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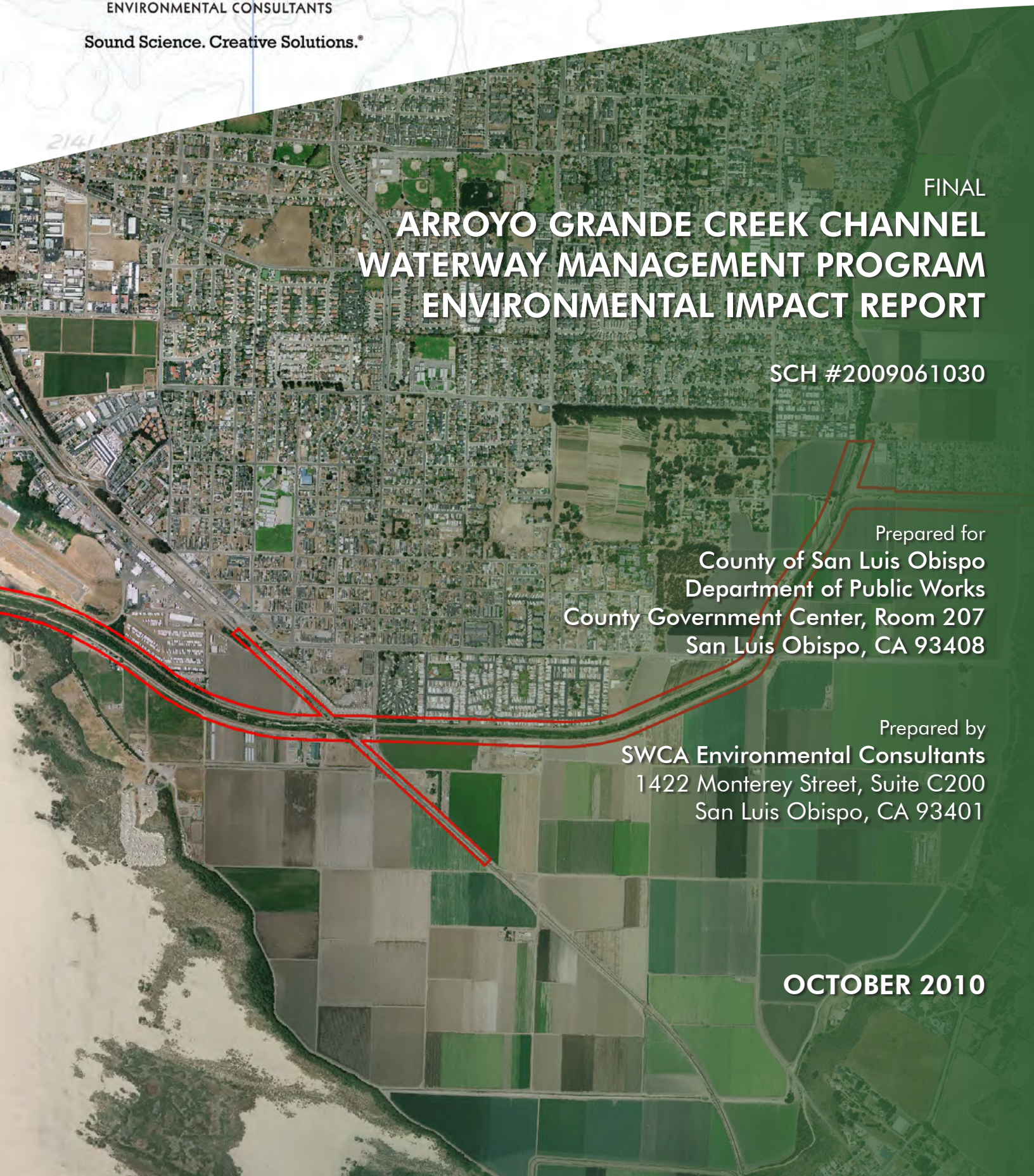

FINAL

ARROYO GRANDE CREEK CHANNEL WATERWAY MANAGEMENT PROGRAM ENVIRONMENTAL IMPACT REPORT

SCH #2009061030

Prepared for
County of San Luis Obispo
Department of Public Works
County Government Center, Room 207
San Luis Obispo, CA 93408

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OCTOBER 2010

Arroyo Grande Creek Channel Waterway Management Program

Final Environmental Impact Report
SCH No. 2009061030

Prepared for:

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EXECUTIVE SUMMARY

PURPOSE OF THE EIR

The purpose of this Environmental Impact Report (EIR) is to identify the potential significant impacts of the Arroyo Grande Creek Channel Waterway Management Program (WMP; proposed project) on the environment, indicate the manner in which such significant impacts will be mitigated or avoided, and identify alternatives to the proposed project that avoid or reduce these impacts. The EIR is intended to serve as an informational document for use by the County of San Luis Obispo (County), the California Environmental Quality Act (CEQA) lead agency; the other responsible agencies; and the general public in their consideration and evaluation of the environmental consequences associated with the implementation of the proposed project. The EIR addresses potentially significant impacts to Agricultural Resources; Biological Resources; Cultural Resources; Geology and Soils; and Flooding, Hydrology and Water Quality; Hazards and Hazardous Materials; and Transportation and Circulation. Significant impacts identified, and the measures recommended to avoid them are shown in Table ES-1.

PROJECT LOCATION

The proposed project is located within San Luis Obispo County, California, near the City of Arroyo Grande and the community of Oceano (refer to Figure ES-1). The project area is located entirely within the unincorporated areas of San Luis Obispo County. The project area is a linear corridor with two segments: (1) Arroyo Grande Creek channel from near the confluence of Los Berros Creek downstream to the Arroyo Grande lagoon and (2) Los Berros Creek channel from the Century Lane Bridge to Arroyo Grande Creek (refer to Figure ES-2). This area is within the County's Flood Control District Zone 1/1A. The total length of the flood control channels addressed in the WMP is approximately 3.5 miles.

PROJECT BACKGROUND

The lower Arroyo Grande Valley has a long history of flooding and severe damage to agricultural and residential lands. Levees were built along lower Arroyo Grande Creek and the lower portion of Los Berros Creek was diverted in 1961 to provide flood control.

In February 2005, the Department of Water Resources (DWR) issued a Statement of Necessary Work with the goal of initiating maintenance work on the channel in July 2005. In response to impending assessments estimated by DWR, the Zone 1/1A Advisory Committee actively lobbied the County Board of Supervisors to instead restore funding for a study of flood control alternatives. The County approved funding to the Coastal San Luis Resource Conservation District (RCD) to conduct an Alternatives Study. It was completed in 2006.

Following completion of the Alternatives Study, the Zone 1/1A Advisory Committee selected a preliminary preferred project alternative that was considered feasible within anticipated funding limits. That alternative became the Waterway Management Program, which is evaluated in the EIR.

Figure ES-1. Project Vicinity Map

Figure ES-2. Project Location Map

PROPOSED PROJECT

Implementation of the WMP would include three distinctive components.

1. Vegetation Management

The vegetation management component would consist of maintaining a 10-foot riparian buffer on both sides of the low-flow channel to provide riparian habitat and streamside cover to protect aquatic habitat. Willows present within the buffer would be limbed up to reduce cross-sectional roughness but still provide adequate stream shading and riparian habitat. Gaps in the riparian buffer would be revegetated with native riparian species including cottonwood, sycamore, and willow. Cottonwood and sycamore would be planted at random along the length of the flood control channel within the buffer to encourage long-term diversity in the riparian canopy. Based on past experience, vegetation management would be repeated approximately every one to three years, depending on the amount of regrowth.

2. Sediment Management

The Arroyo Grande Creek flood control channel currently lacks the secondary channels that are found in more natural, low gradient stream environments. Therefore secondary, or overflow channels, would be excavated into areas in the channel that have accumulated excess sediment resulting in reduced flood capacity. The excavated secondary channels would be connected with the primary channels to allow for complex flow conditions that would encourage scour and sediment transport, and reduce the need for future sediment removal. No sediment in the primary channel would be excavated. Some maintenance (sediment removal) of the secondary channels would be required over the long-term because of the likelihood that significant quantities of fine material would be deposited in the channels.

Large wood structures would be placed at the confluence of each active and secondary channel connection to enhance aquatic habitat. Approximately 35 large wood structures are proposed for the project, to promote pool scour, encourage sediment sorting, and provide deep pools and cover habitat for steelhead and red-legged frog.

3. Levee Raising (Alternatives 3a and 3c)

The proposed project includes raising the levees in two stages along portions of the Los Berros Creek Diversion Channel and along Arroyo Grande Creek Channel from the Los Berros confluence to the lagoon. Levee raising would most likely be conducted in phases as funding is available. The levees would ultimately be raised up to 2.5 feet above the 20-year storm flows (i.e., “freeboard”). The first phase of the levee raising (Alternative 3a) would raise the levees to an elevation that would, along with the vegetation and sediment management discussed above, provide up to 10-year flood protection with freeboard. This raise would focus on “low spots” along the existing levee. The levees would need to be raised in various locations from approximately six inches to as much as two feet.

The longer term levee raise (Alternative 3c) would achieve 20-year flood protection with up to 2.5-feet of freeboard for those parcels included within the special maintenance assessment district. The average levee raise required to implement this component would be approximately 2.8 feet from existing grade, with a maximum raise necessary in some places of approximately 5 feet.

SCOPING AND NOTICE OF PREPARATION PROCESS

In compliance with CEQA Guidelines, the County of San Luis Obispo has taken steps to maximize opportunities to participate in the environmental process. During the environmental determination process, an effort was made to contact various federal, state, regional, and local governmental agencies and other interested parties to solicit comments and inform the public of the proposed project. This included holding a preliminary agency scoping meeting on August 14, 2008 and a public scoping meeting on June 25, 2009. The NOP for the EIR was distributed on June 5, 2009. The proposed project was described, the scope of the environmental review was identified, and agencies and the public were invited to review and comment on the NOP. The close of the NOP review period was July 10, 2009.

Agencies, organizations, and interested parties not contacted or who did not respond to the request for comments about the project during the preparation of the Draft EIR also had the opportunity to comment during the 45-day public review period on the Draft EIR. Comments received and the responses are included in Chapter 9 of the Final EIR.

SIGNIFICANT ENVIRONMENTAL IMPACTS IDENTIFIED

Table ES-1 shows each impact identified and all mitigation measures recommended to reduce or avoid impacts. The most significant impacts identified in the EIR include:

- Biological Resource impacts to Environmentally Sensitive Habitat Areas (ESHA), jurisdictional features including wetlands, riparian habitat, and sensitive wildlife and plant species.

- Agricultural Resource impacts due to conflicts with agricultural operations and potential loss of productive agricultural soils.

- Geology and Soils impacts related to the repair and construction of the levees in saturated soils where seismic activity is likely and the structures are subject to high stormwater flows.

All impacts identified in the EIR can be reduced to a level of insignificance with mitigation.

PROJECT ALTERNATIVES

Three alternatives to the proposed project were brought forward for substantial review and comparison in the EIR:

1. No Project Alternative

2. Levee Setback Alternative

3. Levee Raise and Vegetation Management Alternative

The No Project Alternative would result in the fewest significant impacts among the alternatives, including the proposed project. Impacts to all resources other than biological resources and agricultural resources would be avoided by the No Project Alternative. However it would not meet the project objectives.

Because it would result in increased area for habitat and reduce the need for sediment and vegetation management, the Levee Setback Alternative would result in significantly fewer biological resource impacts when compared to the proposed project. However this alternative would have significantly greater impacts to agricultural resources. This alternative would permanently convert approximately 50 acres of highly productive soils along the levees.

Alternative 3, the Levee Raise and Vegetation Management Alternative would not avoid or significantly reduce the biological resource impacts associated with the proposed project. It would have impacts similar to the proposed project in general.

Due to the biological resources which exist in the channel and the agricultural resources adjacent to the channel, neither the proposed project nor the Levee Setback Alternative could feasibly avoid impacts. The difference therefore between the two alternatives is the potential for feasible mitigation. Impacts to biological resources can be mitigated to a less than significant level through the application of intensive compensatory mitigation. For example, the Army Corps of Engineers policy is "no net loss" of wetlands. This policy allows for wetlands to be impacted (if avoidance is not feasible) as long as wetlands are created or enhanced in return. Prime agricultural soils on the other hand are considered a finite resource. Mitigation measures can be proposed to address impacts; however ultimately, especially when considering the scale of the conversion which would occur with the Levee Setback Alternative, impacts would be considered significant and unavoidable. Because of this, the proposed project is the environmentally superior alternative.

IMPACT SUMMARY TABLE

The table on the following pages provides a summary of the potential impacts of the proposed project. Also summarized in these tables are the mitigation measures associated with each impact that are to be implemented by the project applicant in order to reduce the environmental impacts to a level of insignificance. In accordance with CEQA, the Summary Tables identify the following types of potential impacts associated with the proposed development.

Class I Impacts—Significant environmental impacts that cannot be fully mitigated or avoided. The decision maker must adopt a "Statement of Overriding Considerations" as required under CEQA Guidelines Section 15093 if the project is approved.

Class II Impacts—Significant environmental impacts that can be feasibly mitigated or avoided. The decision maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved.

Class III Impacts—Environmental impacts that are adverse but not significant for which the decision maker does not have to adopt "Findings" under CEQA.

Class IV Effect—An effect that would be beneficial, and would reduce existing environmental impacts or hazards.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
AGRICULTURAL RESOURCES			
AGR Impact 1 Implementation of Alternative 3a and 3c would result in the temporary disturbance of up to approximately 3.5 acres of prime farmland and the permanent loss of up to one acre of prime farmland.	Short-term	**AGR/mm-1** Prior to completion of the construction plan for Alternative 3a, 3c and the UPRR bridge raise, the Flood Control and Water Conservation District (District) shall coordinate with local agriculturalists to refine the construction easement areas to existing agricultural roads and other areas not likely to be in production, to the maximum extent feasible. Construction fencing shall be installed along the easement to reduce the potential for disturbance outside of the construction easement area, as appropriate. **AGR/mm-2** Prior to completion of the final construction plans, the permanent easement area of the Los Berros Creek channel shall be limited to the existing access road areas, to the extent feasible. Further, Construction access and stockpiling locations shall be located within public right of ways to the maximum extent feasible. Permanent conversion of land available for crop production shall be minimized by allowing the use of identified portions of the easement for agricultural roads to the degree possible and appropriate while still ensuring the functionality of the levee. The allowance for and any limitations to locating agricultural roads on the top or outside portion of the levee should be noted in the easement agreement. The allowance to cross through the easement and levee channel should also be noted in those areas where such a crossing is to be retained. **AGR/mm-3** Any imported soils or levee fill/aggregate should be stockpiled in a manner to avoid impacts to adjoining crops. This includes maintaining adequate moisture to avoid dust impacts to nearby crops, the placement of a geotextile membrane in order to prevent rock, construction materials, or imported soil from becoming mixed with the native soils, and the removal of all fill material and the geotextile membrane upon completion of the project, coupled with the restoration of the native soils' previous soil texture, available water holding capacity, and soil permeability in all areas of private	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		agricultural land that are not part of the permanent floodway easement. Upon conclusion of the construction of Alternative 3a and 3c the District shall coordinate with local agriculturalists to determine if restoration (disking, fine grading) of the temporarily disturbed area is necessary. Costs of this restoration shall be considered during easement negotiations with landowners.	
AGR Impact 2 Raising the UPRR bridge would result in the temporary disturbance of approximately 1.5 acres of prime soils.	Short-term	Implement **AGR/mm-1 and AGR/mm-3**. **AGR/mm-4** Construction of the UPRR bridge improvement shall be focused within the UPRR right of way to the maximum extent feasible.	Class III Less Than Significant.
AGR Impact 3 Construction of Alternative 3a, 3c and the UPRR bridge raise would potentially occur on and adjacent to agricultural infrastructure improvements, temporarily reducing productivity.	Short-term	Implement **AGR/mm-1**. **AGR/mm-5** Prior to completion of the final plans for the Alternative 3a, 3c and the UPRR bridge raise, the District shall coordinate with local agriculturalists, to address potential conflicts between the construction activities and agricultural operations. Issues such as the location of stockpiles and haul routes, hours of operation, and farm and construction crew safety and the location of critical agricultural improvements to be avoided shall be considered. The final plans shall identify haul routes, and include a diagram of critical agricultural improvements that shall be avoided during construction, including wells, and accessory structures. Where the project results in the need to relocate existing water or associated electrical infrastructure, such measures should be completed prior to construction commencing in order to ensure the continuity of access to adequate irrigation supplies.	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
AGR Impact 4 The loss of up to one acre of prime farmland resulting from the implementation of Alternative 3c would contribute to a cumulatively significant impact to agricultural resources.	Long-term	**AGR/mm-6** Prior to the issuance of grading permits for Alternative 3c, the District shall provide evidence that funds sufficient to, (1) purchase a farmland conservation easement, deed restriction, or other farmland conservation mechanism, and (2) to compensate for administrative costs incurred in the implementation of this measure have been provided to the California Farmland Conservancy Program or similar program, which will provide for the conservation of farmland impacted by Alternative 3c at a 1:1 ratio in San Luis Obispo County.	Class III Less Than Significant
AIR QUALITY			
AQ Impact 1 Short-term construction emissions resulting from the implementation of the initial sediment management, Alternative 3a and Alternative 3c, and the UPRR bridge raise would potentially exceed ROG and NOx thresholds and produce significant CO2, a GHG.	Short-term	**AQ/mm-1** Prior to issuance of construction permits for any project component, a Construction Activities Management Plan (CAMP) shall be submitted for review and approval by the SLOAPCD. The CAMP shall evaluate the actual equipment that will be used and scheduling and overlapping of the various phases and compare the resulting impacts to the APCD air quality impact thresholds to determine if exceedances are expected and, if so, to define specific mitigation that will be implemented to reduce impacts below the thresholds. The plan shall describe the construction schedule, equipment to be used, and identify the distances to disposal sites or from fill sites, as applicable. Based on those factors, if necessary, the SLOAPCD shall prescribe which Best Available Control Technology shall be incorporated into the CAMP. Applicable technologies shall address GHG as well, and may include: a. Minimizing the number of large pieces of construction equipment operating during any given period. b. Regularly maintaining and properly tuning all construction equipment according to manufacturer's specifications. c. Fueling all off-road and portable diesel powered equipment including, but not limited to: bulldozers, graders, cranes,	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		loaders, scrapers, backhoes, generators, compressors, and auxiliary power units with CARB motor vehicle diesel fuel. d. Using 1996 or newer heavy duty off road vehicles. e. Electrifying equipment where possible. f. Using Compressed Natural Gas (CNG), liquefied natural gas (LNG), bio-diesel, or propane for on site mobile equipment instead of diesel-powered equipment. g. Ensuring that on and off-road diesel equipment shall not be allowed to idle for more than five minutes. h. To the greatest extent practicable, using Purinox or similar NOX reducing agents diesel fuel. i. To the greatest extent feasible, installing catalytic reduction units on all heavy equipment performing this work.	
AQ Impact 2 Short-term construction emissions would occur in close proximity to sensitive receptors.	Short-term	**AQ/mm-2** To minimize the impacts of diesel emissions on sensitive receptors construction activities shall be limited as follows: a. Excavation shall occur from the southern levee (opposite existing residences) to the extent feasible; b. Stockpile locations and staging areas shall be located at least 1,000 feet from sensitive receptors to the extent feasible; c. Haul routes that avoid sensitive receptors shall be considered to the extent feasible; d. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; e. Diesel idling within 1,000 feet of sensitive receptors is not permitted; f. Use of alternative fueled equipment is recommended	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		whenever possible; g. Signs that specify the no idling requirements must be posted and enforced at the active project locations; and, h. These toxic impact reductions for sensitive receptors shall be added to the CAMP as well.	
AQ Impact 3 Short-term construction emissions would potentially include fugitive dust (PM10) emissions.	Short-term	**AQ/mm-3** Prior to construction of any of the project components requiring earthwork, the most current BMPs to reduce fugitive dust emissions shall be shown on all project plans and implemented during daily earth moving activities. Particulate matter shall be addressed in the CAMP as well. BMPs shall specifically address potential fugitive dust emissions which may affect adjacent agricultural operations.	Class III Less Than Significant.
AQ Impact 4 Demolition and relocation activities have the potential to result in adverse air quality impacts associated with hazardous building materials.	Short-term	**AQ/mm-4** Prior to commencement of demolition activities the applicant shall: a. Notify the APCD at least ten working days prior to commencement of any demolition activities; b. Conduct an asbestos survey by a Certified Asbestos Inspector; c. Use applicable disposal and removal requirements for any identified asbestos containing material; and d. Contact the SLOAPCD Enforcement Division prior to final approval of any demolition activity.	Class III Less Than Significant.
BIOLOGICAL RESOURCES			
BR Impact 1 Vegetation and sediment management would include the permanent loss of	Long-term	**BR/mm-1** Prior to implementation of any component of the WMP, the District shall obtain a Section 404 Permit from USACE, a	Class III Less Than

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
approximately 26.48 acres of CDFG jurisdiction, 0.36 acres of USACE/RWQCB wetlands, and 9.18 acres of coastal wetlands within Arroyo Grande Creek channel and Los Berros Creek, resulting in a significant impact.		Section 401 Water Quality Certification from RWQCB, a Coastal Development Permit from the CCC, and a Section 1602 Streambed Alteration Agreement from CDFG for project-related impacts that will occur in areas under the jurisdiction of these regulatory agencies. **BR/mm-2** Prior to construction, to mitigate for the permanent impacts the District shall develop a Mitigation Monitoring Plan (MMP) in consultation with the appropriate regulatory agencies due to the known presence of sensitive habitats and jurisdictional wetlands/other waters within the project site. The MMP shall include success criteria goals and a five-year monitoring schedule. A qualified biologist/botanist shall supervise site preparation, timing, species utilized, planting installation, maintenance, monitoring, and reporting of the revegetation/restoration efforts. The following measures shall be incorporated into the MMP: a. Prior to construction, locations of wetlands to be avoided shall be flagged by a qualified biologist. The areas to be protected should be shown on all applicable construction plans. Prior to any vegetation or sediment removal, exclusionary fencing should be erected by the contractor at the boundaries of all construction areas to avoid equipment and human intrusion into adjacent habitats. The fencing should be maintained and remain in place throughout construction activities. b. Prior to construction, the District shall specify an on-site mitigation strategy (or combination of on-site and off-site) in the MMP to mitigate for impacts to sensitive habitats which would be impacted. This plan should identify the following: i. Suitable on-site mitigation locations (or off-site locations, if there is not enough suitable space along Arroyo Grande Creek) based on soil type, hydrologic conditions, and proximity to existing sensitive species populations; ii. Seed collection and cuttings/plantings requirements and	Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		protocol; iii. Soil seed bank conservation strategies; iv. Mitigation site preparation techniques; v. Seeding regimen; vi. Mitigation site maintenance schedule, including weed abatement strategies, erosion control monitoring, etc.; and, vii. Monitoring requirements. c. The MMP will be implemented after initial vegetation and sediment removal activities. **BR/mm-3** Prior to initiation of WMP activities, the District shall retain qualified biological monitor(s) approved by all involved regulatory agencies to ensure compliance with mitigation measures pertaining to biological resources. Monitoring will occur throughout the length of initial vegetation and sediment removal and during supplemental vegetation and sediment removal, or as directed by the regulatory agencies. **BR/mm-4** Prior to initial, and during subsequent management activities, the project site shall be clearly flagged or fenced so that the contractor is aware of the limits of allowable site access and disturbance. **BR/mm-5** Prior to initiation of WMP activities, the District shall prepare a Hazardous Materials (HAZMAT) Response Plan to allow for a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur. **BR/mm-6** Prior to initiation of WMP activities, if stream diversion/dewatering shall be necessary for any component of the project, the District shall prepare a Diversion and Dewatering plan. The form and function of all pumps used during the dewatering	

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		activities shall be checked by biological monitor(s) to ensure a dry work environment and minimize adverse effects to aquatic species and habitats. **BR/mm-7** During implementation of the WMP, all equipment staging areas, construction-crew parking, and construction access routes shall be established in previously disturbed areas. **BR/mm-8** During implementation of the WMP, the cleaning and refueling of equipment and vehicles shall occur only within a designated staging area and at least 65 ft (20 m) from wetlands, other waters, or other aquatic areas. This staging area shall conform to BMPs applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles shall be checked and maintained on a daily basis to ensure proper operation and avoid potential leaks or spills. **BR/mm-9** During implementation of the WMP, all project-related hazardous materials spills within the project site shall be cleaned up immediately. Spill prevention and cleanup materials shall be on-site at all times during construction. **BR/mm-10** During implementation of the WMP, trash shall be contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas. **BR/mm-11** During implementation of the WMP, no pets shall be allowed on the construction site. **BR/mm-12** After diversion/dewatering (if necessary) has been completed, all material used for diversion/dewatering shall be removed from creek corridor under the supervision of the biological monitor(s) or qualified fisheries biologist. **BR/mm-13** Following initial vegetation and sediment removal, areas of temporary disturbance shall be restored using topsoil salvage and hydroseeding with appropriate non-invasive	

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		herbaceous species for erosion control. Because native plant species are likely to be out-competed by non-native species, a ground-cover mix is recommended for impacted areas. Topsoil salvage methods and seed mixes shall be specified in the MMP. Hydroseeded areas shall be monitored by a qualified restoration biologist and/or horticulturalist for viability and overall success, with additional recommendations as necessary. **BR/mm-14** To reduce impacts of beaver dams on flood control in the Arroyo Grande Creek channel, coordinate with CDFG to implement beaver management as outlined in the WMP.	
BR Impact 2 Vegetation and sediment management would include temporary impacts of up to approximately 16.76 acres of CDFG jurisdiction, 10.17 acres of USACE/RWQCB wetlands, and 5.14 acres of coastal wetlands annually within Arroyo Grande Creek and Los Berros Creek, resulting in a significant impact.	Short-term	Implement **PM VEG-1 through 4**, **PM SED 4 and 5**, and **BR/mm- 1, and 3-14**.	Class III Less Than Significant.
BR Impact 3 Construction of the Alternative 3a and/or 3c levee raise would temporarily impact to jurisdictional areas, resulting in a significant impact.	Short-term	Implement **PM VEG-1 through 4**, **PM SED 4 and 5**, and **BR/mm-1 through 14**, as applicable.	Class III Less Than Significant.
BR Impact 4 Replacement of the Union Pacific Railroad Bridge would permanently impact 0.28 acres of USACE/RWQCB wetlands and temporarily impact 0.1 acres of CDFG jurisdictional areas, resulting in a significant impact.	Short-term	Implement **BR/mm-1 through 14** as applicable to the UPRR component of the project.	Class III Less Than Significant.
BR Impact 5 Implementation of the WMP could result in take of federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species.	Long-term	**BR/mm-15** During construction or subsequent survey efforts, if marsh sandwort, Gambel's watercress, or other sensitive species are observed within the project corridor by biological monitor(s), areas with sensitive plant species will be fenced or	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		marked for avoidance until coordination with regulatory agencies can be facilitated to obtain incidental take (if necessary) or mitigation can be developed to avoid, minimize, or offset impacts to sensitive plant species.	
BR Impact 6 Implementation of the levee raise components of the project could result in take of federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species.	Long-term	**BR/mm-16** Prior to finalization of the Alternative 3a and/or 3c levee raise components of the project, a qualified biologist shall perform an updated full floristic survey of the proposed area of disturbance to identify sensitive species which could be impacted during construction. **BR/mm-17** If marsh sandwort, Gambel's watercress, or other sensitive species are observed within the area of disturbance the District the plans shall be redesigned to avoid these species to the extent feasible, and coordinate with regulatory agencies to facilitate to obtain incidental take (if necessary) or mitigation can be developed to avoid, minimize, or offset impacts to sensitive plant species.	Class III Less Than Significant.
BR Impact 7 Vegetation and sediment removal activities have the potential to directly and/or indirectly impact the federally listed tidewater goby and south-central California coast steelhead.	Long-term	Implement **WMP Performance Measures PM SED-4 and 5**, and **Protection Measures PM-3, PM-4, and PM-5**, and **BR/mm-1 through 14**. **BR/mm-18** Prior to construction, the District shall coordinate with USACE via the Section 404 permitting process to acquire incidental take authorization from 1) USFWS through a FESA Section 7 Biological Opinion and Incidental Take Statement for tidewater goby; and, 2) NMFS through a FESA Section 7 Biological Opinion and Incidental Take Statement for steelhead. **BR/mm-19** Prior to construction, a component including a description of tidewater goby and south-central California coast steelhead, their ecology, legal status, and the need for conservation of these species shall be integrated into a worker environmental	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		training program. All construction personnel conducting in-stream work shall participate in the training program conducted by a qualified biologist. **BR/mm-20** If in-stream work is necessary, a qualified biologist shall be retained with experience in tidewater goby and steelhead biology and ecology, aquatic habitats, biological monitoring (including diversion/dewatering), and capturing, handling, and relocating fish species. During in-stream work, the biological monitor(s) shall continuously monitor placement and removal of any required stream diversions to capture stranded steelhead and other native fish species and relocate them to suitable habitat as appropriate. The biologist(s) shall capture native fish stranded as a result of diversion/dewatering and relocate them to suitable instream habitat immediately downstream of the work area. The biologist shall note the number of native observed in the affected area, the number of fish relocated, and the date and time of the collection and relocation. **BR/mm-21** During construction, non-native fish and other aquatic species shall be permanently removed from Arroyo Grande Creek when captured. **BR/mm-22** During in-stream work, if pumps are incorporated to assist in temporarily dewatering the site, intakes shall be completely screened with no larger than 0.2 inch (five mm) wire mesh to prevent tidewater goby, steelhead, and other sensitive aquatic species from entering the pump system. Pumps shall release the additional water to a settling basin allowing the suspended sediment to settle out prior to re-entering the stream(s) outside of the isolated area. The form and function of all pumps used during the dewatering activities shall be checked daily, at a minimum, by a qualified biological monitor to ensure a dry work environment and minimize adverse effects to aquatic species and habitats. **BR/mm-23** During construction, the biological monitor shall	

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		monitor erosion and sediment controls to identify and correct any conditions that could adversely affect sensitive aquatic species or habitats. The biological monitor shall be granted the authority to halt work activity as necessary and to recommend measures to avoid/minimize adverse effects to steelhead and steelhead habitat.	
BR Impact 8 Vegetation and sediment management activities have the potential to directly and/or indirectly impact the federally listed California red-legged frog.	Long-term	Implement **BR/mm-3 through 14, 22, and 23**. **BR/mm-24** At least 15 days prior to the onset of activities, the District or project proponent shall submit to the USFWS the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work. **BR/mm-25** A Service-approved biologist shall survey the work site two weeks before the onset of activities. If California red-legged frogs, tadpoles, or eggs are found, the approved biologist shall contact the Service to determine if moving any of these life-stages is appropriate. In making this determination the Service shall consider if an appropriate relocation site exists. If the Service approves moving animals, the approved biologist shall be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only Service-approved biologists shall participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. **BR/mm-26** Prior to initiation of the WMP, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session,	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		provided that a qualified person is on hand to answer any questions. **BR/mm-27** A Service-approved biologist shall be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed. After this time, the contractor or permittee shall designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist shall ensure that this individual receives training outlined in the above measure and in the identification of California red-legged frogs. The monitor and the Service-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and Service during review of the proposed action. If work is stopped, the Corps and Service shall be notified immediately by the Service-approved biologist or on-site biological monitor. **BR/mm-28** The number of access routes, number, and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas. Where impacts occur in these staging areas and access routes, restoration shall occur as identified in measures above. **BR/mm-29** A Service-approved biologist shall permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. The permittee shall have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.	
BR Impact 9 Vegetation and sediment management activities have the potential to directly and/or indirectly impact the following California Species of Special Concern: Coast Range newt,	Long-term	**BR/mm-30** Prior to initiation of the WMP, the District shall obtain a letter of permission (or similar authorization) from CDFG to capture and relocate Coast Range newt, southwestern pond turtle, coast horned lizard, two-striped garter snake and other CSC species	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
southwestern pond turtle, coast horned lizard, and two-striped garter snake.		from work areas encountered during construction as necessary. Qualified biologists shall conduct a pre-construction survey for these species in areas where construction will occur. The qualified biologists shall capture and relocate these sensitive species or other sensitive aquatic species to suitable habitat outside of the area of impact. Observations of Species of Special Concern or other special-status species shall be documented on CNDDB forms and submitted to CDFG.	
BR Impact 10 Vegetation and sediment management have the potential to directly and/or indirectly impact nesting bird species.	Long-term	**BR/mm-31** Prior to construction, vegetation removal shall be scheduled to occur outside of the typical nesting season (vegetation removal after August 15) if possible, to prevent birds from nesting within areas of disturbance during or just prior to construction. **BR/mm-32** Prior to construction, if construction activities are proposed to occur during the typical nesting season (between February 15 and August 15 as outlined in WMP Protection Measure PM-2) within 300 ft (90 m) of potential nesting habitat, a nesting bird survey shall be conducted by qualified biologists in potential nesting habitat at least two weeks prior to construction to determine presence/absence of nesting birds within the area of disturbance. Pre-construction surveys for least Bell's vireo by qualified biologists shall be included with any such pre-construction survey effort. Work activities shall be avoided within 100 ft (30 m) of active bird nests and 300 ft (90 m) of active raptor nests until young birds have fledged and left the nest. Readily visible exclusion zones shall be established in areas where nests must be avoided. USFWS and CDFG shall be contacted for additional guidance if nesting birds are observed within or near the boundaries of the project site. Nests, eggs, or young of birds covered by the MBTA and California Fish and Game Code shall not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later, nor would adult birds be killed, injured, or harassed at any time. **BR/mm-33** Prior to construction, the District shall coordinate	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		with CDFG to determine if a Section 2081 Incidental Take Permit (or a Section 2080.1 Consistency Determination) will be required for least Bell's vireo. The District shall ensure avoidance of take of the Fully Protected white-tailed kite at all times. **BR/mm-34** Vegetation removal in potential nesting habitats shall be monitored and documented by the biological monitor(s) regardless of time of year.	
BR Impact 11 Implementation of the levee raise components of the project could result in take of sensitive wildlife species including the California red-legged frog and two striped garter snake, among others.	Long-term	Implement **BR/mm-3, 14, and 22 through 29**.	Class III Less Than Significant.
BR Impact 12 Replacement of the Union Pacific Railroad bridge and modification of the 22nd Street Bridge have the potential to impact nesting birds, pallid bat, Townsend's big-eared bat, or other roosting bats.	Short-term	**BR/mm-35** Prior to bridge demolition, a qualified biologist shall conduct a nest survey and any unoccupied nests (such as cliff swallow nests) under the existing bridge shall be knocked down prior to the typical nesting season (nests removed from August 16 to February 14) to discourage nesting activity just prior to demolition. After February 14, pre-construction surveys by qualified biologists shall continue on a weekly basis to determine if any new nesting activity has occurred under the existing bridges. Partially constructed but unoccupied nests shall be destroyed before they are 1/3 complete. The District shall coordinate with the appropriate regulatory agencies to allow for the legal removal of any bird nests prior to or during the nesting bird season. **BR/mm-36** Prior to construction, if construction activities are proposed to occur during the typical nesting season (February 15 to August 15) within 100 ft (30 m) of potential nesting habitat under bridges, a nesting bird survey shall be conducted by qualified biologists at least two weeks prior to construction to determine presence/absence of nesting birds. Work activities shall be avoided within 100 ft (30 m) of active bird nests under the bridge, until young birds have fledged and left the nest. Readily visible exclusion zones	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		shall be established in areas where nests must be avoided. USFWS and CDFG shall be contacted for additional guidance if nesting birds are observed within or near the boundaries of the project site. Nests, eggs, or young of birds covered by the MBTA and California Fish and Game Code would not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later, nor would adult birds be killed, injured, or harassed at any time. **BR/mm-37** Prior to construction, pre-construction surveys (at least two at dawn and two at dusk at appropriate times of the year, such as in the fall and spring prior to construction) shall be conducted by qualified biologists to determine if bats are roosting under bridges. The biologist(s) conducting the preconstruction surveys will also identify the nature of the bat utilization of the bridge (i.e., no roosting, night roost, day roost, maternity roost). The last survey shall be conducted no later than March 15 to allow for bat exclusion (if required) prior to the onset of the maternity roosting season (typically around April 15). **BR/mm-38** Prior to demolition or modification of existing bridges, if bats are found to be roosting under the bridges, bat exclusion shall be conducted by a qualified biologist or firm qualified to conduct bat exclusion activities. Exclusion methods may include, but are not limited to, wire mesh, spray foam, or fabric placement. If exclusion is necessary, a Bat Exclusion Plan shall be submitted to CDFG for approval prior to construction. **BR/mm-39** Prior to demolition or modification of existing bridges, the District may opt to employ bat exclusion, even if roosting bats aren't observed during pre-construction surveys, prior to the maternity roosting season to eliminate the potential for bat roosting during bridge replacement or modification. **BR/mm-40** If bats are found to be roosting under the Union Pacific Railroad Bridge at any time prior to construction, the new bridge design shall be examined by a qualified biologist in coordination with design engineers to determine if the new bridge	

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		will be capable of supporting roosting bats. If bats are found to roost under the existing bridge and it is determined that the new bridge will not support roosting bats, features facilitating bat roosting such as rails under the bridge or bat boxes shall be attached to the new bridge to allow for bat roosting opportunities. The design, number, and placement of any bat boxes shall be determined by a qualified biologist and coordination with CDFG. Any bat structure proposed as mitigation shall be reviewed by a qualified biologist.	
FLOODING, HYDROLOGY, AND WATER QUALITY			
WQ Impact 1 Construction activities would significantly impact water quality due to the exposure of large areas of soil to erosive forces, the need to dewater during construction, and due to the presence of fuel, oil, and other pollutants on site for construction purposes.	Short-term	Implement **GS/mm-4 through GS/mm-6**.	Class III Less Than Significant.
WQ Impact 2 Long-term sediment and vegetation management activities may impact surface water quality due to the reduction of vegetation, exposure of areas of soil to erosive forces, and due to the presence of fuel, oil, and other pollutants on site for sediment removal purposes.	Long-term	Implement **BR/mm 5, 7, 8, 9, and 13**. **WQ/mm-1** Prior to commencement of annual vegetation and sediment management the County shall prepare an erosion control and water quality protection plan that details measures to be taken during annual monitoring and maintenance efforts that would minimize water quality impacts. This plan would borrow heavily from the SWPPP and shall include measures such as: 1. Maintaining vegetation outside of the buffer area if it is providing protection and shade of the low-flow channel; 2. Minimizing equipment operation in the channels; 3. Prohibiting refueling within or adjacent to the channels; 4. Identifying appropriate species to be planted on levee slopes to provide erosion control that are compatible with biological resources mitigation and the desired channel roughness coefficient.	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
GEOLOGY AND SOILS			
GS Impact 1 The proposed Alternative 3a and 3c levee improvements may become unstable when a seismic event results in liquefaction of the underlying soils.	Long-term	**GS/mm-1** Prior to construction of Alternative 3a and 3c a design-level geotechnical report for the levee improvements shall be prepared by the District. The report shall provide ground motion parameters, for use in geotechnical analyses, such as for evaluating slope stability, liquefaction, and seismic settlement. **GS/mm-2** Prior to construction of Alternative 3a and 3c an Emergency Response Plan shall be prepared by the District to address seismic hazards. The plan shall recognize the potential for liquefaction and seismic impacts to the levee, and delineate specific high-hazard areas that should be inspected for damage immediately following an earthquake.	Class III Less Than Significant.
GS Impact 2 Foundation and/or embankment seepage may result in localized destabilization of the levees.	Long-term	**GS/mm-3** Prior to construction of Alternative 3a and 3c a design level geotechnical report shall be prepared by the District to address seepage conditions. It should include mitigation strategies such as cutoff walls, impervious blankets, or drainage systems, for example, that control or reduce gradients.	Class III Less Than Significant.
GS Impact 3 Soils disturbed during the vegetation and sediment management, construction of Alternative 3a and 3c, and the UPRR bridge raise would be subject to erosion and scour from stormwater, high flow events in the channel, and flooding events.	Long-term	**GS/mm-4** Prior to initiation of any project components an erosion control plan shall be implemented by the District. The plan shall address short and long-term erosion control and scour which may result from the project components. Vegetation used for erosion control shall be compatible with vegetation management efforts to reduce channel roughness coefficients, and any biological resources mitigation measures. **GS/mm-5** Prior to initiation of any project components the District shall prepare and submit to the SWRCB for approval a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the State General Order related to construction projects. The SWPPP shall identify the	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		selected stormwater management procedures, pollution control technologies, spill response procedures, and other means that will be used to minimize erosion and sediment production and the release of pollutants to surface water during construction. The SWPPP shall also describe procedures and be consistent with biological resources mitigation. **GS/mm-6** On-going maintenance of the levee embankments by the District should include removal of debris and dead vegetation which could concentrate flows, and repair of holes and other disturbances resulting from the initial and annual vegetation management activities. **GS/mm-7** Prior to implementation of Alternative 3a and 3c the District shall identify areas adjacent to the south levee where levee overtop and flooding may least affect public safety and property value and consider construction of a permanent spillway at these location(s). The spillway shall be designed to accommodate flood events in a manner that would reduce the potential for mass erosion and catastrophic failure of the levees.	
HAZARDS AND HAZARDOUS MATERIALS			
HAZ Impact 1 The construction of Alternative 3c may require the relocation of potentially explosive liquid natural gas storage tanks.	Short-term	**HAZ/mm-1** Prior to completion of the final design plans, the District shall obtain the natural gas purveyor's Hazardous Materials Plan, which shall include, but is not limited to, details of the existing and proposed storage tank locations and associated infrastructure, and relocation procedures. The procedures shall be referenced on the final plans and implemented during construction, as necessary.	Class III Less Than Significant.
HAZ Impact 2 Implementation of the sediment management, and Alternative 3a and 3c components of the project, could potentially disturb existing gas and petroleum pipelines located within the Arroyo Grande Creek channel and levees.	Short-term	**HAZ/mm-2** Prior to construction, pipeline locations shall be clearly indicated on construction plans and in the field. Project plans shall include specific measures to be taken by construction crews so that damage to the pipelines is avoided.	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
HAZ Impact 3 During implementation of the WMP, construction workers may be exposed to agricultural chemicals due to overlap between normally scheduled applications and construction activities.	Short-term	**HAZ/mm-3** At least 30 days prior to commencement of all construction activities, the County shall provide local agriculturalists a construction schedule and request that use of agricultural chemicals (particularly sprays) be limited during construction hours (typically 8:00 a.m. to 4:00 p.m.).	Class III Less Than Significant.
HAZ Impact 4 Heavy machinery would be operated in proximity to ASTs and other storage equipment which may contain hazardous materials.	Short-term	Implement **AGR/mm-5**. **HAZ/mm-4** Prior to initiation of construction activities that include heavy machinery, existing ASTs located within 50 feet of the exterior toe of the levee slopes shall be identified on construction plans and identified in the field.	Class III Less Than Significant.
HAZ Impact 5 Construction activities associated with the Alternative 3a and 3c levee raise and the UPRR bridge raise may expose construction crews to hazardous soil conditions associated with the railroad right of way.	Short-term	**HAZ/mm-5** Prior to construction of any project component that would result in significant disturbance within the UPRR railroad right-of-way, a qualified consultant shall perform soils tests to determine whether or not hazardous conditions exist. If so, a Contaminated Materials Management Plan (CMMP) shall be developed in coordination with the County Environmental Health Division and implemented during construction.	Class III Less Than Significant.
HAZ Impact 6 Proposed vegetation management would potentially introduce taller tree species near the southern end of the runway, resulting in a strike hazard to aircraft.	Long-term	**HAZ/mm-6** Planting tall tree species (sycamore or cottonwood) within the channel between the UPRR bridge and the southern end of the runway shall be prohibited.	Class III Less Than Significant.
TRANSPORTATION AND TRAFFIC			
TR Impact 1 Construction of the proposed project components would result in short-term increased truck traffic on Halcyon Road and Highway 1, contributing to existing congestion.	Short-term	**TR/mm-1** Prior to initiation of construction activities, the District shall prepare a Construction Traffic Management Plan. The plan shall identify haul routes, the ingress and egress points from the Arroyo Grande Creek and Los Berros Creek channels, the maximum number of daily trips allowed, and the hours of operation, at minimum. It shall also include a description of safety measures	Class III Less Than Significant.

Table ES-1. Significant Environmental Impacts That Can be Feasibly Mitigated or Avoided

(Decision-maker must issue "Findings" under CEQA *Guidelines* §15091(a) if the project is approved)

Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		(cones, signage, flagmen, etc.) to be put in place during construction activities.	
TR Impact 2 Construction of the proposed project components would result in short-term increased truck traffic, potentially creating unsafe driving conditions on due to the slower truck speeds and the need to access public roads from undesignated locations.	Short-term	Implement **TR/mm-1**.	Class III Less Than Significant.

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CHAPTER 1
INTRODUCTION

The San Luis Obispo Flood Control and Water Conservation District (District), serving as the lead agency under the California Environmental Quality Act (CEQA) of 1970, has prepared this Environmental Impact Report (EIR) to assess the impacts that may result from implementation of the Arroyo Grande Creek Channel Waterway Management Program (WMP; proposed project). The WMP includes the following components:

1. Manage riparian vegetation annually to maintain a composite roughness of 0.040 within the flood control reach, fill existing gaps in the riparian corridor vegetation, and encourage species diversity by planting riparian tree species;

2. Remove sediment to create secondary channels that could be self-maintaining, and monitor annually to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments;

3. Raise levees throughout the flood control channel to achieve channel capacity for up to 10-year flood flows; and

4. Eventually raise levees throughout the flood control channel to achieve channel capacity for up to 20-year flood flows.

1.1 PURPOSE OF THE EIR

The purpose of this EIR is to identify the proposed project's significant impacts on the environment, indicate the manner in which such significant impacts will be mitigated or avoided, and identify alternatives to the proposed project that avoid or reduce these impacts. This EIR is intended to serve as an informational document for use by the County of San Luis Obispo, other responsible agencies, and the general public in their consideration and evaluation of the environmental consequences associated with the implementation of the proposed project. This document is provided to the public and decision-makers for their review and comment as required by CEQA.

This EIR has been prepared in accordance with the State and County administrative guidelines established to comply with CEQA, as amended. Section 15151 of the State CEQA *Guidelines* provides the following standards for EIR adequacy:

> "An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."

Under the CEQA process, an EIR must serve as a full disclosure document that enables the lead and responsible agencies to fully evaluate potential environmental impacts and the consequences of their decision on a proposed project. This EIR has been written to comply with the requirements of CEQA for the analysis of the proposed project, as well as the development and evaluation of alternatives to the proposed project.

1.2 EIR STRUCTURE

Contents of the EIR are outlined below, and the attached appendices contain background and technical information compiled and developed throughout the environmental review process. Contents of the EIR were determined from the results of an Initial Study (IS) prepared by the lead agency, responses from the Notice of Preparation (NOP) for the EIR sent to responsible agencies, and comments received during the public scoping process. The IS, the NOP, and comment letters received during the NOP review period are included in Appendix A.

1.2.1 Scoping Process

In compliance with CEQA Guidelines, the County of San Luis Obispo has taken steps to maximize opportunities to participate in the environmental process (refer to Table 1-1). During the environmental determination process, an effort was made to contact various federal, state, regional, and local governmental agencies and other interested parties to solicit comments and inform the public of the proposed project. This included holding a preliminary agency scoping meeting on August 14, 2008, and a public scoping meeting on June 25, 2009. The NOP for the EIR was distributed on June 5, 2009. The proposed project was described, the scope of the environmental review was identified, and agencies and the public were invited to review and comment on the NOP. The close of the NOP review period was July 10, 2009.

Agencies, organizations, and interested parties not contacted or who did not respond to the request for comments about the project during the preparation of the Draft EIR currently had the opportunity to comment during a 45-day public review period on the Draft EIR.

Table 1-1. Opportunities for Public/Agency Comment

Opportunity	Date(s)	Partial List of Agencies Contacted/Attending
Preliminary Agency Scoping for WMP and EIR	August 14, 2008	USACE, NMFS, USFWS, CDFG, RWQCB, RCD
EIR Notice of Preparation	June 5 – July 10, 2009	Refer to Appendix A
EIR Public Scoping Meeting	June 25, 2009	Refer to Appendix A, plus all landowners in the Assessment District
County Interagency Meeting	November 5, 2009	USFWS, CDFG, NMFS
Submittal of Draft WMP	February 8 –March 22, 2010	USFWS, CDFG, NMFS, RWQCB, CCC, RCD, State Parks
Draft EIR Public Comment Period	June 3 – July 18, 2010	All responsible agencies and interested parties noted above

1.2.2 EIR Contents

The scope of the EIR includes issues identified by the lead agency during the preparation of the NOP for the proposed project, as well as environmental issues raised by agencies and the general public in response to the NOP and at the scoping meeting. Chapter 9 includes a list of all comments received on the Draft EIR and the District's responses. Any changes to the Draft EIR that were made in response to comments received are shown in underline and/or strikeout in the Final EIR.

The EIR is divided into the following major sections:

Executive Summary. Provides a brief summary of the project background, description, impacts and mitigation measures, and alternatives.

Introduction. Provides the purpose of an EIR, as well as scope, content, and the use of the document.

Project Description. Provides the general background of the project, objectives, a detailed description of the project characteristics, and a listing of necessary permits and government approvals.

Environmental Setting. Describes the physical setting and surrounding land uses.

Environmental Impacts and Mitigation Measures. Discusses the environmental setting as it relates to the various issue areas, regulatory settings, thresholds of significance, impact assessment and methodology, project-specific impacts and mitigation measures, cumulative impacts, and secondary impacts. The EIR analyzes the potentially significant impacts to the following resource areas, as identified during the preparation of the NOP:

- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Flooding, Hydrology, and Water Quality
- Geology and Soils
- Hazards and Hazardous Materials
- Transportation and Circulation

Alternatives. Summarizes the environmental advantages and disadvantages associated with the project and alternatives. As required, the "No Project" alternative is included among the alternatives considered. An "Environmentally Superior Alternative," is identified.

Environmental Analysis. Identifies growth inducing impact and a discussion of long-term/short-term productivity and irreversible environmental changes.

Mitigation Monitoring and Reporting Plan. This section contains a listing of all mitigation measures contained in the EIR, the requirements of the mitigation measures, the applicant's responsibility and timing for implementation of these measures, the party responsible for verification, the method of verification, and verification timing.

1.3 AGENCY USE OF THE DOCUMENT

The District, as the CEQA lead agency, is responsible for administering the preparation of the EIR and will be responsible for certifying the Final EIR. Lead agency decision-makers (i.e., the Board of Supervisors) will use the EIR as an informational document to assist in the decision-making process, ultimately resulting in the approval, denial, or assignment of conditions to the project. The following jurisdictions may also use this EIR in reviewing and issuing their respective permits and authorizations (as applicable):

- United States Army Corps of Engineers (USACE)
- California Department of Fish and Game (CDFG)
- Regional Water Quality Control Board (RWQCB)
- California Department of Transportation (Caltrans)
- San Luis Obispo County Air Pollution Control District (SLOAPCD)
- City of Arroyo Grande Community Development Department

1.4 PROJECT SPONSORS AND CONTACT PERSONS

Key contact persons are as follows:

Lead Agency:	County of San Luis Obispo Department of Public Works County Government Center Room 200 San Luis Obispo, CA 93408 Mr. John Farhar, Environmental Resource Specialist
Project Proponent:	San Luis Obispo Flood Control and Water Conservation District County Government Center Room 200 San Luis Obispo, CA 93408 Ms. Jill Ogren, Project Manager

1.5 REVIEW OF THE DRAFT EIR

This Draft EIR was distributed to responsible and trustee agencies, other affected agencies, surrounding cities, and interested parties, as well as all parties requesting a copy of the Draft EIR in accordance with Public Resources Code 21092(b)(3). The Notice of Completion of the Draft EIR was also distributed as required by CEQA. The 45-day public review period began on June 3, 2010. During this period the EIR, including technical appendices, was available for review at the following locations:

County of San Luis Obispo
Department of Public Works
County Government Center Room 200
San Luis Obispo, CA 93408

San Luis Obispo City/County Library
995 Palm Street
San Luis Obispo, CA 93401

On behalf of the lead agency, comments on the Draft EIR were addressed to:

John Farhar
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

The 45-day public review period ended on July 18, 2010. Written responses to all significant environmental issues raised were prepared and included as part of the Final EIR and the environmental record for consideration by decision-makers for the project.

1.6 ACRONYMS

The following acronyms are used extensively in the EIR. The acronyms are spelled out the first time they are used in a section or chapter, but are also provided in Table 1-2 below.

Table 1-2. Acronyms

Acronym	Term
°F	degrees Fahrenheit
AB	Assembly Bill
ADT	Average Daily Traffic
afy	acre feet per year
ALUC	Airport Land Use Commission
ALUP	Airport Land Use Plan
asl	above sea level
AST	above-ground storage tanks
BMPs	Best Management Practices
CAAA	Clean Air Act Amendments
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	Department of Industrial Relations, Division of Occupational Safety and Health
CalEPA	California Environmental Protection Agency

Table 1-2. Acronyms

Acronym	Term
Caltrans	California Department of Transportation
CAMP	Construction Activities Management Plan
CAP	Clean Air Plan
CARB	California Air Resources Board
CCAMP	Central Coast Ambient Water Quality Monitoring Program
CCC	California Coastal Commission
CCCP	California Climate Change Portal
CCIC	Central Coast Information Center
CCR	California Code of Regulations
CCSE	Central Coast Salmon Enhancement
CDC	California Department of Conservation
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA	California Endangered Species Act
CH_4	Methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNG	Compressed Natural Gas
CNPS	California Native Plant Society
CO_2	carbon dioxide

Table 1-2. Acronyms

Acronym	Term
County	County of San Luis Obispo Department of Public Works
CRHR	California Register of Historical Resources
CSLOEHS	County of San Luis Obispo Office of Environmental Health Services
CWA	Clean Water Act
CZLUO	Coastal Zone Land Use Ordinance
District	San Luis Obispo County Flood Control and Water Conservation District
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ESHA	Environmentally Sensitive Habitat Areas
ESU	Evolutionarily Significant Unit
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
GIS	Geographic Information Systems
HAZMAT	Hazardous Materials
HFCs	Hydrofluorocarbons
HRER	Historic Resources Inventory and Evaluation Report
IS	Initial Study
LCA	Land Conservation Act
LCC	Land Capability Classification
LNG	liquefied natural gas
LOS	level of service

Table 1-2. Acronyms

Acronym	Term
LUFT	Leaking Underground Fuel Tank
LUO	Land Use Ordinance
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act of 1918
MOU	Memorandum of Understanding
N_2O	nitrous oxide
NEPA	National Environmental Policy Act
NESHAP	National Emission Standard for Hazardous Air Pollutants
NHS	National Highway System
NOA	naturally-occurring asbestos
NOAA Fisheries	National Marine Fisheries Service
NOP	Notice of Preparation
NO_X	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OEP	Office of Environmental Protection
OHP	Office of Historic Preservation
OHWM	Ordinary High Water Mark
PFCs	Perfluorocarbons
PM_{10}	inhalable particulate matter 10 microns or less in size
$PM_{2.5}$	inhalable particulate matter 2.5 microns or less in size

Table 1-2. Acronyms

Acronym	Term
POVE	Pismo Oceano Vegetable Exchange
Ppt	parts per thousand
RCD	Resource Conservation District
RCRA	Resources Conservation and Recovery Act of 1986
RHC	Reactive Hydrocarbons
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SARA	Superfund Amendments and Reauthorization Act of 1986
SF6	sulfur hexafluoride
SLOAPCD	San Luis Obispo County Air Pollution Control District
SLOCDA	San Luis Obispo County Department of Agriculture
SO_2	Sulfur Dioxide
SRA	Sensitive Resource Area
SSC	Species of Special Concern
SSURGO	Soil Survey Geographic
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Board
TDS	total dissolved solids
TMDL	total maximum daily loads
TMP	Transportation Management Plans
UBC	Uniform Building Code

Table 1-2. Acronyms

Acronym	Term
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
UST	underground storage tank
Williamson Act	California Land Conservation Act of 1965
WMP	Waterway Management Program
Zone 1/1A	District “Zones 1 and 1A”

CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT SUMMARY

The Arroyo Grande Creek Channel Waterway Management Program (WMP; proposed project) is being developed through a cooperative effort between the community, the Coastal San Luis Resource Conservation District (RCD) and the San Luis Obispo County Flood Control and Water Conservation District (District). The project is located along the lower reaches of Arroyo Grande Creek, from near the intersection of Los Berros Creek to the Arroyo Grande lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. This area is within District "Zones 1 and 1A" (Zone 1/1A).

The County of San Luis Obispo Department of Public Works (County) is developing the WMP and preparing California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation, including an Environmental Impact Report (EIR), to obtain the necessary federal and state permits for implementation. The Draft WMP which is included as Appendix B of this EIR includes the following components:

1. Manage riparian vegetation annually to maintain a composite roughness of 0.040 within the flood control reach, fill existing gaps in the riparian corridor vegetation, and encourage species diversity by planting riparian tree species;

2. Remove sediment to create secondary channels that could be self-maintaining, and monitor annually to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments;

3. Raise levees throughout the flood control channel to achieve channel capacity for up to 10-year flood flows; and

4. Eventually raise levees throughout the flood control channel to achieve channel capacity for up to 20-year flood flows.

2.2 PROJECT LOCATION

The proposed project is located within San Luis Obispo County, California, near the City of Arroyo Grande and the community of Oceano (refer to Figure 2-1). The project area is located entirely within the unincorporated areas of San Luis Obispo County. The project area is a linear corridor with two segments: (1) beginning on Arroyo Grande Creek 0.14 mile upstream of the confluence of Los Berros Creek and continuing downstream to the upper edge of the Arroyo Grande lagoon at the Pacific Ocean, and (2) beginning at the Century Lane Bridge on Los Berros Creek and continuing downstream to the confluence with Arroyo Grande Creek (refer to Figure 2-2). This area is within District Zone 1/1A. The total length of the flood control channels addressed in the WMP is approximately 3.5 miles.

Figure 2-1. Project Vicinity Map

Figure 2-2. Project Location Map

2.3 PROJECT BACKGROUND

The lower Arroyo Grande Valley has a long history of flooding and severe damage to agricultural and residential lands. Levees were built along lower Arroyo Grande Creek and the lower portion of Los Berros Creek was diverted in 1961 to provide flood control for the adjacent Cienega Valley. Lopez Lake is a water supply reservoir that also provides the added benefit of additional flood storage for the uppermost portion of Arroyo Grande Creek.

In February 2005, the Department of Water Resources (DWR) issued a Statement of Necessary Work with the goal of initiating maintenance work on the channel in July 2005. As mandated by State Water Code, the intended Work Plan was the same as the plan developed as part of the 1955 Arroyo Grande Creek Flood Control Project, which requires maintaining the channel by restoring it to its original 1958 design. Without Water Code provisions to study or implement alternative flood control designs, DWR was faced with a difficult and expensive regulatory permitting process that would likely result in costly mitigation requirements related to habitat loss for federally-listed species. These costs would have been paid locally through a Zone 1/1A property assessment process.

In response to impending assessments estimated by DWR, the Zone 1/1A Advisory Committee comprised of agriculturalists and other local residents and various stakeholders, actively lobbied the County Board of Supervisors to restore funding for a study of flood control alternatives, which had been dropped with the decision to relinquish responsibility to DWR in 2003. In June 2004, the District approved release of funding to Coastal San Luis RCD to conduct the "Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study" (Alternatives Study). It was prepared in 2006 by Swanson Hydrology + Geomorphology. The Alternatives Study provides an in-depth focus on erosion sources, sedimentation, and hydrology as they relate to recurring flooding in the lower reaches of the creek.

Following completion of the Alternatives Study, the Zone 1/1A Advisory Committee selected a preliminary preferred project alternative that was considered feasible within anticipated funding limits. The selected approach was to pursue vegetation and sediment management within the channel, and a phased implementation of Alternative 3a, at a minimum, as funding within the local flood control district became available. Alternative 3a would provide flood protection up to the 10-year return period and would most likely be implemented in several phases. Alternative 3c would also be pursued as funding allows. Alternative 3c includes all elements of Alternative 3a, and additionally raises the levees and Union Pacific Railroad (UPRR) Bridge to provide flood protection up to the 20-year return period.

2.4 PROJECT OBJECTIVE

The primary objective of the WMP is to develop a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel to provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel.

2.5 PROPOSED PROJECT

The WMP is included as Appendix B in this EIR but is also summarized in this section of the EIR. Implementation of the WMP would include three distinctive components:

1. Vegetation Management
2. Sediment Management
3. Levee Raising (Alternatives 3a and 3c)

In addition there are a number of known secondary components resulting from implementation of the levee raising components of the project. These include: (1) raising of the railroad bridge, (2) raising and/or relocating a portion of Halcyon Road, (3) making improvements to the 22nd Street Bridge, and (4) potentially relocating structures located within the Arroyo Grande Channel maintenance easement that encroach on proposed improvements.

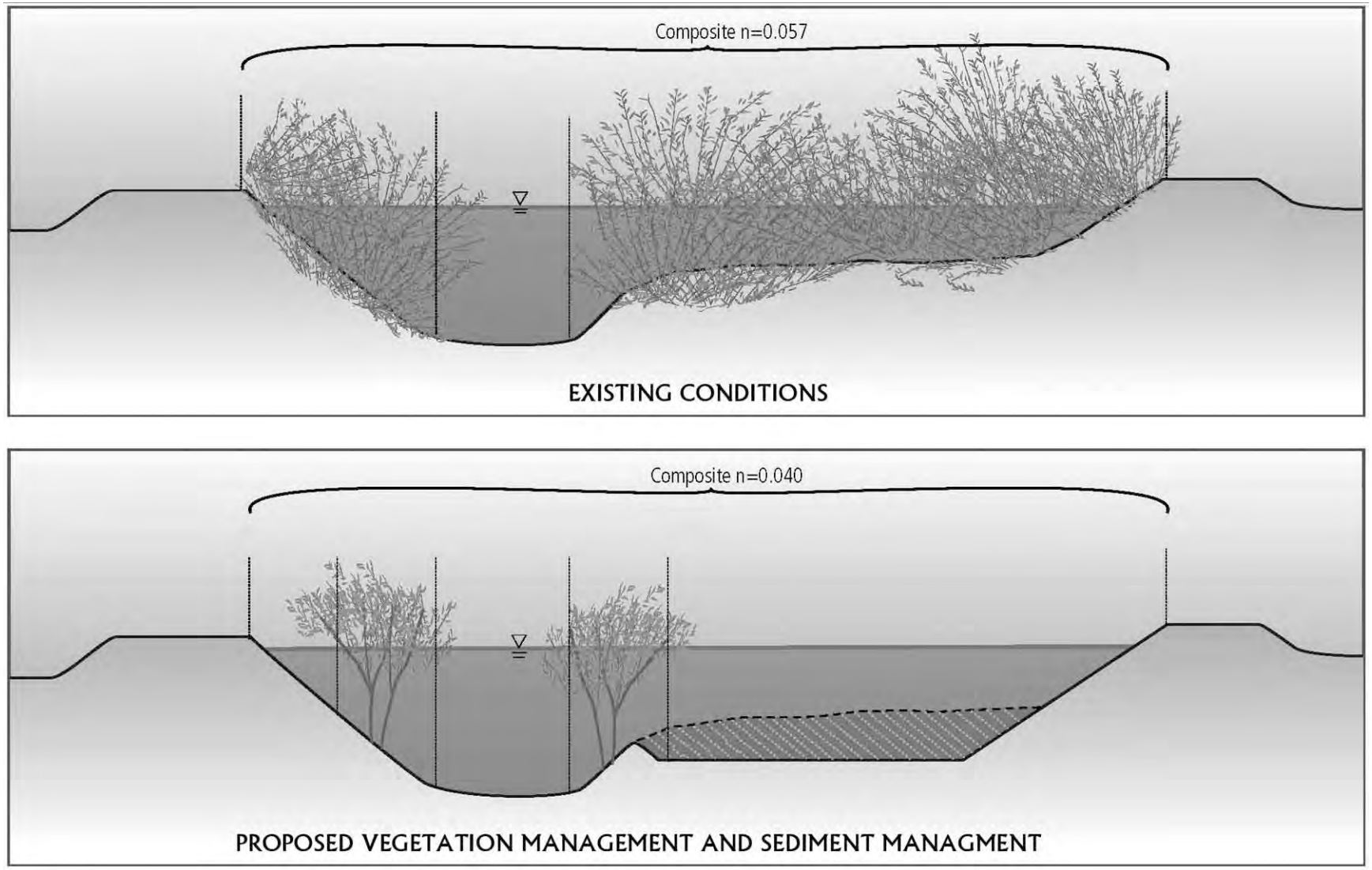
2.5.1 Vegetation Management

The vegetation management program would consist of maintaining a 10-foot riparian buffer on both sides of the low-flow channel to provide riparian habitat and streamside cover to protect aquatic habitat. The management would result in an approximate 40-foot riparian corridor, not including canopy width, although this width could vary depending upon the width of the channel and the location of the low-flow channel in relation to the levees. The corridor would also act to maintain a bankfull channel that has developed over the last several years by providing root strength along the low flow channel margins. All vegetation outside of the buffer would be removed completely to allow high flows to access secondary channels and provide for increased conveyance and flood capacity (refer to Figure 2-3).

Willows present within the buffer would be limbed up to reduce cross-sectional roughness but still provide adequate stream shading and riparian habitat. Root balls within the riparian buffer would be left intact to encourage spring/summer growth along the bankfull channel edge. Gaps in the riparian buffer would be revegetated with native riparian species including cottonwood, sycamore, and willow. Cottonwood and sycamore would be planted at random along the length of the flood control channel within the buffer to encourage long-term diversity in the riparian canopy.

Vegetation management would be conducted as often as necessary to maintain a roughness coefficient of 0.04 (current roughness is approximately 0.057 on average) through an adaptive management approach that would include reconnaissance surveys and site visits with regulatory agency staff. Based on past experience, vegetation management would be repeated approximately every one to three years, depending on the amount of regrowth. Vegetation management would occur as late as possible in the summer and fall of each year to maximize stream shading during the warmer summer months while avoiding impacts to steelhead. Regrowth of willow is expected in late winter and spring providing low, overhanging vegetation during critical months for steelhead rearing.

Figure 2-3. Proposed Vegetation and Sediment Management



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2.5.2 Sediment Management

2.5.2.1 Short Term Removal

The Arroyo Grande Creek flood control channel currently lacks the secondary channels that are found in more natural, low gradient stream environments. Therefore secondary, or overflow channels, would be excavated into areas in the channel that have accumulated excess sediment in bars and terraces resulting in reduced flood capacity (refer to Figure 2-3). At strategic locations, the excavated secondary channels would be connected with the primary channels to allow for complex flow conditions that would encourage scour and sediment transport, and reduce the need for future sediment removal. No sediment in the primary channel would be excavated.

Large wood structures would be placed at the confluence of each active and secondary channel connection to enhance aquatic habitat (refer to Appendix B). Approximately 35 large wood structures are proposed for the project, to promote pool scour, encourage sediment sorting, and provide deep pools and cover habitat for steelhead and red-legged frog. It is currently estimated that this project component would require the removal of approximately 21,000 cubic yards of sediment from the Arroyo Grande Creek and Los Berros channels. Sediment would be hauled by truck to an approved disposal site. The disposal site had not been identified at this time. Heavy machinery would need to operate in the channel during initial sediment removal and during construction of the log structures.

2.5.2.2 Long-term Removal

Some maintenance (sediment removal) of the secondary channels would be required over the long-term because of the likelihood that significant quantities of fine material would be deposited in the channels. Annual cross-section monitoring would assess the performance of the channel in moving supplied sediment. Cross-sections would be prepared each year following the rainy season. The hydraulic model would also be rerun annually with updated cross-sections and roughness information to assess channel capacity.

The volume of sediment to be removed would vary from year to year, would be considerably less than the initial removal, and in some years may not be required at all. Maintenance of the secondary channel would consist of removal of excess sediment by an excavator located on the top of the levee, and a long-reach bucket would be used to scoop up sediment from designated areas and deposit it in a dump truck to take the sediment off-site to a County-approved disposal area. Heavy machinery would most likely not need to access the channel during the annual sediment removal.

2.5.3 Levee Raising

The originally constructed flood control channel was believed to provide flood protection from a 50-year storm, but due to challenges in maintaining the channel, such as inadequate funding and regulatory requirements, as well as changes in the hydrology of the watershed associated with significant changes in land use, the level of flood protection has been reduced. It is estimated that the channels can currently provide flood protection from only a 4.6 year storm. This means that the channel has the probability to overtop once every 4.6 years.

The proposed project includes raising the levees in two stages along portions of the Los Berros Creek Diversion Channel and along Arroyo Grande Creek Channel from the Los Berros confluence to the lagoon. Levee raising would most likely be conducted in phases as funding is

available. The levees ultimately would be raised up to 2.5 feet above the 20-year storm flows (i.e., "freeboard"). Although overtopping of the levees is not desired at all, it is more desirable to overtop to the south where flood waters would inundate agricultural fields and the risk of loss of life can be reduced, rather than in the north, where housing, the airport, and a wastewater treatment plant are located. To that end, the north levee is currently approximately 4-6 inches higher than the south levee, and would remain so as a result of the proposed project.

In general, levee slopes would be constructed at a ratio of 2:1 (horizontal:vertical) on the channel side of the levees and 1.5:1 on the outside of the levees due to the limited levee easement area and number of existing structures encroaching on the levees. Retaining walls may also be necessary in some places to minimize the levee footprint due to the proximity of existing structures to the base of the levee. Retaining walls would not be located within the channel. The levees would maintain a minimum top width of 15 feet. Refer to Figures 2-4a and 2-4b for the approximate area of disturbance associated with the proposed project.

2.5.3.1 Short-term Levee Raise (Alternative 3a)

The first phase of the levee raising (Alternative 3a) would raise the levees to an elevation that would, along with the vegetation and sediment management discussed above, provide up to 10-year flood protection with freeboard. This raise would focus on "low spots" along the existing levee. The levees would need to be raised in various locations from approximately 6 inches to as much as 2 feet. This component would require approximately 14,350 cubic yards of fill material and would be implemented over a period of one or more years, depending on available funding.

2.5.3.2 Longer-term Levee Raise (Alternative 3c)

The longer term levee raise (Alternative 3c) would achieve 20-year flood protection with up to 2.5-feet of freeboard for those parcels included within the special maintenance assessment district. The average levee raise required to implement this component would be approximately 2.8 feet from existing grade, with a maximum raise necessary in some places of approximately 5 feet. These heights would be reduced accordingly if Alternative 3a is implemented first. It is currently estimated that this component would require a total of approximately 67,000 cubic yards of fill, less if Alternative 3a is implemented first. Refer to Figures 2-4a and 2-4b for more information regarding the approximate location and extent of the proposed levee improvements.

2.5.4 Secondary Components

In some cases, achieving the goals of levee raise Alternatives 3a (10-year protection) and 3c (20-year protection) would require improvements other than vegetation management, sedimentation management, and the levee raise. These are discussed below.

2.5.4.1 Union Pacific Railroad Bridge Replacement

The existing railroad bridge, located downstream of the 22nd Street bridge, hangs low in elevation in the Creek and creates a hydraulic constriction in levee raise Alternative 3c. The bridge would need to be raised or replaced at a higher elevation (approximately 5 feet) to relieve the constriction. Raising the bridge also necessitates raising the railroad tracks approaching the bridge. The raise of the approaching railroad bed would have to begin approximately 1,700 feet north and 2,400 feet south of the bridge, according to conceptual plans prepared by UPRR in 2006 (refer to Figure 2-4a for approximate area of disturbance). The area of disturbance would be approximately three acres (4,100 feet by 30 feet). So that railroad service is not disrupted, a

parallel but temporary track would need to be installed. This track is known as a “shoefly” and would allow for uninterrupted railroad service during the bridge raising. The area of disturbance for the shoefly may be approximately the same as that necessary for the bridge raising and would be located immediately west of the current tracks. It would occur mostly within the existing railroad right-of-way. This component of the project may result in earthwork totaling approximately 135,000 cubic yards (90,000 to construct and remove the shoefly, and 45,000 to construct the permanent raise). These construction improvements may require work within the creek channel.

2.5.4.2 Halcyon Road

Halcyon Road was built at an elevation roughly equal to the top of the bank of Arroyo Grande Creek. North of Highway 1, the northwest levee visually disappears becoming part of Halcyon Road. The levee raise for alternative 3c would encroach into a portion of Halcyon Road north of Highway 1 for approximately 600 feet (refer to Figure 2-4b). Either the road would need to be shifted to the west, or the ground would need to be elevated to achieve the flood protection goal under levee raise alternative 3c. The road would need to be raised along this length approximately 5.5 feet or flood walls could be installed in the channel to an equivalent height.

The Department of Public Works is currently working on plans to improve the Halcyon Road/Highway 1 intersection separately from the WMP, but it is expected that the final proposed improvements would be coordinated with the implementation of the WMP to minimize the work required and disturbance of the flood control channel. The Halcyon Road project may result in shifting Halcyon Road to the west, and if this project occurs first, it will provide space for the levee improvements to occur.

2.5.4.3 Structure Encroachment

There are a number of locations along Arroyo Grande Creek Channel where structures have been constructed within the right-of-way. Many of these structures would be impacted by the construction of Levee Raise Alternative 3a and/or 3c. These structures include water tanks, stalls, a barn, propane tanks, and a mobile home, among others. The degree to which they encroach into the right-of-way varies. Some would only be affected by work on Alternative 3c, for example. The actual encroachment issues will not be known until the construction plans have been further refined. It may be possible to design around these structures through the use of retaining walls or other alternate design techniques.

2.5.4.4 22nd Street Bridge Modification

The 22nd Street Bridge is considered a "perched" bridge. This means that if water is allowed to flow over the bridge it will not continue to flow perpendicular to the bridge deck but would turn and flow parallel, potentially creating flooding to adjacent properties. Alternative 3a would only require the installation of a short length of concrete floodwall along the north side of the upstream levee. As part of alternative 3c, the project would include replacing the open bridge railing with a solid concrete barrier on the upstream side of the bridge. It would also require construction of concrete floodwalls on both the north and south levees, to keep floodwaters in the channel. It should be noted that the 22nd Street Bridge, unlike the railroad bridge does not create a hydraulic constriction.

2.5.5 Earthwork

Total approximate earthwork required to implement the components of the project are shown in Table 2-1.

Table 2-1. Earthwork, By Component

Project Component	Earthwork (yds.3)
Sediment Removal	21,000
Alternative 3a	14,350
Alternative 3c	67,000
UPRR Bridge Raise	135,000
Annual Sediment Maintenance	< 2,000

2.6 REQUIRED PERMITS

Table 2-2 shows the permits and responsible agencies for the proposed project. A coastal development permit would be required as the downstream end of the project is located in the Coastal Zone. Also, a portion of the upstream end of Los Berros Creek channel is located within the City of Arroyo Grande limits.

Table 2-2. Responsible Agencies and Associated Permits

Permit	Responsible Agency
Conditional Use Permit/Coastal Development Permit	County of San Luis Obispo Department of Planning and Building
Conditional Use Permit and Grading Permit	City of Arroyo Grande Community Development Department
Section 401, Stormwater Pollution Prevention Plan	Regional Water Quality Control Board
Section 404	Army Corps of Engineers
Section 1602 Streambed Alteration Agreement	California Department of Fish and Game
Encroachment Permit	California Department of Transportation

2.7 PROJECT TIMING AND PHASING

Due to anticipated funding mechanisms and U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) involvement, the project will also go through National Environmental Policy Act (NEPA) review prior to construction. It is estimated that the environmental review and permitting process may be complete to allow for the implementation of some components of the WMP in the fall of 2010. However funding for the larger components, including the Alternative 3c levee raise, may not be available for many years. Sediment and vegetation management would occur annually as necessary.

Figure 2-4a. Project Area

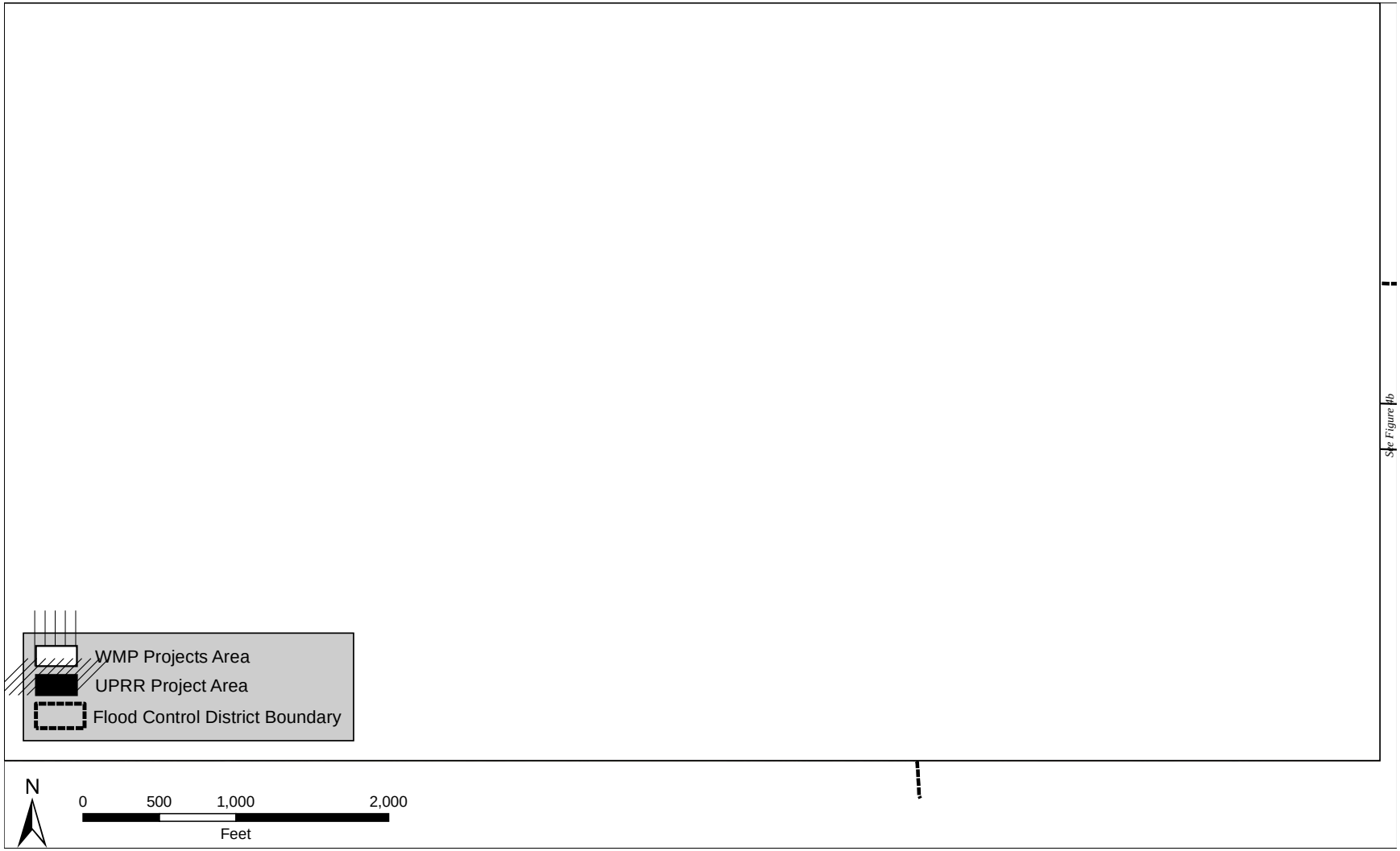

Figure 2-4b. Project Area

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CHAPTER 3
ENVIRONMENTAL SETTING

3.1 PHYSICAL SETTING AND EXISTING USES

The project area is a linear corridor within San Luis Obispo County, with a small portion extending through the City of Arroyo Grande limits, and passing near the unincorporated community of Oceano, and the community of Halcyon. The project is located within San Luis Obispo County Flood Control and Water Conservation District (District) Zone 1/1A and consists of approximately 3.5 miles of trapezoidal channel along Arroyo Grande Creek and Los Berros Creek (Swanson Hydrology + Geomorphology 2006). The Arroyo Grande Creek is part of the Estero Bay Hydrologic Unit (310.0), the Arroyo Grande Hydrologic Area (310.30), and the Oceano Hydrologic Sub-Area (310.31) (Central Coast Salmon Enhancement 2009).

The project site is located in a relatively flat valley that supports prime agricultural land and urban development. It flows through the Arroyo Grande flood control channel into Oceano Dunes State Vehicle Recreation Area to the Pacific Ocean. Agricultural operations, scattered residences, and residential clusters are common along the project corridor and in the surrounding areas. Prominent geographic features in the vicinity include the agricultural Cienega Valley to the south, Nipomo Mesa to the southeast, and the Santa Lucia Range to the east. The project is bounded on the northwest by the unincorporated community of Oceano (within the jurisdiction of San Luis Obispo County) and bounded on the northeast by the community of Halcyon (founded in 1903 by the Temple of the People, a philosophical and religious order from New York). The Oceano Airport and Oceano Wastewater Treatment Plant are located at the northwest corner of the project corridor as it flows into Oceano Dunes State Vehicular Recreation Area, and the project site is bordered on the west by Arroyo Grande lagoon at the Pacific Ocean.

The lower Arroyo Grande Valley has a long history of flooding and damage to agricultural and residential lands. Arroyo Grande Creek has been altered since the late 1950s for flood control, water supply and groundwater recharge purposes. The most substantial alterations include the development of the Arroyo Grande flood control channel, Lopez Dam and diversion of Los Berros Creek. The flood control channel was funded by PL 566 through the United States Department of Agriculture (USDA) Soil Conservation Service as a partnered project of the Arroyo Grande Soil Conservation Service and the District, and completed in 1961 (Central Coast Salmon Enhancement 2009). The entire 3.5-mile project area is located in the flood control channel, which provides flood protection to the productive farmlands of the Cienega Valley. The channelized portion of the Creek, bounded by levees approximately 10 to 12 feet tall, passes through predominantly agricultural land and varies in width from 50 and 80 feet (Stetson Engineers, Inc. et al. 2004). The levees have partially eroded at the westernmost terminus of the Creek as it flows into Arroyo Grande lagoon. The Lopez Dam is located on Arroyo Grande Creek approximately ten miles upstream from the project area and was completed in 1968. The dam collects and provides water to municipalities and releases for downstream users (Central Coast Salmon Enhancement 2009). The lower portion of Los Berros Creek was also channelized and diverted to adjoin Arroyo Grande Creek in 1961 to provide further flood control for the Cienega Valley.

Historical records indicate that prior to construction of the dam, the creek flow was intermittent, with flow slowing or going subsurface in the summer and early fall, with a sand bar forming at the mouth enclosing remaining surface waters in a small estuary. An average of 2,330 acre feet

of water has been released from the reservoir into Arroyo Grande Creek each year, between April and October, to meet downstream demands for agricultural irrigation supplies (Stetson Engineers, Inc. et al. 2004). After construction of Lopez Dam, Arroyo Grande Creek appears to have continued its intermittent nature until 1998, when downstream releases for fisheries were instituted (Central Coast Salmon Enhancement 2009).

3.2 SURROUNDING LAND USES

Farmers and ranchers initially settled the Arroyo Grande Valley in the late 1800s, and agricultural land use continues to be an important economic factor in the area. The terrain in the project area, along the lower three miles of the Creek corridor, is fairly flat. The creek is less deeply incised and the historical 100-year floodplain is much broader than upstream sections of the Creek. The broad 100-year floodplains bordering the creek have been converted to agriculture or dense urban/suburban development. The surrounding hills have mostly been converted to suburban development. The last half-mile of the creek traverses coastal dune habitat and is bordered, especially on the south, by a large active dune complex. Most areas north of the creek have been converted to residential and industrial developments. The northern levee was constructed approximately four to 6 inches higher than the southern levee, in order to more fully protect the Oceano Airport, Oceano Wastewater Treatment Plant, and residential uses to the north. All parcels located directly adjacent to the project site are listed in Table 3-1, along with their current land use designations and existing land use (generally listed from west to east along the project corridor). Many of the surrounding properties have residences or include smaller scale agricultural operations (refer to Table 3-1 and Figure 3-1, below).

Table 3-1. Adjacent Properties' Land Use

APN	Land Use Designation	Land Use
061-091-019	Recreation	Oceano Dunes State Vehicular Recreational Area
061-091-020	Recreation	Oceano Dunes State Vehicular Recreational Area
061-091-025	Public Facility	Vacant
061-091-018	Public Facility	Oceano Wastewater Treatment Plant
061-091-029	Public Facility	Oceano Airport
061-161-012	Agriculture	Vacant
061-161-011	Agriculture	Vacant
061-161-010	Agriculture	Vacant
061-161-008	Agriculture	Agriculture
061-126-007	Agriculture	Agriculture
061-126-006	Industrial	Industrial
061-321-001	Industrial	Agriculture

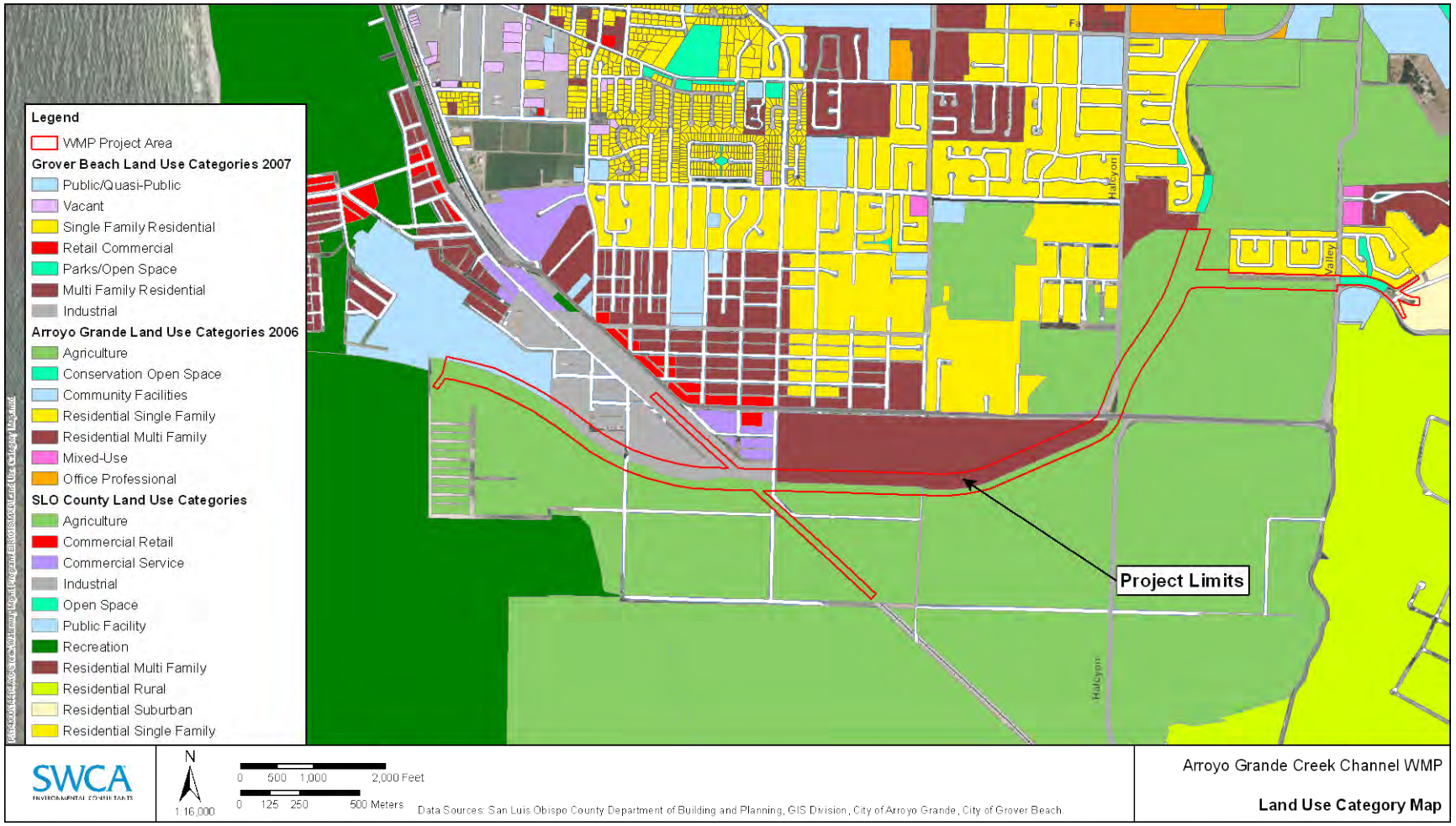
Table 3-1. Adjacent Properties' Land Use

APN	Land Use Designation	Land Use
061-321-002	Industrial	Agriculture/Vacant
061-321-003	Agricultural	Agriculture
061-331-003	Ag/Ind	Vacant
Railroad ROW	Ag/Ind	Union Pacific Railroad
061-331-001	Industrial	Storage facility
061-331-002	Ag/Ind	Residential, Industrial/Manufacturing
062-122-009	Res. Multi Family	Pismo Sands RV Park
062-122-010	Res. Multi Family	Cienaga Seabreeze Mobile Home Park
062-051-004	Res. Multi Family	Duna Vista Mobile Home Park
061-331-004	Agriculture	Agriculture
061-331-005	Agriculture	Agriculture
075-032-008	Res. Multi Family	Rancho del Arroyo Mobile Home Park
075-032-009	Agriculture	Agriculture
075-032-010	Agriculture	Agriculture
075-032-011	Res. Multi Family	Agriculture
075-032-005	Res. Multi Family	Propane facility
075-032-006	Agriculture	Agriculture
075-032-013	Agriculture	Agriculture
075-031-016	Agriculture	Agriculture
075-011-022	Agriculture	Agriculture
075-011-053	Agriculture	Agriculture
075-011-042	Agriculture	Agriculture
075-011-039	Res. Multi Family	Ken Mar Gardens Mobile Home Park
075-011-038	Agriculture	Residence
075-011-020	Agriculture	Agriculture
006-077-007 through 014	SFR Medium Density	Residence

Table 3-1. Adjacent Properties' Land Use

APN	Land Use Designation	Land Use
006-077-027 through 034	SFR Medium Density	Residence
006-077-047	SFR Medium Density	Residence
006-087-003	Conservation/Open Space	Vacant
006-086-006 through 008	SFR Medium Density	Residence
006-085-025	Conservation/Open Space	Vacant
006-085-075 through 090	SFR Medium Density	Residence
075-393-007	Agriculture	Vacant
075-390-001	Res. Single Family	Residence
075-393-001	Residential Suburban	Vacant

Figure 3-1. Land Use Category Map



3.3 CONSISTENCY WITH PLANS AND POLICIES

3.3.1 Overview

CEQA Guidelines, Section 15125(d) states that "the EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." While CEQA requires a discussion of consistency with public plans, inconsistency does not necessarily lead to a significant impact. Inconsistency with public plans creates significant impacts under CEQA only when an adverse physical effect would result from the inconsistency.

3.3.2 Relevant Land Use Plans

The project area, comprised of the lower stretches of Arroyo Grande Creek, lies within many local, state and federal governmental jurisdictions, including San Luis Obispo County, the City of Arroyo Grande, and the California Coastal Commission. The following is a summary of relevant planning documents that affect the project area or any portion of it. Table 3-2 lists applicable policies from these documents and provides a consistency determination. All adverse physical effects resulting from any inconsistencies are discussed in the appropriate environmental analysis sections contained in Section 4 of this EIR. For example, potential inconsistencies with policies related to agricultural resources are addressed in the Agricultural Resources section of this EIR. Although the EIR analysis addresses the proposed project's consistency with applicable land use plans and policies, it is the responsibility of the Board of Supervisors to make the final decision regarding consistency issues.

3.3.2.1 San Luis Obispo County General Plan

California state law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Gov. Code Section 65300). The California Supreme Court has called the general plan the "constitution for future development." The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private. California statutory law requires seven elements to be included in the general plan. These are land use, circulation, housing, open space, safety, conservation, and noise. The San Luis Obispo County General Plan also includes energy, economic, and parks and recreation elements. These ten elements provide the blueprint for future growth in the County. During the environmental review process, three elements of the County's General Plan proved to be most relevant, as follows.

San Luis Obispo County Agriculture and Open Space Element

The 2006 Agriculture and Open Space Element outlines policies for the development and management of agricultural and open space lands within the County's jurisdiction, and is focused on "wisely managing and protecting these important land resources in San Luis Obispo County." Recognizing the value of agriculture to the economy and character of the County as a whole, the goals of the plan are to support agricultural production, conserve and protect agricultural lands and resources, and encourage public education and participation in their management. Open space contributes in large part to the quality of life enjoyed in San Luis Obispo County. The County's goals are to identify, protect, and manage the existing open space by preventing urban sprawl, and encourage public education and participation in the decision making process. The protection of open space is considered essential to the preservation of the rural nature and lifestyles that characterize San Luis Obispo County.

San Luis Obispo County *Draft* Conservation and Open Space Element

The Conservation and Open Space Element is a plan for the conservation of natural resources, including water, forests, soils, harbors, wildlife, and other biological resources. The County of San Luis Obispo is currently preparing an update to their Conservation Element, which was enacted in 1974. The existing Conservation Element is so antiquated that review of that document is not useful at this time. Although not yet adopted, a brief analysis of the upcoming *draft* Conservation and Open Space Element has been included in Table 3-2.

San Luis Obispo County Safety Element

The Safety Element first became a mandatory part of the General Plan in 1975 when the California Legislature adopted Senate Bill 271. This legislation required cities and counties to adopt, at a minimum, General Plan policies related to fire safety, flooding, and geologic hazards. In 1984 the Legislature adopted Assembly Bill 2038, which expanded the list of mandatory issues that were to be evaluated in the Safety Element. The County Safety Element has two basic principles: 1) to be prepared for disaster, and 2) to manage development so as to reduce the risk of disaster. The Safety Element provides a general evaluation of potential public safety hazards on a county-wide basis. The Safety Element provides the direction and resources to help reduce death, injuries, property and environmental damage, and the economic and social dislocation resulting from natural hazards. While it is required to focus on fire, flooding, geologic, and seismic hazards, jurisdictions may address any relevant safety issues that are considered important.

3.3.2.2 San Luis Obispo County Land Use Ordinance (Title 22)

The County Land Use Ordinance for inland portions of the County, known as Title 22, includes regulations established and adopted to protect and promote public health, safety, and welfare. Regulations are also adopted to implement the County General Plan, guide and manage the future growth of the county in accordance with those plans, and regulate land use in a manner that will encourage and support the orderly development and beneficial use of lands within the county. In addition, ordinance regulations are in place to minimize adverse effects on the public resulting from land use and development, as well as to protect and enhance the significant natural, historic, archeological and scenic resources within the county as identified by the county general plan. The Land Use Ordinance also includes planning area standards. The project area is located in the San Luis Bay Planning Area.

San Luis Bay Planning Area Standards

The San Luis Bay Planning Area Standards are a component of the General Plan Land Use and Circulation Elements, and are codified in Article 9 of the San Luis Obispo County Land Use Ordinance (Title 22). The San Luis Obispo Planning Area is one of thirteen planning areas that make up the county Land Use Element. The purpose of Article 9 is to provide standards for proposed development and new land uses that are specific to each of the planning areas defined by the Land Use Element. These standards are mandatory requirements, intended to address the local planning issues of each planning area.

3.3.2.3 San Luis Obispo County Coastal Zone Land Use Ordinance (Title 23)

The San Luis Obispo County Coastal Zone Land Use Ordinance (CZLUO) for coastal portions of the County, known as Title 23, includes regulations established and adopted to protect and promote public health, safety, and welfare. Regulations are also adopted to implement the County General Plan, guide and manage the future growth of the county in accordance with

those plans, and regulate land use in a manner that will encourage and support the orderly development and beneficial use of lands within the county. In addition, ordinance regulations are in place to minimize adverse effects on the public resulting from land use and development, as well as to protect and enhance the significant natural, historic, archeological and scenic resources within the county as identified by the county general plan. The ordinance is intended to assist the public in identifying and understanding regulations affecting the development and use of coastal lands.

3.3.2.4 San Luis Bay Coastal Area Plan

The San Luis Bay Coastal Area Plan describes County land use policies for the Coastal Zone portion of the San Luis Bay Planning Area, including regulations that are also adopted as part of the Land Use Ordinances and Local Coastal Program. The Area Plan allocates land use throughout the Coastal Zone portion of the planning area by land use categories, which determine the variety of land uses that may be established on a parcel of land, as well as defining their allowable density and intensity. Specific development "standards" are included in the area plan to address special problems and conditions in individual communities. Standards for public services, circulation and land uses (located in Chapter 8) provide detailed criteria for evaluation of development projects. The remainder of the area plan is intended to be used for general planning guidance only, and is not to be used as a basis for approval or disapproval of development or land division proposals.

3.3.2.5 San Luis Obispo County Local Coastal Program Policy Document

The Coastal Zone in San Luis Obispo County spans 96 miles of coastline. The California Coastal Act of 1976 mandates that local governments prepare a land use plan and schedule of implementing actions to carry out the policies of the Coastal Act. The County's coastal land use plan is set forth in Title 23, while the Local Coastal Program Policy Document sets forth the County's commitment to implement the Coastal Act through both general plan policies and identification of detailed land use regulations. Under the Coastal Act mandate, local governments are confronted with the need for implementing policies that are more specific and that address non-traditional issues not commonly associated with the normal role of a local government general plan. The policies set forth in the Local Coastal Program Policy Document are typically implemented through Title 23 (CZLUO). Thus, they have not been separately discussed in Table 3-2.

3.3.2.6 Arroyo Grande General Plan

The Arroyo Grande General Plan consists of eight elements, or chapters, each of which focuses on a specific topic related to the city's day-to-day operations and future expansion. The state of California mandates that each city's general plan include elements relating to circulation, conservation, housing, land use, noise, open space, and safety. Arroyo Grande's General Plan combines conservation and open space into a single element, along with agriculture. During the environmental review process, three elements of the Arroyo Grande General Plan proved to be most relevant, as follows.

Arroyo Grande Agriculture, Open Space and Conservation Element

The Arroyo Grande Agriculture, Open Space and Conservation Element sets policies relating to agricultural lands, maintenance of open space, and use of natural resources. The element's primary principals are: (1) resources such as prime capability soils are highly productive whether for agricultural purposes, watershed or natural habitat; (2) resources that are irretrievable and/or irreplaceable need to be protected and preserved; (3) individuals and the

community have a responsibility to future generations as well as to wildlife to preserve and protect finite natural resources; (4) resources lands contribute to overall public health, safety and welfare beyond provision of basic necessities such as food, fiber and livelihood; and (5) land use and urban development shall be managed and limited to that which can be sustained by the available resources and serviced by the circulation and other infrastructure systems.

Arroyo Grande Land Use Element

The Arroyo Grande Land Use Element sets policies for land use citywide, including assigning land use categories to every parcel and setting standards for population density and building intensity. The Land Use Ordinance includes regulations established and adopted to protect and promote public health, safety, and welfare. Regulations are also adopted to implement the City General Plan, guide and manage the future growth of the City in accordance with those plans, and regulate land use in a manner that will encourage and support the orderly development and beneficial use of lands within the City.

Arroyo Grande Safety Element

The Arroyo Grande Safety Element provides a general evaluation of potential public safety hazards in the City and contains policies for disaster preparedness and emergency response. The Safety Element has two basis principals: to be ready for disaster, and to manage development to reduce the risk of disaster. Residents of the City of Arroyo Grande are subject to a variety of natural and human-caused hazards such as earthquakes, landslides, flooding, wildfires, hazardous materials, and unsafe buildings. The Safety Element first became a mandatory part of the General Plan in 1975 requiring cities and counties to adopt, at a minimum, General Plan policies relating to fire safety, flooding, and geologic hazards. In 1984 the State Legislature expanded the list of mandatory issues that were to be evaluated in the Safety Element to provide the direction and resources to help reduce death, injuries, property and environmental damage, and the economic and social dislocation resulting from natural hazards.

3.3.2.7 Arroyo Grande Watershed and Creek Memorandum of Understanding

The Arroyo Grande Watershed and Creek Memorandum of Understanding (MOU) was entered into to develop recommendations to fund programs and develop policies for the maintenance, protection, and enhancement of the Arroyo Grande Watershed and the creeks within the watershed, including but not limited to the Arroyo Grande Creek and Los Berros Creek, and to recommend specific roles and responsibilities to implement those programs and policies. Parties to the MOU include the City of Arroyo Grande, the District Zones 1/1A and Zone 3, the County of San Luis Obispo, the City of Grover Beach, the City of Pismo Beach, Oceano Community Services District, South San Luis Obispo County Sanitation District, Coastal San Luis RCD, Natural Resources Conservation Service (NRCS), Central Coast Salmon Enhancement, California Department of Fish and Game (CDFG), California Department of Parks and Recreation, and the United States Fish and Wildlife Service (USFWS). The purpose of the MOU is to provide an overall understanding, and accountability consensus between the parties, in order to better protect, manage, and enhance the watershed, creating a sustainable future for the surrounding communities and environment.

3.3.2.8 Oceano County Airport Land Use Plan

The Oceano County Airport Land Use Plan was adopted by the San Luis Obispo County Airport Land Use Commission in accordance with California Public Utilities Code Sections 21670 through 21679.5, the California Department of Transportation (Caltrans) *Airport Land Use Planning Handbook* (January 2002), and Federal Aviation Regulations, Parts 77 and 150. The purposes of the Plan are (1) to protect the long term economic viability of the Oceano County Airport by ensuring compatible land uses in the vicinity of the airport, (2) to promote the safety and well-being of the public by ensuring adoption of land use regulations that minimize exposure of persons to hazards associated with the operation of the airport, (3) to provide a set of polices and criteria to assist the Airport Land Use Commission in evaluating the compatibility of proposed actions with the operations of the airport, and (4) to provide guidance to local agencies in presenting proposed actions to the Commission for review. The proposed project runs through the Oceano County Airport Land Use Plan Planning Areas AG/a, I-2, and O/a.

3.3.2.9 Oceano Specific Plan

Oceano is a small, unincorporated coastal agricultural community surrounded by farm fields, coastal dunes and the Pacific Ocean. The Oceano Specific Plan provides an overall framework for translating broad community values and expectations into specific strategies for enhancing the community's quality of life. Also, the Specific Plan contains estimates of future population, housing and employment that serve as the basis for planning. Halcyon is within the Specific Plan geographic and demographic area; however, it is not part of the plan and the standards, guidelines and programs identified in the plan do not apply to Halcyon.

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
San Luis Obispo County General Plan Agricultural and Open Space Element		
AG2: ***Conserve Agricultural Resources.*** b. Conserve the soil and water that are the vital components necessary for a successful agricultural industry in this county.	As discussed in the Agricultural Resources section, proposed buildout of the levees along the flood control channel will result in the taking of approximately one acre of prime agricultural lands, and the temporary disturbance of as much as five acres of prime soils. The loss of prime soils will be mitigated through measures proposed in Section 4-1 Agricultural Resources to the extent feasible, including limiting construction to agricultural roads and other areas not likely to be in production and restoration of disturbed areas. The project applicant will also participate in the City of Arroyo Grande agricultural banking program, or other similar program approved by the County.	Consistent
AGP11: ***Agricultural Water Supplies.*** a. Maintain water resources for production agriculture, both in quality and quantity, so as to prevent the loss of agriculture due to competition for water with urban and suburban development.	The proposed project will not result in the creation of additional water needs and is designed to potentially provide increased storage for storm waters and to decrease loss of water and damage caused by flooding.	Consistent
AGP18: ***Location of Improvements.*** a. Locate new buildings, access roads, and structures so as to protect agricultural land.	Although the proposed project will result in small takings of agricultural land, the improved levee structures will serve to protect those lands from increasing risks of flooding caused by settlement and degradation of the existing levee structures.	Consistent
AGP24: ***Conversion of Agricultural Land.*** a. Discourage the conversion of agricultural lands to non-agricultural uses through the following actions. 4. Avoid locating new public facilities outside urban and village reserve lines unless they serve a rural function or there is no feasible alternative location within the urban and village reserve lines.	Although buildup of the existing levee structures will result in a limited taking of agricultural land, the levees serve a rural function and no feasible alternative location exists for the developments proposed to restore capacity of the lower portions of Arroyo Grande Creek and Los Berros Creek. In addition, loss of agricultural soils will be mitigated through measures proposed in Section 4-1 Agricultural Resources to the extent feasible, including limiting construction to agricultural roads and other areas not likely to be in production and restoration of disturbed areas. The project applicant will also participate in the City	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
	of Arroyo Grande agricultural banking program, or other similar program approved by the County.	
AGP25: *Unique or Sensitive Habitat.* b. For new development requiring a discretionary permit and for proposed land divisions, protect unique or sensitive habitat affected by the proposal through the following measures: 1. Site the proposed development so as to avoid significant impacts on the habitat or significant impacts on the agricultural operations. Provide for adjustments in project design where alternatives are infeasible, more environmentally damaging, or have a significant negative impact on agriculture. 2. When significant impacts are identified, the landowner shall implement county-approved mitigation measures consistent with the existing requirements of CEQA.	Potential impacts of the proposed project on sensitive habitats and agricultural operations will be minimized to the extent feasible through implementation of mitigation measures proposed in Section 4-1, Agricultural Resources, and 4-3, Biological Resources. Because of the significant mitigation required, the development proposed under the project will likely proceeds over an extended period of time. Additionally, the project proposes to enhance existing habitat through riparian vegetation management, provide additional protection to surrounding agricultural lands through improved flood control, and result in a more natural stream flow through the creation of secondary channels that will prevent sedimentation build-up in the stream channel.	Consistent
AGP26: *Streams and Riparian Corridors*. a. Encourage private landowners to protect and preserve stream corridors in their natural state and to restore stream corridors that have been degraded. Provide information and incentives to eliminate overgrazing in stream corridors. Encourage off-stream livestock watering sources.	The project seeks to restore the channelized capacity of the creeks, which have been degraded by excess sedimentation and accumulated vegetation. However, the majority of Arroyo Grande Creek and Los Berros Creek lying within the project area have already been channelized, and thus the creeks do not exist in their natural states. The project will not result in restoring the creeks to their natural states, but will seek to restore more natural function through the creation of secondary channels that will allow sedimentation to be flushed by the streams natural current, rather than through continued sedimentation removal activities. No livestock currently utilize the stream as a watering source, and no such use will result from the proposed project.	Consistent
AGP26: *Streams and Riparian Corridors*. b. For new development requiring a discretionary permit and for land divisions, protect streams and riparian habitat affected by the proposal through the following measures:	Although not a standard type of “development”, the proposed project anticipates the placement of levee structures and removal of vegetation within the stream banks.	Potentially Inconsistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
1. Consistent with the requirements of the Regional Water Quality Control Board's Basin Plan, establish a grading and building setback of 30 feet from the top of the stream bank. Locate buildings and structures outside the setback. Do not remove riparian vegetation within 30 feet of the top of the stream bank. Provide for adjustments when the applicant demonstrates that such setbacks would have a significant negative impact on the agricultural viability of the site, or where alternatives are infeasible or more environmentally damaging, and the adjustments are acceptable to the Regional Board.		
AGP26: *Streams and Riparian Corridors*. b. For new development requiring a discretionary permit and for land divisions, protect streams and riparian habitat affected by the proposal through the following measures: 2. Require appropriate erosion control measures during and following construction. 3. Consistent with state and federal requirements, allow stream alterations for water supply and flood control projects, road maintenance, maintenance of existing channels, or improvement of fish and wildlife habitat if there are no practical alternatives. 4. Consistent with state and federal requirements, assure that stream diversion structures protect habitats. 5. When significant impacts to stream or riparian resources are identified, the landowner shall implement county-approved mitigation measures consistent with the existing requirements of CEQA.	The proposed project is a flood control project to be achieved through maintenance of the existing Arroyo Grande Creek flood control channel. Potential impacts of the project resulting from erosion and sedimentation have been mitigated through proposed measures in Section 4-5, Geology and Soils, including preparation of an erosion control plan and stormwater pollution prevention plan. Although the project has the potential to temporarily affect fish and wildlife habitats within the project area, it has been designed to improve habitat for fish and wildlife in the creek.	Consistent
OSG1: *Identify and Protect Open Space*. a. Identify, protect, sustain, and, where necessary, restore and reclaim areas with the following characteristics: 2. Ecosystems and environmentally sensitive resources such as: (b) Streams and riparian vegetation (c) Unique, sensitive habitat; natural communities (d) Significant marine resources 4. Scenic areas 5. Hazard areas	The project is a flood control project and includes proposed development, sedimentation and riparian vegetation removal within the Arroyo Grande and Los Berros Creeks. The majority of the project area is zoned Agriculture, consistent with surrounding land uses. However, the Creeks are currently in open space, and the project will serve to further define and protect the creek channel and riparian habitat.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
OSP18: ***Protection of Streams and Riparian Corridors***. a. Protect stream and riparian corridors in their natural state on public lands, where there are consenting private land owners or land donors, through the review of proposed land division or discretionary development. b. Where appropriate, utilize stream and riparian corridors as part of a network of wildlife corridors.	The project includes proposed development, sedimentation and riparian vegetation removal within the Arroyo Grande and Los Berros Creeks, which are on privately-owned lands. The creeks do not currently exist in their natural state; however, more natural function of the creeks will be established through the creation of secondary channels that will allow sedimentation to be flushed by the streams natural currents.	Consistent
OSP19: ***Development within Stream Corridors.*** a. On public lands or through the review of proposed land divisions or discretionary development, require projects to protect stream and riparian corridors through the following measures: 1. Establish a building setback of a minimum of 50 feet from the bank of the watercourse or outside the dripline of riparian vegetation, whichever distance is greater, as shown in Fig. 3-12. Locate buildings and structures outside the setback. Provide for adjustments where alternatives are infeasible or more environmentally damaging, but the setback shall be no less than 30 feet consistent with the requirements of the Regional Water Quality Control Board's Basin Plan. 2. Do not grade inside the established setback, unless the applicant provides justification that alternatives are infeasible or more environmentally damaging. When grading is permitted within the setback, require erosion control during construction and habitat restoration subsequent to grading. 3. Limit the alteration of riparian vegetation. 4. Allow stream alterations for water supply and flood control projects, road maintenance, maintenance of existing channels, improvement of fish and wildlife habitat, or no practical alternative is available. 5. Assure that stream diversion structures protect habitats. 6. When no practical alternative to a significant impact to stream or riparian resources exists, the developer or public agency shall implement a county-approved mitigation and monitoring plan that will lessen the impact. The plan shall be prepared and implemented by qualified professionals under funding the by	Although not a standard type of "development", the proposed project provides for the placement of levee structures and removal of riparian vegetation within the stream banks. However, such development is intended to minimize flood hazards and maintain the existing Arroyo Grande Creek flood control channel, and improve fish and wildlife habitat, consistent with subsection 4 of this policy. The project has been designed to minimize grading and erosion, and to protect and enhance habitat within the creek channel.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
applicant. 7. Where feasible, and where a nexus exists with the proposed project, restore damaged riparian habitats as a condition of approval for development projects. 8. Where possible, protect stream corridors and setback areas through easements or dedications.		
OSP31: ***Natural Hazards***. a. In areas subject to flood, geological, seismic, or fire hazards, encourage open space uses that are consistent with public safety.	The entire length of the project area is located in a flood hazard area. The proposed action involves flood management provisions intended to increase flood protection from the current 4.6-year storm protection to that of a 10-year storm (Alternative 3a) or a 20-year storm (Alternative 3c). Potential geological, seismic, and fire hazards have been further mitigated through measures proposed in Sections 4-5, Geology and Soils.	Consistent
OSP32: ***Man-made Hazards.*** a. On public lands or where there are willing landowners, encourage recreational uses such as trails and parks on facilities such as pipeline and other utility line corridors, storm water retention basins, levees, closed landfills, and reclaimed surface mines. Such uses should be consistent with public safety and consistent with nearby sensitive resources or agricultural uses.	Currently, the levees are used by surrounding residents for horseback riding and walking, as they provide an off-road connection between the Cienega Valley and Pacific Ocean. While this use is not necessarily encouraged by the County, project implementation will not prevent or hinder continued use of the levees for this purpose.	Consistent
Draft County of San Luis Obispo General Plan Conservation and Open Space Element (Not yet adopted)		
Chapter 3. ***Biological Resources***. **Goal 4:** The natural structure and function of streams and riparian habitat will be protected and restored.	The Arroyo Grande Creek and Los Berros Creek have been channelized and have not existed in their natural states since the 1860s. However, the project attempts to restore a more natural function of the stream through creation of secondary channels that will allow sedimentation to be flushed by the streams' natural currents.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Policy BR 4.1: *Protect Stream Resources*. Protect streams and riparian vegetation to preserve water quality and flood control functions and associated fish and wildlife habitat (OSP18 revised).	The project is a flood control project and includes proposed development, sedimentation and riparian vegetation removal and management within the Arroyo Grande and Los Berros Creeks. The project will increase flood protection from the existing 4.6-year storm protection to that of a 10-year storm (Alternative 3a) or a 20-year storm (Alternative 3c). The project is also designed to protect and enhance water quality, and steelhead trout habitat and passageways.	Consistent
Implementation Strategy BR 4.1.1: *Approach to stream protection.* a. Require preservation of natural streams and associated riparian vegetation in an undisturbed state to the greatest extent feasible in order to protect banks from erosion, enhance wildlife passageways, and provide natural greenbelts. b. Where appropriate, include stream and riparian corridors as part of a network of wildlife corridors. (OSP 18) c. Where possible, protect stream corridors and setback areas through easements or dedications. (OSP19) d. Consider wildlife values before watercourse alteration is undertaken, explore alternatives to alteration, and assure that stream diversion structures protect habitats. (SLMP3) (OSP18, 19)	The Arroyo Grande Creek and Los Berros Creek have been channelized and have not existed in their natural states since the 1860s. However, the project attempts to restore a more natural function of the stream through creation of secondary channels that will allow sedimentation to be flushed by the streams' natural currents. Mitigation measures proposed in Section 4-5, Geology and Soils, will mitigate the potential for bank erosion. The project does not propose any stream diversion.	Consistent
Policy BR 4.5: *Encourage Stream Preservation on Private Lands.* Encourage private landowners to protect and preserve stream corridors in their natural state and to restore stream corridors that have been degraded.	The Arroyo Grande Creek and Los Berros Creek do not currently exist in their natural states, and the project does not propose to restore them to their natural states. However, the project does seek to restore a more natural stream function in the channels through creation of secondary channels that will allow sedimentation to be flushed by the streams' natural currents.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Implementation Strategy BR 4.5.1: *Support ongoing riparian vegetation management.* Support expansion of ongoing efforts led by the County Agricultural Commissioner, the Flood Control and Water Conservation District, resource conservation districts, and local conservation groups to implement riparian vegetation management techniques. Specifically, the approaches established for the management and/or elimination of invasive plant species as part of the Zone 9 and 1/1A Waterway Management Program (San Luis Obispo Creek and Arroyo Grande Creek watersheds) can be used as a model throughout the region.	A primary component of the proposed project is to continue watershed management along the Arroyo Grande Creek flood control channel and Los Berros Creek, including riparian vegetation management, consistent with this policy.	Consistent
Policy BR 4.6: *Encourage Stream Preservation on Public Lands.* Protect stream and riparian corridors in their natural state on public lands. (OSP18)	The proposed project is located on private lands lying adjacent to Arroyo Grande and Los Berros Creeks. Its purpose is to enhance riparian vegetation and manage sedimentation in the creek channels. The creeks have not been in their natural states since the 1860s, but the project does seek to restore a more natural function of the streams through the creation of secondary channels that will allow sedimentation to be flushed downstream by the natural current.	Consistent
Implementation Strategy BR 4.6.1: *Creek restoration.* Where streambank erosion is a concern, restore creeks to stabilize streambanks, enhance riparian habitat, and improve water quality. The County should coordinate with and seek technical assistance from agencies such as the Natural Resources Conservation Service, Resource Conservation Districts, the California Department of Fish and Game, U.C. Cooperative Extension, the County Farm Bureau, and the Regional Water Quality Control Board.	The existing levees have settled to an extent that they currently provide protection from only a 4.6 year storm. The project is intended to raise the levees to provide additional flood protection and includes coordination with state and federal agencies, including USFWS, CFGD, USACE, and RWQCB. The project also includes proposed sedimentation and riparian vegetation removal and management within the Arroyo Grande and Los Berros Creeks. The project will increase flood protection from the existing 4.6-year storm protection to that of a 10-year storm (Alternative 3a) or a 20-year storm (Alternative 3c). The project is also designed to protect and enhance water quality, and steelhead trout habitat and passageways.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Chapter 3. *Biological Resources*. **Goal 7:** Significant marine resources will be protected. **Policy BR 7.4: *Sedimentation.*** Support efforts on public and private lands to keep Chorro Creek, Los Osos Creek, and other watercourses free of excessive sediment and other pollutants to maintain freshwater flow into the Morro Bay National Estuary and the Monterey Bay National Marine Sanctuary, nurture steelhead trout, and support other plant and animal species. On County-owned lands, implement Best Management Practices in order to reduce sediment transport to coastal waters.	The project includes provisions for the removal of existing sedimentation buildup, and protection and enhancement of habitat. The project has also been designed to enhance the creek's ability to naturally prevent the build-up of sedimentation within the creek channel in the future through flushing by natural water flows.	Consistent
Chapter 8. *Soil Resources.* **Goal 2:** Watersheds and ecological function will be maintained through soil conservation. **Policy SL 2.1: *Protect Watersheds and Aquifer Recharge Areas.*** Give high priority to protecting watersheds, aquifer-recharge areas, and natural drainage systems when reviewing applications for discretionary development.	The purpose of the project is to provide watershed restoration and manage sediment deposition and accumulation within the Arroyo Grande Creek channel, and protect surrounding agricultural lands from flooding in the wide watershed area. Impacts to soils are mitigated through measures proposed in Section 4-1, Agricultural Resources, consistent with this policy.	Consistent
Implementation Strategy SL 2.1.3: *Protect natural stream functions.* Encourage the use of soil conservation practices in development designs near streams and stream crossings in order to protect natural stream functions.	The Arroyo Grande and Los Berros Creeks have not been in their natural states since the 1860s. However, the project has been designed to enhance the creek's ability to naturally prevent the build-up of sedimentation within the creek channel in the future through flushing by natural water flows.	Consistent
Implementation Strategy SL 2.1.4: *Coordinated watershed restoration*. Encourage the coordination of watershed restoration activities and permit streamlining efforts between the County, state and federal agencies, and other groups for watershed restoration and enhancement projects where they support soil conservation practices.	The Arroyo Grande Creek Waterway Management Program is being developed through a cooperative effort between the community, the Coastal San Luis Resource conservation District and the San Luis Obispo Flood Control and Water Conservation District, consistent with this policy.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Chapter 10. *Water Resources.* **Goal 6**: Damage to life, structures, and natural resources from floods will be avoided. **Policy WR 6.1: *Integrated management.*** Pursue an integrated management approach for waterway projects that includes flood management, water quality protection, groundwater recharge, and ecosystem enhancement objectives.	A primary purpose of the project is to raise levees to provide additional flood protection along the Arroyo Grande Creek channel, to that of either a 10-year or 20-year storm as funding allows. The project has been additionally designed to provide additional protection along the northern boundary of the flood channel, along areas containing urban developments, residences and facilities, consistent with this policy.	Consistent
Policy WR 6.3: *Flooding problems.* Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation.	The proposed project has identified the decrease in flood protection along the Arroyo Grande Creek flood control channel through sedimentation and over-vegetation, and seeks to minimize the risks of flood created by these conditions.	Consistent
Policy WR 6.4: *Drainage problems.* Consider drainage problems in the context of an entire watershed. Drainage and flood management plans should address property owner and developer responsibilities. These plans should use an integrated watershed approach that incorporates flood management, water quality, water supply, groundwater, and ecosystem protection and enhancement objectives on a watershed/basin scale.	The proposed project seeks to manage the riparian vegetation, sedimentation and flood hazards along the entire Arroyo Grande Creek channel for the protection of the entire length of the watershed, consistent with this policy.	Consistent.
Policy WR 6.6: *Stream channelization.* Discourage channelization or major alteration of streams, except where no other alternative is feasible. Minor work in streambeds may be necessary to protect valuable farmland from erosion.	The portions of Los Berros Creek and Arroyo Grande Creek within the project area have already been channelized to provide flood protection for surrounding agricultural, public facility, and residential lands. The project does not seek to restore the creeks to their natural states, but proposes to further raise the flood channel levees to provide additional flood protection. However, such improvements are intended to provide flood protection to the urban uses and valuable farmland lying adjacent to the flood control channel. The project also seeks to restore stream function to a more natural state by creating secondary flow channels that will allow sedimentation to be flushed by natural stream currents.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Policy WR 6.7: *Relocation of stream courses.* Discourage the relocation of stream courses and encourage the use of levees and/or bypass/overpass channels along the borders of the floodway where flood protection is necessary. When an artificial channel is needed for flood protection, require landscaping and replanting of vegetation adjacent to the channel.	Although the Arroyo Grande and Los Berros Creeks have been previously relocated and channelized, the proposed project will not result in the further alteration of any presently existing stream courses and proposes the build up of existing levee structures to provide necessary flood protection for surrounding properties.	Consistent
County of San Luis Obispo General Plan Safety Element		
Goal S-2: Reduce damage to structures and the danger to life caused by flooding, dam inundation and tsunami.	The proposed project includes sedimentation measures and riparian vegetation removal to increase capacity of the Arroyo Grande and Los Berros Creeks. The project also includes plans for levee raising along the Arroyo Grande Creek flood control channel to increase the level of flood protection afforded by the channel. The project has been designed to provide increased flood protection along the northern boundary of the channel, where urban residential developments currently exist.	Consistent
Policy S-8: *Flood Hazards*. Strictly enforce flood hazard regulations both current and revised. FEMA regulations and other requirements for the placement of structures in flood plains shall be followed. Maintain standards for development in flood-prone and poorly drained areas.	Although not a standard type of "development", the proposed project involves the placement of raised levees within the flood-prone banks of the Arroyo Grande and Los Berros Creeks. This development will result in an increase in flood protection for surrounding properties.	Consistent
Standard S-16: To the extent practicable, do not allow development in areas of high flood hazard potential.	Although not a standard type of "development", the proposed project involves the placement of raised levees within the flood-prone banks of the Arroyo Grande and Los Berros Creeks. This development will result in an increase in flood protection for surrounding properties.	Consistent
Standard S-18: Review plans for construction in low-lying areas, or any area which may pose a serious drainage or flooding condition.	Although the proposed project does not suggest typical "construction", the project area is entirely encompassed by a low-lying, flood-prone area. Because the project is intended to increase creek capacity, raise creek levees, and provide additional flood protection, it will decrease the risk of drainage or flooding conditions in surrounding	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
	areas.	
Standard S-19: Do not allow development which will create or worsen known flood and drainage problems.	The proposed project includes sedimentation measures and riparian vegetation removal to increase capacity of the Arroyo Grande and Los Berros Creeks. The project also includes plans for levee raising along the Arroyo Grande Creek flood control channel to increase the level of flood protection afforded by the channel.	Consistent
Policy S-9: ***Reduce Flood Damage.*** Reduce flood damage in areas known to be prone to flooding, such as Los Osos, Avila Valley, Santa Margarita, Cambria, Oceano and others.	The proposed project includes sedimentation measures and riparian vegetation removal to increase capacity of the Arroyo Grande and Los Berros Creeks. The project also includes plans for levee raising along the Arroyo Grande Creek flood control channel to increase the level of flood protection afforded by the channel.	Consistent
Program S-21: Inventory and reevaluate where appropriate known local flood prone areas in the County. Develop a prioritized list of proposed capital improvement projects for low-lying, flood prone areas.	The proposed project includes sedimentation measures and riparian vegetation removal to increase capacity of the Arroyo Grande and Los Berros Creeks. The project also includes plans for levee raising along the Arroyo Grande Creek flood control channel to increase the level of flood protection afforded by the channel.	Consistent
Program S-22: Seek funding to implement capital improvement projects for low-lying, flood prone areas.	Local agencies, including those who are parties to the Arroyo Grande Watershed and Creek MOU, have been proactive in establishing funding mechanisms and coordination for improvement projects on the Arroyo Grande and Los Berros Creeks and drainages. The project will be implemented as such funding becomes available.	Consistent
Program S-23: Secure the necessary permits to perform flood-related preventive maintenance and repair. Ensure that all flood-related work in riparian areas minimizes impacts to biological resources.	The proposed project includes flood-related preventative maintenance through sedimentation measures and riparian vegetation removal to increase capacity of the Arroyo Grande and Los Berros Creeks, and levee raising along the Arroyo Grande Creek flood control channel. The proposed project is intended to simultaneously enhance water quality and sensitive species habitat within the	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
	managed channel. Significant biological resource mitigation measures will likely cause the project implementation to take place over an extended period of time; however, measures proposed in Section 4-3, Biological Resources, will be mitigated to the extent feasible.	
Strategic Growth, Smart Growth and Growth Management, County of San Luis Obispo General Plan Amendment LRP2005-00013		
Principle 1: Preserve open space, scenic natural beauty and natural resources. Conserve energy resources. Protect agricultural land and resources. **Policy 3.** Preserve and sustain important water resources, watersheds and riparian habitats.	Agricultural and open space lands adjacent to the project corridor are protected through mitigation measures proposed in Section 4-1, Agricultural Resources. In addition, no development is proposed in the open space natural areas along the Pacific Ocean and adjacent dune habitat. The overriding purpose of the project is to enhance and manage the Arroyo Grande and Los Berros Creeks and associated riparian habitats, as well as to provide flood protection to surrounding lands in the historic watershed area.	Consistent
Title 22: County of San Luis Obispo Land Use Ordinance (Combining Designation Standards)		
22.14.030 – ***Airport Review Area.*** **(B).** ***Limitation on use.*** Developments within areas covered by land use plans adopted by the San Luis Obispo County Airport Land Use Commission are limited to those identified in the plans as "compatible" and "conditionally approvable." Projects that are conditionally approvable may be granted a permit only when in compliance with all conditions of the applicable airport land use plan or its implementing rules.	The proposed project has been analyzed for consistency with the Oceano Airport Plan in Section 4-6, Hazards and Hazardous Materials, and found to be consistent. The project would not increase development density in these areas or attract more people to these areas, and therefore would not expose additional persons to aircraft hazards.	Consistent
22.14.030 – Airport ***Review Area.*** **(D).** ***Additional height standards***. The following standards apply to projects in the AR combining designation in addition to the provisions of Section 22.10.090 (Heights): 1. Except as otherwise provided in this Section, no structure shall be erected, altered, replaced, repaired or rebuilt, or tree be allowed to grow higher or be replanted, in any airport approach area, airport turning area, or airport transition area to a height that would project above the approach surface, the horizontal surface, the conical surface, or the transitional surfaces as defined in	Section 4-6 of this EIR, Hazards and Hazardous Materials, recommends that no tall tree species be planted along the channel corridor in association with the proposed project between the UPRR bridge and southern end of the runway, consistent with this policy.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Article 8.		
22.14.060 – *Flood Hazard Area.* (C). *Flood Hazard Area permit and processing requirements*. Drainage plan approval is required where any portion of the proposed site is located within a Flood Hazard combining designation, in addition to all other permits required under this Title, state and Federal law. In addition to the information called for in Section 22.52.080 (Drainage Plan Required) the drainage plan shall include: 1. Federal Insurance Administration flood data, including base flood elevations, flood hazard areas and floodway locations. 2. In areas where water surface elevation data has not been provided by the Federal Insurance Administration, a normal depth analysis or other equivalent engineering analysis that identifies the location of the floodway and demonstrates to the satisfaction of the Director of Public Works that the structure will not be located within the floodway or be subject to inundation by the 100-year storm. The following information is required to determine the flood elevation and the location of the floodway, except where waived or modified by the Director of Public Works: a. Plans drawn to scale showing the location, dimensions, and elevation of the lot, existing or proposed structures, fill, storage of materials, flood-proofing measures, and the relationship of the above to the location of the floodway. b. Typical valley cross-sections showing the normal channel of the stream, elevation of the land areas adjoining each side of the channel, cross-sections of areas to be occupied by the proposed development, and high-water information sufficient to define the 100-year storm flood profile level. c. A profile showing the slope of the bottom of the channel or flow line of the stream. d. Any previously determined flood data available from any state, federal or other source.	The primary objective of the proposed project is to develop a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel to provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel. Mitigation measures proposed in the EIR include preparation of an erosion control plan and SWPPP.	Consistent
22.14.100 – *Sensitive Resource Area.* (D). *Minimum site design and development standards.* All uses within a Sensitive Resource Area (SRA) shall conform to the following standards: 2. Shoreline areas may not be altered by grading, paving, or other development of impervious surfaces for a distance of 100 feet from the mean high tide line, 75 feet from any lakeshore, or 50 feet from any stream bank,	Though not typical “development”, the proposed project includes improvements made within the existing Arroyo Grande Creek channel. All development will be conducted under appropriate required permits, including a Conditional Use Permit and Coastal Development Permit from the County, and a Coastal Development Permit and Grading	Consistent

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Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
except where authorized through Conditional Use Permit approval. Where the requirements of the California Department of Fish and Game or other public agency having jurisdiction are different, the more restrictive regulations shall apply. 3. Construction and landscaping activities shall be conducted to not degrade lakes, ponds, wetlands, or perennial watercourses within an SRA through filling, sedimentation, erosion, increased turbidity, or other contamination. 4. Where an SRA is applied because of prominent geological features visible from off-site (such as rock outcrops), those features shall be protected and remain undisturbed by grading or development activities. 5. Where an SRA is applied because of specified species of trees, plants or other vegetation, such species are not to be disturbed by construction activities or subsequent operation of the use, except where authorized by Conditional Use Permit approval.	Permit from the City of Arroyo Grande. The project is intended to enhance water quality and stream functions along the Arroyo Grande Creek and impacts related to sedimentation or erosion have been mitigated through measures proposed in the EIR to the extent feasible, including preparation of an erosion control plan and stormwater pollution prevention plan.	
Title 22: County of San Luis Obispo Land Use Ordinance (San Luis Bay Planning Area Standards)		
22.106.020 (A)(1)(b). ***Development Impacts.*** The County shall address potential impacts, including cumulative impacts, that are associated with impacts to water quantity and quality, drainage, erosion and downstream sedimentation, and traffic and circulation as critical subjects for additional evaluation as part of the environmental review process.	Consistent with this policy, the EIR has analyzed potential impacts to water quality and quantity, erosion and sedimentation effects, and traffic impacts resulting from the proposed project. (See Sections 4-5, Geology and Soils, 4-7, Flooding, Hydrology and Water Quality, and 4-8, Transportation and Traffic). Each of the resulting impacts has been mitigated through measures proposed in the relevant EIR sections, including preparation of an erosion control plan, a SWPPP, and a Construction Traffic Management Plan,	Consistent
22.106.020 (C)(1)(b). ***Limitation on uses within Airport Review Area.*** Allowable uses are limited to those designated as "compatible" or "conditionally approvable" by the Oceano County Airport Land Use Plan.	The project will not increase development density in the ALUP area or attract more people to this area, and therefore would not expose additional persons to aircraft hazards. Additionally, no tall tree species will be planted along the channel corridor between the UPRR bridge and southern end of the runway, consistent with this policy. The project does not create a new use, but enhances an existing one, and is expected to be determined to be compatible with the ALUP.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
22.106.070 (A)(1). ***Oceano Specific Plan Included by Reference.*** The 2001 Oceano Specific Plan, and any amendments thereto, is hereby incorporated into this Title as though it were fully set forth here. All development within the Oceano Specific Plan planning area, which coincides with the Oceano Urban Reserve Line, is to be in conformity with the adopted Specific Plan, in addition to any applicable planning area standards. In the event of any conflict between the provisions of this Chapter and the Specific Plan, the Specific Plan shall control. Any deviation of existing or proposed development from the provisions of the Specific Plan is to occur only after appropriate amendment of the Specific Plan.	The project has been analyzed in this section for consistency with the Oceano Specific Plan, consistent with this policy.	Consistent
22.106.070 (B)(1). ***Limitation on uses within Airport Review Area.*** Land uses shall be limited to those designated as "compatible" or "conditionally approvable" by the adopted Oceano County Airport Land Use Plan.	The project will not increase development density in the ALUP area or attract more people to this area, and therefore would not expose additional persons to aircraft hazards. Additionally, no tall tree species will be planted along the channel corridor between the UPRR bridge and southern end of the runway, consistent with this policy. The project does not create a new use, but enhances an existing one, and is expected to be determined to be compatible with the ALUP.	Consistent
22.106.070 (B)(3). ***Site design and development standards – Private lands.*** All development applications for the area within the boundary of the adopted Oceano County Airport Land Use Plan are subject to the development standards set forth in that plan, in addition to all applicable provisions of this Title. In the event of conflicts between the provisions of the Airport Land Use Plan and this Title, the more restrictive provisions shall prevail.	The project will not increase development density in the ALUP area or attract more people to this area, and therefore would not expose additional persons to aircraft hazards. Additionally, no tall tree species will be planted along the channel corridor between the UPRR bridge and southern end of the runway, consistent with this policy.	Consistent
22.106.070 (G)(3)(c). ***Fencing requirement.*** Arroyo Grande Creek dikes and channels shall be fenced at the time adjoining properties develop, to prevent resident access from adjacent mobile home and recreational vehicle parks.	No fencing is proposed in conjunction with the project, and the County has recognized that it is likely that current use of the levees by residents for horseback riding and walking will likely continue after the project has been completed because the levees provide an off-road connection between the Cienega Valley and Pacific Ocean and controlling access will be difficult. This policy appears to conflict with the SLO County	Potentially Inconsistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
	Agriculture and Open Space Element, Open Space Policy 32, above, which encourages recreational use of facilities such as levees consistent with public safety.	
Title 23: County of San Luis Obispo Coastal Zone Land Use Ordinance (Site Development Standards)		
23.05.62. ***Tree Removal Permit Required.*** No person shall allow or cause the removal of any tree without first obtaining a tree removal permit, as required by this section: a. *When required.* Plot Plan approval (Section 23.02.030), is required before the removal or replacement of any existing trees except for tree removal under circumstances that are exempt from tree removal permit requirements pursuant to subsection b. of this section, and except for the following types of tree removal, which are instead subject to Minor Use Permit approval: 1. Riparian vegetation near any coastal stream or wetland. (See Section 23.07.174 for additional standards); 2. Proposed for removal when not accompanied by a land use permit for development; 3. Located in any appealable area as defined by Section 23.01.043c; 4. Located in any Sensitive Resource Area (where the identified resources are trees) as shown on official combining designation maps (Part III of Land Use Element); 5. Where tree cutting will cumulatively remove more than 6,000 square feet of vegetation as measured from the canopy of trees removed.	The proposed project includes riparian vegetation removal and management – a use exempt from this provision pursuant to subsection (a)(1). Removal will be subject to appropriate required Conditional Use Permits from the County of San Luis Obispo and the City of Arroyo Grande.	Consistent
Title 23: County of San Luis Obispo Coastal Zone Land Use Ordinance (Combining Designation Standards)		
23.07.022. ***Limitation on use.*** Developments within areas covered by land use plans adopted by the San Luis Obispo County Airport Land Use Commission are limited to those identified in the plans as "compatible" and "conditionally approvable." Projects that are conditionally approvable may be granted a permit only when in compliance with all conditions of the applicable airport land use plan or its implementing rules.	The project will not increase development density in the ALUP area or attract more people to this area, and therefore would not expose additional persons to aircraft hazards. Additionally, no tall tree species will be planted along the channel corridor between the UPRR bridge and southern end of the runway, consistent with ALUP policy.	Consistent

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Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
	Although not specifically listed as a permitted use in the ALUP, the project does not create a new use, but enhances an existing one, and is expected to be determined to be compatible with the ALUP.	
23.07.26. ***Additional Height Standards.*** The following standards apply to projects in the AR combining designation in addition to the provisions of Section 23.04.120 (Heights): a. Except as otherwise provided in this section, no structure shall be erected, altered, replaced, repaired or rebuilt, or tree be allowed to grow higher or be replanted, in any airport approach area, airport turning area, or airport transition area to a height that would project above the approach surface, the horizontal surface, the conical surface, or the transitional surfaces as defined by this Title.	No tall tree species will be planted along the channel corridor between the UPRR bridge and southern end of the runway, consistent with ALUP policy.	Consistent
23.07.062. ***Applicability of Flood Hazard Standards.*** All uses proposed within a Flood Hazard combining designation are subject to the standards of Sections 23.07.064 through 23.07.066, except: a. *Temporary uses.* With the approval of the Director of Public Works, the of Planning and Building Director may authorize construction or placement of a temporary structure or use within a Flood Hazard area pursuant to the required land use permit without meeting these standards, provided that the structure or use will not be in place from October 15, to April 15. b. *Emergency work.* Emergency work may be undertaken where necessary to preserve life or property. Within 48 hours after commencement of such work, the Director of Public Works is to be notified and an application filed with the Department of Planning and Building in compliance with the provisions of Section 23.07.064. c. *Existing uses.* The continuance, operation, repair, or maintenance of any lawful use of land existing on the effective date of this title is permitted. Any expansion or alteration of an existing structure or use, or grading of a site, shall be conducted in accordance with all applicable provisions of this title.	The proposed project consists of the continuance, repair, or maintenance of existing uses within the flood hazard zone, and is also intended to provide additional flood protection to surrounding areas through levee raise Alternatives 3a and/or 3c.	Consistent
23.07.064. *Flood Hazard Area Permit and Processing Requirements.* Drainage plan approval is required where any portion of the proposed site is located within a Flood Hazard combining designation, in addition to all other permits required by this title, state and Federal law.	The proposed project is not typical “development,” and is intended to prevent flooding in areas along the Arroyo Grande Creek channel by increasing capacity through vegetation management and sedimentation removal and	Consistent

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Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
	management, and levee raises of up to five additional feet.	
23.07.065 *General Hazard Avoidance.* a. *New Development in Flood Hazard Areas.* New structural development, including expansions, additions and improvements to existing development, shall be located outside of the flood hazard areas to the maximum extent feasible. All new structural development located in a flood hazard area, including expansions, additions, improvements, and repairs to existing development, shall be constructed consistent with the standards set forth in Section 23.07.066.	The proposed project is not typical "development," and is intended to prevent flooding in areas along the Arroyo Grande Creek channel by increasing capacity through vegetation management and sedimentation removal and management, and levee raises of up to five additional feet.	Consistent
23.07.066 Co*nstruction Standards.* a. *Construction, general:* 1. No construction or grading is to limit the capacity of the floodway or increase flood heights on existing structures unless the adverse effect of the increase is rectified to the satisfaction of the Director of Public Works. In no case shall flood heights be increased above that allowed under the Federal Flood Insurance Program. 2. Structures shall be anchored to prevent collapse, lateral movement or flotation that could result in damage to other structures or restriction of bridge openings and narrow sections of the stream or river. 6. All buildings or structures shall be located landward of mean high tide. 8. Whenever a watercourse is to be altered or relocated, the Department of Planning and Building shall notify adjacent communities and the California Department of Water Resources and evidence of such notification shall be sent to the Federal Insurance Administration. 11. Non-residential construction shall either be elevated in conformance with Section 23.07.066a(10) above, or together with attendant utility and sanitary facilities, be elevated a minimum of two feet above the highest adjacent grade and be floodproofed to a minimum of one-foot above the 100-year storm flood profile level.	The proposed project is not typical "development," and is intended to prevent flooding in areas along the Arroyo Grande Creek channel by increasing capacity through vegetation management and sedimentation removal and management, and levee raises of up to five additional feet. The project will not limit the capacity of the floodway or increase flood heights, and does not propose to alter or relocate any watercourses.	Consistent

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23.07.066 *Construction Standards.* **c. *Coastal High Hazard areas***. The following requirements shall apply to new structures or any improvement/repair to an existing structure as specified in Section 23.07.066 in areas identified as having special flood hazards extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity waters including coastal and tidal inundation or tsunamis as established on the maps identified in subsection 23.07.060 of this title: 1. All buildings or structures shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the lowest horizontal portion of the structural members of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood elevation level. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable state or local building standards. 2. All new construction and other development shall be located on the landward side of the reach of mean high tide. 5. Man-made alteration of sand dunes that would increase potential flood damage is prohibited.	The proposed project is not typical "development," and is intended to prevent flooding in areas along the Arroyo Grande Creek channel by increasing capacity through vegetation management and sedimentation removal and management, and levee raises of up to five additional feet. The project will not limit the capacity of the floodway or increase flood heights, and does not propose to alter or relocate any watercourses.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
23.07.164. *SRA Permit and Processing Requirements.* *e. Required findings.* Any land use permit application within a Sensitive Resource Area shall be approved only where the Review Authority can make the following required findings: (1) The development will not create significant adverse effects on the natural features of the site or vicinity that were the basis for the Sensitive Resource Area designation, and will preserve and protect such features through the site design. (2) Natural features and topography have been considered in the design and siting of all proposed physical improvements. (3) Any proposed clearing of topsoil, trees, or other features is the minimum necessary to achieve safe and convenient access and siting of proposed structures, and will not create significant adverse effects on the identified sensitive resources. (4) The soil and subsoil conditions are suitable for any proposed excavation; site preparation and drainage improvements have been designed to prevent soil erosion, and sedimentation of streams through undue surface runoff.	The proposed project would impact SRAs. Avoidance of these areas is infeasible due to the nature of the project. Measures in the WMP and those developed in this EIR would reduce impacts to a less than significant level.	Consistent
23.07.166. *Minimum Site Design and Development Standards.* All uses within a Sensitive Resource Area shall conform to the following standards: b. Shoreline areas shall not be altered by grading, paving, or other development of impervious surfaces for a distance of 100 feet from the mean high tide line, 75 feet from any lakeshore, or 50 feet from any streambank, except where authorized through Development Plan approval. Where the requirements of the California Department of Fish and Game or other public agency having jurisdiction are different, the more restrictive regulations shall apply. Special requirements for setbacks from wetlands, streams, and the coastline are established by Sections 23.07.172 through 23.07.178. c. Construction and landscaping activities shall be conducted to not degrade lakes, ponds, wetlands, or perennial watercourses within an SRA through filling, sedimentation, erosion, increased turbidity, or other contamination. d. Where an SRA is applied because of prominent geological features visible from off-site (such as rock outcrops), those features are to be protected and remain undisturbed by grading or development activities. e. Where an SRA is applied because of specified species of trees, plants or	The project proposes development of impervious surfaces within 50 feet of the Arroyo Grande Creek streambank, but is not the typical “development” referenced in this section because the project entails improvements to existing flood control levees to provide flood protection to areas where degradation has reduced the viability of the existing structures. Impacts resulting from construction activities have been mitigated to the extent feasible through measures proposed in Section 4-5, Geology and Soils, 4-6, Hazards and Hazardous Materials, and 4-7, Flooding, Hydrology and Water Quality.	Consistent

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other vegetation, such species shall not be disturbed by construction activities or subsequent operation of the use, except where authorized by Development Plan approval.		
23.07.170. *Environmentally Sensitive Habitats.* The provisions of this section apply to development proposed within or adjacent to (within 100 feet of the boundary of) an Environmentally Sensitive Habitat as defined by Chapter 23.11 of this title. b. *Required findings.* Approval of a land use permit for a project within or adjacent to an Environmentally Sensitive Habitat shall not occur unless the applicable review body first finds that: (1) There will be no significant negative impact on the identified sensitive habitat and the proposed use will be consistent with the biological continuance of the habitat. (2) The proposed use will not significantly disrupt the habitat. d. *Alternatives analysis required.* Construction of new, improved, or expanded roads, bridges and other crossings will only be allowed within required setbacks after an alternatives analysis has been completed. The alternatives analysis shall examine at least two other feasible locations with the goal of locating the least environmentally damaging alternative. When the alternatives analysis concludes that a feasible and less environmentally damaging alternative does not exist, the bridge or road may be allowed in the proposed location when accompanied by all feasible mitigation measures to avoid and/or minimize adverse environmental effects. If however, the alternatives analysis concludes that a feasible and less-environmentally damaging alternative does exist, that alternative shall be used and any existing bridge or road within the setback shall be removed and the total area of disturbance restored to natural topography and vegetation. e. *Development standards for environmentally sensitive habitats.* All development and land divisions within or adjacent to an Environmentally Sensitive Habitat Area shall be designed and located in a manner which avoids any significant disruption or degradation of habitat values. This standard requires that any project which has the potential to cause significant adverse impacts to an ESHA be redesigned or relocated so as to avoid the impact, or reduce the impact to a less than significant level where complete avoidance is not possible.	Avoidance of ESHA is infeasible due to the nature of the project. Measures in the WMP and those developed in this EIR, which will be refined during the permitting process would reduce impacts to a less than significant level. The EIR does include an alternatives discussion.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
(1) *Development within an ESHA.* In those cases where development within the ESHA cannot be avoided, the development shall be modified as necessary so that it is the least environmentally damaging feasible alternative. Development shall be consistent with the biological continuance of the habitat. Circumstances in which a development project would be allowable within an ESHA include: (i) *Resource dependent uses.* New development within the habitat shall be limited to those uses that are dependent upon the resource. (ii) *Coastal accessways.* Public access easements and interpretive facilities such as nature trails which will improve public understanding of and support for protection of the resource. (iii) *Incidental public services and utilities in wetlands.* Essential incidental public services and utilities pursuant to ESHA Policy 13 and CZLUO Section 23.07.172(e). (iv) *Habitat creation and enhancement.* Where the project results in an unavoidable loss (i.e., temporary or permanent conversion) of habitat area, replacement habitat and/or habitat enhancements shall be provided and maintained by the project applicant. Plans for the creation of new habitat, or the enhancement of existing habitat, shall consider the recommendations of the California Coastal Commission, the California Department of Fish and Game and/or U.S. Fish and Wildlife Service. Generally, replacement habitat must be provided at recognized ratios to successfully reestablish the habitat at its previous size, or as is deemed appropriate in the particular biologic assessment(s) for the impacted site. Replacement and/or enhanced habitat, whenever feasible, shall be of the same type as is lose ("same-kind") and within the same biome ("same-system"), and shall be permanently protected by a deed restriction or conservation easement. (v). *Restoration of damaged habitats.* Restoration or management measure required to protect the resource. Projects located within or adjacent to environmentally sensitive habitat areas that have been damaged shall be conditioned to require the restoration, monitoring, and long-term protection of such habitat areas through a restoration plan and an accompanying deed restriction or conservation easement. Where previously disturbed but restorable habitat for rare and sensitive plant and animal species exists on a site that is surrounded by other environmentally sensitive habitat areas, these areas shall be delineated and considered for restoration as recommended by a restoration plan.		

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Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
(2) *Development in ESHA to avoid a taking.* If development in an ESHA must be allowed to avoid an unconstitutional taking, then all of the following standards shall apply with respect to such development: (i) *Avoidance of takings.* The amount and type of development allowed shall be the least necessary to avoid a taking. (ii) *Impacts avoided/mitigated.* All development in and impacts to ESHA shall be avoided to the maximum extent feasible. Any unavoidable impacts shall be limited to the maximum extent feasible. (iii) *Mitigation required.* All adverse impacts to the ESHA shall be fully mitigated. (3) *Steelhead stream protection: net loss stream diversions prohibited.* Diversions of surface and subsurface water will not be allowed where a significant adverse impact on the steelhead run, either individually or cumulatively, would result. Diversion dams, water supply wells which tap the subflow, and similar water supply facilities which could significantly harm the steelhead run in any of these streams shall not be allowed. Exceptions may be considered only where the impact cannot be avoided, is fully mitigated and no significant disruption would result. Techniques for impact avoidance include: (i) *Limiting diversions.* Limiting diversions to peak winter flows exceeding the amount needed to maintain the steelhead runs, with off-stream storage where year-round water supplies are desired. (ii) *Protecting water quality.* Treating diverted water after use, and returning it to the watershed of origin in like quantities and qualities; and (iii) *Supplementing flows.* Supplementing stream flows with water imported from sources that do not exacerbate impacts on steelhead or salmon runs elsewhere. (4) *Other prohibited uses.* Prohibited development activities include: (i) *Placement of barriers to fish.* In-stream barriers to sensitive freshwater species migration, including types of dams not covered above, weirs, and similar obstacles which would substantially interfere with normal migration patterns, except where barriers cannot be avoided and impacts are mitigated to less than significant levels (e.g., with fish ladders or other effective bypass systems). (ii) *Destruction of rearing habitats.* Development which would cause loss of spawning or rearing habitat through flooding, siltation or similar impacts. (iii) *Disturbance or removal of native riparian vegetation on the banks of streams.* Locations constituting an exception to this requirement are:		

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
a. In-between stream banks when essential for flood control purposes and no less environmentally damaging alternative is available to protect existing structures; b. On roads, trails, or public utility crossings where vegetation removal cannot be avoided, and where there is no feasible alternative and no significant disruption would result; and c. For native habitat restoration and protection projects. (iv) *Interference with fish migration.* Any other development activity that would raise overall stream temperatures to unfavorable levels, or that would interfere with normal fish migration and movement within the stream. (v) *Breaching.* Breaching of the beach berm, where such berm creates a coastal lagoon that provides summer rearing habitat for juvenile steelhead and/or other sensitive aquatic species. Exceptions shall be authorized only where such breaching represents the least environmentally damaging feasible alternative for relieving a flood hazard, public health hazard, or water pollution problem. In the event that a breach is authorized, it shall be conducted subject to the following standards: a. Artificial breaching of a sand bar or beach berm containing a coastal lagoon is considered coastal development; therefore, a coastal development permit must be obtained proper to breaching activity. b. As appropriate, permits for creek mouth breaching must also be obtained prior to commencement of any work from California Department of Fish and Game, the U.S. Army Corps of Engineers, the Monterey Bay National Marine Sanctuary (if applicable), the Regional Water Quality Control Board, and all other concerned agencies prior to the breaching. In many cases, the required coastal development permit must be obtained from the California Coastal Commission instead of, or in addition to, the County, because the lagoon/creek mouth will be located entirely or partially within the State's retained jurisdiction. c. Because of the unique nature of individual creek mouth environments, breaching standards must be designed specifically for each location where breaching activity will occur. d. Development of a creek mouth breaching plan for each site shall include consideration of the following: 1. Use of feasible available alternatives, to eliminate the practice of artificial breaching if possible. 2. Thorough study of affected rare, threatened, or endangered		

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
species and habitat, in particular, steelhead trout and tidewater goby. 3. Review of mitigation options as compensation for environmental damage caused by breaching. 4. Public access impacts. 5. Public health impacts. 6. Public safety impacts. 7. Review of historic and projected flooding of public and private properties, agricultural lands, and habitat. 8. Monitoring of lagoon and stream water quality. 9. Creation of a monitoring plan for each individual breaching incident, and a long-term monitoring plan to study lagoon health and the impacts of breaching on the lagoon. (5) Grading adjacent to Environmentally Sensitive Habitats shall conform to the provisions of Section 23.05.034c (Grading Standards). (6) The use of invasive plant species is prohibited.		
23.07.172. *Wetlands.* Development proposed within or adjacent to (within 100 feet of the upland extent of) a wetland area shown on the Environmentally Sensitive Habitat Maps shall satisfy the requirements of this section to enable issuance of a land use or construction permit. These provisions are intended to maintain the natural ecological functioning and productivity of wetlands and estuaries and where feasible, to support restoration of degraded wetlands. a. *Location of development.* Development shall be located as far away from the wetland as feasible, provided that other habitat values on the site are not thereby more adversely affected. b. *Principle Permitted Uses in wetlands.* Hunting, fishing, wildlife management, education and research projects. c. *Department of Fish and Game review.* The State Department of Fish and Game shall review all applications for development in or adjacent to coastal wetlands and recommend appropriate mitigation measures where needed which should be incorporated in the project design. d. *Wetland setbacks.* New development shall be located a minimum of 100 feet from the upland extent of all wetlands, except as provided by subsection d(2). If the biological report required by Section 23.07.170 (Application Content) determines that such setback will provide an insufficient buffer from the wetland area, and the applicable approval body cannot make the finding required by Section 23.07.170b, then a greater setback may be required.	Avoidance of wetlands is infeasible due to the nature of the project. Measures in the WMP and those developed in this EIR, which will be refined during the permitting process would reduce impacts to a less than significant level. Impacts to wetlands would be mitigated through compensatory mitigation strategies to be refined during the permitting process.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
(1) *Permitted uses within wetland setbacks.* Within the required setback buffer, permitted uses are limited to passive recreation, educational, existing non-structural agricultural development in accordance with best management practices, utility lines, pipelines, drainage and flood control of facilities, bridges and road approaches to bridges to cross a stream and roads when it can be demonstrated that: (i) Alternative routes are infeasible or more environmentally damaging. (ii) Adverse environmental effects are mitigated to the maximum extent feasible. (2) *Wetland setback adjustment.* The minimum wetland setback may be adjusted through Minor Use Permit approval (but in no case shall be less than 25 feet), provided that the following findings can be made: (i) The site would be physically unusable for the principal permitted use unless the setback is reduced. (ii) The reduction is the minimum that would enable a principal permitted use to be established on the site after all practical design modifications have been considered. (iii) That the adjustment would not allow the proposed development to locate closer to the wetland than allowed by using the stringline setback method pursuant to Section 23.04.118a of this title. (3) *Requirements for wetland setback adjustment.* Setbacks established that are less than 100 feet consistent with this section shall include mitigation measures to ensure wetland protection. Where applicable, they shall include landscaping, screening with native vegetation and drainage controls. The adjustment shall not be approved until the approval body considers the following: (i) Site soil types and their susceptibility to erosion. (ii) A review of the topographic features of the site to determine if the project design and site location has taken full advantage of natural terrain features to minimize impacts on the wetland. (iii) The biologists report required by Section 23.07.170 shall evaluate the setback reduction request and identify the types and amount of vegetation on the site and its value as wildlife habitat in maintaining the functional capacity of the wetland. (iv) Type and intensity of proposed development. (v) Lot size and configuration and location of existing development. e. *Site development standards*.		

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
(1) *Diking, dredging, or filling of wetlands.* Diking, dredging, or filling activities in wetland areas under county jurisdiction shall be allowed only to the extent that they are consistent with Environmentally Sensitive Habitats Policy 13 of the San Luis Obispo County Coastal Plan Policies, and shall not be conducted without the property owner first securing approval of all permits required by this title. Mineral extraction is not an allowed use in a wetland. (2) *Vehicle traffic.* Vehicle traffic from public roads shall be prevented from entering wetlands by vehicular barriers, except where a coastal accessway is constructed and designated parking and travel lanes are provided consistent with this title. The type of barrier and its proposed location shall be identified in the materials accompanying an application for a land use permit and must be approved by the Planning Director before permit issuance to insure that it will not restrict local and state agencies or the property owner from completing the actions necessary to accomplish a permitted use within the wetland. (3) *Open space easement required.* A land use or construction permit for a structure larger than 1000 square feet in floor area shall not be approved on a parcel of one acre or larger that contains a wetland, unless the property owner first grants the county or an approved land trust an open space easement or fee title dedication of all portions of the site not proposed for development, as well as the entire wetland.		
23.07.174. *Streams and Riparian Vegetation.* Coastal streams and adjacent riparian areas are environmentally sensitive habitats. The provisions of this section are intended to preserve and protect the natural hydrological system and ecological functions of coastal streams. a. *Development adjacent to a coastal stream.* Development adjacent to a coastal stream shall be sited and designed to protect the habitat and shall be compatible with the continuance of such habitat. b. *Limitation on streambed alteration.* Channelization, dams or other substantial alteration of stream channels are limited to: (1) Necessary water supply projects, provided that quantity and quality of water from streams shall be maintained at levels necessary to sustain functional capacity of streams, wetlands, estuaries and lakes. (A "necessary" water project is a project that is essential to protecting and/or maintaining public drinking water supplies, or to accommodate a principally permitted use as shown on Coastal Table "O" where there are no feasible alternative. (2) Flood control projects, including maintenance of existing flood control	Avoidance or setbacks from coastal streams and riparian vegetation is infeasible due to the nature of the project. Measures in the WMP and those developed in this EIR, which will be refined during the permitting process would reduce impacts to a less than significant level. Impacts to wetlands would be mitigated through compensatory mitigation strategies to be refined during the permitting process.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
channels, where such protection is necessary for public safety or to protect existing commercial or residential structures, when no feasible alternative to streambed alteration is available. (3) Construction of improvements to fish and wildlife habitat. Streambed alterations shall not be conducted unless all applicable provisions of this title are met and if applicable, permit approval from the California Department of Fish and Game, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and California State Water Resources Control Board. In addition, every streambed alteration conducted pursuant to this title shall employ the best mitigation measures where feasible, including but not limited to: (a) Avoiding the construction of hard bottoms; (b) Using box culverts with natural beds rather than closed culverts to provide for better wildlife movement; and (c) Pursuing directional drilling for pipes, cables, and conduits to avoid surface streambed disturbance. c. *Stream diversion structures.* Structures that divers all or a portion of streamflow for any purpose, except for agricultural stock ponds with a capacity less than 10 acre-feet, shall be designed and located to not impede the movement of native fish or to reduce streamflow to a level that would significantly affect the production of fish and other stream organisms. d. *Riparian setbacks.* New development shall be setback from the upland edge of riparian vegetation the maximum amount feasible. In the urban areas (inside the URL) this setback shall be a minimum of 50 feet. In the rural areas (outside the URL) this setback shall be a minimum of 100 feet. A larger setback will be preferable in both the urban and rural areas depending on parcel configuration, slope, vegetation types, habitat quality, water quality, and any other environmental consideration. These setback requirements do not apply to non-structural agricultural developments that incorporate adopted nest management practices in accordance with LUP Policy 26 for Environmentally Sensitive Habitats. (1) *Permitted uses within the setback.* Permitted uses are limited to those specified in Section 23.07.172d(1) (for wetland setbacks), provided that the findings required by that section can be made. Additional permitted uses that are not required to satisfy those findings include pedestrian and equestrian trails, and non-structural agricultural uses. All permitted development in or adjacent to streams, wetlands, and other aquatic habitats shall be designed and/or conditioned to prevent loss or disruption of the habitat, protect water		

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
quality, and maintain or enhance (when feasible) biological productivity. Design measures to be provided include, but are not limited to: (i) Flood control and other necessary instream work should be implemented in a manner than minimizes disturbance of natural drainage courses and vegetation. (ii) Drainage control methods should be incorporated into projects in a manner that prevents erosion, sedimentation, and the discharge of harmful substances into aquatic habitats during and after construction. (2) *Riparian habitat setback adjustment.* The minimum riparian setback may be adjusted through Minor Use Permit approval, but in no case shall structures be allowed closer than 10 feet from a stream bank, and provided the following findings can first be made: (i) Alternative locations and routes are infeasible or more environmentally damaging; and (ii) Adverse environmental effects are mitigated to the maximum extent feasible; and (iii) The adjustment is necessary to allow a principal permitted use of the property and redesign of the proposed development would not allow the use with the standard setbacks; and (iv) The adjustment is the minimum that would allow for the establishment of a principal permitted use. e. *Alteration of riparian vegetation.* Cutting or alteration of natural riparian vegetation that functions as a portion of, or protects, a riparian habitat shall not be permitted except: (1) For streambed alterations allowed by subsections a and b above; (2) Where an issue of public safety exists; (3) Where expanding vegetation is encroaching on established agricultural uses; (4) Minor public works projects, including but not limited to utility lines, pipelines, driveways and roads, where the Planning Director determines no feasible alternative exists; (5) To increase agricultural acreage provided that such vegetation clearance will: (i) Not impair the functional capacity of the habitat; (ii) Not cause significant streambank erosion; (iii) Not have a detrimental effect on water quality or quantity; (iv) Be in accordance with applicable permits required by the		

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Department of Fish and Game. (6) To locate a principally permitted use on an existing lot of record where no feasible alternative exists and the findings of Section 23.07.174d(2) can be made.		
Title 23: County of San Luis Obispo Coastal Zone Land Use Ordinance (Chapter 8. Planning Area Standards)		
A. *San Luis Bay Rural Area Standards. Agriculture.* *Arroyo Grande and Cienega Valleys.* 2. *Limitation on Use.* Uses allowed by Coastal Table O, Part I of the Land Use Element are limited to: agricultural accessory structures; crop production and grazing; animal raising and keeping; nursery specialties – soil-dependent; farm support quarters; single family dwellings; mobile homes; temporary dwellings; roadside stands; temporary or seasonal retail sales; pipelines and power transmission; and water wells and impoundment.	The proposed project is a utility infrastructure improvement similar to a pipeline or impoundment.	Consistent
A. *San Luis Bay Rural Area Standards. Combining Designations.* *Airport Review Area (AR).* 2. *Limitation on Uses Within Airport Review Area.* Allowable uses are limited to those designated as "compatible" or "conditionally approvable" by the adopted Oceano County Airport Land Use Plan. 3. *Development Standards – Private Lands.* All permit applications for sites within the boundary of the adopted Oceano County Airport Land Use Plan are subject to the development standards set forth in that plan.	The EIR addresses potential impacts to the airport in the Hazards and hazardous Materials section of the EIR. The ALUC will be provided a copy of the Draft EIR for consideration.	Consistent
A. *San Luis Bay Rural Area Standards. Sensitive Resource Areas (SRA)* 9. *Site Planning – Development Plan Projects.* Projects requiring Development Plan approval are to concentrate proposed uses in the least sensitive portions of properties. Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas. Native vegetation is to be retained as much as possible. 13. *Oceano Lagoon.* Development within Oceano Lagoon SRA shall be limited to those developments permitted consistent with the wetland policies in the LUE and LCP Policy Document. Additionally, development shall be sited to maintain and where feasible restore the biological capacity of the lagoon through among	Development cannot avoid potential SRA due to the nature of the project. No development has been proposed for the Oceano Lagoon.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
other means, minimizing, adverse effects of waste water discharges and entertainment, controlling runoff, preventing depletion of groundwater supplies and substantial interference with surface water flow, and maintaining natural vegetation buffer areas.		
D. *Oceano Urban Area Standards. Combining Designations.* *Airport Review Area (AR)* 1. *Limitation on Uses Within Airport Review Area.* Allowable uses are limited to those designated as "compatible" or "conditionally approvable" by the adopted Oceano County Airport Land Use Plan. 2. *Development Standards – Airport Site.* New development on the county-owned portions of the site of the Oceano County Airport shall be consistent with the adopted Airport Development Plan and shall comply with all applicable provisions of the airport lease site standards. 3. *Development Standards – Private Lands.* All permit applications for sites within the boundary of the adopted Oceano County Airport Land Use Plan are subject to the development standards set forth in that plan.	The WMP would result in planting potentially tall trees within the Airport review area. The EIR has addressed compatibility issues with the airport in the Hazards and Hazardous Materials section. The ALUC has been provided a copy of the Draft EIR for their review.	Consistent
D. *Oceano Urban Area Standards. Combining Designations.* *Sensitive Resource Area (SRA). Oceano Lagoon.* 4. *Permit Requirement.* All uses shall require Site Plan approval unless Development Plan approval is required by the Coastal Zone Land Use Ordinance. The site shall be surveyed by a qualified biologist to determine the extent of the wetlands and riparian vegetation on site or on surrounding parcels and to recommend necessary mitigations including minimum setbacks, site restoration, etc. Setbacks shall be a minimum of 25 feet from the established wetlands or riparian vegetation. 5. *Limitation on Use.* Development within Oceano Lagoon is prohibited. Any lagoon maintenance program to support continued capacity shall also preserve the lagoon in a natural state, including the parcel transferred from the county to the South San Luis Obispo County Sanitation District.	No development has been proposed for the Oceano Lagoon	Consistent
D. *Oceano Urban Area Standards. Industrial.* 1. *Limitation on Use.* Uses allowed by Coastal Table O, Part I of the Land Use Element may be permitted except: drive-in theaters; petroleum refining and related industries; petroleum extraction; airfields and landing strips; marine terminals and piers.	The proposed project is an allowed use.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Arroyo Grande General Plan Agriculture, Open Space and Conservation Element		
C/OS2: *Safeguard important environmental and sensitive biological resources contributing to healthy, functioning ecosystem.* C/OS2-1. Designate all streams and riparian corridors as Conservation/Open Space (C/OS). C/OS2-1.1. "Streams" and "riparian corridors" shall include buffer area corresponding at least to natural vegetation and/or creek bank. C/OS2-1.2. Preserve stream and riparian corridors in their natural state except that periodic flood control maintenance consistent with State and Federal permits shall be allowed. C/OS2-1.3. Where feasible, maintain a grading and building setback of 25 feet from the top of stream bank. Locate buildings and structures outside the setback. Except in urban areas where existing development exists to the contrary, prevent removal of riparian vegetation within 25 feet of the top of stream bank.	Avoidance of streams and riparian corridors is infeasible due to the nature of the project. Measures in the WMP and those developed in this EIR, which will be refined during the permitting process would reduce impacts to a less than significant level. Impacts to sensitive biological resources would be mitigated through avoidance and compensatory mitigation strategies to be refined during the permitting process.	Consistent
Arroyo Grande General Plan Safety Element		
Objective S-2: Reduce damage to structures and the danger to life caused by flooding, dam failure inundation, and other water hazards. Policy S2-1. *Flood Hazards.* Strictly enforce flood hazard regulations both current and revised. Federal Emergency Management Agency (FEMA) regulations and other requirements for the placement of structures in flood plains shall be followed. Maintain standards for development in flood-prone and poorly drained areas. Standard S2-1.1. Discourage development, particularly critical facilities, in areas of high flood hazard potential. Do not allow development within areas designated as the 100-year flood plain that would obstruct flood flow or be subject to flood damage. Do not allow development which will create or worsen known flood or drainage problems. Standard S2-1.3. Review development plans for construction of structures in low-lying areas, or any area which may pose a serious drainage or flooding condition. Susceptibility to damage from flooding should be determined based on the 100-year flood.	The WMP would reduce the potential for catastrophic failure of the levees and increase flood protection.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
Policy S2-2. *Reduce Flood Damage.* Reduce flood damage in areas of the City known to be prone to flooding. Standard S2-2.1. Inventory and reevaluate where appropriate known local flood prone areas in the City. Develop a prioritized list of capital improvement projects for low-lying, flood prone areas. Standard S2-2.2. Seek funding to implement capital improvement projects for low-lying, flood prone areas. Standard S2-2.3. When reviewing proposals for potential development of water reservoirs, retention ponds, or drainage channels, require an evaluation of potential inundation areas and design proven to withstand potential seismic activity.	The WMP would reduce the potential for catastrophic failure of the levees and increase flood protection.	Consistent
Oceano County Airport Land Use Plan		
Policy S-2. *Allowable Land Uses.* No proposed land use shall be established in the Airport Planning Area unless such proposed use is designated as Allowable by Table 4 (Airport Land Use Compatibility Matrix) of this document. In the event that any question should arise as to the type of land use that would be established by a proposed development, the question shall be submitted to and resolved by the Airport Land Use Commission, whose decision shall be final and binding.	No new land use is proposed.	Consistent
Policy A-1. *Obstructions to aerial navigation.* No structure, tower, landform, or other improvement may be constructed nor vegetation be grown or permitted to grow to a height which exceeds the height of any imaginary surface established under Section 77.25 or 77.29 of the Federal Aviation Regulations.	The project anticipates that cottonwood and sycamore would be planted at random along the length of the flood control channel within the buffer to encourage long-term diversity in the riparian canopy; however these tress would not be planted downstream of the UPRR bridge to avoid conflicts with approaching planes.	Potentially Inconsistent
Policy A-2. *Hazards to aerial navigation.* No project or land use may be established within the Airport Planning Area if such use entails or is expected to entail any of the following characteristics which would potentially interfere with the takeoff, landing, or maneuvering of aircraft at the Airport: a. creation of electrical interference with navigation signals or radio communication between the aircraft and airport; b. lighting which is difficult to distinguish from airport lighting; c. glare in the eyes of pilots using the airport;	The proposed project is intended to enhance water quality and sensitive species habitat within the flood control channel, and proposed vegetation management could attract birds and other wildlife to the areas surrounding the airport.	Potentially Inconsistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
d. uses which attract birds and create bird strike hazards; e. uses which produce visually significant quantities of smoke; and f. uses which entail a risk of physical injury to operators or passengers of aircraft (e.g., exterior laser light demonstrations or shows).		
Oceano Specific Plan		
Public Improvements. 2. *Drainage.* Institute the following retrofit project to address existing deficiencies in stormwater control: • Define drainage areas within the community based on topographic features, • Identify and quantify the existing drainage/flooding problems based on historic information, community and County input, and site observations, • Identify categories of drainage and flooding related problems, • Generate alternative improvements for specific drainage problem areas, • Review potential environmental and water quality impacts as well as potential regulatory impacts associated with the alternatives, • Recommend specific improvement and funding solutions based on criteria, • Ensure proper review of new development. 3. *Runoff & Sediment Control.* In addition to the drainage retrofit plan, above, the following best management practices should be utilized where feasible: • Install pollution control devices such as oil and water separators in parking lots and other areas where fuels and other pollutants accumulate. • Enforce anti-littering laws and post “No Littering Signs” in areas where there is high pedestrian traffic. • Maintain vegetative cover on landscaped areas and use manual weed control • Inspect and clean storm drains prior to onset of the wet season, paying particular attention to areas that tend to accumulate litter, sediment and other debris	The WMP would include measures to reduce the risk of flooding in Zone1/1A. Mitigation measures in this EIR address the risk of sedimentation.	Consistent

Table 3-2. Consistency with Plans and Policies

Goals, Policies, Plans, Programs and Standards	Proposed Action	Preliminary Determination
• Include standards for storm drainage including but not limited to those recommended in the California Storm Water Best Management Practices Handbook.		

3.4 CUMULATIVE ANALYSIS

3.4.1 CEQA Requirements

The California Environmental Quality Act, in §15355 of the CEQA Guidelines, defines "cumulative impacts" as two or more individual effects that, when considered together, are considerable or would compound or increase other environmental impacts. Cumulative impacts are the changes in the environment that result from the incremental impact of development of the proposed project when added to other closely related past, present, or reasonably foreseeable and probable future projects. For example, the traffic impacts of two projects in close proximity may be insignificant when analyzed separately, but could have a significant impact when the projects are analyzed together.

According to §15130 of the CEQA Guidelines, cumulative impacts shall be discussed when the project's incremental effect is cumulatively considerable as defined in section 15065. The discussion of cumulative impacts needs to reflect the severity of the impacts and their likelihood of occurrence, but the discussion does not need to provide as great a detail as is provided for the effects attributable to the project alone. According to the Guidelines, the following elements are necessary to an adequate discussion of significant cumulative impacts:

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or

- A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the Lead Agency.

- The discussion shall also include a summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available, and a reasonable analysis of the cumulative impacts of the relevant projects. The EIR shall examine reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project.

3.4.2 Cumulative Development Scenario

An analysis of cumulative effects has been included within each resource issue area discussed in this EIR (refer to Chapter 4, Environmental Impacts and Mitigation Measures). The proposed project extends through a relatively rural area. A review of probable future projects in the region surrounding the Creek have been identified in Table 3-3, Cumulative Development Scenario, because they are either in proximity to the proposed project, and/or have similar characteristics, and are therefore likely to contribute cumulatively to environmental impacts. However, each environmental issue will evaluate potentially cumulative considerable impacts based on scenarios appropriate for the section. For example, cumulative air quality effects may be considered as they impact the entire air basin, while it is more appropriate to identify cumulative noise impacts as they relate to sensitive receptors in the vicinity of the project corridor.

Table 3-3. Cumulative Development Scenario

Project	Location	Description	Status	Related Impacts
Lopez Dam Raise	Lopez Dam	Install Obermeyer gates at the Lopez Dam spillway that will allow additional storage at Lopez Reservoir.	San Luis Obispo County has prepared a pre-planning assessment.	Biological Resources
Laetitia Winery Agricultural Cluster Development	Laetitia Winery adjacent to Los Berros Creek	Agricultural development project - water resources would be developed which are projected to reduce in-stream flows, and excessive well pumping could reverse flow gradient to that groundwater from Los Berros Creek flows toward the pumping wells.	Pending	Biological Resources, Transportation, Flooding, Hydrology, and Water Quality
Development plans for two properties adjacent to Talley Ho Creek	Talley Ho Creek in the Village of Arroyo Grande and at the intersection of 227 and Corbett Canyon Road	Development of two properties adjacent to Talley Ho Creek present opportunities to work voluntarily with landowners to enhance habitat and reduce sedimentation as the projects enter the City planning process.	Pending	Biological Resources
Conduct Steelhead Restoration Planning	Along entire length of Arroyo Grande Creek and watershed	Remove or modify various stream gages, road culverts, abandoned dam footings, road debris, and other barriers to unimpeded migration and passage of adult and juvenile steelhead.	Proposed	Biological Resources
Gravel Augmentation	Along length of Arroyo Grande Creek	Remove materials from the flood control channel and devise a system to sift or grade some of the coarser sediments, and reposition clean gravels at the top of the watershed to increase capacity in the flood control channel and improve water quality.	Proposed	Biological Resources

Table 3-3. Cumulative Development Scenario

Project	Location	Description	Status	Related Impacts
Remove Exotic Species	Along entire length of Arroyo Grande Creek and watershed	Investigate the presence of exotic predators, remove and prevent the re-growth of exotic plant species (including overgrown English ivy and Cape ivy), and consider a beaver management program for protection of the watershed.	Proposed	Biological Resources
Control Erosion to Reduce Sediment for Improved Water Quality	Along entire length of Arroyo Grande Creek and watershed	Implement low impact development principles; inventory floodplains for potential enhancement; restore creeks through sediment removal; seek solutions to stabilize creek banks; inventory road system to identify areas where sediment is entering the Creek; and stencil warnings at common dumping stations to reiterate impacts of dumping into storm drains.	Proposed	Biological Resources, Flooding, Drainage and Water Quality

Source: Arroyo Grande Creek Watershed Management Plan Update (Central Coast Salmon Enhancement 2009)

CHAPTER 4
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The Environmental Impacts and Mitigation Measures chapter of this Environmental Impact Report (EIR) has been divided into sub sections, as follows:

- **Existing Conditions**: The description of the physical environmental conditions in the vicinity of the project, as they exist at the time the Notice of Preparation (NOP) is published (baseline physical conditions).

- **Regulatory Setting**: The regulations in force at the time the NOP is published. These are the applicable regulations governing each environmental topic, such as the Clean Air Act and its requirements for maintaining air quality. This is not an exhaustive analysis of the regulations, but rather information to assist the reader in understanding the potential impacts of the project from a regulatory perspective.

- **Thresholds of Significance**: The thresholds used to evaluate each environmental topic are usually based on Appendix G of the California Environmental Quality Act (CEQA) *Guidelines*, or are standard procedures related to existing regulations or are standards in the industry.

- **Impact Assessment and Methodology**: Methodology used to determine the impacts associated with the project, such as measurements or field investigative processes.

- **Project-Specific Impacts and Mitigation Measures**: These include the significant environmental effects of the proposed project, as further defined below. The impacts are identified and then are followed by the mitigation measures that can minimize significant impacts; mitigation measures must be enforceable and feasible. Where more than one mitigation measure could be used to reduce a significant effect, each should be discussed and rationale given for determining the preferable mitigation measure. In addition, there must be an essential nexus between the mitigation measure and a legitimate governmental interest, and the mitigation measure also must be "roughly proportional" to the impacts of the project.

- **Residual Impacts**: The statement of the level of impact, significant or insignificant, that is residual once mitigation is applied.

- **Cumulative Impacts**: The cumulative effects of the project when the project's effect is cumulatively considerable.

- **Secondary Impacts**: If a mitigation measures would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure must be discussed but in less detail than the significant effects of the project as proposed. (*Stevens v. City of Glendale* (1981) 125 Cal.App.3d 986).

All residual impacts in the EIR have been classified according to the following criteria (note: CEQA does not recognize a beneficial effect as an impact):

- **Class I – Significant, unavoidable, adverse impacts:** Significant impacts that cannot be fully and effectively mitigated. No measures could be taken to avoid or reduce these adverse effects to insignificant or negligible levels.

- **Class II – Significant, but mitigable impacts:** These impacts are potentially similar in significance to those of Class I, but can be reduced or avoided by the implementation of mitigation measures.

- **Class III – Less than significant impacts:** Mitigation measures may still be required for these impacts as long as there is rough proportionality between the environmental impacts caused by the project and the mitigation measures imposed on the project.

The term "significance" is used throughout the EIR to characterize the magnitude of the projected impact. For the purpose of this EIR, a significant impact is a substantial or potentially substantial change to resources in the proposed project area or the area adjacent to the proposed project. In the discussions of each issue area, thresholds are identified that are used to distinguish between significant and insignificant impacts. To the extent feasible, distinctions are also made between local and regional significance and short-term versus long-term duration. Where possible, measures have been identified to reduce project impacts to less than significant levels. CEQA requires that public agencies should not approve projects as proposed if there are feasible mitigation measures available that would substantially lessen the environmental effects of such projects (CEQA Statute Section 21002). Included with each mitigation measure are the plan requirements needed to ensure that the mitigation is included in the plans and construction of the project and the required timing of the action (e.g., prior to development of final construction plans, prior to commencement of construction, prior to operation, etc.).

4.1 AGRICULTURAL RESOURCES

This section identifies potential impacts to agricultural resources resulting from the proposed project. Resources used in developing this section include Natural Resources Conservation Service (NRCS) soils data, San Luis Obispo County Department of Agriculture (SLOCDA) 2008 Annual Report, field survey data, and aerial photos, among others. Potential impacts identified include temporary and permanent conversion of prime farmland~~agricultural soils~~, temporary loss of productivity, and incompatibilities between construction activity and agricultural activities. Mitigation measures have been recommended to reduce impacts identified in this section.

4.1.1 Existing Conditions

4.1.1.1 Regional Setting

According to the California Department of Food and Agriculture (CDFA), in 2007 agricultural production in California resulted in sales of approximately $36.6 billion, including $10.9 billion worth of international exports. The state produces approximately 22% of the milk produced in the nation, and about half of the fruit, nuts, and vegetables. As of 2007, San Luis Obispo County ranked 15th in the state for overall agricultural production value at approximately $654 million (CDFA 2009).

In 2008, the total value of agricultural production in San Luis Obispo County was approximately $606 million. Crop values for selected crops are shown in Table 4.1-1 (SLOCDA 2009).

Table 4.1-1. Approximate Crop Value
San Luis Obispo County, 2008

Crop	Value ($ millions)
Wine Grapes	124
Broccoli	71
Strawberries	65
Head Lettuce	25
Carrots	20
Oriental Vegetables	13
Celery	12
Leaf Lettuce	12
Cabbage	7
Bell peppers	7

Source: SLOCDA 2009

In San Luis Obispo County, vegetable production occurs primarily in the coastal valleys, including the Arroyo Grande Valley, while irrigated field crops (mostly alfalfa and irrigated pasture) are predominate in the interior valleys. Expansion of vineyards over land previously used for dry farm grain production has been significant over the last 20 years. Vineyards occur mostly on gently rolling land east of Paso Robles, west of Templeton and Paso Robles, and in the Edna Valley. Avocados, lemons and some other subtropical fruits are grown in the coastal foothills. Production of high value nursery stock and crop seed has also steadily increased, and includes propagation of fruit and nut trees and vegetable seedlings, as well as the production of cut flowers, indoor decoratives, and ornamental trees and shrubs.

4.1.1.2 Project Site and Immediate Vicinity

All portions of the project within the unincorporated areas of the Arroyo Grande Valley (the southern reaches of which are also known as La Cienaga Valley) and south of the channel are designated within the Agricultural land use category, with most of the parcels used for intensive crop production. Some ~~P~~parcels north of the channel and north of Highway 1 are also in the Agricultural land use category and being cultivated.

The San Luis Bay Inland Area Plan specifically describes the suitability of the valley for agriculture and identifies the importance of protecting the valley exclusively for agricultural use. According to the Area Plan, "other uses are not appropriate, with the exception of roadside stands for sale of products grown on site. The parcel sizes are generally large and lands are intensively used for raising truck crops. There are very few residences within La Cienaga Valley and breakdown of these properties for residential uses should not be allowed. These farmlands depend on the locally available groundwater for irrigation and should be assured a continued adequate water supply."

On site Soils

United States Department of Agriculture Criteria

The United States Department of Agriculture (USDA) NRCS Land Capability Classification (LCC) system classifies soil units based on limitations for field crop production, the risk of damage due to crop production, and how the soil responds to management (Table 4.1-2). Generally, Class 1 or 2 soils are considered "prime agricultural land~~soil~~," although other criteria can be used in cases where site specific conditions require it.

Table 4.1-2. Land Capability Classifications

Class	Definition
1	Slight limitations that restrict use
2	Moderate limitations that reduce the choice of plants or require moderate conservation practices
3	Severe limitations that reduce the choice of plants or require special conservation practices, or both
4	Very severe limitations that restrict the choice of plants or require very careful management, or both.
5	Little or no hazard of erosion but has other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
6	Severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
7	Very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife
8	Limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.

Based on the *Soil Survey of San Luis Obispo County, California Coastal Part* soil survey maps, two soil units (Marimel and Mocho variant) dominate the project area and underlie the agriculture operations, although four soils are located within the project area. These soils and their LCC rating are shown in Figure 4.1-1 and Table 4.1-3).

Table 4.1-3. Soil Map Units in Project Area

Soil Number	Soil Name	Class	
		Irrigated	Non-irr.
134	Dune land	8	8
170	Marimel silty clay loam	1	3
173	Mocho fine sandy loam	2	3
176	Mocho variant fine sandy loam	2	3

California Department of Conservation Classification

The California Department of Conservation (CDC) Division of Land Resource Protection developed the Farmland Mapping and Monitoring Program (FMMP) in 1984 to analyze impacts to California's agricultural resources.

Land designations include the following categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-up Land, and Other Land. The CDC considers Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance to be Important Farmland. These categories are defined by the FMMP as follows:

- **Prime Farmland (P):** Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- **Farmland of Statewide Importance (S):** Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- **Unique Farmland (U)**: Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- **Farmland of Local Importance (L):** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. The SLOCDA defines these as areas of soils that meet all the characteristics of Prime or Statewide, with the exception of irrigation. Additional farmland includes dryland field crops of wheat, barley, oats, and safflower.

- **Farmland of Local Potential (LP):** This rarely used classification includes soils which qualify for Prime Farmland or Farmland of Statewide Importance, but generally are not cultivated or irrigated. The SLOCDA defines these as "lands having the potential for farmland, which have Prime or Statewide characteristics, and are not cultivated."

- **Grazing Land (G):** Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.

- **Urban and Build-up Land (D):** Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

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

According to the CDC FMMP, three soil types within the project area meet the criteria for Prime Farmland Soils. These are the Marimel soils, (soil numbers 170 and 173) and the Mocho Variant fine sandy loam (soil number 176). These soils make up the majority of the soils in the agricultural areas on the valley floor, and surround the project site (refer to Figure 4.1-1).

Agricultural Infrastructure and Production

The project area is located within and adjacent to an agricultural area used for rotational vegetable production. North of Highway 1, row crops exist on either side of the channel. South of Highway 1 the northern side of the channel includes significant residential development, although row crops are grown near the southwest corner of Highway 1 and Halcyon Road, and west of the Union Pacific Railroad (UPRR) bridge. The southern side of the Arroyo Grande and Los Berros Creek channels is dominated by row crop production with the exception of the far western end, where equestrian facilities and pastures exist. Crop production is intensive and the dominant activity in the project area. In some places crops are grown adjacent to the toe of the existing levee slopes. A number of larger-scale agricultural operations are located in the project area, producing a variety of crops including head and mixed leaf lettuce, broccoli, bell peppers, squash, Napa cabbage, bok choy, celery, kale, leeks, and green onion, among others.

Infrastructure improvements include extensive irrigation systems, earthen drainage systems, and a series of agricultural access roads, both adjacent to and through the creek channel. Significant agricultural accessory structures are also located adjacent to the channel. The Bejo Seed facility which includes crop lands, a large warehouse/distribution facility, a large photovoltaic installation, and additional structures, are located immediately south of the channel and east of the UPRR bridge. The other large facility adjacent to the channel is the Seminis Seed facility, which includes crop land, greenhouses, and an administrative building. It is located immediately east of the Arroyo Grande Creek channel and north of the Los Berros Creek channel. The Pismo Oceano Vegetable Exchange (POVE) shipping facility is located north of the project area on Highway 1.

There are four locations, three on the Arroyo Grande Creek channel, on one Los Berros Creek channel, where agricultural access roads cross the levees and the channels. These crossings allow agricultural equipment to cross the channel and access fields on ether side of the channel without having to use public roads. They are not paved, and most likely require some maintenance after large storm events, but are clearly visible in the field and on aerial photographs. These crossings are shown on the conceptual plans for the project.

Agricultural Water Supply

The water supply for the surrounding agricultural uses is obtained entirely from groundwater underlying the valley. The valley is technically part of the Santa Maria River Valley Aquifer. No surface water is used to irrigate the farmland within the Arroyo Grande Valley. There are wells located adjacent to the levees, and at least one within the existing levee footprint. Given the intense range of crop production in the project area, irrigation is common.

4.1.1.3 Williamson Act

San Luis Obispo County's agricultural preserve program was created to implement the California Land Conservation Act (LCA) of 1965. It identifies areas where the County is willing to enter into an LCA contract (also referred to as a Williamson Act contract) with property owners based on an approved set of criteria (San Luis Obispo County 1998). Lands that enter into the County's agricultural preserve program may be a ~~are subject to zoning restrictions including parcel size restrictions ranging from~~ minimum of 20 acres (with individual parcel size within a preserve no less than 10 acres). ~~40 acres for prime land and 100 acres for nonprime land.~~ A Williamson Act contract is a legal contract between a landowner and a land-regulating agency under the Act (i.e., the County). Under a Williamson Act contract, the property owner agrees to keep the property in commercial agricultural use and preclude uses that are not compatible ~~not to develop the property for a period of ten to twenty years~~ in exchange for property tax reductions based on the property's value as open space or agricultural, rather than developable, land. In the summer of 2009 the State of California stopped reimbursing local governments for the reduced property tax revenue resulting from the Williamson Act.~~removed funding for the Williamson Act from the State budget.~~ It is unclear at this time what affect that may have on agricultural resources in the state and county, although local counties may continue the subsidy program.

Based on correspondence from the Agriculture Department, state policy to avoid, whenever practicable, the location of any public improvements or the acquisition of land therefore, including easements, within agricultural preserves and more specifically on lands under contract. State code provides specific procedures and findings in order to acquire such land for public use.

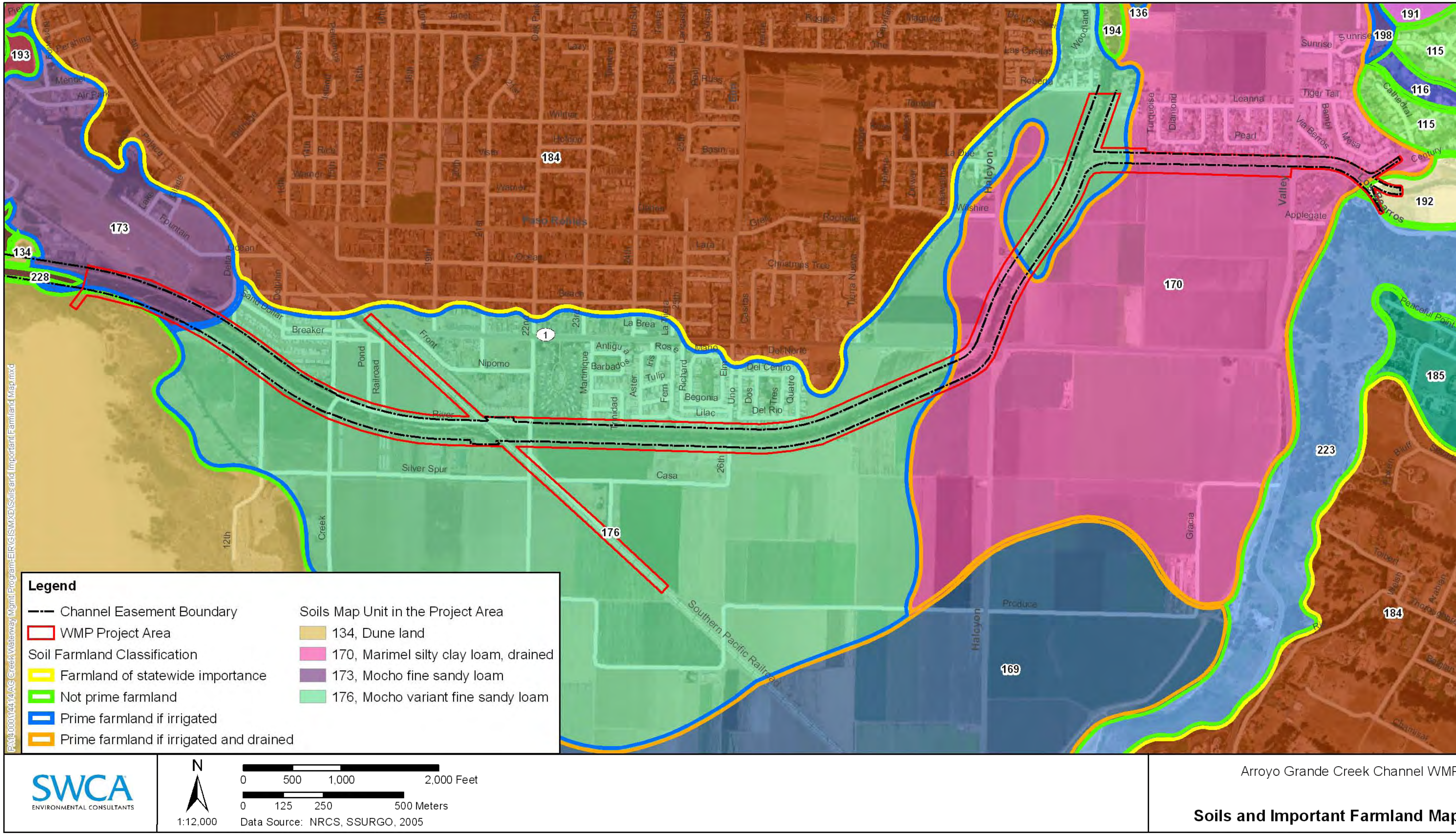
Three parcels within the project area are under Williamson Act contracts (www.sloplanning.org 2009). Two are located on the east and west side of the Arroyo Grande Creek channel, between Los Berros Creek channel and Highway 1. The third is located south of the Arroyo Grande Creek Channel and immediately east of the UPRR right of way. The contracted parcels exceed 40 acres.

4.1.2 Regulatory Setting

4.1.2.1 California Land Conservation Act (Williamson Act)

As defined by the CDC, the California Land Conservation Act of 1965 (Williamson Act) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. As an incentive, landowners receive lower property tax assessments based on agricultural or open space land uses, as opposed to the real estate value of the land. Local governments receive a subsidy for forgone property tax revenues from the state via the Open Space Subvention Act of 1971. However, as at the time this EIR was prepared, the State of California has at least temporarily suspended the subsidies to local government.

Figure 4.1-1. Soils and Important Farmland Map



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4.1.2.2 Local Regulation and Policy

Agriculture and Open Space Element

The Agriculture and Open Space Element of the San Luis Obispo County General Plan provides a background on agricultural and open space resources within the County. Through the goals, policies, implementation programs, and measures provided within the document, the County's intent is, "To promote and protect the agricultural industry of the County, to provide for a continuing sound and healthy agriculture in the County, and to encourage a productive and profitable agricultural industry." Of the policies in the element, seven are directly applicable to this project. Please refer to Chapter 3, Environmental Setting for a discussion of these policies as they relate to this project.

San Luis Obispo County Right-to-Farm Ordinance

The San Luis Obispo County "Right-to-Farm" Ordinance states that the use of real property for agricultural operations is a high priority and favored use. Ordinance No. 2561 (August, 1992), added Chapter 5.16 to Title 5 of the San Luis Obispo County Code relating to Agricultural Lands, Operations, and The Right To Farm. Paragraph "b" of Section 5.16.020 (Findings and Policy) states:

> "Where non-agricultural land uses occur near agricultural areas, agricultural operations frequently become the subjects of nuisance complaints due to lack of information about such operations. As a result, agricultural operators may be forced to cease or curtail their operations. Such actions discourage investments in farm improvements to the detriment of agricultural uses and the viability of the County's agricultural industry as a whole."

4.1.3 Thresholds of Significance

The significance of potential agricultural impacts are based on thresholds identified within Appendix G of the CEQA *Guidelines*, which provides the following thresholds for determining impact significance with respect to agricultural resources. Agricultural impacts would be considered potentially significant if the proposed project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Involve other changes in the existing environment, which due to their location or nature, could individually or cumulatively result in loss of farmland, to non-agricultural use.
- Impair agricultural use of other property or result in conversion to other uses.
- Conflict with any local, state, or federal policies or ordinances protecting agricultural resources.

4.1.4 Impact Assessment and Methodology

Impacts to agricultural resources were assessed utilizing data and maps published by the United States Department of Agriculture, CDC, and County Department of Agriculture, including soil information, farmland mapping, and economic data. The project was analyzed for the potential conversion of Prime ~~Important~~ Farmland, loss of productive agricultural soils, incompatible land uses, and inconsistencies with regulations and policies intended to preserve agricultural resources.

The analysis of agricultural constraints included a review of Geographic Information Systems (GIS) maps, local and state literature and records, consultation with the County Department of Agriculture and field visits to the project study area and the surrounding region. A number of GIS layers provided by the County of San Luis Obispo were utilized to determine soil types and identify parcels within and adjacent to the project study area that were part of agricultural preserves. These layers were joined with the project study area layer to determine precisely how much farmland might be impacted either permanently or temporarily by the components of the proposed project.

4.1.5 Project-Specific Impacts and Mitigation Measures

4.1.5.1 Soil Conversion

Vegetation and Sediment Management

The vegetation and sediment management components of the proposed project would occur within the existing channel and therefore would not result in the temporary or permanent conversion of prime farmland or otherwise productive soils to another use. Sediment removal would proceed relatively slowly due to biological resources in the channel. As noted in the project description, sediment removed from the channel would be loaded directly into trucks and hauled along the levees to an approved location. Sediment would not be stockpiled on adjacent lands. Impacts would be *less than significant*. No mitigation would be required.

Alternative 3a and 3c Levee Raise

The levee raise components of the proposed project would require the County of San Luis Obispo to acquire permanent and temporary easements. The areas of these easements are shown by soil type in Table 4.1-4. Dune land (soil number 134) has not been included as it is not suited for agriculture. Mocho fine sandy loam (soil number 173) is present between the Oceano County Airport and the Oceano dunes. It is disconnected from the remainder of the valley and other agricultural operations, and is unlikely to support agriculture; therefore, conversion of these soils is not considered in the analysis that follows.

Acreage calculations in Table 4.1-4 are based on the conceptual plans (Waterways 2009) and preliminary estimates of the size of the UPRR shoofly (a temporary parallel track to allow train travel during the bridge raising) (UPRR 2006). ~~For the levee raise component, permanent impacts include the area between the existing and proposed new permanent levee easement.~~ Temporary (construction) impacts include the area between the proposed new permanent easement and the construction easement.

Two methods were considered for determining permanent impacts to prime farmland. The first method included determining the acreage of prime farmland which would be in the new permanent easement. This method allowed for a very accurate assessment of acreage

potentially impacted. However, it doesn't necessarily account for the fact that some farming does and would still be able to occur within the easement (although structural improvements are technically precluded).

The second method compared the existing levee footprint to the proposed levee footprint. Unfortunately though, the existing levee footprint has not been formally surveyed. Instead an estimate of the footprint was available that had been developed using aerial photos and topographic changes. It was suggested that the data could be up to five feet off in either direction. Therefore, given that the distance between the existing and proposed footprints is likely to be well under ten feet in most cases, using the footprints to calculate impacts was not considered accurate. Still, an assessment was performed, and it was concluded that the new permanent easement would result in approximately 1.2 acres of permanent disturbance.

Ultimately it was decided that the change in the permanent easement should be used due to the inaccuracies associated with the data which exists for the existing footprint. The easement calculations are shown in Table 4.1-4. It should be noted that both methods indicated a similar amount of potential disturbance would result from Alternative 3c.

Table 4.1-4. Temporary and Permanent Impacts to Prime Farmland ~~Prime Soils~~ (Acres)

Project Component	Soil Map Unit	Construction Easement	Permanent Easement
Alternative 3a Levee Raise	170	0	n/a
	176	2.42	n/a
	Total	**2.42**	**n/a**
Alternative 3c Levee Raise[1]	170	1.04	0.43
	176	4.47	0.73
	Total	**5.51**	**1.16**
UPRR Bridge Raise[2]	170	0	n/a
	176	1.5	n/a
	Total	**1.5**	**n/a**

[1] Includes Alternative 3a impact areas as well.
[2] Does not include Alternative 3a or 3c impact areas.

The temporary area of disturbance shown in Table 4.1-4 for Alternative 3a may be somewhat overstated because some areas where the construction easement would be required are already used as agricultural roads. In this case the soils wouldn't be impacted as heavy farm equipment and trucks already use those areas. This is true of those areas west of the UPRR bridge where access roads parallel the levees and separate the levees from the fields. The areas south of the Los Berros Creek channel are also used as access roads. As a result, total temporary disturbance due to construction easements for Alternative 3a may be closer to one and a half acres. There would be no permanent disturbance of prime farmland~~prime soils~~ as a

result of Alternative 3a because the levee footprint would remain within the existing levee easement.

In the case of Alternative 3c, the construction easement is less likely to overlap with existing roads as the levee footprint would need to expand as well, although there would be some overlap in the area south of the Los Berros Creek channel. In other areas, the construction easement would be located in areas where crop production is unlikely to exist, such as the industrial area north of the levees and west of Creek Road, and the equestrian facilities south of the levee and west of Elm Street. Because of these factors, temporary disturbance associated with Alternative 3c would most likely be closer to three and a half acres (this includes the area disturbed by Alternative 3a).

To allow for the expanded levee footprint, the County would need to acquire additional permanent easement rights. The new permanent easement would include more than one acre of potentially prime farmland~~prime soils~~; however, in some cases the new permanent easement may be located in areas not likely to be cultivated, and in other areas, such as south of Los Berros Creek channel, it may overlap with existing access roads, which could remain within the easement. Therefore, loss of existing ~~productive~~ prime farmland~~soil~~ may be somewhat less than one acre. In addition, the new permanent easements are not continuous, but would rather be necessary only in small sections approximately 10 feet wide, adjacent to the levee, and for relatively short distances. The total prime farmland impacted by the Alternative 3c permanent easement would be distributed among multiple parcels and operations.~~.~~

The levee improvements will require imported soil. Levee improvements will proceed relatively slowly due to the biological and agricultural resource constraints at the project site. However, it may be necessary to stockpile soil for brief periods of time. As noted in the project description, stockpiled material will be located on lands adjacent to the project site least likely to be used for crop production. Potential stockpile locations are located north of the levees in the uncultivated area immediately east of the railroad and the area between the railroad and 22nd Street.

AGR Impact 1 **Implementation of Alternative 3a and 3c would result in the temporary disturbance of up to approximately 3.5 acres of prime farmland~~soils~~ and the permanent loss of up to one acre of prime farmland~~soils~~.**

Mitigation Measures

AGR/mm-1 *Prior to completion of the construction plan for Alternative 3a, 3c and the UPRR bridge raise, the Flood Control and Water Conservation District (District) shall coordinate with local agriculturalists to refine the construction easement areas to existing agricultural roads and other areas not likely to be in production, to the maximum extent feasible. Construction fencing shall be installed along the easement to reduce the potential for disturbance outside of the construction easement area, as appropriate.*

AGR/mm-2 *Prior to completion of the final construction plans, the permanent easement area of the Los Berros Creek channel shall be limited to the existing access road areas, to the extent feasible. Further, Construction access and stockpiling locations shall be located within public right of ways to the maximum extent feasible.*

Permanent conversion of land available for crop production shall be minimized by allowing the use of identified portions of the easement for agricultural roads to the degree possible and appropriate while still ensuring the functionality of the levee. The allowance for and any limitations to locating agricultural roads on the top or outside portion of the levee should be noted in the easement agreement. The allowance to cross through the easement and levee channel should also be noted in those areas where such a crossing is to be retained.

AGR/mm-3 *Any imported soils or levee fill/aggregate should be stockpiled in a manner to avoid impacts to adjoining crops. This includes maintaining adequate moisture to avoid dust impacts to nearby crops, the placement of a geotextile membrane in order to prevent rock, construction materials, or imported soil from becoming mixed with the native soils, and the removal of all fill material and the geotextile membrane upon completion of the project, coupled with the restoration of the native soils' previous soil texture, available water holding capacity, and soil permeability in all areas of private agricultural land that are not part of the permanent floodway easement.*

Upon conclusion of the construction of Alternative 3a and 3c the District shall coordinate with local agriculturalists to determine if restoration (disking, fine grading) of the temporarily disturbed area is necessary. Costs of this restoration shall be considered during easement negotiations with landowners.

Residual Impact

The temporary impacts to prime farmlandsoils would be reduced by mitigation measures AGR/mm-1 and AGR/mm-3. As the project design is refined and the District works with local landowners, the temporary disturbance area may be less than three acres. AGR/mm-3 requires that the District work with landowners to perform some restoration work, if necessary. Temporary impacts would be *less than significant.*

The permanent loss of prime farmlandsoil losses would be as much as one acre. The loss would result from a number of small encroachments of Alternative 3c throughout the project corridor. The loss would not occur on any individual field or operation. Considering the length of the corridor, the relatively small fraction of the prime farmland soils to be disturbed and implementation of AGR/mm-2, permanent impacts would be *less than significant*.

UPRR Bridge Raise

For the UPRR bridge component, temporary impacts, up to three acres, are related to the area needed for construction of the shoofly. The width of the right-of-way west of the tracks is forty feet. This analysis assumes that at least half of the disturbance would be in the existing railroad right-of-way.

AGR Impact 2 **Raising the UPRR bridge would result in the temporary disturbance of approximately 1.5 acres of prime soils.**

Mitigation Measures

Implement AGR/mm-1 and AGR/mm-3.

AGR/mm-4 *Construction of the UPRR bridge improvement shall be focused within the UPRR right of way to the maximum extent feasible.*

Residual Impact

Designs of the UPRR bridge improvements are preliminary and conceptual at this time. It appears that the right of way is large enough to accommodate the construction, but ultimately total areas of disturbance will not be known until the project is farther along. It is also not clear at this time which party would be responsible for the construction and potential mitigation. It is likely that subsequent environmental review will be required for the UPRR bridge raise, and that the project applicant would be UPRR. However, it does appear that temporary impacts would be limited and that AGR/mm-3 and AGR/mm-4 would be effective mitigation measures for reducing temporary impacts. Temporary impacts would likely be *less than significant*.

4.1.5.2 Infrastructure and Productivity

The Arroyo Grande Creek channel bisects an intensively farmed agriculture area. The operations regularly produce multiple harvests of high-value crops annually. Substantial infrastructure improvements have been made. These include wells, irrigation systems, fencing, drainage systems, interior roads, barns, other accessory structures, and processing facilities. In some cases, single operations are located on both sides of the channel and access across the channel has been created and maintained by agriculturalists.

Vegetation and Sediment Management

Vegetation removal and maintenance would be performed by hand without the use of chemicals and within the channel. Sediment removal would be performed from the top of the levee and adjacent temporary easement areas. Sediment excavated from the channel would be relatively moist, although dust could be generated during the activity as soil is loaded into trucks to be hauled offsite. Dust from construction activities can reduce productivity and increase pest populations, such as dust mites. Dust control for all components of the project has been considered in the Air Quality section of this EIR. Refer to AQ Impact 3 and AQ/mm-3 for more information on impacts and recommended mitigation measures for dust control. Excavations for the initial sediment removal would be relatively shallow, and therefore farm equipment could still cross the channel, as necessary.

Alternative 3a and 3c Levee Raise and UPRR Bridge Raise

In addition to generating dust during construction, the implementation of Alternatives 3a, 3c, and the UPRR bridge raise would have direct, but temporary impacts on agricultural operations. Construction activities would occur outside of the levees, where crops may be in production or where agricultural access roads or accessory structures exist. Construction vehicles would be using agricultural roads parallel and adjacent to the levees. Heavy equipment would be operating on the levee faces and adjacent properties while additional material is being added and compacted onto the levee faces. In some cases the material at the toe of the levees would have to be over excavated to ensure the integrity of the levee improvements. All of these activities potentially conflict with the existing agricultural use of properties adjacent to the levee.

Agricultural wells within and adjacent to the levees have been identified during surveys and the proposed project would avoid removing or modifying wells and related electrical equipment. In some cases, it will be necessary to construct retaining walls around the wells to ensure continued function and access. This has been indentified on the conceptual plans.

There are four locations throughout the project area where agriculturalists have created and maintained access across the channel. The District has recognized the value of these crossings, and proposes to maintain them permanently. However, to minimize damage to the levees caused by the use of agricultural equipment, these access points would be protected through the use of concrete reinforcement or geotextiles.

AGR Impact 3 Construction of Alternative 3a, 3c and the UPRR bridge raise would potentially occur on and adjacent to agricultural infrastructure improvements, temporarily reducing productivity.

Mitigation Measures

Implement AGR/mm-1.

AGR/mm-5 Prior to completion of the final plans for the Alternative 3a, 3c and the UPRR bridge raise, the District shall coordinate with local agriculturalists, to address potential conflicts between the construction activities and agricultural operations. Issues such as the location of stockpiles and haul routes, hours of operation, and farm and construction crew safety and the location of critical agricultural improvements to be avoided shall be considered. The final plans shall identify haul routes, and include a diagram of critical agricultural improvements that shall be avoided during construction, including wells, and accessory structures. Where the project results in the need to relocate existing water or associated electrical infrastructure, such measures should be completed prior to construction commencing in order to ensure the continuity of access to adequate irrigation supplies.

Residual Impact

Coordination between agriculturalists and construction crews will be necessary and is a recommended mitigation in this section as well as the Hazards and Hazardous Materials section. In some cases it may be infeasible to completely avoid accessory structures, especially those located within the existing levee easement. Whether or not these structures shall be relocated will not be known until the construction designs are finalized. The design for the UPRR shoofly is only preliminary. The area of disturbance may change based on site specific issues or UPRR design criteria. Additional environmental review may be necessary for the bridge raise component. Implementation of these mitigation measures would reduce potentially significant impacts to productivity and infrastructure to *less than significant*.

4.1.5.3 Agricultural Water Supply

Groundwater is the agricultural water supply in the lower Arroyo Grande Valley. Wells are located throughout the valley, and extensive irrigation systems are used. The proposed project would not require the use of groundwater, with the possible exception of short term use for dust control during construction of the project components. As noted above, the project would not require the relocation of existing wells. As a result of the propose project, flooding in the valley would be reduced, potentially reducing groundwater recharge; although as described in the Flooding, Hydrology, and Water Quality section of this EIR, the flood waters would most likely not percolate as the soils are already saturated during flood events and the local water tables are relatively close to the surface, even during dry periods. Impacts to the agricultural water supply would be *less than significant*. No mitigation is required.

4.1.5.4 Williamson Act

The vegetation and sediment management components of the project would not result in the conversion of any lands under Williamson Act contracts. The Alternative 3a levee raise would not result in any permanent conversion of agricultural lands under Williamson Act contract. Alternative 3c would potentially result in the permanent conversion of a total of one acre (10 foot wide strip adjacent to the existing levee) of existing agricultural land under Williamson Act contract. This loss would not reduce parcel sizes below that necessary to qualify for the County's Williamson Act program. Impacts to Williamson Act properties would be *less than significant.* No mitigation is required.

4.1.6 Cumulative Impacts

The proposed project would result in temporary and permanent conversion of ~~prime soils~~prime farmland, result in temporary impacts to productivity, and create short-term incompatibilities between the construction activities and agricultural operations. The temporary impacts would not contribute cumulatively to agricultural resource impacts in the Arroyo Grande Valley. The impacts would result in a permanent loss of prime soils in the valley. This loss, while small, would also contribute cumulatively, along with other projects, such as the Halcyon Road improvements, to a significant loss of ~~prime soils~~prime farmland in the valley.

AGR Impact 4 **The loss of up to one acre of prime farmland resulting from the implementation of Alternative 3c would contribute to a cumulatively significant impact to agricultural resources.**

AGR/mm-6 *Prior to the issuance of grading permits for Alternative 3c, the District shall provide evidence that funds sufficient to, (1) purchase a farmland conservation easement, deed restriction, or other farmland conservation mechanism, and (2) to compensate for administrative costs incurred in the implementation of this measure have been provided to the California Farmland Conservancy Program or similar program, which will provide for the conservation of farmland impacted by Alternative 3c at a 1:1 ratio in San Luis Obispo County.*

Residual Impact

~~However, implementation of the WMP would reduce the potential for the farmlands adjacent to the channel to be flooded, which in turn would increase their productivity in the long term.~~ Implementation of measures AGR/mm-1 through AGR/mm-6 would reduce ~~This~~ potentially significant cumulative impacts ~~beneficial impact would reduce the potentially significant cumulative loss of prime soils~~ to a *less than significant level*.

4.2 AIR QUALITY

This section describes the existing air quality setting in San Luis Obispo County and the potential short-term and long-term air quality impacts associated with development of the proposed project. This section also includes a discussion of greenhouse gas (GHG) emissions associated with project implementation. The analysis is based on information provided by the County of San Luis Obispo, the San Luis Obispo County Air Pollution Control District (SLOAPCD), and modeling of construction-related emissions from vehicle and heavy equipment operation using URBEMIS, a software program which uses land use emissions inventory models to estimate GHG and criteria pollutant emissions.

4.2.1 Existing Conditions

4.2.1.1 Regional Meteorology

San Luis Obispo County is part of the South Central Coast Air Basin, which also includes Santa Barbara and Ventura Counties. The climate of the basin area is strongly influenced by its proximity to the Pacific Ocean. San Luis Obispo County constitutes a land area of approximately 3,316 square miles with varied vegetation, topography, and climate. From a geographical and meteorological standpoint, the County can be divided into three general regions: the Coastal Plateau, the Upper Salinas River Valley, and the East County Plain. Air quality in each of these regions is characteristically different, although the physical features that divide them provide only limited barriers to the transport of pollutants between regions.

Approximately 75% of the County population and a corresponding portion of the commercial and industrial facilities are located within the Coastal Plateau. Due to higher population density and closer spacing of urban areas, emissions of air pollutants per unit area are generally higher in this region than in other regions of the County. The project is located within the Coastal Plateau.

4.2.1.2 Air Quality Monitoring

The County's air quality is measured by multiple ambient air quality monitoring stations, including four permanent SLOAPCD-operated stations, two permanent state-operated stations, two special stations, and one station operated by Tosco Oil Refinery for monitoring Sulfur Dioxide (SO_2) emissions. Air quality monitoring is rigorously controlled by federal and state quality assurance and control procedures to ensure data validity. Gaseous pollutant levels are measured continuously and averaged each hour, 24 hours a day. Particulate pollutants are generally sampled by filter techniques for averaging periods of three to 24 hours. PM_{10} (inhalable particulate matter 10 microns or less in size) and $PM_{2.5}$ (inhalable particulate matter 2.5 microns or less in size) are sampled for 24 hours every sixth day on the same schedule nationwide.

4.2.1.3 Existing Air Quality

The significance of a given pollutant can be evaluated by comparing its atmospheric concentration to state and federal air quality standards, which are presented in Table 4.2-1. These standards represent allowable atmospheric contaminant concentrations at which the public health and welfare are protected, and include a factor of safety.

Table 4.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[3,4]	Secondary[3,5]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	0.12 ppm (235 µg/m^3)[6]	Same as Primary Standard
	8 Hour	-----	0.08 ppm (157 µg/m^3)	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No California Standards	65 µg/m^3	Same as Primary Standard
	Annual arithmetic mean		15 µg/m^3	
Respirable Particulate Matter (PM_{10})	Annual geometric mean	30 µg/m^3	-----	
	24 Hour	50 µg/m^3	150 µg/m^3	
	Annual arithmetic mean	-----	50 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	-----
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual arithmetic mean	-----	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 Hour	0.25 ppm (470 µg/m^3)	-----	
Lead	30 day average	1.5 µg/m^3	-----	-----
	Calendar quarter	-----	1.5 µg/m^3	Same as Primary Standard
Sulfur Dioxide (SO_2)	Annual arithmetic mean	-----	0.030 ppm (80 μg/m^3)	-----
	24 Hour	0.04 PPM (105 μg/m^3)	0.14 PPM (365 μg/m^3)	-----
	3 Hour	-----	-----	0.5 ppm (1300 μg/m^3)
	1 Hour	0.25 PPM (655 μg/m^3)	-----	-----
Visibility Reducing Particles	8 Hour (10 am to 6 pm, PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer – visibility of ten miles or more due to particles when the relative humidity is less than 70%.	No National Standards	
Sulfates	24 Hour	25 μg/m^3		
Hydrogen Sulfide	1 Hour	0.03 PPM (42 μg/m^3)		

NOTES:

1. California standards for ozone, carbon monoxide, sulfur dioxide (1- and 24-hour), nitrogen dioxide, respirable particulate matter (PM_{10}), and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.
2. National standards, other than ozone, fine particulate matter (PM2.5), and those based on annual averages or annual arithmetic mean, are not to be exceeded more than once a year. The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM2.5 the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national Policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar). Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
5. National Secondary Standards: The levels of quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. New national 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. The national 1-hour ozone standard continues to apply in areas that violated the standard. Contact U.S. EPA for further clarification and current national policies.

Source: California Air Resources Board

San Luis Obispo County was designated non-attainment for the state ozone standard in 1989 after adoption of the California Clean Air Act. The law required each non-attainment area to develop a plan to attain the standards expeditiously. The County achieved ozone attainment status granted by the California Air Resources Board (CARB) in January 2004, but is currently in non-attainment.

The following summary of local air quality concerns is from the SLOAPCD 2007 Air Quality Report:

> "In San Luis Obispo County, ozone and PM10 are the pollutants of main concern, since exceedences of state health-based standards for those are experienced here in most years; our county is designated as a non-attainment area for the state ozone and PM_{10} standards. Although most populated areas of San Luis Obispo County enjoyed good air quality during calendar year 2007, ozone levels exceeding both federal and state standards were measured on numerous days in north county inland areas due to locally formed as well as transported pollution. Exceedence days in Carrizo Plains, Red Hills, Atascadero, and Paso Robles were recorded for the federal and state 8-hour ozone standards.
>
> "Exceedences of the state 24 hour PM10 standard were recorded in Nipomo area. There was no measured exceedence of other air quality standards in 2007."

4.2.1.4 Existing Emissions

On a regional basis, ozone is the pollutant of greatest concern in San Luis Obispo County, particularly within the Coastal Plateau. Ozone is a secondary pollutant, formed in the atmosphere by complex photochemical reactions involving precursor pollutants and sunlight. The amount of ozone formed is dependant upon both the ambient concentration of chemical precursors and the intensity and duration of sunlight. Consequently, ambient ozone concentration tends to vary seasonally with the weather. Reactive Organic Gases (ROG), also called Reactive Hydrocarbons (RHC), and Nitrogen Oxides (NO_X) are the primary precursors to ozone formation. NO_X emissions result primarily from the combustion of fossil fuels; ROG emissions are also generated by fossil fuel combustion and through the evaporation of petroleum products.

Local concentrations of inert (non-reactive) pollutants (carbon monoxide [CO_2], ozone, PM_{10}) are primarily influenced by nearby sources of emissions, and thus, vary considerably between monitoring stations. SO_2 emissions are mainly concentrated around areas where large quantities of fossil fuels are either burned in electrical production or where petroleum products are refined.

The majority of GHG emissions, particularly CO_2 in San Luis Obispo County, are associated with combustion of fossil fuels related to energy production and transportation.

4.2.1.5 Naturally-Occurring Asbestos

The proposed project is located in an area that may contain naturally-occurring asbestos (NOA) according to the SLOAPCD. However, technical studies prepared for the project indicate that NOA does not exist within the project site (Kleinfelder 2009).

4.2.1.6 Climate Change

Climate change refers to any significant change in measures of climate such as temperature, precipitation, or wind, lasting for decades or longer (Environmental Protection Agency [EPA], 2007). Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); or,
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification, etc.)

Human activities, such as fossil fuel combustion and land use changes release CO_2 and other compounds, cumulatively termed GHGs. GHGs are effective in trapping infra-red radiation which otherwise would have escaped the atmosphere, thereby warming the atmosphere, the oceans, and earth's surface (EPA 2007).

GHGs are any gases that absorb infrared radiation in the atmosphere (EPA 2007). GHGs, as defined in Assembly Bill 32 (AB 32), include the following: CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). CO_2 is the GHG most likely to be produced by the proposed project, due to construction activities.

In California, the main sources of GHG emissions are from the transportation and energy sectors. According to the CARB draft GHG emission inventory for the year 2004, 39% of GHG emissions result from transportation and 25% of GHG emissions result from electricity generation.

According to the California Climate Change Portal (CCCP), the potential effects of future climate change on California resources include (CCCP 2007):

- **Air temperature:** Increases of three to 10.4 degrees Fahrenheit by the end of the century, depending on the aggressiveness of GHG emissions mitigation.
- **Sea level rise:** Increases of 6 to 30 inches by the end of the century, depending on the aggressiveness of GHG emissions mitigation.
- **Water resources:** Reduced Sierra snow pack, reduced water supplies, increased water demands, changed flood hydrology.
- **Forests:** Changed forest composition, geographic range, and forest health and productivity; increased destructive wild fires.
- **Ecosystems:** Changed habitats, increased threats to certain endangered species.
- **Agriculture:** Changed crop yields, increased irrigation demands, increased impacts from tropospheric ozone.

- **Public health:** Increased smog and commensurate respiratory illness and weather-related mortality.

4.2.2 Regulatory Setting

4.2.2.1 Federal Clean Air Act Amendments

Air quality protection at the national level is provided through the federal Clean Air Act Amendments (CAAA). President George Bush, Sr. signed the current version into law on November 15, 1990. These amendments represent the fifth major effort by the U.S. Congress to improve air quality. The 1990 CAAA are generally less stringent than the California Clean Air Act. However, unlike the California law, the CAAA set statutory deadlines for attaining federal standards. The 1990 CAAA added several new sections to the law, including requirements for the control of toxic air contaminants, reductions in pollutants responsible for acid deposition, development of a national strategy for stratospheric ozone and global climate protection, and requirements for a national permitting system for major pollution sources.

4.2.2.2 California Clean Air Act

The California Clean Air Act (CCAA) was signed into law in September of 1988. It requires all areas of the state to achieve and maintain the California ambient air quality standards by the earliest practicable date. These standards are generally more stringent than the federal standards; thus, emission controls to comply with state law are more stringent than necessary for attainment of the federal standards. The CAAA requires that all APCDs adopt and enforce regulations to achieve and maintain state ambient air quality standards for the area under its jurisdiction. Pursuant to the requirements of the law, the SLOAPCD adopted a Clean Air Plan (CAP) for their jurisdiction.

4.2.2.3 Assembly Bill 32

The California Global Warming Solutions Act of 2006 (AB 32, Health and Safety Code Sections 38500 et seq.) requires the ARB to design and implement emission limits, regulations, and other measures. These will reduce, by 2020, statewide GHG emissions in a technologically feasible and cost-effective manner to 1990 levels (representing a 25% reduction).

4.2.2.4 San Luis Obispo County Clean Air Plan

The 2001 SLO County Clean Air Plan (CAP) is used by the SLOAPCD to address attainment of national and state fugitive dust (PM_{10}) and ozone standards for the entire County (SLOAPCD 2004). The CAP is a comprehensive planning document intended to provide guidance to the APCD and other local agencies, including the County of San Luis Obispo, on how to attain and maintain the state standards for ozone and PM_{10}. The CAP presents a detailed description of the sources and pollutants which impact the jurisdiction, future air quality impacts to be expected under current growth trends, and an appropriate control strategy for reducing ozone precursor emissions, thereby improving air quality.

4.2.3 Thresholds of Significance

The significance of potential air quality impacts are based on thresholds identified within Appendix G of the CEQA *Guidelines* and standards established within the SLOAPCD CEQA Air Quality Handbook. The specifics of these guidelines are defined below.

4.2.3.1 CEQA Guidelines

Appendix G of the CEQA *Guidelines* provides the following thresholds for determining significance with respect to air quality. Air quality impacts would be considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable clean air plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or,
- Create objectionable odors affecting a substantial number of people.

4.2.3.2 SLOAPCD CEQA Air Quality Handbook

According to the CEQA Air Quality Handbook, project impacts may also be considered significant if one or more of the following special conditions apply:

- The project has the ability to emit hazardous or toxic air pollutants in the close proximity of sensitive receptors such that an increased cancer risk affects the population.
- The project has the potential to emit diesel particulate matter in an area of human exposure, even if overall emissions are low.
- Remodeling or demolition operations where asbestos-containing materials will be encountered.
- Naturally occurring asbestos has been identified in the project area.
- The project has the ability to emit hazardous or toxic air pollutants in the close proximity of sensitive receptors such as schools, churches, hospitals, etc.
- The project results in a nuisance odor problem to sensitive receptors.

The CEQA Air Quality Handbook also defines specific thresholds for long-term operational emissions and short-term construction related emissions. Depending on the level of exceedance of a defined threshold, the APCD has established varying levels of mitigation. The proposed project involves only temporary construction activities; therefore, only short-term construction emission thresholds are relevant and described below.

Short-term Construction Emissions Thresholds

Use of heavy equipment and earth-moving operations during project construction can generate fugitive dust and combustion related emissions that may have substantial temporary impacts on local air quality. Fugitive dust emissions would result from land clearing, demolition, ground excavation, cut and fill operations, and equipment traffic over temporary roads at the project

site. Combustion emissions, such as NO_X and diesel particulate matter, are most significant when using large diesel fueled equipment.

By using emission estimates established by the APCD for specific equipment types and gathering information pertaining to each construction activity, an evaluation can be made as to whether or not a significant impact will occur and what level of mitigation is required to lessen the impact to a level of insignificance. Examples of information required to calculate construction emissions are type and number of equipment to be used, estimated fuel use, emission factors for each piece of equipment, volume of material to be moved, number of hours per day, and the total number of days each piece of equipment will be operated. Because this type of detailed construction equipment information is often not yet available during the EIR process, the APCD has developed an alternative method for calculating construction emissions based on the amount of earthwork involved for a particular project. Table 4.2-2 summarizes the level of emissions requiring mitigation.

Table 4.2-2. Level of Construction Activity Requiring Mitigation

Pollutant	Emissions		~~Amount of Material Moved~~	
	Tons/Qtr	Lbs/day	~~Cu. Yds/Qtr~~	~~Cu. Yds/Day~~
ROG and NOx (combined)	2.5	137~~185~~	~~247,000~~	~~9,100~~
	~~6.0~~	~~185~~	~~593,000~~	~~9,100~~
~~NO_X~~	~~2.5~~	~~185~~	~~53,500~~	~~2,000~~
	~~6.0~~	~~185~~	~~129,000~~	~~2,000~~
PM_{10}	2.5		~~Any project with a grading area greater than 4.0 acres of continuously worked area will exceed the 2.5-ton PM_{10} quarterly threshold. Combustion emissions should always be calculated based upon the amount of cut and fill expected.~~	
Greenhouse Gases	Not Yet Established			

Note: All calculations assume working conditions of 8 hours per day, 5 days per week, for a total of 65 days per quarter.

Source: County of San Luis Obispo APCD CEQA Air Quality Handbook, 2009~~3~~

GHG Thresholds

No formal statewide or local guidance currently exists for determining climate change thresholds of significance for construction projects such as the one proposed. There is no legally adopted threshold for what emission levels constitute a significant amount. For purposes of this EIR, GHG thresholds are similar to the short-term combustion emissions thresholds in the SLOAPCD Handbook for pollutants such as ROG and NOx. In other words, if the project would exceed the ROG and NOx thresholds and result in a significant impact, then it would also result in a significant GHG impact.

4.2.4 Impact Assessment and Methodology

The APCD has established four separate categories of evaluation for determining the significance of air quality emissions. Full disclosure of the potential air pollutant and/or toxic air emissions from a project is needed for these evaluations, as required by CEQA. The evaluation categories include:

- Comparison of calculated project emissions to APCD emission thresholds;
- Consistency with the most recent CAP for the County;
- Comparison of predicted ambient pollutant concentrations resulting from the project to state and federal health standards, when applicable; and
- The evaluation of special conditions that apply to certain projects.

Impacts have been analyzed using a reasonable "worst-case" analysis approach for air quality resources. The specific methodologies of each "worst-case" approach are described within the Project-Specific Impacts and Mitigation Measures of each section of this chapter and/or the project description, as applicable. Emission estimates for the proposed project have been determined through the following:

- Consultation with the County of San Luis Obispo APCD;
- Use of the County of San Luis Obispo APCD CEQA Air Quality Handbook (April 2003);
- Use of the County of San Luis Obispo APCD Clean Air Plan (December 2001);
- Use of established emission factors that quantify the amount of emissions of a pollutant per unit time or energy volume;
- Mass emission estimates that quantify the amount of emissions of a pollutant in pounds per cubic yard of earthwork; and,
- Discussions with the project proponent regarding potential construction techniques.

Project components, particularly Alternative 3c, may occur as many as five or ten years subsequent to the preparation of this EIR; therefore, specific information regarding construction equipment usage is unknown. However, conceptual project construction schedules were estimated and short-term construction related emissions were assessed using the URBEMIS modeling software. The URBEMIS data sheets can be found in Appendix C.

URBEMIS is a software program which uses land use emissions inventory models to estimate GHG and criteria pollutant emissions, such as PM_{10}, ROG, and NOx under particular scenarios involving construction area and other sources. It has been designed specifically for California. The software allows users to enter project-specific data, including construction schedules, time of year during which construction would occur, the number and type of equipment to be used, and other factors such as the amount of material to be moved, and the distance required to haul material.

4.2.5 Project-Specific Impacts and Mitigation Measures

4.2.5.1 Short-term Construction Emissions

Short-term construction emissions would result from earthwork associated with sediment management, levee raising, and secondary project components such as the UPRR bridge raising. They include combustion and fugitive dust emissions. Potential construction and earthwork associated with each of the project components is described below. Because the County is in non-attainment for PM_{10}, the SLOAPCD requires Best Management Practices (BMPs) for all projects involving earthmoving activities regardless of the project size or duration.

The potential combustion emissions for those components below that would require significant earthwork is shown in Table 4.2-3. These emissions are based on the URBEMIS modeling. It should be noted that the haul distances associated with the import and export of material could have a significant effect on emissions for each project component. For purposes of the modeling, a haul distance of 10 miles (20 miles round trip) was assumed. Further, it was assumed that each truck would carry 10 cubic yards because the site constraints would make it difficult to use double-trailer trucks. An exception was made for the UPRR bridge raise area, where access is better and double trailers could be used. In that area, each truck would carry approximately 18 cubic yards of material.

Vegetation and Sediment Management

The vegetation management component of the proposed project would occur primarily with handtools. Use of heavy machinery would be limited. No burning of vegetation is proposed. No significant construction emissions would result from implementation of this component.

Sediment management would include two distinct activities, the initial removal, and subsequent annual maintenance. The initial action would result in the removal of approximately 21,000 cubic yards of sediment, using an excavator and haul trucks. Given the intensive biological mitigation measures required for the project, and other constraints, such as the limited work area and length of the corridor, removal may occur relatively slowly. The activity would occur in approximately 30 working days.

An approved disposal site for the removed material has not been identified at this time. There are currently no known disposal locations in the area capable of accepting 21,000 cubic yards of soil, although it may be possible to use the material for the levee raise components. Other locations may include the Oceano Airport property. If a local disposal option is not identified, the material would need to be transported over 10 miles from the project site.

The use of heavy machinery would occur in close proximity to existing residences on the north side of the levee system. The majority of the potentially affected residences are located north of the Arroyo Grande Creek channel between 22nd Street and Calle Uno, and on the north side of the Los Berros Creek channel, west of Valley Road.

Sediment removal would potentially be required over the long-term if significant quantities of fine materials are deposited in the secondary channel. The volume of sediment to be removed during annual maintenance would be considerably less than the initial sediment removal, would vary from year to year, and in some years may not be required at all. Heavy machinery for annual maintenance would be limited to one excavator with bucket and dump trucks. Material would be hauled to an approved disposal area. There is little potential that these annual activities would result in the removal of more than 2,000 cubic yards in any given year, and

therefore the thresholds of Table 4.2-2 would not be exceeded. Fugitive dust could be generated by annual maintenance activities. In addition, the activities would occur in close proximity to residences.

Alternative 3a and 3c Levee Raise

Both of the levee raise components would involve substantial earthwork. Alternative 3a would require earthwork including over excavating the existing levee in some places, and placement of new fill. In some cases, portions of the toe of the levee may need to be expanded as well. Total fill required to implement this component is approximately 14,350 cubic yards. The biological mitigation required will be intensive for this project and the levee raise is not necessary along the entire portion of the channel; therefore, earthwork may progress relatively slowly (compared to mass grading for a subdivision, for example). Equipment for this component would include a loader, grader, and haul trucks. Similar to the sediment management component, the levee raise would occur in close proximity to residences. It is assumed that this work would occur over a 25 day work schedule.

Alternative 3c construction techniques would be similar to those described for Alternative 3a, although earthwork would be more substantial, requiring up to 67,000 cubic yards of fill. It is assumed that this work would occur over a 100 day work schedule.

Secondary Components

As described in the Project Description, these construction activities would be required if Alternative 3c is implemented.

Union Pacific Railroad Bridge Replacement

The bridge replacement would require extensive earthwork. Estimates indicate that up to 3 acres could be disturbed and 135,000 cubic yards of cut and fill (total) would be required. This activity would occur in proximity to some residences, although the bridge is downstream from the majority of the residences located in the project area. It is assumed that earthwork would occur over a 60 day work schedule.

Structure Encroachment

These activities would require construction of retaining walls, flood walls, or would require the relocation or demolition of structures. They would not require significant earthwork by heavy machinery.

22nd Street Bridge Modification

This activity requires modifications to the bridge structure, but significant earthwork would not be required.

Table 4.2-3. Potential Short-term Construction Emissions (10-mile haul)

Project Component	Duration (days)	Earthwork (yds.3)	Emissions Produced (lbs/day)				
			ROG	NOx	CO_2	PM_{10}	$PM_{2.5}$
Sediment Removal	30	21,000	4	56	7,134	102	46
Alternative 3a	25	14,350	4	51	6,297	341	146
Alternative 3c	100	67,000	4	39	6,802	81	36
UPRR Bridge Raise	60	135,000	5	53	11,104	268	115
Sediment Removal (20-mile haul)	30	21,000	7	97	12,770	209	49

Source: URBEMIS modeling (Refer to Appendix C)

Based on the data shown in Table 4.2-3, the project components would not result in short-term construction emissions that exceed thresholds for ROG and NOx (185 lbs/day). However the factors used to determine these emissions are preliminary as construction schedules are not known at this time.

Based on the results of the 10-mile haul emissions versus the 20-mile haul emissions for sediment removal detailed in Table 4.2-3, haul distances are a significant factor. Construction aggregate is currently available at a surface mine on Highway 227, approximately 7 miles from the site, and near the Santa Maria River, approximately 10 miles from the project site. It is approximately 30 miles to large aggregate producers in northern San Luis Obispo County. In the event that long haul distances are required, or that construction schedules differ significantly from those used in this analysis, the proposed project could result in significant air quality impacts, and mitigation may be necessary to reduce impacts to a less than significant level.

AQ Impact 1 **Short-term construction emissions resulting from the implementation of the initial sediment management, Alternative 3a and Alternative 3c, and the UPRR bridge raise would potentially exceed ROG and NOx thresholds and produce significant CO_2, a GHG.**

Mitigation Measures

AQ/mm-1 *Prior to issuance of construction permits for any project component~~initiation of the initial sediment removal, construction of Alternative 3a, construction of Alternative 3c, and the UPRR bridge raise,~~ a Construction Activities Management Plan (CAMP) shall be submitted for review and approval by the SLOAPCD. The CAMP shall evaluate the actual equipment that will be used and scheduling and overlapping of the various phases and compare the resulting impacts to the APCD air quality impact thresholds to determine if exceedances are expected and, if so, to define specific mitigation that will be implemented to reduce impacts below the thresholds. The plan shall describe the construction schedule, equipment to be used, and identify the distances to disposal sites or from fill sites, as applicable. Based on those factors, if*

necessary, the SLOAPCD shall prescribe which Best Available Control Technology shall be incorporated into the CAMP. Applicable technologies shall address GHG as well, and may include:

a. *Minimizing the number of large pieces of construction equipment operating during any given period.*

b. *Regularly maintaining and properly tuning all construction equipment according to manufacturer's specifications.*

c. *Fueling all off-road and portable diesel powered equipment including, but not limited to: bulldozers, graders, cranes, loaders, scrapers, backhoes, generators, compressors, and auxiliary power units with CARB motor vehicle diesel fuel.*

d. *Using 1996 or newer heavy duty off road vehicles.*

e. *Electrifying equipment where possible.*

f. *Using Compressed Natural Gas (CNG), liquefied natural gas (LNG), bio-diesel, or propane for on site mobile equipment instead of diesel-powered equipment.*

g. *Ensuring that on and off-road diesel equipment shall not be allowed to idle for more than five minutes.*

h. *To the greatest extent practicable, using Purinox or similar NOX reducing agents diesel fuel.*

i. *To the greatest extent feasible, installing catalytic reduction units on all heavy equipment performing this work.*

Residual Impact

While these measures have been developed to reduce ROG and NOx emissions, some, such as the idling limitation may also effectively reduce CO_2 (GHG) production. With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

AQ Impact 2 **Short-term construction emissions would occur in close proximity to sensitive receptors.**

Mitigation Measures

AQ/mm-2 *To minimize the impacts of diesel emissions on sensitive receptors construction activities shall be limited as follows:*

a. *Excavation shall occur from the southern levee (opposite existing residences) to the extent feasible;*

b. *Stockpile locations and staging areas shall be located at least 1,000 feet from sensitive receptors to the extent feasible; ~~and~~*

c. Haul routes that avoid sensitive receptors shall be considered to the extent feasible;.

d. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;

e. Diesel idling within 1,000 feet of sensitive receptors is not permitted;

f. Use of alternative fueled equipment is recommended whenever possible;

g. Signs that specify the no idling requirements must be posted and enforced at the active project locations; and,

h. These toxic impact reductions for sensitive receptors shall be added to the CAMP as well.

Residual Impact

With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

AQ Impact 3 Short-term construction emissions would potentially include fugitive dust (PM_{10}) emissions.

Mitigation Measures

AQ/mm-3 *Prior to construction of any of the project components requiring earthwork, the most current BMPs to reduce fugitive dust emissions shall be shown on all project plans and implemented during daily earth moving activities. Particulate matter shall be addressed in the CAMP as well. BMPs shall specifically address potential fugitive dust emissions which may affect adjacent agricultural operations.*

Residual Impact

With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

4.2.5.2 Hazardous Air Pollutants

Demolition or relocation of existing structures or pipelines located within the project area would be avoided to the extent feasible, although there may be some cases, particularly the Alternative 3c levee raise where structures would need to be demolished or relocated. This may be true of utilities as well. These activities have the potential to negatively impact air quality. The possibility exists that these older structures or utilities could include asbestos-containing building materials or other hazardous building materials. Demolition and remodeling activities would be subject to the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (NESHAP) pertaining to demolition activities.

AQ Impact 4 **Demolition and relocation activities have the potential to result in adverse air quality impacts associated with hazardous building materials.**

Mitigation Measures

AQ/mm-4 *Prior to commencement of demolition activities the applicant shall:*

a. *Notify the APCD at least ten working days prior to commencement of any demolition activities;*

b. *Conduct an asbestos survey by a Certified Asbestos Inspector;*

c. *Use applicable disposal and removal requirements for any identified asbestos containing material; and*

d. *Contact the SLOAPCD Enforcement Division prior to final approval of any demolition activity.*

Residual Impact

With implementation of this measure, the impact would be *less than significant*. No additional mitigation is required.

4.2.5.3 Consistency with the Clean Air Plan

Generally a project would be consistent with the CAP if the answer to the following questions is "yes":

1. Are the population projections used in the plan or project equal to or less than those used in the CAP for the same area?

2. Is rate of increase in vehicle trips and miles traveled less than or equal to the rate of population growth for the same area?

3. Have all applicable land use and transportation control measures from the CAP been included in the plan or project to the maximum extent feasible?

However these questions are not necessarily relevant to the proposed project. The project would not result in any additional trip generation, vehicle miles travelled, or increases in housing or employment. The proposed project is a construction and maintenance project and no new structures are proposed. Therefore transportation and land use management strategies in the CAP intended to reduce vehicle miles travelled or increase transit ridership, for example, are not necessarily relevant.

Compliance with the district rules and regulations is also required for a project to be consistent with the CAP. Regulations concerning developmental burning, dust control, naturally occurring asbestos, and hazardous air pollutants associated with demolition activities are relevant to the proposed project. The mitigation measures recommended in this and/or other sections of the EIR require compliance with those rules and regulations; therefore *the proposed project is consistent with the CAP* in this respect.

4.2.6 Cumulative Impacts

Potential construction-related air quality impacts are location-specific to the extent that they may temporarily result in significant impacts on the localized environment, but they are not "cumulative" in the sense normally applied in CEQA documents. The only longer-term "operational" contributions to emissions would be those associated with annual sediment maintenance activities. Those impacts are less than significant as they may not occur every year and would involve the movement of less than 2,000 cubic yards in a single day. Therefore, the cumulative impacts related to these issues and mitigation measures that have been previously identified for the components of the proposed project would apply cumulatively as well. The proposed projects contribution to cumulative impacts would be *less than significant.* No additional mitigation measures are required.

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4.3 BIOLOGICAL RESOURCES

This section evaluates potential impacts to biological resources within the project area. The analysis considers sensitive habitats, plant, and animal species that are either known to occur, or have the potential to occur, within the project corridor. Potential short-term and long-term impacts to biological resources, based on the proposed construction and maintenance activities included in the Waterway Management Program (WMP). For those instances where potential impacts to sensitive biological resources may occur, mitigation measures and best management practices have been proposed with the objective of avoiding or minimizing impacts.

The information presented within this section is based on a compilation of several previous biological studies conducted within or in the vicinity of the project corridor, and additional focused surveys conducted by SWCA biologists from 2008 to 2009. The primary documents used in preparation of this section include the following:

- Botanical Survey Report for the Arroyo Grande Creek Waterway Management Plan; SWCA Environmental Consultants, 2008.
- Preliminary Jurisdictional Determination for the Arroyo Grande Creek Waterway Management Plan; SWCA Environmental Consultants, 2009.
- Arroyo Grande Creek Management Plan Update; Central Coast Salmon Enhancement Group, 2009.
- Final Biotic Assessment for the Arroyo Grande Creek Flood Control Project; Biotic Resources Group, 2006.
- Habitat Assessment for the Arroyo Grande Creek Flood Control Project; Essex Environmental, 2000.

4.3.1 Existing Conditions

The project corridor is a linear corridor generally following the location of the lower reaches of Arroyo Grande Creek, from near the intersection of Los Berros Creek to the Arroyo Grande lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. Historically, the project corridor was a part of a large alluvial valley where sediment from the upper watershed was transported and deposited onto the broad floodplains within Oceano, referred to as the Cienaga Valley. Since the early 1800s this area has been developed and altered by humans to create more farmland on the rich alluvial deposits. The project corridor is best described as 3.5 miles of trapezoidal channel along Arroyo Grande Creek and Los Berros Creek, primarily surrounded by agricultural, commercial, and residential land uses. Natural features within the vicinity of the project corridor include the Oceano Lagoon immediately north, the Oceano Dunes located to the south, and the Pacific Ocean to the west.

Overall, the project corridor is generally flat at approximately 25 to 60 feet above sea level (asl) in elevation. The mild Mediterranean climate of the area and coastal influence produce summer temperatures averaging 59.9 to 72.4 degrees Fahrenheit ($^{\circ}$F), winter temperatures averaging 41.6 to 60.8°F, and annual precipitation averaging 15.6 inches.

The *Soil Survey Geographic* (SSURGO) *database for San Luis Obispo County, California* identifies the occurrence of three separate soil units within the project corridor (United States Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS]; December 12, 2007). According to the NRCS database, the property contains Mocho variant fine sandy loam, Mocho fine sandy loam. Both of these soils types belong to the Mocho Series. The property also contains Marimel silty clay loam, which belongs to the Marimel Series. None of the soils present are listed as NRCS hydric soils. A more detailed description of soil characteristics are in Section 4-5, Geology and Soils.

4.3.1.1 Environmentally Sensitive Habitat Area

The California Coastal Act defines Environmentally Sensitive Habitat Areas (ESHA) as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments." Under this definition, unique plant habitats; rare and endangered animal habitats; wetlands; coastal streams; rocky points; intertidal areas; and kelp beds are typically considered ESHAs. Based on this definition, the various jurisdictional waters, Arroyo Grande Creek, and the California Natural Diversity Database (CNDDB) special communities that occur in the project corridor described below and which also occur within the Coastal Zone (approximately downstream of the Union Pacific Railroad [UPRR] line), are ESHAs.

4.3.1.2 Plant Communities

The project corridor is situated within the Central Coast subregion of the Central Western California floristic province (Hickman 1993). Comprehensive botanical field surveys were conducted by SWCA biologists on May 29, June 27, and September 5, 2008 following United States Fish and Wildlife Service (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2000) and California Department of Fish and Game (CDFG) *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG revised 2000) (SWCA 2009). During this time, SWCA biologists compiled a list of plant species which occur within the project corridor, identified any special-status plant species occurring on-site, and updated the existing plant community map which was originally conducted for the *Biotic Assessment*, prepared for the *Arroyo Grande Creek Flood Control Project* by Biotic Resources Group (2006).

Based on the results of the botanical field surveys, the project corridor includes six generalized plant communities. The general location of these communities in relation to the project elements is depicted in Figures 4.3-1 through 4.3-3. A description of those plant communities which are found within the project corridor is provided in the following section.

Within the six plant communities, a total of 113 plant species were identified within the project corridor. Overall, identified plant species consisted of 47 (41.5 percent) native taxa and 66 (58.5 percent) non-native naturalized taxa. The percentage of non-native taxa is greater than for the State as a whole, which is approximately 17.4 percent (Allen-Diaz 2000), reflecting the relatively high level of colonization by non-native species within the project corridor.

Figure 4.3-1. Habitat Map

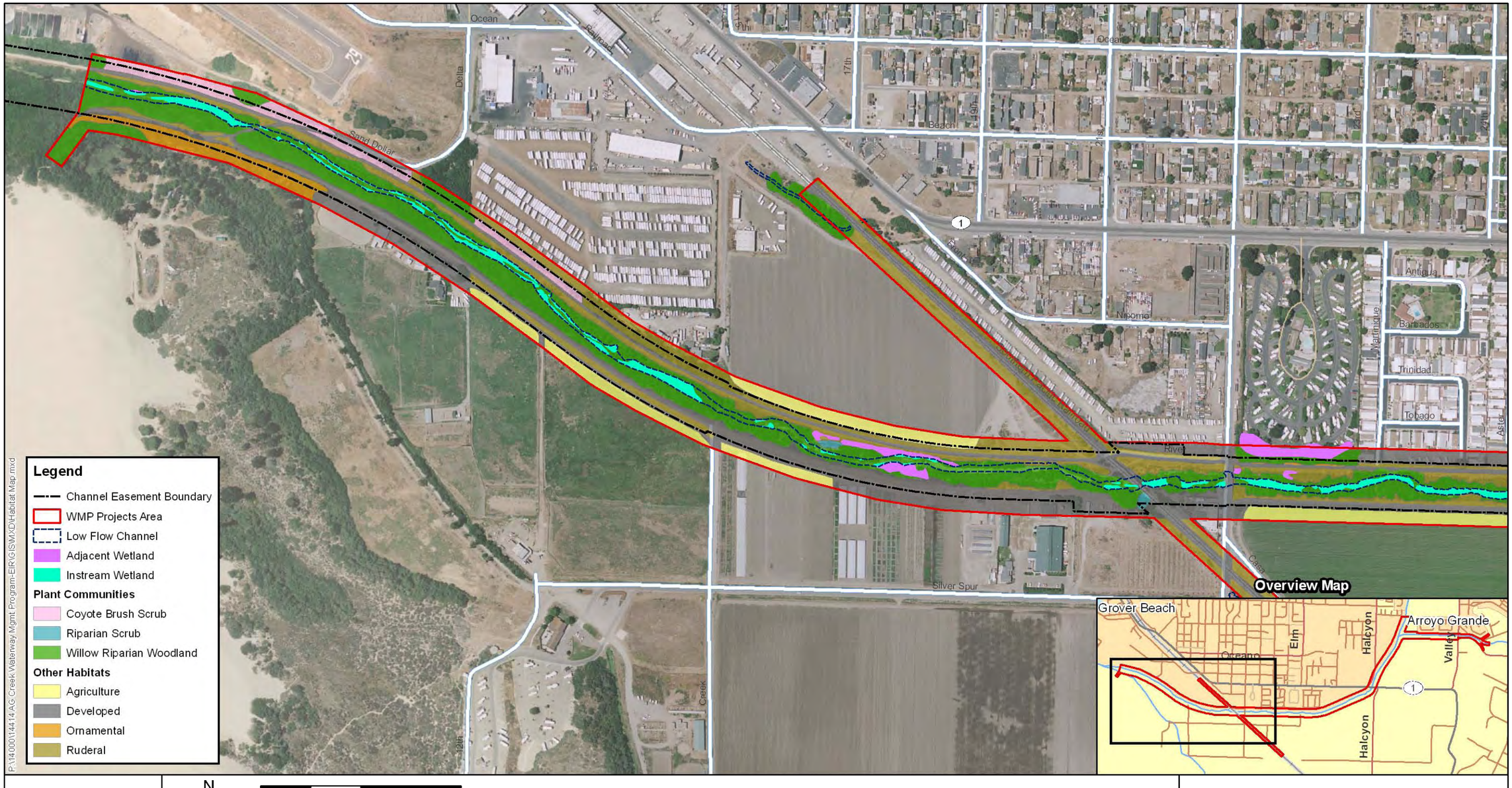

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Figure 4.3-2. Habitat Map

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Figure 4.3-3. Habitat Map

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Willow Riparian Woodland

Willow riparian scrub within the project corridor is largely limited to the banks of Arroyo Grande Creek. This area was historically associated with a much larger complex of riparian woodland vegetation prior to farming from the late 1800s to the present, and the channelization of Arroyo Grande Creek. The vegetation within this plant community is largely dominated by arroyo willow (*Salix lasiolepis*) and red willow (*S. laevigata*) with scattered occurrences of black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), American dogwood (*Cornus sericea*), box elder (*Acer negundo* var*. californica*), blue elderberry (*Sambucus mexicana*), and western sycamore (*Platanus racemosa*). Previous maintenance activities implemented within the channel have resulted in this habitat being thinned out, although regrowth of willow has occurred rapidly (refer to Photos 4, 5, and 6 in Appendix WMP).

The understory is limited to shrubs and herbaceous species, most of which are non-native. Typical species observed include curly dock (*Rumex crispus*), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativa*), summer mustard (*Hirschfeldia incana*), mallow (*Malva neglecta*), castor bean (*Ricinus communis*), and garden nasturtium (*Tropaeolum majus*). Native species include coyote brush (*Baccharis pilularis*), creek clematis (*Clematis* sp.), toyon (*Heteromeles arbutifolia*), and California blackberry (*Rubus ursinus*). Occurrences of invasive, non-native plant species were also observed along Arroyo Grande Creek; stands of giant reed (*Arundo donax*), and pampas grass (*Cortaderia jubata*) occur amid the willow-dominated woodland.

Riparian Scrub

A few small areas along the banks of Arroyo Grande Creek lack dominant mature willow vegetation to qualify as willow riparian woodland, described above. These areas are better described as riparian scrub, in which the dominant plant species are young willows and includes an understory that varies from shrubby to impenetrable. Understory species within the project corridor includes young willows, intermixed with common California aster (Aster *chilensis*), coyote brush, Italian ryegrass (*Lolium multiflorum*), and Himalayan blackberry (*Rubus discolor*).

In-Stream Wetlands

In-stream wetlands exist within various portions of the Arroyo Grande Creek channel. Some of these areas are dominated by large expanses of wetland vegetation which covers the entire creek channel. Dominant vegetation within these areas consists of watercress (*Rorippa nasturtium-aquaticum*) and water smartweed (*Polygonum* spp.). Along the edges of the creek banks, species such as cocklebur (*Xanthium strumarium*), bristly ox-tongue (*Picris echioides*), curly dock, and Pacific silverweed (*Potentilla anserina* ssp. *pacifica*) are found. Those areas within the channel that lack the aquatic vegetation are expected to be open water habitat in the presence of water.

In-stream wetlands also exist within several small backwater areas that are occasionally flooded when water flows exceed the Ordinary High Water Mark (OHWM) and inundates adjacent depressions. Vegetation in these areas is dominated by stands of cattail (*Typha* sp.), bur-reed (*Sparganium eurycarpum*), bulrush (*Scirpus americanus*), and sedge (*Cyperus* sp.).

Coyote Brush Scrub

Coyote brush scrub habitat is found along some of the outer slopes of the levees along the lower reaches of Arroyo Grande Creek. The dominant plant species is coyote brush, yet also includes other disturbance-adapted species such as fennel, summer mustard, Kikuyu grass (*Pennisetum clandestinum*), and Himalayan blackberry.

Non-native (Ruderal) Grassland

Several of the levee slopes along Arroyo Grande Creek are dominated by ruderal (disturbed) grassland species. Plant species are typical of previously disturbed areas and are dominated by non-native plant species. Typical species within the project corridor are wild radish, telegraph weed (*Heterotheca grandiflora*), fennel, summer mustard, Kikuyu grass, Italian ryegrass, bull mallow (*Malva neglecta*), and Himalayan blackberry. Native plant species are scattered within the grassland and include common California aster, coyote brush, California poppy (*Eschscholzia californica*), and mugwort (*Artemisia douglasiana*). The project corridor also supports scattered plants of mission cactus (*Opuntia ficus-indica*).

Ornamental Vegetation

Ornamental plant species within the project corridor are located adjacent to residential areas and include Monterey pine (*Pinus radiata*), myoporum (*Myoporum laetum*), blue gum eucalyptus (*Eucalyptus globulus*), and weeping willow (*Salix babylonica*). Other landscape plants include mallow (*Sidalcea* sp.), geranium (*Geranium* sp.), and English ivy (*Hedera helix*).

Agriculture

Portions of agricultural fields occur within and adjacent to the project corridor and consist of crop plants when actively farmed, occasionally with weedy, mostly non-native vegetation when left fallow.

4.3.1.3 Wildlife

General wildlife surveys were conducted in conjunction with SWCA's botanical surveys in 2008. Detection methods included direct observation with binocular, examination and identification of tracks, scats, burrows/diggings, and carcasses/skeletal remains; and identification of vocalizations (calls and songs). Survey results were supplemented with previously published biological reports, regional and local species distribution references, and consultation with the USFWS and CDFG to determine which species occur or potentially occur within the project corridor. It should be noted that accurate assessment of wildlife populations would require extended periods of site research, trapping, and census taking. It is particularly difficult to detect nocturnal, rare, or reclusive species to obtain accurate estimates of population size and geographical distribution. Other complications in the quantitative assessment of vertebrate (and invertebrate) populations include:

- Many species may occur in the area only for short periods during migrations;
- Many species of amphibians and reptiles become inactive during one or more seasons; and,
- Seasonal or annual fluctuations in climate or weather patterns may confound observations.

The principal wildlife habitat that would be potentially impacted by proposed project activities include those plant communities previously discussed, in addition to Open Water Habitat (not a plant community). Typical wildlife species found in association with each of these cover types are discussed below. Further detailed discussion on sensitive wildlife species is included in Section 4.3.1.7.

Willow Riparian Woodland and Riparian Scrub

Riparian habitats support a wide diversity of wildlife due to the availability of important features such as nesting sites, escape and thermal cover, food, and dispersal corridors. Animal species that utilize riparian habitat include, but are not limited to, species such as striped skunk (*Mephitis mephitis*), coyote (*Canus latrans*), raccoon (*Procyon lotor*), dusky-footed woodrat (*Neotoma fuscipes*), Virginia opossum (*Didelphis virginianus*), common garter snake (*Thamnophis sirtalis*), and Pacific chorus frog (*Pseudacris regilla*). Some of the more common birds expected to nest in this habitat include, but are not limited to California towhee (*Pipilo crissalis*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), song sparrow (*Melospiza melodia*), spotted towhee (*Pipilo maculatus*), Pacific-slope fly catcher (*Empidonax difficilis*), western scrub jay (*Aphelocoma californica*), Bewick's wren (*Thryomanes bewickii*), Anna's hummingbird (*Calypte anna*), Wilson's warbler (*Wilsonia pusilla*), and American robin (*Turdus migratorius*).

In-Stream Wetlands and Open Water

In-stream wetlands and open water habitat include the active channel of the project corridor. Water flow is regulated by Lopez Dam and varies during seasonal rainfall activity. In-stream wetlands include those areas with some emergent or aquatic vegetation. Areas devoid of vegetation are considered open water. Animal species which utilize these habitats include, but are not limited to, semi-aquatic species such as Pacific chorus frog, California red-legged frog (*Rana draytonii*), and southwestern pond turtle (*Actinemys marmorata pallida*). Aquatic species expected to utilize this habitat include south-central California coast steelhead (*Oncorhynchus mykiss irideus*), tidewater goby (*Eucyclogobius newberryi)*, three-spine stickleback (*Gasterosteus aculeatus*), and speckled dace (*Rhinichthys osculus*). It is also important to mention that in-stream wetlands and open water habitat is being utilized by American beaver (*Castor canadensis)* throughout the channel, with beaver dams constructed in some locations.

Coyote Brush Scrub

Due to the moderate cover provided by coyote brush, this habitat type provides nesting and foraging habitat for a variety of smaller bird species such as California towhee (*Pipilo crissalis*), spotted towhee, song sparrow, bushtit, Bewick's wren, and white-crowned sparrow (*Zonotrichia leucophrys*). Shrubs within this habitat also provide shade and shelter for several reptilian and mammalian species. Common reptiles include species such as western fence lizard (*Sceloporus occidentalis*), western rattlesnake (*Crotalus viridis*), and western whiptail (*Cnemidophorus tigris*). Mammalian species expected to occur within this habitat includes desert cottontail (*Sylvilagus audubonii*), raccoon, opossum, striped skunk, dusky-footed woodrat, and coyote.

Non-native (Ruderal) Grassland

Several of the levee slopes along Arroyo Grande Creek are dominated by ruderal (disturbed) grassland species. The wildlife habitat values provided by this community are dependent on the level of on-going disturbance and the type of plants present. Annual grasslands provide foraging habitat for small mammals such as voles (*Microtus* spp.) and white-footed mice (*Peromyscus* spp.). Predators including red-tailed hawk, white-tailed kite, American kestrel, and Cooper's hawk may also utilize annual grassland for foraging habitat. Overall, most ruderal habitat within the project corridor receives regular disturbance and is expected to provide only minimal habitat for wildlife.

Ornamental

This habitat encompasses a very small portion of the project corridor. Wildlife use of ornamental species is expected to be low because most are only single shrubs or trees interspersed among an otherwise urbanized and developed area providing little vegetative cover for wildlife. Urban adapted species such as scrub jay, northern mockingbird (*Mimus polyglottos*), house sparrow (*Passer domesticus*), Brewer's blackbird (*Euphagus cyanocephalus*), mourning dove (*Zenaida macroura*), and European starling (*Sturnus vulgaris*) may use the ornamental areas for perches, foraging, and potential nesting sites. Ornamental plant species may also provide suitable roosting sites for various raptor species, including red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and Cooper's hawk (*Accipiter cooperii*).

Agriculture

Agricultural fields, because of regular disturbance, do not typically support habitat for sensitive wildlife species in this particular region of San Luis Obispo County. Common wildlife species adapted to disturbance that may be encountered in agricultural fields include western fence lizard, Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (Spermophilus beecheyi), and American crow (*Corvus brachyrhynchos*).

4.3.1.4 Jurisdictional Waters

A Preliminary Jurisdictional Determination was prepared for the project on October 9 and 31, and November 6 2008, and September 23 2009, by Jon Claxton and Bob Sloan, SWCA biologists (SWCA 2009). Wetland delineation efforts utilized the routine delineation methodology described in the 1987 United States Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987), as supplemented in the *Final Arid West Supplement Version 2.0* (Environmental Laboratory 2008), and other relevant literature. Jurisdictional features, including OHWM and top-of-bank/edge of riparian canopy, were mapped using a Trimble® Pathfinder Global Positioning System (GPS) capable of sub-meter accuracy. Jurisdictional boundaries for the CDFG and for the California Coastal Commission (CCC) were mapped where applicable. All mapped jurisdictional boundaries are shown on Figures 4.3-4 through 6.

U.S. Army Corps of Engineers Jurisdictional Areas

The site investigation identified a total of 11.1 acres potentially subject to USACE jurisdiction under Section 404 of the Clean Water Act. USACE jurisdictional determinations were based on the presence/absence of wetland indicators, definable OHWM's, and connectivity to relatively permanent waters. Potentially jurisdictional areas include all wetland and other waters areas located within the OHWM of both creek channels (10.1 acres), and areas mapped as adjacent wetlands outside the OHWM (0.99 acres).

Figure 4.3-4. Preliminary Jurisdictional Determination

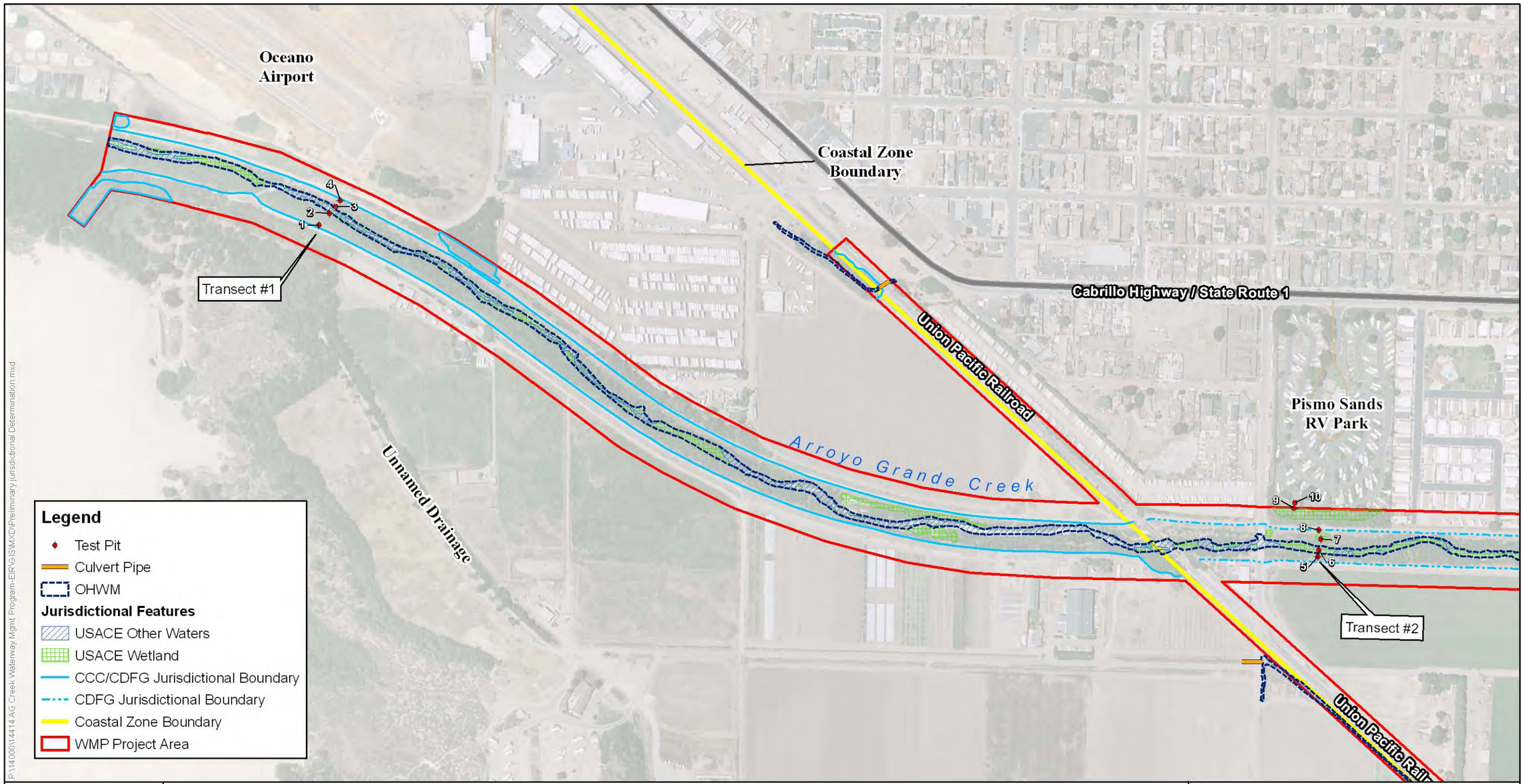

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Figure 4.3-5. Preliminary Jurisdictional Determination

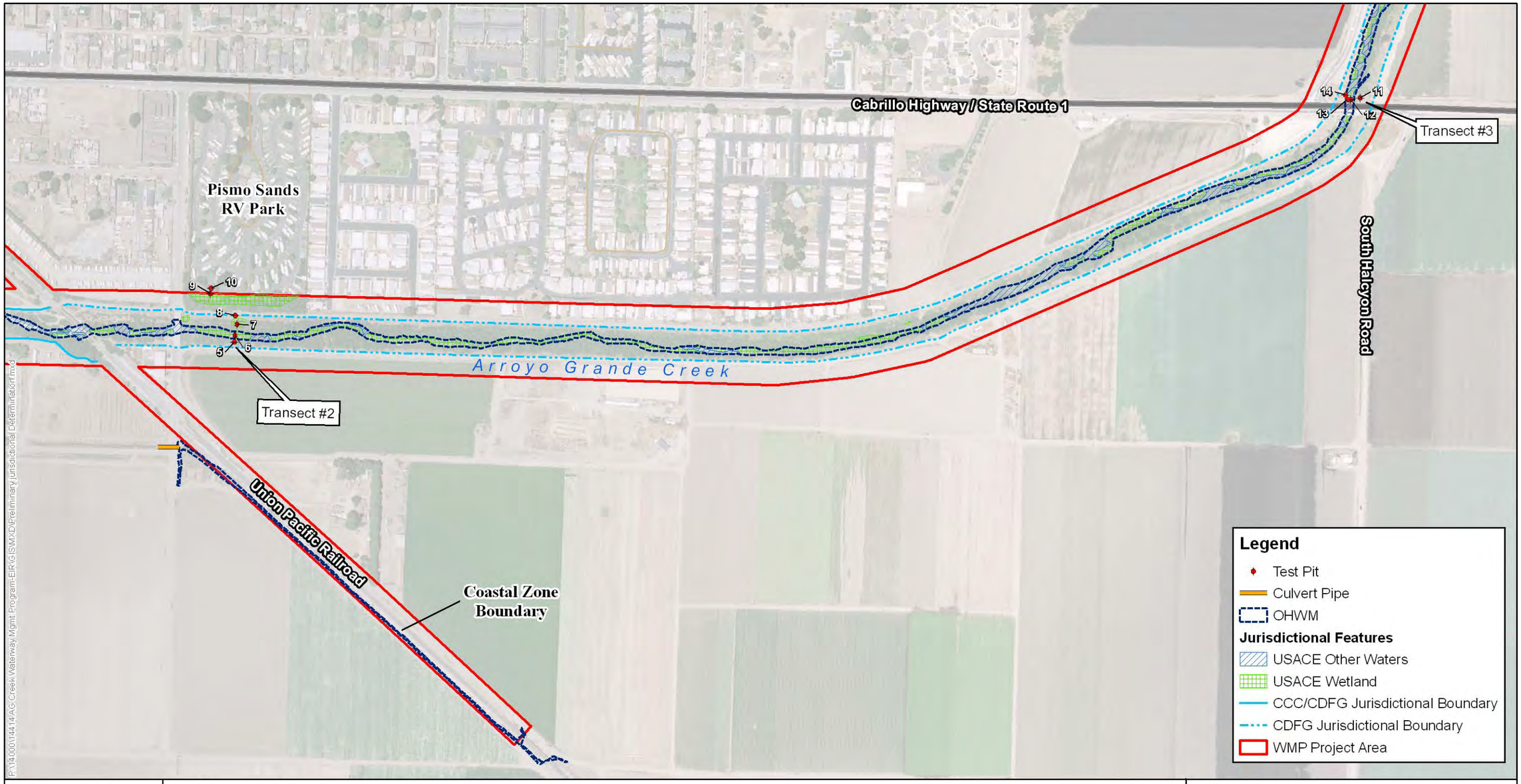

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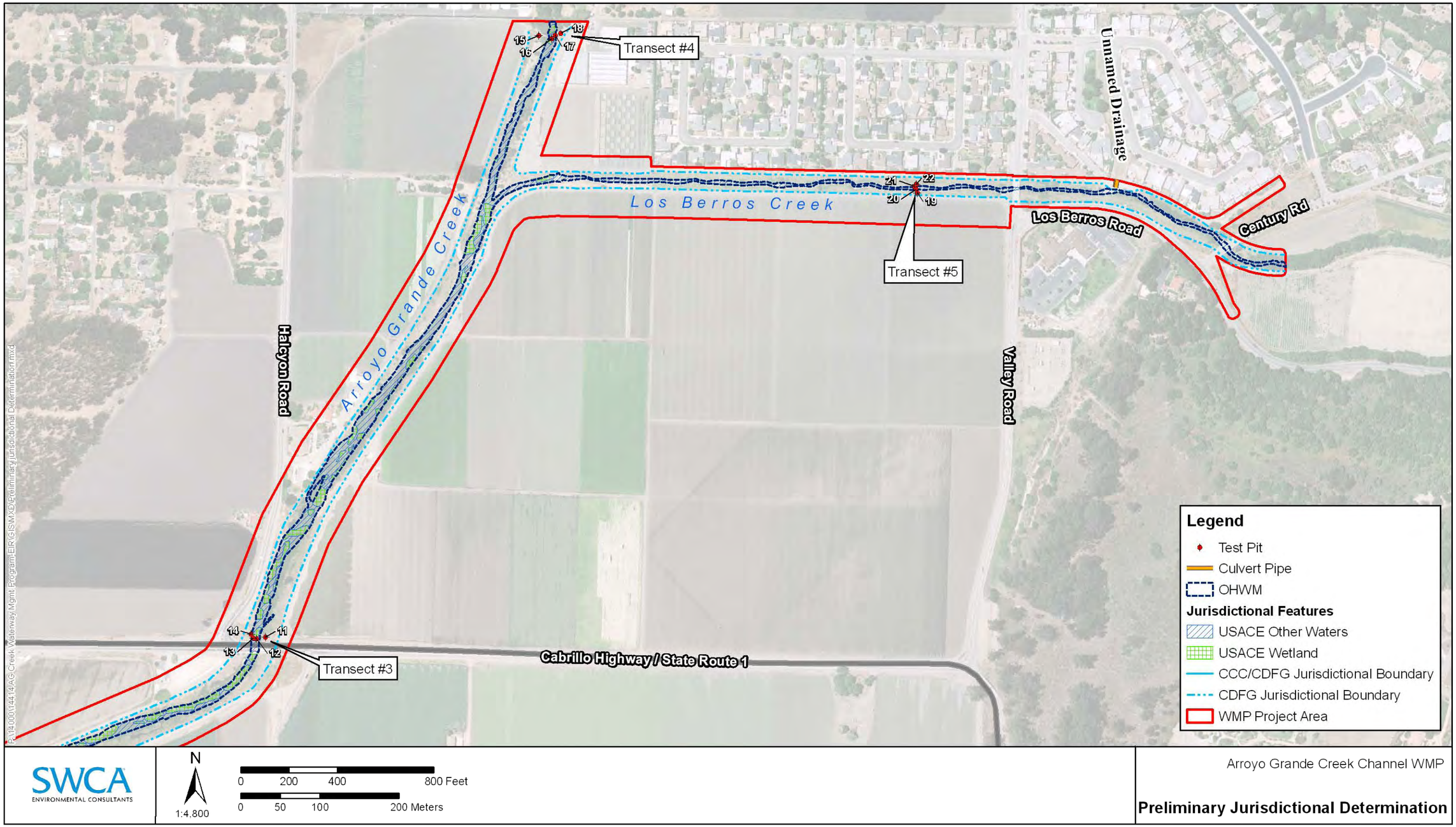
Figure 4.3-6. Preliminary Jurisdictional Determination



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California Department of Fish and Game Jurisdictional Areas

The site investigation identified a total of 58.8 acres of CDFG jurisdiction within the project corridor. CDFG jurisdictional boundaries are more extensive than and typically include USACE jurisdictional areas. CDFG jurisdictional areas were delineated by the evidence of a defined bed and bank or riparian dripline vegetation, connectivity to relatively permanent waters, and evidence of hydrology. Jurisdictional areas include all channel features within the levee banks, and areas where riparian canopy extends over the banks.

Regional Water Quality Control Board Jurisdictional Areas

The 2009 *Technical Memorandum No. 2: Wetland Definition* by the Technical Advisory Team to the Policy Development Team for the California Wetland and Riparian Area Protection Policy (San Francisco Estuary Institute 2009) recommends defining a State wetland as the following:

> An area is wetland if, under normal circumstances, it (1) is saturated by ground water or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate; (2) exhibits hydric substrate conditions indicative of such hydrology; and (3) either lacks vegetation or the vegetation is dominated by hydrophytes.

The recommended State definition uses field indicators of hydrological regimen, substrate condition, and plant community composition to distinguish wetland areas from other areas of a landscape. This is commonly regarded as the "three-parameter approach" to defining, identifying, and delineating wetland areas in the field. These are the same parameters incorporated into the wetland definition used by the USACE and the US Environmental Protection Agency (USEPA) for Clean Water Act purposes.

This definition recognizes that all three parameters may not be evident or present in some areas that provide wetland functions, beneficial uses, or ecological services at some times of the year or in some years (especially during prolonged dry periods), and that some of these areas lack vegetation and therefore may satisfy only two parameters (i.e., wetland hydrology and hydric substrates). It was determined that a modification for the vegetation parameter was necessary to address instances where the USACE definition is problematic. The recommended State definition identifies non-vegetated areas that satisfy the hydrology and substrate parameters. It is recommended that the State initially identify the USACE's 1987 wetland manual (Environmental Laboratory 1987) and the supplement for arid regions (Environmental Laboratory 2008), and any subsequent replacement USACE technical guidance as the primary sources for information and practices necessary for identifying wetland areas and delineating wetland boundaries pursuant to the recommended State definition.

The site investigation identified a total of 11.1 acres of Regional Water Quality Control Board (RWQCB) jurisdiction (i.e., State wetlands) within the project corridor. The RWQCB adheres to the delineation protocols set forth by the USACE for wetlands and other waters. Under the definition outlined above, potential Waters of the State under the jurisdiction of the RWQCB include all potential USACE jurisdictional areas.

California Coastal Commission Jurisdictional Areas

The site investigation identified a total of 14.9 acres of CCC jurisdiction within the project corridor. CCC considers any area that supports one or more of the three wetland indicators to be a state wetland. As a result, all USACE and CDFG jurisdictional areas within the coastal zone fall under CCC jurisdiction. Only the portion of the project west of the UPRR crossing is within the Coastal Zone (refer to Figure 4.3-6), and all channel features within the levee banks within this area fall under CCC jurisdiction.

4.3.1.5 Special-Status Species

Several species known to occur within, or in the vicinity of the project corridor, are accorded "special-status" designation because of their recognized rarity or vulnerability to various causes of habitat loss or population decline. Some of these receive specific protection defined in federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of State resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special-status species" in this EIR, a collective term indicating some level of local, state or federal concern for populations or habitats.

The description and analysis of special-status biological resources within the project corridor is based on the results of a California Natural Diversity Database (CNDDB) query for records of special-status species that are known to occur within the region. The records search included the following nine 7.5-minute United States Geological Survey (USGS) quadrangle maps: Santa Maria, Oceano, Nipomo, Huasna Peak, Twitchell Dam, Sisquoc, Orcutt, Casmalia, and Guadalupe. Special-status taxa that are known to occur, or have the potential to occur, in the project corridor were also identified through a review of relevant literature (California Native Plant Society [CNPS] 2001, 2008-2010; Zeiner et al. 1988, 1990a, 1990b), previous biological studies in the area, and surveys conducted by SWCA biologists.

~~Further, a list of federally threatened and endangered species potentially occurring within the area was requested from the USFWS. Although this document was not received prior to impact analysis,~~ County Public Works received a letter with comments from USFWS regarding federally listed species on July 2, 2009. In the comment letter, USFWS expressed concern about the potential adverse impacts of the proposed project on the federally endangered least Bell's vireo (*Vireo bellii pusillas*), southwestern willow flycatcher (*Empidonax traillii extimus*), marsh sandwort (*Arenaria paludicola*), Gambel's watercress (*Nasturtium gambelii*), and tidewater goby (*Eucyclogobius newberryi*); the threatened California red-legged frog (*Rana draytonii*); and migratory birds. SWCA biologists evaluated ~~all~~ these federally listed species ~~in San Luis Obispo County~~ with the potential to occur within the immediate project corridor (see Table D-1 and D-2 in Appendix D) based on habitat requirements and known habitat within the project corridor. ~~Species included within the impact analysis were derived from the unofficial USFWS list titled: "*Federal Endangered and Threatened Species that may be affected by projects in San Luis Obispo County*" (website: http://ventura.fws.gov).~~ SWCA subsequently received an official USFWS species list on November 6, 2010, which included marsh sandwort, Gambel's watercress, tidewater goby, California red-legged frog, least Bell's vireo, and southwestern willow flycatcher on the list. ~~Subsequent to survey efforts, a letter was received from the USFWS dated November 6, 2009, indicating that marsh sandwort, Gambel's watercress, tidewater goby, steelhead trout, California red-legged frog, and least Bell's vireo are federally listed species known to occur in Arroyo Grande, San Luis Obispo County, California.~~

4.3.1.6 Special-status Plant Species

The following section describes those special-status plant species which have been documented within an approximate ten-mile radius of the project corridor. For the purposes of this section, sensitive plant species are defined as the following:

- Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (FESA) (50 Code of Federal Regulations [CFR] 17.12 for listed plants and various notices in the Federal Register for proposed species).
- Plants that are candidates for possible future listing as threatened or endangered under FESA (Federal Register Vol. 74, No. 215, pp. 57804-57878, November 9, 2009).
- Plants that meet the definitions of rare or endangered species under CEQA (State CEQA Guidelines, Section 15380).
- Plants considered by CNPS to be "rare, threatened, or endangered" in California (Lists 1B and 2 in CNPS, 2008-2010).
- Plants listed by CNPS as plants about which we need more information and plants of limited distribution (Lists 3 and 4 in CNPS, 2008-2010).
- Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5).
- Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
- Plants considered sensitive by other Federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), state and local agencies, or jurisdictions.

Based on the literature review for this project, a total of 60 sensitive plant taxa have been documented in a 10-mile radius of the project corridor (refer to Table 1, in Appendix D). Because the plant species list presented in Table 1 is regional, an analysis of the range and habitat preferences of those species was conducted to identify which special-status plant taxa have the potential to occur within the project corridor. This analysis considered existing habitat, elevation, results of previous surveys conducted for other projects, and soils within the project corridor.

As a result of the analysis conducted by SWCA it was determined that five sensitive plant taxa, including the state and federally listed marsh sandwort and Gambel's water cress, had the greatest potential to occur within, or directly adjacent to, the project corridor. However, based on the field surveys which were conducted during the appropriate blooming period for these taxa, results of previous studies conducted nearby, and a field evaluation of the habitat within the project corridor it was determined that no special-status plant taxa occur within the project corridor. For a complete listing of vascular flora observed within the project corridor, please refer to Appendix D.

4.3.1.7 Special-status Wildlife

For the purposes of this section, special-status animal taxa are defined as the following:

- Animals listed or proposed for listing as threatened or endangered under FESA (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).
- Animals that are candidates for possible future listing as threatened or endangered under FESA (Federal Register Vol. 74, No. 215, pp. 57804-57878, November 9, 2009).
- Animals that meet the definitions of rare or endangered species under CEQA (State CEQA Guidelines, §15380).
- Animals listed or proposed for listing by the State of California as threatened and endangered under CESA (14 CCR 670.5).
- Animal species of special concern to the CDFG (Shuford and Gardali 2008 for birds; Williams, 1986 for mammals).
- Animal species that are fully protected in California (California Fish and Game Code, §3511 [birds], §4700 [mammals], and §5050 [reptiles and amphibians]).

Based on a CNDDB query, a review of existing literature and the local experience of SWCA biologists, a total of 37 special-status wildlife taxa have been documented or have the potential to occur within the reviewed USGS quadrangles (refer to Appendix D). Because this list of taxa is regional, an analysis of the range and habitat preferences of those species was conducted to identify which sensitive wildlife species have the potential to occur within the project corridor given the existing habitat. Previous survey reports were also reviewed for occurrences of these taxa.

This analysis determined that the following sensitive wildlife taxa have potential to occur within or directly adjacent to the project corridor, or are warranted of further discussion:

- Tidewater goby
- Steelhead trout
- California red-legged frog
- Coast range newt
- Southwestern pond turtle
- Coast horned lizard
- Two-striped garter snake
- Cooper's hawk
- Sharp-shinned hawk
- Western yellow-billed cuckoo
- Yellow warbler
- White tailed kite
- Purple martin
- Least bell's vireo
- Southwestern willow flycatcher
- Pallid bat
- Townsend's big-eared bat
- Other nesting birds and roosting bats

The following presents the applicable ecological and range information for those special-status wildlife species documented within the vicinity of the project corridor, or otherwise worthy of

further discussion. The likelihood of these species occurring within the project corridor is also discussed, based on existing conditions and the known habitat requirements for each species.

Tidewater Goby (*Eucyclogobius newberryi*)

Tidewater goby is listed as federal endangered and as a Species of Special Concern (SSC) by CDFG. The tidewater goby is a small estuarine fish, rarely exceeding two inches in length that inhabits lagoons and the tidally influenced region of rivers from San Diego County to Del Norte County, California. They are typically found in the upper ends of lagoons in brackish water, usually in salinities of less than 10 parts per thousand (ppt). Tidewater gobies are bottom dwellers and are typically found at depths of less than three feet. Instream, they inhabit low-velocity habitats out of the main current.

While no protocol tidewater goby surveys were conducted specifically for this project, there is a body of evidence from previous sources regarding occurrence of the species in Arroyo Grande Creek.

The project area occurs within the Concepcion Unit (CO) for recovery for the species. More specifically, Arroyo Grande Creek occurs in the CO1 Sub-Unit, which extends between Point San Luis and Point Sal and is a largely sandy shore-line. The CO1 Sub-Unit consists of three occupied tidewater goby localities and is located entirely within San Luis Obispo County. According to the USFWS Recovery Plan for Tidewater Goby (USFWS 2005), the available potential tidewater goby habitat in Arroyo Grande Creek encompasses approximately 3 to 5 hectares (7.5 to 10 ac). One of the primary tasks recommended for recovery include improvement of habitat and reduction of threats to tidewater gobies in Arroyo Grande Creek (USFWS 2005). Based on the final rule published in January 2008, the USFWS has not designated Arroyo Grande Creek as critical habitat (USFWS 2008a). However, this species does have the potential to occur upstream from Arroyo Grande Lagoon, and within the project area.

According to the Recovery Plan (USFWS 2005), Arroyo Grande Creek is considered occupied by tidewater goby from Arroyo Grande Lagoon to a distance of approximately 0.6 mile upstream of the lagoon in Arroyo Grande Creek (USFWS 2005). The Recovery Plan also states that in the absence of recent survey data, any site known historically to have been populated with tidewater goby should be assumed to be currently occupied by the species, unless clear evidence indicates that the habitat has been so modified as to be uninhabitable (USFWS 2005). Surveys are not needed if surveys completed during the prior 10 years have confirmed the presence of tidewater goby in waters with habitat contiguous to the habitat identified for survey and the habitat where gobies were earlier found have not been substantially modified or impacted by human activities or natural events (i.e., USFWS presumes that habitat previously occupied by tidewater goby continues to be occupied unless clear evidence indicates that they have been extirpated).

Although past survey efforts have indicated that occupancy by tidewater gobies at Arroyo Grande Lagoon is intermittent and only in small numbers (USFWS 2005), they have been reported as occurring within the lagoon as recently as 2008 (CNDDB 2008-2010). The mouth of Arroyo Grande Lagoon changes from year to year, and according to the CNDDB, 2007 was the first year of abundant protection at the lagoon (CNDDB 2008-2010).

California Department of Parks and Recreation has conducted several surveys of lower Arroyo Grande Creek and the lagoon in recent years. Tidewater gobies were not found during

sampling in 2003 and 2004, but site colonization was documented early in 2005 (Rischbeiter 2006). Winter flood flows in early 2005 noticeably modified the habitat and lengthened the lower portion of the stream; tidewater gobies likely colonized this location from a nearby watershed (USFWS 2005). In 2006, the first evidence of goby reproduction was observed with the capture of a juvenile (Rischbeiter 2007). Extensive reproduction and population expansion of tidewater goby was observed in 2007 (Rischbeiter 2008), but in 2008, while tidewater gobies were captured in March and June, none were captured in September (Rischbeiter 2009). It is inconclusive whether the tidewater goby population in Arroyo Grande Creek has been completely extirpated, and for the purposes of this EIR, presence of this species in the project area is inferred. ~~Tidewater goby has been documented as present within the Arroyo Grande Lagoon (CNDDB 2009) although survey efforts indicate that occupancy by tidewater gobies at Arroyo Grande Lagoon is intermittent and only in small numbers (USFWS 2005).~~

~~Based on the final rule in January 2008, the USFWS has not designated Arroyo Grande Creek as critical habitat. However, this species does have the potential to occur upstream from the Arroyo Grande Lagoon, and within the project corridor.~~

South-central California Coast Steelhead (*Oncorhynchus mykiss*)

The south-central California coast steelhead was listed as federally threatened by the USFWS in 1997 and is also considered a SSC species by the CDFG. Optimal habitat for steelhead on the Pacific Coast can generally be characterized by clear, cool water with abundant instream cover (i.e., submerged branches, rocks, and logs), well-vegetated stream margins, relatively stable water flow, and a 1:1 pool-to-riffle ratio (Raleigh et al. 1984). Steelhead along the central coast of California typically begin migrating up coastal drainages following the first substantial rainfall of the fall season. Spawning typically occurs during the spring in riffle areas that consist of clean, coarse gravels. Deposited eggs incubate for approximately three to four weeks, with hatched fry rearing within the gravel interstices for an additional two to three weeks. Emergent fry rear at the stream margins near overhanging vegetation. Juveniles (smolts), after rearing for one to three years within freshwater, migrate out to the ocean from March to July, as do post-spawning adults, depending on stream flows.

This species has been well documented as occurring within Arroyo Grande Creek and tributary channels (Central Coast Salmon Enhancement 2009; Swanson Hydrology + Geomorphology 2008; Rischbeiter 2004). The project corridor is located within designated critical habitat for this species (NMFS 2005).

Habitat data collected in 2005 by California Conservation Corps staff (CCC 2005) and population data collected by Swanson Hydrology + Geomorphology (2008) suggest that the flood control reach is primarily used as a migratory corridor for adult steelhead attempting to reach higher quality spawning and rearing habitat upstream. Although steelhead juveniles have been observed rearing in the flood control reach, their survival is low due to high summer water temperatures and low flow conditions in late summer and fall. In many years, portions of the flood control reach dry up completely.

Arroyo Grande Creek is one of the few streams at the southern portion of the subject Evolutionarily Significant Unit (ESU) where age zero and older juvenile steelhead occur during summer and fall, and sexually mature adults occur in winter and early spring (NMFS 2005). There are numerous streams in San Luis Obispo County, but a disproportionate number in the southern portion of the subject ESU currently do not appear suitable for steelhead; Arroyo Grande Creek is one of the notable exceptions (NMFS 2005). Arroyo Grande Creek has been

determined to have medium conservation value and essential for the conservation of the ESU (NMFS 2005).

California Red-Legged Frog (*Rana draytonii*)

The California red-legged frog was listed as federally threatened by the USFWS in 1996, and is also considered a SSC by CDFG. Critical habitat has been designated for the species but the project corridor does not occur within a critical habitat unit. Riparian habitat degradation, urbanization, predation by bullfrogs, and historic market harvesting has all reportedly contributed to population declines in this species. The California red-legged frog occurs in various habitats during its life cycle. Breeding areas include aquatic habitats such as lagoons, streams and ponds, and siltation and irrigation ponds. California red-legged frogs prefer aquatic habitats with little or no flow, the presence of surface water to at least early June, surface water depths to at least 0.7 meters (2.3 feet), and the presence of fairly sturdy underwater supports such as cattails (*Typha* spp.). The largest densities of California red-legged frog are typically associated with dense stands of overhanging willows and an intermixed fringe of sturdy emergent vegetation.

California red-legged frog is known to be present within the project corridor, having been well documented during previous biological surveys (Biotic Resources Group 2006) and observed by SWCA biologists in 2008.

Coast Range Newt (*Taricha torosa torosa*)

The Coast Range newt is considered a SSC by CDFG. Two subspecies of California newt (*T. torosa*) are currently recognized in California: Coast Range newt (*T. t. torosa*) and Sierra newt (*T .t. sierrae*). The former ranges discontinuously along the coast of California from Mendocino County to San Diego County. Optimum habitats reportedly consist of valley-foothill hardwood forest in association with rivers, creeks, ponds, and lakes. This species is seasonally abundant within the upper watersheds of several San Luis Obispo County creeks. Coast Range newts have both terrestrial and aquatic phases to their life cycle. Adults are largely inactive, aestivating within subterranean refuges during most of the year. Following the first rains of fall, adults migrate to water, with mating occurring from September to May. Adhesive egg masses are deposited on submergent vegetation and rocks from May to June, with larvae hatching 5 to 7 weeks thereafter. Larvae transform to adults during the summer or fall of their first year. Sexual maturity is reached at approximately the end of the first year. Riparian degradation related to urban development has likely contributed to population declines.

Although coast range newt has been documented just below Lopez Dam, the likelihood for coast range newt to occur within the project corridor is considered low, due to poor breeding habitat quality that is present for newts in this area, and the lack of evidence of this species within the lower reaches of Arroyo Grande Creek.

Southwestern Pond Turtle (*Actinemys marmorata pallida*)

The southwestern pond turtle is considered a SSC by CDFG. Pond turtles prefer quiet waters of ponds, lakes, streams, and marshes. This subspecies inhabits reaches of streams that contain deep pools, from 3.0 to 5.2 feet in depth (Stebbins 1972). The ponds favored by turtles typically support emergent and floating vegetation such as cattails and algal mats. The southwestern pond turtle historically has been present in most Pacific slope drainages between the Oregon and Mexican borders (Jennings and Hayes 1994). It is mostly aquatic, leaving its aquatic site to reproduce, estivate, and over-winter. Pond turtles also bask on half-submerged

logs, rocks, or flat shorelines close to the edge of water. In warmer areas along the central and southern California coast, pond turtles may be active all year (Zeiner et al. 1988). Nesting sites may be more than 400 meters from the aquatic site, but most nests are within 200 meters.

Southwestern pond turtle is known to inhabit Arroyo Grande Creek, and one southwestern pond turtle was observed during field surveys conducted by SWCA biologists in 2009. This species was observed using open water habitat which has been created as a result of existing beaver dams in the channel. Suitable habitat occurs throughout the project corridor.

Coast Horned Lizard (*Phrynosoma coronatum frontale*)

The coast (California) horned lizard is considered a SSC species by CDFG. This species is a relatively large horned lizard, less rounded than other species, with numerous pointed scales along the sides of the body and over the back. Only the horns around the head are rigid. The range of the species extends from northern California to the tip of Baja California, distributed throughout foothills and coastal plains in areas with abundant, open vegetation such as chaparral or coastal sage scrub. The species typically occupies open country, especially sandy areas, washes, flood plains, and wind-blown deposits in a wide variety of habitats. The coast horned lizard is a ground dweller, and does not climb shrubs or trees. Egg-laying in southern California extends from late May through June with a mean clutch size of 13 eggs. Coast horned lizards feed on ants and other small insects.

The likelihood for this species to occur within the project corridor is low. Habitat for Coast horned lizard is considered to be marginal within the project corridor due to minimal sandy soils and open habitat.

Two-striped Garter Snake (*Thamnophis hammondii*)

The two-striped garter snake is considered a SSC species by the CDFG. It is a medium-sized garter snake with a variable dorsal coloration of olive, brown, or brownish gray, with a single yellow-orange lateral stripe on each side of the body (Jennings and Hayes 1994). There is no dorsal stripe, and the ventral surface is pale cream-colored to salmon, becoming white toward the throat. The lateral stripes may be lacking on melanistic individuals, which are common in the northern third of the species range (Bellemin and Stewart 1977; Stewart 2003). Melanistic individuals along the Central Coast are black underneath with a white throat; however, there are several other morphs found in the area (Stewart 2003). The dark color of these specific morphs may be a selective factor that allows them to blend in with exposed root systems (Stewart 2003). During the day, this garter snake often basks on streamside rocks or on densely vegetated stream banks. Prey items include fish, fish eggs, and various frogs and toads (Jennings and Hayes 1994; Stewart 2003).

The likelihood for two-striped garter snake to occur within the project corridor is considered moderate. Although this species was not observed during surveys, there is a potential for this species to occur due to the presence of suitable habitat.

Cooper's hawk (*Accipiter cooperii*)

Cooper's hawk is considered a SSC by CDFG during nesting periods; primarily due to the loss of riparian nesting habitat. Preferred nesting habitat typically consists of dense stands of coast live oak, riparian or other forest habitat located near water. This species generally is solitary and feeds on small birds and mammals captured in surprise attack. Cooper's hawk is an uncommon permanent resident and fairly common fall transient along the central coast.

The likelihood for Cooper's hawk to occur within the project corridor is considered high. One individual was identified within the project corridor during the field surveys conducted by SWCA. Based on this observation and the presence of suitable habitat within the project corridor, this species has the potential to occur within the project corridor for nesting and foraging purposes.

Sharp-shinned hawk (*Accipiter striatus*)

The sharp-shinned hawk is considered a SSC by CDFG during nesting periods. The species is also protected under the Migratory Bird Treaty Act (MBTA). This species typically builds nests within woodland habitat where they forage on small birds. Sharp-shinned hawks will also occasionally eat small mammals and insects. This species is a fairly common winter visitor and resident along coastal ridges foraging in woodland and semi-open habitats.

The likelihood for sharp-shinned hawk to nest within the project corridor is considered low, due to the marginal quality of habitat within the project corridor. However, this species may occur within the project corridor as an infrequent forager.

Western Yellow-billed Cuckoo (*Coccyzus americanus*)

The western yellow-billed cuckoo is a federal candidate for listing and a state endangered species. It is a casual spring and fall transient in San Luis Obispo County (Edell 2004). Although its historic status within the county is unknown, it was likely a regular breeder in large cottonwood-willow riparian woodlands. There are only eight San Luis Obispo County records for the species over the last fifty years, two of which involve nesting birds. The six recent non-breeding records are from Morro Bay (1961), Los Osos (1980), Morro Bay (1989), Carrizo Plain (1991), Oso Flaco Lake (1999), and San Simeon Creek (1999).

Due to the rarity of this species, the likelihood of western yellow-billed cuckoo would occur within the project corridor is considered very low. This species was not observed or heard during surveys, there are no known recent nesting records in San Luis Obispo County, and there are no known breeding locations outside of the currently known breeding locations, none of which occur in San Luis Obispo County (Edell 2004). This species is not expected to nest along Arroyo Grande Creek.

Yellow Warbler (*Dendroica petechia brewsteri*)

The yellow warbler is considered a SSC by CDFG during the nesting period. Yellow warblers are migratory and are broadly distributed throughout North America, though their California distribution is largely restricted to the northern and coastal portions of the State, and the Sierra Nevada foothills. Within San Luis Obispo County, this species is a fairly common summer transient of deciduous riparian habitats. Breeding and nesting of yellow warbler typically occurs from mid-April to early August, with peak activity occurring in June. Eggs (typically three to six) are incubated for approximately 11 days, and young fledge approximately nine to 12 days thereafter. Brood parasitism by brown-headed cowbirds has reportedly reduced numbers of this species statewide, though predation and destruction/clearing of riparian habitat is also implicated in population declines of this species.

The likelihood for this species to occur within the project corridor is considered high. Although this species was not observed or heard during surveys, yellow warbler has the potential to occur within the project corridor based on the presence of suitable habitat and known occurrences in the area. Yellow warblers have been recently observed in the Oceano campground area (San Luis Obispo County Birding Digest 2873).

White-tailed kite (*Elanus leucurus*)

The white-tailed kite is not listed as an endangered or threatened species; however, this species is listed as California fully-protected by the CDFG and is considered to be a Federal migratory non-game bird of special concern by the USFWS. Within San Luis Obispo County, white-tailed kites are common, especially along the coastline from Morro Bay north, though it is possible to find them in a variety of habitats near the coast. Populations do not seem to be migratory, and annual abundance variances are generally "apparent changes" meaning that abundance probably remains constant, but activity patterns and frequency of observation changes.

The likelihood of white-tailed kite to occur within the project corridor is considered low to moderate. Although this species was not observed or heard during field surveys, this species has the potential to roost and nest within the project corridor given the presence of suitable foraging habitat adjacent to the project corridor.

Purple Martin (*Progne subis*)

The purple martin is considered a SSC by CDFG. This species was formerly a common breeder along the length of the Coast Range of California and in smaller numbers in the Sierra Nevada. There has been a dramatic decrease in southern California during the last 15 years where it was once a common breeder in the mountains and where it even nested in some lowland residential areas. The species uses valley foothill and montane hardwood, valley foothill and montane hardwood-conifer, riparian habitats, and coniferous habitats. The purple martin may nest in old woodpecker cavities or in human-made structures such as bridges and culverts. It nests from April to August, with peak activity in June, laying three to eight eggs. Food is primarily insects.

The likelihood of purple martin to occur within the project corridor is considered to be low. Although this species was not observed or heard during surveys; there is a potential that this species may utilized riparian habitat and mature trees within the project corridor.

Least Bell's Vireo (*Vireo bellii pusillus*)

Least Bell's vireo is state and federally listed as endangered. It primarily occurs in association with low, dense riparian growth in the vicinity of water or dry river bottoms. Nesting usually occurs along the margins or on twigs of various shrubs including low-growing species of willow. Breeding and nesting primarily occurs in May and June (Zeiner et al. 1990a). Vegetation characteristics of riparian stands between five to ten years of age are most suitable for nesting least Bell's vireo (Goldwasser 1981; USFWS 1998). ~~Prior to a recent observation of least Bell's vireo in Los Osos in 2009, the nearest known documented occurrence of least Bell's vireo was observed near the Wellsona Road crossing over the Salinas River in 2005.~~

While no protocol least Bell's vireo surveys were conducted specifically for this project, the results of a habitat assessment and recommendations from USFWS suggest that presence of least Bell's vireo should be inferred along riparian habitats within the project area (USFWS 2010). The subspecies has been found in marginal riparian habitats in California, and the riparian habitat at Arroyo Grande Creek was likely suitable, despite the fact that no least Bell's vireo nesting observations had been documented within this region of San Luis Obispo County (Greaves 2010).

The Draft Recovery Plan for Least Bell's Vireo describes 14 units for recovery (USFWS 1998). Arroyo Grande Creek does not occur in any of these recovery units. The nearest recovery units

are along the Salinas River in San Luis Obispo County and the Santa Ynez River in Santa Barbara County.

While there have been no recent records of nesting least Bell's vireos in San Luis Obispo County (USFWS 2006), the least Bell's vireo has recently observed in San Luis Obispo County in willows along Pecho Road in Los Osos (SLOCOBIRDING 2009), which is located several miles north of the project area. There were a few incidental sightings of least Bell' vireo after the breeding season from 2001 to 2006 in the Salinas Valley, but territorial and reproductive status for these birds has not been established (USFWS 2006).

This least Bell's vireo commonly bred in riparian forests throughout the Central Valley of California, but prior to 2005, no nesting pairs had been confirmed in the region in over 50 years. On 29 June 2005, a Least Bell's Vireo nest was located in a 3-year-old riparian restoration site at the San Joaquin River National Wildlife Refuge in Stanislaus County, California (Howell et al. 2010). In 2006, a least Bell's vireo pair returned to the refuge to successfully breed, followed by an unsuccessful attempt in 2007 by an unpaired female. These records are approximately 350 km from the nearest known breeding population and appear to be part of a growing number of sightings outside of the species' current southern California breeding range (Howell et al. 2010).

USFWS has also expressed concern about the potential adverse impacts of the proposed project on the least Bell's vireo (USFWS 2010a; 2010b). Least Bell's vireos have been expanding their range since the time of listing and are also being found in a wider variety of habitats than were historically documented (USFWS 2006). Recent sightings of this species have been made within San Luis Obispo County (in Los Osos in fall 2009) and even as far north as San Mateo County earlier in 2010 (as documented on the Northern California Birdbox in May 2010). Also, because this species exhibits strong site tenacity, impacts to the nesting habitat of this species, if present onsite, may result from the vegetation removal activities that are proposed as a part of the project.

USFWS stated that the avoidance and minimization measures in the DEIR proposed for migratory birds should help to reduce potential impacts to the least Bell's vireo, and USFWS also recommended including the least Bell's vireo in pre-construction survey efforts (USFWS 2010b).~~The likelihood for least bell's vireo to occur within the project corridor is considered to be low. Although riparian vegetation is present within the project corridor, this vegetation is not likely to be suitable for nesting least Bell's vireo due to ongoing disturbances and continual annual thinning activities resulting in a lack of dense, low-growing vegetation. This species is not expected to nest along Arroyo Grande Creek.~~

Southwestern Willow Flycatcher (*Empidonax trailli extimus*)

Southwestern willow flycatcher is state and federally listed as endangered. This subspecies is a rare spring transient and an uncommon spring/summer migrant to San Luis Obispo County. It is most commonly found as a summer resident within mountainous wet meadow and montane riparian habitats of the Sierra Nevada and Cascade ranges after migrating from winter habitat in Central and South America. Dense willow thickets are required for nesting and roosting.

No protocol southwestern willow flycatcher surveys were conducted. It is unlikely that birds in San Luis Obispo County are of the endangered subspecies *E. t. extimus*, as the birds occurring in Kern County are the most northern known occurrences of that subspecies; it is more likely that San Luis Obispo County migrants are of the northern breeding subspecies *E. t. brewsteri* and *E. t. adastus* (SLOCOBIRDING 2001). There are also no known nesting records for willow

flycatcher (*Empidonax traillii*) in San Luis Obispo County; the nearest known nesting location is on the Santa Ynez River near Buellton (SLOCOBIRDING 2001), which is approximately 30 miles (m) (48 kilometers (km)) south of the project area. Spring transients have been recorded in San Luis Obispo County between 5 May and 19 June while fall birds have been recorded from 17 August to October 17th, with 24 birds observed in the fall of 1985 being a high count for the fall month (SLOCOBIRDING 2001).

The Recovery Plan for Southwestern Willow Flycatcher defines six Recovery Units, each with four to seven Management Units (USFWS 2002b). The project area does not occur within any of these Recovery Units. The nearest Recovery Unit is the Coastal California Recovery Unit, which stretches along the coast of southern California from just north of Point Conception south to the Mexico border.

While riparian habitat occurs within the project area, it is well north of the known range of the subspecies, and southwestern willow flycatcher is not expected to occur in the project area or otherwise be affected by the proposed project. ~~The likelihood for southwestern willow flycatcher to occur within the project corridor is very low. Although riparian vegetation is present within the project corridor, this vegetation is not likely to be suitable for southwestern flycatcher due to the ongoing disturbances and general lack of dense understory. There are no documented occurrences of this species breeding within San Luis Obispo County. This species is not expected to nest along Arroyo Grande Creek.~~

Other Nesting Birds (Class Aves)

A number of other bird species have the potential for nesting within the project corridor, and are protected during their nesting period under the federal MBTA and CDFG Code Section 3503. Birds may nest in urban habitats (such as buildings, bridges, and landscaped ornamental vegetation), windrows, riparian forest and scrub areas, and ruderal habitats. During surveys, several bird species protected under MBTA were observed within the project corridor. These species likely utilize habitats within the project corridor for nesting and foraging purposes; therefore, nesting activity during the nest season (February 15 to August 15) should be expected.

Pallid Bat (*Antrozous pallidus*), Townsend's Big-eared Bat (*Corynorhinus townsendii*), and Other Roosting Bats

The following discussion on sensitive bat taxa have been combined together for conciseness and because the share similar habitat requirements and regulatory protections.

The pallid bat is considered a SSC by CDFG. Pallid bats range over much of the western United States, from central Mexico to British Columbia (Zeiner et al. 1990a). They are found throughout California, especially in lowland areas below 6,400 feet (1,950 meters). Pallid bats are apparently not migratory, but make local, seasonal movements. This species resides in colonies consisting of a dozen to over 100 individuals. Pallid bats roost in deep crevices, caves, mines, rock faces, bridges and buildings. Like many bat species, pallid bats maintain both day and night roosts. Night roosts are used for feeding and are typically 0.25 mile (0.4 kilometers) from the day roosts, which are used for sleeping. Females have one to two pups for each pregnancy, usually born between mid to late June.

Townsend's big-eared bat is considered a SSC by CDFG. It is most abundant in mesic (wet) habitats. Townsend's big-eared bat requires caves, mines, tunnels, buildings or other human-made structures for roosting. It may use separate sites for night, day, hibernation, or maternity

roosts. Maternity roosts are the most important limiting resource. Maternity roosts are found in caves, tunnels, mines, and buildings. Small clusters or groups (usually fewer than 100 individuals) of females and young form the maternity colony. Maternity roosts are in relatively warm sites. Most mating occurs from November-February. Births occur in May and June, peaking in late May. This species is extremely sensitive to disturbance of roosting sites (Zeiner et al., 1990a).

Roosting bats in general are also considered as sensitive by CDFG and under CEQA. Although no bat roosting or evidence of roosting was observed during surveys, potential roosting habitat for bats may occur under bridges within the project corridor, particularly under the UPRR bridge. The bat maternity roosting season typically begins around April 15).

4.3.2 Regulatory Overview

4.3.2.1 Federal Policies and Regulations

Section 404 of the Clean Water Act of 1977

The USACE is responsible for the issuance of permits for the placement of dredged or fill material into "waters of the United States" pursuant to Section 404 of the Clean Water Act (CWA) (33 United States Code [USC] 1344). As defined by USACE at 33 CFR 328.3(a)(parts 1-6), the following summarizes "Waters of the United States" as:

> "Those waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; tributaries and impoundments to such waters; all interstate waters including interstate wetlands; and territorial seas."

Based on the Preliminary Jurisdictional Determination prepared (SWCA 2009), the project would result in dredge or fill of "waters of the U.S." Therefore, the project would be subject to Section 404 of the CWA based on review by the USACE.

Section 401 of the Clean Water Act of 1977

Section 401 of the CWA and its provisions ensure that federally permitted activities comply with the CWA and state water quality laws. Section 401 is implemented through a review process that is conducted by the RWQCB, and is triggered by the Section 404 permitting process (see above). The RWQCB certifies via the 401 process that a proposed project complies with applicable effluent limitations, water quality standards, and other conditions of California law. Evaluating the effects of the proposed project on both water quality and quantity (runoff) falls under the jurisdiction of the RWQCB.

The proposed project has the potential to result in impacts to water quality and quantity, resulting in compliance with Section 404 of the CWA. Therefore, the proposed project would also require compliance with Section 401 of the CWA, requiring certification by the RWQCB.

Federal Endangered Species Act

FESA, administered by the USFWS and NMFS, provides protection to species listed as threatened or endangered. FESA also provides protection to those species proposed to be listed under FESA. In addition to the listed species, the Federal government also maintains lists of species that are neither formally listed nor proposed, but could potentially be listed in the

future. Species on this list receive "special attention" from federal agencies during environmental review, although they are not protected otherwise under the FESA. The candidate species include taxa for which substantial information on biological vulnerability and potential threats exist, and are maintained in order to support the appropriateness of proposing to list the taxa as an endangered or threatened species.

USFWS and NMFS also regulate activities conducted in federal critical habitat, which are geographic units designated as areas that support primary habitat constituent elements for listed species.

Due to the presence of federally listed species within the proposed project area and the presence of critical habitat for steelhead, compliance with Section 7 of FESA would be required. Potential impacts to listed species resulting from the implementation of a project would require the responsible agency or individual to formally consult with the USFWS or NMFS to determine the extent of impact to a particular species.

Migratory Bird Treaty Act

The MBTA of 1918 protects all migratory birds, including their eggs, nests, and feathers. The MBTA was originally drafted to put an end to the commercial trade in bird feathers, popular in the latter part of the 1800's. The MBTA is enforced by the USFWS, and potential impacts to species protected under the MBTA are evaluated by the USFWS in consultation with other federal agencies. Several migratory bird species were present within the project corridor.

4.3.2.2 State Policies and Regulations

California Endangered Species Act

The CESA ensures legal protection for plants listed as rare or endangered, and wildlife species formally listed as endangered or threatened. The state also maintains a list of SSCs. SSC status is assigned to species that have limited distribution, declining populations, diminishing habitat; or unusual scientific, recreational, or educational value. Under state law, the CDFG is empowered to review projects for their potential to impact special-status species and their habitats. Under CESA, CDFG reserves the right to request the replacement of lost habitat that is considered important to the continue existence to CESA protected species.

Take of state-listed species would require a Section 2081 Incidental Take Permit from the CDFG. This process requires submittal of a sensitive species study and permit application package, and is similar to the FESA Section 10 process, except that the CDFG is the regulatory and decision-making agency. Alternatively, Section 2080.1 allows an applicant who has obtained a federal incidental take statement pursuant to a federal Section 7 consultation or a federal Section 10(a) incidental take permit to notify CDFG in writing that the applicant has been issued an incidental take statement or an incidental take permit pursuant to FESA. The applicant must submit the federal opinion incidental take statement or permit to CDFG for a determination as to whether the federal document is "consistent" with CESA. It is likely that a Section 2081 Incidental Take Permit or Section 2080.1 Consistency Determination will be required for potential impacts to the state listed least Bell's vireo.

California Fish and Game Code

California Fish and Game Code §3511 includes provisions to protect Fully Protected (FP) species, such as: (1) Prohibiting take or possession "at any time" of the species listed in the

statute, with few exceptions; (2) stating that "no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to "take" the species; and (3) stating that no previously issued permits or licenses for take of the species "shall have any force or effect" for authorizing take or possession. CDFG is unable to authorize incidental take of "fully protected" species when activities are proposed in areas inhabited by those species. Sections 3503 of the Fish and Game Code state that it is “unlawful to take, possess, or destroy the nest or eggs of any bird, with occasional exceptions.” Section 3503.5 of the Fish and Game Code states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest of eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.”

In addition, §3513 states that it is unlawful to take or possess any migratory bird as designated in the MBTA or any part of such migratory birds except as provided by rules and regulations under provisions of the MBTA. White-tailed kite is a fully protected species under §3511 and has a potential to occur within the project corridor.

CDFG also manages the California Native Plant Protection Act of 1977 (Fish and Game Code Section 1900, et seq), which was enacted to identify, designate, and protect rare plants. In accordance with CDFG guidelines, California Native Plant Society (CNPS) 1B list plants are considered “rare” under the Act, and are evaluated in CEQA documents.

Section 1602 of the Fish and Game Code

CDFG is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the law requires any person, state or local government agency, or public utility proposing a project that may impact a river, stream, or lake to notify the CDFG before beginning the project. If the CDFG determines that a project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement (SAA) is required. A SAA lists the CDFG conditions of approval relative to the proposed project, and serves as an agreement between an applicant and the CDFG for a term of not more than five years for the performance of activities subject to this section. As proposed the project would require a SAA from CDFG.

California Coastal Act

The California Coastal Act was enacted in 1976 to provide long-term protection of California’s coastal resources. The Act’s coastal resources management policies are based on recommendations contained in the California Coastal Plan. One such policy includes:

> “Protection, enhancement and restoration of environmentally sensitive habitats, including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, certain wood and grasslands, streams, lakes, and habitat for rare or endangered plants or animals.”

The CCC must evaluate proposed impacts to wetlands. For wetland delineations in the Coastal Zone, the CCC utilizes a single-criteria definition (in addition to the USACE three criteria definition). Delineations performed using the CCC definition generally results in larger wetland areas than a corresponding USACE delineation of the same site. Habitat constituents within the project corridor meet both the single criteria and the three-criteria parameters based on the presence of wetland vegetation, soils, and high ground water (hydrology). A Preliminary Jurisdictional Determination has been prepared (SWCA 2009), which delineates coastal wetland

areas. Arroyo Grande Creek also constitutes an environmentally sensitive habitat within the Coastal Zone, as defined by the California Coastal Act. Any proposed impacts to these habitats must conform to Coastal Act/Local Coastal Plan requirements.

4.3.3 Thresholds of Significance

The significance of potential biological impacts is based on Appendix G of the State CEQA *Guidelines*. Using these guidelines, activities requiring CEQA review within the project corridor would have a significant impact on biological resources if they would:

1. Substantially affect a rare or endangered species;

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community;

3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act;

4. Interfere substantially with the movement of any resident or migratory species of wildlife or with established native resident or migratory wildlife corridors;

5. Conflict with any local policies or ordinances protecting biological resources;

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan;

7. Reduce the long term viability of native plant, fish, or wildlife populations;

8. Reduce species diversity or numbers of species; and,

9. Introduce invasive plant or animal species.

4.3.4 Impact Assessment and Methodology

Impacts have been analyzed using a reasonable "worst-case" scenario for plant communities, jurisdictional features, and sensitive plant and wildlife species. Potential impacts are expected to occur where proposed activities would result in temporary or permanent modification of sensitive plant communities or habitats occupied by special-status species. Impacts to biological resources were evaluated by determining the sensitivity, significance, or rarity of each resource that would be adversely affected by the proposed project. Thresholds of significance were applied to determine if the impact constitutes a significant impact. The significance threshold may be different for each resource and is based on the resource's rarity or sensitivity and the level of impact that would result. Where potential project-related impacts to sensitive resources were identified, measures for avoiding or minimizing adverse effects to these resources are recommended.

4.3.4.1 Assessing Areas of Disturbance

To allow impacts to plant communities and jurisdictional features to be quantified, a potential area of disturbance was identified based on the WMP Conceptual Plans and proposed management activities (refer to Appendix B) overlain with GIS-based plant community and jurisdictional waters mapping data collected during field surveys conducted for this EIR.

Descriptions of the factors that affect the areas of disturbance are presented below. Figure 4.3-7 shows a typical section of the channel and identifies where proposed management activities would potentially occur in relation to existing jurisdictional features.

Vegetation Management

As described in the WMP, woody vegetation would be completely removed from the channel between a 10-foot riparian buffer on each side of the low-flow stream channel and the inside toe of the levee slopes (this buffer would be 5 feet within the Los Berros Channel, and this is reflected in Table 4.3-1 below). This removal would be considered a permanent impact due to the proposed repeated vegetation clearing to facilitate flood control. Riparian vegetation within the buffer area would be hand-trimmed as necessary up to six feet from ground level, and considered subject to temporary disturbances. It should be noted that the impact areas identified for jurisdictional areas in Table 4.3-1 are not necessarily additive. That is, there is some overlap among the jurisdictions. For example, the Coastal Commission jurisdiction includes both the CDFG and USACE jurisdictional areas that are located in the Coastal Zone.

Table 4.3-1. Vegetation Management Impacts to Plant Communities and Jurisdictional Features[1]

Plant Communities / Jurisdictional Features	Temporary Impacts (in acres)	Permanent Impacts (in acres)
Plant Communities		
Willow Riparian Woodland	12.30	10.10
Riparian Scrub	0.02	0.10
In-Stream Wetlands	4.34	0
Coyote Brush Scrub	0	0.97
Non-native (ruderal) grassland	4.10	19.39
Ornamental Vegetation	0	0.74
Agriculture[3]	0	2.18
Jurisdictional Features		
U.S. Army Corps of Engineers Wetlands	4.47	0.36
U.S. Army Corps of Engineers Other Waters	5.70	0
California Department of Fish and Game	16.76	26.48[2]
Regional Water Quality Control Board[4]	10.17	0.36
California Coastal Commission[5]	5.14	9.18

1. There is overlap between the impacts to plant communities and jurisdictional features. For purposes of this EIR, mitigation recommendations are based impacts to jurisdictional features.

2. CDFG jurisdiction extends from the thalweg (low point) of the Arroyo Grande Creek channel to the tops of the levees. While permanent impacts within CDFG jurisdiction would occur between the riparian buffer and the tops of the levees, the extent of

Table 4.3-1. Vegetation Management Impacts to Plant Communities and Jurisdictional Features[1]

Plant Communities / Jurisdictional Features	Temporary Impacts (in acres)	Permanent Impacts (in acres)

permanent impacts to vegetation would be from the riparian buffer to the outer edge of riparian vegetation within the channel. The quantity of vegetation permanently impacted (and therefore, the area requiring mitigation) will be less than the jurisdictional area listed in the table, and equates to approximately 19.9 acres.

3. The Agricultural impact area noted in this table is based on mapping of habitat types during biological resources field surveys. It differs, and is less accurate than the impact areas identified in the Agricultural Resources section of this EIR.

4. These impacts are identical to the U.S. Army Corps of Engineers Wetlands and Other Waters impact areas and should not be considered in addition to those impacts.

Sediment Management

The initial sediment management activities would include the excavation of overflow, or "secondary" channels and installation of log structures which would provide habitat while discouraging the migration of the low flow channel. The excavation would occur outside of the 10-foot buffers guiding the vegetation management activities. Maintenance of the secondary channels would be necessary over the long-term and would be conducted through use of an excavator from the top of the levee. Installation of the log structures would require some work within the buffer, zone, although the impacts would be temporary.

Impacts to jurisdictional areas outside of the low-flow channel buffer area have been considered in the vegetation management discussion and Table 4.3-1 above and are considered permanent impacts. Because the initial and ongoing sediment management activities would occur primarily outside of the buffer area, occur simultaneously with vegetation management activities, and be temporary, no additional impacts would result.

Alternative 3a and 3c Levee Raise

Alternative 3a and 3c would require earthwork including over excavating the existing levee in some places, and placement of new fill. In some cases, portions of the toe of the levee may need to be expanded as well. This activity would effectively widen the levees at their base, but levee improvements would not encroach within the riparian buffer zone. No additional permanent or temporary impacts to jurisdictional features are expected beyond the ongoing periodic vegetation management activities already described.

Secondary Components

As described in the Project Description, the following construction activities would be required if Alternative 3c is implemented.

Union Pacific Railroad Bridge Replacement

The UPRR bridge raising which would be necessary in order for the benefits of the Alternative 3c levee raise to be realized. Based on preliminary construction drawings, the bridge raising would result in approximately 3 acres of temporary disturbance related to construction and removal of the shoe-fly track. Permanent impacts would be limited to any changes made to the footprint of the existing UPRR grade to allow for the bridge to be raised approximately 5 feet. Financial costs to implement this component, and the necessity of coordinating improvements

with UPRR, will likely delay its implementation for some time. An updated assessment of potential impacts associated with the bridge raise may need to be performed once construction details are known.

Table 4.3-2. UPRR Bridge Raise Impacts to Plant Communities and Jurisdictional Features[1]

Plant Communities / Jurisdictional Waters	Temporary Impacts (in acres)	Permanent Impacts (in acres)
Plant Communities		
Willow Riparian Woodland	0.18	0.0045
Riparian Scrub	0.03	0.0048
In-Stream Wetlands	0	0
Coyote Brush Scrub	0	0
Non-native (ruderal) grassland	1.49	0.0039
Ornamental Vegetation	0	0
Agriculture	0	0
Jurisdictional Features		
U.S. Army Corps of Engineers Wetlands	0	0
U.S. Army Corps of Engineers Other Waters	0	0.28
California Department of Fish and Game	0.10	0
Regional Water Quality Control Board	0	0.28
California Coastal Commission	0	0

1. There is overlap between the impacts to plant communities and jurisdictional features. For purposes of this EIR, mitigation recommendations are based impacts to jurisdictional features. Refer to Table 4.3-1 for additional clarifications and information.

Structure Encroachment

These activities would require construction of retaining walls, flood walls, or would require the relocation or demolition of structures. They would not require significant earthwork by heavy machinery and would not be expected to impact sensitive vegetation or species, as this work would occur mainly along or outside of the levees.

22nd Street Bridge Modification

This activity requires modifications to the bridge railings, but significant earthwork or disturbance within the channel would not be required.

4.3.4.2 Development of Mitigation

The WMP was developed to provide guidance for increasing flood capacity of the Arroyo Grande Creek Channel, but also to provide a framework for: (1) addressing the impacts which would result from those activities, and (2) enhancing habitat within the channel. Therefore, the mitigation measures recommended rely on monitoring, performance, and protection measures already included in the WMP, to the extent feasible. If those are exhausted, standard agency mitigation measures addressing impacts are recommended. In some cases, due to the unique nature of this project, additional mitigation measures have been developed. These measures would then be incorporated into the WMP directly, integrated into the various Work Plans required by the WMP, or be shown on construction plans, as applicable.

4.3.5 Project-Specific Impacts and Mitigation Measures

The vegetation and sediment management components of the WMP would be the first components of the project to be implemented, the ones that would potentially result in the most permanent and temporary impacts to biological resources, and are likely to occur simultaneously during annual implementation of the WMP. Therefore the discussion of potential impacts and recommended mitigation measures for these components of the project are considered together in the discussion below. The discussion is structured to address impacts by component, and by resource type (i.e. plant communities, jurisdictional features, sensitive plants, and sensitive wildlife).

4.3.5.1 Plant Communities and Jurisdictional Features

Vegetation and Sediment Management

As discussed above and shown in Table 4.3-1 these components of the project would permanently impact 26.48 acres of CDFG jurisdictional areas, of which approximately 19.9 acres are occupied by riparian vegetation. These jurisdictional areas include 0.36 acre of USACE/RWQCB jurisdictional wetlands, and 9.18 acres of CCC jurisdictional areas. A combination of handwork and heavy machinery would be used for removal of vegetation outside of the riparian buffer. These activities would be considered permanent as they would be ongoing and critical to maintaining the roughness goals (manning's coefficient of 0.04) of the WMP. Within the buffer, vegetation management would include removal by hand of horizontal branches up to six feet from ground level.

Vegetation and sediment management would be conducted as often as necessary (possibly every one to three years) through an adaptive management approach that would include regular reconnaissance surveys, as well as site visits with regulatory agency staff as needed. Sediment management is not expected to occur as frequently (possibly once every five years). These activities are fully described in the WMP (refer to Appendix B).

The WMP also includes three vegetation enhancement activities within the channel, including: (1) systematic removal of invasive, exotic species; (2) increasing species diversity within the buffer area; and (3) increasing the canopy cover throughout the project area by filling in gaps in the existing riparian vegetation within the buffer area.

Figure 4.3-7. Areas of Disturbance

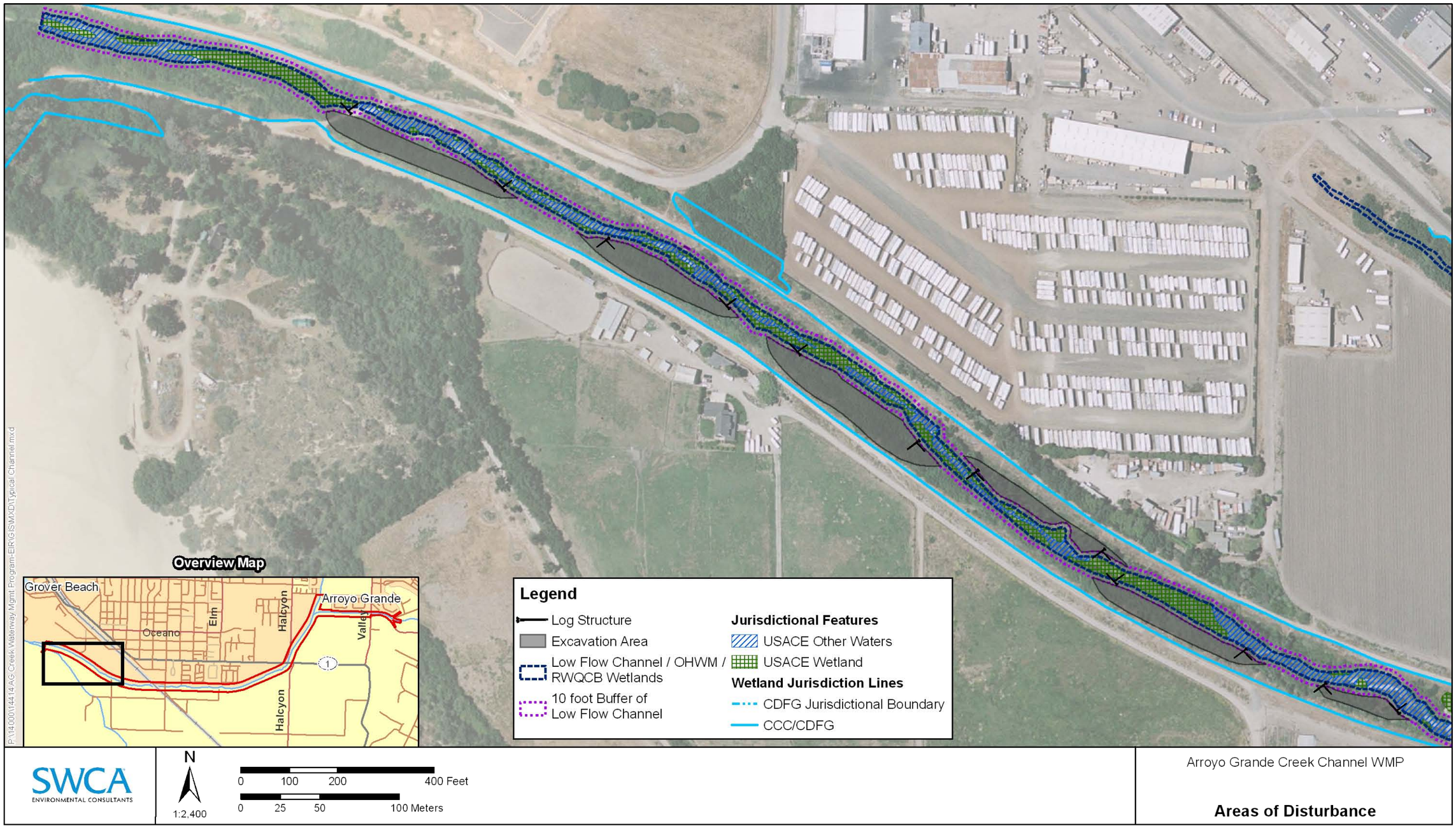

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Figure 4.3-8. Areas of Disturbance

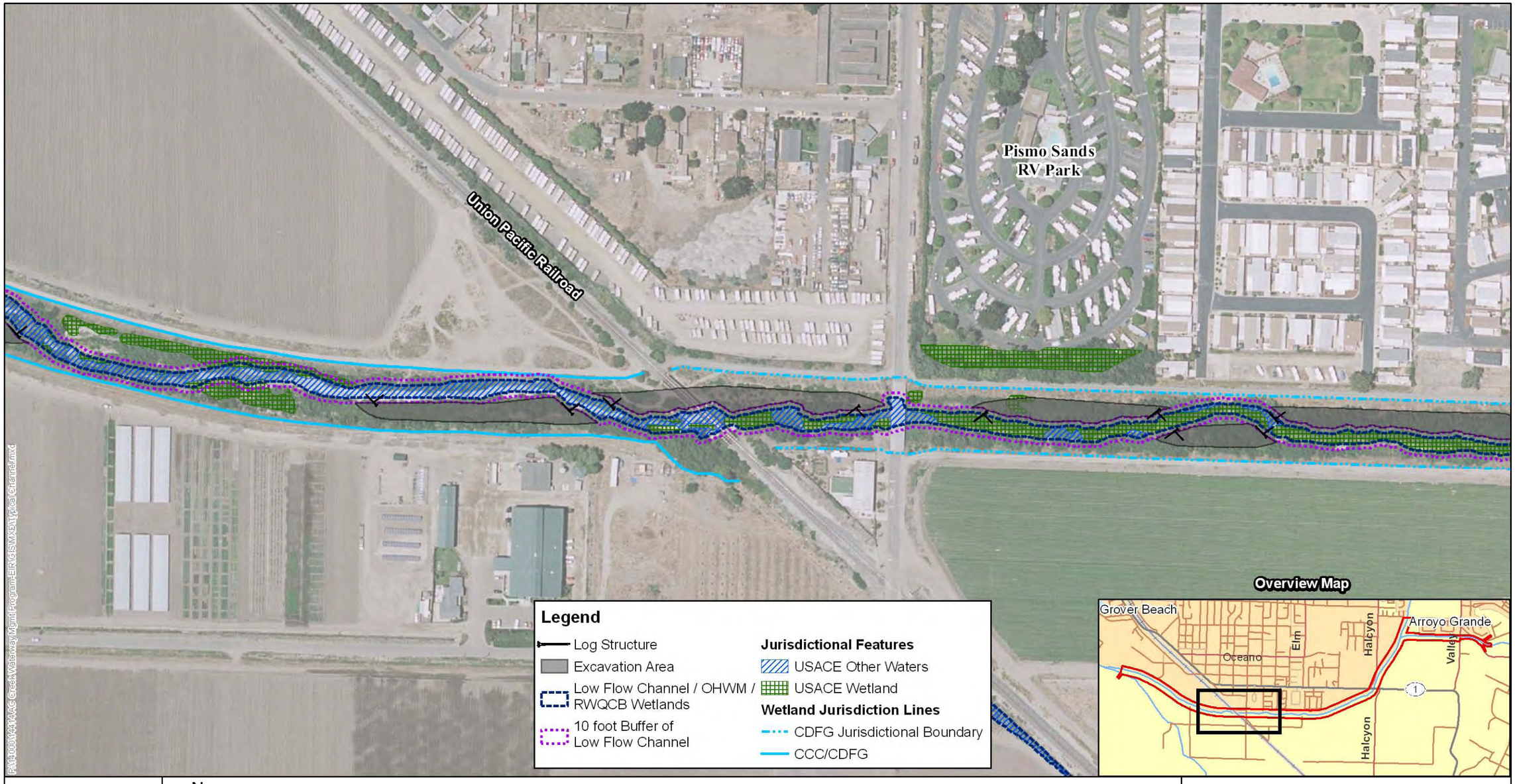

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Figure 4.3-9. Areas of Disturbance

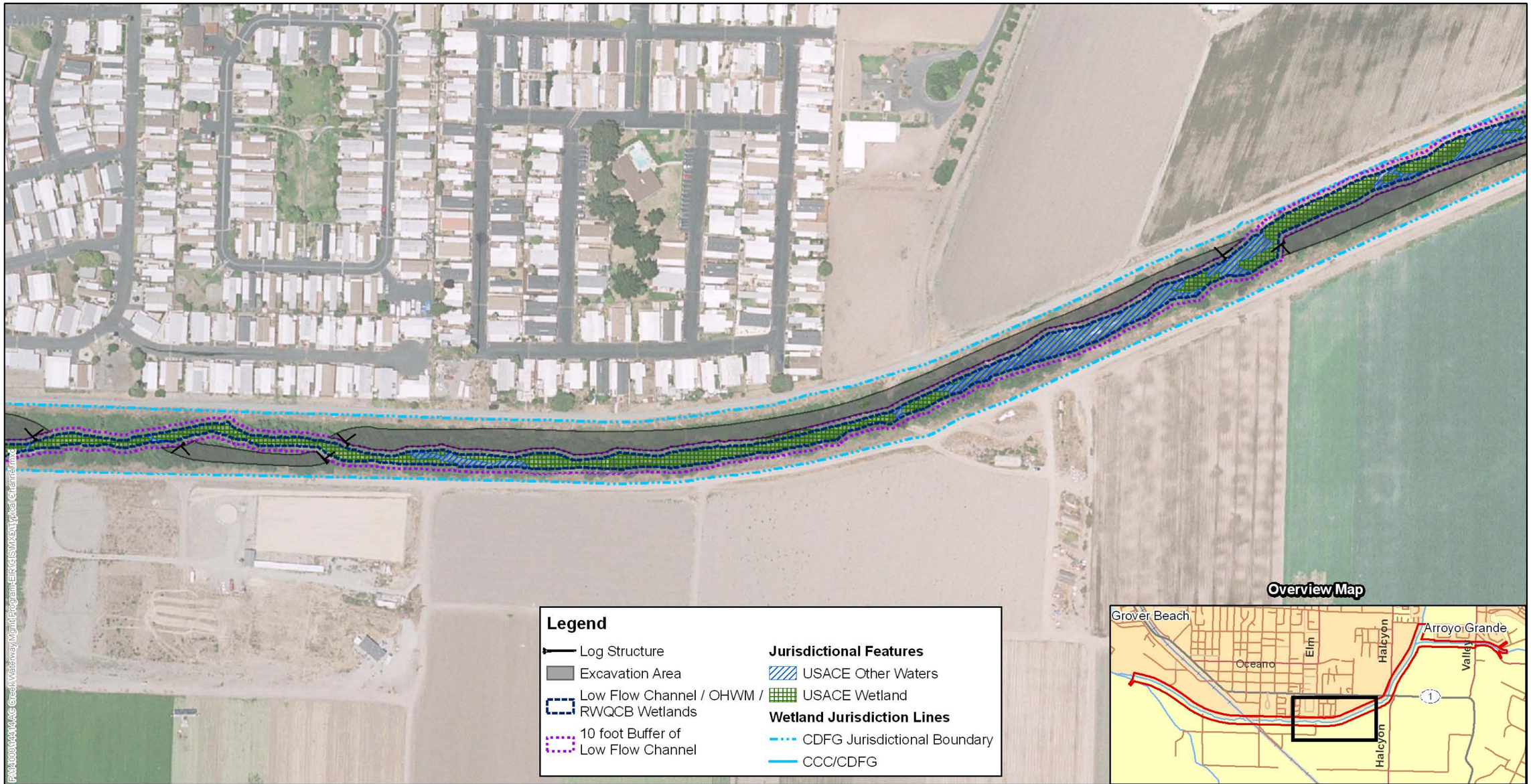

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Figure 4.3-10. Areas of Disturbance

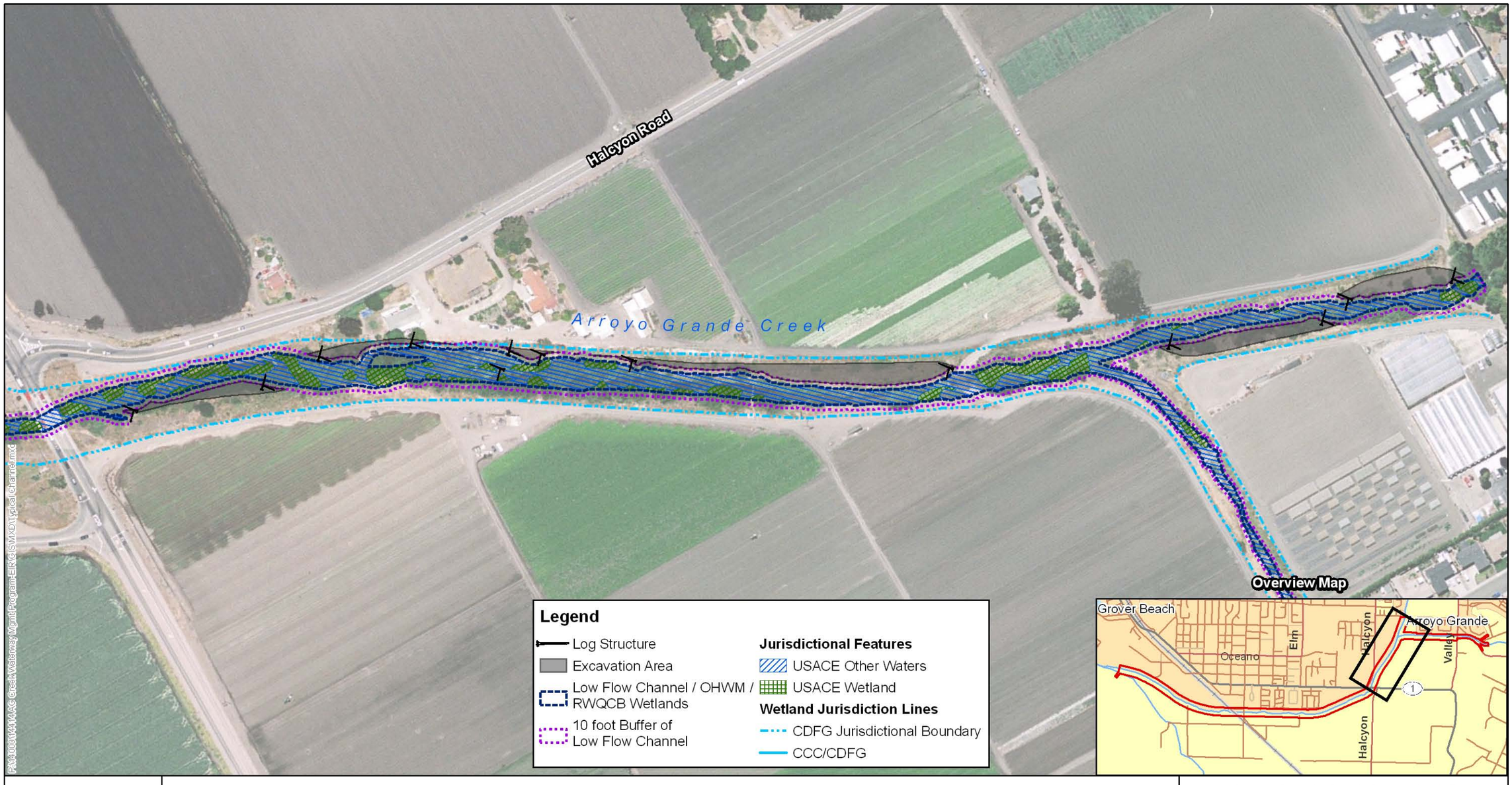

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Figure 4.3-11. Areas of Disturbance

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These three activities, along with the vegetation and sediment management activities would be included within the annual workplan required by MON VEG-1 in the WMP. Preparation of the workplan would allow the San Luis Obispo County Flood Control and Water Conservation District (District) and resource agencies to monitor the affects of previous management efforts, and would provide resource agencies an opportunity to comment on management activities the District for the upcoming season.

The mitigation strategy included below recommends replacement in-kind for permanent impacts to plant communities and jurisdictional areas through development of a Mitigation and Monitoring Plan (MMP), and reliance on the habitat enhancement strategies in the WMP to mitigate initial and ongoing temporary impacts to these areas.

BR Impact 1 **Vegetation and sediment management would include the permanent loss of approximately 26.48 acres of CDFG jurisdiction, 0.36 acres of USACE/RWQCB wetlands, and 9.18 acres of coastal wetlands within Arroyo Grande Creek channel and Los Berros Creek, resulting in a significant impact.**

Mitigation Measures

BR/mm-1 *Prior to implementation of any component of the WMP, the District shall obtain a Section 404 Permit from USACE, a Section 401 Water Quality Certification from RWQCB, a Coastal Development Permit from the CCC, and a Section 1602 Streambed Alteration Agreement from CDFG for project-related impacts that will occur in areas under the jurisdiction of these regulatory agencies.*

BR/mm-2 *Prior to construction, to mitigate for the permanent impacts the District shall develop a Mitigation Monitoring Plan (MMP) in consultation with the appropriate regulatory agencies due to the known presence of sensitive habitats and jurisdictional wetlands/other waters within the project site. The MMP shall include success criteria goals and a five-year monitoring schedule. A qualified biologist/botanist shall supervise site preparation, timing, species utilized, planting installation, maintenance, monitoring, and reporting of the revegetation/restoration efforts. The following measures shall be incorporated into the MMP:*

a. *Prior to construction, locations of wetlands to be avoided shall be flagged by a qualified biologist. The areas to be protected should be shown on all applicable construction plans. Prior to any vegetation or sediment removal, exclusionary fencing should be erected by the contractor at the boundaries of all construction areas to avoid equipment and human intrusion into adjacent habitats. The fencing should be maintained and remain in place throughout construction activities.*

b. *Prior to construction, the District shall specify an on-site mitigation strategy (or combination of on-site and off-site) in the MMP to mitigate for impacts to sensitive habitats which would be impacted. This plan should identify the following:*

i. *Suitable on-site mitigation locations (or off-site locations, if there is not enough suitable space along Arroyo Grande Creek) based on soil type, hydrologic conditions, and proximity to existing sensitive species populations;*

ii. *Seed collection and cuttings/plantings requirements and protocol;*

iii. *Soil seed bank conservation strategies;*

iv. *Mitigation site preparation techniques;*

v. *Seeding regimen;*

vi. *Mitigation site maintenance schedule, including weed abatement strategies, erosion control monitoring, etc.; and,*

vii. *Monitoring requirements.*

c. *The MMP will be implemented after initial vegetation and sediment removal activities.*

BR/mm-3 *Prior to initiation of WMP activities, the District shall retain qualified biological monitor(s) approved by all involved regulatory agencies to ensure compliance with mitigation measures pertaining to biological resources. Monitoring will occur throughout the length of initial vegetation and sediment removal and during supplemental vegetation and sediment removal, or as directed by the regulatory agencies.*

BR/mm-4 *Prior to initial, and during subsequent management activities,, the project site shall be clearly flagged or fenced so that the contractor is aware of the limits of allowable site access and disturbance.*

BR/mm-5 *Prior to initiation of WMP activities, the District shall prepare a Hazardous Materials (HAZMAT) Response Plan to allow for a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.*

BR/mm-6 *Prior to initiation of WMP activities, if stream diversion/dewatering shall be necessary for any component of the project, the District shall prepare a Diversion and Dewatering plan. The form and function of all pumps used during the dewatering activities shall be checked by biological monitor(s) to ensure a dry work environment and minimize adverse effects to aquatic species and habitats.*

BR/mm-7 *During implementation of the WMP, all equipment staging areas, construction-crew parking, and construction access routes shall be established in previously disturbed areas.*

BR/mm-8 *During implementation of the WMP, the cleaning and refueling of equipment and vehicles shall occur only within a designated staging area and at least 65 ft (20 m) from wetlands, other waters, or other aquatic areas. This staging area shall conform to BMPs applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles shall be checked and maintained on a daily basis to ensure proper operation and avoid potential leaks or spills.*

BR/mm-9 *During implementation of the WMP, all project-related hazardous materials spills within the project site shall be cleaned up immediately. Spill prevention and cleanup materials shall be on-site at all times during construction.*

BR/mm-10 *During implementation of the WMP, trash shall be contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.*

BR/mm-11 *During implementation of the WMP, no pets shall be allowed on the construction site.*

BR/mm-12 *After diversion/dewatering (if necessary) has been completed, all material used for diversion/dewatering shall be removed from creek corridor under the supervision of the biological monitor(s) or qualified fisheries biologist.*

BR/mm-13 *Following initial vegetation and sediment removal, areas of temporary disturbance shall be restored using topsoil salvage and hydroseeding with appropriate non-invasive herbaceous species for erosion control. Because native plant species are likely to be out-competed by non-native species, a ground-cover mix is recommended for impacted areas. Topsoil salvage methods and seed mixes shall be specified in the MMP. Hydroseeded areas shall be monitored by a qualified restoration biologist and/or horticulturalist for viability and overall success, with additional recommendations as necessary.*

BR/mm-14 *To reduce impacts of beaver dams on flood control in the Arroyo Grande Creek channel, coordinate with CDFG to implement beaver management as outlined in the WMP.*

Residual Impact

As they are key components of the project required for increasing flood control capacity, temporary and permanent impacts to riparian vegetation and jurisdictional wetlands/other waters along Arroyo Grande Creek and Los Berros Creek associated with the proposed project would be unavoidable. In order to be consistent with regulatory agency standards for "no net loss" of wetlands, mitigation will be required to offset permanent impacts to jurisdictional features, through a combination of on-site and off-site, in-kind and out-of-kind, restoration, and enhancement. With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

BR Impact 2 **Vegetation and sediment management would include temporary impacts of up to approximately 16.76 acres of CDFG jurisdiction, 10.17 acres of USACE/RWQCB wetlands, and 5.14 acres of coastal wetlands**

annually within Arroyo Grande Creek and Los Berros Creek, resulting in a significant impact.

Mitigation Measures

Implement PM VEG-1 through 4, PM SED 4 and 5, and BR/mm- 1, and 3-14.

Residual Impact

The PM VEG and SED measures in the WMP require the District to maintain or increase canopy cover within the project area, remove invasive species, and improve species diversity (planting sycamore or cottonwood, for example) within the buffer area. As described in the WMP, these efforts would be included in the workplans submitted to agencies annually. The results of the efforts would be measured every three years. After implementation of these measures, ongoing temporary impacts to riparian habitat and jurisdictional areas would be *less than significant*. No additional mitigation is required.

Alternative 3a and 3c Levee Raise

Alternative 3a and 3c would require earthwork including over excavating the existing levee in some places, and placement of new fill. In some cases, portions of the toe of the levee may need to be expanded as well. This activity would effectively widen the levees at their base, but levee improvements would not encroach within the riparian buffer zone. No additional permanent impacts are expected beyond the ongoing periodic vegetation and sediment management activities already described. Alternative 3c construction techniques would be similar to those described for Alternative 3a, but earthwork would be more substantial, requiring more fill and carried out over a longer work schedule. The toe of the levees would encroach more into the channel than compared to Alternative 3a, but not into the riparian buffer zone. Encroachment on the channel side of the levees has been minimized as much as possible, because it would disturb habitat and reduce the capacity of the channel.

BR Impact 3 Construction of the Alternative 3a and/or 3c levee raise would temporarily impact to jurisdictional areas, resulting in a significant impact.

Mitigation Measures

Implement PM VEG-1 through 4, PM SED 4 and 5, and BR/mm-1 through 14, as applicable.

Residual Impact

These measures in the WMP along with the additional mitigation measures recommended to address temporary impacts resulting from the vegetation and sediment management components of the WMP would also apply to temporary impacts resulting from construction of the Alternative 3a and 3c levee raise projects. With implementation impacts would be *less than significant*. No additional mitigation is required.

Secondary Components

Based on Table 4.3-2, the UPRR bridge raising project would temporarily disturb approximately 0.1 acres of jurisdictional features and permanently disturb 0.28 acres of jurisdictional features. Much of this disturbance however would include areas within the channel which would already

have been disturbed by the vegetation and sediment management activities by the time this component occurs. Due to the lack of specificity in regards to this component of the project and the relatively long amount of time which may pass before it is implemented, specific impacts to plant communities and jurisdictional areas are somewhat speculative. Subsequent environmental review may be required at such time as this component has been further refined and a potential construction schedule is known.

BR Impact 4 Replacement of the Union Pacific Railroad Bridge would permanently impact 0.28 acres of USACE/RWQCB wetlands and temporarily impact 0.1 acres of CDFG jurisdictional areas, resulting in a significant impact.

Mitigation Measures

Implement BR/mm-1 through 14 as applicable to the UPRR component of the project.

Residual Impact

In order to be consistent with regulatory agency standards for "no net loss" of wetlands, mitigation will be required to offset permanent impacts to jurisdictional features, through a combination of on-site and off-site, in-kind and out-of-kind, restoration, and enhancement. With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

The PM VEG and SED measures in the WMP require the District to maintain or increase canopy cover within the project area, remove invasive species, and improve species diversity (planting sycamore or cottonwood, for example) within the buffer area. As described in the WMP, these efforts would be included in the workplans submitted to agencies annually. The results of the efforts would be measured every three years. After implementation of these measures, ongoing temporary impacts to riparian habitat and jurisdictional areas would be *less than significant*. No additional mitigation is required.

4.3.5.2 Sensitive Plant Species

Vegetation and Sediment Management

Although sensitive plant species were not observed during floristic surveys and are not expected to occur along the portion of Arroyo Grande Creek within the project area, there remains a limited potential with the passage of time that the federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species could be found within the project corridor, due to the presence of suitable habitat. If found to occupy habitat within the project corridor, project activities could result in the take of sensitive plant species.

BR Impact 5 Implementation of the WMP could result in take of federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species

Mitigation Measures

BR/mm-15 *During construction or subsequent survey efforts, if marsh sandwort, Gambel's watercress, or other sensitive species are observed within the project corridor by biological monitor(s), areas with sensitive plant species will be fenced or marked for avoidance until coordination with regulatory agencies*

can be facilitated to obtain incidental take (if necessary) or mitigation can be developed to avoid, minimize, or offset impacts to sensitive plant species.

Residual Impact

These measures would require the District to replace in-kind all permanently impacted jurisdictional areas through development and implementation of an MMP. Because the goal of the WMP is to reduce the quantity of vegetation within the channel to allow for greater flood capacity, it is unlikely that replacement efforts would occur within the project corridor. However, there are a number of potential habitat improvement projects in the Arroyo Grande Creek watershed that have been identified by the Central Coast Salmon Enhancement. These projects could provide opportunities for offsite mitigation efforts. Impacts to sensitive plant species are not expected in the short-term and remain unlikely in the long-term. With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

Alternative 3a and 3c Levee Raise

No sensitive plant species were observed during floristic surveys and are not expected to occur along the portion of Arroyo Grande Creek within the project area after implementation of the vegetation management activities (with the buffer area within the channel being one potential exception). Still, due to funding limitations, it is possible that the Alternative 3a or 3c levee raise projects would not occur for 5 years or more after approval of initial permits for the WMP. With the passage of time there is potential that the federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species could be found within the project area due to the presence of suitable habitat.

BR Impact 6 **Implementation of the levee raise components of the project could result in take of federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species.**

Mitigation Measures

BR/mm-16 *Prior to finalization of the Alternative 3a and/or 3c levee raise components of the project, a qualified biologist shall perform an updated full floristic survey of the proposed area of disturbance to identify sensitive species which could be impacted during construction.*

BR/mm-17 *If marsh sandwort, Gambel's watercress, or other sensitive species are observed within the area of disturbance the District the plans shall be redesigned to avoid these species to the extent feasible, and coordinate with regulatory agencies to facilitate to obtain incidental take (if necessary) or mitigation can be developed to avoid, minimize, or offset impacts to sensitive plant species.*

Residual Impact

Impacts to sensitive plant species are not expected in the short-term and remain unlikely in the long-term due to the proposed vegetation maintenance outside of the buffer area. With implementation of this measure, the impact would be *less than significant.* No additional mitigation is required.

Secondary Components

As with the levee raise component, the UPRR bridge raise may not occur for a number of years. Refer to BR Impact 9, and BR/mm-33 and 34. These impacts and mitigation measures would also be applicable to the UPRR bridge raise component.

4.3.5.3 Sensitive Wildlife Species

Vegetation and Sediment Management

Tidewater goby and south-central California coast steelhead

Vegetation and sediment removal activities have the potential to directly and/or indirectly impact the federally listed tidewater goby and south-central California coast steelhead.

Vegetation management activities would result in removal of large amounts of vegetation from Arroyo Grande Creek, and less so for Los Berros Creek. Streamside vegetation enhances aquatic habitat conditions by providing shade, terrestrial insects, and instream cover habitat. The trimming or removal of riparian vegetation would likely permanently affect overhanging vegetation and microclimate conditions in overflow areas on the outer edge of the riparian buffer in each drainage; however, areas within the riparian buffer zone along the typically wetted portions of the streams would only be subjected to temporary impacts associated with periodic limbing/trimming, and would not be expected to significantly affect habitat and microclimate conditions for steelhead and other fish within the typically wet portions of Arroyo Grande Creek and Los Berros Creek. A Mitigation and Monitoring Plan would also be implemented, which would compensate for losses of riparian vegetation and would function to replace lost habitat.

Water quality is important for aquatic life and maintaining quality of steelhead critical habitat for rearing and spawning. Sediment removal activities would not be expected to result in direct impacts to water quality if conducted during dry conditions, but alteration of the substrate topography in overflow areas of Arroyo Grande Creek could result in future alteration of water quality in those areas during overflow conditions. Installation and removal of temporary stream diversions would likely temporarily increase the potential for sedimentation and turbidity, which can result in fish mortality, reduce the effectiveness of feeding behaviors, and decrease food sources. Although turbidity and sedimentation rates are expected to increase during installation of the temporary diversion, these increases are not expected to significantly affect tidewater goby or steelhead habitat because they would be temporary, localized, similar to or less than the levels fish species can be subjected to as part of natural storm flow events, and would be expected to settle out relatively quickly. Use of heavy equipment also has the potential to accidentally release hazardous materials harmful to aquatic life. To further reduce potential inputs of hazardous substances to the stream all equipment and vehicles will operate only outside of flowing water and all servicing and staging of vehicles will be conducted away from the stream channel (at minimum of 20 m) in designated areas and a Hazardous Materials Response Plan will be prepared and implemented.

In addition to the direct loss of habitat, installation of the log structures during the initial sediment removal may require dewatering portions of the creek. The excavations would be limited in size and occur during the dry season, so it is unlikely that vegetation or sediment management activities would require dewatering when surface flows exist.

Prior to any dewatering process, if necessary, tidewater goby and steelhead would be relocated from wetted areas where work will be conducted. While the goal of relocation is to avoid injury

or mortality, relocated fish will unavoidably be subjected to the stresses of capture, handling, and relocation. Arroyo Grande Creek has a viable steelhead population, and an unknown number of steelhead would potentially require relocation during dewatering activities (although abundance surveys performed in the channel only identified 0.004 fish/feet of channel, or 4 per 1000 feet). It is anticipated that any incidental injury or mortality of steelhead associated with implementation of the proposed project would be low with the use of qualified biological monitors experienced in salmonid capture, handling, and relocation. The potential types of impacts to tidewater goby are similar, but would be less expected, as potential for tidewater goby presence is reduced with increased distance upstream from the lagoon.

Any project-related activities that affect instream habitat could potentially affect food resources for tidewater goby and steelhead, such as aquatic invertebrates. Individual benthic aquatic insects would be expected to be affected when sections of the creek would be temporarily dewatered. Effects to aquatic insects resulting from the stream diversion would be temporary because diversion/dewatering activities would be relatively short, and short-term recolonization of disturbed areas by invertebrates would be likely. The effect of insect loss on tidewater goby and steelhead would be at least partially countered by food from upstream sources carried through the diversion pipe that would remain available to fish downstream of the diversion.

The sediment management component of the WMP is intended to enhance aquatic habitats as well. Specifically, the secondary channels would potentially create complex flow conditions that may create habitat (eddies, backwater, scour) for aquatic species. This component would also include the installation of large woody structures at the intersection of the primary and low-flow channels. These structures have been proposed to reduce the potential for headcutting into the primary channel and to encourage pool scour and mimic an undercut bank. They also will provide important escape cover habitat during high flow conditions when steelhead are attempting to migrate through the project reach. This type of habitat has been shown to be lacking through the project reach.

The WMP has been designed with performance measures for steelhead, including maintaining or increasing cover habitat for steelhead, despite the loss of vegetation outside of the buffer area. Protection measures for steelhead are also included in the WMP. These would also result in protections for tidewater goby. Implementation of WMP Protection Measures PM-4, PM-5, and PM-6 would minimize impacts to steelhead and tidewater goby and result in less risk of injury or mortality to these sensitive fish species.

BR Impact 7 **Vegetation and sediment removal activities have the potential to directly and/or indirectly impact the federally listed tidewater goby and south-central California coast steelhead.**

Mitigation Measures

Implement WMP Performance Measures PM SED-4 and 5, and Protection Measures PM-3, PM-4, and PM-5, and BR/mm-1 through 14.

BR/mm-18 *Prior to construction, the District shall coordinate with USACE via the Section 404 permitting process to acquire incidental take authorization from 1) USFWS through a FESA Section 7 Biological Opinion and Incidental Take Statement for tidewater goby; and, 2) NMFS through a FESA Section 7 Biological Opinion and Incidental Take Statement for steelhead.*

BR/mm-19 *Prior to construction, a component including a description of tidewater goby and south-central California coast steelhead, their ecology, legal status, and the need for conservation of these species shall be integrated into a worker environmental training program. All construction personnel conducting in-stream work shall participate in the training program conducted by a qualified biologist.*

BR/mm-20 *If in-stream work is necessary, a qualified biologist shall be retained with experience in tidewater goby and steelhead biology and ecology, aquatic habitats, biological monitoring (including diversion/dewatering), and capturing, handling, and relocating fish species. During in-stream work, the biological monitor(s) shall continuously monitor placement and removal of any required stream diversions to capture stranded steelhead and other native fish species and relocate them to suitable habitat as appropriate. The biologist(s) shall capture native fish stranded as a result of diversion/dewatering and relocate them to suitable instream habitat immediately downstream of the work area. The biologist shall note the number of native fish observed in the affected area, the number of fish relocated, and the date and time of the collection and relocation.*

BR/mm-21 *During construction, non-native fish and other aquatic species shall be permanently removed from Arroyo Grande Creek when captured.*

BR/mm-22 *During in-stream work, if pumps are incorporated to assist in temporarily dewatering the site, intakes shall be completely screened with no larger than 0.2 inch (five mm) wire mesh to prevent tidewater goby, steelhead, and other sensitive aquatic species from entering the pump system. Pumps shall release the additional water to a settling basin allowing the suspended sediment to settle out prior to re-entering the stream(s) outside of the isolated area. The form and function of all pumps used during the dewatering activities shall be checked daily, at a minimum, by a qualified biological monitor to ensure a dry work environment and minimize adverse effects to aquatic species and habitats.*

BR/mm-23 *During construction, the biological monitor shall monitor erosion and sediment controls to identify and correct any conditions that could adversely affect sensitive aquatic species or habitats. The biological monitor shall be granted the authority to halt work activity as necessary and to recommend measures to avoid/minimize adverse effects to steelhead and steelhead habitat.*

Residual Impact

Impacts to and take of federally listed tidewater goby and steelhead are likely to occur as a result of the proposed project. With implementation of these measures and the other previous measures, the impacts would be *less than significant.* These measures may be refined by USFWS and NMFS in federal Biological Opinions that would be required prior to implementation of the WMP.

California Red-legged Frog

Vegetation and sediment removal activities and ongoing maintenance have the potential to directly and/or indirectly impact the federally listed California red-legged frog. Stream diversion/dewatering, if required, could directly impact and result in take of California red-legged frog; Introduction of sediment into wetted portions of Arroyo Grande Creek could directly and/or indirectly impact California red-legged frog. Removal of vegetation and sediment could directly impact California red-legged frogs residing in drier areas adjacent to the riparian zone buffer.

Stream diversion/dewatering, if required, would remove shelter, breeding habitat, and foraging habitat by dewatering the creek channel, as well as trimming riparian vegetation within the buffer zone and permanent removal of vegetation outside the buffer zone in overflow areas; however, California red-legged frog habitat within the typically wetted portions of Arroyo Grande Creek and Los Berros Creek would be expected to recover to their pre-construction condition. Impacts to water quality, as described previously for tidewater goby and steelhead, could also impact California red-legged frog. California red-legged frogs that are not detected and relocated during preconstruction surveys could be subjected to injury or mortality or otherwise harmed by worker foot traffic. An unknown number of California red-legged frogs would be affected.

The WMP has been designed with protection measures for California red-legged frog. Implementation of WMP Protection Measures PM-1 and PM-6 would minimize impacts to California red-legged frog and result in less risk of injury or mortality to this and other sensitive aquatic species.

In anticipation that USACE would serve as the lead federal agency for the proposed project, and that a Clean Water Act Section 404 would be issued by USACE, recommended avoidance, minimization, and mitigation measures, include the following as provided by the *Programmatic Formal Endangered Species Act Consultation on Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the California Red-legged Frog* (USFWS 1999). With the use of protective measures contained in the USACE programmatic biological opinion, it is anticipated that few, if any, California red-legged frogs would likely be killed or injured during implementation of the project. These measures provide overlap with Protection Measure PM-1 for California red-legged frog presented in the WMP.

BR Impact 8 **Vegetation and sediment management activities have the potential to directly and/or indirectly impact the federally listed California red-legged frog.**

Mitigation Measures

Implement BR/mm-3 through 14, 22, and 23.

BR/mm-24 *At least 15 days prior to the onset of activities, the District or project proponent shall submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.*

BR/mm-25 *A Service-approved biologist shall survey the work site two weeks before the onset of activities. If California red-legged frogs, tadpoles, or eggs are found,*

the approved biologist shall contact the Service to determine if moving any of these life-stages is appropriate. In making this determination the Service shall consider if an appropriate relocation site exists. If the Service approves moving animals, the approved biologist shall be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only Service-approved biologists shall participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.

BR/mm-26 *Prior to initiation of the WMP, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.*

BR/mm-27 *A Service-approved biologist shall be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed. After this time, the contractor or permittee shall designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist shall ensure that this individual receives training outlined in the above measure and in the identification of California red-legged frogs. The monitor and the Service-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and Service during review of the proposed action. If work is stopped, the Corps and Service shall be notified immediately by the Service-approved biologist or on-site biological monitor.*

BR/mm-28 *The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas. Where impacts occur in these staging areas and access routes, restoration shall occur as identified in measures above.*

BR/mm-29 *A Service-approved biologist shall permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. The permittee shall have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.*

Residual Impact

Impacts to and take of federally listed California red-legged frog are likely to occur as a result of the proposed project. Permanent losses to habitat would be mitigated through development of the MMP. Temporary impacts would be mitigated through the measures listed above. With implementation of these measures and the other previous measures, the impacts would be *less*

than significant. Additional mitigation measures may eventually be required by USFWS and CDFG.

Other Sensitive Wildlife Species

Vegetation and sediment removal activities and ongoing maintenance have the potential to directly and/or indirectly impact Coast Range newt, southwestern pond turtle, coast horned lizard, and two-striped garter snake, which are all California Species of Special Concern. Potential impacts previously described for tidewater goby, steelhead, and California red-legged frog would also apply for the aquatic Coast Range newt, southwestern pond turtle, and two-striped garter snake. Coast horned lizard has a more limited potential of occurring along drier areas of Arroyo Grande Creek and Los Berros Creek. Monitoring by qualified biologists and capture and relocation of these species when observed (if necessary) would minimize impacts to these species and reduce the risk of injury or mortality.

BR Impact 9 **Vegetation and sediment management activities have the potential to directly and/or indirectly impact the following California Species of Special Concern: Coast Range newt, southwestern pond turtle, coast horned lizard, and two-striped garter snake.**

Mitigation Measures

BR/mm-30 *Prior to initiation of the WMP, the District shall obtain a letter of permission (or similar authorization) from CDFG to capture and relocate Coast Range newt, southwestern pond turtle, coast horned lizard, two-striped garter snake and other CSC species from work areas encountered during construction as necessary. Qualified biologists shall conduct a pre-construction survey for these species in areas where construction will occur. The qualified biologists shall capture and relocate these sensitive species or other sensitive aquatic species to suitable habitat outside of the area of impact. Observations of Species of Special Concern or other special-status species shall be documented on CNDDB forms and submitted to CDFG.*

Residual Impact

Impacts to special status wildlife species are likely to occur as a result of the proposed project. With implementation of this measure and the other previous measures, the impacts would be *less than significant.* Additional mitigation measures may eventually be required by regulatory agencies, to be determined during the permitting process.

Nesting Birds

Vegetation removal activities, including trimming of riparian vegetation within the buffer zone, have the potential to directly and/or indirectly impact nesting Cooper's hawk, sharp-shinned hawk, yellow warbler, white-tailed kite, purple martin, and other nesting bird species. Sedimentation removal activities and ongoing maintenance have the potential to indirectly impact nesting birds via noise and other disturbance associated with construction. Although riparian vegetation is present, western yellow-billed cuckoo, least Bell's vireo, and southwestern willow flycatcher are not expected to nest within the project corridor due to unsuitable types of riparian habitat present and a lack of historical nesting records in the region.

BR Impact 10 Vegetation and sediment management have the potential to directly and/or indirectly impact nesting bird species.

Mitigation Measures

BR/mm-31 *Prior to construction, vegetation removal shall be scheduled to occur outside of the typical nesting season (vegetation removal after August 15) if possible, to prevent birds from nesting within areas of disturbance during or just prior to construction.*

BR/mm-32 *Prior to construction, if construction activities are proposed to occur during the typical nesting season (between February 15 and August 15 as outlined in WMP Protection Measure PM-2) within 300 ft (90 m) of potential nesting habitat, a nesting bird survey shall be conducted by qualified biologists in potential nesting habitat at least two weeks prior to construction to determine presence/absence of nesting birds within the area of disturbance. Pre-construction surveys for least Bell's vireo by qualified biologists shall be included with any such pre-construction survey effort. Work activities shall be avoided within 100 ft (30 m) of active bird nests and 300 ft (90 m) of active raptor nests until young birds have fledged and left the nest. Readily visible exclusion zones shall be established in areas where nests must be avoided. USFWS and CDFG shall be contacted for additional guidance if nesting birds are observed within or near the boundaries of the project site. Nests, eggs, or young of birds covered by the MBTA and California Fish and Game Code shall not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later, nor would adult birds be killed, injured, or harassed at any time.*

BR/mm-33 *Prior to construction, the District shall coordinate with CDFG to determine if a Section 2081 Incidental Take Permit (or a Section 2080.1 Consistency Determination) will be required for least Bell's vireo. The District shall ensure avoidance of take of the Fully Protected white-tailed kite at all times.*

BR/mm-34 *Vegetation removal in potential nesting habitats shall be monitored and documented by the biological monitor(s) regardless of time of year.*

Residual Impact

Impacts to nesting birds as a result of the proposed project are possible but can be avoided by removing vegetation outside of the nesting season, or with pre-construction surveys and implementation of exclusion zones around active nests, as necessary. Impacts to and take of state and federally listed least Bell's vireo may occur as a result of the proposed project. Permanent losses to habitat would be mitigated through development of the MMP. With implementation of these measures and the other previous measures, the impacts would be *less than significant.* Additional mitigation measures may eventually be required by regulatory agencies, to be determined during the permitting process.

Alternative 3a and 3c Levee Raise

While raising the levees would increase the size of these features as barriers to terrestrial wildlife movement along a portion of the channel, it would not otherwise be expected to impact wildlife species other than via the generation of noise and disturbance associated with the activity. All levee work would be conducted by heavy equipment restricted to the top or

immediate vicinity of the levees. The tops of the levees would be subjected to routine temporary disturbance from heavy equipment and vehicles for maintenance purposes (levee, vegetation, and sediment maintenance).

BR Impact 11 Implementation of the levee raise components of the project could result in take of sensitive wildlife species including the California red-legged frog and two striped garter snake, among others.

Mitigation Measures

Implement BR/mm-3, 14, and 22 through 29.

Residual Impacts

Impacts to special status wildlife species are likely to occur as a result of the levee raise component of the proposed project. With implementation of these measures the impacts would be *less than significant.* These measures may need to be refined by regulatory agencies, during the permitting process, particularly if the levee raise activities do not occur in the near future.

Secondary Components

Because this component would require construction within channel, including within the buffer zone, sensitive wildlife species which could be affected by the UPRR bridge raise include all of those previously discussed in the vegetation and sediment management discussion. In addition, replacement of the Union Pacific Railroad Bridge has the potential to impact nesting birds, pallid bat, Townsend's big-eared bat, or other roosting bats, if these species are found to be using the bridges as artificial habitat prior to construction.

BR Impact 12 Replacement of the Union Pacific Railroad bridge and modification of the 22nd Street Bridge have the potential to impact nesting birds, pallid bat, Townsend's big-eared bat, or other roosting bats.

Mitigation Measures

BR/mm-35 *Prior to bridge demolition, a qualified biologist shall conduct a nest survey and any unoccupied nests (such as cliff swallow nests) under the existing bridge shall be knocked down prior to the typical nesting season (nests removed from August 16 to February 14) to discourage nesting activity just prior to demolition. After February 14, pre-construction surveys by qualified biologists shall continue on a weekly basis to determine if any new nesting activity has occurred under the existing bridges. Partially constructed but unoccupied nests shall be destroyed before they are 1/3 complete. The District shall coordinate with the appropriate regulatory agencies to allow for the legal removal of any bird nests prior to or during the nesting bird season.*

BR/mm-36 *Prior to construction, if construction activities are proposed to occur during the typical nesting season (February 15 to August 15) within 100 ft (30 m) of potential nesting habitat under bridges, a nesting bird survey shall be conducted by qualified biologists at least two weeks prior to construction to determine presence/absence of nesting birds. Work activities shall be avoided within 100 ft (30 m) of active bird nests under the bridge, until young*

birds have fledged and left the nest. Readily visible exclusion zones shall be established in areas where nests must be avoided. USFWS and CDFG shall be contacted for additional guidance if nesting birds are observed within or near the boundaries of the project site. Nests, eggs, or young of birds covered by the MBTA and California Fish and Game Code would not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later, nor would adult birds be killed, injured, or harassed at any time.

BR/mm-37 *Prior to construction, pre-construction surveys (at least two at dawn and two at dusk at appropriate times of the year, such as in the fall and spring prior to construction) shall be conducted by qualified biologists to determine if bats are roosting under bridges. The biologist(s) conducting the preconstruction surveys will also identify the nature of the bat utilization of the bridge (i.e., no roosting, night roost, day roost, maternity roost). The last survey shall be conducted no later than March 15 to allow for bat exclusion (if required) prior to the onset of the maternity roosting season (typically around April 15).*

BR/mm-38 *Prior to demolition or modification of existing bridges, if bats are found to be roosting under the bridges, bat exclusion shall be conducted by a qualified biologist or firm qualified to conduct bat exclusion activities. Exclusion methods may include, but are not limited to, wire mesh, spray foam, or fabric placement. If exclusion is necessary, a Bat Exclusion Plan shall be submitted to CDFG for approval prior to construction.*

BR/mm-39 *Prior to demolition or modification of existing bridges, the District may opt to employ bat exclusion, even if roosting bats aren't observed during pre-construction surveys, prior to the maternity roosting season to eliminate the potential for bat roosting during bridge replacement or modification.*

BR/mm-40 *If bats are found to be roosting under the Union Pacific Railroad Bridge at any time prior to construction, the new bridge design shall be examined by a qualified biologist in coordination with design engineers to determine if the new bridge will be capable of supporting roosting bats. If bats are found to roost under the existing bridge and it is determined that the new bridge will not support roosting bats, features facilitating bat roosting such as rails under the bridge or bat boxes shall be attached to the new bridge to allow for bat roosting opportunities. The design, number, and placement of any bat boxes shall be determined by a qualified biologist and coordination with CDFG. Any bat structure proposed as mitigation shall be reviewed by a qualified biologist.*

Residual Impact

Impacts to bird nests or bat roosts under the Union Pacific Railroad Bridge or the 22nd Street Bridge would be unexpected, but remain possible with the passage of time. Impacts can be avoided with pre-construction nest and roost surveys, removing inactive nests prior to the nesting season, implementation of exclusion zones around active nests, and exclusion of bats prior to the maternity roosting season, as necessary. With implementation of these measures and the other previous measures, the impacts would be *less than significant.* Additional mitigation measures may eventually be required by regulatory agencies, to be determined during the permitting process.

4.3.6 Cumulative Impacts

Long-term sediment and vegetation management activities would potentially affect biological resources, including sensitive habitats, jurisdictional waters, and sensitive plant and wildlife species. The Arroyo Grande Creek Waterway Management Plan Update prepared by Central Coast Salmon Enhancement identifies a number of reasonably foreseeable projects that, along with the proposed project, could have a significantly cumulative negative or beneficial impact to the Arroyo Grande Creek watershed. These include increasing the capacity of Lopez Dam, proposed urban development at the Laetitia Vineyard, and habitat enhancement projects such as barrier removal, erosion control, and removal of non-native species from the creek and its tributaries.

Projects that potentially directly affect Arroyo Grande Creek are generally highly regulated. The proposed project would require permits or other authorizations from regulatory agencies including the USACE, RWQCB, CDFG, CCC, USFWS, and NMFS. These agencies are responsible to authorize projects that avoid, minimize, and/or mitigate impacts to habitats, jurisdictional waters, and sensitive plant and wildlife species. The proposed project is also subject to regulations by all of these agencies and would not be expected to contribute cumulative impacts to biological resources. Cumulative impacts to biological resources would be realized, but would be anticipated to be less than significant with incorporation of proposed mitigation. No mitigation beyond that already discussed in this EIR is required.

4.4 CULTURAL RESOURCES

This section includes a discussion of cultural resources in the project vicinity, including prehistoric and historic resources, and identifies any impacts that may result form the proposed project. Surveys were performed by SWCA cultural resources staff and JRP Historical Consulting. This section is based on the results of two technical reports, a Cultural Resources Survey (SWCA 2009) and a Historic Resources Inventory and Evaluation Report (HRER) (JRP 2009). The surveys were prepared to determine whether any archaeological/cultural resources were present, to map their extent based on surface examination, and to determine the nature and significance of any archaeological or cultural resources discovered. These reports are not available for public review in this document because of the need to keep recorded sites confidential to protect the resources; however, the results have been submitted to the State Records Clearinghouse and are available for review by qualified persons at the Department of Public Works.

4.4.1 Existing Conditions

4.4.1.1 Pre-Historic Resources

The project site lies in San Luis Obispo County, near the city of Arroyo Grande, an area that was historically occupied by the Obispeño Chumash, the most northern of all Chumash groups. San Luis Obispo County was home to the Northern Chumash or Obispeño for over 9,000 years. The term "Chumash" is derived from a Native American word and initially applied to the people living on Santa Cruz Island. Chumash now refers to the entire linguistic and ethnic group of societies that occupied the coast between San Luis Obispo and northwestern Los Angeles County and inland to the western edge of the San Joaquin Valley, including the Santa Barbara Channel Islands.

At the time of Spanish contact in 1542 and again in 1769, the early accounts describe settlement along the Santa Barbara Channel coast as heavily populated. Estimates of total Chumash population for the initial contact period vary from 8,000 to 22,000. Diarists on the 1769 Portolá expedition described the village of *Shisholop* at the mouth of Santa Clara River near today's city of Ventura as a large and nicely laid out "rancheria" with 30 large houses, 15 canoes, and at least 900 people. Some coastal Barbareño Chumash villages near Goleta and Dos Pueblo were even larger, with more than 1,000 inhabitants and 120 houses. Inland, the Spanish noted the villages were smaller, with 100 to 500 occupants. Chumash place names in the project vicinity include *Pismu* (Pismo Beach), *Tematatimi* (along Los Berros Creek), and *Tilhini* (near San Luis Obispo).

The first permanent non-indigenous settlement in the general area occurred with the founding of Mission San Luis Obispo in 1771, and soon numerous troop and supply trains passed through Chumash lands on the way from San Diego to more northerly missions and outposts.

The effect of mission influence upon local native populations was devastating. The dissolution of their culture alienated them from their traditional subsistence patterns, social customs, and marriage networks. European diseases, against which they had no immunity, reached epidemic proportions, and Chumash populations were decimated. The increase in agriculture and the spread of grazing livestock into their collecting and hunting areas made maintaining traditional lifeways increasingly difficult. Although most Chumash eventually submitted to the Spanish and

were incorporated into the mission system, some refused to give up their traditional existence and escaped into the interior regions of the state, as refugees living with other tribes.

With the secularization of mission lands after 1834, traditional Chumash lands were distributed among grants to private owners. Most Chumash managed to maintain a presence in the area into the early twentieth century as cowboys, farm hands, and town laborers. Since the 1970s, Chumash descendants living in the city of Santa Barbara and the rural areas of San Luis Obispo, Santa Barbara, and Ventura Counties have formed social and political organizations to aid in cultural revitalization, to protect sacred areas and archaeological sites, and to petition for federal recognition. Today, the Santa Ynez Band of Chumash Indians is the only federally recognized Chumash tribe.

A records search performed by the Central Coast Information Center (CCIC) for this project indicates that 256 cultural resources studies have been conducted within a 0.5-mile radius of the project area. The complete list of the 256 cultural resources studies within a 0.5-mile radius is included in the SWCA Cultural resources report. Of these studies, 18 partly overlapped with the current project area and 10 are adjacent.

The record search by the CCIC indicates that 28 cultural resources have been recorded within a 0.5-mile radius of the project area. These include 23 prehistoric archaeological resources, three multi-component sites, one historic church, and one unknown resource. According to the literature search, no cultural resources have been previously recorded within or immediately adjacent to the current project area. Pedestrian surveys were also performed of the entire site, covering approximately 110 acres. No cultural resources were identified during the intensive-level pedestrian survey within the project area.

4.4.1.2 Historic Resources

The project area is located in the lower Arroyo Grande Valley and Cienaga Valley southeast of San Luis Obispo near the Pacific Coast of California. Spanish and Mexican ranchers settled in the area in the 1830s, and by the time of California statehood, farmers and other immigrants to the area discovered that the alluvial plain of the creek provided excellent soil for growing seeds, beans, and other crops. Agricultural production flourished in the valley with Oceano as the main rail shipping point.

Southern Pacific completed its coastal route between San Francisco and Los Angeles including service at Oceano in 1901 and a new period of land speculation began focusing on vacation travel and agricultural production. The Southern Pacific depot at Oceano expanded into the main shipping point for produce of the Arroyo Grande and Cienaga Valley. The most successful subdivision of the period was the Theosophical settlement of Halcyon east of the original Oceano plat, adjoining the study area to the northwest along Halcyon Road. A utopian community known as the Temple of the People was founded in 1903 in Halcyon, and was intended to provide a model for such communities and to attract new members to the movement.

An agricultural community of Japanese Issei and Nisei farmers also developed in the valley. The first Japanese settlers arrived around 1903 and continued to settle in the valley through the 1920s. The first Japanese farmer in the Oceano area was Eikichi Toshima, who went on to assist other Japanese interested in relocating to the area, despite the strict anti-Japanese limitations imposed upon land ownership. The population of Japanese farmers in the area grew

through the 1920s and by the end of the 1930s, approximately forty Japanese families had settled in the area.

The Oceano area Japanese community was devastated by US government relocation of Issei and Nisei farmers to internment camps far inland during World War II. Many who had leased farms were not able to return because others took up the leases while the Japanese were interred. However, several Anglo families in the Arroyo Grande area looked after the Japanese farms, collecting rents, preventing damage, and applying the rents to taxes and mortgages.

The post war period saw changes in agricultural production. Celery became a major crop, replacing beans. The Yamaguchi family introduced celery in the 1920s, and although it was soon discontinued, it was reintroduced following the war and was a major crop in the area through the 1970s. Japanese farmers also introduced Asian vegetables like bok choy and Napa cabbage.

The area remains agricultural despite the growth of Oceano, Arroyo Grande, and neighboring communities. Oceano grew to more than 2,500 people in 1970, but remained unincorporated. Adjoining communities sought to annex the community, and as a result Oceano and Halcyon became a Community Services District in 1981 to stave off annexation and maintain local control.

The history of the flood control channel is discussed in the project description and the Flooding, Drainage, and Water Quality sections.

The area included in the HRER analysis includes the project area identified in the project description, plus some additional area within parcels that comprise the project area. That area includes eight structures, including four houses, one agricultural accessory structure, two bridges, and the flood control channel.

Residential and Accessory Structures

The earliest residence is 2150 Creek Road (Figure 4.4-1, Map Reference #2), built in the 1920s. The home began as a small cross gable building with a rectangular plan; however, an addition was added to the northwest corner that more than doubled the living area and has obscured the original form of the house. The windows have also been extensively altered and most have been replaced with sliding aluminum frame sash.

The Saruwatari farmstead (Figure 4.4-1, Map Reference #8) was constructed in 1924 and follows the simple vernacular construction seen in 2150 Creek Road (Map Reference #2). It is a single story end gable vernacular bungalow. The full width front porch was enclosed and a side gable addition added to the east. Original wood one-over-one double-hung windows remain on the west side, but other windows have been altered or replaced.

The Fukuhara residence at 1111 Halcyon Road (Figure 4.4-1, Map Reference #7), is a two-story Spanish Colonial Revival building built in 1941. The two story massing presents a more studied style than the earlier vernacular residences. The stucco building is topped with a complex system of tile gable roofs. The south facing and northeast corner porches have been enclosed.

The residence at 3120 Cienaga Road (Map Reference #5) is the newest of the residences in the study, constructed in 1948. Despite its later construction date, it has a more vernacular approach than the Fukuhara residence (Map Reference #7). The hip roof rectangular plan

residence has been converted for use as a commercial building, including installation of a plywood-sided breezeway constructed to connect the former residence and hip roofed garage. Wood over one single hung window has been partially replaced with aluminum framed windows. Additional windows have been cut into the adjoining garage.

The Saruwatari and Fukuhara farmsteads include outbuildings constructed of vertical wood planks with simple corrugated metal roofs. The agricultural outbuilding on APN 075-032-010 (Map Reference #4) is also utilitarian, but utilized an arched roof. The associated farmstead has been removed.

Bridges

Two bridges over 50 years old carry transportation features across channelized Arroyo Grande Creek. They include a 1912 railroad bridge (Map Reference #3) and a roadway bridge carrying Highway 1 (Caltrans #49-0019) (Map Reference #6) that was built in 1956 and altered in 1984.

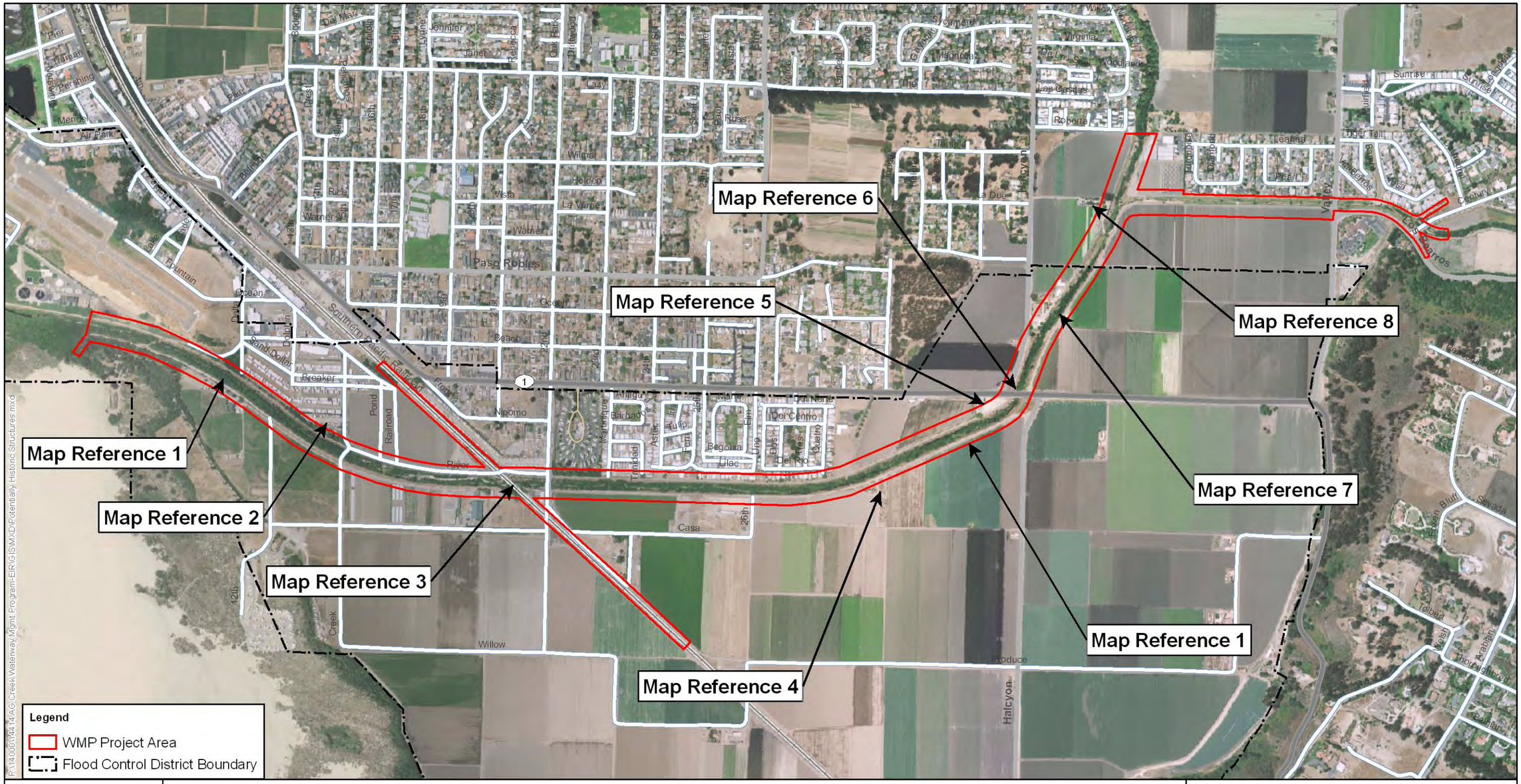
The Highway 1 Arroyo Grande Creek Bridge (Caltrans #49-0019) (Map Reference #6) is a continuous concrete slab bridge. The bridge is approximately 123 feet long and 47 feet wide and carries two lanes of traffic. The bridge has two bents consisting of concrete support columns dividing the bridge into three spans. The bridge has a simple formed blind concrete rail on both sides.

The Southern Pacific Coast Line Bridge over Arroyo Grande Creek (Map Reference #3) is a through plate girder bridge. It has board formed concrete abutments and a center pier supporting two 91-foot, 3-inch plate girder spans. The abutments, or portions thereof, appear to date to the original 1895 bridge. The plate girders are approximately 6-feet tall and each span is divided into 18 5-foot long sections. The girders are riveted together. The open deck floor beams form Xs across the bottom of the bridge. Triangular knee braces stiffen the joint between the girders and floor beams. Wooden ties lie directly on the floor beams. While railroad track charts indicate that the rails were replaced in 1950, the rail leading to the bridge is stamped “1360 00CF&F 1955.”

Flood Control Channel

The Arroyo Grande Creek Channel (Map Reference #1) is an engineered portion of Arroyo Grande Creek that is approximately three miles long, and the subject of the proposed project.

Figure 4.4-1. Potentially Historic Structures



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4.4.2 Regulatory Setting

The California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) requires consideration of a project's impacts on significant historical and archaeological resources. Significant impacts on such resources are to be avoided or mitigated to less than significant levels. Other state laws govern actions affecting cemeteries and human remains. Similarly, the City and County of San Luis Obispo require protection of archaeological and historical resources to the greatest extent feasible.

Archaeological and Historic Resources

Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.

The Office of Historic Preservation (OHP) is the governmental agency primarily responsible for the statewide administration of the historic preservation program in California. OHP's responsibilities include:

1. Identifying, evaluating, and registering historic properties;

2. Ensuring compliance with federal and state regulatory obligations;

3. Cooperating with traditional preservation partners while building new alliances with other community organizations and public agencies;

4. Encouraging the adoption of economic incentives programs designed to benefit property owners; and

5. Encouraging economic revitalization by promoting a historic preservation ethic through preservation education and public awareness and, most significantly, by demonstrating leadership and stewardship for historic preservation in California.

CCIC, under contract to the State Office of Historic Preservation, helps implement the California Historical Resources Information System (CHRIS). It integrates information on new resources and known resources into the CHRIS, supplies information on resources and surveys to government and supplies lists of consultants qualified to do historic preservation fieldwork within the area.

4.4.3 Thresholds of Significance

4.4.3.1 Cultural Resources Survey

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources. Section 21083.2(g) describes a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

These thresholds were used to determine significance in the Cultural Resources Survey. Generally, intact cultural and historic deposits are considered significant. Severely disturbed or mixed deposits often are not considered significant but may have educational value. Human remains and associated goods are accorded special consideration, even when fragmentary, and are considered significant.

4.4.3.2 Historic Resources Inventory and Evaluation Report (HRER)

For preparation of the HRER, JRP applied California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP) significance criteria in the evaluation of historic era resources (built environment resources) within the study area. The eligibility criteria for listing properties in the NHRP are codified in CFR 36 Part 60 and explained in guidelines published by the Keeper of the National Register. Eligibility for listing in either the NHRP or CRHR rests on twin factors of significance and integrity. A property must have *both* significance and integrity to be considered eligible. Loss of integrity, if sufficiently great, will overwhelm historical significance a property may possess and render it ineligible. Likewise, a property can have complete integrity, but if it lacks significance, it is also ineligible.

4.4.3.3 Environmental Impact Report

The significance determination in the EIR reflects the determinations made in the two technical reports. CEQA guides lead agencies to protect and preserve resources with cultural, historic, scientific, or educational value. Appendix G of the CEQA *Guidelines* puts forth the following questions to be used in determining a project impact on cultural resources.

Would the project:

1. Cause a substantial adverse change in the significance of a historical resource;

2. Cause a substantial adverse change in the significance of an archaeological resource;

3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;

4. Disturb any human remains, including those interred outside of formal cemeteries.

4.4.4 Impact Assessment and Methodology

4.4.4.1 Prehistoric Resources

In addition to the archival records and cultural resources records search performed by the CCIC for this project, SWCA archaeologists Philip Hanes and John Covert conducted an intensive pedestrian survey of the majority of the project area between July 29 and July 31, 2008.

Transect intervals were spaced no greater than 15 meters apart. SWCA archaeologist Kristina Gill, M.A., RPA, surveyed the eastern portion of the project corridor using the same methodology on May 9, 2009. Her survey area included the DeVincenzo and St. John's Lutheran Church parcels, as well as the area between those parcels along Los Berros Creek and Los Berros Road. The total area surveyed was approximately 110 acres. Because there are no existing records of cultural resources within the project area and the field survey also did not identify any prehistoric cultural resources, the impact assessment was concluded.

4.4.4.2 Historic Resources

The HRER analysis included the area of direct disturbance identified in the project description plus the entire boundary of parcels that intersected that area, if the parcel contained one or more buildings, or structures within forty feet of the area of direct disturbance. JRP identified survey properties and confirmed the actual or approximate date of construction through preliminary research including review of historic aerial photography, assessor records, building permits, and USGS quadrangle mapping. Out of the 16 parcels in the project area, five contained buildings or structures over 50 years old that required evaluation. Three other structures, the Arroyo Grande Creek channel, Highway 1 Bridge, and the Union Pacific Railroad Bridge, do not have associated parcel numbers, but are over 50 years old and required evaluation.

4.4.5 Project-Specific Impacts and Mitigation Measures

4.4.5.1 Prehistoric Resources

There are no existing records of cultural resources within the project area and the field survey also did not identify any prehistoric cultural resources. No impacts to prehistoric cultural resources would result from any component of the proposed project. There is always the potential for the existence of buried archaeological materials within a project area. County Code (22.10.040) requires that in the event archeological resources are unearthed or discovered during any construction activities, the following standards apply:

1. Construction activities shall cease, and the Department shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist, and disposition of artifacts may be accomplished in accordance with state and federal law.

2. In the event archeological resources are found to include human remains, or in any other case when human remains are discovered during construction, the County Coroner shall be notified in addition to the Department so proper disposition may be accomplished.

These existing requirements reduce impacts to prehistoric resources to a *less than significant level*. No additional mitigation is required. In the event that construction staging or stockpile locations are located in previously undisturbed areas beyond and outside of the project area defined in this EIR, subsequent cultural resources surveys may be required.

4.4.5.2 Historic Resources

<u>Residences and Accessory Structures</u>

None of the residential or agricultural structures surrounding the Arroyo Grande Creek Channel appear to meet the criteria for the CRHR or NRHP. Two properties were previously evaluated:

1111 Halcyon Road (Map Reference #7), and 3120 Cienega Street (Map Reference #5). The previous evaluation concluded that the properties did not meet the criteria for either register. The Office of Historic Preservation concurred with these conclusions on October 8, 2004 (JRP 2009).

The remaining residential and agricultural properties: (Figure 4.4-1, Map Reference #2, 4, and 8), do not meet the criteria for listing in the NRHP or CRHR because they lack historical significance. They are not significant for their association with the settlement or agricultural development of the lower Arroyo Grande Valley. None of the properties is significant for this association or played a singularly important role in the local history.

Bridges

Neither the Highway 1 nor the Union Pacific Railroad (UPRR) bridge is eligible for the NRHP or CRHR. The Highway 1 Bridge (Figure 4.4-1 Map Reference #6) was evaluated as a part of the 2004-2006 update to the Caltrans California Historic Bridge Inventory and was found "not eligible."

The UPRR (former Southern Pacific) bridge over Arroyo Grande Creek channel (Figure 4.4-1, Map Reference #3) is not significant within the context of railroad transportation development. The bridge was constructed as a replacement for an earlier bridge and did not alter the alignment or rail service in the area. The bridge does not have direct or important associations with any historically significant individuals. The bridge does not possess any distinctive characteristics or high artistic value that would render it historically significant.

Flood Control Channel

The Arroyo Grande Creek Channel, constructed between 1957 and 1961, is the largest structure within the study area. The Arroyo Grande Creek Channel is not significant for its association with flood control development. The federal small watershed program (PL83-566) was launched following the successful demonstration of projects using multiple small structures and funded the construction of the channel. While the Arroyo Grande Creek Watershed Project was the first west of the Mississippi funded under this specific program, similar projects were already under way on Los Angeles River and Santa Ynez River under other federal programs.

None of the built environment resources in the study area of the proposed project meet the criteria for listing in the NRHP. All buildings or structures within the APE that were more than 50 years old received evaluation. None of the more recently constructed buildings meet the exacting standards of exceptional significance for such properties. None of the buildings in the project area are historic properties subject to Section 106, nor are they considered historical resources for the purposes of CEQA. Potential impacts to historical resources are considered *less than significant*. No mitigation is required.

4.4.6 Cumulative Impacts

Based on the information above, the proposed project would have less than significant impacts to cultural resources. No historic or prehistoric resources were identified in the project area during records searches and field surveys of the project area. This project would not result in any impacts individually, nor require any mitigation, and therefore would not contribute to potential cumulative impacts to cultural resources. Impacts would be *less than significant.*

4.5 FLOODING, HYDROLOGY, AND WATER QUALITY

This section includes a discussion of local flooding and drainage conditions, and factors affecting water quality such as erosion and sedimentation. The section draws from previous analysis of the watershed and lower Arroyo Grande Creek channel, including the Alternatives Study (Swanson 2006), the Halcyon Road Master EIR (Morro Group 2007), and the Arroyo Grande Creek Watershed Management Plan Update prepared by Central Coast Salmon Enhancement (CCSE) (2009). Erosion, and its relationship to water quality, is considered in this section, although it is primarily discussed in the Geology and Soils section.

4.5.1 Existing Conditions

4.5.1.1 Arroyo Grande Creek Watershed Hydrology

Arroyo Grande Creek drains a 157 square mile watershed and is the dominant surface water feature in the project area. Flows in the creek are dominated by two factors, winter rains, and Lopez Dam. Typical of the central coast, large winter storms, which generally occur between October and April, first saturate the soils in the watershed. Once the soil is saturated, stormwater runoff and subsequently creek flows increase significantly. In their assessment of the creek conditions, Swanson (2004) noted that peak flow events are "flashy and are tied closely to the duration and magnitude of winter rainfall."

Lopez Dam, approximately 10 miles upstream from the project area, impounds approximately seventy square miles of the upper watershed (Swanson 2006), which is dominated by the Los Padres National Forest. As of 2001 the reservoir behind the dam had a capacity of approximately 49,000 acre feet and an annual safe yield (the amount of water that the dam can safely provide) of approximately 9,000 acre feet per year (afy). Approximately half of that yield is provided to municipal water suppliers. The remaining yield is for agricultural use, groundwater recharge, and for maintaining natural systems (CCSE 2009).

The lower watershed, approximately 87 square miles, is heavily urbanized, which has led to increased stormwater runoff, erosion of creek banks, and sedimentation of the creek. The project site is in the lower watershed, specifically in the lower Arroyo Grande Valley, where local hydrologic conditions have been substantially altered.

As early as the 1860s, the downstream portions of Arroyo Grande Creek in the project area have been channelized to some degree (CCSE 2009). Historical accounts of the conditions in the lower valley indicate the creek meandered considerably during high flows, and the floodplain was extensive. (CCSE 2009). A map prepared in 1873 (refer to Figure 4.5-1) shows much of the eastern half of the lower valley (between the creek and the Nipomo Mesa) as a series of marshes (JRP Historical Consulting 2009). Signs of the flood plain are also visible in a 1939 aerial photograph (refer to Figure 4.5-1). Historically, Los Berros Creek entered the lower valley from the east and turned immediately to the south and "around" the southern edge of the valley, before joining Arroyo Grande Creek near its outlet at the ocean.

In 1961 two significant man-made changes to the hydrologic conditions of the lower valley were completed. Arroyo Grande Creek was channelized by earthen levees from near its outlet at the Pacific Ocean to approximately three miles upstream. And, Los Berros Creek was diverted and channelized so that upon entering the valley (near Valley Road) it flowed due west directly into the Arroyo Grande Creek channel (refer to Figure 4.5-1).

The channelized portion of Los Berros Creek intersects the channelized Arroyo Grande Creek northeast of the intersection of Halcyon Road and Highway 1. Los Berros Creek drains watershed areas north and east of the project area. Upstream uses are predominately residential and agricultural. Despite the presence of Lopez Dam and the leveed channels, the lower Arroyo Grande Creek Valley is subject to flooding from storm events larger than the 4.6 year event.

4.5.1.2 Flooding and Drainage

The proposed project is located in an area that has experienced extensive flooding in the past. In the first half of the 20th Century, landowners were on their own to protect farmlands from inundation. There were at least seven episodes of severe flooding damage between the years of 1900 and 1960. In 1961, the Arroyo Grande Creek Flood Control Project was organized. The project included various governmental agencies and resulted in the construction of levees along Arroyo Grande Creek from its confluence with Los Berros Creek to the Pacific Ocean. Levees were also constructed along Los Berros Creek from near the edge of the Nipomo Mesa to Arroyo Grande Creek (Swanson 2006). That original project was intended to control a 50-year flood. A 50 year flood has a two percent chance that it could happen in any given year, but occurs approximately once every 50 years.

The Alternatives Study found that when channelized by the levees, Arroyo Grande Creek lost the ability to migrate across the broad valley, as it did historically, and therefore sediment buildup has resulted. In addition, over time development upstream from the levee system has increased stormwater runoff, resulting in higher flows and sediment loads in the creek. The levees have settled over time as well, reducing their height.

Maintenance (sediment and vegetation removal) of the channels in recent years has been limited by a lack of funding and stricter environmental regulations developed to protect sensitive species that exist within the Arroyo Grande and Los Berros Creek channels.

Drainage Features

The Arroyo Grande and Los Berros Creek channels are the dominant drainage features in the project area and they convey stormwater that has originated in the watershed above the project site to the Pacific Ocean. Stormwater runoff in the immediate vicinity of the project site infiltrates into the permeable agricultural fields or is captured in the linear drainage features of the agricultural operations. Some of these drainages eventually connect with Arroyo Grande or Los Berros Creek channels, and some simply terminate at property lines, roads, or field limits. There are also storm drains that drain urban lands adjacent to the channels and outflow directly into the Arroyo Grande Creek and Los Berros Creek channels.

Floodplain

Flood Insurance Rate Maps divide flood areas into three zones: Zone A for areas of 100-year flood, base flood elevations not determined; Zone B for areas of 500-year flood; and Zone C for areas of minimal flooding. The National Flood Insurance Program 100-year floodplain is considered to be the base flood condition. This is defined as a flood event of a magnitude that would be equaled or exceeded an average of once during a 100-year period. Floodways are defined as stream channels plus adjacent floodplains that must be kept free of encroachment as much as possible so that 100-year floods can be carried without substantial increases (no more than one foot) in flood elevations. Figure 4.5-2 shows the Federal Emergency Management Act (FEMA) 100-year flood zones in the vicinity of the project area.

Due to the inability of the San Luis Obispo County Flood Control and Water Conservation District (District) to maintain the channel capacity (refer to the Project Description), currently storms greater than a 4.6-year event (one which occurs roughly every five years, but has a 20 percent chance of happening every year) will overtop the channel levees and result in localized flooding. Levee overtopping within the project area occurs first on the southern levee as they are slightly lower than the northern levee, so that floodwaters would affect agricultural properties primarily before residential properties.

Arroyo Grande Creek Lagoon

The lagoon is not in the project area, and would not be managed as a part of the WMP, however due to its location and function, is a critical component of the creek system. The lagoon is located at the most downstream end of the creek. It is bounded on the north by the existing levee and extends south along the north-south trending Oceano dunes. During periods of low flow, the creek does not break through the sandbars on the beach to reach the ocean. The upstream and downstream boundaries of the lagoon vary from year to year depending on creek flows, tides, sediment movement and beaver activity. The length of the creek to lagoon transition zone, the lagoon itself, and the lagoon outlet to the Pacific, is approximately one-half mile long.

4.5.1.3 Water Quality

The issue of surface water quality is important because of the habitat value of the County's creeks and tributaries, including habitat for several endangered or threatened plant and animal species. Surface water entering watercourses from undeveloped areas usually travels over vegetative cover, and erosion and sedimentation is a slow, gradual process. Urbanized areas typically contain pollutants on the ground surface that are harmful to water quality. These include heavy metals, hydrocarbons, detergents, fertilizers, and pesticides that originate from vehicle use and commercial and residential land use activities. For the most part, these pollutants are associated with sediments that collect on roadways and are flushed into the creek system either in dry weather flows during construction or by rainfall. Construction activities also create erosion and cause sediment to be transported off-site by surface water runoff. Therefore, water quality depends mainly on the hydrologic characteristics of the drainage basin, the makeup of the soils in the watershed, and sources of pollution in the watershed.

Sediment Transport

To determine the rate at which sediment was accumulating in the flood control reach (i.e. project area), Swanson included a sediment budget and transport analysis in the Alternatives Study. The analysis included an assessment of potential sediment sources and quantities, and evaluated the ability of the channel to transport sediment. If the quantities of sediment in the creek exceeded the ability of the creek to transport, than it is assumed that the "excess" sediment is either being deposited in the floodplain or in the channel. The analysis proved difficult, and the modeling results suggested that there was potentially 70,000 tons of excess sediment deposited annually. This number was refined considerably after reviewing historical sediment removal activities and re-evaluating erosion rates and the potential of peak flows to discharge sediment. The report concluded that approximately five to fifteen thousand tons (3,300 to 10,000 cubic yards) of sediment may be accumulating in the creek annually. The study also concludes that even during moderate discharge the channel is most likely aggrading as there is not enough energy in the system to transport the sediment, but during high discharge periods, the channel is scouring and removing sediment from the system.

Sediment transport through the lagoon reach varied considerably not only due to discharge rates, but also morphology of the lagoon. Because of this, the upper and lowest ends of the lagoon reach proved most effective at discharging sediment.

Water Quality Monitoring

The Central Coast Regional Water Quality Control Board (RWQCB) Central Coast Ambient Water Quality Monitoring Program (CCAMP) includes Arroyo Grande Creek. The program is a water quality and assessment program intended to "*collect, assess, and disseminate scientifically based water quality information to aid decision makers and the public in maintaining, restoring, and enhancing water quality and associated beneficial uses"* (CCAMP 2009). The program includes a number of specific goals including assessing watershed conditions on a five-year basis, assessing long-term water quality trends, and providing water quality information to the public in a useful form to support decision making. In or near the project site, the program includes monitoring stations at the Arroyo Grande Lagoon (monitored in 1998), Arroyo Grande Creek at 22nd Street (monitored from 2001 to 2006) and at Los Berros Creek at Valley Road (monitored from 2002 to 2003).

In some cases nearly 100 parameters used as water quality indicators by the RWQCB or Environmental Protection Agency (EPA) were evaluated. Based on reviews of the data performed by Central Coast Salmon Enhancement, trends in water quality are reflective of the flow patterns in the Creek, where sediment and nutrient loads may increase sharply during high flow storm events, and then reduce to a baseline level soon after. Water quality data suggests that water quality is generally "good" in the creek, with basin criteria being met. However there have been some quality issues identified during monitoring. These include elevated levels of fecal coliform, total dissolved solids (TDS), chloride and sulfate at the 22nd Street site. Boron levels, which could affect irrigation waters, have also been noted as an issue. Monitoring at Valley Road has shown elevated levels of fecal coliform, high levels of nitrates, and high levels of boron and TDS, both of which can affect agricultural irrigation water quality. Dissolved oxygen, oxygen saturation, and pH were noted at levels which could affect cold water fish habitat.

Central Coast Salmon Enhancement has also conducted volunteer monitoring along Arroyo Grande Creek, with results similar to those of the RWQCB.

Figure 4.5-1. Historic Flood Channel Locations

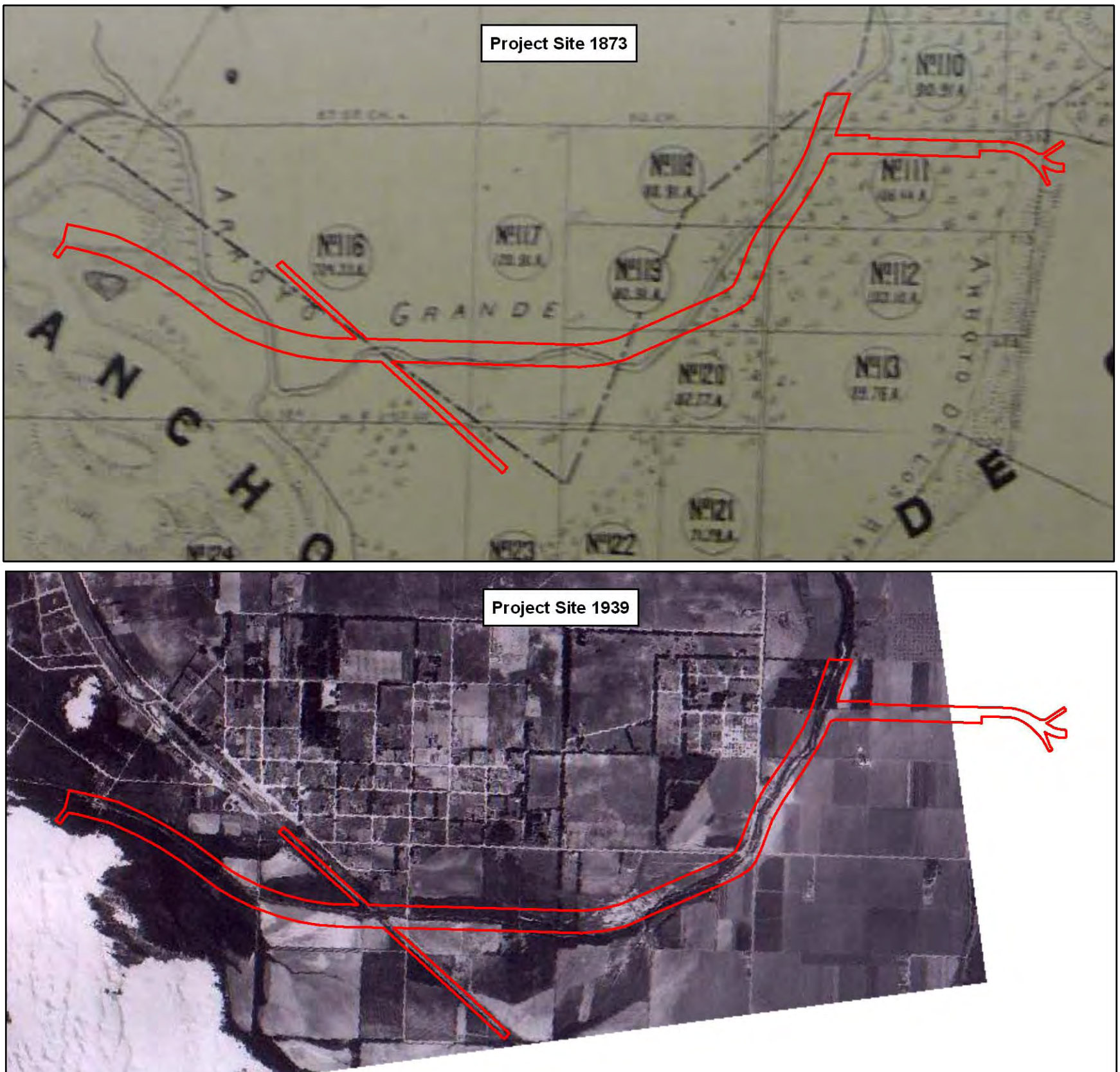

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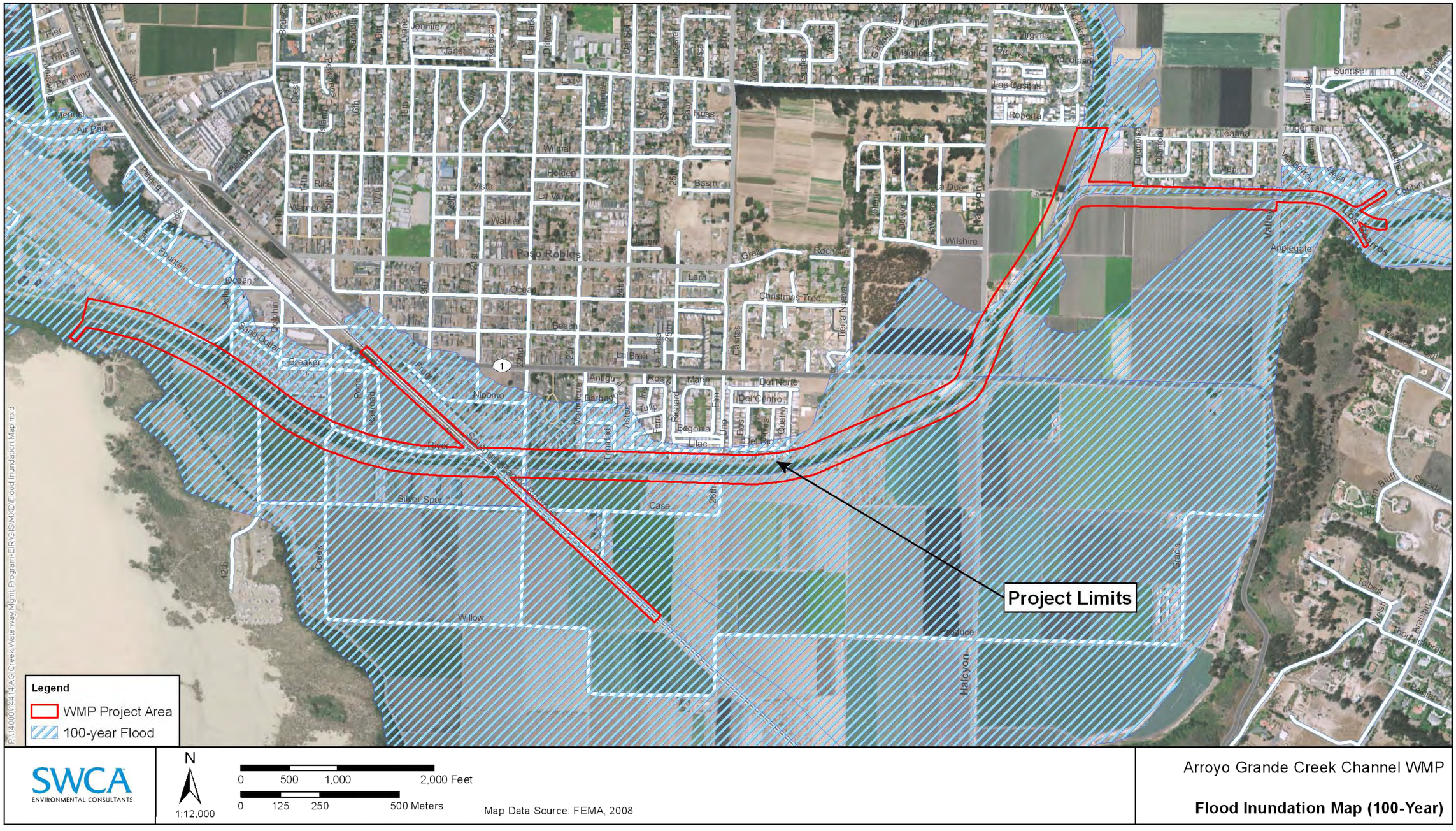
Figure 4.5-2. FEMA 100-Year Inundation Zone



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4.5.2 Regulatory Setting

Surface water and groundwater resources and their associated water quality are regulated in California through many different applicable laws, regulations, and ordinances administered by local, state and federal agencies. The United States Army Corps of Engineers (USACE), California Department of Water Resources, Central Coast RWQCB, and the District are the primary agencies responsible for the protection of watersheds, floodplains, and water quality. These agencies ensure that the hydrologic characteristics of surface water and groundwater are considered, so that the existing identified beneficial uses are not impaired. Similarly, water quality regulations are designed to limit the discharge of pollutants to the environment, maintain surface water and groundwater quality, protect fish and wildlife and their habitats, and protect beneficial uses. This section describes regulations relevant to construction of the proposed project.

4.5.2.1 Federal and State Policies and Regulations

Federal and state agencies have jurisdiction over specific activities conducted in or connected to drainages, stream channels, wetlands and other water bodies. The federal government supports a policy of minimizing "the destruction, loss or degradation of wetlands" (Executive Order 11990, May 24, 1977). The USACE and the EPA regulate the placement of dredged and fill material into "waters of the United States," including wetlands, under Section 404 of the Clean Water Act (CWA). For all work subject to a 404 permit, project approval also must be obtained from the RWQCB via either a certification or a waiver under Section 401 of the CWA stating that the project would comply with applicable water quality regulations.

Since 1990, regulations have increasingly emphasized the control of water pollution from non-point sources, which include stormwater systems and runoff from point-source construction sites and industrial areas. In California, the State Water Resources Board (SWRCB) issued a statewide General Permit to regulate runoff from construction sites involving grading and earth moving in areas over one acre. The SWRCB is acting to enforce requirements of the federal CWA, pursuant to regulations issued by the EPA for the National Pollutant Discharge Elimination System (NPDES). This state order requires construction projects covered under the General Permit to use the "best available technology economically achievable," and the "best conventional pollution control technology". Each construction project subject to the permit is required to have a Storm Water Pollution Prevention Plan (SWPPP) prepared, which identifies likely sources of sediment and pollution and incorporates measures to minimize sediment and pollution in runoff water.

The State Department of Water Resources also is responsible for coordinating flood-fighting activities and is authorized to receive requests from public agencies for assistance during floods. Should flooding occur, these agencies would have policies and regulations to address management of flooding hazards.

4.5.2.2 Local Policies and Regulations

Chapter 52 of the County's Land Use Ordinance (Title 22 of the County Code) contains site development standards for the County, including drainage, grading, erosion, and sedimentation control. Sections that are applicable to drainage, grading, erosion, and sedimentation are outlined below.

Section 22.52.020 states that the purpose of the County's standards for grading and excavation is to minimize hazards to life and property; protect against erosion and the sedimentation of

water courses; and to protect the safety, use, and stability of public rights of way and drainage channels.

Section 22.52.080 of the Ordinance states that standards for the control of drainage and drainage facilities are designed to minimize harmful effects of stormwater runoff and resulting inundation and erosion on proposed projects, and to protect neighboring and downstream properties from drainage problems resulting from new development.

Erosion and sedimentation control to protect damaging effects on-site and on adjoining properties is discussed in Section 22.52.090 of the Ordinance. A sedimentation and erosion control plan would be required for the proposed project. The plan must discuss temporary and final measures including:

- Slope surface stabilization including temporary mulching or other stabilization measures to protect exposed areas of high erosion potential during construction and interceptors and diversions at the top of slopes to redirect runoff;

- Erosion and sedimentation control devices such as absorbing structures or devices to reduce the velocity of runoff; and

- Final erosion control measures including mechanical or vegetative measures.

4.5.2.3 County Impaired Water Bodies

Section 303(d) of the federal Clean Water Act, requires States to identify waters that do not meet water quality standards after applying effluent limits for point sources (other than publicly owned treatment works) that are based on the best practicable control technology currently available. States are then required to prioritize waters/watersheds for total maximum daily loads (TMDL) development. States are to compile this information in a list and submit the list to EPA for review and approval. This list is known as the 303(d) list of impaired waters. The SWRCB and RWQCB have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDLs (RWQCB 2004). Arroyo Grande Creek is not listed as an impaired water body.

4.5.3 Thresholds of Significance

Criteria for evaluating the significance of hydrology and water quality impacts included in the CEQA *Guidelines,* Appendix G, are directed toward identifying substantial changes in drainage patterns, drainage volumes, or violations of water quality standards. Impacts would be considered significant if the proposed project would result in any of the following:

1. Potentially degrade surface or groundwater quality below standards established by the Regional Water Quality Control Board;

2. Substantially interfere with groundwater recharge;

3. Substantially alter the existing drainage pattern of the area such that substantial erosion or sedimentation occurs;

4. Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner which results in flooding;

5. Create or contribute runoff which would exceed the capacity of stormwater drainage systems; or

6. Substantially add additional sources of polluted runoff to a water body.

4.5.4 Impact Assessment and Methodology

Development adjacent to or near surface waters is subject to specific design and construction conditions in order to ensure the project's stormwater is adequately contained and directed without adversely affecting downstream locations. Typically an impact would occur if the proposed project directed construction runoff or stormwater in the long-term to areas where downstream capacity could be exceeded. Because the proposed project would increase stormwater capacity of the Arroyo Grande and Los Berros Creek channels, the assessment focuses instead on impacts to the drainage system, sediment transport and groundwater recharge.

The determination of water quality significance is based on a review of typical construction site pollutants usually found on job sites that might contribute disproportionate amounts of polluting materials in runoff and effects that long-term management of the channels may have on water quality factors such as temperature and turbidity.

4.5.5 Project-Specific Impacts and Mitigation Measures

4.5.5.1 Flooding and Drainage

The proposed project would increase the flood control capacity of the channel and ultimately provide 20-year flood protection to all properties located within the assessment district. In some cases, as described in the Project Description, those properties have as little as 4.6-year flood protection. The increased stormwater discharge from the Arroyo Grande Creek channel resulting from this project would discharge into the Pacific Ocean, located immediately downstream from the proposed project. Therefore the project would not change drainage patterns in a way that results in increased flooding or exceeding stormwater facilities. Further, because the project would include regular removal of vegetation from outside of the low flow channel buffer, the channel may be less constricted by vegetation, and floodwaters would be less likely to result in small-scale flood events at individual locations.

There are three storm drains identified on the Alternative 3a and 3c conceptual plans. In some case the storm drains would need to be extended due to the expansion of the levee footprint; however, no storm drains would be redirected, removed, or "capped" as a result of this project. Impacts to the flooding patterns and drainage systems would be *less than significant.* No mitigation measures are required.

<u>Groundwater Recharge</u>

Generally natural recharge of groundwater supplies occurs due to the infiltration of precipitation, the surface and subsurface flow of creeks, and flood events. Groundwater recharge may also occur as a result of the percolation of irrigation water which is not consumed by crops. Winter rains provide direct irrigation for crops in the Arroyo Grande Valley, but groundwater is used to supplement rainfall.

One option to provide 20-year protection identified in the Alternatives Study included developing off-channel flood storage areas where floodwaters could be directed during high flow events.

The report proposed that storage of up to approximately 620 acre-feet (af) of stormwater may be necessary to provide protection from a 20-year storm. The stored floodwaters would then be pumped back into the channel after flows had decreased. This is the same level of protection resulting from implementation of the proposed project.

As a result of the proposed project those floodwaters would no longer overtop the levee and would instead reach the ocean, which would theoretically reduce recharge of the local groundwater basin. However, the potential of flood waters to recharge groundwater in the lower Arroyo Grande Valley south of the levees is limited by three factors:

1. Flood events usually occur after (and partially because) soils are already saturated and can no longer absorb water;

2. Even in the dry season the water table is relatively near the surface both adjacent to the levee (Fugro 2009) and below at the southern end of the valley (Swanson 2006), leaving little capacity for recharge; and

3. The southern end of the valley (the Cienaga Valley) may already be flooded when the Arroyo Grande Creek channel levees overtop due to flows in the old Los Berros Creek channel and presence of clay soils.

Floodwaters associated with the 2001 flood did not percolate into the groundwater, but rather inundated agricultural lands in the southern valley for many months due to the already saturated soils (Swanson 2006).

The proposed project would not require significant groundwater resources although it may be used for dust control during construction periods. Due to the factors described above groundwater recharge would not be reduced significantly as a result of the proposed project. Impacts to groundwater levels and recharge would be *less than significant.* No mitigation would be required.

4.5.5.2 Water Quality

Construction Activities

Construction activities can impair water quality temporarily due to the potential for sediment, petroleum products, construction materials and miscellaneous wastes to be discharged into receiving waters or the storm drainage system. Soils and associated contaminants that enter stream channels can increase turbidity, stimulate growth of algae, increase sedimentation of aquatic habitat and introduce compounds that are potentially harmful or toxic to aquatic organisms. Construction materials such as fuels, oils, paints and concrete are potentially harmful to fish and other aquatic life if released into the environment.

Project components including the sediment management, levee raise Alternative 3a and 3c, and the UPRR bridge raise may all result in construction-related impacts to water quality as they will require significant movement of soil and use of heavy machinery in and around the creek channels. According to the Preliminary Geotechnical Engineering Report prepared by Fugro (2009) for the proposed project, some of the project components, including the levee raises may require dewatering that would temporarily lower surface and groundwater levels to facilitate excavations. Groundwater would be discharged back into the creek subsequently. Discharge of turbid waters or water with an altered temperature back into the channel could impact water

quality. Baker tanks may be used as desiltation devices to settle out sediments prior to discharge.

WQ Impact 1 **Construction activities would significantly impact water quality due to the exposure of large areas of soil to erosive forces, the need to dewater during construction, and due to the presence of fuel, oil, and other pollutants on site for construction purposes.**

Mitigation Measures

Implement GS/mm-4 through GS/mm-6.

Residual Impact

With implementation of the mitigation described in the Geology and Soils section of this EIR, this impact would be considered *less than significant*. No additional mitigation is required.

Long-Term Management Activities

Long-term sediment and vegetation management activities would result in flood control channels that contain less vegetative cover overall; however, riparian cover of the low flow channel would remain and over time be enhanced through the management as described in the WMP. Vegetation management would be performed primarily with handtools and therefore the possibility of heavy machinery leaking or spilling fuel or other contaminates into the channel is low. Levee slopes could also be exposed during periods when significant vegetation is removed to maintain channel capacity and the roughness coefficient goals discussed in the Project Description. Further, based on the timing of the various project components, the erosion control and SWPPP recommended (GS/mm4 through6) may not be in effect.

WQ Impact 2 **Long-term sediment and vegetation management activities may impact surface water quality due to the reduction of vegetation, exposure of areas of soil to erosive forces, and due to the presence of fuel, oil, and other pollutants on site for sediment removal purposes.**

Mitigation Measures

Implement BR/mm 5, 7, 8, 9, and 13.

WQ/mm-1 *Prior to commencement of annual vegetation and sediment management the County shall prepare an erosion control and water quality protection plan that details measures to be taken during annual monitoring and maintenance efforts that would minimize water quality impacts. This plan would borrow heavily from the SWPPP and shall include measures such as:*

1. *Maintaining vegetation outside of the buffer area if it is providing protection and shade of the low-flow channel;*

2. *Minimizing equipment operation in the channels;*

3. *Prohibiting refueling within or adjacent to the channels;*

4. *Identifying appropriate species to be planted on levee slopes to provide erosion control that are compatible with biological resources mitigation and the desired channel roughness coefficient.*

Residual Impact

With implementation of mitigation, this impact would be considered *less than significant with mitigation*. Amend after bio and WMP complete.

Sediment Transport

Prior to the levee construction, sediment in the creek was either transported to the ocean or settled into the broad floodplain during flood events. Channel aggradation was not common. The project includes raising the levees and the creation and maintenance of secondary channels within the levees. The secondary channel would allow the channel to act more like a natural system and more effectively transport sediment through the flood control reach and into the ocean. The levee would reduce the possibility that sediment would reach the floodplain. As a result of the proposed project, it is likely that more sediment will be entrained by the creek flows and less will settle out and be deposited in the creek bed. Modeling done specifically for the lagoon area indicate that the proposed project would increase sediment transport during periods when flow rates are 4000 cubic feet per second (cfs) or greater but would potentially transport a similar amount or less when flow rates are less than 4,000 cfs (Figure 4.10 of the Alternatives Study). Therefore, increased sedimentation of surface water is only likely during very high flow events which do not occur annually. During these events large volumes of sediment are already being transported.

The WMP requires that the sediment volumes in the channels are monitored annually to identify how much material has been removed by management activities and how much has been deposited during the rainy season. Excess sediment deposition would be removed as necessary during management activities. The proposed project would not increase sediment loads in surface water significantly, and would not result in increased deposition of sediment in the channel. Impacts related to sediment transport are less *than significant*. No mitigation is required.

4.5.6 Cumulative Impacts

Typical flooding, hydrology, and water quality impacts resulting from development include expanded impervious surfaces, increased discharge of stormwater or sediment into a drainage system, or development within a floodplain which may reduce the floodplain capacity and affect upstream or downstream land uses. These impacts may contribute cumulatively along with other projects to result in significant impacts. However the proposed project is a construction and maintenance project designed to increase flood control capacity. No impervious surfaces are proposed, and no significant alteration to the location or extent of existing natural and manmade drainage systems is proposed.

Mitigation measures above address the potential for construction-related contamination of stormwater to a less than significant level. Because construction is short-term, there would be no cumulative impacts. The project is not expected to reduce groundwater recharge or affect groundwater patterns individually or cumulatively. Increased sedimentation of surface water would occur only during period of high flows in the creek when sediment transport is already substantial.

Long-term sediment and vegetation management activities would potentially affect water quality as it pertains to sensitive species and habitat. These issues are considered in the Biological Resources section of the EIR. The Arroyo Grande Creek Watershedway Management Plan Update (2009) prepared by Central Coast Salmon Enhancement identifies a number of reasonably foreseeable projects that, along with the proposed project, could have a significantly cumulative negative or beneficial impact to the Arroyo Grande Creek watershed. These include increasing the capacity of Lopez Dam, proposed urban development at the Laetitia Vineyard, and habitat enhancement projects such as barrier removal, erosion control, and removal of nonnative species from the creek and its tributaries.

Projects that potentially have a direct effect on Arroyo Grande Creek are generally highly regulated. The projects described above would all require permits from resource agencies including the USFWS, USACE, and the RWQCB. These agencies ensure that impacts to water quality and habitat are limited. The proposed project is also subject to regulations by all of these agencies and therefore would not contribute cumulative impacts to water quality or alterations of the local hydrologic conditions. Cumulative impacts to Flooding, Hydrology, and Water Quality are *less than significant*. No mitigation beyond that already discussed in this EIR is required.

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4.6 GEOLOGY AND SOILS

This section discusses existing geologic and/or soils related conditions including seismicity, liquefaction potential, slope stability, and expansive soils that may affect the proposed project. The majority of this section is based on a Preliminary Geotechnical Report prepared for the project by Fugro in 2009. The report focused on the levee raise component of the project and included surface and subsurface geologic investigations and laboratory analysis of sample material taken from the levee embankments and the subgrade. The report characterizes material properties and provides recommendations for addressing local geologic conditions and potential geologic hazards. The conclusions and recommendations (Chapter 6 of the report) have been included in Appendix E. The complete report is available for review with the San Luis Obispo County Flood Control and Water Conservation District (District).

4.6.1 Existing Conditions

4.6.1.1 General Site Conditions

The project area includes a portion of the Arroyo Grande Valley. The valley is a broad, flat plain spreading from north to south/southwest. The southern and western ends of the valley terminate at the Oceano Dunes. The northern end of the valley pinches out where Arroyo Grande Creek flows under Highway 101. Surface soils in the area have been continually disturbed by agricultural activities in the valley.

Los Berros Creek channel flows into the Arroyo Grande Creek channel approximately 2,000 feet north of Highway 1. The project elevations range from approximately 11 feet near the Oceano dunes to approximately 65 feet at Century Lane. The channel bottoms are mostly sand and gravel.

Review of the original United States Department of Agriculture (USDA) levee plans by Fugro indicates that the initial levee construction included embankments of approximately 15 feet wide. External slopes were constructed at 1.5h:1v or 2h:1v and internal slopes were designed to be approximately 3h:1v. Review of the as-built plans and recent topographic data indicate the interior slopes are as steep as 2h:1v. The levees were designed to have interior heights of approximately 11 to 14 feet. Existing heights may be somewhat less than this, although portions of the channel upstream of Highway 1 are incised below that depth, potentially due to bank erosion. Exterior slope heights were designed to be approximately 5 to 12 feet above existing grades, although they are generally less pronounced upstream of Highway 1.

In 2003 the levees were damaged by the San Simeon earthquake. Damage to the southern levee was noted by the County near Creek Road. According to the United States Geological Survey (USGS) report prepared after the earthquake, damage was most likely due to liquefaction.

4.6.1.2 Geologic Setting

Based on published geologic maps used in the Fugro report, the entire project site is located on recent alluvial deposits (Qal on Figure 4.6-1). Subsurface exploration and laboratory testing identified five variations of this formation (Qal1 through Qal5) within the project area. These variations are described in detail in the Fugro report. Adjacent formations include the older sand dune deposits that make up the Oceano Dunes and Nipomo Mesa. It should be noted that a portion of the site along the creek was part of what is known as the “pre-settlement Estero”.

According to the USGS the area was "subdivided and turned into developable lots by leveling dunes and filling in swamp areas with dune sand in March 1927". The alignment of Arroyo Grande Creek downstream of Creek Road may have been altered by this development as well. During field explorations, groundwater was encountered anywhere from 3 to 14 feet below ground level. Fugro notes that groundwater levels in the area could fluctuate considerably given rainfall, tidal influences, runoff, and irrigation schedules.

The area of the Union Pacific Railroad (UPRR) bridge raise was not specifically evaluated in the Fugro report. However based on maps in the report, the underlying soils are similar to those in the rest of the project area.

Regional Faulting and Seismicity

Fugro identified nine active and potentially active faults in the vicinity of the project site. The closest are associated with the San Luis Range Fault System. This system includes the Oceano and Wilmar Avenue faults, which are considered active. These faults do not cross the project site. The project site is in a seismically active portion of California and has been subject to various seismic events, including ones in 1830, 1857, 1913, 1916, 1917, 1952, 1966, 1980, and 2003. The San Simeon Earthquake (2003) did result in damage to the levees.

Existing Levee Slope Stability

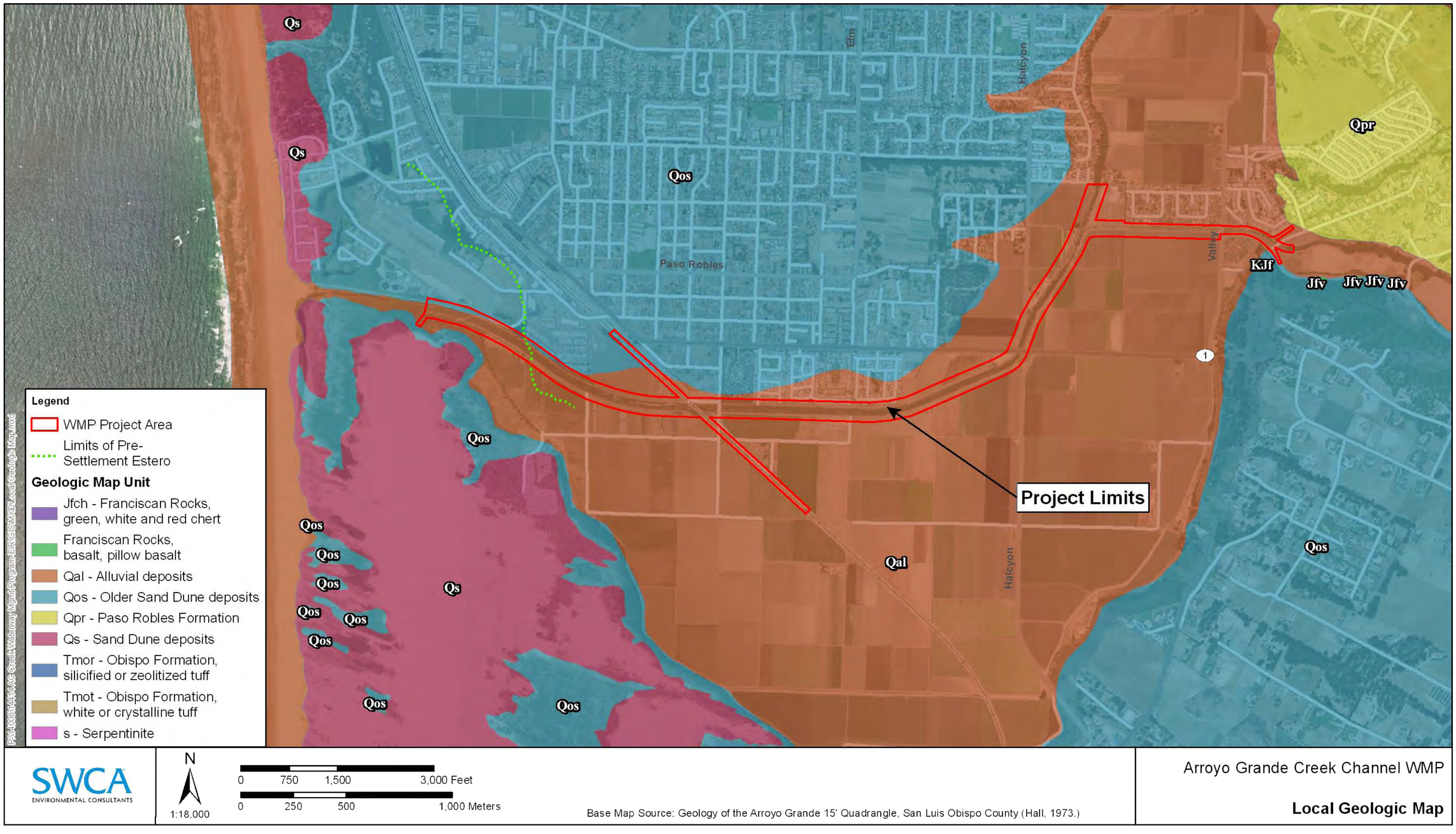
Fugro performed slope stability analysis at two locations along the existing levee. The analysis considered static loading, psuedostatic (earthquake) loading, and post-liquefaction conditions. The results of the analysis are summarized in Table 4.6-1. Generally a factor of safety of 1.1 or higher is considered stable under County guidelines. The analysis concludes that the southern levee downstream of Creek Road may be unstable once earthquake-induced liquefaction occurs. This is consistent with the damage that occurred after the 2003 San Simeon earthquake.

Table 4.6-1. Existing Levee Slope Stability

Location	Levee Slope	Existing Factor of Safety		
		Static	Earthquake	Post-liquefaction
North Levee upstream of 22nd Street (Sta 72)	Interior	2.5	1.5	2.5
	Exterior	1.7	1.2	1.7
South Levee downstream of Creek Road (Sta 30)	Interior	2.6	1.5	0.8
	Exterior	1.9	1.3	1.1

Source: Fugro 2009 (See Appendix E)

Figure 4.6-1. Geologic Map



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Liquefaction

Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment (such as silt and sand) to a fluid-like state, often caused by an earthquake. During the shaking the soil loses its bearing strength and it may spread laterally, undergo settlement, and/or form fissures. Liquefaction can result in substantial damage to property, roads, and infrastructure. The southern levee near Creek Road was affected by liquefaction during the 2003 San Simeon earthquake. Potential for liquefaction is highest where alluvial deposits and high water tables underlie the ground surface, which is the case in much of the project area.

Soil Conditions

Erosion and Scour

Soils in the County are mapped by the Natural Resources Conservation Service (NRCS) and documented in the Soil Surveys for San Luis Obispo County. Tests performed on those soils help engineers determine their characteristics (i.e., permeability, strength, composition, etc.). Typically, erosive factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. Erosive factors are influenced by factors such as plant cover, grade and length of slope, management practices, and climate.

Erosion outside of the levees is relatively limited due to the flat topography. Erosion of levee slopes has been noted on the interior and exterior levee slopes in some places. An evaluation of erosion along Arroyo Grande Creek performed by Central Coast Salmon Enhancement (CCSE) identified approximately 10 sites with relatively significant erosion problems that are also located within the project area (CCSE 2009).

The existing levee slopes are subject to sheet or rill erosion during rainfall, although the slopes are generally well-vegetated, which minimizes damage caused by stormwater runoff. The County does periodically maintain levee slopes affected by runoff. Levee embankments are also subject to an erosional feature known as piping, wherein a tunnel-like void is eroded in the levee due to seepage daylighting from the interior of the levee to the exterior. The Fugro report notes that piping is possible due to the sandy material which makes up the existing levee. The levees are also subject to mass erosion and have failed catastrophically during flooding events when the levee is breached. This occurred most recently in 2001. Hundreds of acres of farmland and several residences were flooded due to that event (Swanson 2006).

Scour is the hole left behind when sediment (sand and rocks) is washed away from the bottom of a river. Although scour may occur at any time, it may be especially strong during floods. Swiftly flowing water has more energy than calm water to lift and carry sediment down river. If sediment or rock on which bridge supports rest is scoured by a river, the bridge could become unsafe for travel. The Fugro report notes areas of scour upstream of the Highway 1 bridge identified during field visits in 2008.

Subsidence

Subsidence is the sinking or downward settling of the ground surface relative to the surrounding area, with little or no horizontal movement. Significant land subsidence in California is generally related to dewatering or withdrawal of oil or gas from the soil, hydrocompaction of dry, loose, clayey soils, or oxidation of organic materials, although groundwater withdrawal may also result in subsidence. In the project area, groundwater is relatively close to the surface.

Expansive Soils

The project site is dominated by sandy soils, although finer grained and some clay soils do exist, according to the Fugro report. The levees are constructed of sandy material which has a low potential for expansion.

Landslide and Rockfall Hazard

A landslide is defined as downslope movement, under gravitational influence, of soil and rock materials en masse. Rockfall is precipitous movement of rocks or newly detached segments of bedrock down the face of a steep slope or cliff. Landslide and rockfall conditions do not exist at the project site given the flat topographic conditions of the Arroyo Grande Valley.

4.6.2 Regulatory Setting

4.6.2.1 Federal and State Polices and Regulations

Alquist-Priolo Earthquake Hazards Zone Act

The Alquist-Priolo Earthquake Hazard Zone Act (originally the Alquist-Priolo Special Studies Zone Act of 1972) requires that zones along sufficiently active and well-defined faults be established. The zones vary in width, but are in general approximately one quarter mile wide. Development is limited in areas defined as Earthquake Hazard Zones and structures for human occupancy are generally not permitted. The act regulates structures with human occupancy or usage of 2,000 person-hours per year or more. The project site is not in or adjacent to an Alquist-Priolo Zone.

Uniform Building Code and California Building Code

The Uniform Building Code (UBC) and the California Building Code dictate seismic design parameters for structures in California. The UBC provides a standard for building laws. Published by the International Conference of Building Officials, the UBC is a widely adopted model building code in the United States. The 1997 UBC is considered the latest edition and is adopted and used by most cities and counties. The California Building Code incorporates by reference the UBC with necessary California amendments. The California Building Code is codified in the California Code of Regulations (CCR) Title 24 Part 2, commonly known as the California Building Standards Code. Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. About one-third of the text within the California Building Code has been tailored for California earthquake conditions.

4.6.2.2 Local Policies and Regulations

Government Code Sections 65302.1 requires a safety element for the protection of the community from geologic hazards that must include features to minimize risks associated with these hazards. San Luis Obispo County adopted its Safety Element of the General Plan in 1999. In accordance with this regulation, the proposed project shall be designed to comply and be consistent with the Safety Element of the San Luis Obispo County General Plan.

Also applicable to the project are Chapter 22 of the County of San Luis Obispo Land Use Ordinance (LUO), 2002 edition, and Title 19, Building and Construction Ordinance of the San Luis Obispo County Code. Article 5, Chapter 22.52 of the LUO establishes standards for

grading and excavation activities. Grading, sedimentation, and erosion control are addressed in Section 19.20.090 of Title 19, Building and Construction Ordinance of the San Luis Obispo County Code.

4.6.3 Thresholds of Significance

The thresholds of significance are based on the criteria set forth in Appendix G of the CEQA Guidelines. According to that criteria, a project would result in a significant geology and soils-related impact if it would:

1. Expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving earthquake rupture, strong seismic ground shaking, seismic related ground failure including liquefaction, and landslides;

2. Result in substantial soil erosion or the loss of topsoil;

3. Be located on a geologic unit or soil that is unstable that could potentially result in landslide, lateral spreading, subsidence, liquefaction or collapse; or

4. Be located on expansive soil creating substantial risks to like or property.

4.6.4 Impact Assessment and Methodology

Soils, geologic, and seismic hazards and impacts, were evaluated based upon a review of the Fugro report, the Halcyon Road Master Environmental Impact Report (EIR) (Morro Group 2007), and a site reconnaissance. The report includes twenty potential hazards that could affect the project. The potential of those hazards to impact the existing levee was compared to their potential to impact the levee after implementation of the proposed project. A table of the conclusions is included in Appendix E.

4.6.5 Project-Specific Impacts and Mitigation Measures

Impacts in this section are not broken down by project component as they relate only to the levee raise components of the project. In general the impacts would be similar for either the Alternative 3a or 3c levee raise, but would perhaps be more intensive for the 3c levee raise as it requires the most substantial changes to existing conditions. It should also be noted that prior to grading associated with the levee components and UPRR bridge raise, additional subsurface analysis and specific geotechnical recommendations would be made by an engineer. This is a requirement of local building code and therefore not identified as a specific mitigation measure below.

4.6.5.1 Faulting and Seismicity

No active faults cross the project area but the project site is subject to seismic activity due to its proximity to numerous faults, including local faults associated with the San Luis Range fault system which are less than 2 miles from the project area, and the San Andreas fault, located approximately 42 miles from the project site.

Seismic activity can induce liquefaction, resulting in settlement or cracking of the levees, or result in failure of the levee slopes. Based on the project location, local geologic conditions and recent experience with seismic events, the proposed project may be impacted by all three

issues. Based on information in the Fugro report, settlement could reach as much as 2 to 9 inches along the levees depending upon the location, with the greatest settlement located in the "pre Estero" area downstream of Creek Road.

Failure of the levee slopes may also occur due to seismic activity and subsequent liquefaction of local soils. The Fugro analysis considered static loading, psuedostatic (earthquake) loading, and post-liquefaction conditions on the proposed project. The results of the analysis are summarized in Table 4.6-2. Generally a factor of safety of 1.1 or higher is considered stable under County guidelines.

Table 4.6-2. Alternative 3c Levee Slope Stability

Location	Levee Slope	Proposed Factor of Safety		
		Static	Earthquake	Post-liquefaction
North Levee upstream of 22nd Street (Sta 72)	Interior	1.9	1.3	1.8
	Exterior	1.7	1.2	1.7
South Levee downstream of Creek Road (Sta 30)	Interior	1.9	1.3	0.5
	Exterior	1.9	1.3	0.8

Source: Fugro 2009 (See Appendix E)

Table 4.6-2 indicates that the Alternative 3c levees would be stable under static and earthquake "loads." It also indicates that in areas downstream of Creek Road the factor of safety may fall well below 1.1 and the levees may be unstable. This is due to the liquefaction that would occur in the soils underlying the levee. This instability exists currently as well, but to a lesser extent.

Two potential mitigation strategies for potential slope instability are discussed in the Fugro report. One includes over-excavating liquefaction prone soils and backfilling the excavation with soils not prone to liquefaction. However given that potential excavation could reach 13 feet in some places, and the lengths which excavation would need to occur, this strategy may be infeasible.

Another approach for mitigation is to acknowledge that liquefaction and instability may occur, and to prepare for it accordingly. This may include identifying those areas most prone to liquefaction and developing an emergency response repair plan so that the levee embankments could be repaired as soon as possible. Without quick repairs, the integrity of the flood control channel would be compromised and the level of flood protection offered would be reduced.

GS Impact 1 The proposed Alternative 3a and 3c levee improvements may become unstable when a seismic event results in liquefaction of the underlying soils.

Mitigation Measures

GS/mm-1 *Prior to construction of Alternative 3a and 3c a design-level geotechnical report for the levee improvements shall be prepared by the District. The report shall provide ground motion parameters, for use in geotechnical analyses, such as for evaluating slope stability, liquefaction, and seismic settlement.*

GS/mm-2 *Prior to construction of Alternative 3a and 3c an Emergency Response Plan shall be prepared by the District to address seismic hazards. The plan shall recognize the potential for liquefaction and seismic impacts to the levee, and delineate specific high-hazard areas that should be inspected for damage immediately following an earthquake.*

Residual Impact

In the event that liquefaction produces instability during a flooding event GS/mm-2 would be ineffective at addressing the impacts. As a result there is some residual impact; however, the likelihood of a high-flow event coinciding with a significant earthquake event is quite low. Therefore with implementation of these measures, the impact would be *less than significant*.

4.6.5.2 Soil Conditions

Seepage

Soils conditions of the project area and levees described by Fugro indicate that the integrity of the channels may be compromised due to erosion of the levee slopes, and seepage through the levee embankments or foundation. Other impacts identified include the potential of expansive soils or collapsible soils to affect the levee stability, although standard geotechnical practices required by ordinance would mitigate these impacts.

During high flow events, water seeping through the levee embankments may daylight on the exterior of the levee slopes, resulting in localized erosion. Continued seepage could lead to piping and increased erosion. Foundation seepage may also occur when a higher water level in creeks infiltrates the creekbed and flows beneath the levee to a lower water level. If uncontrolled, piping or seepage could erode foundation materials destabilizing the embankment. Seepage could be accelerated during the vegetation management as shrubs and root-intensive plants would be removed from the levee embankments.

GS Impact 2 **Foundation and/or embankment seepage may result in localized destabilization of the levees.**

Mitigation Measures

GS/mm-3 *Prior to construction of Alternative 3a and 3c a design level geotechnical report shall be prepared by the District to address seepage conditions. It should include mitigation strategies such as cutoff walls, impervious blankets, or drainage systems, for example, that control or reduce gradients.*

Residual Impact

With implementation of mitigation, this impact would be considered *less than significant*.

Erosion

Construction activities associated with the vegetation management, the levee raise components and the UPRR bridge raise would all result in exposed slopes subject to erosion. As proposed, the project components would be implemented during the dry season, minimizing the potential for erosion to occur during construction. Over the long term, the graded fill slopes would be subject to sheet and rill erosion and scour. Currently, erosion of the interior levee slopes is minimized due to the relative flat slope angles (roughly 3h;1v) and the relatively heavy vegetative cover. However this cover would be removed under the vegetation management component of the proposed project.

Erosion would be accelerated where soils are directly exposed to concentrated stormwater runoff such as at culverts and areas where floodwaters overtop the levees. Floodwaters overtopping the levee may result in mass erosion and catastrophic failure of the levee system as witnessed in the 2001 flooding event. This may be more likely on the southern levee as it is lower relative to the northern levee and would overtop first.

GS Impact 3 **Soils disturbed during the vegetation and sediment management, construction of Alternative 3a and 3c, and the UPRR bridge raise would be subject to erosion and scour from stormwater, high flow events in the channel, and flooding events.**

Mitigation Measures

GS/mm-4 *Prior to initiation of any project components an erosion control plan shall be implemented by the District. The plan shall address short and long-term erosion control and scour which may result from the project components. Vegetation used for erosion control shall be compatible with vegetation management efforts to reduce channel roughness coefficients, and any biological resources mitigation measures.*

GS/mm-5 *Prior to initiation of any project components the District shall prepare and submit to the SWRCB for approval a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the State General Order related to construction projects. The SWPPP shall identify the selected stormwater management procedures, pollution control technologies, spill response procedures, and other means that will be used to minimize erosion and sediment production and the release of pollutants to surface water during construction. The SWPPP shall also describe procedures and be consistent with biological resources mitigation.*

GS/mm-6 *On-going maintenance of the levee embankments by the District should include removal of debris and dead vegetation which could concentrate flows, and repair of holes and other disturbances resulting from the initial and annual vegetation management activities.*

GS/mm-7 *Prior to implementation of Alternative 3a and 3c the District shall identify areas adjacent to the south levee where levee overtop and flooding may least affect public safety and property value and consider construction of a permanent spillway at these location(s). The spillway shall be designed to accommodate flood events in a manner that would reduce the potential for mass erosion and catastrophic failure of the levees.*

Residual Impact

There is always the potential that the levees would erode during a major flood event resulting in massive failure. This possibility is decreased by the proposed project due to its design in accordance with modern building codes and the mitigation measures included in this section of the EIR. Impacts associated with erosion and scour would be *less than significant*. No additional mitigation would be required.

Secondary Impacts

In the event that implementation of GS/mm-7 results in construction of spillways, floodwaters could be concentrated on adjacent agricultural lands, reducing short-term productivity; however, those areas are currently subject to floods from five-year events and therefore the proposed project, even after implementation of GS/mm-7 would result in fewer flooding impacts to the properties adjacent to the spillways. Spillway construction shall be performed consistent with the biological resource and other mitigation included in this EIR, although based on the specific size and design of the improvements, subsequent environmental review may be required.

4.6.5.3 Landslide and Rockfall

The potential for impacts to the project related to landslide and rockfall, are considered *less than significant* due to the absence of site conditions that would create a significant potential for such occurrences. No mitigation is required.

4.6.6 Cumulative Impacts

Potential impacts related to geologic, soils, and seismic hazards are all site-specific, and mitigation measures are applied to each project to minimize the potential for significant geologic impacts. All development projects are required to comply with State and local regulations regarding grading and construction; therefore, cumulative impacts related to these issues would be *less than significant*. No mitigation is required.

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4.7 HAZARDS AND HAZARDOUS MATERIALS

This section describes existing and potential sources of environmental hazards and hazardous materials associated with the proposed project. The information referenced in this section was gathered from a Phase 1 Environmental Site Assessment (ESA) prepared for this project and previous documentation prepared for the Halcyon Road Master Environmental Impact Report (EIR) (Morro Group 2007). Information on the potential for naturally-occurring asbestos hazards is included in the Air Quality section of this EIR.

4.7.1 Existing Conditions

4.7.1.1 Hazardous Material Definition

As defined in Chapter 6.95 of Division 20 of the California Health and Safety Code, Section 25501(k), a hazardous material is "…any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment."

4.7.1.2 Hazard Versus Risk

Worker safety and public health are potentially at risk whenever hazardous materials are used or exposed. It is often helpful to distinguish between the "hazard" associated with these materials and the "risk" they pose to human health or the environment. A hazardous material has the potential to cause damage upon accident or incidental exposure. The risk of an event is determined by a combination of the probability of exposure to hazardous materials and the severity of consequences should exposure occur (California Office of Emergency Services 1989). The likelihood of exposure to a hazardous material coupled with its inherent hazardous properties determines the degree of risk to public health or the environment. To be of high risk, exposure to a hazardous material must be both likely and have negative consequences.

4.7.1.3 Site Conditions

The proposed project site includes channelized portions of Arroyo Grande Creek and Los Berros Creek. The areas immediately north of the project site have undergone increasing urbanization over the last 100 years. The area north of the project site includes single family residences, mobile home parks, industrial uses, agricultural uses, the Oceano County Airport, and the Oceano Wastewater Treatment Plant. The Union Pacific Railroad (UPRR) railroad lines (formerly the Southern Pacific Railroad) were in place by 1901.

Areas south of the channel have remained in agricultural cultivation over the same period. Scattered residences and agriculture accessory buildings do exist south of the channels. A small sand mine is located just south of the western end of the project area.

4.7.1.4 Hazardous Materials Land Uses

The following land uses associated with hazards and hazardous materials were identified within the vicinity of the proposed project site.

Propane Filling and Storage Station

Delta Liquid Energy, a liquid propane company has a distribution station located on the west side of Arroyo Grande Creek near the western intersection of Highway 1 and Halcyon Road. Access to the site is from Highway 1. The parking lot is large enough to accommodate multiple trucks to park off of the street and to turn around without affecting traffic flow on Highway 1. The station contains two large, liquid propane storage tanks, set behind protective steel bollards, which are located adjacent to Arroyo Grande Creek and on the opposite side of the large unpaved parking area from a small residential building containing a home office.

Buried Natural Gas and Petroleum Lines

The Phase I ESA prepared for the Halcyon Road Master EIR identified two sets of pipes, buried at an unknown depth adjacent to Halcyon Road, within the project area. The first set, operated by Southern California Gas Company, is a 16-inch pipe used for transporting and distributing natural gas which extends along the south and west side of Halcyon Road. The second, an eight-inch semi-refined petroleum pipeline operated by ConocoPhillips (who acquired the pipelines from Tosco/Unocal) extends along the north and east side of Halcyon Road. Both sets of pipes are fitted with pressure monitoring and leak detection devices, as well as manual shut off valves that can be utilized in the event that a leak is detected. There are no documented releases from these pipelines. The pipes are checked aerially twice a week for leaks, and on foot six times per month (Morro Group 2007). These lines are identified in the conceptual plans. A third gas line was identified during preparation of the conceptual plans for this proposed project. It is located below the eastern levee and crosses west over the creek near the northern limits of the project area.

Agricultural Hazards

Intensive agriculture dominates the project area, particularly on the southern side. Agricultural activities involve regular plowing by large farm equipment, laying irrigation pipes and irrigation, pesticide use, and crop harvesting. The Phase I ESA prepared for the Halcyon Road Master EIR included soil testing at locations north and south of Highway 1, adjacent to Halcyon Road. These areas are relatively close to where levee improvements are proposed. The soil was tested to a depth of one foot. A number of pesticide residues were discovered, but were below levels that pose a risk during construction.

There are two locations where storage of agricultural pesticides may occur relatively close to the proposed project. One location is south of the Arroyo Grande Creek channel on either side of the UPRR railroad. This site includes above-ground storage tanks (AST). The other site is located east of the channel near the northern terminus of the project area. These areas appear to include storage and maintenance of agricultural equipment. The Phase I ESA notes that these types of operations are known to store and mix agricultural chemicals. Further, the active agricultural operations regularly apply pesticides or other hazardous materials to the soil and crops.

Union Pacific Railroad

Active and inactive railroad beds frequently have concentrations of petroleum products and lead elevated above natural background conditions. Petroleum product concentrations and lead concentrations are derived from drippings from rail vehicles and flaked paint, respectively. Wooden railroad ties may contain preservatives (i.e., creosote), some of which may contain hazardous constituents. The Phase I ESA prepared for this project notes that typically railroad

right-of-way soils contain elevated concentrations of arsenic, as well as lead and organochlorine pesticides due to former weed control practices.

Oceano County Airport

The Oceano County Airport is located northwest of the project site. The airport has one runway approximately 2,300 feet long and 50 feet wide. The southern end of the runway extends to within approximately 200 feet of the northern levee. The airport does not have scheduled carrier service. The airport has its own planning areas, which reflect state and federal airport safety regulations and local land uses.

The airport seeks to avoid accidents through minimizing potential obstructions (landforms, towers, trees, etc.) to aircraft and minimizing hazards which would potentially interfere with the takeoff, landing, or maneuvering of aircraft at the Airport. These hazards include electrical interference, land uses which may attract birds or produce smoke, among others.

4.7.1.5 Agency Records

Federal, state, and local regulatory agencies publish databases or "lists of businesses and properties that handle hazardous materials or hazardous waste, or are the known location of a release of hazardous substances to soil and/or groundwater. These databases are available for review and/or purchase at the regulatory agencies, or the information may be obtained through a commercial database service. The databases checked are shown in Table 4.6-1. Three potential hazardous materials sites were identified in the search (bold findings in Table 4.6-1) and described below.

Leaking Underground Storage Tank

The Regional Water Quality Control Board (RWQCB) maintains records of reported leaking underground storage tank (LUST) incidents and is required to submit an annual report to the state that covers the reported leaks of hazardous substances from underground storage tanks. There is one RWQCB LUST property listed within one-half mile of the site. The Craig Bell property is a former gasoline service station located approximately one-third of a mile north of the site at the intersection of Front St. and Highway 1. According to reports reviewed at RWQCB, groundwater monitoring and remediation are on-going as of the beginning of 2008. The groundwater contamination plume does not extend beyond a one block area of that facility, which would not include the project site.

Underground Storage Tank

Fukuhara Farms, located at 1091 South Halcyon Road is listed on the historical underground storage tank (UST) list maintained by the State Water Resources Control Board as having two tanks. A file review conducted at the County of San Luis Obispo Office of Environmental Health Services (CSLOEHS) revealed no evidence of USTs at the facility. However, a 500-gallon diesel above ground storage tank (AST) and a 500-gallon gasoline AST were noted at the facility. Waste oil and filters were also listed, but records did not indicate the waste oil was being stored in a tank (AST or UST). These tanks are not located within the proposed area of disturbance.

Cortese List

The Office of Environmental Protection (OEP), Office of Hazardous Materials maintains the Identified Hazardous Waste and Substances Site database also known as the Cortese list. This

database identifies contaminated public drinking water supply wells, sites selected for remediation, sites with known toxic releases, UST sites with reported releases, and solid waste disposal facilities where contamination migration is known. There is one Cortese listed property within a half-mile of the site. The Bell property, discussed above, appears on this list. As previously discussed, the groundwater contamination plume does not extend beyond a one block area of that facility, which does not include the project site.

Table 4.7-1. Environmental Database Records Search

Database	Agency	Search Radius	Findings
Federal			
NPL	EPA	1 mile	None listed
CERCLIS	EPA	½ mile	None listed
RCRA-TSD	EPA	1 mile	None listed
RCRA-GEN	EPA	Site and bordering	None listed
ERNS	EPA	Site	None listed
CORRACTS TSD	EPA	1 mile	None listed
Non-CORRACTS TSD	EPA	½ mile	None listed
State			
BEP/AWP/EnviroStor	Cal-EPA	1 mile	None listed
SWIS/SWAT V	RWQCB	½ mile	None listed
LUST	**RWQCB**	**½ mile**	**One**
SLIC	SWCB	½ mile	None listed
UST	**CSLOEHS**	**Site and bordering**	**One**
CHMIRS	CIWMB	Site and bordering	None listed
CORTESE	**OEP**	**½ mile**	**One**

4.7.2 Regulatory Setting

Hazards and hazardous material management is subject to multiple laws, policies, and regulations at all levels of government. The agencies responsible for enforcing applicable laws and regulations develop and enforce standards for the handling and cleanup of specific materials determined to pose a risk to human health or the environment. The enforcing agency at the local level for the proposed project area is San Luis Obispo County Health Agency, Division of Environmental Health. Enforcement agencies at the State level include two branches of the California Environmental Protection Agency (CalEPA): the Department of Toxic Substances Control (DTSC), and the RWQCB. The Federal enforcement agency is the EPA. A brief description of agency involvement in management of hazardous materials is provided below.

4.7.2.1 Federal Policies and Regulations

The EPA is the Federal agency responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials; in addition, the EPA provides oversight and supervision for some site investigation/remediation projects. For disposal of certain hazardous wastes, the EPA has developed land disposal restrictions and treatment standards. Legislation includes the Resources Conservation and Recovery Act of 1986 (RCRA), the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The Federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (CFR). These laws and regulations include specific requirements for facilities that handle, generate, use, store, treat, transport, and/or dispose of hazardous materials, as well as for investigation and cleanup of contaminated property.

4.7.2.2 State Policies and Regulations

Central Coast Regional Water Quality Control Board

The project site is located within the jurisdiction of the Central Coast RWQCB. The RWQCB is authorized by the California Porter-Cologne Water Quality Act of 1969 (“the Porter-Cologne Act”), to implement water quality protection laws. When the quality of the groundwater or the surface waters of the State is threatened, the RWQCB has the authority to require investigations and remedial actions. In addition, the Central Coast RWQCB is the State regulatory agency that oversees the local Leaking Underground Fuel Tank (LUFT) program, which was established to regulate underground fuel tanks. Under the LUFT program, local implementing agencies are required to permit, inspect, and oversee monitoring programs to detect leakage of hazardous materials.

California Environmental Protection Agency, Department of Toxic Substances Control

In California, the DTSC, a branch of CalEPA, works in conjunction with, or in lieu of, the EPA to enforce and implement specific hazardous materials laws and regulations. California has enacted its own legislation pertaining to the management of hazardous materials.

California Occupational Safety and Health Agency

Worker health and safety in California is regulated by the Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA). Cal/OSHA standards and practices for workers dealing with hazardous materials are contained in Title 8 of the CCR, and include Division 1, Chapter 4, Subchapter 7 (General Industry Safety Orders) and Section 5192

(Hazardous Waste Operations and Emergency Response). General construction regulations are found in Division 1, Chapter 4, sub-chapter 4 (Construction Safety Orders). Cal/OSHA offers on-site evaluations and issues notices of violation to enforce necessary improvements to on-site health and safety practices to achieve compliance with regulations.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered to be hazardous waste. Health concerns pertaining to the release of hazardous materials; however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26 of the California Code of Regulations, which describes required aspects for the proper management of hazardous waste.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including EPA, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

4.7.2.3 Local Policies and Regulations

San Luis Obispo County Air Pollution Control District

The federal and state Clean Air Acts are enforced locally by the San Luis Obispo County Air Pollution Control District (SLOAPCD). The SLOAPCD regulates potential discharges of criteria air pollutants (including organic compounds that contribute to ozone formation) and toxic air contaminants.

San Luis Obispo County Office of Emergency Services

The County Office of Emergency Services is an emergency management agency with responsibilities that include coordination of emergency and disaster preparedness planning, response, and recovery with and between local, state, and federal agencies. The County Office of Emergency Services is committed to serving the public before, during and after times of emergency and disaster by promoting effective coordination between agencies, and encouraging emergency preparedness of the public and organizations involved in emergency response.

San Luis Obispo County Health Agency

Pursuant to State law and local ordinance, the Division of Environmental Health of the San Luis Obispo County Health Agency conducts inspections to ensure proper handling, storage, and disposal of hazardous materials and proper remediation of contaminated sites. In addition, the Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act, [i.e., Chapter 6.95 of Division 20 of the California Health and Safety Code]) requires that any business that handles or stores hazardous materials prepare a Hazardous Materials Business Plan. Under this law, businesses are required to submit inventories of on-site hazardous materials and wastes and the locations where these materials are stored and handled. This information is collected and certified by San Luis Obispo County Environmental Health Department for emergency response purposes. There are no cities within San Luis Obispo County that have adopted and implemented their own hazardous materials programs in lieu of the County program; however, the City of San Luis Obispo Fire Department is a participating agency with San Luis Obispo County.

Oceano County Airport Land Use Plan

The purpose of the Airport Land Use Plan (ALUP) is to ensure compatible land uses in the vicinity of the airport, promote the safety and well-being of the public by ensuring adoption of land use regulations, minimize exposure of persons to hazards associated with the operation of the Oceano County Airport, to provide a set of policies and criteria to assist the Airport Land Use Commission (ALUC) in evaluating the compatibility of proposed actions of local agencies with the present and future operations at the Oceano County Airport and with the ALUP, and to provide guidance to local agencies in presenting proposed actions to the ALUC for review. The ALUP designates specific airport-related planning areas that restrict development based on its potential to interfere or be affected by the airport.

4.7.3 Thresholds of Significance

Appendix G of the CEQA *Guidelines* states that a project would normally have a significant impact if it would create a potential health hazard or involve use, production, or disposal of materials that pose a hazard to people, animal, or plant populations in the area affected. For the purposes of this analysis, an impact would be considered significant if the project would:

1. Create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials;

2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accidental conditions involving the release of hazardous materials into the environment;

3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or planned school; or

4. Be located on a site which is included on a list of hazardous materials sites compiled by local, state, or federal agencies and, as a result, will create a significant hazard to the public or the environment.

5. Substantially increase hazards due to a design feature or incompatible uses.

4.7.4 Impact Assessment and Methodology

The EIR impact analysis focuses on potential health risks associated with the proposed project, particularly from surrounding land uses where the potential for hazardous material release could be encountered and affect the project site. Methodology for assessing the proposed project includes a review of the Phase I ESA prepared for the project and existing regulatory plans and policies. Significant impacts would result if the project would increase the likelihood that hazardous materials or conditions would be encountered or created during project implementation due to existing conditions such as leaking USTs, or the characteristics of the proposed project.

4.7.5 Project-Specific Impacts and Mitigation Measures

Potential hazards and/or hazardous materials identified in this chapter occur in and around the project site. Those identified are associated with hazards located below ground (i.e., pipelines), potentially contaminated surface or subsurface soils, and above-ground storage tanks. Components of the project that would require significant disturbance of surface conditions or operation of heavy machinery in proximity to hazardous materials are those most likely to result in significant impacts.

4.7.5.1 Propane Filling and Storage Station

Based on the conceptual plans prepared for the project, only the Alternative 3c levee raise component would require disturbance in proximity to the propane tanks. As currently proposed, that component would require relocation of the tanks. It may be possible to construct retaining walls along that portion of the property and avoid relocation, but it is unknown at this time if that is a preferred and feasible alternative.

HAZ Impact 1 **The construction of Alternative 3c may require the relocation of potentially explosive liquid natural gas storage tanks.**

Mitigation Measures

HAZ/ mm-1 *Prior to completion of the final design plans, the District shall obtain the natural gas purveyor's Hazardous Materials Plan, which shall include, but is not limited to, details of the existing and proposed storage tank locations and associated infrastructure, and relocation procedures. The procedures shall be referenced on the final plans and implemented during construction, as necessary.*

Residual Impact

There is a certain amount of inherent risk in the storage and use of natural gas that no precautions can fully mitigate. However, with caution and professional handling and operation, these risks can be mitigated to acceptable levels. With implementation of this mitigation, impacts would be *less than significant.*

4.7.5.2 Buried Natural Gas and Petroleum Lines

As proposed, the initial sediment management activities would include excavation within the proposed alignment of the buried pipelines. Excavations for construction of Alternative 3a and 3c may also be deep enough to warrant mitigation as well.

HAZ Impact 2 **Implementation of the sediment management, and Alternative 3a and 3c components of the project, could potentially disturb existing gas and petroleum pipelines located within the Arroyo Grande Creek channel and levees.**

Mitigation Measures

HAZ/mm-2 *Prior to construction, pipeline locations shall be clearly indicated on construction plans and in the field. Project plans shall include specific measures to be taken by construction crews so that damage to the pipelines is avoided.*

Residual Impact

Implementation of this measure would reduce potential impacts to a *less than significant level*. No additional mitigation is required.

4.7.5.3 Agricultural Hazards

Soils test performed for the Halcyon Road MEIR indicate that soil pesticide levels in areas along Halcyon Road do not warrant further action. However the active agricultural operations adjacent to the project site include the regular spraying and use of potentially hazardous materials including fertilizer and pesticides. Construction crews could be exposed to pesticide during all components of the proposed project given the proximity of the project site to active operations.

In addition, there are several ASTs adjacent to the project site which could be encountered during construction activity.

HAZ Impact 3 **During implementation of the WMP, construction workers may be exposed to agricultural chemicals due to overlap between normally scheduled applications and construction activities.**

Mitigation Measures

Implement AGR/mm-5.

HAZ/mm-3 *At least 30 days prior to commencement of all construction activities, the County shall provide local agriculturalists a construction schedule and request that use of agricultural chemicals (particularly sprays) be limited during construction hours (typically 8:00 a.m. to 4:00 p.m.).*

Residual Impact

Implementation of these measures would result in close coordination between construction crews and local agriculturalists, reducing potential conflicts and hazards to *less than significant.* No additional mitigation is required.

HAZ Impact 4 **Heavy machinery would be operated in proximity to ASTs and other storage equipment which may contain hazardous materials.**

Mitigation Measures

Implement AGR/mm-5.

HAZ/mm-4 *Prior to initiation of construction activities that include heavy machinery, existing ASTs located within 50 feet of the exterior toe of the levee slopes shall be identified on construction plans and identified in the field.*

Residual Impact

Implementation of these measures would reduce potential impacts to *less than significant*. No additional mitigation is required.

4.7.5.4 UPRR Right-of-Way

Project components, including Alternative 3a and 3c levee raise and the UPRR bridge raise, would include disturbance within the UPRR right-of-way and may potentially encounter hazardous materials associated with the railroad.

HAZ Impact 5 **Construction activities associated with the Alternative 3a and 3c levee raise and the UPRR bridge raise may expose construction crews to hazardous soil conditions associated with the railroad right of way.**

Mitigation Measures

HAZ/mm- 5 *Prior to construction of any project component that would result in significant disturbance within the UPRR railroad right-of-way, a qualified consultant shall perform soils tests to determine whether or not hazardous conditions exist. If so, a Contaminated Materials Management Plan (CMMP) shall be developed in coordination with the County Environmental Health Division and implemented during construction.*

Residual Impact

Implementation of this measure would reduce potential impacts to a *less than significant level*. No additional mitigation is required.

Secondary Impact

In the event that soils contamination is present, the disturbed soils may have to be removed from the site and disposed of at an appropriate location. For Alternative 3a and 3c, the area of disturbance is relatively small and the amount of soil to be removed may be less than 100 cubic yards. The UPRR bridge raise would require significant disturbance in the right of way, although the amount of contaminated soil to be hauled would be insignificant when compared to the total earthwork required for this component (135,000 cubic yards). Therefore additional truck trips related to soil hauling would be *less than significant*.

4.7.5.5 Oceano County Airport

Portions of the project would be located adjacent to areas that the Airport Master Plan notes are exposed to “Severe/Significant Airport Impact”. These areas include the Runway Protection Zone, area Oa (Open Space), and area I-2 (Industrial). The proposed project would not

increase development density in these areas or attract more people to these areas, and therefore, would not expose additional persons to aircraft hazards.

Alternatives 3a and 3c would increase the levee heights along the channel between the UPRR bridge and the eastern end of the runway. Alternative 3c would increase the height by as much as four feet in some places, raising the levee to an elevation of approximately 34 feet above sea level west of the UPRR bridge. At this point the levee is approximately 1,500 feet from the southern end of the runway. This increase in height would not affect the visibility of the runway or pose an impact hazard to aircraft.

The vegetation management component of the project includes in some places, the planting of "upland" riparian species, such as cottonwood and sycamore. These trees are longer-lived, provide habitat, and require less maintenance than willows. However they can also grow much higher. Sycamores could easily reach 50 to 100 feet in height. This could pose a strike hazard to aircraft and potentially affect visibility of the runway.

HAZ Impact 6 **Proposed vegetation management would potentially introduce taller tree species near the southern end of the runway, resulting in a strike hazard to aircraft.**

Mitigation Measures

HAZ/mm-6 *Planting tall tree species (sycamore or cottonwood) within the channel between the UPRR bridge and the southern end of the runway shall be prohibited.*

Residual Impact

Implementation of this measure would reduce potential impacts to a *less than significant level*. No additional mitigation is required.

4.7.6 Cumulative Impacts

Potential hazards and use of hazardous materials are location-specific to the extent that they may result in significant impacts on the localized environment, but they are not "cumulative" in the sense normally applied in CEQA documents. Further, the impacts identified in this section are associated with relatively short-term construction activities, with the exception of long-term vegetation and sediment management. Therefore, the cumulative impacts related to these issues and mitigation measures that have been identified for the proposed project would apply cumulatively as well. Cumulative impacts would be *less than significant*. No additional mitigation is required.

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4.8 TRANSPORTATION AND TRAFFIC

The Transportation and Traffic section includes a description of the local transportation network and how it may be affected by the proposed project. The project would not result in a permanent increase in local traffic, but would contribute short-term construction traffic to the local and regional transportation network. This section also discusses the project relationship to potential Halcyon Road/Highway 1 intersection improvements. Much of the traffic data detailed below was obtained from the Halcyon Road Master Environmental Impact Report (MEIR) (Morro Group 2007) and associated technical documents.

4.8.1 Existing Conditions

Within the project area, Halcyon Road and Highway 1 are the two most travelled roads. They provide local circulation for various communities located along the central coast including Nipomo, Arroyo Grande, Grover Beach, Pismo Beach, Shell Beach, Avila Beach, and San Luis Obispo. Highway 1 is a major two-lane north-south coastal highway serving California, which extends from Orange County to the south and Mendocino County to the north. In the federal route classification system, SR-1 is considered a principal arterial and is included in the National Highway System (NHS). In the project area, between Nipomo Street and Valley Road, Highway 1 is also referred to as Cienaga Street. In this EIR it will only be referred to as Highway 1.

Halcyon Road is a two-lane north-south County roadway that connects Zenon Way to the south and El Camino Real to the north. Highway 1 intersects with Halcyon Road at two locations. The northerly intersections of Halcyon Road at Highway 1 consist of two offset all-way-stop-controlled T-intersections, east and west of the Arroyo Grande Creek channel. A current proposal would use two roundabouts to replace the two three-way stops that currently exist. The western roundabout would be centered approximately 200 feet west of the current western Halcyon Road and Highway 1 intersection. The center of the eastern roundabout would be located in approximately the same location as the existing eastern intersection. These improvements are intended to improve traffic flow at this location. Construction schedules for the improvements are not known at this time but would most likely not be completed prior to the other project components, with the exception of Alternative 3c and the Union Pacific Railroad (UPRR) bridge raise.

North of the intersection, Halcyon Road is on relatively level terrain. South of the intersection Halcyon Road is on relatively level terrain until it climbs the face of Nipomo Mesa on a 15 percent grade, gaining about 135 feet of elevation. This section of Halcyon Road has non-standard shoulder widths ranging from approximately zero to four feet in width and is signed to prohibit use by all trucks over seven tons.

Other roads in the project area that may be used to access either the Arroyo Grande Creek or Los Berros Creek channels, include 22nd Street, Los Berros Road, Valley Road, River Road, and Century Lane.

4.8.1.1 Halcyon Road/Highway 1 Traffic Volumes and Function

Traffic Volumes

Preparation of the Halcyon Road Master EIR included substantial use of the *South County Traffic Model Update* (Omni-Means 2006). That study included detailed traffic counts in the

project area, specifically for the sections of Halcyon Road and Highway 1 adjacent to the Arroyo Grande Creek channel. Roadway operations were quantified utilizing the roadway Average Daily Traffic (ADT) and base level of service (LOS) thresholds. LOS A through F are used to rate roadway and intersection operations. LOS A is described generally as "Free flow, with unlimited freedom to maneuver and select desired speed" and LOS F as "Forced flow, stoppages for long periods. Driver frustration is high at peak traffic periods" (County of San Luis Obispo Resource Management Services 2008). The results are summarized in Table 4.8-1.

According to the *South Traffic Model Update* Highway 1 carries approximately 11,544 ADT west of Halcyon Road (and Arroyo Grande Creek) and 5,186 ADT east of Halcyon Road. According to the *2004 Annual Average Daily Truck Traffic on the California State Highway System* (published on Caltrans website), trucks comprise approximately 11 percent of the average daily traffic through the Highway 1 study segment, which would be approximately 1,200 trucks per day west of Halcyon Road, and 600 trucks per day between Halcyon Road and Valley Road.

Halcyon Road carries an ADT of approximately 8,576 vehicles north of and 10,074 vehicles south of Highway 1.

Table 4.8-1. Roadway Level of Service (2006)

Roadway Segment	Configuration	ADT	LOS
Halcyon Road Segments			
North of Highway 1	Two-Lane Collector	8,576	C
South of Highway 1	Two-Lane Collector	10,074	D
Highway 1 Segments			
West of Halcyon Road	Two-Lane Arterial	11,544	C
East of Halcyon Road to Valley Road	Two-Lane Arterial	5,186	A

Source: Halcyon Road MEIR (Morro Group 2007)

Intersection Operations

Intersection operations at Halcyon Road and Highway 1 were also assessed in the Transportation and Traffic section of the Halcyon Road Master EIR. Table 4.8-2 presents intersection traffic operations at that location under 2005 traffic volumes.

Table 4.8-2. Intersection Level of Service (2005)

Intersection	Control	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS
Highway 1/Halcyon Road (west)	3-way stop	39.5	E	104.9	F
Highway 1/Halcyon Road (east)	3-way stop	90.4	F	256.3	F

Source: Halcyon Road EIR (Morro Group 2007)

4.8.2 Regulatory Setting

Traffic is regulated at the federal, state, and local levels through regulations, policies, and/or local ordinances. Local policies are commonly adaptations of federal and state guidelines, based on prevailing local conditions or special requirements. Generally traffic regulations are associated with long-term operations and standards such as speed limits and volumes, and road design. Therefore the traffic related regulatory setting for this project is limited.

4.8.2.1 State Policies and Regulations

Caltrans began requiring Transportation Management Plans (TMP) in 2000 for all planned activities on the state highway system. A TMP is a program of activities for alleviating or minimizing work-related traffic delays through use of public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. The proposed project would not include work on Highway 1, although construction traffic, including haul trucks would access the highway.

4.8.2.2 San Luis Obispo County Policies and Regulations

There are no specific construction-traffic policies in the County Code. In cases where large significant construction traffic will result, the County Public Works Department, Development Services Division does require Construction Activities Management Plans. These plans include a maximum number of daily trips allowed, designated contractor parking areas, identification of haul routes, hours of operation, etc.

4.8.3 Thresholds of Significance

The determinations of significance of project impacts are based on applicable policies, regulations, goals, and guidelines defined by the California Environmental Quality Act (CEQA), California Department of Transportation (Caltrans), and the County of San Luis Obispo.

4.8.3.1 CEQA Guidelines

The significance of potential transportation and circulation (traffic) impacts are based on thresholds identified within Appendix G of the CEQA *Guidelines*. According to the *Guidelines*, transportation impacts would be considered significant if the proposed project would:

1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);

2. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;

3. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

4. Result in inadequate emergency access;

5. Result in inadequate parking capacity; or,

6. Conflict with adopted polities, plans, or programs supporting alternative transportation (e.g., bus turnouts or bicycle racks).

4.8.4 Impact Assessment and Methodology

The proposed project involves various construction and maintenance activities. It would not result in the addition of any permanent new traffic to the circulation system. Therefore, the impact assessment focuses on the number of construction-related daily truck trips that could result from the proposed project. The number of truck trips which could be necessary is based on the volumes of material that may need to be imported to or exported from the project site and are consistent with those used in the air quality analysis.

4.8.5 Project-Specific Impacts and Mitigation Measures

This section includes a discussion of potential truck trips generated by each component of the project and determines whether or not they would contribute to short-term impacts to the local circulation system. Truck trip generation is summarized in Table 4.8-3. Trips shown in the table are one way trips. Specific haul routes have not been identified at this time, but the analysis assumes that the vast majority of trips would occur on Halcyon Road, between Highway 1 and Highway 101. 22nd Street would most likely provide access to the UPRR bridge raising component of the project and potentially portions of the sediment removal and levee raise components as well. Access to Highway 101 would be from Grand Avenue or the Brisco Road interchanges.

4.8.5.1 Short-term Construction Traffic Impacts

<u>Vegetation and Sediment Management</u>

Vegetation management activities would be most significant during the first year as the majority of the vegetation outside of the riparian buffer area would be removed. Vegetation removal is a relatively slow process and therefore significant truck traffic wouldn't occur on a daily basis during the removal. Subsequent annual maintenance would require less removal. Greenwaste

would be transported to a commercial greenwaste facility, most likely Cold Canyon Landfill. This component of the project would not result in a significant short or long-term truck traffic. Trucks would be required to leave the levee system and access local roads at various locations, including potentially in places where there are not designated ingress or egress points.

Sediment management would include two distinct activities, the initial removal, and subsequent annual maintenance. The initial action would result in the removal of approximately 21,000 cubic yards. The activity would occur in approximately 30 working days. This component of the project may result in an additional 140 truck trips per day on Highway 1 and Halcyon Road. The volume of sediment to be removed during annual maintenance would be considerably less than the initial sediment removal, vary from year to year, and in some years may not be required at all. It is estimated to be less than 2,000 yards annually.

Alternative 3a and 3c Levee Raise

Both of the levee raise components would involve substantial earthwork and therefore result in additional truck trips. Total fill required to implement this component is approximately 14,350 cubic yards. The biological mitigation required will be intensive and therefore earthwork may progress relatively slowly (compared to mass grading for a subdivision, for example). This component would occur over an approximately 25 day work schedule. This component of the project may result in an additional 115 truck trips per day on Highway 1 and Halcyon Road.

Alternative 3c would require up to 67,000 cubic yards of fill and occur over an approximately 100 day work schedule. This component of the project may result in an additional 134 truck trips per day on Highway 1 and Halcyon Road.

Secondary Components

The following construction activities would be required if Alternative 3c is implemented.

Union Pacific Railroad Bridge Replacement

The bridge replacement would require extensive earthwork. Approximately 135,000 cubic yards of cut and fill (total) would be required. It is assumed that earthwork would occur over a 60 day work schedule. This component of the project may result in an additional 225 truck trips per day on Highway 1, Halcyon Road and 22nd Street.

Structure Encroachment

This component would not result in significant truck traffic.

22nd Street Bridge Modification

This activity would require modifications to the bridge structure, but significant earthwork and truck trips would not result.

Table 4.8-3. Potential One Way Truck Trips (by component)

Project Component	Duration (days)	Earthwork ($yds.^3$)	Truck Capacity (yds^3)	Daily Truck Trips
Sediment Removal	30	21,000	10	140
Alternative 3a	25	14,350	10	115
Alternative 3c	100	67,000	10	134
UPRR Bridge Raise	60	135,000	20	225

TR Impact 1 **Construction of the proposed project components would result in short-term increased truck traffic on Halcyon Road and Highway 1, contributing to existing congestion.**

Mitigation Measures

TR/mm-1 *Prior to initiation of construction activities, the District shall prepare a Construction Traffic Management Plan. The plan shall identify haul routes, the ingress and egress points from the Arroyo Grande Creek and Los Berros Creek channels, the maximum number of daily trips allowed, and the hours of operation, at minimum. It shall also include a description of safety measures (cones, signage, flagmen, etc.) to be put in place during construction activities.*

Residual Impact

With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

TR Impact 2 **Construction of the proposed project components would result in short-term increased truck traffic, potentially creating unsafe driving conditions on due to the slower truck speeds and the need to access public roads from undesignated locations.**

Mitigation Measures

Implement TR/mm-1.

Residual Impact

With implementation of these measures, the impact would be *less than significant.* No additional mitigation is required.

4.8.6 Cumulative Impacts

Potential construction-related traffic impacts are location-specific and may temporarily result in impacts on the localized circulation network, but they are not "cumulative" in the sense normally applied in CEQA documents. Therefore, the cumulative impacts related to the construction traffic on Highway 1 and Halcyon Road and mitigation measures that have been previously identified in this section would apply cumulatively as well. The proposed projects contribution to cumulative impacts would be *less than significant.* No additional mitigation measures are required.

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4.9 ISSUES WITH LESS THAN SIGNIFICANT IMPACTS

This section of the Environmental Impact Report (EIR) discusses those issues that were determined not to be significant during the scoping of the EIR and preparation of the Initial Study. A brief description of these issues, including Aesthetics, Noise, Population and Housing, Public Services, Recreation, and Wastewater is included below. Additional information can be found in the Initial Study prepared for the project (refer to Appendix A)

4.9.1 Aesthetics

Developments made in relation to the proposed project would be visible from Halcyon Road, Los Berros Road, Valley Road, Highway 1, and 22nd Street, among others. Much of the proposed routine vegetation and sediment management and maintenance work would occur within the levees at short-term, periodic intervals. Levee construction would be visible from public roads. The proposed improvements would result in a maximum levee raise of approximately five feet, although this would not be necessary along the entire levee. The railroad bridge would be raised approximately five feet as well. The proposed project would not result in glare or night lighting, and will not change the visual character of the area, or block any ridgelines or scenic views.

4.9.2 Noise

The proposed project includes initial sedimentation removal and riparian vegetation management and intermittent future maintenance activities, as well as short-term construction of levees in Alternatives 3a and 3c. However, the project is not within close proximity of loud noise sources. Based on the Noise Element's project future noise generation from known stationary and vehicle-generated noise sources, the project is within an acceptable threshold area. The levee improvements may require construction in close proximity to residences. And the sediment removal would require significant truck activity in proximity to residences. However, the project is not expected to generate loud noises for extended periods of time, and construction would be limited to daytime hours, as required by local ordinance.

4.9.3 Population and Housing

The proposed project includes three main components within the Arroyo Grande Creek and Los Berros Creek channels: (1) riparian vegetation management, (2) sedimentation removal and management, and (3) levee improvements to provide increased flood control. None of the project components will induce population growth in the surrounding areas or create the need for substantial new housing in the area. The project will not displace existing housing or use substantial amounts of fuel or energy.

4.9.4 Public Services

The project is served by the County Sheriff's Department and the California Department of Forestry and Fire Protection (CAL FIRE) as the primary emergency responders. The project is located within a Moderate Fire Hazard Zone, a Local Fire Protection Responsibility Area (Incorporated), and lies predominantly within the 10 Minute Emergency Response Time Zone. The project area is also within the Lucia Mar Unified School District.

The three main components of the proposed project, (1) riparian vegetation management, (2) sedimentation removal and management, and (3) levee improvements to provide increased flood control, are not expected to cause significant impacts to public services or utilities. None of the project components will induce population growth at the project location or surrounding areas. The proposed project is not expected to create additional demands on local fire, police, or energy resources. In addition, the proposed project will not increase demands on local schools, roads or solid waste collection and disposal facilities.

4.9.5 Recreation

The County Trails Plan does not show any potential trails going through the proposed project area. The levees are located on private property and are not considered a recreational facility. However, they are used by some residents for horseback riding and walking as they provide an off-road connection between the Cienega Valley and the Pacific Ocean. This existing use will likely continue after completion of the proposed project, although not encouraged or allowed by the County, because of the infeasibility of monitoring use of the levee. The project terminates at the Arroyo Grande Creek lagoon, near the coastal dunes adjacent to the Pacific Ocean. The lagoon is not included in the project area and no development is proposed in this area; however, it lies at the north end of the Pismo Dunes Natural Preserve and Oceano Dunes State Recreation Area. No development is proposed in close proximity to the dunes lying at the west end of the project corridor, and accessibility to the recreation areas will not be obstructed as a result of the project. The proposed project will not create a significant impact on recreational resources as a result of the proposed project, and no mitigation measures are necessary.

CHAPTER 5
ALTERNATIVES ANALYSIS

5.1 INTRODUCTION

The California Environmental Quality Act (CEQA), Section 15126(a), requires an Environmental Impact Report (EIR) to describe a reasonable range of alternatives to a proposed project. The alternatives selected should feasibly attain most of the basic project objectives and avoid or substantially lessen any of the significant effects. This section discusses a range of alternatives to the proposed project including, the No Project, the Levee Setback and the Reduced Project Alternatives.

Criteria used to evaluate the range of alternatives and remove certain alternatives from further consideration are addressed in the CEQA Guidelines Section 15126.6. Specifically, this section requires that the Alternatives Analysis include:

- Description of "...a range of reasonable alternatives to the project, or to the location of a project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." [Section 15126.6(a)]

- A setting forth of alternatives that "...shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project." [Section 15126.6(f)]

- Discussion of the "No Project" alternative, and "...If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." [Section 15126.6(e)(2)]

- Discussion and analysis of alternative locations: "Only locations that would substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR." [Section 15126.6(f)(2)(A)]

Given the CEQA guidelines listed above, this section (1) describes the range of reasonable alternatives to the project; (2) examines and evaluates resource issue areas where significant adverse environmental effects have been identified and compares the impacts of the alternatives to those of the proposed project; and, (3) identifies the Environmentally Superior Alternative.

5.2 THE 2006 EROSION, SEDIMENTATION, AND FLOODING ALTERNATIVES STUDY

Prior to development of the proposed project the San Luis Obispo County Flood Control and Water Conservation District (District) provided funding to the San Luis Coastal Resource Conservation District (RCD) to prepare an "Erosion, Sedimentation, and Flooding Alternatives Study" (Alternatives Study). This study, prepared by Swanson Hydrology and Geomorphology was completed in 2006. The document has provided substantial background for this EIR. The focus of the study was to evaluate alternatives that reduce flood risk along Arroyo Grande Creek and minimize human-induced erosion that may contribute to flooding. The flood protection goal identified was to "equal or exceed the design capacity of 7,500 cubic feet per second (cfs) with

two feet of freeboard". Initially eighteen alternatives were developed. The number of alternatives further evaluated in any detail was limited to those which appeared to implement the goals of the Zone 1/1A advisory committee and the anticipated funding. Six alternatives emerged for further evaluation; however only two of those met the flood protection goals (refer to Table 3.13, in the Alternatives Study). A third, Alternative 4, met the cfs goal (7,500 cfs) but did not provide 20-year protection. These three alternatives are described below:

Alternative 3 Levee Raise 3C with Vegetation and Sediment Management: This alternative could provide protection from a 20-year flood event and provided capacity for 8,600 cfs. It also provided 2 feet of freeboard, and appeared to address budgetary constraints. It evolved into the proposed project. Without freeboard, it provides protection from a 37-year flood event.

Alternative 4 Levee Raise with Vegetation Management: This alternative resembles Alternative 3 although it does not include the sediment management. It provides 16.6-year protection and provided capacity for 7,500 cfs. It also provides two feet of freeboard. Without freeboard, it provides protection from a 34-year flood event.

Alternative 5 Overflow Weir and Storage: This alternative provided flood protection by controlling the overflow and directing it to managed flood storage areas adjacent to the levee system. In this alternative, specific properties would be designated flood storage areas, and 5-foot tall levees would be constructed around them. These properties would be subject to more intensive flooding; however, the total acreage within Zone 1/1A subject to flooding would be reduced. Flood protection would only be limited by the size of the overflow areas.

The Alternatives Study is available at the Department of Public Works in its entirety. An electronic version can be downloaded at: *http://www.slocountywater.org*. A table developed previously to facilitate discussion of the preliminary alternatives in the Alternatives Study is included as Appendix G in this EIR. The table includes a qualitative and brief discussion of pros and cons of each alternative.

5.3 ALTERNATIVES FOR USE IN THIS EIR

The three factors guiding the development of alternatives in the EIR include:

1. Project Objective: Alternatives were rejected for further review if they could not feasibly attain the project objectives. The project objective identified in the Project Description is as follows: ". . . to develop a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel to provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel."

2. Potential to Reduce Environmental Impacts: Alternatives were limited from further review based on their ability to avoid or reduce potential environmental effects that may be associated with the proposed project. For the proposed project, the most significant environmental effects are associated with biological resources. In particular, potential impacts to the habitat of listed species including the California red-legged frog, the south-central coast steelhead, and the tidewater goby were identified. Impacts associated with sensitive habitat include those to wetlands and riparian vegetation. Other significant impacts identified are associated with agricultural resources and air quality.

3. Regulatory Environment/Resource Conservation: The project location is intensely regulated because of its location, function, and environmental value. It is located within the jurisdictions of the County of San Luis Obispo, the City of Arroyo Grande, and the California Coastal Commission (CCC). Numerous other agencies, including the United States Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NOAA Fisheries), and Regional Water Quality Control Board (RWQCB), also may have permitting authority over the project. In general, flood control improvements and resource conservation have historically been mutually exclusive activities. For example the construction of dams, levees, undergrounding of streams and creeks, have resulted in increased flood protection and preservation of the built environment, but in many cases resulted in significant impacts to environmental conditions, through loss of habitat, increased stormwater runoff, decreased water quality, etc. For this EIR, efforts were made to identify alternatives that meet the project objective and the objectives of the various responsible agencies. In some cases that meant revisiting alternatives rejected during preparation of the 2006 Alternatives Study.

The 18 preliminary alternatives identified in the Alternatives Study have been re-evaluated in the context of this EIR. Of those eighteen, four appeared to warrant further review in the EIR. The selection of alternatives to be evaluated in detail in this EIR differed from the one used for the Alternatives Study for the following reasons:

- A project has been proposed and the specific project impacts have been identified;
- The proposed project objective differs from the goals identified in the Alternatives Study;
- The CEQA Guidelines prohibit economic feasibility from being the lone factor used to reject an alternative to the proposed project; and
- Resource agencies, including the RWQCB and NOAA Fisheries commented on the Alternatives Study and suggested an alternative (levee setback) that could meet the individual agency objectives in addition to the project objectives.

5.4 PROJECT ALTERNATIVES

Based on a re-evaluation of the preliminary alternatives in the Alternatives Study in the context of this EIR and the three factors discussed above, the following five alternatives (the No Project alternative, and four variants of the alternatives from the Alternatives Study) to the proposed project were considered for additional review:

- *No Project Alternative*. This alternative considers impacts based on the existing conditions without further development such as the proposed project. CEQA requires a No Project alternative be included in every EIR.
- *Levee Raise and Setback*. This alternative would widen the existing channel to 200 feet along most of the project area by relocating the southern levee. It would require rebuilding the Union Pacific Railroad (UPRR) Bridge, the 22nd Street Bridge, and the Highway 1 Bridge, and purchasing agricultural land on the south side of the existing levee to accommodate a widened channel. Relocation of existing structures would be required as well to accommodate the new levee.

- *Controlled Overflow and Flood Storage.* This alternative would integrate off-channel flood storage areas into the flood control system to provide additional flood protection through controlled overflow of flood waters. The areas for off-channel storage would be along the south bank of Arroyo Grande Creek, between the confluence of Los Berros Creek and the UPRR Bridge, areas currently in agricultural use. The flood storage areas would be created by constructing 5-foot high levees around portions of existing agricultural fields to provide an average storage depth of 4 feet. Flood protection would only be limited by the size of the overflow storage areas.

- *Los Berros Creek Overflow.* This alternative would use the old Los Berros channel as a potential storage area for floodwaters emanating from the Los Berros Creek watershed. An existing flood gate located at the inlet of the old Los Berros channel would be retrofitted to allow flood flows to enter the old channel and bypass the existing flood control reach. Floodwaters would enter Arroyo Grande Creek downstream, near the lagoon.

- *Levee Raise and Vegetation Management.* This alternative would include the levee raise components of the proposed project, and the vegetation management, but would not include the sediment removal component, in an attempt to limit activities within the channel.

The *Controlled Overflow and Storage Alternative* was eventually rejected because while it could provide flood protection for many of the properties in Zone 1/1A, and would avoid extensive in-channel activities, it would do so at the expense of the properties where floodwaters would be accommodated. And given the rapid willow growth in the channel, vegetation management on a regular basis would still likely be necessary, although perhaps less than the proposed project. Further, the project objectives include restoring the capacity of the flood control channel, which this alternative does not necessarily meet. NOAA Fisheries (2005) also raised concerns that this alternative could potentially trap steelhead in the off-channel areas, stranding them when floodwaters receded.

The *Los Berros Creek Overflow Alternative* was discussed as possible alternative as it appeared to avoid impacts to the biological resources of the Arroyo Grande Creek Channel, and could provide increased flood protection through restoration of the "natural" drainage system. Upon further review, however, this alternative was rejected as it became apparent that while it avoided biological resource impacts to the Arroyo Grande Creek channel, restoring the old Los Berros Creek in a way that allowed for substantial capacity would require grading and vegetation management similar to that proposed for the Arroyo Grande Creek channel. Further, the old Los Berros Creek channel is not continuous and is likely to be inundated with local drainage waters at the time the storage volume would be most necessary (Swanson 2006). As a result this alternative may have significant biological resource impacts and increase flooding impacts at the southern end of the valley.

Therefore, of the five alternatives selected for further review, the following three were brought forward for substantial review and comparison to the proposed project in the EIR:

1. No Project Alternative

2. Levee Setback Alternative

3. Levee Raise and Vegetation Management Alternative

5.5 ALTERNATIVES ANALYSIS

The following is a qualitative analysis of the alternatives brought forward for further review. The analysis provides a more specific project description for the three alternatives, identifies the level of impact that would result if the alternatives were to be implemented, and how they compare to the proposed project. These alternatives would either have comparable impacts or would reduce environmental impacts when compared to the proposed project, would meet most of the basic objectives of the proposed project (other than the No Project Alternative), and are considered feasible for implementation. CEQA does not require the alternatives evaluation to be at the same level of detail as the proposed project, but does require the EIR to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project (CEQA Guidelines Section 15126.6(d)).

5.5.1 No Project Alternative

The No-Project Alternative would result in a flood control system which operates as it currently does, providing protection from flood events that happen on average every 4.6 years. As a result, a flood event would likely affect the area within the next five years. Currently, the District maintains the channel through periodic vegetation removal and small scale repair and maintenance of the levees. In recent years, the District has received permits and approvals to perform this work from the CDFG and the CCC. These recent approvals have been made with an understanding among agencies that a management program for the channel was being developed and a subsequent comprehensive CEQA and National Environmental Policy Act (NEPA) review and permitting process would occur. For example the most recent application to the Coastal Commission has not been acted upon due to the development of the proposed project. Because of the sensitive species and habitats that exist in the project area, the resource agencies have indicated that additional permits for even the existing maintenance efforts may become increasingly difficult to obtain.

Therefore, it is reasonable to expect the No Project Alternative would at most result in some periodic vegetation and levee maintenance, although nothing as significant as included in the WMP. No sediment removal could occur without a streambed alteration agreement and Section 401/404 permits from the USACE and RWQCB. In the event that catastrophic failure of the levees occurred, large-scale repair of the affected levees would most likely occur through an emergency permit, and would potentially be exempt from environmental review.

The analysis that follows assumes that the No Project Alternative would result in periodic maintenance of vegetation in the channel, and small-scale repair and maintenance of the levees. This alternative does not meet the project objectives, which include providing 20-year flood protection, enhancing water quality and sensitive species habitat within the managed channel.

5.5.1.1 Agricultural Resources

This alternative would not increase the footprint of the levee system and would not permanently convert agriculture soils to another use. The No Project alternative would result in minimal incompatibilities with agricultural operations.

This alternative would leave the majority of the agriculturally productive areas in the lower Arroyo Grande Valley subject to flooding approximately once every five years. When compared to the proposed project which would leave the same area subject to flooding once every 20

years, this alternative would reduce productivity of the operations. Flooding can destroy crops, deposit sediment and other substances on agricultural fields, requiring significant maintenance by growers. As discussed in the Flooding section of this EIR, fields may be inundated for extended periods of time as drainage of the lower valley is slow. Compared to the proposed project, this is a different impact to agricultural resources, but a significant one as it makes agricultural production less feasible. However, when compared to existing conditions, there is no productivity-related impact.

5.5.1.2 Air Quality

This alternative would not result in any construction-related emissions (combustion and particulate). The No Project alternative would not include the UPRR bridge raising. This alternative would maintain the existing levee footprint so demolition of existing structures may not be necessary, reducing the potential for hazardous air pollutants from being airborne. Generally, this alternative would result in significantly less air quality impacts when compared to the proposed project, due to the substantially reduced area of disturbance and number of project components. It is likely that no mitigation beyond standard dust control, already required by ordinance would be required.

5.5.1.3 Biological Resources

The No Project alternative would result in limited vegetation removal within the channel system. Recent vegetation removal activities have been performed by the District and the California Conservation Corps. Work has been performed by hand. Willows are thinned and limbed up where determined appropriate by CDFG staff in the field. Work occurs intermittently depending upon where growth has been most significant. Based on anecdotal evidence, annual vegetation growth is outpacing management activities. Because this alternative would not significantly reduce riparian vegetation and would not disturb sediments in the channel, it would have limited impacts to sensitive species and habitats. This assume future activities would be conducted in accordance with CDFG standard management practices for vegetation management, such as avoiding nesting birds, minimizing use of heavy machinery, and allowing a buffer to grow between the low flow channel and removal activities, etc.

5.5.1.4 Cultural Resources

No known prehistoric or historic resources were identified in the proposed project area. This alternative would have a reduced project area compared to the proposed project and therefore the cultural resource impacts would be less than significant.

5.5.1.5 Flooding, Hydrology, and Water Quality

The No Project alternative would not significantly alter the existing flooding, drainage, or water quality conditions of the channels. However continued degradation of the levees, sediment accumulation and vegetation growth would further reduce flood capacity within the channel and increase the potential for flooding within Zone 1/1A.

5.5.1.6 Geology and Soils

This alternative would have fewer geology and soils impacts when compared to the proposed project as no levee improvements would occur. This alternative would also not include the UPRR bridge raise component, further reducing potential geology and soils hazards. The levees are old and were not constructed to the same engineering standards used now. In that

respect, the No Project Alternative would result in levees more prone to catastrophic failure, compared to the proposed project.

5.5.1.7 Hazards and Hazardous Materials

The No Project Alternative would not include the UPRR bridge raising, and as a result the potential to encounter hazardous materials associated with the railroad use would be less. The worker exposure to agricultural chemicals would still exist with this alternative, but to a much lesser extent as the scope of the work is significantly reduced. Impacts would be less than significant with mitigation.

5.5.1.8 Transportation and Traffic

The No Project Alternative would not require sediment removal and levee-related work would be much less substantial. It would not include the UPRR bridge project, and it would not require the importation of significant quantities of fill. As a result truck traffic would be insignificant compared to the proposed project. No mitigation would be required.

5.5.2 Levee Setback Alternative

The Levee Setback Alternative would provide flood protection in a manner that represents a partial restoration of the drainage system as it existed prior to the original levee construction. It would include constructing a higher north levee to ensure protection for the residential and public facility land uses, but shift the southern levee along the Arroyo Grande and Los Berros Creek channels to the south approximately 130 feet, increasing channel width from approximately 70 feet to approximately 200 feet (refer to Figure 5-1). With this configuration the creek could meander within a larger corridor, reflecting more natural conditions. Unlike the proposed project, this wider channel would provide the capacity for deposition of sediment in the channel and not require sediment management.

This scenario was described in the Alternatives Study as providing approximately 50-year flood protection. A setback of less than 130 feet may adequately provide 20-year flood protection, similar to the proposed project, but based on the historical rates of vegetation growth in the creek, there is the risk that a narrower channel may lose capacity more quickly due to dense growth of willows and require regular vegetation management. A wider channel would reduce the likelihood that vegetation and/or sediment management would be necessary and therefore this alternative includes the wider channel.

Because the channel would be 130 feet wider, the Levee Setback Alternative would require significant infrastructure improvements at the UPRR, 22nd Street, and Highway 1 bridges. As such, this alternative was identified as one of the more expensive options in the Alternatives Study. To minimize costs of bridge construction, it was assumed that three expanded crossings would use large culverts and would not be spanned by bridges (refer to Figure 5-2).

This alternative would require the County to obtain a significantly wider easement or purchase land outright to accommodate the wider channel. Based on site visits and aerial photos, this alternative may result in the demolition or relocation of approximately 25 structures, including at least two residences and equestrian facilities, and require the partial relocation of at least two large agricultural facilities, one at the northern (upstream) end of the project area, and one west of 22nd Street. This alternative would potentially require the relocation of a short portion of Halcyon Road, south of Highway 1, although for purposes of this analysis it is assumed a slightly narrower channel would be used near Halcyon to allow for its current configuration.

This alternative would meet the project objectives, as it would provide flood protection, and potentially enhance water quality and sensitive species habitat. The alternative did not receive further analysis in the Alternatives Study because it was estimated (very roughly) to cost $30 million to implement – much of which would be related to property acquisition and infrastructure costs. Table 3.13 of the Alternatives Study includes an estimate that the proposed project could cost approximately $11 million to implement over 10 years.

5.5.2.1 Agricultural Resources

The Levee Setback Alternative would result in significant impacts to agricultural resources. Assuming a levee setback of 130 feet over a length of approximately 3 miles, this alternative would result in the permanent conversion of approximately 50 acres of prime agricultural soils, nearly all of which are in intensive production. Additional soils may be converted during reconstruction of the UPRR, 22nd Street, and Highway 1 bridges. It would also result in the need to permanently relocate agricultural infrastructure which is located adjacent to the southern levee, including large barns, warehouses, storage yards for irrigation pipe, etc. There are currently three agricultural crossings of the Arroyo Grande Creek channel and these would need to span the new 200-foot wide channel as well, which could prove more difficult for agricultural machinery than the existing 70 foot crossings. This alternative would have more significant impacts to agriculture resources compared to the proposed project. Impacts would be Class I, significant and unavoidable.

5.5.2.2 Air Quality

The Levee Setback Alternative would require more extensive upfront construction than the proposed project. The northern levee would need to be constructed as proposed, but the southern levee would need to be reconstructed entirely. A new levee with a cross-sectional area of approximately 525 square feet (15 foot top width, 60 foot base width, 14 feet tall), approximately 3 miles (15,800 feet) long, would require more than 300,000 cubic yards of material. The existing southern levee could be the source of much of this material. Additional construction and fill would be required for the channel crossings.

This alternative would not require sediment management over the long-term however, so all construction-related air emissions would be short-term. Further, the project would need to be constructed between rainy seasons as it requires the southern levee to be removed completely, exposing the properties to the south to a temporary increased risk of flooding. Because of a relatively quick construction schedule and significant earthmoving required, the Levee Setback Alternative would result in more significant construction-related air quality emissions (combustion and particulate) than the proposed project. Emissions are likely to exceed the SLOAPCD thresholds discussed in the Air Quality section and require substantial mitigation, potentially including offsite mitigation. Other impacts associated with demolition of structures would be less than significant with mitigation, similar to the proposed project.

Figure 5-1. Alternative 2 – Levee Setback Alternative

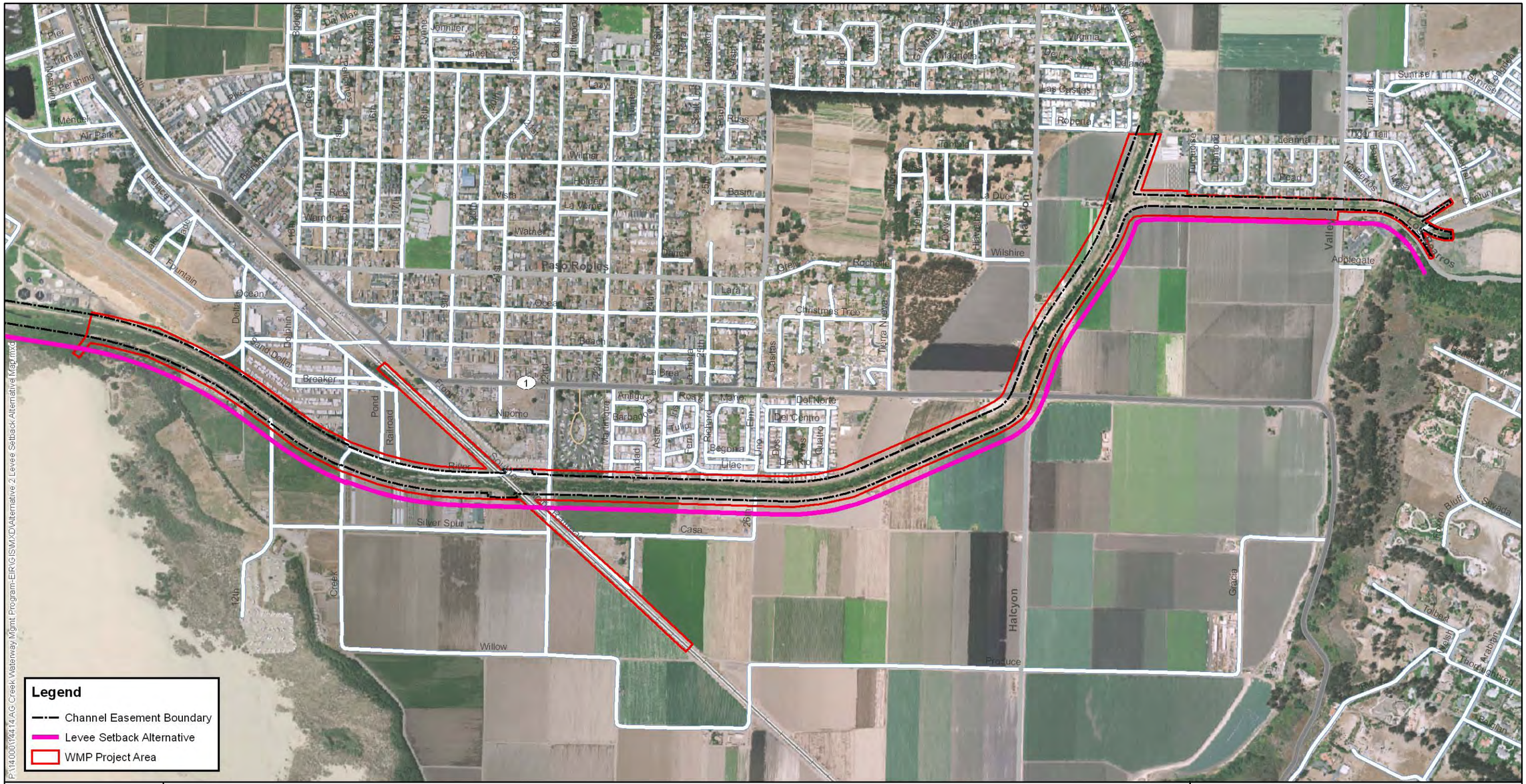

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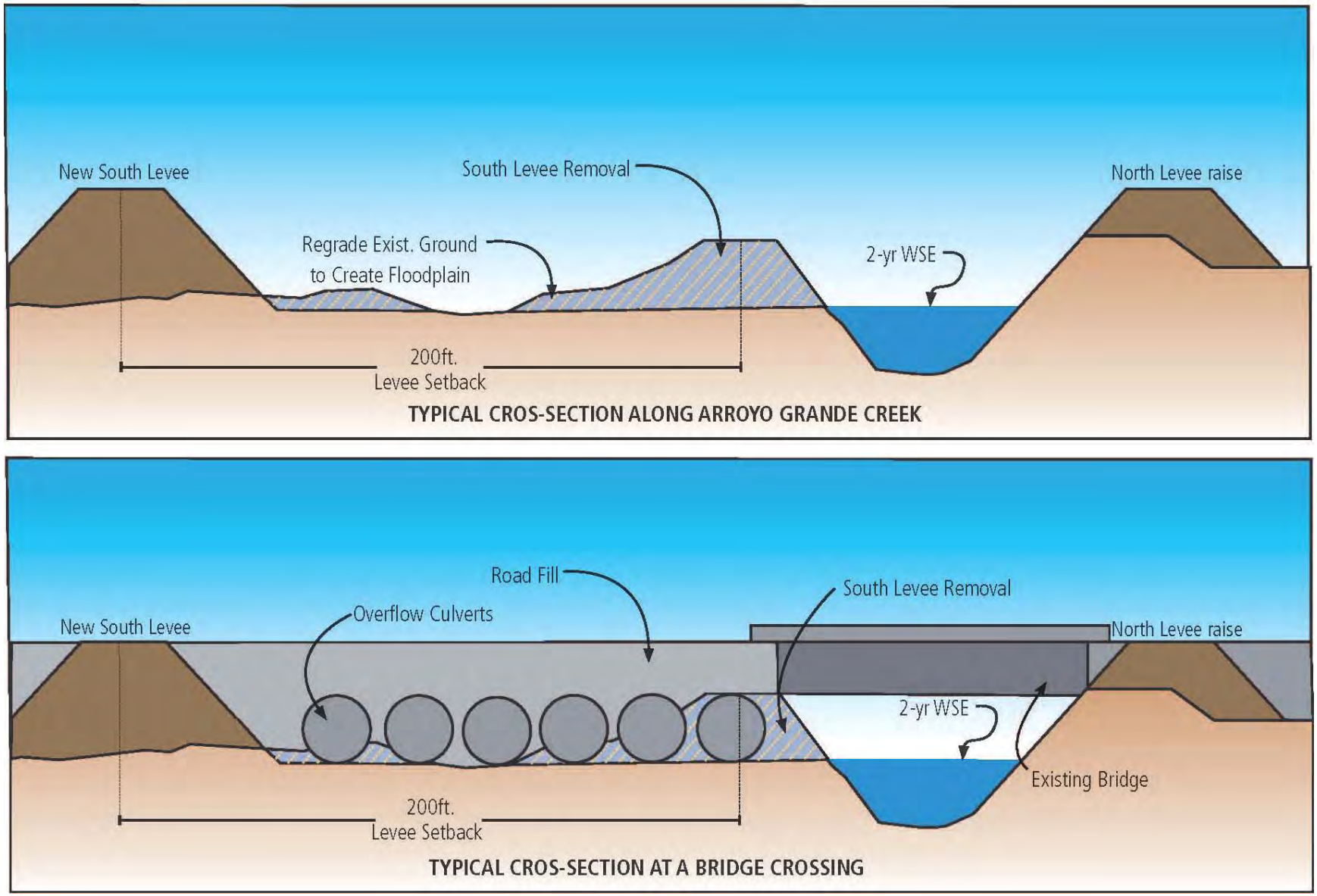
Figure 5-2. Levee Setback Alternative - Conceptual Cross Section



5.5.2.3 Cultural Resources

The Levee Setback Alternative would include a larger footprint to the south than the proposed project. However, there are no additional structures not considered in the analysis that would qualify as historic. Also given that the area south of the levee is floodplain and most likely part of the old Arroyo Grande Creek channel and adjacent floodplain, prehistoric resources are unlikely to remain. Cultural resource impacts would be less than significant, similar to the proposed project.

5.5.2.4 Flooding, Hydrology, and Water Quality

The concept behind the Levee Setback Alternative is that flood protection could be provided long-term in a manner that could potentially avoid long-term sediment or vegetation management in-channel. This alternative would in effect reclaim portions of the original floodplain disconnected from Arroyo Grande Creek when the levees were originally constructed. It would potentially result in a more active channel where various aquatic habitats such as pools, riffles, and bars may form naturally.

The Alternatives Study suggested that this alternative could provide 50-year flood protection and wouldn't require long-term sediment management, because the width would allow for a partial floodplain to develop within the channel; and therefore it wouldn't be necessary for sediment to be "flushed" to the Pacific Ocean during large events. As a result, sediment loads in the creek may be reduced, improving water quality (reducing turbidity) in comparison with the proposed project.

While the Levee Setback Alternative appears to restore the channel to a more natural condition, it is not a total restoration; the channel would still be a leveed, flood protection facility. In the event that the extended channel crossings at the UPRR, 22nd Street and Highway 1 utilized culverts, as depicted in Figure 5-2, it may be necessary to periodically maintain the culverts to ensure they didn't clog with debris or sediment. The effect that this alternative would have on the lagoon downstream is also unknown at this time. Additional modeling would be required to resolve these issues.

In general this alternative would likely have reduced flooding, hydrologic, and water quality impacts when compared to the proposed project. Impacts would be less than significant with mitigation. Mitigation would be focused on the preliminary infrastructure improvement efforts, but monitoring of the new channel and periodic management may also be necessary and could not be entirely ruled out at this time.

5.5.2.5 Geology and Soils

Given that the Levee Setback Alternative relocates the south levee 130 feet to the south, the geologic and soil conditions affecting the alternative are the same as the proposed project. The constructed levees would be subject to the same codes, regulations, and engineering standards as the proposed project. Seismic safety, erosion, expansive soils, etc .would all need to be considered during the design and permitting process. This alternative would require construction of significant channel crossings and therefore, special consideration would have to be given to the potential of the in-channel culverts and/or bridge abutments do not result in unintended scour or erosion of the levees or other infrastructure. Because this alternative would require more substantial infrastructure improvements, the number of mitigation measures may be more intensive and touch on a broader range of issues (for example, construction of an entirely new levee as opposed to raising an existing levee). Still, impacts would most likely be

less than significant through compliance with existing engineering standards and ordinance requirements.

5.5.2.6 Hazards and Hazardous Materials

The Levee Setback Alternative would require construction within the UPRR right-of-way, and as a result the potential to encounter hazardous materials associated with the railroad use would be similar to the proposed project. Other hazards impacts such as worker exposure to agricultural chemicals and the potential to encounter buried utilities would be similar or greater than the proposed project as construction would disturb more soils on active agricultural lands and potentially require the demolition and relocation of facilities where hazardous agricultural chemicals have been stored and are frequently used. Potential impacts would be more intensive than the proposed project, but still most likely less than significant with mitigation.

5.5.2.7 Transportation and Traffic

This alternative would have more intensive, short-term impacts to the local transportation network. In addition to the truck traffic associated with construction activities, which would be more substantial than the proposed project due to the increased earthwork, the Levee Setback Alternative would also require the closure of the Highway 1 and 22nd Street bridges for a period of time while new channel crossings are constructed. Impacts would be more intensive than the proposed project, but would remain less than significant with mitigation (i.e., traffic management plan) similar to the proposed project.

5.5.3 Levee Raise and Vegetation Management Alternative

The Levee Raise and Vegetation Management Alternative could also be considered a “reduced project” alternative as it includes the same levee raise and vegetation management components as the proposed project, but does not include the sediment management components. This would reduce activity in the channel, particularly that associated with heavy machinery, potentially avoiding some sensitive species and wetland impacts. By not including the sediment management component, flood protection resulting from the project would also be reduced. Based on information in the Alternatives Study, 34-year protection would be provided, although that protection would be reduced to 16-year protection if 2-feet of freeboard is also desired.

The levee raise components, vegetation management, and secondary components would be identical to the proposed project, and therefore potential impacts would be as well. This alternative would technically meet the project objectives similar to the proposed project, although 20-year protection would not be provided as effectively. The projects ability to enhance sensitive species habitat may also be more limited as the log and habitat structures are proposed as part of the sediment management component of the project.

5.5.3.1 Agricultural Resources

This alternative would result in agricultural resource impacts similar to the proposed project, as the level same level of temporary and permanent disturbance on and outside the levees would be required. This alternative would not result in any new impacts not discussed in the Agricultural Resources chapter of this EIR. Impacts would be less than significant with mitigation.

5.5.3.2 Air Quality

The Levee Raise and Vegetation Management Alternative would have similar air quality impacts as the proposed project, although it would result in reduced construction-related impacts because the sediment management earthwork and truck traffic would not occur. Impacts would be less than significant with mitigation.

5.5.3.3 Biological Resources

The Levee Raise and Vegetation Management Alternative would still result in a significant loss of riparian habitat and impact sensitive wildlife species. Because it does not involve the sediment management component of the WMP the use of heavy machinery in or near the channel would be limited to the levee raise components of the WMP. As a result temporary impacts to sensitive wildlife species may also be reduce, and the potential for "take" of those species may also be reduced compared to the proposed project. However, removing the sediment management component also reduces the opportunities to enhance aquatic habitat for steelhead as it included installation of the log structures, which are intended to create backflows, eddies, and localized scour, mimicking undercut stream banks.

Generally the impacts and mitigation measures for this alternative would be similar to the proposed project, although because the log structure and secondary channel habitat enhancements would not be included, it would be necessary to focus more of the mitigation efforts offsite.

5.5.3.4 Cultural Resources

No known prehistoric or historic resources were identified in the proposed project area. This alternative would have a similar or reduced project area compared to the proposed project and therefore the cultural resource impacts would be less than significant.

5.5.3.5 Flooding, Hydrology, and Water Quality

This alternative would include two of three measures proposed to improve flood capacity within the channel (vegetation management and the levee raises). Based on the analysis in the 2006 Alternatives Study, this alternative would provide approximately 16 year flood protection with 2-feet of freeboard (34 year with no freeboard). The initial sediment removal was added to the project to attain the 20-year flood protection goals of Zone1/1A. The excavation would increase flood capacity directly by increasing the volume of water which could be accommodated within the channel, and is also designed to allow for the channel to more easily transport sediment through the channel, ensuring that the ongoing sediment removal activities would be minimized in the long-term. Without the sediment management component, sediment transport would occur as it does currently.

Impacts to water quality from construction activities would be similar to the proposed project as the levee raise components and vegetation management would still occur. Impacts and mitigation measures in this EIR developed for the proposed project would reduce impacts to a less than significant level.

5.5.3.6 Geology and Soils

This alternative would be subject to the same codes, regulations, and engineering standards as the proposed project. Seismic safety, erosion, expansive soils, etc. would all need to be considered during the design and permitting process. The impacts identified in the Geology and Soils section of the EIR were not specific to the sediment management component, but were instead a result of the levee raise components of the project. Impacts would be similar to the proposed project - less than significant with mitigation.

5.5.3.7 Hazards and Hazardous Materials

The Levee Raise and Vegetation Management Alternative would include the UPRR bridge raising, and as a result the potential to encounter hazardous materials associated with the railroad would be similar to the proposed project. Other hazards impacts such as worker exposure to agricultural chemicals and the potential to encounter buried utilities would also be similar to the proposed project as construction would occur in roughly the same footprint and in the same manner. Impacts would be less than significant with mitigation.

5.5.3.8 Transportation and Traffic

This alternative would have impacts similar to the proposed project. Impacts would be temporary and related to construction of the infrastructure improvements, including the levee raises and the UPRR bridge raising. Impacts would be somewhat less intensive than with the proposed project because the initial sediment removal and long-term management would not be required. Impacts would be less significant with mitigation.

Table 5-1. Project Alternatives Impact Analysis

Environmental Resource	Proposed Project	Alternatives		
		1. No Project	2. Levee Setback	3. Levee Raise and Vegetation Management
Agricultural Resources				
Air Quality				
Biological Resources				
Cultural Resources				
Flooding, Drainage and Water Quality				
Geology and Soils				
Hazards/Hazardous Materials				
Transportation and Circulation				

Impacts unavoidable and/or requiring intensive mitigation measures.

Less than significant impacts with application of substantial mitigation.

Less than significant impacts with standard mitigation measures/ordinance compliance.

No significant impacts.

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The alternative that most effectively reduces impacts while meeting project objectives should be considered the "environmentally superior alternative." In the event that the No Project Alternative is considered the environmentally superior alternative, the EIR is also supposed to identify an environmentally superior alternative among the other alternatives.

The No Project Alternative would result in the fewest significant impacts among the alternatives, including the proposed project. Impacts to all resources other than biological resources and agricultural resources would be avoided by the No Project Alternative, and agricultural resources impacts would be less than significant with minimal mitigation recommendations. This alternative could result in additional impacts in the event that significant sediment accumulated in the channel, as that would exacerbate flooding and may affect sensitive habitat in the channel and the lagoon.

Alternative 2, the Levee Setback Alternative, would have significantly greater impacts to agricultural resources. This alternative would permanently convert approximately 50 acres of highly productive soils along the levees, and some additional conversion resulting from the need to lengthen bridges at 22nd Street, the UPRR railroad, and Highway 1. This alternative would require relocation of existing agricultural infrastructure including drainage systems, storage areas, fencing, warehouses, power systems, and interior access roads. During construction this alternative would result in incompatibilities with agricultural operations similar to the proposed project. It may be more difficult for growers to maintain access across the wider channel. This alternative may also have more significant Air Quality impacts, due to the increased earthwork involved, although impacts could be mitigated.

Alternative 2 would result in significant short-term biological resource impacts associated with the removal and reconstruction of the southern levee. However, over the long-term this alternative would potentially provide a more substantial area for the development of wetland and riparian habitats. It is likely that the channel would provide enough capacity and that sediment removal would not be necessary, although some thinning of vegetation may be necessary given the history of willow growth in the channel. Because of the increased area for habitat and the reduced sediment and vegetation management, the levee setback alternative would result in significantly fewer biological resource impacts when compared to the proposed project.

This alternative could potentially provide similar or greater flood protection than the proposed project, and based on the size of the new channel, it would accommodate short and mid-term sediment accumulation without any changes to the level of flood protection. This alternative would appear to result in a more "natural" drainage pattern, reducing long-term management requirements; however it would not necessarily reduce flooding, drainage, and water quality impacts when compared to the proposed project, as both would be less than significant. And as with the proposed project this alternative would not increase or decrease surface water runoff, interfere with groundwater recharge, or exceed the capacity of stormwater systems. Other impacts, including Geology and Soils and Cultural Resources would also be similar to the proposed project.

After review of Alternative 3, the Levee Raise and Vegetation Management Alternative, it was determined that the alternative would not avoid or significantly reduce the biological resource impacts associated with the proposed project. Use of heavy machinery and activity within the channel would be reduced; however, the vegetation management component of the project would still result in similar impacts to jurisdictional features and wildlife species and require

substantial mitigation on and offsite mitigation over the short and long-term. The alternative would have impacts similar to the proposed project for other issue areas as well.

Based on the analysis above and Table 5-1 an Environmentally Superior Alternative is not evident. The proposed project would result in significant impacts to biological resources, including jurisdictional area and sensitive wildlife over the short long term. The measures included in the WMP and developed for this EIR would reduce impacts to less than significant level, although it will take a long term commitment of resources and intensive monitoring efforts to ensure mitigation is fully implemented.

The Levee Setback Alternative would avoid many of the significant biological resources impacts associated with the proposed project, but would result in significant and unavoidable impacts to agricultural resources. It would require the conversion of prime farmland on a large scale and require relocation of significant portions of existing agricultural infrastructure. Both the proposed project and the Levee Setback Alternative would potentially improve long-term productivity of agricultural resources by reducing flooding potential.

Due to the biological resources which exit in the channel and the agricultural resources adjacent to the channel, neither the proposed project nor the Levee Setback Alternative could feasibly avoid impacts. The difference therefore between the two alternatives is the potential for feasible mitigation. Impacts to biological resources can be mitigated to a less than significant level through the application of intensive compensatory mitigation. For example, the Army Corps of Engineers policy is “no net loss” of wetlands. This policy allows for wetlands to be impacted (if avoidance is not feasible) as long as wetlands are created or enhanced in return. Prime agricultural soils on the other hand are considered a finite resource. Mitigation measures can be proposed to address impacts; however ultimately, especially when considering the scale of the conversion which would occur with the Levee Setback Alternative, impacts would be considered significant and unavoidable. Because of this, the proposed project is the environmentally superior alternative.

CHAPTER 6
ENVIRONMENTAL ANALYSIS

6.1 GROWTH INDUCING IMPACTS

The goal of the growth inducing impacts section of the EIR is to address the effects the proposed project may have on surrounding facilities and activities by assessing the ways in which a project could encourage population or economic growth, increase employment opportunities or employment growth in support of an industry, or the construction of new housing or service facilities, either directly or indirectly.

CEQA Guidelines state that in the preparation of an EIR, growth inducing impacts that need to be addressed are ones that "…foster economic or population growth, or the construction of additional housing…remove obstacles to population growth…encourage and facilitate other activities that could significantly affect the environment either individually or cumulatively" (Section 15126.2 (d)). An example given is the expansion of a wastewater treatment plant allowing for increased construction in service areas.

Based on the CEQA guidelines outlined above, the proposed project was evaluated in order to determine if any part of the project demonstrates the potential for growth inducing impacts. There are a number of constraints to urban growth in the immediate project area. These include the local land use categories (zoning) and policies, the successful agricultural economy, limited urban infrastructure, and the high potential for flooding. The presence of the Oceano Airport also affects the growth potential in the lower valley. The proposed project would reduce the flooding constraint for some properties located adjacent to the channels and lower Arroyo Grande Valley. Generally speaking, as a result of the project, the recurrence interval for flooding in this area would be reduced from once every five years to once every twenty years. This could potentially be seen as reducing an obstacle to growth. The proposed project would not affect the other constraints.

Policies in County planning documents discourage development in the 100-year flood zones as identified by the Federal Emergency Management Agency. The project area and much of the lower Arroyo Grande Valley are located within the 100-year flood zone and still would be despite implementation of the proposed project. Given this significant constraint, as well as County policies discouraging development of agricultural land, the lack of community water and sewer service, and the presence of the Oceano Airport, potential future development would still be highly constrained. It is not likely that the reduction of flood potential would be enough of a change to induce growth in the lower Arroyo Grande Valley.

The proposed project would include short-term construction and long-term maintenance. The short-term construction activities would require typical equipment and limited construction crews, as work would most likely progress slowly given the environmental constraints discussed in this EIR. It is unlikely this activity would require a permanent increase in construction-related jobs. Long-term maintenance would also be done with limited personnel, and is currently on-going for portions of the creek. Long-term maintenance would also not require increases in construction-related jobs. *Potential growth-inducing impacts are less than significant.*

6.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the CEQA Guidelines states that use of nonrenewable resources during the initial and continued phases of a proposed project may be irreversible if a large commitment of these resources makes their removal, indirect removal, or non-use thereafter unlikely. This section of the EIR evaluates whether the project would result in the irretrievable commitment of resources, or would cause irreversible changes in the environment. Also, in accordance with Section 15126.2 of the CEQA Guidelines, this section identifies any irreversible damage that could result from environmental accidents associated with the proposed project.

The proposed project was evaluated based on the above stated conditions and was found to have the following irreversible significant environmental changes: irreversible commitment of resources, and loss of agricultural resources.

6.2.1 Irreversible Commitment of Non-Renewable Resources

Non-renewable resources, such as natural gas, petroleum products, asphalt, petrochemical construction materials, steel, copper and other metals, and sand and gravel are considered to be commodities which are available in a finite supply. The processes that created these resources occur over a long period of time. Therefore, the replacement of these resources would not occur over the life of the project. To varying degrees, the aforementioned materials are all readily available and some materials, such as asphalt or sand and gravel, are abundant. Other commodities, such as metals, natural gas, and petroleum products, are also readily available, but they are finite in supply given the length of time required by the natural process to create them.

The demand for all such resources is expected to increase regardless of whether or not the project is developed. Increases in population will directly result in the need for resources. And they would likely be committed to other projects in the region intended to meet this anticipated growth. Resources necessary for implementation of the proposed project include sand and gravel for levee improvements and other components and the petroleum products consumed during construction. The majority of the resources would be used during short-term project construction; the long-term commitment of resources associated with maintenance of the project is limited.

CHAPTER 7
MITIGATION MONITORING AND REPORTING PLAN

7.1 STATUTORY REQUIREMENT

When a Lead Agency makes findings on significant environmental effects identified in an EIR, the agency must also adopt a "reporting or monitoring program for the changes to the project which it has adopted or made a condition of approval in order to mitigate or avoid significant effects on the environment" (Public Resources Code §21081.6(a) and CEQA *Guidelines* §15091(d) and §15097). The Mitigation Monitoring and Reporting Plan (MMRP) is implemented to ensure that the mitigation measures and project revisions identified in the EIR are implemented. Therefore, the MMRP must include all changes in the proposed project either adopted by the project proponent or made conditions of approval by the Lead or Responsible Agency.

7.2 ADMINISTRATION OF THE MITIGATION MONITORING AND REPORTING PLAN

The County of San Luis Obispo is the Lead Agency responsible for the adoption of the MMRP. According to CEQA *Guidelines* §15097(a), a public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity that accepts the delegation. However, until mitigation measures have been completed, the Lead Agency remains responsible for ensuring that the implementation of the measure occurs in accordance with the program.

7.3 MITIGATION MEASURES AND MONITORING PLAN

Table 7-1 on the following pages is structured to enable quick reference to mitigation measures and the associated monitoring plan based on the environmental resource. The numbering of mitigation measures correlates with numbering of measures founding the analysis chapter of this EIR (refer to Chapter 4).

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
AGRICULTURAL RESOURCES					
AGR/mm-1	Prior to completion of the construction plan for Alternative 3a, 3c and the UPRR bridge raise, the Flood Control and Water Conservation District (District) shall coordinate with local agriculturalists to refine the construction easement areas to existing agricultural roads and other areas not likely to be in production, to the maximum extent feasible. Construction fencing shall be installed along the easement to reduce the potential for disturbance outside of the construction easement area, as appropriate.	Coordinate with local agriculturalists to refine the construction easement areas to existing agricultural roads and other areas not likely to be in production, to the maximum extent feasible	San Luis Obispo County Flood Control and Water Conservation District (District)	Install fencing.	Prior to completion of the construction plan for Alternative 3a, 3c and the UPRR bridge raise
AGR/mm-2	Prior to completion of the final construction plans, the permanent easement area of the Los Berros Creek channel shall be limited to the existing access road areas, to the extent feasible. Further, Construction access and stockpiling locations shall be located within public right of ways to the maximum extent feasible. Permanent conversion of land available for crop production shall be minimized by allowing the use of identified portions of the easement for agricultural roads to the degree possible and appropriate while still ensuring the functionality of the levee. The allowance for and any limitations to locating agricultural roads on the top or outside portion of the levee should be noted in the easement agreement. The allowance to cross through the easement and levee channel should also be noted in those areas where such a crossing is to be retained.	Limit permanent easement area to existing access roads	District	Review construction plans.	Prior to completion of the final construction plans

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
AGR/mm-3	Any imported soils or levee fill/aggregate should be stockpiled in a manner to avoid impacts to adjoining crops. This includes maintaining adequate moisture to avoid dust impacts to nearby crops, the placement of a geotextile membrane in order to prevent rock, construction materials, or imported soil from becoming mixed with the native soils, and the removal of all fill material and the geotextile membrane upon completion of the project, coupled with the restoration of the native soils' previous soil texture, available water holding capacity, and soil permeability in all areas of private agricultural land that are not part of the permanent floodway easement. Upon conclusion of the construction of Alternative 3a and 3c the District shall coordinate with local agriculturalists to determine if restoration (disking, fine grading) of the temporarily disturbed area is necessary. Costs of this restoration shall be considered during easement negotiations with landowners.	Coordinate with local agriculturalists to determine if restoration (disking, fine grading) of the temporarily disturbed area is necessary	District	Provide verification at final inspection.	Upon conclusion of the construction of Alternative 3a and 3c
AGR/mm-4	Construction of the UPRR bridge improvement shall be focused within the UPRR right of way to the maximum extent feasible.	Focus UPRR improvements in the ROW	District	Upon submittal of plans	Prior to issuance of permits.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
AGR/mm-5	Prior to completion of the final plans for the Alternative 3a, 3c and the UPRR bridge raise, the District shall coordinate with local agriculturalists, to address potential conflicts between the construction activities and agricultural operations. Issues such as the location of stockpiles and haul routes, hours of operation, and farm and construction crew safety and the location of critical agricultural improvements to be avoided shall be considered. The final plans shall identify haul routes, and include a diagram of critical agricultural improvements that shall be avoided during construction, including wells, and accessory structures. Where the project results in the need to relocate existing water or associated electrical infrastructure, such measures should be completed prior to construction commencing in order to ensure the continuity of access to adequate irrigation supplies.	Coordinate with local agriculturalists, to address potential conflicts between the construction activities and agricultural operations.	District	Review final plans.	Prior to completion of the final plans for the Alternative 3a, 3c and the UPRR bridge raise.
AGR/mm-6	Prior to the issuance of grading permits for Alternative 3c, the District shall provide evidence that funds sufficient to, (1) purchase a farmland conservation easement, deed restriction, or other farmland conservation mechanism, and (2) to compensate for administrative costs incurred in the implementation of this measure have been provided to the California Farmland Conservancy Program or similar program, which will provide for the conservation of farmland impacted by Alternative 3c at a 1:1 ratio in San Luis Obispo County.	Provide evidence that funds have been provided to farmland conservation program.	District	Receive confirmation of funding from conservation program..	Prior to issuance of grading permits for Alternative 3c.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
AIR QUALITY					
AQ/mm-1	Prior to issuance of construction permits for any project component, ~~initiation of the initial sediment removal, construction of Alternative 3a, construction of Alternative 3c, and the UPRR bridge raise,~~ a Construction Activities Management Plan (CAMP) shall be submitted for review and approval by the SLOAPCD. The CAMP shall evaluate the actual equipment that will be used and scheduling and overlapping of the various phases and compare the resulting impacts to the APCD air quality impact thresholds to determine of exceedances are expected and, if so, to define specific mitigation that will be implemented to reduce impacts below the thresholds. The plan shall describe the construction schedule, equipment to be used, and identify the distances to disposal sites or from fill sites, as applicable. Based on those factors, if necessary, the SLOAPCD shall prescribe which Best Available Control Technology shall be incorporated into the CAMP. Applicable technologies shall address GHG as well, and may include: a. Minimizing the number of large pieces of construction equipment operating during any given period. b. Regularly maintaining and properly tuning all construction equipment according to manufacturer's specifications. c. Fueling all off-road and portable diesel powered equipment including, but not limited to: bulldozers, graders, cranes, loaders, scrapers, backhoes, generators, compressors, and auxiliary power units with	Submit CAMP to SLOAPCD	District	Submit CAMP	Prior to initiation of the initial sediment removal, construction of Alternative 3a, construction of Alternative 3c, and the UPRR bridge raise.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	CARB motor vehicle diesel fuel. d. Using 1996 or newer heavy duty off road vehicles. e. Electrifying equipment where possible. f. Using Compressed Natural Gas (CNG), liquefied natural gas (LNG), bio-diesel, or propane for on site mobile equipment instead of diesel-powered equipment. g. Ensuring that on and off-road diesel equipment shall not be allowed to idle for more than five minutes. h. To the greatest extent practicable, using Purinox or similar NOX reducing agents diesel fuel. i. To the greatest extent feasible, installing catalytic reduction units on all heavy equipment performing this work.				
AQ/mm-2	To minimize the impacts of diesel emissions on sensitive receptors construction activities shall be limited as follows: a. Excavation shall occur from the southern levee (opposite existing residences) to the extent feasible; b. Stockpile locations and staging areas shall be located at least 1,000 feet from sensitive receptors to the extent feasible; ~~and~~ c. Haul routes that avoid sensitive receptors shall be considered to the extent feasible;~~.~~ d. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; e. Diesel idling within 1,000 feet of sensitive receptors is not permitted;	Limit exposure by sensitive receptors.	District	Review of construction plans.	During construction activities.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	f. Use of alternative fueled equipment is recommended whenever possible; g. Signs that specify the no idling requirements must be posted and enforced at the active project locations; and, ~~c.~~h. These toxic impact reductions for sensitive receptors shall be added to the CAMP as well.				
AQ/mm-3	Prior to construction of any of the project components requiring earthwork, the most current BMPs to reduce fugitive dust emissions shall be shown on all project plans and implemented during daily earth moving activities. Particulate matter shall be addressed in the CAMP as well. BMPs shall specifically address potential fugitive dust emissions which may affect adjacent agricultural operations.	Incorporate dust control BMPs during construction.	District	Review project plans.	Prior to construction of any of the project components requiring earthwork
AQ/mm-4	Prior to commencement of demolition activities the applicant shall: a. Notify the APCD at least ten working days prior to commencement of any demolition activities; b. Conduct an asbestos survey by a Certified Asbestos Inspector; c. Use applicable disposal and removal requirements for any identified asbestos containing material; and d. Contact the SLOAPCD Enforcement Division prior to final approval of any demolition activity.	Coordinate demolition activities with APCD.	District	Submit asbestos survey to APCD	Prior to commencement of demolition activities

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
BIOLOGICAL RESOURCES					
BR/mm-1	Prior to implementation of any component of the WMP, the District shall obtain a Section 404 Permit from USACE, a Section 401 Water Quality Certification from RWQCB, a Coastal Development Permit from the CCC, and a Section 1602 Streambed Alteration Agreement from CDFG for project-related impacts that will occur in areas under the jurisdiction of these regulatory agencies.	Obtain a Section 404 Permit from USACE, a Section 401 Water Quality Certification from RWQCB, a Coastal Development Permit from the CCC, and a Section 1602 Streambed Alteration Agreement from CDFG.	District	Obtain permits.	Prior to implementation of any component of the WMP.
BR/mm-2	Prior to construction, to mitigate for the permanent impacts the District shall develop a Mitigation Monitoring Plan (MMRP) in consultation with the appropriate regulatory agencies due to the known presence of sensitive habitats and jurisdictional wetlands/other waters within the project site. The MMRP shall include success criteria goals and a five-year monitoring schedule. A qualified biologist/botanist shall supervise site preparation, timing, species utilized, planting installation, maintenance, monitoring, and reporting of the revegetation/restoration efforts. The following measures shall be incorporated into the MMRP: a. Prior to construction, locations of wetlands to be avoided shall be flagged by a qualified biologist. The areas to be protected should be shown on all applicable construction plans. Prior to any vegetation or sediment removal, exclusionary fencing should be erected by the contractor at the boundaries of all construction areas to avoid equipment	Develop a Mitigation Monitoring Plan (MMRP) in consultation with the appropriate regulatory agencies.	District	Submit MMRP.	Prior to construction.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	and human intrusion into adjacent habitats. The fencing should be maintained and remain in place throughout construction activities. b. Prior to construction, the District shall specify an on-site mitigation strategy (or combination of on-site and off-site) in the MMRP to mitigate for impacts to sensitive habitats which would be impacted. This plan should identify the following: i. Suitable on-site mitigation locations (or off-site locations, if there is not enough suitable space along Arroyo Grande Creek) based on soil type, hydrologic conditions, and proximity to existing sensitive species populations; ii. Seed collection and cuttings/plantings requirements and protocol; iii. Soil seed bank conservation strategies; iv. Mitigation site preparation techniques; v. Seeding regimen; vi. Mitigation site maintenance schedule, including weed abatement strategies, erosion control monitoring, etc.; and, vii. Monitoring requirements. c. The MMRP will be implemented after initial vegetation and sediment removal activities.				
BR/mm-3	Prior to initiation of WMP activities, the District shall retain qualified biological monitor(s) approved by all involved regulatory agencies to ensure compliance with mitigation measures pertaining to biological resources. Monitoring will occur throughout the length of initial	Retain qualified biological monitor(s) approved by all involved regulatory agencies.	District	Retain monitor.	Prior to initiation of WMP activities.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	vegetation and sediment removal and during supplemental vegetation and sediment removal, or as directed by the regulatory agencies.				
BR/mm-4	Prior to initial, and during subsequent management activities, the project site shall be clearly flagged or fenced so that the contractor is aware of the limits of allowable site access and disturbance.	Flag or fence limits of disturbance.	District	Observe flagging in field.	Prior to initial, and during subsequent management activities
BR/mm-5	Prior to initiation of WMP activities, the District shall prepare a Hazardous Materials (HAZMAT) Response Plan to allow for a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.	Prepare a Hazardous Materials (HAZMAT) Response Plan.	District	Prepare HAZMAT.	Prior to initiation of WMP activities.
BR/mm-6	Prior to initiation of WMP activities, if stream diversion/dewatering shall be necessary for any component of the project, the District shall prepare a Diversion and Dewatering plan. The form and function of all pumps used during the dewatering activities shall be checked by biological monitor(s) to ensure a dry work environment and minimize adverse effects to aquatic species and habitats.	Prepare a Diversion and Dewatering plan	District	Prepare plan.	Prior to initiation of WMP activities.
BR/mm-7	During implementation of the WMP, all equipment staging areas, construction-crew parking, and construction access routes shall be established in previously disturbed areas.	Establish construction staging, etc. in previously disturbed areas.	District	Review construction plans.	During implementation of the WMP.
BR/mm-8	During implementation of the WMP, the cleaning and refueling of equipment and vehicles shall occur only within a designated staging area and at least 65 ft (20 m) from	Cleaning and refueling of equipment and vehicles shall occur	District	Check vehicles regularly.	During implementation of the WMP.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	wetlands, other waters, or other aquatic areas. This staging area shall conform to BMPs applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles shall be checked and maintained on a daily basis to ensure proper operation and avoid potential leaks or spills.	only within a designated staging area and at least 65 ft (20 m) from wetlands, other waters, or other aquatic areas			
BR/mm-9	During implementation of the WMP, all project-related hazardous materials spills within the project site shall be cleaned up immediately. Spill prevention and cleanup materials shall be on-site at all times during construction.	Hazardous materials spills within the project site shall be cleaned up immediately	District	In field documentation of spills by biological monitor.	During implementation of the WMP.
BR/mm-10	During implementation of the WMP, trash shall be contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.	Trash shall be contained, removed from the work site	District	Field observation.	During implementation of the WMP.
BR/mm-11	During implementation of the WMP, no pets shall be allowed on the construction site.	Prohibit pets onsite.	District	Field observation	During implementation of the WMP.
BR/mm-12	After diversion/dewatering (if necessary) has been completed, all material used for diversion/dewatering shall be removed from creek corridor under the supervision of the biological monitor(s) or qualified fisheries biologist.	Material used for diversion/dewatering shall be removed from creek corridor	District	Field observation by biological monitor.	During implementation of the WMP.
BR/mm-13	Following initial vegetation and sediment removal, areas of temporary disturbance shall be restored using topsoil salvage and hydroseeding with appropriate non-invasive herbaceous species for erosion control. Because native plant species are likely to be out-competed by non-native species, a ground-cover mix is recommended for impacted areas.	Temporary disturbance shall be restored using topsoil salvage and hydroseeding with appropriate non-invasive herbaceous species for erosion	District	Field observation by biological monitor.	Following initial vegetation and sediment removal.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	Topsoil salvage methods and seed mixes shall be specified in the MMRP. Hydroseeded areas shall be monitored by a qualified restoration biologist and/or horticulturalist for viability and overall success, with additional recommendations as necessary.	control			
BR/mm-14	To reduce impacts of beaver dams on flood control in the Arroyo Grande Creek channel, coordinate with CDFG to implement beaver management as outlined in the WMP.	Coordinate with CDFG to implement beaver management as outlined in the WMP	District	Field observation.	Ongoing.
BR/mm-15	During construction or subsequent survey efforts, if marsh sandwort, Gambel's watercress, or other sensitive species are observed within the project corridor by biological monitor(s), areas with sensitive plant species will be fenced or marked for avoidance until coordination with regulatory agencies can be facilitated to obtain incidental take (if necessary) or mitigation can be developed to avoid, minimize, or offset impacts to sensitive plant species.	Areas with sensitive plant species will be fenced or marked for avoidance	District	Reporting by biological monitors.	During construction or subsequent survey efforts.
BR/mm-16	Prior to finalization of the Alternative 3a and/or 3c levee raise components of the project, a qualified biologist shall perform an updated full floristic survey of the proposed area of disturbance to identify sensitive species which could be impacted during construction.	Perform an updated full floristic survey of the proposed area of disturbance	District	Submittal of report.	Prior to finalization of the Alternative 3a and/or 3c levee raise components of the project.
BR/mm-17	If marsh sandwort, Gambel's watercress, or other sensitive species are observed within the area of disturbance the District the plans shall be redesigned to avoid these species to the extent feasible, and coordinate with regulatory agencies to facilitate to obtain incidental take (if	Redesigned to avoid sensitive plant species to the extent feasible.	District	Correspondence with agencies.	Ongoing.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	necessary) or mitigation can be developed to avoid, minimize, or offset impacts to sensitive plant species.				
BR/mm-18	Prior to construction, the District shall coordinate with USACE via the Section 404 permitting process to acquire incidental take authorization from 1) USFWS through a FESA Section 7 Biological Opinion and Incidental Take Statement for tidewater goby; and, 2) NMFS through a FESA Section 7 Biological Opinion and Incidental Take Statement for steelhead.	Coordinate with USACE via the Section 404 permitting process to acquire incidental take authorization from 1) USFWS through a FESA Section 7 Biological Opinion and Incidental Take Statement for tidewater goby; and, 2) NMFS through a FESA Section 7 Biological Opinion and Incidental Take Statement for steelhead.	District	Correspondence with USACE. Receipt of permit.	Prior to construction.
BR/mm-19	Prior to construction, a component including a description of tidewater goby and south-central California coast steelhead, their ecology, legal status, and the need for conservation of these species shall be integrated into a worker environmental training program. All construction personnel conducting in-stream work shall participate in the training program conducted by a qualified biologist.	A description of tidewater goby and south-central California coast steelhead, their ecology, legal status, and the need for conservation of these species shall be integrated into a worker environmental training program.	District	Report from biological monitor.	Prior to construction

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
BR/mm-20	If in-stream work is necessary, a qualified biologist shall be retained with experience in tidewater goby and steelhead biology and ecology, aquatic habitats, biological monitoring (including diversion/dewatering), and capturing, handling, and relocating fish species. During in-stream work, the biological monitor(s) shall continuously monitor placement and removal of any required stream diversions to capture stranded steelhead and other native fish species and relocate them to suitable habitat as appropriate. The biologist(s) shall capture native fish stranded as a result of diversion/dewatering and relocate them to suitable instream habitat immediately downstream of the work area. The biologist shall note the number of native observed in the affected area, the number of fish relocated, and the date and time of the collection and relocation.	Retain qualified biologist during dewatering activities.	District	Retention of biologist.	Ongoing.
BR/mm-21	During construction, non-native fish and other aquatic species shall be permanently removed from Arroyo Grande Creek when captured.	Remove non-native aquatic species when captured.	District	Reporting of biological monitors.	*During construction.*
BR/mm-22	During in-stream work, if pumps are incorporated to assist in temporarily dewatering the site, intakes shall be completely screened with no larger than 0.2 inch (five mm) wire mesh to prevent tidewater goby, steelhead, and other sensitive aquatic species from entering the pump system. Pumps shall release the additional water to a settling basin allowing the suspended sediment to settle out prior to re-entering the stream(s) outside of the isolated area. The form and function of all pumps used during the dewatering activities	Prevent sensitive wildlife from being affected by pumps.	District	Reporting of biological monitors.	*During in-stream work.*

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	shall be checked daily, at a minimum, by a qualified biological monitor to ensure a dry work environment and minimize adverse effects to aquatic species and habitats.				
BR/mm-23	During construction, the biological monitor shall monitor erosion and sediment controls to identify and correct any conditions that could adversely affect sensitive aquatic species or habitats. The biological monitor shall be granted the authority to halt work activity as necessary and to recommend measures to avoid/minimize adverse effects to steelhead and steelhead habitat.	Monitor erosion and sediment controls.	District	Reporting of biological monitors.	During construction
BR/mm-24	At least 15 days prior to the onset of activities, the District or project proponent shall submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.	Submit the name(s) and credentials of biologists who would conduct activities specified in the following measures	District	Submit credentials	At least 15 days prior to the onset of activities.
BR/mm-25	A Service-approved biologist shall survey the work site two weeks before the onset of activities. If California red-legged frogs, tadpoles, or eggs are found, the approved biologist shall contact the Service to determine if moving any of these life-stages is appropriate. In making this determination the Service shall consider if an appropriate relocation site exists. If the Service approves moving animals, the approved biologist shall be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only Service-approved biologists shall participate in activities	Survey the work site for California red-legged frogs, tadpoles, or eggs.	District	Reporting of biological monitors and correspondence with agencies.	Two weeks before the onset of activities.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	associated with the capture, handling, and monitoring of California red-legged frogs.				
BR/mm-26	Prior to initiation of the WMP, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.	Conduct a training session for all construction personnel.	District	Reporting of biological monitors.	Prior to initiation of the WMP.
BR/mm-27	A Service-approved biologist shall be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed. After this time, the contractor or permittee shall designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist shall ensure that this individual receives training outlined in the above measure and in the identification of California red-legged frogs. The monitor and the Service-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and Service during review of the proposed action. If work is stopped, the Corps and Service shall be notified immediately by the Service-approved biologist or on-site biological monitor.	Have a biologist present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed.	District	Reporting of biological monitors.	Such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
BR/mm-28	The number of access routes, number, and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas. Where impacts occur in these staging areas and access routes, restoration shall occur as identified in measures above.	Limit staging and activity areas.	District	Review construction plans.	Ongoing.
BR/mm-29	A Service-approved biologist shall permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. The permittee shall have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.	Permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible.	District	Reporting of biological monitors.	Ongoing.
BR/mm-30	Prior to initiation of the WMP, the District shall obtain a letter of permission (or similar authorization) from CDFG to capture and relocate Coast Range newt, southwestern pond turtle, coast horned lizard, two-striped garter snake and other CSC species from work areas encountered during construction as necessary. Qualified biologists shall conduct a pre-construction survey for these species in areas where construction will occur. The qualified biologists shall capture and relocate these sensitive species or other sensitive aquatic species to suitable habitat outside of the area of impact. Observations of Species of Special Concern or other special-status species shall be documented on CNDDB forms	Obtain a letter of permission (or similar authorization) from CDFG to capture and relocate Coast Range newt, southwestern pond turtle, coast horned lizard, two-striped garter snake and other CSC species from work areas encountered. during construction	District	Receive letter.	Prior to initiation of the WMP.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	and submitted to CDFG.				
BR/mm-31	Prior to construction, vegetation removal shall be scheduled to occur outside of the typical nesting season (vegetation removal after August 15) if possible, to prevent birds from nesting within areas of disturbance during or just prior to construction.	Schedule vegetation removal outside of nesting bird season to the extent feasible.	District	Reporting of biological monitors.	Prior to construction.
BR/mm-32	Prior to construction, if construction activities are proposed to occur during the typical nesting season (between February 15 and August 15 as outlined in WMP Protection Measure PM-2) within 300 ft (90 m) of potential nesting habitat, a nesting bird survey shall be conducted by qualified biologists in potential nesting habitat at least two weeks prior to construction to determine presence/absence of nesting birds within the area of disturbance. Pre-construction surveys for least Bell's vireo by qualified biologists shall be included with any such pre-construction survey effort. Work activities shall be avoided within 100 ft (30 m) of active bird nests and 300 ft (90 m) of active raptor nests until young birds have fledged and left the nest. Readily visible exclusion zones shall be established in areas where nests must be avoided. USFWS and CDFG shall be contacted for additional guidance if nesting birds are observed within or near the boundaries of the project site. Nests, eggs, or young of birds covered by the MBTA and California Fish and Game Code shall not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later, nor would adult birds be killed, injured, or harassed at any time.	A nesting bird survey shall be conducted by qualified biologists.	District	Reporting of biological monitors.	Prior to construction.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
BR/mm-33	Prior to construction, the District shall coordinate with CDFG to determine if a Section 2081 Incidental Take Permit (or a Section 2080.1 Consistency Determination) will be required for least Bell's vireo. The District shall ensure avoidance of take of the Fully Protected white-tailed kite at all times.	Ensure avoidance of take of the Fully Protected white-tailed kite	District	Reporting of biological monitors.	Ongoing.
BR/mm-34	Vegetation removal in potential nesting habitats shall be monitored and documented by the biological monitor(s) regardless of time of year.	Monitor vegetation removal in nesting habitat.	District	Reporting of biological monitors.	Ongoing.
BR/mm-35	Prior to bridge demolition, a qualified biologist shall conduct a nest survey and any unoccupied nests (such as cliff swallow nests) under the existing bridge shall be knocked down prior to the typical nesting season (nests removed from August 16 to February 14) to discourage nesting activity just prior to demolition. After February 14, pre-construction surveys by qualified biologists shall continue on a weekly basis to determine if any new nesting activity has occurred under the existing bridges. Partially constructed but unoccupied nests shall be destroyed before they are 1/3 complete. The District shall coordinate with the appropriate regulatory agencies to allow for the legal removal of any bird nests prior to or during the nesting bird season.	Conduct a nest survey and any unoccupied nests (such as cliff swallow nests) under the existing bridge.	District	Receipt of survey results.	Prior to bridge demolition.
BR/mm-36	Prior to construction, if construction activities are proposed to occur during the typical nesting season (February 15 to August 15) within 100 ft (30 m) of potential nesting habitat under bridges, a nesting bird survey shall be conducted by qualified biologists at least two weeks prior to construction to determine presence/absence of nesting birds. Work	Nesting bird survey shall be conducted by qualified biologists.	District	Receipt of survey results.	Prior to construction.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	activities shall be avoided within 100 ft (30 m) of active bird nests under the bridge, until young birds have fledged and left the nest. Readily visible exclusion zones shall be established in areas where nests must be avoided. USFWS and CDFG shall be contacted for additional guidance if nesting birds are observed within or near the boundaries of the project site. Nests, eggs, or young of birds covered by the MBTA and California Fish and Game Code would not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later, nor would adult birds be killed, injured, or harassed at any time.				
BR/mm-37	Prior to construction, pre-construction surveys (at least two at dawn and two at dusk at appropriate times of the year, such as in the fall and spring prior to construction) shall be conducted by qualified biologists to determine if bats are roosting under bridges. The biologist(s) conducting the preconstruction surveys will also identify the nature of the bat utilization of the bridge (i.e., no roosting, night roost, day roost, maternity roost). The last survey shall be conducted no later than March 15 to allow for bat exclusion (if required) prior to the onset of the maternity roosting season (typically around April 15).	Pre-construction surveys shall be conducted by qualified biologists to determine if bats are roosting under bridges.	District	Receipt of survey results.	Prior to construction.
BR/mm-38	Prior to demolition or modification of existing bridges, if bats are found to be roosting under the bridges, bat exclusion shall be conducted by a qualified biologist or firm qualified to conduct bat exclusion activities. Exclusion methods may include, but are not limited to, wire mesh, spray foam, or fabric placement. If	Bat exclusion shall be conducted by a qualified biologist or firm qualified to conduct bat exclusion activities.	District	Retention of qualified biologist.	Prior to demolition or modification of existing bridges

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	exclusion is necessary, a Bat Exclusion Plan shall be submitted to CDFG for approval prior to construction.				
BR/mm-39	Prior to demolition or modification of existing bridges, the District may opt to employ bat exclusion, even if roosting bats aren't observed during pre-construction surveys, prior to the maternity roosting season to eliminate the potential for bat roosting during bridge replacement or modification.	Employ bat exclusion.	District	Review of final construction plans.	Prior to demolition or modification of existing bridges.
BR/mm-40	If bats are found to be roosting under the Union Pacific Railroad Bridge at any time prior to construction, the new bridge design shall be examined by a qualified biologist in coordination with design engineers to determine if the new bridge will be capable of supporting roosting bats. If bats are found to roost under the existing bridge and it is determined that the new bridge will not support roosting bats, features facilitating bat roosting such as rails under the bridge or bat boxes shall be attached to the new bridge to allow for bat roosting opportunities. The design, number, and placement of any bat boxes shall be determined by a qualified biologist and coordination with CDFG. Any bat structure proposed as mitigation shall be reviewed by a qualified biologist.	New bridge design shall be examined by a qualified biologist in coordination with design engineers to determine if the new bridge will be capable of supporting roosting bats.	District	Review of final construction plans and survey results.	Any time prior to construction.
FLOODING, HYDROLOGY, AND WATER QUALITY					
WQ/mm-1	Prior to commencement of annual vegetation and sediment management the County shall prepare an erosion control and water quality protection plan that details measures to be taken during annual monitoring and	Prepare an erosion control and water quality protection plan.	District	Review plans and SWPPP.	Prior to commencement of annual vegetation and sediment management.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	maintenance efforts that would minimize water quality impacts. This plan would borrow heavily from the SWPPP and shall include measures such as: 1. Maintaining vegetation outside of the buffer area if it is providing protection and shade of the low-flow channel; 2. Minimizing equipment operation in the channels; 3. Prohibiting refueling within or adjacent to the channels; 4. Identifying appropriate species to be planted on levee slopes to provide erosion control that are compatible with biological resources mitigation and the desired channel roughness coefficient.				
GEOLOGY AND SOILS					
GS/mm-1	Prior to construction of Alternative 3a and 3c a design-level geotechnical report for the levee improvements shall be prepared by the FCWCD. The report shall provide ground motion parameters, for use in geotechnical analyses, such as for evaluating slope stability, liquefaction, and seismic settlement.	Design-level geotechnical report for the levee improvements	District	Prepare report.	Prior to construction of Alternative 3a and 3c.
GS/mm-2	Prior to construction of Alternative 3a and 3c an Emergency Response Plan shall be prepared by the FCWCD to address seismic hazards. The plan shall recognize the potential for liquefaction and seismic impacts to the levee, and delineate specific high-hazard areas that should be inspected for damage immediately following an earthquake.	Prepare an emergency response plan.	District	Prepare Emergency Response Plan.	Prior to construction of Alternative 3a and 3c.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
GS/mm-3	Prior to construction of Alternative 3a and 3c a design level geotechnical report shall be prepared by the FCWCD to address seepage conditions. It should include mitigation strategies such as cutoff walls, impervious blankets, or drainage systems, for example, that control or reduce gradients.	Prepare a design level geotechnical report.	District	Prepare report.	Prior to construction of Alternative 3a and 3c.
GS/mm-4	Prior to initiation of any project components an erosion control plan shall be implemented by the FCWCD. The plan shall address short and long-term erosion control and scour which may result from the project components. Vegetation used for erosion control shall be compatible with vegetation management efforts to reduce channel roughness coefficients, and any biological resources mitigation measures.	Implement erosion control plan.	District	Prepare plan.	Prior to initiation of any project components.
GS/mm-5	Prior to initiation of any project components the FCWCD shall prepare and submit to the SWRCB for approval a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the State General Order related to construction projects. The SWPPP shall identify the selected stormwater management procedures, pollution control technologies, spill response procedures, and other means that will be used to minimize erosion and sediment production and the release of pollutants to surface water during construction. The SWPPP shall also describe procedures and be consistent with biological resources mitigation.	Prepare and submit to the SWRCB for approval a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP).	District	Review NOI	Prior to initiation of any project components.
GS/mm-6	On-going maintenance of the levee embankments by the FCWCD should include removal of debris and dead vegetation which could concentrate flows, and repair of holes	Remove debris and dead vegetation which could concentrate flows.	District	Reports from maintenance crews.	Ongoing.

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	and other disturbances resulting from the initial and annual vegetation management activities.				
GS/mm-7	Prior to implementation of Alternative 3a and 3c the FCWCD shall identify areas adjacent to the south levee where levee overtop and flooding may least affect public safety and property value and consider construction of a permanent spillway at these location(s). The spillway shall be designed to accommodate flood events in a manner that would reduce the potential for mass erosion and catastrophic failure of the levees.	Consider construction of a permanent spillway.	District	Review final construction plans.	Prior to implementation of Alternative 3a and 3c.
HAZARDS AND HAZARDOUS MATERIALS					
HAZ/mm-1	Prior to completion of the final design plans, the District shall obtain the natural gas purveyor's Hazardous Materials Plan, which shall include, but is not limited to, details of the existing and proposed storage tank locations and associated infrastructure, and relocation procedures. The procedures shall be referenced on the final plans and implemented during construction, as necessary.	Obtain the natural gas purveyor's Hazardous Materials Plan.	District	Obtain plan.	Prior to completion of the final design plans.
HAZ/mm-2	Prior to construction, pipeline locations shall be clearly indicated on construction plans and in the field. Project plans shall include specific measures to be taken by construction crews so that damage to the pipelines is avoided.	Pipeline locations shall be clearly indicated.	District	Review construction plan.	Prior to construction.
HAZ/mm-3	At least 30 days prior to commencement of all construction activities, the County shall provide local agriculturalists a construction schedule and request that use of agricultural chemicals (particularly sprays) be limited during construction hours (typically 8:00 a.m. to 4:00	Provide local agriculturalists a construction schedule.	District	Provide schedule.	At least 30 days prior to commencement of all construction activities,

Table7-1. Mitigation Monitoring and Reporting Plan

Mitigation Measure	Requirements of Measure	Applicant Responsibilities	Party Responsible for Verification	Method of Verification	Verification Timing
	p.m.).				
HAZ/mm-4	Prior to initiation of construction activities that include heavy machinery, existing ASTs located within 50 feet of the exterior toe of the levee slopes shall be identified on construction plans and identified in the field.	Identify activities within 50 feet of AST's.	District	Review final construction plans.	Prior to initiation of construction activities.
HAZ/mm-5	Prior to construction of any project component that would result in significant disturbance within the UPRR railroad right-of-way, a qualified consultant shall perform soils tests to determine whether or not hazardous conditions exist. If so, a Contaminated Materials Management Plan (CMMRP) shall be developed in coordination with the County Environmental Health Division and implemented during construction.	Perform soils tests to determine whether or not hazardous conditions exist along the UPRR right of way.	District	Obtain test results. Prepare CMMP.	Prior to construction of any project component that would result in significant disturbance within the UPRR railroad right-of-way.
HAZ/mm-6	Planting tall tree species (sycamore or cottonwood) within the channel between the UPRR bridge and the southern end of the runway shall be prohibited.	Prohibit planting of tall species west of the UPRR bridge.	District	Review annual plans.	Ongoing
TRANSPORTATION AND TRAFFIC					
TR/mm-1	Prior to initiation of construction activities, the FCWCD shall prepare a Construction Traffic Management Plan. The plan shall identify haul routes, the ingress and egress points from the Arroyo Grande Creek and Los Berros Creek channels, the maximum number of daily trips allowed, and the hours of operation, at minimum. It shall also include a description of safety measures (cones, signage, flagmen, etc.) to be put in place during construction activities.	Prepare a Construction Traffic Management Plan.	District	Obtain CTMP	Prior to initiation of construction activities.

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CHAPTER 8
REFERENCES AND REPORT PREPARATION

8.1 REFERENCES

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8.1.8 Transportation and Traffic

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8.2 EIR PREPARERS

This Environmental Impact Report (EIR) has been prepared by SWCA Environmental Consultants, in association with the County of San Luis Obispo. Project Director for the EIR was Mary Reents, and Project Manager was Keith Miller. The following is a list of individuals responsible for preparation of the EIR.

Responsibilities	EIR Preparer
Project Description	Keith Miller, SWCA
Environmental Setting	Emily Creel, SWCA
Agricultural Resources	Keith Miller, SWCA
Air Quality	Keith Miller, SWCA
Biological Resources	Geoff Hoetker, SWCA
Cultural Resources	Keith Miller, SWCA
Flooding, Hydrology, and water Quality	Keith Miller, SWCA
Geology and Soils	Keith Miller, SWCA
Hazards and Hazardous Materials	Keith Miller, SWCA
Transportation and Circulation	Keith Miller, SWCA
Alternatives Analysis	Keith Miller, Mary Reents, SWCA
Document Graphics	Deborah Hollowell, Kevin Doyle, SWCA
Technical Editing	Jaimie Jones, SWCA

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CHAPTER 9
RESPONSE TO COMMENTS

The Response to Comments section of includes comment letters received on the Draft Environmental Impact Report (EIR) for the Arroyo Grande Creek Channel Waterway Management Program (WMP). Any changes referenced in this chapter will be noted through use of strikeout and underline in the Final EIR.

9.1 DRAFT EIR COMMENT LETTERS AND RESPONSES

The following agencies and members of the public have prepared comments on the Draft EIR:

Respondent	Code	Contact	Page
State of California **Office of Planning and Research** **State Clearinghouse and Planning Unit** On Line Announcement of Filing Received: June 3, 2010	SCH	1400 10th Street Sacramento, CA 95812 www.ceqanet.ca.gov	9-3
U.S. Department of Homeland Security **Federal Emergency Management Agency** **Region IX** Letter dated: June 21, 2010	FEMA	1111 Broadway, Suite 1200 Oakland, CA 94607 *Contact: Gregor Blackburn*	9-5
State of California **Native American Heritage Commission** Letter dated: June 22, 2010	NAHC	915 Capitol Mall, Room 364 Sacramento, CA 95814 *Contact: Katy Sanchez*	9-7
County of San Luis Obispo **Department of Agriculture/Weights and Measures** Letter dated: July 16, 2010	SLOAG	2156 Sierra Way, Suite A San Luis Obispo, CA 93401 *Contact: Michael Isensee*	9-10
City of Arroyo Grande **Community Development** Letter dated: July 16, 2010	AGCD	P.O. Box 550 214 East Branch Street Arroyo Grande, CA 93421 *Contact: Teresa McClish*	9-17
Central Coast Salmon Enhancement, Inc. Letter dated: July 18, 2010	CCSE	229 Stanley Avenue Arroyo Grande, CA 93420 *Contact: Stephnie Wald*	9-19
United States Department of the Interior **Fish and Wildlife Service** **Ventura Office** Letter dated: July 19, 2010	USFWS	2493 Portola Road, Suite B Ventura, CA 93003 *Contact: Chris Dellith*	9-21
State of California **Department of Parks and Recreation** **Oceano Dunes District** Letter dated: July 19, 2010	CDPR	340 James Way, Suite 270 Pismo Beach, CA 93449 *Contact: Andrew Zilke*	9-24

Respondent	Code	Contact	Page
County of San Luis Obispo **Air Pollution Control District** Letter dated: July 19, 2010	SLOAPCD	3433 Roberto Court San Luis Obispo, CA 93401 *Contact: Andy Mutziger*	9-29

The letters of comment are given in the above order with the responses following the individual letters. Letters of comment are reproduced in total, and numerical annotation has been added as appropriate to delineate and reference the responses to those comments. The pages of the letters have been re-numbered to conform to the page sequence of this section.

California Home Wednesday, July 21, 2010

Arroyo Grande Creek Waterway Management Program

SCH Number: 2009061090
Document Type: EIR - Draft EIR
Alternate Title: Arroyo Grande Creek Channel Waterway Management Program
Project Lead Agency: San Luis Obispo County

Project Description

A request to manage the lower, leveed three and a half miles of the Arroyo Grande Creek Channel through the management of sediment, vegetation, and by raising levees.

Contact Information

Primary Contact:
John Farher
San Luis Obispo County Flood Control & Water Conservation Dist
805-781-5714
976 Osos Street, Rm 207
San Luis Obispo, CA 93408-2040

Project Location

County: San Luis Obispo
City: Arroyo Grande
Region:
Cross Streets: Hwy 1, 22nd St, Century Ln, Valley Rd
Latitude/Longitude:
Parcel No: multiple
Township:
Range:
Section:
Base:
Other Location Info:

Proximity To

Highways: Hwy 1
Airports: Oceano
Railways: UPRR
Waterways: Arroyo Grande Creek, Los Berros Creek, Pacific Ocean
Schools: Lucia Mar USD
Land Use: Agriculture, Industrial, Residential Multi-Family

Development Type

Other

Local Action

Local Coastal Permit, Other Action

Project Issues

Agricultural Land, Air Quality, Archaeologic-Historic, Biological Resources, Coastal Zone, Drainage/Absorption, Flood Plain/Flooding, Geologic/Seismic, Growth Inducing, Landuse, Soil Erosion/Compaction/Grading, Toxic/Hazardous, Traffic/Circulation, Vegetation, Water Quality, Water Supply, Wetland/Riparian, Wildlife

Reviewing Agencies (Agencies in **Bold Type** submitted comment letters to the State Clearinghouse)

Resources Agency; California Coastal Commission; Department of Fish and Game, Region 4; Office of Historic Preservation; Department of Parks and Recreation; Central Valley Flood Protection Board; Department of Water Resources; Office of Emergency Services; Caltrans, Division of Aeronautics; Caltrans, District 5; Regional Water Quality Control Board, Region 3, **Native American Heritage Commission**; Public Utilities Commission; State Lands Commission

Date Received: 6/3/2010 **Start of Review:** 6/3/2010 **End of Review:** 7/19/2010

CEQAnet HOME | NEW SEARCH

State Clearinghouse Online Notification

Comment No.	Response
SCH-1	This notification identifies the agencies that were notified by the State Clearinghouse. This notification is included for informational purposes and no further response to this letter is necessary.

U.S. Department of Homeland Security
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

June 21, 2010

RECEIVED

John Farhar, Project Manager
San Luis Obispo County
County Department of Public Works
976 Osos Street, Room 207
San Luis Obispo, California 93408-2040

Dear Mr. Farhar:

This is in response to your request for comments on the Arroyo Grande Creek Channel Waterway Management Program (WMP)-Notice of Availability of Draft EIR (ED07-243; SCH#2009061030).

Please review the current effective Flood Insurance Rate Maps (FIRMs) for the County of San Luis Obispo (Community Number 060304), Maps revised August 28, 2008. Please note that the County of San Luis Obispo, California is a participant in the National Flood Insurance Program (NFIP). The minimum, basic NFIP floodplain management building requirements are described in Vol. 44 Code of Federal Regulations (44 CFR), Sections 59 through 65.

A summary of these NFIP floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map. **FEMA-1**

- If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any ***development*** must not increase base flood elevation levels. **The term *development* means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials.** A hydrologic and hydraulic analysis must be performed *prior* to the start of development, and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways. **FEMA-2**

- All buildings constructed within a coastal high hazard area, (any of the "V" Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. **FEMA-3**

- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA's Flood Map Revision Application Packages, please refer to the FEMA website at http://www.fema.gov/business/nfip/forms.shtm. **FEMA-4**

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community's floodplain manager for more information on local floodplain management building requirements. The San Luis Obispo floodplain manager can be reached by calling Tim J. Tomlinson, Floodplain Manager, at (805) 781-5271. **FEMA-5**

If you have any questions or concerns, please do not hesitate to call Jane Hopkins of the Mitigation staff at (510) 627-7183.

Sincerely,

Gregor Blackburn, CFM, Branch Chief
Floodplain Management and Insurance Branch

cc:
Tim J. Tomlinson, Floodplanner Manager, San Luis Obispo County
Garret Tam Sing/Salomon Miranda, State of California, Department of Water Resources, Southern Region Office
Jane Hopkins, Floodplanner, DHS/FEMA Region IX
Alessandro Amaglio, Environmental Officer, DHS/FEMA Region IX

Response to Letter from FEMA – Region IX, dated June 21, 2010

Comment No.	Response
FEMA-1	No buildings are proposed.
FEMA-2	The proposed project would reduce flooding potential. Hydrologic modeling has already been performed.
FEMA-3	No buildings are proposed in the coastal high hazard area.
FEMA-4	The District intends to comply with the NFIP policies and regulations.
FEMA-5	Comment noted.

STATE OF CALIFORNIA — Arnold Schwarzenegger, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

RECEIVED
JUN 25 2010

June 22, 2010

John Farhar
San Luis Obispo Flood Control and Water Conservation District
976 Osos Street, Room 207
San Luis Obispo, CA 93408-2040

RE: SCH# 2009061030 Arroyo Grande Creek Waterway Management Program; San Luis Obispo County.

Dear Mr. Farhar:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Completion (NOC) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5 minute quadrangle name, township, range and section required.**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,
Katy Sanchez
Katy Sanchez
Program Analyst
(916) 653-4040

CC: State Clearinghouse

NAHC-1

Native American Contact List
San Luis Obispo County
June 22, 2010

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
805 492-7255
(805) 558-1154 - cell
folkes9@msn.com
Chumash
Tataviam
Fernandeño

San Luis Obispo County Chumash Council
Chief Mark Steven Vigil
1030 Ritchie Road
Grover Beach CA 93433
cheifmvigil@fix.net
(805) 481-2461
(805) 474-4729 - Fax
Chumash

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517
Santa Ynez , CA 93460
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(805) 686-9578 Fax
Chumash

Santa Ynez Tribal Elders Council
Adelina Alva-Padilla, Chair Woman
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Chumash

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ndnRandy@gmail.com
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Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

Lei Lynn Odom
1339 24th Street
Oceano , CA 93445
(805) 489-5390
Chumash

Coastal Band of the Chumash Nation
Vennise Miller, Chairperson
P.O. Box 4464
Santa Barbara CA 93140
805-964-3447
Chumash

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources forthe proposed SCH# 2009061030 Arroyo Grande Creek Waterway Management Program; San Luis Obispo County.

Native American Contact List
San Luis Obispo County
June 22, 2010

Mona Olivas Tucker
660 Camino Del Rey
Arroyo Grande CA 93420
(805) 489-1052 Home
(805) 748-2121 Cell
Chumash

Northern Chumash Tribal Council
Fred Collins, Spokesperson
67 South Street
San Luis Obispo CA 93401
(805) 801-0347 (Cell)
Chumash

Matthew Darian Goldman
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Chumash

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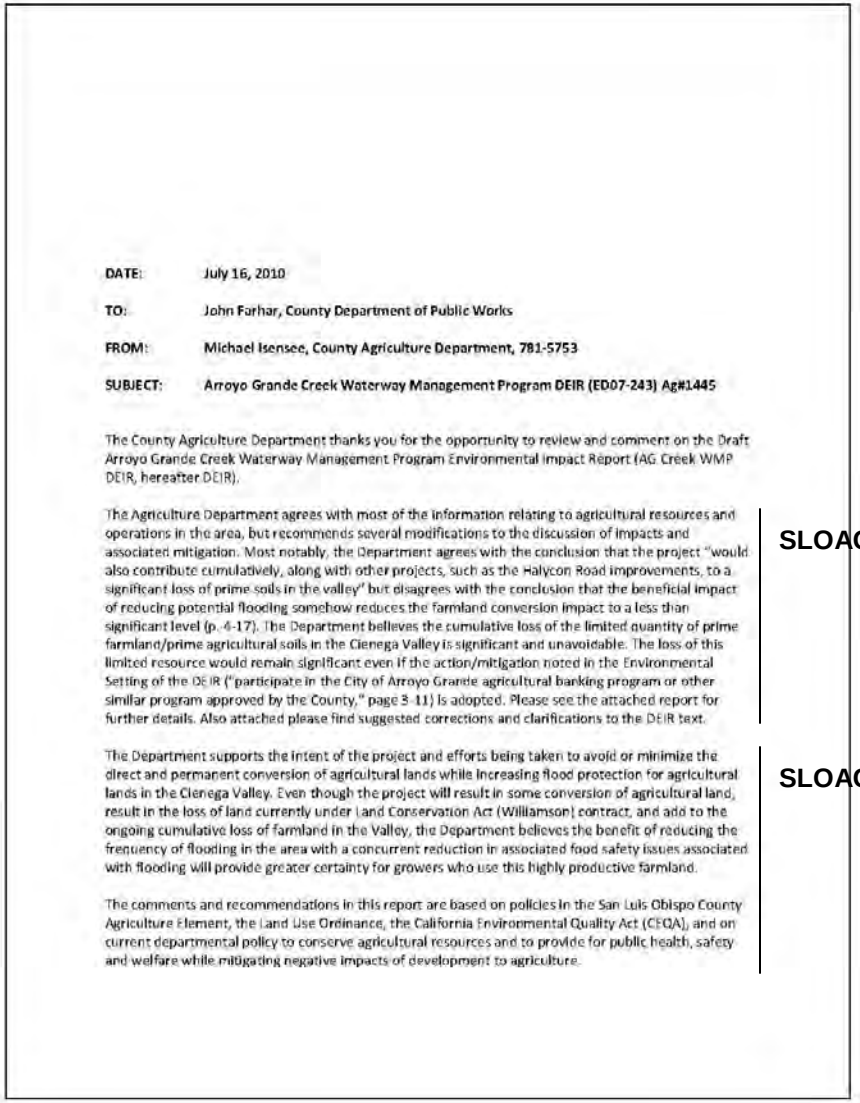
This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources forthe proposed SCH# 2009061030 Arroyo Grande Creek Waterway Management Program; San Luis Obispo County.

Response to Letter from Native American Heritage Commission, dated June 22, 2010

Comment No.	Response
NAHC-1	Please refer to the Cultural resources section for a description of the records search surface surveys, and consultation performed in support of the EIR.



DATE: July 16, 2010

TO: John Farhar, County Department of Public Works

FROM: Michael Isensee, County Agriculture Department, 781-5753

SUBJECT: Arroyo Grande Creek Waterway Management Program DEIR (ED07-243) Ag#1445

The County Agriculture Department thanks you for the opportunity to review and comment on the Draft Arroyo Grande Creek Waterway Management Program Environmental Impact Report (AG Creek WMP DEIR, hereafter DEIR).

The Agriculture Department agrees with most of the information relating to agricultural resources and operations in the area, but recommends several modifications to the discussion of impacts and associated mitigation. Most notably, the Department agrees with the conclusion that the project "would also contribute cumulatively, along with other projects, such as the Halycon Road improvements, to a significant loss of prime soils in the valley" but disagrees with the conclusion that the beneficial impact of reducing potential flooding somehow reduces the farmland conversion impact to a less than significant level (p. 4-17). The Department believes the cumulative loss of the limited quantity of prime farmland/prime agricultural soils in the Clenega Valley is significant and unavoidable. The loss of this limited resource would remain significant even if the action/mitigation noted in the Environmental Setting of the DEIR ("participate in the City of Arroyo Grande agricultural banking program or other similar program approved by the County," page 3-11) is adopted. Please see the attached report for further details. Also attached please find suggested corrections and clarifications to the DEIR text.

SLOAG-1

The Department supports the intent of the project and efforts being taken to avoid or minimize the direct and permanent conversion of agricultural lands while increasing flood protection for agricultural lands in the Clenega Valley. Even though the project will result in some conversion of agricultural land, result in the loss of land currently under Land Conservation Act (Williamson) contract, and add to the ongoing cumulative loss of farmland in the Valley, the Department believes the benefit of reducing the frequency of flooding in the area with a concurrent reduction in associated food safety issues associated with flooding will provide greater certainty for growers who use this highly productive farmland.

SLOAG-2

The comments and recommendations in this report are based on policies in the San Luis Obispo County Agriculture Element, the Land Use Ordinance, the California Environmental Quality Act (CEQA), and on current departmental policy to conserve agricultural resources and to provide for public health, safety and welfare while mitigating negative impacts of development to agriculture.

Thresholds, Impacts and Mitigation Comments

4.1.3 Thresholds of Significance and 4.1.4 Impact Assessment and Methodology.

The initial bullets establishing thresholds refer to the conversion of *prime farmland, unique farmland*, or *farmland of statewide importance* to non-agricultural uses. Immediately below, in section **4.1.4 Impact Assessment and Methodology**, the document refers to conversion of *Important Farmland*. While not especially relevant to this project, since all conversion involves lands which meet the NRCS definition of prime farmland, the terms used in the DEIR are not synonymous. Specifically, *Important Farmland* as defined by the FMMP includes prime, unique and statewide important farmland as well as *farmland of local importance* and, in San Luis Obispo County, *farmland of local potential*.

SLOAG-3

The Department worked with agricultural resource agencies (University of California Cooperative Extension and Natural Resources Conservation Service) and the Agricultural Liaison Advisory Board to craft a local definition of Important Agricultural Soils as part of the recently adopted Conservation and Open Space Element. This definition attempted to be inclusive of the most important soil resources in the county for agricultural production. The Department hopes this single comprehensive resource will be a useful tool for future environmental review.

SLOAG-4

4.1.5.1 Soil Conversion

Temporary Impacts

Regarding the assessment of farmland soil impacts, it is inaccurate to discuss soil impacts only in terms of current uses. Farm roads around farm fields are integral parts of the overall farm operation. Impacts to farmland soils may exist even if the impacts are to soils not currently used for crop production (i.e. used as an ag road), especially to the degree the impact may result in adjoining land being taken out of production. Areas currently used for unimproved agricultural roads can be used for crop production if field layouts are modified in the future. Therefore, the most accurate and conservative accounting of impacts appears to be provided in Table 4.1-4. Further, it appears that along much of the length of the creek, adjoining farm operators utilize the levee top as an agricultural access road. It is only as the levee grows higher toward the west that farm operations locate an agricultural road at the toe of the levee.

SLOAG-5

To the degree feasible, all construction stockpiling and access should use public right of ways, publicly owned properties such as the Oceano airport, and the existing floodway easement (levee top access) rather than adjoining farmland areas.

SLOAG-6

Table 4.1-4 should be clarified to clearly explain the impacts associated with Alternative 3c are cumulative and include the areas impacted by Alternative 3a. In the same location, it should also be explained that the impacts associated with UPRR Bridge Raise are not included in either of the other Alternatives.

SLOAG-7

The Department does concur that temporary impacts to farmland soils, whether currently used as unimproved agricultural roads or not, are not significant if (1) the impact is solely related to the temporary use of the road by construction equipment during active excavation operations and (2) the area is able to return to productive agricultural use as either cultivated ground or an unimproved agricultural access road at the conclusion of construction. In order to ensure the temporary impact area is not adversely impacted on a long-term basis, the Department recommends the following:

SLOAG-8

- Maintain proposed AGR/mm-1
- Add the following additional measure:
  Any imported soils or levee fill/aggregate should be stockpiled in a manner to avoid impacts to adjoining crops. This includes maintaining adequate moisture to avoid dust impacts to nearby crops, the placement of a geotextile membrane in order to prevent rock, construction materials, or imported soil from becoming mixed with the native soils, and the removal of all fill material and the geotextile membrane upon completion of the project, coupled with the restoration of the native soils' previous soil texture, available water holding capacity, and soil permeability in all areas of private agricultural land that are not part of the permanent floodway easement.
- Modify AGR/mm-3 to include not only the cost of restoring any areas disturbed by construction, but also compensation for the temporary loss of the use of the land for crop production.

SLOAG-8 (cont'd)

Currently, portions of the agricultural parcel adjoining the UPRR south of the bridge (APN 061-331-008) are planted with a permanent crop. Such crops generally require multiple years before a marketable commodity can be harvested. The temporary impact of locating a portion of the shoofly ROW on this parcel will require further analysis as the type of potential impact is different than the temporary use of an agricultural road. Avoiding impacts to the permanent crops and prime farmland soils should be a priority for the railroad portion of the project. However, it appears that impacts would likely occur to no more than 22 trees. If necessary, potential mitigation might be the relocation of the trees currently planted along the railroad property line.

SLOAG-9

Finally, any project development located on soil type 173 (Mocho fine sandy loam) should be included in the analysis of agricultural resource impacts as it meets the Coastal Act definition of prime agricultural land (Storie index rating between 80 and 100). Mitigation measures which protect and restore areas qualifying as prime agricultural land should occur whether the soil is currently in productive agricultural use or not.

SLOAG-10

Permanent Impacts
The DEIR conservatively identifies the acquisition of up to 1.16 acres of farmland for the permanent floodway easement in association with Alternative 3c. All farmland impacted is classified as prime farmland (NRCS definition) and prime agricultural land (state definition). Alternative 3a and the UPRR Bridge Raise do not identify any additional permanent acquisition. In and of itself, this level of conversion does not appear to the Department to be a significant impact to agricultural resources for the reasons noted near the bottom of page 4-14.

All farmland conversion should be minimized to the degree feasible. The Department recommends the following:

- Modify AGR/mm-2 to note that all floodway easements (temporary construction and permanent floodway) should be limited to the extent feasible. Permanent conversion of land available for crop production should be minimized by allowing the use of identified portions of the easement for agricultural roads to the degree possible and appropriate while still ensuring the functionality of the levee. The allowance for and any limitations to locating agricultural roads on the top or outside portion of the levee should be noted in the easement agreement. The allowance to cross through the easement and levee channel should also be noted in those areas where such a crossing is to be retained.

SLOAG-11

4.1.5.2 Infrastructure and Productivity.

Air quality and crop protection
AQ/mm-8 is identified as the mitigation measure intended to address dust control (4-15 and 4-31). This mitigation measure does not identify any specific actions to be taken and cannot be assessed to determine if it represents adequate mitigation to protect crops near levee construction areas. The Department recommends that this measure be modified to note the specific objectives of air quality BMPs. Specifically, the Department recommends that one of the objectives be the protection of nearby crops from any adverse impacts associated with fugitive emissions. Current APCD mitigation measures often do not take into account the protection of crops located on the same parcel as a project, since monitoring, if required, occurs at the parcel edge or adjoining public road. To fully protect agricultural crops, any monitoring should occur between the construction area and adjoining farm fields.

SLOAG-12

Agricultural wells and irrigation infrastructure
AGR/mm-5 should be modified to note that where the project results in the need to relocate existing water or associated electrical infrastructure, such measures should be completed prior to construction commencing in order to ensure the continuity of access to adequate irrigation supplies.

SLOAG-13

Project coordination
The issue of coordination between construction efforts and time sensitive crop management practices needs further discussion. The mitigation included in the **Hazards and Hazardous Materials** section of the DEIR requests that growers avoid the use of pesticide applications during construction hours (p. 4-143). To the degree construction impacts the ability of growers to conduct necessary operations on a timely basis; such a measure represents an additional adverse impact to agriculture.

The Department recommends that the DEIR identify mitigation which would avoid potential impacts to agricultural operations. Potential ideas include:

- Early (90+ day) notification provided to growers prior to the commencement of construction
- Regular updates (every 30 days prior to the commencement of construction and weekly during construction) of construction schedules and location
- Maintenance of a web site and/or information kiosk(s) with specific information about construction activities and schedules (including any planned road, including farm road, closures)
- Providing growers with direct cell phone contact to the construction supervisor

In order to avoid potential hazards for construction employees while minimizing impacts to agricultural operations and their weather-dependent pesticide application schedule, other measures could include:

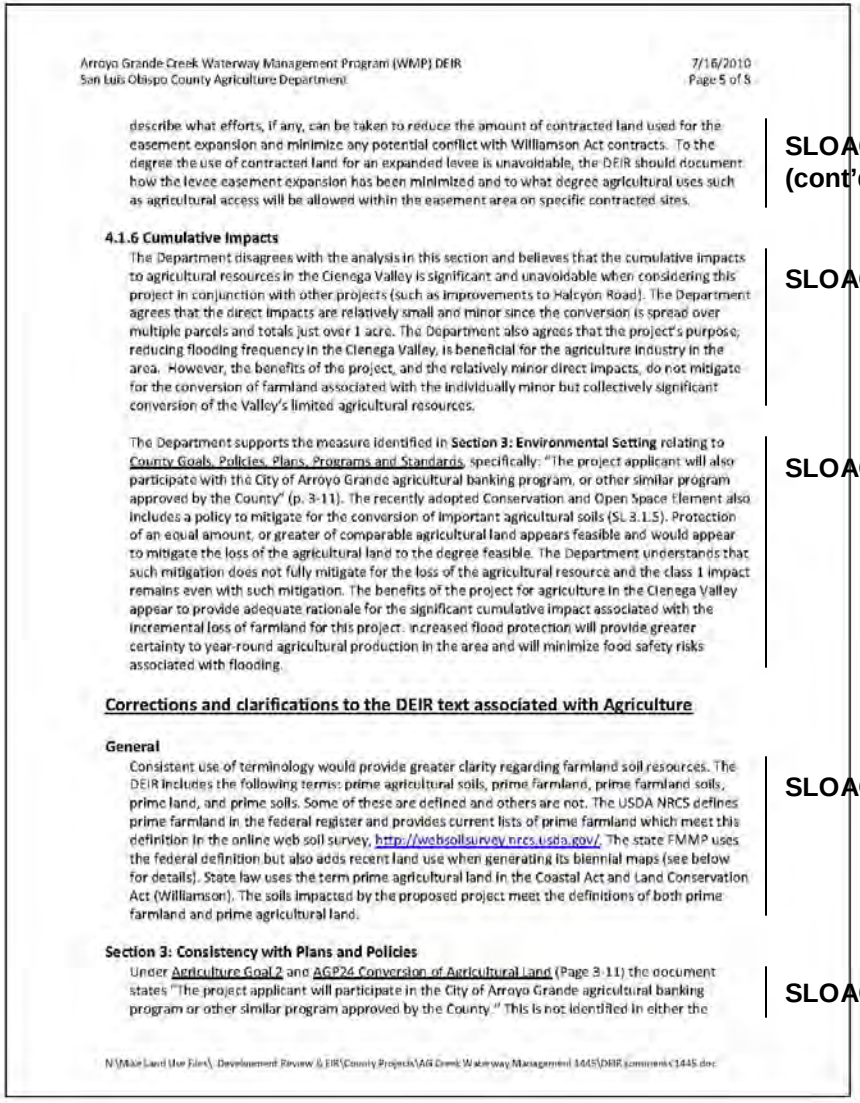
- Coordinate construction efforts around the schedules of neighboring farmers' planting, cultural practice (including pesticide applications) and harvesting schedules.
- During negotiations with property owners and growers, incorporate agreements for prior notification to the construction manager of pending pesticide applications.

SLOAG-14

4.1.5.4 Williamson Act

The analysis in this section should be strengthened. A significant impact to Williamson Act contracted lands does not only occur if the public acquisition of land results in a parcel area that no longer meets contract minimum parcel sizes (generally 10 acres in the Cienega Valley). A more appropriate discussion relating to impacts would be to identify the impact, describe why impacts are necessary to contracted land (e.g. the levee easement is located in the midst of the parcel), and

SLOAG-15



describe what efforts, if any, can be taken to reduce the amount of contracted land used for the easement expansion and minimize any potential conflict with Williamson Act contracts. To the degree the use of contracted land for an expanded levee is unavoidable, the DEIR should document how the levee easement expansion has been minimized and to what degree agricultural uses such as agricultural access will be allowed within the easement area on specific contracted sites.

SLOAG-15 (cont'd)

4.1.6 Cumulative Impacts

The Department disagrees with the analysis in this section and believes that the cumulative impacts to agricultural resources in the Cienega Valley is significant and unavoidable when considering this project in conjunction with other projects (such as improvements to Halcyon Road). The Department agrees that the direct impacts are relatively small and minor since the conversion is spread over multiple parcels and totals just over 1 acre. The Department also agrees that the project's purpose, reducing flooding frequency in the Cienega Valley, is beneficial for the agriculture industry in the area. However, the benefits of the project, and the relatively minor direct impacts, do not mitigate for the conversion of farmland associated with the individually minor but collectively significant conversion of the Valley's limited agricultural resources.

SLOAG-16

The Department supports the measure identified in **Section 3: Environmental Setting** relating to County Goals, Policies, Plans, Programs and Standards, specifically: "The project applicant will also participate with the City of Arroyo Grande agricultural banking program, or other similar program approved by the County" (p. 3-11). The recently adopted Conservation and Open Space Element also includes a policy to mitigate for the conversion of important agricultural soils (SL 3.1.5). Protection of an equal amount, or greater of comparable agricultural land appears feasible and would appear to mitigate the loss of the agricultural land to the degree feasible. The Department understands that such mitigation does not fully mitigate for the loss of the agricultural resource and the class 1 impact remains even with such mitigation. The benefits of the project for agriculture in the Cienega Valley appear to provide adequate rationale for the significant cumulative impact associated with the incremental loss of farmland for this project. Increased flood protection will provide greater certainty to year-round agricultural production in the area and will minimize food safety risks associated with flooding.

SLOAG-17

Corrections and clarifications to the DEIR text associated with Agriculture

General

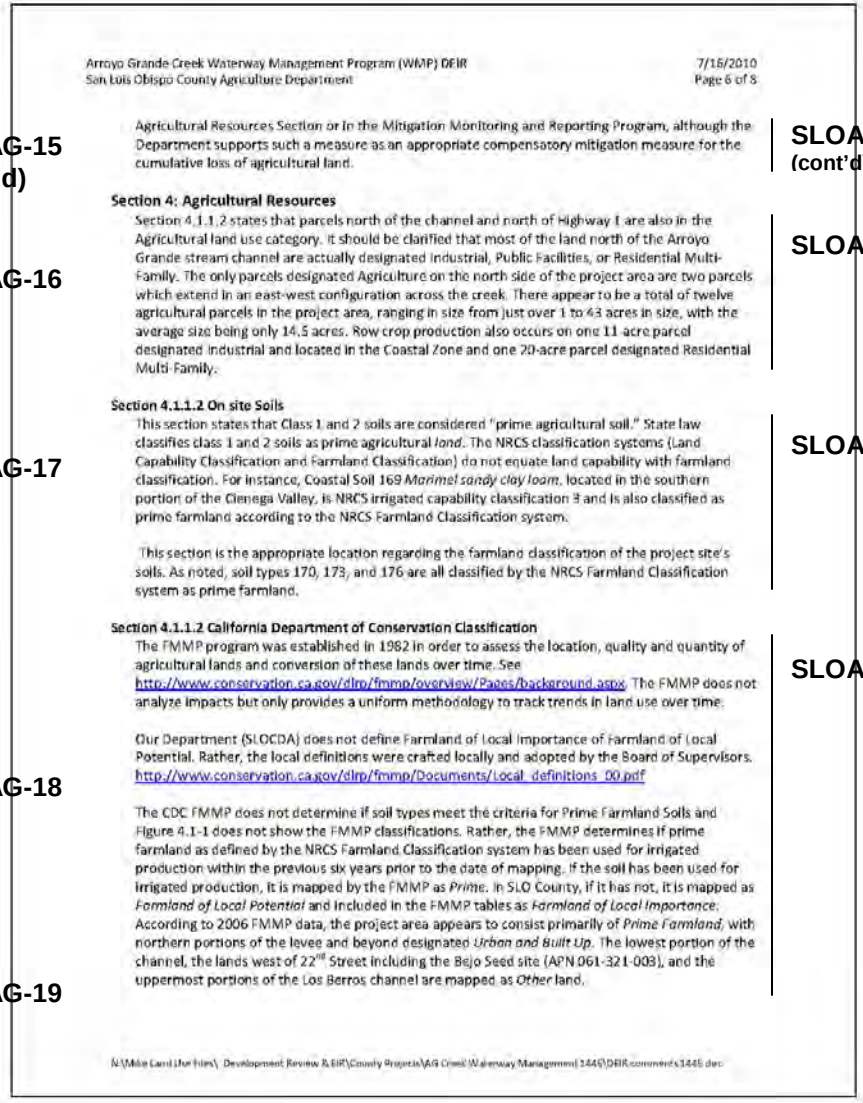
Consistent use of terminology would provide greater clarity regarding farmland soil resources. The DEIR includes the following terms: prime agricultural soils, prime farmland, prime farmland soils, prime land, and prime soils. Some of these are defined and others are not. The USDA NRCS defines prime farmland in the federal register and provides current lists of prime farmland which meet this definition in the online web soil survey, http://websoilsurvey.nrcs.usda.gov/. The state FMMP uses the federal definition but also adds recent land use when generating its biennial maps (see below for details). State law uses the term prime agricultural land in the Coastal Act and Land Conservation Act (Williamson). The soils impacted by the proposed project meet the definitions of both prime farmland and prime agricultural land.

SLOAG-18

Section 3: Consistency with Plans and Policies

Under Agriculture Goal 2 and AGP24 Conversion of Agricultural Land (Page 3-11) the document states "The project applicant will participate in the City of Arroyo Grande agricultural banking program or other similar program approved by the County." This is not identified in either the

SLOAG-19



Agricultural Resources Section or in the Mitigation Monitoring and Reporting Program, although the Department supports such a measure as an appropriate compensatory mitigation measure for the cumulative loss of agricultural land.

SLOAG-19 (cont'd)

Section 4: Agricultural Resources

Section 4.1.1.2 states that parcels north of the channel and north of Highway 1 are also in the Agricultural land use category. It should be clarified that most of the land north of the Arroyo Grande stream channel are actually designated Industrial, Public Facilities, or Residential Multi-Family. The only parcels designated Agriculture on the north side of the project area are two parcels which extend in an east-west configuration across the creek. There appear to be a total of twelve agricultural parcels in the project area, ranging in size from just over 1 to 43 acres in size, with the average size being only 14.5 acres. Row crop production also occurs on one 11 acre parcel designated Industrial and located in the Coastal Zone and one 20-acre parcel designated Residential Multi-Family.

SLOAG-20

Section 4.1.1.2 On site Soils

This section states that Class 1 and 2 soils are considered "prime agricultural soil." State law classifies class 1 and 2 soils as prime agricultural *land*. The NRCS classification systems (Land Capability Classification and Farmland Classification) do not equate land capability with farmland classification. For instance, Coastal Soil 169 *Marimel sandy clay loam*, located in the southern portion of the Cienega Valley, is NRCS irrigated capability classification 3 and is also classified as prime farmland according to the NRCS Farmland Classification system.

This section is the appropriate location regarding the farmland classification of the project site's soils. As noted, soil types 170, 173, and 176 are all classified by the NRCS Farmland Classification system as prime farmland.

SLOAG-21

Section 4.1.1.2 California Department of Conservation Classification

The FMMP program was established in 1982 in order to assess the location, quality and quantity of agricultural lands and conversion of these lands over time. See http://www.conservation.ca.gov/dlrp/fmmp/overview/Pages/background.aspx. The FMMP does not analyze impacts but only provides a uniform methodology to track trends in land use over time.

Our Department (SLOCDA) does not define Farmland of Local Importance of Farmland of Local Potential. Rather, the local definitions were crafted locally and adopted by the Board of Supervisors. http://www.conservation.ca.gov/dlrp/fmmp/Documents/Local_definitions_00.pdf

The CDC FMMP does not determine if soil types meet the criteria for Prime Farmland Soils and Figure 4.1-1 does not show the FMMP classifications. Rather, the FMMP determines if prime farmland as defined by the NRCS Farmland Classification system has been used for irrigated production within the previous six years prior to the date of mapping. If the soil has been used for irrigated production, it is mapped by the FMMP as *Prime*. In SLO County, if it has not, it is mapped as *Farmland of Local Potential* and included in the FMMP tables as *Farmland of Local Importance*. According to 2006 FMMP data, the project area appears to consist primarily of *Prime Farmland*, with northern portions of the levee and beyond designated *Urban and Built Up*. The lowest portion of the channel, the lands west of 22nd Street including the Bejo Seed site (APN 061-321-003), and the uppermost portions of the Los Berros channel are mapped as *Other* land.

SLOAG-22

Agricultural Infrastructure and Production
The second sentence in this section, commencing with "North of Highway 1..." does not make sense as most of the channel is south of Highway 1.

The second paragraph regarding infrastructure should also note the wells, pumps, and utility lines are existing infrastructure improvements. The discussion about the Bejo Seed facility claims it is located east of the railroad bridge. The facility is actually located west of the facility.

Agricultural Water Supply
The final statement in the first paragraph is confusing and unnecessary, but could be replaced with the following: "Irrigation is necessary for the range of crops grown in and near the project area."

4.1.1.3 Williamson Act
This section does not accurately reflect the Land Conservation Act program.

- There are different rules for the creation of an agricultural preserve and for entering into an actual contract. Agricultural preserves can consist of multiple parcels and in the Cienega Valley a preserve could be as small as 20 acres under the County's current rules.
- Each parcel within a preserve, assuming it meets the criteria for prime agricultural land, must be a minimum of 10 acres in size.
- Under a contract, a landowner agrees to keep the property in commercial agricultural use and preclude uses that are non-compatible with the agricultural use. The county agrees to assess the property at its restricted use value, which is based upon the actual use of the property rather than its Proposition 13 value.
- The funding which was removed in last year's state budget and proposed for elimination in the current budget are subvention payments. State subventions do not "fund the Williamson Act" but provide reimbursement to local government for foregone property tax revenue that results from placing land under contract and assessing it based upon the capitalization of income (use) rather than its unrestricted value.

The three parcels under contract would best be described by their inclusion in a figure, possibly by outlining them on Figure 4.1-1. Two of the parcels, a 21 acre parcel and a 42 acre parcel, straddle the Arroyo Grande Creek between Halcyon Road, Highway 1 and Los Berros Creek. The third, an 11.7 acre parcel, is located immediately east of 22nd Street and south of the Arroyo Grande Creek. Only one of the three parcels exceeds 40 acres.

Finally, this section should note that it is state policy to avoid, whenever practicable, the location of any public improvements or the acquisition of land therefore, including easements, within agricultural preserves and more specifically on lands under contract. State code provides specific procedures and findings in order to acquire such land for public use. The State Department of Conservation is to be consulted prior to and independent of the environmental review process, and should also be consulted during the environmental review process regarding potential impacts to lands in preserve or under contract.

4.1.2.1 California Land Conservation Act
The property tax assessment of land under contract is not necessarily lower, but is based upon the use of the land rather than on its unrestricted value under Proposition 13. In some cases the Proposition 13 value is lower. Local governments do not receive a subsidy, but a subvention of funds intended to cover the revenue that is foregone by entering into contracts and reducing the overall property taxes which would otherwise be generated at the local level. It should be noted that

SLOAG-22 (cont'd)

SLOAG-23

SLOAG-24

despite the current elimination of subvention funds in the state budget, contracts between the county and property owners remain in full effect.

SLOAG-24 (cont'd)

4.1.2 Regulatory Setting
There is no note or discussion of the Coastal Act and the county's coastal agricultural policies. Coastal policies are very restrictive related to development on agricultural land especially prime agricultural land. Both soils types 173 and 176 would be considered prime agricultural land under the Coastal Act regardless of current use due to their high Storie Index ratings.

SLOAG-25

4.1.2.2 Local Regulation and Policy
Agriculture and Open Space Element. This section should be renamed the Agriculture Element due to the recent (May 2010) separation of the two documents. However, both the Agriculture Element and the recently update Conservation and Open Space Element provide relevant policy guidance for the proposed project.

SLOAG-26

Response to Letter from County of San Luis Obispo Department of Agriculture/Weights and Measures, dated July 16, 2010

Comment No.	Response
SLOAG-1	The cumulative impacts discussion notes a potentially significant impact to agricultural resources, however it fails to specifically identify the impact. The section has been revised to include AGR Impact 4 which specifically identifies the potential impact. In addition, the mitigation measure which requires the District to offset soil conversion impacts through participation in the City of Arroyo Grande's or a similar banking program in Chapter 3 has been formally recommended as AGR/mm-6. The California Environmental Quality Act defines "cumulative impacts" as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. (a) The individual effects may be changes resulting from a single project or a number of separate projects. (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (State CEQA Guidelines sections 15355) In order to determine if a project's cumulative impacts are significant, an agency must determine if those impacts are "cumulatively considerable", meaning that the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (State CEQA guidelines section 15065 (a) (3)) In the case of this project, the Arroyo Grande Creek Waterway Management Program, the draft EIR determined that the loss of 1.16 acres of prime soils was cumulatively considerable when combined with the loss of prime soils resulting from other small projects in the project vicinity. As a result, mitigation in the form of participation in an existing land preservation program is proposed as part of the project. CEQA provides that "an EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact." (State CEQA Guidelines section 15130 (a) (3)) Although the project's initial contribution to the significant impact was determined to be cumulatively considerable, and therefore significant, the overall effect is less than significant because the proposed mitigation measure will reduce this project's incremental effects to a less than significant level. The residual cumulative effects are considered less than considerable because the project's impacts are offset by the long term preservation of an equal amount of similar land, and because the substantial beneficial effects of the project, that is, the reduction of regular and ever more severe flooding events that are destructive to the productivity of soils in the Cienega Valley, will result in an overall increase in the productivity of area farmland.
SLOAG-2	Comment noted.

Comment No.	Response
SLOAG-3	Changes have been made to Section 4.1.4 so that it is consistent with the threshold of significance language.
SLOAG-4	Comment noted.
SLOAG-5	The analysis attempted to recognize the importance of agricultural access roads. They vary in layout and width throughout the project area, and may be reconfigured as needed by the operators. The analysis attempted a reasonable quantification of impacts in light of these variabilities.
SLOAG-6	There are other issues which might affect stockpile locations, such as APCD requirements which seek to limit construction activity in the vicinity of sensitive receptors, such as residences. However, AGR/mm-2 has been modified to encourage use of public right of ways for construction access and stockpiling, to the extent feasible.
SLOAG-7	Notes have been added to Table 4.1-4 indicating that the acreage noted for Alt 3c is cumulative and not additive to the acreage shown in Alt 3c.
SLOAG-8	The AGR/mm-3 has been modified to include the language requested by the Agricultural Department. With this change, AGR/mm-1 through 3 adequately mitigate potential impacts. The compensation measure is not considered necessary to mitigate the impacts.
SLOAG-9	Comment noted. Subsequent environmental review will be necessary once the design of the UPRR component has been further advanced.
SLOAG-10	AGR/mm1 requires the District to minimize disturbance and avoid areas which could be productive to the maximum extent feasible. This would include stockpile locations. No changes are required.
SLOAG-11	AGR/mm-2 has been modified to include the language provided.
SLOAG-12	AQ/mm-3 has been modified to reflect the Department's concerns.
SLOAG-13	AGR/mm-5 has been modified as recommended by the Department.
SLOAG-14	There are numerous other constraints on the project, including biological resources requirements that must be balanced with the schedules of the operators. Given the likelihood that operators would be in various stages of production, it is not feasible to coordinate entirely with them all and still meet the District's need to initiate project activities in the late summer and early autumn. AGR/mm-5 also requires coordination with local agriculturalists. These two measures adequately address potential impacts.

Comment No.	Response
SLOAG-15	Due to the costs of acquiring easements and the District's significant funding limitations, every effort has been made to limit the size of the easements necessary. As with the loss or prime agricultural land, impacts to the productivity of lands under contract may also be mitigated due to the fact that the project would increase flood protection on those properties, potentially increasing their productivity. No changes to the existing language are necessary.
SLOAG-16	Refer to response SLOAG-1.
SLOAG-17	Refer to response SLOAG-1.
SLOAG-18	The text has been amended to reduce inconsistencies.
SLOAG-19	Refer to response SLOAG-1.
SLOAG-20	Recommended changes would not affect analysis. No changes made.
SLOAG-21	Text amended for clarity as suggested.
SLOAG-22	North of Highway 1, the channel is oriented north-south. As shown in Figure 4-1 and 2-4b, and as visible in aerial photos, row crops exist on both sides of the channel.
SLOAG-23	Text has been amended to clarify the Land Conservation Act (Williamson Act) program. No new figure has been added. It does not appear that further discussion would result in a change to the conclusions.
SLOAG-24	Text has been modified to address the comment.
SLOAG-25	Table 3-2 includes a discussion of the use restrictions placed agricultural resources in the Arroyo Grande and Cienaga Valley by the Coastal Zone Land Use Ordinance.
SLOAG-26	The analysis began well before the separation and prior to adoption of the Conservation Element. No change is warranted.

City of Arroyo Grande
COMMUNITY DEVELOPMENT

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July 16, 2010

Mr. John Farhar, Environmental Resource Specialist
San Luis Obispo County
Department of Public Works
County Government Center, Rm. 200
San Luis Obispo CA 93408-2040

Subject: Draft Environmental Impact Report (Draft EIR) - Arroyo Grande Creek Channel Waterway Management Program; SCH #2009061030

Dear Mr. Farhar:

The City of Arroyo Grande staff respectively submits the following comments regarding the above-referenced Draft EIR. The project evaluated by the EIR is located within District Zone 1/1A along the lower reaches of Arroyo Grande Creek, from near the intersection of Los Berros Creek to the Arroyo Grande lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. The EIR identifies impacts related to selected alternatives (Alternatives 3a and 3c, via a comprehensive set of actions and as funding allows) that were identified in the "Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study" prepared in 2006 by Swanson Hydrology and Geomorphology. The project includes annual management of riparian vegetation; increasing the health and diversity of the riparian corridor; sediment removal and monitoring; and short and long term phasing to raise levees to increase channel capacity.

Implementation of the proposed project would result in potentially significant impacts to biological and agricultural resources. The City supports a project that would fully mitigate identified impacts as analyzed in the EIR and provide enhancement of water quality and sensitive species habitat. The City is particularly concerned with impacts to Agricultural resources. The City would like to further review mitigation that specifies that the loss of prime soils be mitigated by construction limitations and participation in the City's Agricultural banking program, or other similar program as approved by the County. **AGCD-1**

Pursuant to Section 1.3 of the Draft EIR, the City of Arroyo Grande Community Development Department finds that the Draft EIR correctly identifies project impacts and mitigation. City staff supports the classification of these impacts. Further the Staff finds that the project and EIR are consistent with the purposes and intent of the Arroyo Grande Watershed and Creek Memorandum of Understanding. **AGCD-1**

The City appreciates the opportunity to comment on the Draft EIR and would like to continue to be involved in any future project discussion, including those related to work at Los Berros creek, impacts from detailed trucking operations, the Halcyon Road project. **AGCD-1**

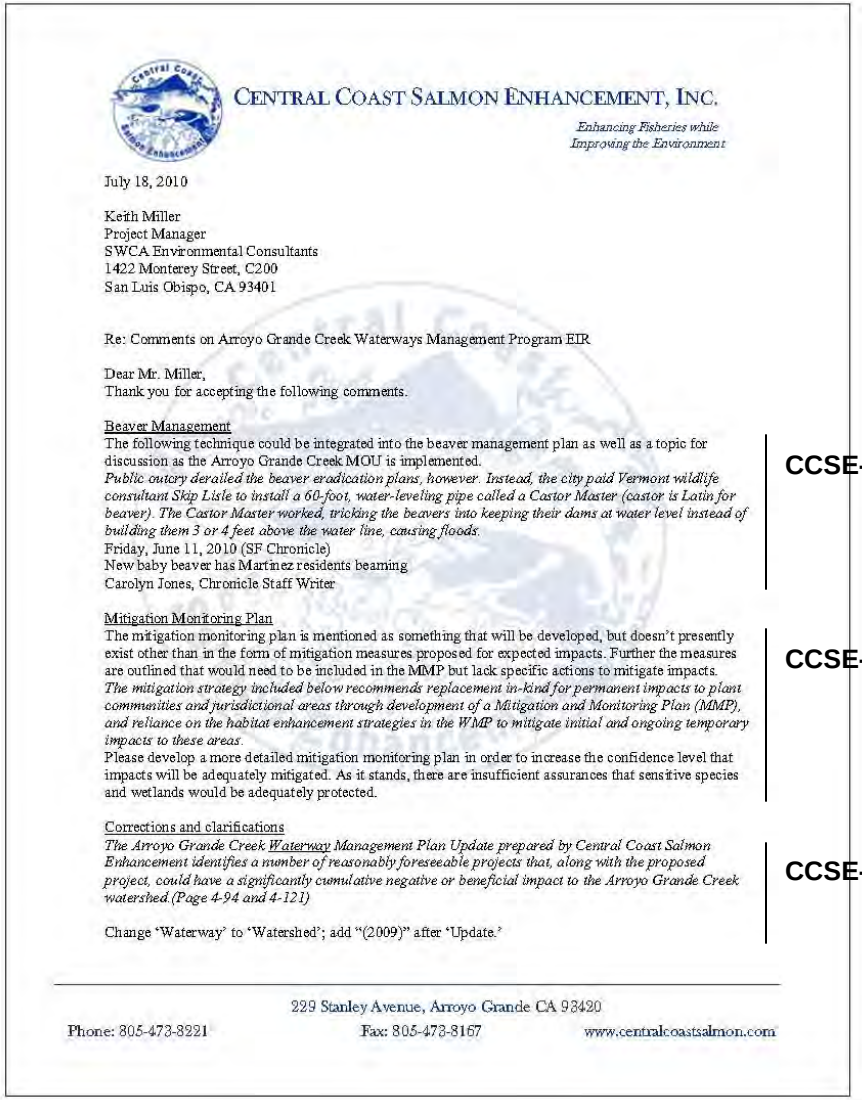
Sincerely,

Teresa McClish, AICP
Community Development Director

cc: City Council
City Manager

Response to Letter from City of Arroyo Grande Community Development, dated July 16, 2010

Comment No.	Response
AGCD-1	AGR/mm-6 has been added to address potential cumulative impacts associated with the loss of agricultural lands. Refer to response SLOAG-1 for more information.
AGCD-2	Comment noted.
AGCD-3	Comment noted.



CENTRAL COAST SALMON ENHANCEMENT, INC.

Enhancing Fisheries while Improving the Environment

July 18, 2010

Keith Miller
Project Manager
SWCA Environmental Consultants
1422 Monterey Street, C200
San Luis Obispo, CA 93401

Re: Comments on Arroyo Grande Creek Waterways Management Program EIR

Dear Mr. Miller,
Thank you for accepting the following comments.

Beaver Management
The following technique could be integrated into the beaver management plan as well as a topic for discussion as the Arroyo Grande Creek MOU is implemented.
Public outcry derailed the beaver eradication plans, however. Instead, the city paid Vermont wildlife consultant Skip Lisle to install a 60-foot, water-leveling pipe called a Castor Master (castor is Latin for beaver). The Castor Master worked, tricking the beavers into keeping their dams at water level instead of building them 3 or 4 feet above the water line, causing floods.
Friday, June 11, 2010 (SF Chronicle)
New baby beaver has Martinez residents beaming
Carolyn Jones, Chronicle Staff Writer

CCSE-1

Mitigation Monitoring Plan
The mitigation monitoring plan is mentioned as something that will be developed, but doesn't presently exist other than in the form of mitigation measures proposed for expected impacts. Further the measures are outlined that would need to be included in the MMP but lack specific actions to mitigate impacts.
The mitigation strategy included below recommends replacement in-kind for permanent impacts to plant communities and jurisdictional areas through development of a Mitigation and Monitoring Plan (MMP), and reliance on the habitat enhancement strategies in the WMP to mitigate initial and ongoing temporary impacts to these areas.
Please develop a more detailed mitigation monitoring plan in order to increase the confidence level that impacts will be adequately mitigated. As it stands, there are insufficient assurances that sensitive species and wetlands would be adequately protected.

CCSE-2

Corrections and clarifications
The Arroyo Grande Creek Waterway Management Plan Update prepared by Central Coast Salmon Enhancement identifies a number of reasonably foreseeable projects that, along with the proposed project, could have a significantly cumulative negative or beneficial impact to the Arroyo Grande Creek watershed (Page 4-94 and 4-121)

Change 'Waterway' to 'Watershed'; add "(2009)" after 'Update.'

CCSE-3

229 Stanley Avenue, Arroyo Grande CA 93420
Phone: 805-473-8221 Fax: 805-473-8167 www.centralcoastsalmon.com

CENTRAL COAST SALMON ENHANCEMENT, INC.

Enhancing Fisheries while Improving the Environment

Page 5-18
Due to the biological resources which exit...
Change 'exit' to 'exist.'

The following suggests that urbanization causes erosion of stream banks and subsequent sedimentation.
The lower watershed, approximately 87 square miles, is heavily urbanized, which has led to increased stormwater runoff, erosion of creek banks, and sedimentation of the creek.
It would be more accurate to depict the role of the dam in providing 'hungry water' which provides the physical context for increased levels energy to erode creek banks.

CCSE-3 (cont'd)

Lagoon
While the lagoon is not in the project area, its location makes it the potential recipient of certain project impacts by virtue of its proximity. I would recommend formulating an adjunct plan to analyze impacts to the lagoon given that impacts to TWG are explored which are most likely to occur in the lagoon.

CCSE-4

Sincerely,

Stephnie Wald
Watershed Projects Manager
Central Coast Salmon Enhancement

229 Stanley Avenue, Arroyo Grande CA 93420
Phone: 805-473-8221 Fax: 805-473-8167 www.centralcoastsalmon.com

Response to Letter from Central Coast Salmon Enhancement, dated July 18, 2010

Comment No.	Response
CCSE-1	Beaver management would potentially include a variety of activities. Management would vary based on the number of animals and their activity level. As noted in the WMP, beaver impacts include not just water impoundment, but their dams can also result in the deposition of sediment and they cut down large trees, possibly creating gaps in the riparian canopy. If eradication is not a favored management method by the District or agencies, the commenter's "Castor Master" alternative may provide some benefit.
CCSE-2	The EIR provides a reasonable worst-case case scenario of potential impacts to biological resources, including jurisdictional areas. It also includes numerous mitigation measures that would reduce these impacts. These measures include a number of actions including implementation of the Performance and Monitoring measures in the WMP, and development of a MMP. Mitigation measure BR/mm-2 requires the MMP be developed prior to implementation of any component of the WMP and prior to permitting. As noted in the EIR the MMP would include riparian habitat enhancement, and may need to occur "offsite" in other areas of the Arroyo Grande Creek watershed. Specific components of the MMP, including the amount of offsite mitigation that is necessary, will be developed through ongoing consultation with regulatory agencies and will be completed prior to permitting. Further, the WMP provides a structure for ensuring that mitigation measures are implemented and monitored. Further development of mitigation measures in the EIR is not warranted.
CCSE-3	Suggested edits have been made. It is true that the dam has also had a significant effect on flow in the channel and along with urban development has likely altered the historical erosion and sedimentation patterns in the channel. This does not affect the WMP nor the analysis, however.
CCSE-4	Based on the analysis in the EIR impacts to tidewater goby would be less than significant with the implementation of mitigation measures. Avoiding disturbance within the lagoon area was an important factor in the development of the WMP. The area downstream of the project area is not as constrained, nor does flooding have the potential to impact health or safety as it does upstream. Still, the WMP does include a measure that would require the District to monitor sedimentation patterns in the lagoon and assess whether changes may be attributable to the proposed project.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
81440-2010-TA-0366

July 19, 2010

John Farhar
Department of Public Works
County of San Luis Obispo
976 Osos Street
San Luis Obispo, California 93408

Subject: Comments on the Draft Environmental Impact Report for the Proposed Arroyo Grande Creek Channel Waterway Management Program, Arroyo Grande, San Luis Obispo County, California

Dear Mr. Farhar,

We are responding to your correspondence, received in our office on June 4, 2010, requesting our comments on the final draft environmental impact report (DEIR) for the subject project. The proposed Arroyo Grande Creek Channel Waterway Management Program (WMP) is a cooperative effort between the community of Arroyo Grande, the Coastal San Luis Resource Conservation District (RCD), and the San Luis Obispo County Flood Control and Water Conservation District (District). The proposed project would be located within the city of Arroyo Grande, San Luis Obispo County, along the lower reaches of Arroyo Grande Creek, near the intersection of Los Berros Creek to the Arroyo Grande Lagoon and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. This area is within the District zones 1 and 1A.

The proposed WMP would include: managing riparian vegetation annually to maintain a composite roughness of 0.040 within the flood control reach, filling existing gaps in the riparian corridor vegetation, and encouraging species diversity by planting riparian tree species; removing sediment to create secondary channels that could be self-maintaining, and annually monitoring to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments; raising the levees throughout the flood control channel to achieve channel capacity for up to 10-year flood flows; and eventually raising the levees throughout the flood control channel to achieve channel capacity for up to 20-year flood flows. The proposed project is scheduled to begin in the fall of 2010 and continue for several years until completion.

TAKE PRIDE IN AMERICA

In response to a request from SWCA consultants on behalf of San Luis Obispo County, we sent a list of federally listed species that may occur in the vicinity of the subject project on November 5, 2009. We also commented on a previous version of the DEIR in a letter that was dated July 1, 2009. Most of our comments have been addressed in the most recent version of the DEIR; however, we have included a few additional comments below.

The DEIR indicates that the sources of information used in developing the biological resources section included a search of rare, sensitive, threatened, and endangered species in the California Natural Diversity Database in 2008; a review of the biotic assessment for the proposed project; the consultant's personal knowledge of the area; and biological reconnaissance surveys of the area conducted in 2008. The DEIR indicates that least Bell's vireos are unlikely to occur within the proposed WMP area and does not include any specific minimization measures for this species. **USFWS-1**

We are concerned about the potential adverse impacts of the proposed project on the federally endangered least Bell's vireo (*Vireo bellii pusillus*). Least Bell's vireos have been expanding their range since the time of listing and are also being found in a wider variety of habitats than were historically documented (Service 2006). Recent sightings of this species have been made within San Luis Obispo County (in Los Osos in fall 2009) and even as far north as San Mateo County earlier this year (as documented on the Northern California Birdbox in May 2010). Also, because this species exhibits strong site tenacity, impacts to the nesting habitat of this species, if present onsite, may result from the vegetation removal activities that are proposed as a part of the subject project. The avoidance and minimization measures in the DEIR, which are proposed for migratory birds should help to reduce potential impacts to the least Bell's vireo. Additionally, we recommend including the least Bell's vireo in pre-construction survey efforts. **USFWS-2**

Lastly, should project implementation result in take of any listed wildlife species, the proposed project would require exemption from the prohibitions against take in section 9 of the Endangered Species Act of 1973, as amended (Act), pursuant to section 10(a)(1)(B) of the Act. If the proposed project is to be funded, authorized, or carried out by a Federal agency, and may affect a listed species, take exemption may be authorized through consultation with the Federal agency pursuant to section 7(a)(2) of the Act. **USFWS-3**

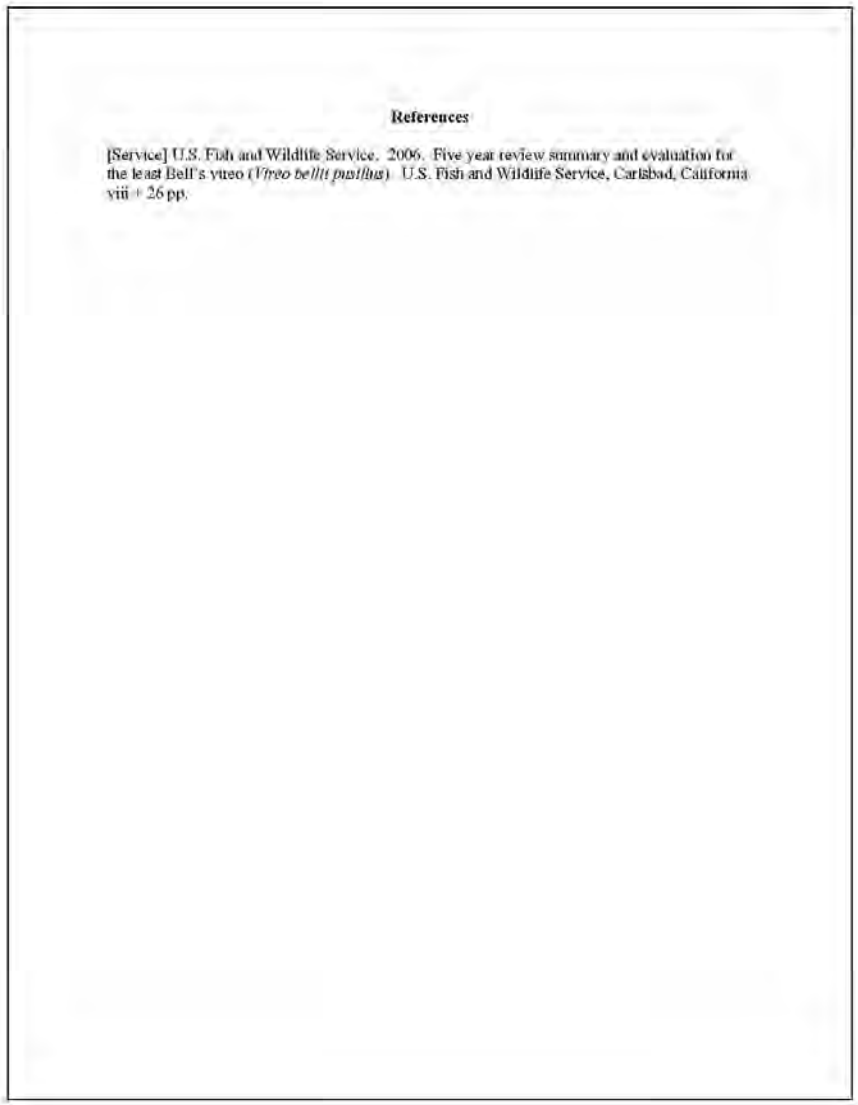
We appreciate the opportunity to provide comments on the proposed project and look forward to working with the County in the future. If you have any questions regarding these comments, please contact Heather Abbey of our staff at (805) 644-1766, extension 290.

Sincerely,

/s/ Chris Dellith

Chris Dellith
Acting Deputy Assistant Field Supervisor

cc:
Bob Stafford, California Department of Fish and Game

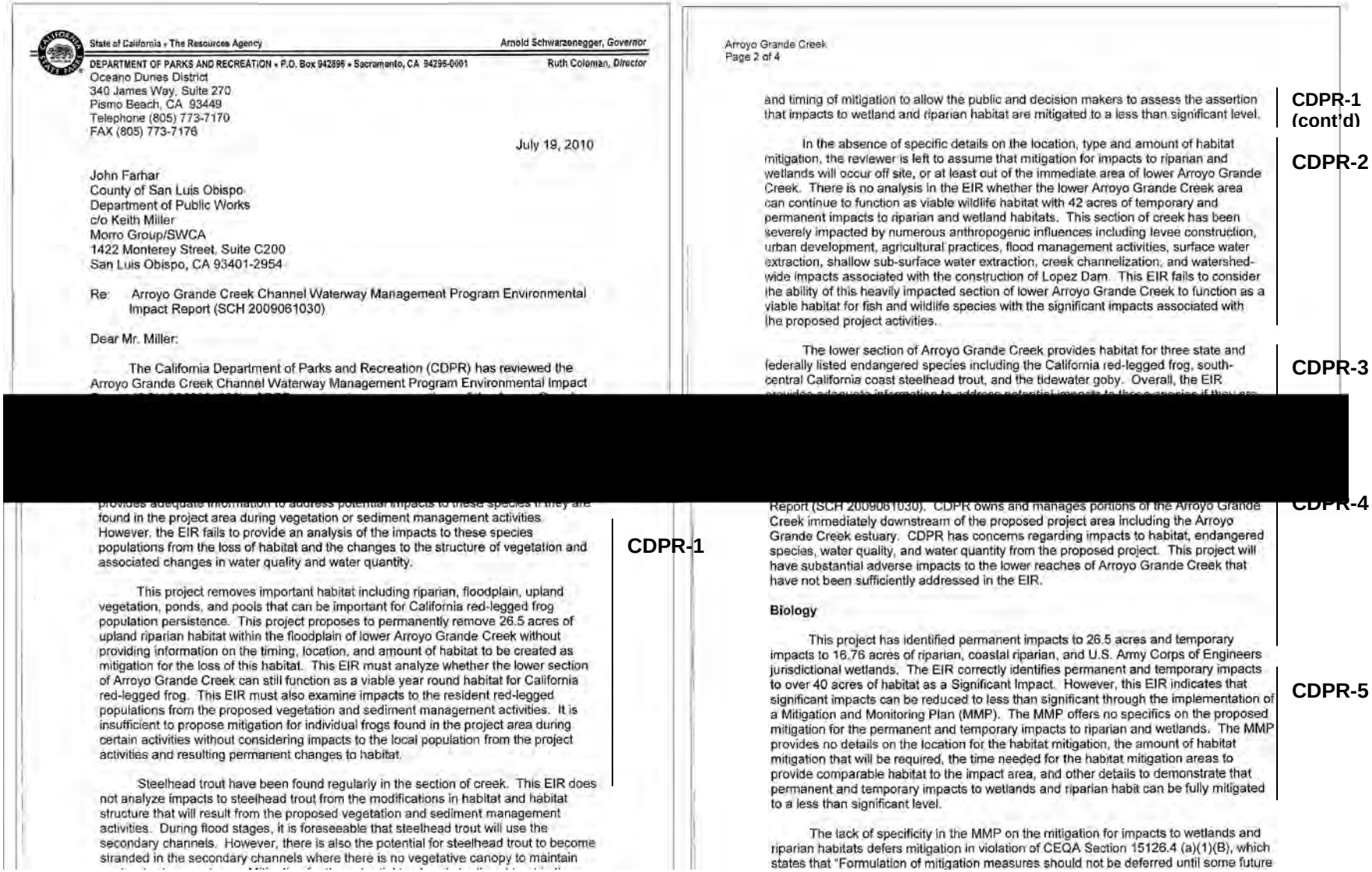


References

[Service] U.S. Fish and Wildlife Service. 2006. Five year review summary and evaluation for the least Bell's vireo (*Vireo bellii pusillus*). U.S. Fish and Wildlife Service, Carlsbad, California viii + 26 pp.

Response to Letter from United States Fish and Wildlife Service, dated July 19, 2010

Comment No.	Response
USFWS-1	The discussion of least Bell's vireo was inaccurate. The Biological Resources existing conditions and regulatory setting sections have been updated with additional information on this species and the southwestern willow flycatcher.
USFWS-2	BR/mm-32 and 33 have been modified to include specific measures that address impacts to least Bell's vireo.
USFWS-3	The District is currently completing a Biological Assessment for federally listed species and will continue consultations with USFWS and other federal agencies to avoid or minimize impacts to these species. It is expected that if take authorization is necessary it will be through Section 7 and Section 401/404 permitting process.



State of California • The Resources Agency — Arnold Schwarzenegger, *Governor*

DEPARTMENT OF PARKS AND RECREATION • P.O. Box 942896 • Sacramento, CA 94296-0001 — Ruth Coleman, *Director*

Oceano Dunes District
340 James Way, Suite 270
Pismo Beach, CA 93449
Telephone (805) 773-7170
FAX (805) 773-7176

July 19, 2010

John Farhar
County of San Luis Obispo
Department of Public Works
c/o Keith Miller
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

Re: Arroyo Grande Creek Channel Waterway Management Program Environmental Impact Report (SCH 2009061030)

Dear Mr. Miller:

The California Department of Parks and Recreation (CDPR) has reviewed the Arroyo Grande Creek Channel Waterway Management Program Environmental Impact

[redacted]

provides adequate information to address potential impacts to these species if they are found in the project area during vegetation or sediment management activities. However, the EIR fails to provide an analysis of the impacts to these species populations from the loss of habitat and the changes to the structure of vegetation and associated changes in water quality and water quantity.

CDPR-1

This project removes important habitat including riparian, floodplain, upland vegetation, ponds, and pools that can be important for California red-legged frog population persistence. This project proposes to permanently remove 26.5 acres of upland riparian habitat within the floodplain of lower Arroyo Grande Creek without providing information on the timing, location, and amount of habitat to be created as mitigation for the loss of this habitat. This EIR must analyze whether the lower section of Arroyo Grande Creek can still function as a viable year round habitat for California red-legged frog. This EIR must also examine impacts to the resident red-legged populations from the proposed vegetation and sediment management activities. It is insufficient to propose mitigation for individual frogs found in the project area during certain activities without considering impacts to the local population from the project activities and resulting permanent changes to habitat.

Steelhead trout have been found regularly in the section of creek. This EIR does not analyze impacts to steelhead trout from the modifications in habitat and habitat structure that will result from the proposed vegetation and sediment management activities. During flood stages, it is foreseeable that steelhead trout will use the secondary channels. However, there is also the potential for steelhead trout to become stranded in the secondary channels where there is no vegetative canopy to maintain

Arroyo Grande Creek
Page 2 of 4

and timing of mitigation to allow the public and decision makers to assess the assertion that impacts to wetland and riparian habitat are mitigated to a less than significant level.

CDPR-1 (cont'd)

In the absence of specific details on the location, type and amount of habitat mitigation, the reviewer is left to assume that mitigation for impacts to riparian and wetlands will occur off site, or at least out of the immediate area of lower Arroyo Grande Creek. There is no analysis in the EIR whether the lower Arroyo Grande Creek area can continue to function as viable wildlife habitat with 42 acres of temporary and permanent impacts to riparian and wetland habitats. This section of creek has been severely impacted by numerous anthropogenic influences including levee construction, urban development, agricultural practices, flood management activities, surface water extraction, shallow sub-surface water extraction, creek channelization, and watershed-wide impacts associated with the construction of Lopez Dam. This EIR fails to consider the ability of this heavily impacted section of lower Arroyo Grande Creek to function as a viable habitat for fish and wildlife species with the significant impacts associated with the proposed project activities.

CDPR-2

The lower section of Arroyo Grande Creek provides habitat for three state and federally listed endangered species including the California red-legged frog, south-central California coast steelhead trout, and the tidewater goby. Overall, the EIR

CDPR-3

Report (SCH 2009061030). CDPR owns and manages portions of the Arroyo Grande Creek immediately downstream of the proposed project area including the Arroyo Grande Creek estuary. CDPR has concerns regarding impacts to habitat, endangered species, water quality, and water quantity from the proposed project. This project will have substantial adverse impacts to the lower reaches of Arroyo Grande Creek that have not been sufficiently addressed in the EIR.

CDPR-4

Biology

This project has identified permanent impacts to 26.5 acres and temporary impacts to 16.76 acres of riparian, coastal riparian, and U.S. Army Corps of Engineers jurisdictional wetlands. The EIR correctly identifies permanent and temporary impacts to over 40 acres of habitat as a Significant Impact. However, this EIR indicates that significant impacts can be reduced to less than significant through the implementation of a Mitigation and Monitoring Plan (MMP). The MMP offers no specifics on the proposed mitigation for the permanent and temporary impacts to riparian and wetlands. The MMP provides no details on the location for the habitat mitigation, the amount of habitat mitigation that will be required, the time needed for the habitat mitigation areas to provide comparable habitat to the impact area, and other details to demonstrate that permanent and temporary impacts to wetlands and riparian habit can be fully mitigated to a less than significant level.

CDPR-5

The lack of specificity in the MMP on the mitigation for impacts to wetlands and riparian habitats defers mitigation in violation of CEQA Section 15126.4 (a)(1)(B), which states that "Formulation of mitigation measures should not be deferred until some future

individuals. Similarly, the EIR does not adequately address impacts to resident steelhead trout populations from the project and resultant permanent alterations to the habitat that supports this species.

CDPR-5 (cont'd)

Tidewater goby are unlikely to be found in the project area because they are typically confined to the tidally influenced areas of the estuary. Since 2004, CDPR has conducted quarterly surveys of the estuary for tidewater goby and has document the tenuous hold this goby population has in the estuary. Tidewater goby were thought to be extirpated from the estuary in 2008 and 2009 because the estuary completely dried up during two consecutive summers. In the spring of 2010, tidewater goby were found in the estuary, but in low numbers. If the estuary dries up in subsequent years, it is likely that goby will again be extirpated from the estuary. This project has the potential to impact tidewater goby populations by altering the hydrology and water quality of the lower section of Arroyo Grande Creek. This EIR fails to analyze whether tidewater goby can persist in the estuary given the changes to water quality and hydrology that will result from the permanent changes to habitat in the lower Arroyo Grande Creek area.

CDPR-6

Water Quality

The EIR does an adequate job of assessing impacts to water quality from

[redacted]

legged frog, tidewater goby, and steelhead habitats; impacts to California red-legged frog, tidewater goby, and steelhead populations; potential changes to water quality; and potential changes to hydrology and water quantity for wildlife. We look forward to reviewing a revised EIR with a more thorough analysis of these and other deficiencies.

Thank you for the opportunity to provide comments on this project. If you have any questions, please contact me at (805) 773-7170, or Ronnie Glick, Senior Environmental Scientist at (805) 773-7180.

CDPR-8

Sincerely,

For Andrew Zilke
District Superintendent

cc:

project area and to better describe potential impacts to downstream habitats and property.

CDPR-8 (cont'd)

Furthermore, with the permanent changes in riparian and floodplain habitat that will result from the vegetation and sediment management activities, it is unclear if the proposed project will impact available water for wildlife during low flow periods of the year. As discussed in the comments on tidewater goby above, CDPR has documented localized extirpation of federally listed species in the Arroyo Grande Creek estuary as a result to consecutive years of extreme low water events. This EIR fails to adequately analyze potential changes to water quantity from the proposed activities. At a minimum, the EIR must demonstrate that the proposed project will not exacerbate the current hydrological conditions that have resulted in severe impacts to downstream wildlife.

CDPR-9

Alternatives Analysis

CDPR favors additional analysis on the Controlled Overflow alternative as this would provide greater protection for sensitive resources and habitats in the project area.

CDPR-10

In summary, CDPR finds that the EIR provides inadequate analysis on impacts

The EIR does an adequate job of assessing impacts to water quality from construction activities, but this EIR fails to assess impacts to water quality from the permanent alterations to existing habitat that will result from the proposed project.

The proposed project will permanently impact habitat in the lower Arroyo Grande Creek area by decreasing canopy cover and altering the structure of the vegetation in the floodplain. This change in canopy cover has the potential to increase water temperature and decrease invertebrate food resources for local wildlife, including red-legged frog, tidewater goby and steelhead trout. This project has the potential to impact water temperature in the main stem and in the secondary channels. The EIR fails to consider changes to water quality that will result from permanent changes to vegetation canopy structure. These changes to water quality can have significant adverse impacts to listed species in this section of Arroyo Grande Creek.

Hydrology and Water Quantity

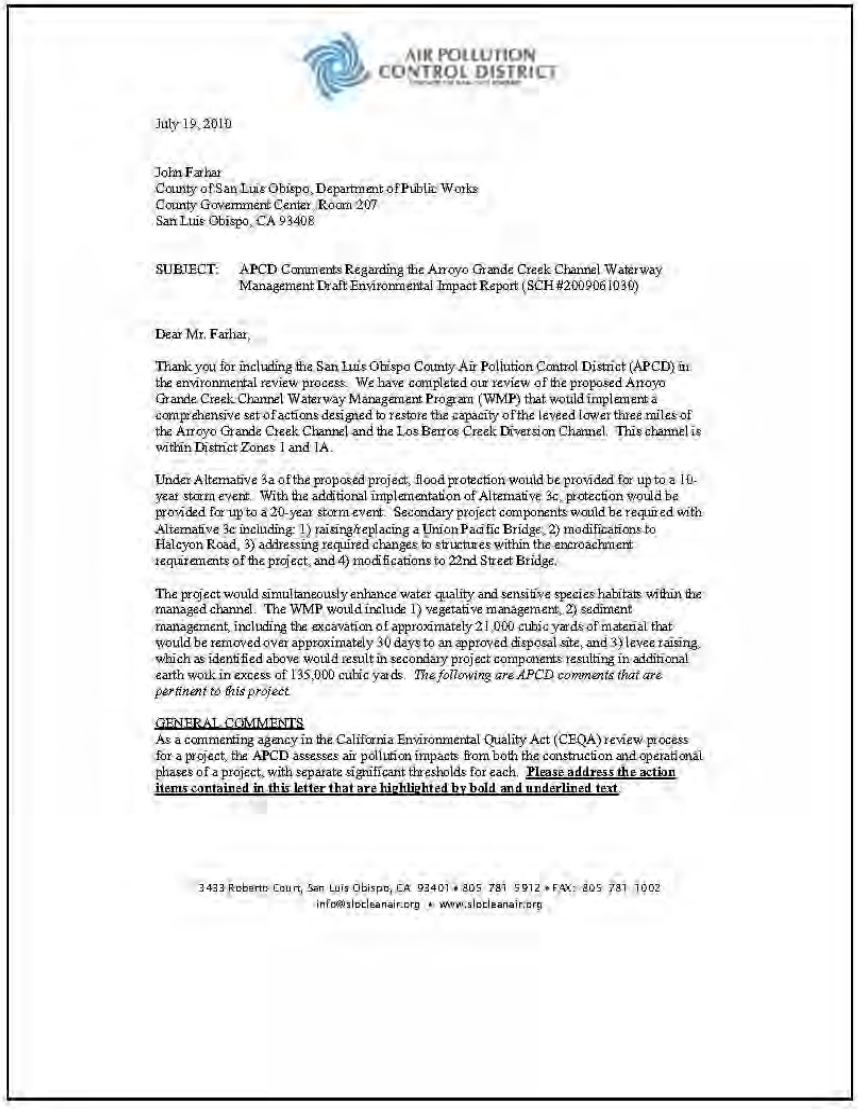
CDPR owns and manages land immediately downstream of the proposed project area. CDPR is concerned that this project will change the hydrology and water quantity available for wildlife on public lands. It is not clear if a hydraulic analysis was conducted to determine how flood waters will impact property downstream of the project area. If there is greater flood capacity in an upstream section, there is the potential for excessive scouring or flooding of downstream properties, especially if the downstream properties are managed for a more natural stream channel. If the proposed project increases flood flows and velocities in the portion of channel managed by State Parks, there could be extreme scouring of sediments and vegetation that could cause

Response to Letter from State of California Department of Parks and Recreation, dated July 19, 2010

Comment No.	Response
CDPR-1	Preparation of the MMP is one component of the mitigation strategy discussed in the EIR. The focus of mitigation efforts was to rely on the performance and monitoring measures in the WMP. These are summarized in Table 3 of the WMP (Appendix B of the Draft EIR). The WMP includes specific habitat enhancement activities need to occur and establishes performance standards so that all agencies and the District can define "success" using the same methods. For example, in regards to canopy coverage, the WMP performance target is to maintain or increase % canopy coverage over baseline conditions. This would be accomplished by retaining the primary channel buffer area, filling in existing gaps in the riparian canopy, and by increasing the numbers of long-lived, full canopy species such as sycamore and cottonwood in the channel. Mon-Veg-2 in the WMP, for example, requires the canopy to be measured every three years to monitor compliance. The commenter is correct in that the MMP, recommended as additional mitigation in the EIR, is not as thoroughly specific in its measures as the WMP. The WMP has been developed in consultation with regulatory agencies including the CDFG, NMFS, and FWS, however additional consultation must still occur prior to permitting and implementation of the WMP. BR/mm-2 does require the MMP to be completed prior to permitting and prior to implementation of the WMP. It also establishes a monitoring period, and notes that offsite mitigation may be necessary. It is unclear at this time how much "in-kind" mitigation may be required for the project. However, the Arroyo Grande Creek *Watershed* Management Plan prepared by Central Coast Salmon Enhancement does indicate that there are a number of locations and projects in the mainstem and tributaries of Arroyo Grande Creek that could enhance and/or restore riparian habitats. In the event that regulatory agencies require in-kind mitigation for the permanent loss of jurisdictional areas, and onsite enhancement activities (which are well-described in the WMP and EIR) are not sufficient, it would be possible for the District to use these projects as "off-site" mitigation.
CDPR-2	The evaluation of impacts is based on existing conditions in the channel. These conditions reflect the anthropogenic changes listed by the commenter. Potential impacts on these existing conditions and mitigation measures to address these impacts are described in the EIR. Cumulative impacts are also considered in the EIR. In addition, a long-term adaptive management strategy is proposed in the WMP which will allow for annual evaluation of the measures implemented.
CDPR-3	Potential short-term and long-term impacts to these species are considered in the EIR. It is important to note that the proposed project includes the removal of vegetation but also includes permanent, long-term habitat enhancement measures, such as the installation of log structures, removal of invasive species and increasing native species diversity within the channel. If during subsequent consultation, resource agencies identify long-term impacts to sensitive species which are not mitigated by these activities, additional "in-kind" mitigation may be required. This would be developed in the MMP, and prior to project development.

Comment No.	Response
CDPR-4	Vegetation management has been ongoing in the channel for many years, including in 2006 and 2007. The proposed project would alter the "structure of the riparian vegetation" as it has in previous years, but would also result in a canopy coverage that is equal or greater to that which currently exists (refer to Performance Targets in Table 3, WMP), would reduce populations of invasive species and increase species diversity within the channel. Potential impacts to sensitive species have been considered, and mitigation has been proposed that would reduce impacts to a less than significant level. For example, the WMP includes a very specific monitoring plan that would evaluate canopy cover and restoration of those areas impacted by invasive species. These characteristics are relevant to red-legged frog and other species. The WMP will be implemented over a long period of time and includes a number of components. Management of vegetation and sediment will undoubtedly need to adapt based on the results of the monitoring recommended in the WMP. In the event that the measures proposed to enhance habitat and avoid impacts to sensitive species are not working, the activities can be modified during the annual consultations the District will have with relevant regulatory agencies.
CDPR-5	Steelhead have been considered throughout development of the WMP. Steelhead currently have access to off-channel areas under baseline conditions and this would not change with the proposed project. The off-channel areas have also been designed with a gradient similar to the main channel and therefore will drain following the peak of the storm event. Under proposed conditions, water will access off-channel areas more frequently than under existing conditions, but would be limited to flows that exceed the 1.5 year discharge. Consequently, on average, flow will only access these off-channel areas once per year during the peak of the storm event. Given the flashy nature of the system, water to be accessing off-channel areas for several hours per year. Further, adult steelhead typically do not migrate during the peak of a storm event, but instead prefer low velocity areas that provide shelter during the storm peak, with migration occurring during the declining limb of the hydrograph. Consequently, it is not expected that these areas would see much use by migrating adults. Under most flow conditions, these off-channel areas will be dry, with flow confined to the existing bankfull channel. The installation of log structures are a specific action included in the WMP to benefit migrating steelhead, as they would create more complex stream conditions. As with the other resources in the channel, steelhead habitat would be monitored over the long-term through the WMP process. PM-Sed 4, 5 and 9 in the WMP specifically address long-term habitat in the channel as it relates to steelhead, through the monitoring of both cover habitat and pool depth. This monitoring builds on work performed by the California Conservation Corps in the 2006.
CDPR-6	The EIR has concluded that changes to water quality would be limited and less than significant. The hydrology of the channel would change only during high flow events, as the channels ability to accommodate higher flows would increase. Tidewater goby has been considered in the EIR, and a sediment monitoring plan has been proposed in the WMP to monitor whether or not the project results in changes to the sediment deposition patterns in the lagoon.
CDPR-7	While the project would result in changes to the structure of the vegetation in the channel, the WMP specifically requires the % of canopy cover within the channel to be maintained or increase. Figure 9 in the WMP illustrates how much of the existing canopy results from vegetation that is located within the buffer area, and would therefore remain in place. In addition, existing gaps in the riparian canopy would be filled through the introduction of alder, cottonwood, and sycamore. Refer to Table 3 of the WMP for more information. Flowing water in off-channel areas is expected only during peak winter flow events. Consequently, any water accessing the off-channel areas is not expected to have an impact on water temperature.

Comment No.	Response
CDPR-8	These concerns were raised during preparation of the initial Alternatives Analysis for the project. In response, Swanson H+G evaluated changes in bed mobility in response to implementation of Alternative 3C (refer to Chapter 4 of the Alternative Analysis prepared by Swanson H+). The results suggest that under low to moderate flow conditions (less than 4,000 cubic feet per second), the bed is less mobile under the proposed project due to lower water surface elevations (shear is a function of depth) associated with an increase in conveyance in off-channel areas. At flows greater than 4,000 cubic feet per second, the results suggest that there would be more flushing of the lagoon as more water is contained within the levee system. Whether or not an increase in scour potential in the lagoon provides a benefit or is detrimental to lagoon function is debatable. Excessive sedimentation of the lagoon, caused by construction of Lopez Dam, has most likely impacted lagoon function by reducing peak flows to the mouth. Sedimentation results in loss of lagoon volume, increased embeddedness of coarse substrate in the lagoon, and an overall loss of habitat. Periodic flushing of fine sediments in the lagoon may potentially improve habitat conditions for both tidewater goby and outmigrating smolts by creating a deeper lagoon with greater habitat complexity.
CDPR-9	The project is not proposing any use of the water. Summer low flows are currently regulated at Lopez Dam and will not be affected by this project. No change to the quantity of water in the system would result from the project.
CDPR-10	The EIR includes a discussion of a reasonable range of alternatives. As discussed in the EIR, the controlled overflow alternative was not favored by NMFS due to its potential to strand migrating steelhead. The alternative would also appear to impact agricultural operations to a greater degree than the proposed project.



AIR POLLUTION CONTROL DISTRICT

July 19, 2010

John Farhar
County of San Luis Obispo, Department of Public Works
County Government Center, Room 207
San Luis Obispo, CA 93408

SUBJECT: APCD Comments Regarding the Arroyo Grande Creek Channel Waterway Management Draft Environmental Impact Report (SCH #2009061030)

Dear Mr. Farhar,

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the proposed Arroyo Grande Creek Channel Waterway Management Program (WMP) that would implement a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of the Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel. This channel is within District Zones 1 and 1A.

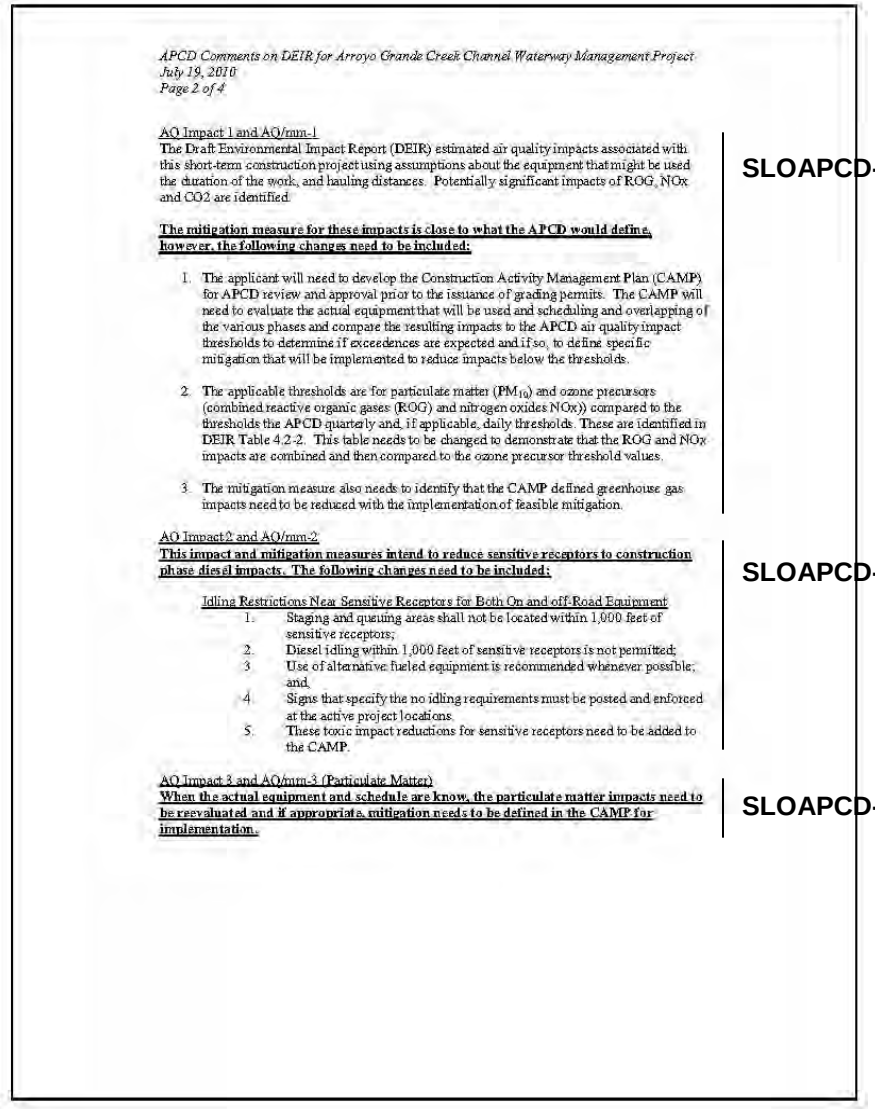
Under Alternative 3a of the proposed project, flood protection would be provided for up to a 10-year storm event. With the additional implementation of Alternative 3c, protection would be provided for up to a 20-year storm event. Secondary project components would be required with Alternative 3c including: 1) raising/replacing a Union Pacific Bridge, 2) modifications to Halcyon Road, 3) addressing required changes to structures within the encroachment requirements of the project, and 4) modifications to 22nd Street Bridge.

The project would simultaneously enhance water quality and sensitive species habitats within the managed channel. The WMP would include 1) vegetative management, 2) sediment management, including the excavation of approximately 21,000 cubic yards of material that would be removed over approximately 30 days to an approved disposal site, and 3) levee raising, which as identified above would result in secondary project components resulting in additional earth work in excess of 135,000 cubic yards. *The following are APCD comments that are pertinent to this project.*

GENERAL COMMENTS

As a commenting agency in the California Environmental Quality Act (CEQA) review process for a project, the APCD assesses air pollution impacts from both the construction and operational phases of a project, with separate significant thresholds for each. **Please address the action items contained in this letter that are highlighted by bold and underlined text.**

3433 Roberto Court, San Luis Obispo, CA 93401 • 805 781 5912 • FAX: 805 781 1002
info@slocleanair.org • www.slocleanair.org



AQ Impact 1 and AQ/mm-1

The Draft Environmental Impact Report (DEIR) estimated air quality impacts associated with this short-term construction project using assumptions about the equipment that might be used the duration of the work, and hauling distances. Potentially significant impacts of ROG, NOx and CO2 are identified.

The mitigation measure for these impacts is close to what the APCD would define, however, the following changes need to be included:

1. The applicant will need to develop the Construction Activity Management Plan (CAMP) for APCD review and approval prior to the issuance of grading permits. The CAMP will need to evaluate the actual equipment that will be used and scheduling and overlapping of the various phases and compare the resulting impacts to the APCD air quality impact thresholds to determine if exceedences are expected and if so, to define specific mitigation that will be implemented to reduce impacts below the thresholds.

2. The applicable thresholds are for particulate matter (PM_{10}) and ozone precursors (combined reactive organic gases (ROG) and nitrogen oxides NOx)) compared to the thresholds the APCD quarterly and, if applicable, daily thresholds. These are identified in DEIR Table 4.2-2. This table needs to be changed to demonstrate that the ROG and NOx impacts are combined and then compared to the ozone precursor threshold values.

3. The mitigation measure also needs to identify that the CAMP defined greenhouse gas impacts need to be reduced with the implementation of feasible mitigation.

SLOAPCD-1

AQ Impact 2 and AQ/mm-2

This impact and mitigation measures intend to reduce sensitive receptors to construction phase diesel impacts. The following changes need to be included:

Idling Restrictions Near Sensitive Receptors for Both On and off-Road Equipment

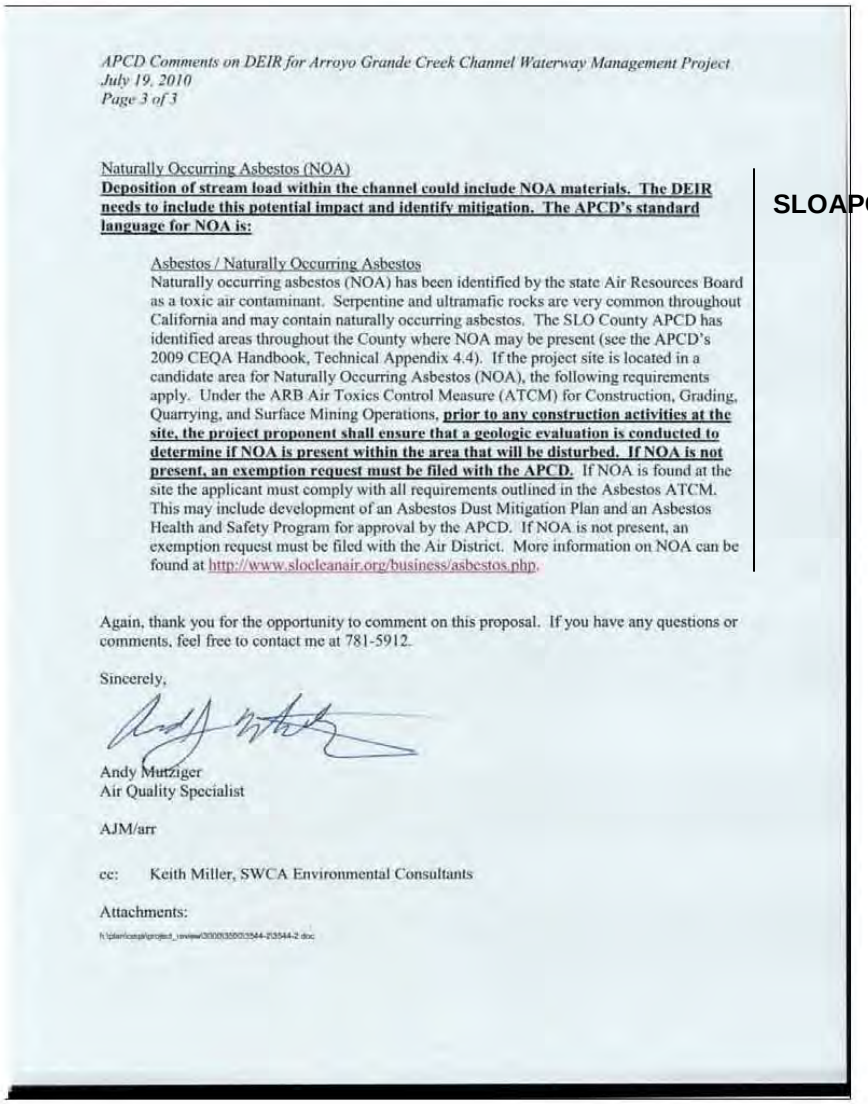
1. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;
2. Diesel idling within 1,000 feet of sensitive receptors is not permitted;
3. Use of alternative fueled equipment is recommended whenever possible; and,
4. Signs that specify the no idling requirements must be posted and enforced at the active project locations.
5. These toxic impact reductions for sensitive receptors need to be added to the CAMP.

SLOAPCD-2

AQ Impact 3 and AQ/mm-3 (Particulate Matter)

When the actual equipment and schedule are know, the particulate matter impacts need to be reevaluated and if appropriate, mitigation needs to be defined in the CAMP for implementation.

SLOAPCD-3



APCD Comments on DEIR for Arroyo Grande Creek Channel Waterway Management Project
July 19, 2010
Page 3 of 3

Naturally Occurring Asbestos (NOA)
Deposition of stream load within the channel could include NOA materials. The DEIR needs to include this potential impact and identify mitigation. The APCD's standard language for NOA is:

SLOAPCD-4

Asbestos / Naturally Occurring Asbestos
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. The SLO County APCD has identified areas throughout the County where NOA may be present (see the APCD's 2009 CEQA Handbook, Technical Appendix 4.4). If the project site is located in a candidate area for Naturally Occurring Asbestos (NOA), the following requirements apply. Under the ARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, **prior to any construction activities at the site, the project proponent shall ensure that a geologic evaluation is conducted to determine if NOA is present within the area that will be disturbed. If NOA is not present, an exemption request must be filed with the APCD.** If NOA is found at the site the applicant must comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the APCD. If NOA is not present, an exemption request must be filed with the Air District. More information on NOA can be found at http://www.slocleanair.org/business/asbestos.php.

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at 781-5912.

Sincerely,

Andy Mutziger
Air Quality Specialist

AJM/arr

cc: Keith Miller, SWCA Environmental Consultants

Attachments:

Response to Letter from County of San Luis Obispo Air Pollution Control District, dated July 19, 2010

Comment No.	Response
SLOAPCD-1	AQ/mm-1 has been amended as requested.
SLOAPCD-2	AQ/mm-2 has been amended as requested.
SLOAPCD-3	AQ/mm-3 has been amended as requested.
SLOAPCD-4	Section 4.2.1.5 indicates that NOA tests were performed in the project area, including the channel, and no NOA was detected. Please refer to Appendix D for more information.

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Appendix A.
Notice of Preparation and Response Letters

SAN LUIS OBISPO COUNTY
DEPARTMENT OF PUBLIC WORKS
County Government Center, Room 207 • San Luis Obispo, CA 93408 • (805)781-5252

Fax (805) 781-1229 *email address: pwd@co.slo.ca.us*

DATE: June 5, 2009

TO: Interested Parties

FROM: County of San Luis Obispo Department of Public Works

SUBJECT: **NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT**

PROJECT TITLE: **Arroyo Grande Creek Channel Waterway Management Program**

PROJECT APPLICANT: **San Luis Obispo County Flood Control and Water Conservation District (District)**

RESPONSES DUE BY: **July 10, 2009**

The County of San Luis Obispo is the lead agency for the full development of the Waterway Management Program (WMP) projects and will prepare an Environmental Impact Report (EIR) for the project described in the attached project description. We would like to know your views as to the scope and content of the environmental information proposed for the WMP and EIR.

PLEASE provide us the following information at your earliest convenience, but not later than the 30-day comment period which will begin with your agency's receipt of the NOP.

1. **NAME OF CONTACT PERSON**. (Address and telephone number)

2. **PERMIT(S) or APPROVAL(S) AUTHORITY**. Please provide a summary description of these and send a copy of the relevant sections of legislation, regulatory guidance, etc.

3. **ENVIRONMENTAL INFORMATION**. What environmental information must be addressed in the EIR to enable your agency to use this documentation as a basis for your permit issuance or approval?

4. **ALTERNATIVES**. What alternatives does your agency recommend be analyzed in equivalent level of detail with those listed below?

5. **RELEVANT INFORMATION**. Please provide references for any available, appropriate documentation you believe may be useful to the county in preparing the EIR.

6. **FURTHER COMMENTS.** Please provide any further comments or information that will help the county to scope the document and determine the appropriate level of environmental assessment.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than **30 days** after receipt of this notice.

The project description, location, and the probable environmental effects are contained in the attached materials and are available online at SLOCountyWater.org.

Please send your response to the attention of Mr. John Farhar, Project Manager, at the following address:

John Farhar
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

We will need the name of a contact person in your agency. If you have any questions regarding the NOP or the proposed project, please contact Ms. Mary Reents at (805) 543-7095, extension 103.

In addition, an EIR scoping meeting will be held on June 25, 2009 at 6:00 pm at the Oceano Community Services District Meeting Room, located at 1655 Front Street, Oceano, San Luis Obispo County, California. The EIR scoping meeting will be open to all interested parties and provide an opportunity for input relating to the scope and content of the EIR.

Reviewed by:

Signature Ellen Carroll

Ellen Carroll
County of San Luis Obispo
Environmental Coordinator

Reference: California Administrative Code, Title 14, Section 15082

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE ARROYO GRANDE CREEK CHANNEL WATERWAY MANAGEMENT PROGRAM

PROJECT DESCRIPTION AND LOCATION

Refer to Attachment A, Project Description.

SCOPE OF THE EIR

The following discussion outlines the issues that will be addressed in the EIR, based on the probable environmental effects associated with the proposed project, as identified by the District. **Please indicate any additions or corrections to the proposed scope of work as part of your response to this Notice of Preparation**. The EIR will address the following project components:

1. *Summary*. The summary section will include a summary of the project alternatives, as well as a summary of impacts and mitigation measures in tabular form.
2. *Project Description*. The project description will include a description of the project site location and a legal description; a detailed description of the actions comprising the long-term vegetation and sediment maintenance proposed; the project objectives and project phasing; and a recent history of flood management within the District.
3. *Environmental Setting*. This will include a discussion of the general setting; a detailed description of flood management facilities; and an analysis of the consistency of the project with applicable County plans and policies that pertain to the project site.
4. *Environmental Impacts and Mitigation Measures.* This will include a discussion of the anticipated significant and potential effects of the proposed project. Mitigation measures will be recommended to reduce potential impacts. This section will also include a description of any impacts that cannot be avoided or reduced to a level of insignificance. The environmental impact topics to be included will be an inclusive list (refer to Attachment B, Initial Study Checklist), as follows:

    - Agricultural Resources
    - Air Quality
    - Biological Resources
    - Cultural Resources
    - Geology and Soils
    - Hazards / Hazardous Materials
    - Flooding / Hydrology / Water Quality
    - Transportation and Traffic

5. *Cumulative Impacts*. This will include the cumulative impacts associated with the proposed project when viewed in connection with the effects of past, current, and probable future projects.
6. *Project Alternatives*. The alternatives section of the EIR will be prepared in accordance Section 15126(d) of the CEQA Guidelines, and will include as required the "No-Project" alternative. The discussion will include reasonable alternatives capable of eliminating or

reducing significant adverse environmental effects. The environmentally superior alternative will be identified, and if it is identified as the "No-Project" alternative then a preferred or environmentally superior alternative among the other alternatives will be included. Secondary impacts of the alternatives will be discussed, but in less detail than the significant effects of the project as per CEQA section 15126(d)(4).

7. *Significant Irreversible Environmental Changes*. This will include irreversible changes associated with the projects.
8. *Growth-inducing Impacts*. This section will analyze the proposed project in terms of its potential to substantially induce growth in the surrounding area.
9. *Impacts Not Found to be Significant*. Impacts that are determined in the analysis not to have significant impacts will be identified and discussed. Based on preliminary review of the proposed projects (refer to Attachment B, Initial Study Checklist), the following resource areas are expected to have less than significant impacts and will not be addressed in individual sections:

- Land Use / Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Visual Resources

ATTACHMENT A

- **Project Description**

ATTACHMENT A
PROJECT DESCRIPTION

PROJECT SUMMARY

The Arroyo Grande Creek Channel Waterway Management Program (WMP, proposed project) is being developed through a cooperative effort between the community, the Coastal San Luis Resource Conservation District (RCD) and the San Luis Obispo County Flood Control and Water Conservation District (District). The project is located along the lower reaches of Arroyo Grande Creek, from near the intersection of Los Berros Creek to the Arroyo Grande lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. This area is within Flood Control District "Zones 1 and 1A" (Zone 1/1A).

The County of San Luis Obispo Public Works Department (County) is developing the WMP and preparing California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation, including an Environmental Impact Report (EIR), to obtain the necessary federal and state permits for implementation. The WMP includes the following components:

1. Manage riparian vegetation annually to maintain a composite roughness of 0.040 within the flood control reach, fill existing gaps in the riparian corridor vegetation and encourage species diversity by planting riparian tree species;

2. Remove sediment to create secondary channels that could be self-maintaining, and monitor annually to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments;

3. Raise levees throughout the flood control channel to achieve channel capacity for up to 10-year flood flows; and

4. Raise levees throughout the flood control channel to achieve channel capacity for up to 20-year flood flows.

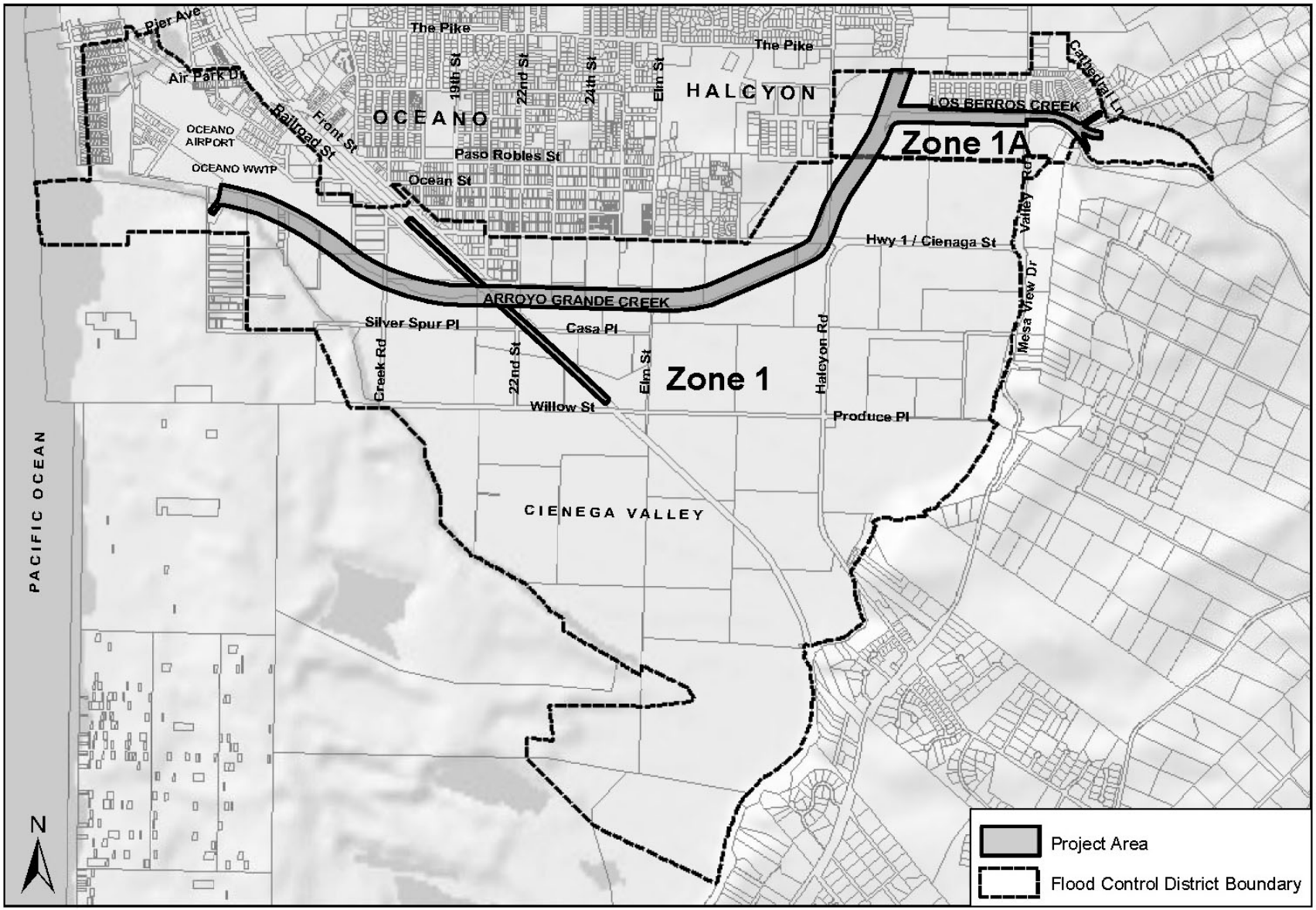
PROJECT LOCATION

The proposed project is located within San Luis Obispo County, California, near the City of Arroyo Grande and the community of Oceano (refer to Figure 1). The project area is located entirely within the unincorporated areas of San Luis Obispo County. The project area is a linear corridor with two segments: (1) beginning on Arroyo Grande Creek 0.14 mile upstream of the confluence of Los Berros Creek and continuing downstream to the upper edge of the Arroyo Grande lagoon at the Pacific Ocean, and (2) beginning at the Century Lane Bridge on Los Berros Creek and continuing downstream to the confluence with Arroyo Grande Creek (refer to Figure 2). This area is within Zone 1/1A. The total length of the flood control channels addressed in the WMP is approximately 3.5 miles.

Source: ESRI Resources Center.

NORTH
Not to Scale

Project Vicinity Map
FIGURE 1



Source: ESRI Resource Center

Project Location Map
FIGURE 2

PROJECT BACKGROUND

The lower Arroyo Grande Valley has a long history of flooding and severe damage to agricultural and residential lands. Levees were built along lower Arroyo Grande Creek, and the lower portion of Los Berros Creek was diverted in 1961 to provide flood control for the adjacent Cienega Valley. Lopez Lake is a water supply reservoir that also provides the added benefit of some flood storage for the uppermost portion of Arroyo Grande Creek.

In February 2005, the Department of Water Resources (DWR) issued a Statement of Necessary Work with the goal of initiating maintenance work on the channel in July 2005. As mandated by State Water Code, the intended Work Plan was the existing plan developed as part of the 1955 Arroyo Grande Creek Flood Control Project which requires maintaining the channel by restoring it to its original 1958 design. Without Water Code provisions to study or implement alternative flood control designs, DWR was faced with a difficult and expensive regulatory permitting process which would likely result in costly mitigation requirements related to habitat loss for federally-listed species. These costs would have been paid locally through a Zone 1/1A property assessment process.

In response to impending assessments estimated by DWR, the Zone 1/1A Advisory Committee comprised of agriculturalists and other local residents and various stakeholders, actively lobbied the County Board of Supervisors to restore funding for a study of flood control alternatives, which had been dropped with the decision to relinquish responsibility to DWR in 2003. In June 2004, the District approved release of funding to Coastal San Luis RCD to conduct the "Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study" (Alternatives Study). It was prepared in 2006 by Swanson Hydrology + Geomorphology. The Alternatives Study focuses in-depth on erosion sources, sedimentation, and hydrology as they relate to recurring flooding in the lower reaches of the creek.

Following completion of the Alternatives Study the Zone 1/1A Advisory Committee selected a preliminary preferred project alternative which was considered feasible within anticipated funding limits. The selected approach was to pursue vegetation and sediment management within the channel, and a phased implementation of Alternative 3a, at a minimum, as funding within the local flood control district became available. Alternative 3a would provide flood protection up to the 10-year return period and would most likely be implemented in several phases. Alternative 3c would also be pursued as funding allows. Alternative 3c includes all elements of Alternative 3a, and additionally raises the levees and Union Pacific Railroad (UPRR) Bridge to provide flood protection up to the 20-year return period.

PROJECT OBJECTIVE

The primary objective of the WMP is to develop a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel to provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel.

PROPOSED PROJECT

The WMP is currently being prepared, and the information below reflects the most recent information available at the time this Notice of Preparation (NOP) was published. The project description may be refined somewhat for use in the CEQA and NEPA analyses; however, no significant changes are anticipated. Implementation of the WMP would include three distinctive components:

1. Vegetation Management
2. Sediment Management
3. Levee Raising (Alternatives 3a and 3c)

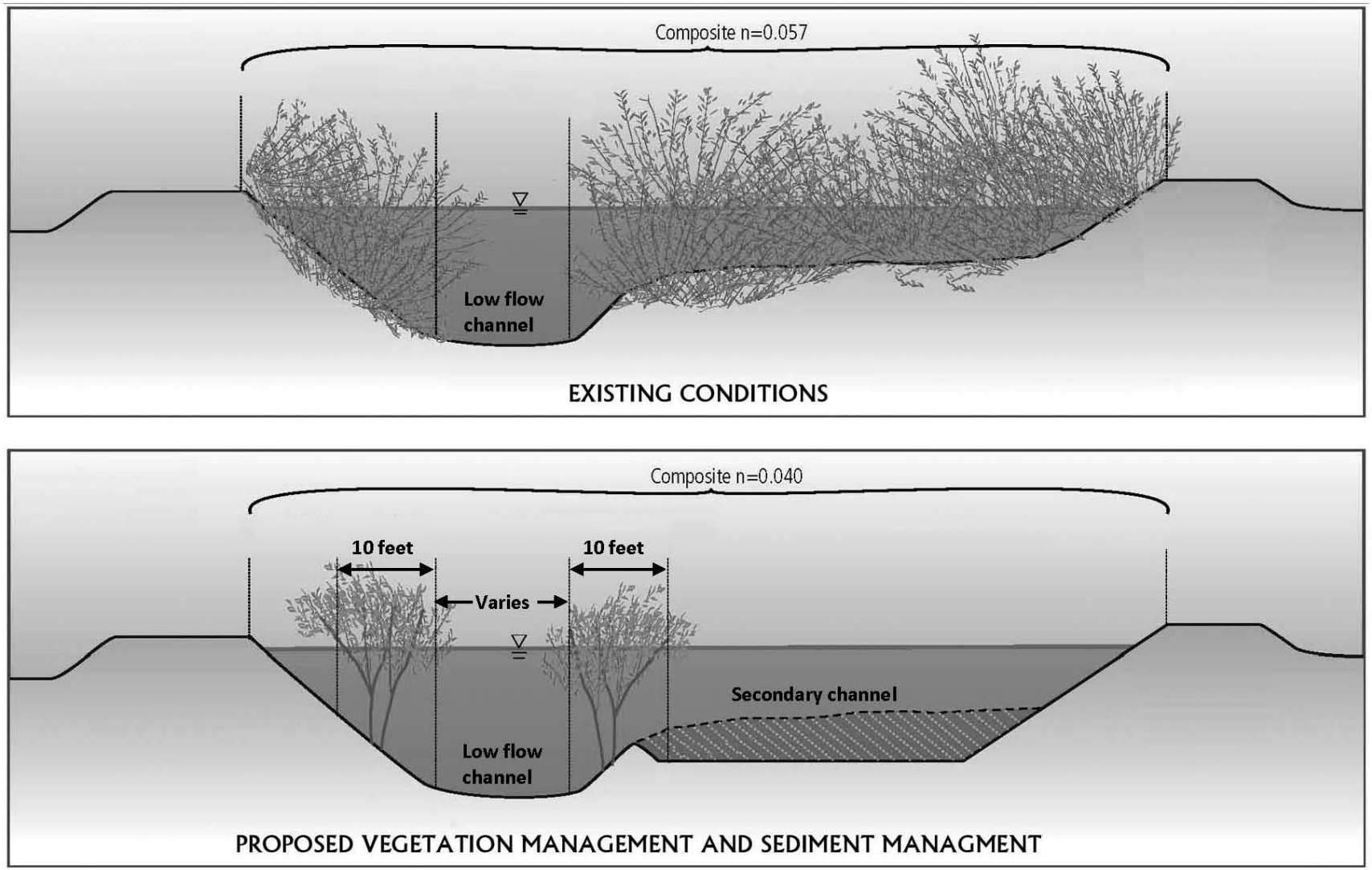
In addition there are a number of known secondary components resulting from implementation of the levee raising components of the project. These include raising of the railroad bridge, raising and/or relocating a portion of Halcyon Road, making improvements to the 22nd Street Bridge, and potentially the relocation of structures located within the Arroyo Grande Channel maintenance easement that encroach on proposed improvements.

A. VEGETATION MANAGEMENT

The vegetation management program would consist of maintaining a 10-foot riparian buffer on both sides of the low-flow channel to provide riparian habitat and streamside cover to protect aquatic habitat. The management would result in an approximate 40-foot riparian corridor, not including canopy width, although this width could vary depending upon the width of the channel and the location of the low-flow channel in relation to the levees. The corridor would also act to maintain a bankfull channel that has developed over the last several years by providing root strength along the low flow channel margins. All vegetation outside of the buffer would be removed completely to allow for high flows to access secondary channels and provide for increased conveyance and flood capacity (refer to Figure 3).

Willows present within the buffer would be limbed up to reduce cross-sectional roughness but still provide adequate stream shading and riparian habitat. Root balls within the riparian buffer would be left intact to encourage spring/summer growth along the bankfull channel edge. Gaps in the riparian buffer would be revegetated with native riparian species including cottonwood, sycamore, and willow. Cottonwood and sycamore would be planted at random along the length of the flood control channel within the buffer to encourage long-term diversity in the riparian canopy.

Vegetation management would be conducted as often as necessary to maintain a roughness coefficient of 0.04 (current roughness is approximately 0.057 on average) through an adaptive management approach that would include reconnaissance surveys and site visits with regulatory agency staff. Based on past experience, vegetation management would be repeated approximately every one to three years, depending on the amount of regrowth. Vegetation management would occur as late as possible in the summer and fall of each year to maximize stream shading during the warmer summer months while avoiding impacts to steelhead. Regrowth of willow is expected in late winter and spring providing low, overhanging vegetation during critical months for steelhead rearing.



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Proposed Vegetation & Sediment Management
FIGURE 3

B. SEDIMENT MANAGEMENT

1. Short Term Removal

The Arroyo Grande Creek flood control channel currently lacks the secondary channels that are found in more natural, low gradient stream environments. Therefore secondary, or overflow channels, would be excavated into areas in the channel that have accumulated excess sediment in bars and terraces resulting in reduced flood capacity (refer to Figure 3). At strategic locations, the excavated secondary channels would be connected with the primary channels to allow for complex flow conditions that would encourage scour and sediment transport, and reduce the need for future sediment removal. No sediment in the primary channel would be excavated.

Large wood structures would be placed at the confluence of each active and secondary channel connection to enhance aquatic habitat. Approximately 35 large wood structures are proposed for the project, to promote pool scour, encourage sediment sorting, and provide deep pools and cover habitat for steelhead and red-legged frog. It is currently estimated that this project component would require the removal of approximately 21,000 cubic yards of sediment from the Arroyo Grande Creek and Los Berros channels. Sediment would be hauled by truck to an approved disposal site. The site had not been identified at the time the NOP was published. Heavy machinery would need to operate in the channel during initial sediment removal and during construction of the log structures.

2. Long-term Sediment Removal

Some maintenance (sediment removal) of the secondary channels would be required over the long-term because of the likelihood that significant quantities of fine material would be deposited in the channels. Annual cross-section monitoring would assess the performance of the channel in moving supplied sediment. Cross-sections would be prepared each year following the rainy season. The hydraulic model would also be rerun annually with updated cross-sections and roughness information to assess channel capacity.

The volume of sediment to be removed would vary from year to year, would be considerably less than the initial removal, and in some years may not be required at all. Maintenance of the secondary channel would consist of removal of excess sediment by an excavator located on the top of the levee, and a long-reach bucket would be used to scoop up sediment from designated areas and deposit it in a dump truck to take the sediment off-site to a County approved disposal area. Heavy machinery would most likely not need to access the channel during the annual sediment removal.

C. LEVEE RAISING

The originally constructed flood control channel was believed to provide flood protection from a 50-year storm, but due to challenges in maintaining the channel, such as inadequate funding and regulatory requirements, and changes in the hydrology of the watershed associated with significant changes in land use, the level of flood protection has been reduced. It is estimated that the channels can currently provide flood protection from only a 4.6 year storm. This means that the channel has the probability to overtop once every 4.6 years.

The proposed project includes raising the levees in two stages along portions of the Los Berros Creek Diversion Channel and along Arroyo Grande Creek Channel from the Los Berros confluence to the lagoon. Levee raising would most likely be conducted in phases as funding is available. The levees would ultimately be raised up to 2.5 feet above the 20-year storm flows (i.e., "freeboard"). Although overtopping of the levees is not desired at all, it is more desirable to overtop to the south where flood waters would inundate agricultural fields, rather than housing, the airport and a wastewater treatment plant, and reduce the risk of loss of life. To that end, the north levee is currently approximately 4-6 inches higher than the south levee, and would remain so as a result of the proposed project.

In general, levee slopes would be constructed at a ratio of 2:1 (horizontal:vertical) on the channel side of the levees and 1.5:1 on the outside of the levees due to the limited levee easement area and number of existing structures encroaching on the levees. Retaining walls may also be necessary in some places to minimize the levee footprint due to the proximity of existing structures to the base of the levee. Retaining walls would not be located within the channel. The levees would maintain a minimum top width of 15 feet. Refer to Figures 4a and 4b for the approximate area of disturbance associated with the proposed project.

1. Short-term Levee Raise (Alternative 3a)

The first phase of the levee raising (Alternative 3a) would raise the levees to an elevation that would, along with the vegetation and sediment management discussed above, provide up to 10-year flood protection with freeboard. This raise would focus on "low spots" along the existing levee. The levees would need to be raised in various locations from approximately six inches to as much as two feet. This component would require approximately 14,350 cubic yards of fill material and would be implemented over a period of one or more years, depending on available funding.

2. Longer-term Levee Raise (Alternative 3c)

The longer term levee raise (Alternative 3c) would achieve 20-year flood protection with up to 2.5-feet of freeboard for those parcels included within the special maintenance assessment district. The average levee raise required to implement this component would be approximately 2.8 feet from existing grade, with a maximum raise necessary in some places of approximately 5 feet. These heights would be reduced accordingly if Alternative 3a is implemented first. It is currently estimated that this component would require a total of approximately 67,000 cubic yards of fill, less if Alternative 3a is implemented first. Refer to Figures 4a and 4b for more information regarding the approximate location and extent of the proposed levee improvements.

3. Secondary Components

In some cases, achieving the goals of levee raise Alternatives 3a (10 year protection) and 3c (20 year protection) would require improvements other than vegetation management, sedimentation management, and the levee raise. These are discussed below.

a. Union Pacific Railroad Bridge Replacement

The existing railroad bridge, located downstream of the 22nd Street bridge, hangs low in elevation in the Creek and creates a hydraulic constriction in levee raise Alternative 3c. The bridge would need to be raised or replaced at a higher elevation (approximately 5 feet) to relieve the constriction. Raising the bridge also necessitates raising the railroad tracks approaching the bridge. The raise of the approaching railroad bed would have to begin approximately 1,700 feet north and 2,400 feet south of the bridge, according to conceptual plans prepared by UPRR in 2006 (refer to Figure 4a). The area of disturbance would be approximately three acres (4,100 feet by 30 feet). So that railroad service is not disrupted, a parallel but temporary track would need to be installed. This track is known as a "shoefly" and would allow for uninterrupted railroad service during the bridge raising. The area of disturbance for the shoefly may be approximately the same as that necessary for the bridge raising and immediately west of the current tracks. It would occur mostly within the existing railroad right-of-way. This component of the project may result in earthwork totaling approximately 135,000 cubic yards (90,000 to construct and remove the shoefly, and 45,000 to construct the permanent raise). These construction improvements may require work within the creek channel.

b. Halcyon Road

Halcyon Road was built at an elevation roughly equal to the top of the bank of Arroyo Grande Creek. North of Highway 1, the northwest levee visually disappears becoming part of Halcyon Road. The levee raise for alternative 3c would encroach into a portion of Halcyon Road north of Highway 1 for approximately 600 feet (refer to Figure 4b). Either the road would need to be shifted to the west, or the ground would need to be elevated to achieve the flood protection goal under levee raise alternative 3c. The road would need to be raised along this length approximately 5.5 feet or flood walls could be installed in the channel to an equivalent height.

The Department of Public Works is currently working on plans to improve the Halcyon Road/Highway 1 intersection, and it is expected that the improvements would be coordinated with the implementation of the WMP to minimize the work required and disturbance of the flood control channel. The Halcyon Road project may result in shifting Halcyon Road to the west, and if this project occurs first, it will provide space for the levee improvements to occur.

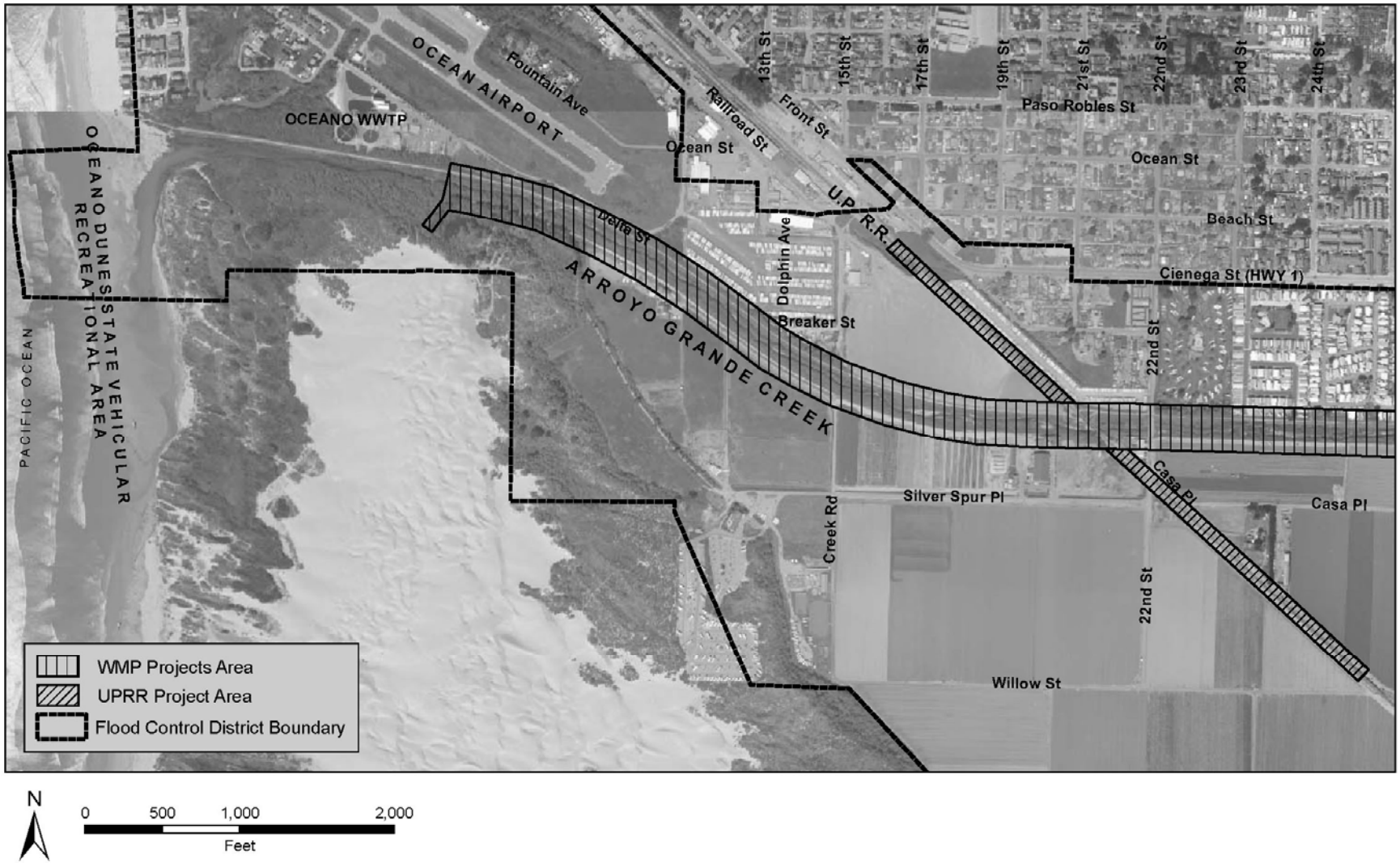
c. Structure Encroachment

There are a number of locations along Arroyo Grande Creek Channel where structures have been constructed within the right-of-way. Many of these structures would be impacted by the construction of Levee Raise Alternative 3a and/or 3c. These structures include water tanks, stalls, a barn, propane tanks, and a mobile home, among others. The degree to which they encroach varies. Some would only be affected by work on alternative 3c, for example. The actual encroachment issues will not be known until the construction plans have been further

refined. It may be possible to design around these structures through the use of retaining walls or other alternate design techniques.

d. 22nd Street Bridge Modification

The 22nd Street Bridge is considered a "perched" bridge. This means that if water is allowed to flow over the bridge it will not continue to flow perpendicular to the bridge deck but would turn and flow parallel, potentially creating flooding to adjacent properties. Alternative 3a would only require the installation of a short length of concrete floodwall along the north side of the upstream levee. As part of alternative 3c, the project would include replacing the open bridge railing with a solid concrete barrier on the upstream side of the bridge. It would also require construction of concrete floodwalls on both the north and south levees, to keep floodwaters in the channel. It should be noted that the 22nd bridge, unlike the railroad bridge does not create a hydraulic constriction.



Project Area
FIGURE 4a

Project Area
FIGURE 4b

ATTACHMENT B

- **Initial Study Checklist**

COUNTY OF SAN LUIS OBISPO
INITIAL STUDY SUMMARY - ENVIRONMENTAL CHECKLIST
(ver 2.1)

Project Title & No. Arroyo Grande Creek Channel Waterway Management Program ED 07-243

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: The proposed project could have a "Potentially Significant Impact" for at least one of the environmental factors checked below. Please refer to the attached pages for discussion on mitigation measures or project revisions to either reduce these impacts to less than significant levels or require further study.

☐ Aesthetics	☒ Geology and Soils	☐ Recreation
☒ Agricultural Resources	☒ Hazards/Hazardous Materials	☒ Transportation/Circulation
☒ Air Quality	☐ Noise	☐ Wastewater
☒ Biological Resources	☐ Population/Housing	☒ Water
☒ Cultural Resources	☐ Public Services/Utilities	☒ Land Use

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation, the Environmental Coordinator 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.

Keith Miller, Morro Group/SWCA — May 26, 2009

Prepared by (Print) — Signature — Date

Ellen Carroll,
Environmental Coordinator

Reviewed by (Print) — Signature — (for) — Date

Project Environmental Analysis

The County's 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 staff's 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. Exhibit A includes the references used, as well as the agencies or groups that were contacted as a part of the Initial Study. The Environmental Division uses the checklist to summarize the results of the research accomplished during the initial environmental review of the project.

Persons, agencies or organizations interested in obtaining more information regarding the environmental review process for a project should contact the County of San Luis Obispo Environmental Division, Rm. 200, County Government Center, San Luis Obispo, CA, 93408-2040 or call (805) 781-5600.

A. PROJECT

DESCRIPTION: See attached.

ASSESSOR PARCEL NUMBER(S): multiple SUPERVISORIAL DISTRICT # 4

B. EXISTING SETTING

PLANNING AREA: South County (Coastal), South County (Inland)

LAND USE CATEGORY: Agriculture

COMBINING DESIGNATION(S): Flood Hazard , Streams Riparian Vegetation , Coastal Appealable Zone

EXISTING USES: Leveed flood control channel

TOPOGRAPHY: Nearly level

VEGETATION: Riparian , ruderal

PARCEL SIZE: Not applicable

SURROUNDING LAND USE CATEGORIES AND USES:

North: Residential Single Family; various residential uses Public Facilities; WWTP, Oceano airport	*East:* Agriculture; intensive agriculture, row crops single family residences
South: Agriculture; intensive agriculture, row crops	*West:* Recreation; Oceano Dunes SRVA

C. ENVIRONMENTAL ANALYSIS

During the Initial Study process, several issues were identified as having potentially significant environmental effects (see following Initial Study). Those potentially significant items associated with the proposed uses can be minimized to less than significant levels.

COUNTY OF SAN LUIS OBISPO
INITIAL STUDY CHECKLIST

1. **AESTHETICS** - ***Will the project:***	**Potentially Significant**	**Impact can & will be mitigated**	**Insignificant Impact**	**Not Applicable**
a) Create an aesthetically incompatible site open to public view?	☐	☐	☒	☐
b) Introduce a use within a scenic view open to public view?	☐	☐	☒	☐
c) Change the visual character of an area?	☐	☐	☒	☐
d) Create glare or night lighting, which may affect surrounding areas?	☐	☐	☒	☐
e) Impact unique geological or physical features?	☐	☐	☒	☐
f) Other:_____	☐	☐	☐	☐

Setting. The project would be visible from Halcyon Road, Los Berros Road, Valley Road, Highway 1 and 22nd Street, among others. Much of the routine vegetation and sediment management maintenance work would occur within the levees and only periodically. Levee construction would be visible from public roads. The proposed improvements would result in a maximum levee raise of approximately 5 feet in some places, although this would not be necessary along the entire levee. The railroad bridge would be raised approximately 5 feet as well.

The proposed project would not result in glare or night lighting, change the visual character of an area, or block any ridgelines or scenic views. The levee raising would occur over an extended period of time and result in levees that are a maximum of approximately five feet higher than they are currently. The raised levees would not be tall enough to block any scenic views or unique visual features. The project is not in the vicinity of unique geologic features.

Impact. No significant visual impacts are expected to occur.

Mitigation/Conclusion. No mitigation measures are necessary.

2. AGRICULTURAL RESOURCES - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Convert prime agricultural land to non-agricultural use?	☒	☐	☐	☐
b) Impair agricultural use of other property or result in conversion to other uses?	☐	☒	☐	☐
c) Conflict with existing zoning or Williamson Act program?	☐	☒	☐	☐
d) Other: _____	☐	☐	☐	☐

Setting. The proposed project is located within the Cienega Valley, a productive agricultural region. Row crops are common in the area, and a wide variety of crops are grown. Significant agricultural improvements have been made as well, including irrigation systems, barns, stalls, and other agricultural accessory structures. In some cases, landowners utilize access points along the levee, facilitating movement of machinery while avoiding public roads. Based on a preliminary evaluation, four large parcels located adjacent to the levee may be under an agricultural land conservation contract.

Impact. Proposed levee improvements, particularly Alternative 3c the long term levee raise, would require disturbance beyond the existing levee footprint. Temporary and permanent easements may be required to accommodate proposed improvements. Construction staging areas may also temporarily reduce the amount of land available for agricultural production. Agricultural structures currently encroach on the levee easement, and in some cases those structures may need to be relocated to facilitate construction of the levee raises.

The proposed project may result in prime soils being converted to a non-agricultural use. Improvements could impair or conflict with the use of existing agricultural improvements. Construction and maintenance activities could conflict with agricultural activities. The proposed project would reduce flooding frequency and intensity, potentially improving agricultural productivity.

Mitigation/Conclusion. The County of San Luis Obispo has not developed any standard mitigation for the permanent loss of prime soils. However, it should be noted that the loss of the soils may result from a project that improves the agricultural viability of the area by decreasing flood risk. This issue would be evaluated in the EIR. Mitigation measures may include minimizing the size of staging and construction areas, preservation/relocation of topsoil, and inclusion of a WMP component that addresses conflicts between construction and maintenance activities, and agricultural activities. It does not appear that the proposed project would conflict with existing Williamson Act contracts, but this issue would be evaluated in the EIR.

3. AIR QUALITY - *Will the project:*		Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a)	***Violate any state or federal ambient air quality standard, or exceed air quality emission thresholds as established by County Air Pollution Control District?***	☐	☒	☐	☐
b)	***Expose any sensitive receptor to substantial air pollutant concentrations?***	☐	☐	☒	☐
c)	***Create or subject individuals to objectionable odors?***	☐	☐	☒	☐
d)	***Be inconsistent with the District's Clean Air Plan?***	☐	☐	☒	☐
e)	***Other:*** _____	☐	☐	☐	☐

Setting. The Air Pollution Control District (APCD) has developed the 2003 CEQA Air Quality Handbook 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 (prepared by APCD).

Impact. As proposed, the project will result in the disturbance along much of approximately 3.5 miles of the existing levee system. The initial sediment removal from the channel would occur in one year and require the "cut" of approximately 22,000 cubic yards of material. Levee improvements 3a and 3c, which would be constructed over multiple years, require approximately 14,350 and 67,000 cubic yards of fill, respectively. These construction activities would result in the creation of construction dust, as well as short- term vehicle construction emissions. Raising the railroad bridge would require approximately 90,000 yards of cut and fill (shoefly construction and removal) and 45,000 cubic yards of fill for the permanent raise of the bridge.

Mitigation/Conclusion. The URBEMIS air emissions modeling program would be used to estimate specific emission production in the EIR. That program would model emissions, including carbon dioxide, a greenhouse gas that may result from construction of the project. Mitigation measures would be developed subsequently and in accordance with the SLOAPCD CEQA Handbook.

4. BIOLOGICAL RESOURCES - *Will the project:*		Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a)	***Result in a loss of unique or special status species or their habitats?***	☐	☒	☐	☐
b)	***Reduce the extent, diversity or quality of native or other important vegetation?***	☐	☒	☐	☐

4. BIOLOGICAL RESOURCES - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
c) Impact wetland or riparian habitat?	☐	☒	☐	☐
d) Introduce barriers to movement of resident or migratory fish or wildlife species, or factors, which could hinder the normal activities of wildlife?	☐	☒	☐	☐
e) Other: _____	☐	☐	☐	☐

Setting. As part of the Analysis prepared for the Alternatives Study prepared by Swanson G+H, a Biotic Assessment was conducted. This assessment habitat mapping within the channel reach identified impacts to sensitive habitats and species. It was used by the CDFG to issue a Streambed Alteration Agreement which expires in 2009. According to a preliminary search of the California Natural Diversity Database (CNDDB, January 2008), a review of the Biotic Assessment, and familiarity with the project area, federally-listed plant and animal species protected under the Federal Endangered Species Act (FESA) have the potential for occurrence in or near the project site and could be affected by the proposed project. These include marsh sandwort (Arenaria paludicola), Gambel's water cress (Nasturtium gambelii), tidewater goby (Eucyclogobius newberryi), south-central California coast steelhead evolutionarily significant unit (ESU) (Oncorhynchus mykiss irideus), and California red-legged frog (Rana aurora draytonii). Several other sensitive species protected under the California Endangered Species Act (CESA) and/or CEQA may also have the potential for occurrence. The proposed project area also includes riparian habitat and wetlands. The mouth of Arroyo Grande Creek includes a lagoon.

The WMP would include measures intended to preserve and improve habitat within the levees. These measures include constructing channels such that they provide shade and pools for fish, providing habitat in the form of log structures, reducing willow growth, and replacing willows with more permanent species such as sycamore and cottonwoods.

Impact. The project site supports significant sensitive native vegetation, significant wildlife habitats, and special status species. Construction of the secondary channel, log structures, and 22nd Street Bridge floodwalls would involve heavy machinery working directly in the channel. Annual sediment management and levee improvements would involve heavy machinery operated from the top of the levee. Vegetation management would be performed by hand, similar to existing practices. Other activities may include temporary diversion and/or dewatering of the creek in some locations to facilitate construction. Impacts to sensitive species and habitats could occur during construction activities.

Mitigation/Conclusion. The WMP is expected to be "self-mitigating". In other words, policies and procedures would be incorporated into the program to mitigate potential significant impacts identified in the EIR to a less than significant level. As such, it would include policies addressing sensitive species, such as performing pre-construction red-legged frog surveys, nesting bird surveys, minimizing activities during the rainy season, and maintaining a 10-foot riparian buffer on either side of the active channel. The WMP would also promote adaptive management of the channel to address changes due to flows, channel morphology, vegetation growth, and agency requirements.

5. CULTURAL RESOURCES - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Disturb pre-historic resources?	☐	☒	☐	☐
b) Disturb historic resources?	☐	☒	☐	☐
c) Disturb paleontological resources?	☐	☐	☒	☐
d) Other:_____	☐	☐	☐	☐

Setting. The project is located in an area historically occupied by the Obispeno Chumash. Historic structures associated with the community of Halcyon are known to exist in the vicinity of the proposed project. Other structures, including the levee and the railroad bridge may also qualify as historic. The proposed project would modify the levees, and in some cases expand their footprint. The channel and adjacent areas are largely previously disturbed due to original levee construction and existing agricultural activities. No paleontological resources are known to exist in the area.

Impact. The project is an area that would be considered culturally sensitive due to its proximity to Arroyo Grande Creek, the Pacific Ocean, and known resources. Construction would occur almost entirely within previously disturbed areas, and therefore impacts may be avoidable.

Mitigation/Conclusion. A cultural resources surface survey and an assessment of potentially historic architectural resources are currently being prepared for the project and their conclusions would be incorporated into the EIR. Mitigation measures would vary considerably depending on the resources discovered. Typical mitigation measures may include pre-construction documentation of historic structures, and monitoring during excavation of native soils. The measures would focus on avoidance of the resources to the extent feasible.

6. GEOLOGY AND SOILS - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Result in exposure to or production of unstable earth conditions, such as landslides, earthquakes, liquefaction, ground failure, land subsidence or other similar hazards?	☐	☒	☐	☐
b) Be within a California Geological Survey "Alquist-Priolo Earthquake Fault Zone"?	☐	☐	☐	☒
c) Result in soil erosion, topographic changes, loss of topsoil or unstable soil conditions from project-related improvements, such as vegetation removal, grading, excavation, or fill?	☐	☒	☐	☐

6. GEOLOGY AND SOILS - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
d) Change rates of soil absorption, or amount or direction of surface runoff?	☐	☒	☐	☐
e) Include structures located on expansive soils?	☐	☒	☐	☐
f) Change the drainage patterns where substantial on- or off-site sedimentation/ erosion or flooding may occur?	☐	☒	☐	☐
g) Involve activities within the 100-year flood zone?	☐	☒	☐	☐
h*) Be inconsistent with the goals and policies of the County's Safety Element relating to Geologic and Seismic Hazards?*	☐	☒	☐	☐
i) Preclude the future extraction of valuable mineral resources?	☐	☐	☐	☒
j) Other:_____	☐	☐	☐	☐

Setting. GEOLOGY - The topography of the project is nearly level. The area proposed for development is outside of the Geologic Study Area designation. A geotechnical evaluation has been prepared by Fugro West for the proposed project. The evaluation considers existing levee stability and the feasibility of the proposed project. It identifies hazards, such as expansive soils and the saturated soils associated with the channel. The evaluation recommends slopes that would remain stable and provided specific measures that should be taken during construction to ensure the long-term competence of the levees. The landslide risk potential is considered negligible. The liquefaction potential during a ground-shaking event is considered high. No active faulting is known to exist on or near the subject property. The project is not within a known area containing serpentine or ultramafic rock or soils.

DRAINAGE – The flood control channel is at the downstream, lower gradient terminus of the Arroyo Grande Creek Watershed and has already received the majority of the runoff from the watershed. Its capacity to accommodate the flows has decreased over time. Drainage patterns beyond the levee would only change in that flooding severity and frequency would be reduced in the Cienaga Valley.

SEDIMENTATION AND EROSION – When highly erosive conditions exist, a sedimentation and erosion control plan is required (LUO Sec. 22.52.090) 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. Projects involving more than one acre, such of disturbance are subject to the preparation of a Storm Water Pollution Prevention Plan (SWPPP), which focuses on controlling storm water runoff. The Regional Water Quality Control Board is the local extension who monitors this program.

Impact. As proposed, the project will result in the disturbance of portions of the north and south levees and the channel, within the lower 3.5 miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion channel. The proposed project is expected to reduce flooding frequency and

severity for properties in Flood Control Zone 1/1A by providing increased capacity within the flood control facility. Construction activities associated with the levee improvements have the potential to result in temporary erosion and sedimentation of the flood control channel. The project would result in a northern levee that is higher than the southern levee. As discussed in the Project Description, the northern levee is currently maintained at a higher elevation so that initially floodwaters would overtop the southern levee prior to the northern one, reducing the potential for floodwaters to impact public facilities and residential structures. This design feature would remain with the proposed project. This built-in preference to overtop the southern levee first may result in greater flood-related disturbance of the southern levee.

Mitigation/Conclusion. A preliminary geotechnical evaluation of the proposed project has been prepared. Based on that report, it appears that the proposed project is feasible and standard engineering and construction methods would be adequate to construct and maintain the levee improvements. There is no evidence that measures above what is identified in the report and those that are already required by ordinance or codes are needed. The conclusions of that report and associated local, state and federal requirements will be summarized in the EIR.

7. HAZARDS & HAZARDOUS MATERIALS - ***Will the project:***	**Potentially Significant**	**Impact can & will be mitigated**	**Insignificant Impact**	**Not Applicable**
a) Result in a risk of explosion or release of hazardous substances (e.g. oil, pesticides, chemicals, radiation) or exposure of people to hazardous substances?	☐	☒	☐	☐
b) Interfere with an emergency response or evacuation plan?	☐	☒	☐	☐
c) Expose people to safety risk associated with airport flight pattern?	☐	☐	☒	☐
d) Increase fire hazard risk or expose people or structures to high fire hazard conditions?	☐	☐	☒	☐
e) Create any other health hazard or potential hazard?	☐	☒	☐	☐
f) Other: _____	☐	☐	☐	☐

Setting. The project is not located in an area of known hazardous material contamination. The project is not within a high severity risk area for fire. The project is within the Airport Review area for the Oceano Airport. A Phase I Environmental Site Assessment (ESA) is currently being prepared for the proposed project. This assessment would identify potentially hazardous materials that may be located in the projects area of disturbance.

Impact. The project does not propose the use of hazardous materials. The project does not present a significant fire safety risk. The project is not expected to conflict with any regional evacuation plan. The project would require disturbance of the existing railroad grade. Railroad right-of-ways may have elevated levels of heavy metals and/ or other contaminates, which could become airborne during

construction.

The proposed project would reduce flooding frequency and severity, and as a result would also reduce the possibility that flood waters could transport hazardous substances which could affect residents or property. Due to the southern levee being 4 to 6 inches lower than the northern one, areas south of the channel are currently more likely to flood than areas to the north. This situation would remain under the proposed project. This is discussed in the Geology and Soils section.

Mitigation/Conclusion. Mitigation to address possible railroad contamination would require site specific testing prior to construction. Depending on the level of contamination, specific handling of the soil may be required. The EIR will summarize the results of the ESA.

8. NOISE - ***Will the project:***	**Potentially Significant**	**Impact can & will be mitigated**	**Insignificant Impact**	**Not Applicable**
a) Expose people to noise levels that exceed the County Noise Element thresholds?	☐	☐	☒	☐
b) Generate increases in the ambient noise levels for adjoining areas?	☐	☐	☒	☐
c) Expose people to severe noise or vibration?	☐	☐	☒	☐
d) Other: _____	☐	☐	☐	☐

Setting. The project is not within close proximity of loud noise sources. 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 levee improvements may require construction in close proximity to residences. The preliminary sediment removal would require significant truck activity in proximity to residences.

Impact. The project is not expected to generate loud noises for extended periods. Construction would be limited to daytime hours, as required by local ordinance.

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

9. POPULATION/HOUSING - ***Will the project:***	**Potentially Significant**	**Impact can & will be mitigated**	**Insignificant Impact**	**Not Applicable**
a) Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	☒	☐

9. POPULATION/HOUSING - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
b) Displace existing housing or people, requiring construction of replacement housing elsewhere?	☐	☐	☒	☐
c) Create the need for substantial new housing in the area?	☐	☐	☒	☐
d) Use substantial amount of fuel or energy?	☐	☐	☒	☐
e) Other: _____	☐	☐	☐	☐

Setting. The proposed project include construction of levee improvements, sedimentation and vegetation management.

Impact. The project will not result in a need for a significant amount of new housing, and will not displace existing housing.

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

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10. PUBLIC SERVICES/UTILITIES - *Will the project have an effect upon, or result in the need for new or altered public services in any of the following areas:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Fire protection?	☐	☐	☒	☐
b) Police protection (e.g., Sheriff, CHP)?	☐	☐	☒	☐
c) Schools?	☐	☐	☒	☐
d) Roads?	☐	☐	☒	☐
e) Solid Wastes?	☐	☐	☒	☐
f) Other public facilities?	☐	☐	☒	☐
g) Other: _____	☐	☐	☐	☐

Setting. The project area is served by the County Sheriff's Department and CDF/County Fire as the primary emergency responders.

Impact. No significant project-specific impacts to utilities or public services were identified.

Mitigation/Conclusion. No impacts would result and no mitigation measures are required.

11. RECREATION - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Increase the use or demand for parks or other recreation opportunities?	☐	☐	☒	☐
b) Affect the access to trails, parks or other recreation opportunities?	☐	☐	☒	☐
c) Other _____	☐	☐	☐	☐

Setting. The County Trails Plan does not show that a potential trail goes through the proposed project. The levees are located on private property and are not considered a recreational facility, but they are used by some residents for horseback riding and walking as they provide an off-road connection between the Cienega Valley and the Pacific Ocean.

Impact. The existing recreational use, while not encouraged or allowed by the County of San Luis Obispo, would most likely remain due to the infeasibility of monitoring use of the levee by local residents.

The proposed project will not create a significant need for additional park or recreational resources.

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

12. TRANSPORTATION/ CIRCULATION - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Increase vehicle trips to local or areawide circulation system?	☐	☒	☐	☐
b) Reduce existing "Levels of Service" on public roadway(s)?	☐	☐	☒	☐
c) Create unsafe conditions on public roadways (e.g., limited access, design features, sight distance, slow vehicles)?	☐	☒	☐	☐
d) Provide for adequate emergency access?	☐	☐	☒	☐
e) Result in inadequate parking capacity?	☐	☐	☒	☐
f) Result in inadequate internal traffic circulation?	☐	☐	☒	☐

12. TRANSPORTATION/ CIRCULATION - *Will the project:*		Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
g)	***Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., pedestrian access, bus turnouts, bicycle racks, etc.)?***	☐	☐	☒	☐
h)	***Result in a change in air traffic patterns that may result in substantial safety risks?***	☐	☐	☒	☐
i)	***Other:*** _____	☐	☐	☐	☐

Setting. Future development will access onto the following public road(s): Highway 1, Halcyon Road, Los Berros Road, 22nd Street, and Valley Road. The identified roadways are operating at acceptable levels. The proposed project would occur in the same location as the proposed Halcyon Road improvements.

Impact. The proposed project would generate significant construction-related traffic during the initial sediment removal and during levee improvements. Specific daily truck trips which may be generated by the project are unknown at this time. Large trucks pulling out onto public roads could affect local traffic safety. The levee improvements would require moving Halcyon Road. This may conflict with other plans to improve the Halcyon Road and Highway 1 intersection.

Mitigation/Conclusion. It appears that a construction traffic management plan may be necessary to address construction traffic during high activity periods. The EIR will evaluate the potential of the proposed project to conflict with the proposed Halcyon Road/Highway1 intersection improvements

13. WASTEWATER - *Will the project:*		Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a)	***Violate waste discharge requirements or Central Coast Basin Plan criteria for wastewater systems?***	☐	☐	☒	☐
b)	***Change the quality of surface or ground water (e.g., nitrogen-loading, daylighting)?***	☐	☐	☒	☐
c)	***Adversely affect community wastewater service provider?***	☐	☐	☒	☐
d)	***Other:*** _____	☐	☐	☐	☐

Setting. The proposed project would not generate wastewater.

Impact. No impacts would result of the project.

Mitigation/Conclusion. No mitigation measures are necessary.

14. **WATER** - ***Will the project:***	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Violate any water quality standards?	☐	☒	☐	☐
b) Discharge into surface waters or otherwise alter surface water quality (e.g., turbidity, temperature, dissolved oxygen, etc.)?	☐	☒	☐	☐
c) Change the quality of groundwater (e.g., saltwater intrusion, nitrogen-loading, etc.)?	☐	☐	☒	☐
d) Change the quantity or movement of available surface or ground water?	☐	☐	☒	☐
e) Adversely affect community water service provider?	☐	☐	☒	☐
f) Other: _____	☐	☐	☐	☐

Setting. The proposed project would only require water for dust control during construction activities. This would be trucked in or potentially come from neighboring wells.

Projects involving more than one acre of disturbance are subject to preparation of a Storm Water Pollution Prevention Plan (SWPPP) to minimize on-site sedimentation and erosion.

Impact. Regarding surface water quality, as proposed, the project will result in the disturbance of large sections of the Arroyo Grande Creek Channel and Los Berros Creek Diversion Channel levee system. These activities have the potential to introduce additional sediment to the channel. Construction may also require channel dewatering or diversion in some cases. Implementation of the full WMP would result in a channel and levee system capable of accommodating up to a 20-year flood. It would reduce the frequency and intensity of flooding events in the Cienega valley. It is unclear at this time how this may affect local groundwater conditions.

Mitigation/Conclusion. The WMP would include BMPs to address stormwater quality during construction. The project would require a SWPPP. The Biological Resources section and Geology and Soils section would also include measures intended to reduce water quality impacts as they relate to construction and biological resources. Standard drainage and erosion control measures will be required for the proposed project and will provide sufficient measures to adequately protect surface water quality.

15. LAND USE - *Will the project:*	Inconsistent	Potentially Inconsistent	Consistent	Not Applicable
a) Be potentially inconsistent with land use, policy/regulation (e.g., general plan [county land use element and ordinance], local coastal plan, specific plan, Clean Air Plan, etc.) adopted to avoid or mitigate for environmental effects?	☐	☒	☐	☐
b) Be potentially inconsistent with any habitat or community conservation plan?	☐	☐	☒	☐
c) Be potentially inconsistent with adopted agency environmental plans or policies with jurisdiction over the project?	☐	☐	☒	☐
d) Be potentially incompatible with surrounding land uses?	☐	☐	☒	☐
e) Other: _____	☐	☐	☐	☐

Setting/Impact. Surrounding uses are identified on Page 2 of the Initial Study. The proposed project will be 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, etc.). The NOP will be sent to outside agencies to review for policy consistencies (e.g., CDF for Fire Code, APCD for Clean Air Plan, etc.).

Mitigation/Conclusion. Land use inconsistencies would be discussed in the applicable section of the EIR, and/or in the Environmental Setting section.

16. MANDATORY FINDINGS OF SIGNIFICANCE - *Will the project:*	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) Have the potential to 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☒	☐	☐
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

For further information on CEQA or the county's environmental review process, please visit the County's web site at "www.sloplanning.org" under "Environmental Review", 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.

Exhibit A - Initial Study References and Agency Contacts

The County Planning or Environmental Division have contacted various agencies for their comments on the proposed project. With respect to the subject application, the following have been contacted (marked with an ☒) and when a response was made, it is either attached or in the application file:

Contacted	Agency	Response
☐	County Public Works Department	**Project proponent**
☒	County Environmental Health Division	**Will receive NOP**
☒	County Agricultural Commissioner's Office	**Will receive NOP**
☒	County Airport Manager	**Will receive NOP**
☒	Airport Land Use Commission	**Will receive NOP**
☒	Air Pollution Control District	**Will receive NOP**
☒	County Sheriff's Department	**Will receive NOP**
☒	Regional Water Quality Control Board	**Will receive NOP - has expressed concerns over alternatives in the past**
☒	CA Coastal Commission	**Will receive NOP**
☒	CA Department of Fish and Game	**Will receive NOP**
☒	CA Department of Forestry	**Will receive NOP**
☒	CA Department of Transportation	**Will receive NOP**
☒	OceanoCommunity Service District	**Will receive NOP**
☒	Other Army Corp of Engineers	**Will receive NOP**
☒	Other USFWS	**Will receive NOP**

*** "No comment" or "No concerns"-type responses are usually not attached*

The following checked ("☒") reference materials have been used in the environmental review for the proposed project and are hereby incorporated by reference into the Initial Study. The following information is available at the County Planning and Building Department.

☐ Project File for the Subject Application

County documents

☐ Airport Land Use Plans
☐ Annual Resource Summary Report
☒ Building and Construction Ordinance
☐ Coastal Policies
☒ Framework for Planning (Coastal & Inland)
☒ General Plan (Inland & Coastal), including all maps & elements; more pertinent elements considered include:
  - ☒ Agriculture & Open Space Element
  - ☐ Energy Element
  - ☐ Environment Plan (Conservation, Historic and Esthetic Elements)
  - ☐ Housing Element
  - ☒ Noise Element
  - ☒ Parks & Recreation Element
  - ☒ Safety Element

☒ Land Use Ordinance
☐ Real Property Division Ordinance
☐ Trails Plan

Other documents

☐ Archaeological Resources Map
☐ Area of Critical Concerns Map
☒ Areas of Special Biological Importance Map
☒ California Natural Species Diversity Database
☒ Clean Air Plan
☒ Fire Hazard Severity Map
☒ Flood Hazard Maps
☒ Natural Resources Conservation Service Soil Survey for SLO County
☐ Regional Transportation Plan
☐ Uniform Fire Code
☒ Water Quality Control Plan (Central Coast Basin – Region 3)
☒ GIS mapping layers (e.g., habitat, streams, contours, etc.)

In addition, the following project specific information and/or reference materials have been considered as a part of the Initial Study:

Fugro West, Inc. *Preliminary Geotechnical Report Arroyo Grande Creek*, April 22, 2009.

Morro Group, *Halcyon Road Master Environmental Impact Report*, 2007.

Swanson H+G, *Arroyo Grande Creek Erosion, Sedimentation, and Flooding Alternatives Study*, 2006.

Swanson H+G, *Tech Memos prepared for the Department of Public Works (various)*, 2007-2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
81440-2009-FA-0100

JUL 2 2009

July 1, 2009

John Farhar
Department of Public Works
County of San Luis Obispo
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, California 93401-2954

Subject: Comments on the Draft Environmental Impact Report for the Proposed Arroyo Grande Creek Channel Waterway Management Program, Arroyo Grande, San Luis Obispo County, California

Dear Mr. Farhar,

We are responding to your request, dated June 5, 2009, and received in our office on June 8, 2009, for comments on the draft environmental impact report (DEIR) for the subject project. The proposed project is a cooperative effort between the community of Arroyo Grande, the Coastal San Luis Resource Conservation District (RCD), and the San Luis Obispo County Flood Control and Water Conservation District (District). The proposed project is located within city of Arroyo Grande, San Luis Obispo County, along the lower reaches of Arroyo Grande Creek, near the intersection of Los Berros Creek to the Arroyo Grande Lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. This area is within the District zones 1 and 1A. The proposed Arroyo Grande Creek Channel Waterway Management Program (WMP) includes management of the riparian vegetation annually to maintain a composite roughness (determined from the values of the factors that affect the roughness of channels and flood plains; in densely vegetated flood plains, the major roughness is caused by trees, vines, and brush) of 0.040 within the flood control reach; filling existing gaps in the riparian corridor vegetation; encouraging species diversity by planting riparian tree species; removing sediment to create secondary channels that could be self-maintaining; monitoring the area annually to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments; raising the levees throughout the flood control channel to achieve channel capacity for up to 10-year flow events; and eventually raising the levees throughout the flood control channel to achieve channel capacity for up to 20-year flow events. Additionally, there are some secondary components of the proposed project that would be required in order to accomplish raising the levees to the 10- and 20-year flow events, including replacing the Union Pacific Railroad Bridge, elevation of or relocation of Halcyon Road for 600 feet of the road, which adjoins Arroyo Grande Creek, potential movement of several small structures located in

the right-of-way along the Arroyo Grande Creek Channel, and the modification of the 22nd Street Bridge. The total length of the flood control channels addressed in the WMP is approximately 3.5 miles.

Specifically, the vegetation management program would consist of maintaining a 10-foot riparian buffer on either side of the low-flow channel. All vegetation directly outside of the buffer area would be removed completely. Willows (*Salix* spp.) present within the buffer zone would be limbed to reduce the cross-sectional roughness and gaps within the buffer zone would be revegetated with native vegetation including cottonwood (*Populus* spp.), sycamore (*Platanus racemosa* spp.), and willow. The sediment management consists of excavating some secondary channels along the Arroyo Grande Creek, to provide an area for overflow. No sediment in the primary channel would be excavated. Approximately 21,000 cubic yards of sediment would be removed from the Arroyo Grande Creek and Los Berros channels initially and there would be smaller-scale sediment removal and maintenance that would occur annually. Thirty-five large wooden structures would be placed at the confluence of the connections between the active and secondary channels to enhance the available aquatic habitat for federally threatened steelhead (*Oncorhynchus mykiss*) and California red-legged frog (*Rana aurora draytonii*). The levee raising portion of the proposed project, consisting of a short-term levee raise to the 10-year storm level, would require raising the banks of the creek anywhere from 6 inches to 2 feet and placement of 14,350 cubic yards of fill over several years. The longer-term levee raise to the 20-year storm level would require raising the banks of the channel approximately 2.8 to 5 feet from existing grade and placement of approximately 67,000 cubic yards of fill (including the 14,350 cubic yards of fill from the short-term levee raise). The first component required for completion of the levee raising for the proposed project is the replacement of the Union Pacific Railroad Bridge. This bridge would have to be raised approximately 5 feet, by creating a gentle slope that starts 1,700 feet north and 2,400 feet south of the bridge and requiring the movement of approximately 135,000 cubic yards of dirt. The second component necessary to accomplish the proposed levee raising is shifting the 600 feet of Halcyon Road that adjoins the creek channel to the west or elevating that portion of the road approximately 5.5 feet. Additionally, some of the small structures that are within the creek channel right-of-way would need to be either relocated or designed around. Lastly, the proposed levee-raising would include replacing the open bridge railing of the 22nd Street Bridge with a solid concrete barrier on the upstream side of the bridge, in addition to the construction of concrete floodwalls on the levees on both the north and south side of the bridge.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act prohibits the taking of any federally listed endangered or threatened species. Section 3(18) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly

disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species. Exemptions to the prohibitions against take may be obtained through the Service in two ways: through interagency consultation for projects with Federal involvement pursuant to section 7, or through the issuance of an incidental take permit under section 10(a)(1)(B) of the Act.

We are concerned about the potential adverse impacts of the proposed project on the federally endangered least Bell's vireo (*Vireo bellii pusillas*), southwestern willow flycatcher (*Empidonax traillii extimus*), marsh sandwort (*Arenaria paludicola*), Gambel's watercress (*Nasturtium gambelii*), and tidewater goby (*Eucyclogobius newberryi*), and threatened California red-legged frog. The DEIR indicates that the sources of information used in developing the biological resources section included a search of rare, sensitive, threatened, and endangered species in the California Natural Diversity Database in 2008; a review of the biotic assessment for the proposed project; and the consultant's personal knowledge of the area. We have not been provided with a copy of the biological assessment that was conducted for the proposed project.

There are historic records of marsh sandwort, Gambel's watercress, and tidewater goby, and California red-legged frog occurrence within the vicinity of the subject project; however, we are unaware of whether recent pre-construction or protocol level surveys have been conducted for these species in the area. We recommend that pre-construction surveys are conducted for the marsh sandwort, Gambel's watercress, and California red-legged frog to determine whether these species occur within the subject project area. There is suitable California red-legged frog dispersal and breeding habitat on-site within the subject project area and it is reasonable to expect that individual California red-legged frogs make overland excursions between the drainages in this region and therefore may be adversely impacted by the subject project activities, as proposed in the Initial Study. Additionally, we recommend that the appropriate level of surveys are conducted for the tidewater goby, according to the guidelines in Appendix F of the recovery plan for the tidewater goby (Service 2005). If tidewater gobies occur within or downstream of the proposed project area, they could be adversely impacted by the proposed alteration of the existing creek channel, as well as stormwater runoff, erosion, or actions directly related to the construction activities within the proposed project site. Fine sediment could degrade tidewater goby habitat and smother tidewater goby eggs; therefore, best management practices and erosion control measures should be implemented on-site to reduce impacts to the tidewater goby. We recommend that you conduct surveys according Service protocol for the least Bell's vireo and southwestern willow flycatcher prior to commencement of the proposed activities in habitat suitable for these species.

We are also concerned about the project's potential impacts to migratory birds. The Service has conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA) (16 U.S.C. 703 et. seq.). Any land clearing or other surface disturbance associated with proposed actions should be timed to avoid potential destruction of bird nests or young of birds that breed in the area, as such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not

be damaged, nor may migratory birds be killed. If this seasonal restriction is not possible, we recommend that a qualified biologist survey the area for nests or evidence of nesting (e.g., mated pairs, territorial defense, carrying of nesting material, transporting food) prior to the commencement of land clearing activities. If nests or other evidence of nesting are observed, a protective buffer should be delineated and the entire area should be avoided to prevent destruction or disturbance to nests until they are no longer active.

Based on our review of the proposed project and its associated supplemental information, we are unable to determine the extent of impacts of the proposed project on the California red-legged frog and other federally listed species that may occur in the project vicinity. To make a determination on the potential impacts of the proposed project on federally listed species, we would require the following information:

1. Specific information regarding the timeframe for implementing the proposed project.

2. Detailed information regarding the results from the proposed surveys that will be performed and any previous surveys that have been conducted for California red-legged frogs in the project area.

3. Detailed results from the biological assessment that was performed for the proposed project and from any other focused surveys that have been or will be performed for the following federally listed species that have the potential to occur within the project area: marsh sandwort, Gambel's watercress, tidewater goby, least Bell's vireo, and southwestern willow flycatcher. The DEIR does not indicate whether biological reconnaissance surveys were performed for all of these species.

4. More detailed information regarding the specific minimization measures for the proposed project that will reduce impacts to federally listed species within the proposed project area.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

This letter does not reflect a comprehensive review of the DEIR document on our part; however, we are concerned that the subject project, as proposed, could result in take of and/or adverse impacts to the least Bell's vireo, southwestern willow flycatcher, marsh sandwort, Gambel's watercress, tidewater goby, and California red-legged frog. Therefore, we recommend that you address these potential effects in the final EIR and if any federally listed species are found within the proposed project area during the surveys, we recommend that you initiate formal consultation with the Service through either Section 7 or Section 10 of the Act prior to the onset of any proposed project activities. Please note that despite the incorporation of any mitigation measures

developed pursuant to the California Environmental Quality Act, any take of listed species that could result from the proposed project would require exemption pursuant to section 7 or authorization pursuant to section 10 of the Act.

We appreciate the opportunity to provide comments on the proposed project and look forward to working with the County in the future. If you have any questions regarding these comments, please contact Heather Abbey of my staff at (805) 644-1766, extension 290.

Sincerely,

Chris Dellith
Senior Biologist

cc:
Anthony Spina, National Marine Fisheries Service
Bob Stafford, California Department of Fish and Game

REFERENCES

Bulger, J.B., N.J. Scott, and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs (*Rana aurora draytonii*) in coastal forests and grasslands. Biological Conservation 110(2003):85-95.

Hayes, M.P. and M.R. Jennings. 1985. Pre-1900 over harvest of California red-legged frogs (*Rana aurora draytonii*): the inducement for bullfrog (*Rana catesbeiana*) introduction. Herpetologica 31:94-103.

Hayes, M.P. and M.R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylii*): implications for management. Pages 144-158. In Proceedings of the symposium on the management of amphibians, reptiles, and small mammals in North America. R. Sarzo, K.E. Severson, and D.R. Patton (technical coordinators). U.S.D.A. Forest Service General Technical Report RM-166.

U.S. Fish and Wildlife Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. viii + 173 pp.

U.S. Fish and Wildlife Service. 2005. Recovery plan for the tidewater goby (*Eucyclogobius newberryi*). U.S. Fish and Wildlife Service, Portland, Oregon. vi + 199 pp.

Mary Reents

From: James Kilmer [james_kilmer@dot.ca.gov]
Sent: Sunday, July 26, 2009 10:23 PM
To: Mary Reents
Cc: Gary Ruggerone; Jim Mills
Subject: RE: Arroyo Grande Creek Channel Watreway Managment Program NOP

Hi Mary,
I received responses back from District 5 Hydraulics and Non-Capital Environmental - they don't have any comments. HQ structures hasn't sent any comments so we'll take that as a No Comment from them. It appears that Caltrans doesn't have any issues with your project.

Thanks Mary.

-James

James Kilmer
Associate Transportation Planner
District 5
Development Review

Phone # (805) 549-3683
Fax # (805) 549-3077

"Mary Reents" <mreents@swca.com> 07/10/2009 09:33 AM

To: "James Kilmer" <james_kilmer@dot.ca.gov>
cc: "Keith Miller" <klmiller@swca.com>, <jfarhar@co.slo.ca.us>
Subject: RE: Arroyo Grande Creek Channel Watreway Managment Program NOP

Hi James- Yes, you can have a time extension. We need your comments! Please get them in as soon as you can.

Mary B. Reents
Senior Consultant
SWCA Environmental Consultants
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401
*805) 543-7095X103
(805) 543-2367 (FAX)
mreents@SWCA.com
www.swca.com

-----Original Message-----
From: James Kilmer [mailto:james_kilmer@dot.ca.gov]

Sent: Thursday, July 09, 2009 3:00 PM
To: mreents@morrogroup.com
Subject: Arroyo Grande Creek Channel Watreway Managment Program NOP

Hi Mary,
The comments for the NOP are due tomorrow the10th. Is it possible to get a time extension on those comments?
-James

James Kilmer
Associate Transportation Planner
District 5
Development Review

Phone # (805) 549-3683
Fax # (805) 549-3077

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

In reply refer to:
SWR/2009/03881:MRM

AUG 19 2009

John Farhar
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, California 93401

Dear Mr. Farhar:

NOAA's National Marine Fisheries Service (NMFS) reviewed the June 5, 2009, Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Arroyo Grande Creek Channel Waterway Management Program (Program) near Arroyo Grande, California. As requested in the NOP, NMFS provides the following information to assist the County of San Luis Obispo (County) in formulating the EIR.

The Program is of concern because threatened steelhead (*Oncorhynchus mykiss*) and critical habitat for this species are present within the action area of Arroyo Grande Creek. Accordingly, the EIR should clearly identify and describe the Program including interrelated and interdependent actions to the extent that NMFS may develop an understanding of the potential effects (offsite, onsite, direct, indirect, temporary, permanent) of the Program on steelhead and critical habitat. The EIR should include a list of measures for avoiding and minimizing potential negative effects of the Program on steelhead and their habitat. Unavoidable effects should be fully described according to life stage (i.e., spawning, rearing and migration) and features of this species' habitat. The manner in which the preferred alternative would be implemented (e.g., construction schedule, level of manpower, equipment types, access roads) should be clearly described. The potential benefits of the Program for steelhead, including any compensatory mitigation measures, should be described. Engineered design drawings and results of topographic surveys and creek-hydraulic analyses should be included in the EIR.

Because the County included a brief project description with the June 5, 2009 NOP, NMFS provides the following additional specific comments on the Program. These comments are related to the general comments above and should be addressed in the EIR.

- Evidence provided in the ecological literature indicates that floodplains can impart an elevated level of biotic diversity, fish and invertebrate production, and habitat area and diversity. The Program specifies an increase in the elevation of the existing levees which is expected to continue to confine the creek within an artificially defined corridor and perpetuate the existing disconnect between the

creek and the historical floodplain, particularly those historical floodplain areas that are not developed with hard structures. Precluding Arroyo Grande Creek from entering the available historical floodplain during the wet season is expected to be unfavorable for the aquatic environment in general and the local population of steelhead in particular. The County should provide an analysis in the EIR on the effects to steelhead and critical habitat that will occur as a result of continuing to confine the creek within an artificially defined corridor rather than a more natural approach to promote stream connectivity with the historical floodplain.

- The EIR should provide an analysis to determine the degree that development of secondary overflow channels are expected to increase the potential that steelhead will become trapped or stranded in residual wetted areas outside the active creek channel as streamflow declines.

- Any channel modification to improve flood conveyance will likely result in a reduction in the complexity of instream and riparian habitat, which is expected to translate into a decreased ability to conserve threatened steelhead. The EIR should provide an analysis of the likelihood and extent of potential impacts that the Program will have as a result of reducing habitat complexity.

- The basis for the proposed width of the vegetated buffer (10ft) as part of the vegetation removal should be provided in the EIR. Currently, whether the proposed width is ecologically meaningful, is unknown. In addition, the terminology "limbed up" is not defined, but is presumed to imply that most tree limbs will be removed. Removing limbs from trees is not expected to favor over-summering juvenile steelhead, and may appreciably reduce the function and value of streamside vegetation as an essential feature of critical habitat for the species.

- The EIR should provide an analysis of the potential effects of long term and short term sediment removal activities on steelhead and critical habitat.

- Finally, the EIR should describe the relationship of the Program to Section 7 of the U. S. Endangered Species Act (ESA). In this regard, the EIR should disclose whether consultation with NMFS is necessary prior to undertaking the project, in accordance with Section 7 of the ESA.

NMFS appreciates the opportunity to provide information that would assist the County to develop the EIR for the subject Program. Matt McGoogan is NMFS' representative for this specific project. Please call him at (562) 980-4026 if you have any questions concerning this letter or if you require additional information.

Sincerely,

Rodney R. McInnis
Regional Administrator

cc: Margaret Roper, CDFG, San Luis Obispo, California
Roger Root, USFWS, Ventura, California
Copy to Administrative File: 151422SWR2009PR00360

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

June 12, 2009

John Farhar
San Luis Obispo County Department of Public Works
C/O Mary B. Reents
Morro Group/SWCA, Suite C200
1422 Monterey St.
San Luis Obispo, CA 93401-2954

RE: SCH#2009061030 Arroyo Grande Creek Channel Waterway Management Program; San Luis Obispo County.

Dear Mr. Farhar:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5 minute quadrangle name, township, range and section required.**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,
Katy Sanchez
Katy Sanchez
Program Analyst
(916) 653-4040

CC: State Clearinghouse

Native American Contact
San Luis Obispo County
June 10, 2009

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks , CA 91362
805 492-7255
(805) 558-1154 - cell
folkes9@msn.com
Chumash
Tataviam
Fe†rnandeño

Judith Bomar Grindstaff
63161 Argyle Road
King City , CA 93930
(831) 385-3759-home
Salinan

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517
Santa Ynez , CA 93460
varmenta@santaynezchumash.org
(805) 688-7997
(805) 686-9578 Fax
Chumash

San Luis Obispo County Chumash Council
Chief Mark Steven Vigil
1030 Ritchie Road
Grover Beach , CA 93433
cheifmvigil@fix.net
(805) 481-2461
(805) 474-4729 - Fax
Chumash

Julie Lynn Tumamait
365 North Poli Ave
Ojai , CA 93023
jtumamait@sbcglobal.net
(805) 646-6214
Chumash

Diane Napoleone and Associates
Diane Napoleone
1433 Camino Trillado
Carpinteria , CA 93013
805-684-4213
Chumash

Lei Lynn Odom
1339 24th Street
Oceano , CA 93445
(805) 489-5390
Chumash

Salinan Tribe of Monterey, San Luis Obispo and San Benito Counties
John W. Burch, Traditional Chairperson
8315 Morro Rd, #202
Atascadero , CA 93422
salinantribe@aol.com
805-460-9202
805 235-2730 Cell
805-460-9204
Salinan

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2009061030 Arroyo Grande Creek Channel Waterway Management Program: San Luis Obispo County.

Native American Contact
San Luis Obispo County
June 10, 2009

Santa Ynez Tribal Elders Council
Adelina Alva-Padilla, Chair Woman
P.O. Box 365
Santa Ynez , CA 93460
elders@santaynezchumash.org
(805) 688-8446
(805) 693-1768 FAX
Chumash

Salinan Nation Cultural Preservation Association
Robert Duckworth, Environmental Coordinator
Drawer 2447
Greenfield , CA 93927
dirobduck@thegrid.net
831-578-1852
Salinan

Randy Guzman - Folkes
4577 Alamo Street, Unit C
Simi Valley , CA 93063
ndnrandy@hotmail.com
(805) 905-1675 - cell
Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

Salinan Nation Cultural Preservation Association
Jose Freeman, President
15200 County Road, 96B
Woodland , CA 95695
josefree@ccio1.com
(530) 662-5316
Salinan

Xolon Salinan Tribe
Donna Haro
110 Jefferson Street
Bay Point , CA 94565
Salinan

Coastal Band of the Chumash Nation
Janet Garcia,Chairperson
P.O. Box 4464
Santa Barbara , CA 93140
805-964-3447
Chumash

Salinan Nation Cultural Preservation Association
Doug Alger, Cultural Resources Coordinator
PO Box 56
Lockwood , CA 93932
fabbq2000@earthlink.net
(831) 262-9829 - cell
(831) 385-3450
Salinan

Mona Olivas Tucker
660 Camino Del Rey
Arroyo Grande , CA 93420
(805) 489-1052 Home
(805) 748-2121 Cell
Chumash

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2009061030 Arroyo Grande Creek Channel Waterway Management Program: San Luis Obispo County.

Native American Contact
San Luis Obispo County
June 10, 2009

Matthew Darian Goldman
495 Mentone
Grover Beach , CA 93433
805-748-6913
Chumash

Northern Chumash Tribal Council
Fred Collins, Spokesperson
67 South Street
San Luis Obispo , CA 93401
(805) 801-0347 (Cell)
Chumash

Santa Ynez Band of Mission Indians
Sam Cohen, Tribal Administrator
P.O. Box 517
Santa Ynez , CA 93460
(805) 688-7997
(805) 686-9578 Fax
Chumash

Frank Arredondo
PO Box 161
Santa Barbara , Ca 93102
805-617-6884
ksen_sku_mu@yahoo.com
Chumash

Salinan Nation Cultural Preservation Association
Gregg Castro, Administrator
5225 Roeder Road
San Jose , CA 95111
glcastro@pacbell.net
(408) 864-4115
Salinan

Salinan-Chumash Nation
Xielolixii
3901 Q Street, Suite 31B
Bakersfield , CA 93301
xielolixii@yahoo.com

408-966-8807 - cell
Salinan
Chumash

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2009061030 Arroyo Grande Creek Channel Waterway Management Program: San Luis Obispo County.

COUNTY OF SAN LUIS OBISPO

Department of Agriculture/Weights and Measures

2156 SIERRA WAY, SUITE A • SAN LUIS OBISPO, CALIFORNIA 93401-4556
ROBERT F. LILLEY (805) 781-5910
AGRICULTURAL COMMISIONER/SEALER FAX (805) 781-1035
www.slocounty.ca.gov/agcomm AgCommSLO@co.slo.ca.us

DATE: **June 26, 2009**

TO: **John Farhar, County of San Luis Obispo Department of Public Works c/o Mary B. Reents, Morro Group, Inc**

FROM: **Michael Isensee, Agriculture Department** MI

SUBJECT: **Arroyo Grande Creek Waterway Management Program Notice of Preparation (Ag #1445)**

Thank you for requesting the County Agriculture Department's input into the preparation of a Draft Environmental Impact Report (DEIR) for flood control enhancement along the lower portion of Arroyo Grande and Los Berros Creek. The proposed project appears to have the potential for direct and indirect, temporary and permanent impacts to agricultural resources. The proposed project also appears to include secondary components which may also have impacts to agricultural resources and operations.

Answers to basic scoping questions follow:

Contact Person:

Michael Isensee
Agricultural Resource Specialist
San Luis Obispo County Agriculture Department
2156 Sierra Way, Suite A
San Luis Obispo, CA 93401
805-781-5753

Approval Authority:

None. Advisory on issues relating to CEQA and agricultural resource impacts

Environmental Information:

-Amount of agricultural soils permanently and temporarily impacted by the project and secondary components of the project

-Options that reduce the amount of impact to agricultural resources and operations

Permit Stipulations

-Measures that reduce construction impacts to growers

-Measures that avoid or reduce impacts to productive soils

-Measures that avoid impacts to adjoining agricultural operations

Alternatives

-Alternatives that avoid temporary impacts to the maximum extent feasible and that minimize permanent loss of farmland associated with levee improvements

Relevant Information & Further Comments

The Agriculture Department recommends the DEIR:

- details the quantities of agricultural land that may be impacted by the project and specifies which project component the impact relates to. Information about secondary project components should be incorporated if necessary to achieve the goals of the proposed project. The conversion of agricultural soils in the Cienega Valley contributes to the irreversible loss of a very limited resource: productive soils with sufficient groundwater resources located in a mild coastal climate allowing for the year-round utilization of these soils for the production of food crops.
- addresses construction related impacts such as dust.
- analyzes the ultimate disposal of spoils generated by the project.
- addresses potential impacts to agricultural infrastructure including power lines, wells/pumps, access roads, and irrigation water lines.
- details farm field access routes, any possible disruption to field access, and ensures the incorporation of measures which ensure growers' timely and ongoing access necessary for row crop production.
- addresses potential impacts to properties encumbered with Williamson Act contracts that abut the creek or secondary project components.
- considers alternatives which locate temporary construction areas, stockpiles, and other project components off of capable agricultural land.
- evaluates mitigation options. Mitigation should focus on avoiding impacts including temporary impacts whenever possible. While the county does not have specific implementation procedures for mitigating farmland soil conversion, several current projects include farmland conversion mitigation recommendations. The County's draft Conservation Element soils chapter includes policy language regarding such mitigation for the loss of productive agricultural soils.

These comments and recommendations are based on policies in the San Luis Obispo County Agriculture and Open Space Element, the Land Use Ordinance, the California Environmental Quality Act (CEQA), and on current departmental policy to conserve agricultural resources and to provide for public health, safety and welfare while mitigating negative impacts of development to agriculture.

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

July 10, 2009

JUL 14 2009

John Farhar, Project Manager
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

SUBJECT: APCD Comments on the Notice of Preparation (NOP) for the Arroyo Grande Creek Channel Waterway Management Program (ED 07-243)

Dear Mr. Farhar and Ms. Reents,

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the proposed Arroyo Grande Creek Channel Waterway Management Program (WMP) that would implement a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of the Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel. This would provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel. The WMP would include vegetative management, 2) sediment management, including the dredging/excavation of approximately 21,000 cubic yards of material that would be trucked to an approved disposal site, and 3) potential levee raising that would also result in raising sections of road and rail road and some structure relocations. Annually; thereafter, a long-term sediment management program would occur with assessment of sediment loading, removal of excess sediment with excavation, and trucking of the material to an approved disposal site.

The following are APCD comments that are pertinent to this project.

1. Contact Person:

   Andy Mutziger
   Air Pollution Control District
   3433 Roberto Court
   San Luis Obispo, CA 93401
   (805) 781-5912

2. Permit(s) or Approval(s) Authority:

   Hydrocarbon Contaminated Soil
   Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit will be required. In addition,

the following measures shall be implemented immediately after contaminated soil is discovered:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;
- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and,
- Clean soil must be segregated from contaminated soil.

The notification and permitting determination requirements shall be directed to the APCD Compliance Division at 781-5912.

Construction Permit Requirements

Based on the information provided, we are unsure of the types of equipment that may be present during the project's construction phase. Portable equipment, 50 horsepower (hp) or greater, used during construction activities will require California statewide portable equipment registration (issued by the California Air Resources Board) or an APCD permit. The following list is provided as a guide to equipment and operations that may have permitting requirements, but should not be viewed as exclusive. For a more detailed listing, refer to page A-5 in the District's CEQA Handbook.

- Power screens, conveyors, diesel engines, and/or crushers;
- Portable generators and equipment with engines that are 50 hp or greater;
- IC engines;
- Unconfined abrasive blasting operations;
- Concrete batch plants;
- Rock and pavement crushing;
- Tub grinders; and
- Trommel screens.

To minimize potential delays, prior to the start of the project, please contact the APCD Engineering Division at (805) 781-5912 for specific information regarding permitting requirements.

Demolition Activities

The project referral indicated that there are existing structures on the proposed site that will be demolished, moved, or renovated. These activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of asbestos containing material (ACM). Asbestos containing materials could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes/pipelines (transite pipes or insulation on pipes). **If utility pipelines are scheduled for removal or relocation; or building(s) are removed or renovated this 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).** These requirements include but are not limited to: 1) notification

requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM. Please contact the APCD Compliance Division at 781-5912 for further information.

3. Environmental Information:

The potential air quality impacts from construction and operational phases of the project should be assessed in the EIR. The project under development has the potential for significant impacts to local air emissions, ambient air quality, sensitive receptors, and the implementation of the Clean Air Plan (CAP). A complete air quality analysis should be included in the DEIR to adequately evaluate the overall air quality impacts associated with implementation of the proposed project. This analysis should address both short-term (construction) and long-term (operational) emissions impacts (including traditional air pollutants and greenhouse gas emissions). The following is an outline of items that should be included in the analysis:

a) A description of existing air quality and emissions in the impact area, including the attainment status of the APCD relative to State and Federal air quality standards and any existing regulatory restrictions to development. The most recent CAP should be consulted for applicable information and the APCD should be consulted to determine if there is more up to date information available.

b) A detailed quantitative air emissions analysis at the project scale needs to be estimated as part of the DEIR.

c) A qualitative analysis of the air quality impacts should be conducted. A consistency analysis with the CAP will determine if the emissions resulting from development under the project will be consistent with the emissions projected in the CAP, as described in item 6 of this letter. The qualitative analysis should be based upon criteria such as prevention of urban sprawl and reduced dependence on automobiles. A finding of Class I impacts could be determined qualitatively. The DEIR author should contact the APCD if additional information and guidance is required. All assumptions used should be fully documented in an appendix to the DEIR.

4. Alternatives:

The DEIR should include a range of alternatives that could effectively minimize air quality impacts. A consistency analysis should be performed for each of the proposed alternatives identified, as described above. A qualitative analysis of the air quality impacts should be generated for each of the proposed alternatives. Examples include but are not limited to:

- Flexible zoning to promote mixed use and design standards that protect mixed use.
- Increase the amount of neighborhood scale mixed use.
- Additional density beyond proposed zoning allowances.

- Design standards that require narrow streets and minimum front setbacks on structures.
- Limiting the size of each arterial through the development. This reduces the need for noise barriers such as cinder block walls along roadways, decreases roadway widths, and slows the speed of traffic, creating an atmosphere that encourages walking and bicycling.

d) Mitigation measures to reduce air quality impacts from construction and operational phases to a level of insignificance should be specified. Any alternatives described in the DEIR should involve the same level of air quality analysis as described in bullet items 3.c and 3.d listed above.

If you would like to receive a copy of an example of a recommended format for the qualitative analysis section on air emissions impacts, contact the APCD Planning Division at 781-5912.

5. Relevant Information:

It is recommended that you refer to the "CEQA Air Quality Handbook" (the Handbook). If you do not have a copy, it can be accessed on the APCD web page (www.slocleanair.org) in the Business Assistance section, listed under Regulations, or a hardcopy can be requested by contacting the APCD. The Handbook provides information on mitigating emissions from development (Section 5) which should be referenced in the DEIR.

6. Further Comments:

The following are additional air quality issues that the EIR shall need to address:

Naturally Occurring Asbestos
The project site is located in a candidate area for Naturally Occurring Asbestos (NOA), which has been identified as a toxic air contaminant by the California Air Resources Board (ARB). Under the ARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, **prior to any grading activities at the site, the project proponent shall ensure that a geologic evaluation is conducted to determine if NOA is present within the area that will be disturbed. If NOA is not present, an exemption request must be filed with the District (see Attachment 1). If NOA is found at the site, the applicant must comply with all requirements outlined in the Asbestos ATCM.** This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the APCD. Please refer to the APCD web page at *http://www.slocleanair.org/business/asbestos.asp* for more information or contact the APCD Enforcement Division at 781-5912.

Developmental Burning
Effective February 25, 2000, **the APCD prohibited developmental burning of vegetative material within San Luis Obispo County.** Under certain circumstances where no technically feasible alternatives are available, limited developmental burning under restrictions may be allowed. This requires prior application, payment of fee based on the size of the project, APCD

approval, and issuance of a burn permit by the APCD and the local fire department authority. The applicant is required to furnish the APCD with the study of technical feasibility (which includes costs and other constraints) at the time of application. If you have any questions regarding these requirements, contact the APCD Enforcement Division at 781-5912.

Dust Control Measures

Construction activities can generate fugitive dust, which could be a nuisance to local residents and businesses in close proximity to the proposed construction site. Dust complaints could result in a violation of the APCD's 402 "Nuisance" Rule. Any project with a grading area greater than 4.0 acres exceeds the APCD's PM10 quarterly threshold. **This project has areas that are near potentially sensitive receptors and shall be conditioned to comply with all applicable Air Pollution Control District regulations pertaining to the control of fugitive dust (PM10) as contained in section 6.5 of the Air Quality Handbook. All site grading and demolition plans noted shall list the following regulations:**

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 native 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, and
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.

All PM10 mitigation measures required should be shown on grading and building plans. In addition, the contractor or builder should designate a person or persons to monitor the dust control program and to order increased watering, as necessary, 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 prior to land use clearance for map recordation and finished grading of the area.**

Truck Routing
Where feasible, proposed truck routes need to be evaluated to identify routing patterns with the least impact to residential communities and sensitive receptors, such as schools, daycare facilities, hospitals, and senior centers.

Material Removal
The APCD will need the EIR to evaluate the construction and operational phase emissions associated with the equipment needed to excavate materials from these waterways and determine whether emissions thresholds (daily and quarterly for the construction phase and daily for the operational phase) may be exceeded. Mitigation needs to be proposed to address any potential threshold exceedences and to ensure that impacts, particularly diesel impacts, to sensitive receptors are minimized. Staging areas shall not be placed within 1,000 feet of sensitive receptors. Sensitive receptors include: Schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities. The EIR should identify the sensitive receptors that may be impacted by the work on this project. In addition, work within 1,000 feet of sensitive receptors should be minimized as practically as possible and measures to minimize diesel emissions identified for implementation during all project phases.

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at 781-5912.

Sincerely,

Andy Mutziger
Air Quality Specialist

AJM/AAG/lmg

cc: John Farhar, SLO County Public Works
Karen Brooks, Enforcement Division, APCD
Tim Fuhs, Enforcement Division, APCD
Gary Willey, Engineering Division, APCD

Attachment: Naturally Occurring Asbestos – Construction & Grading Project Exemption Request Form, Construction & Grading Project Form

h:\plan\ceqa\project_review\3000\3500\3544-1\3544-1.doc

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

3433 Roberto Court, San Luis Obispo, CA 93401
805-781-5912 – FAX: 805-781-1002

Naturally Occurring Asbestos Construction and Grading Project Form

Applicant Information/Property Owner		Project Name	
Address		Project Address and/or Assessors Parcel Number	
City, State, Zip		City, State, Zip	
Email		Email	
Phone Number	Date Submitted	Agent	Phone Number

Check Applicable	DESCRIPTION (attach applicable required information)	APCD REQUIREMENT 1	APCD REQUIREMENT 2
	Project is subject to NOA requirements but NOT disturbing NOA	Geological Evaluation	Exemption Request Form
	Project is subject to NOA requirements and project is disturbing NOA – more than one acre	Geological Evaluation	Dust Control Measure Plan
	Project is subject to NOA requirements and project is disturbing NOA – one acre or less	Geological Evaluation	Mini Dust Control Measure Plan

Please note that the applicant will be invoiced for any associated fees

REQUIRED APPLICANT SIGNATURE:

Legal Declaration/Authorized Signature _____ Date _____

APCD OFFICE USE ONLY				
Geological Evaluation	**Exemption Request Form**	**Dust Control Measure Plan**		**Monitoring, Health and Safety Plan**
Approved Yes ☐ No ☐	Approved: Yes ☐ No ☐	Approved: Yes ☐ No ☐		Approved: Yes ☐ No ☐
Comments:	Comments:	Comments:		
APCD Staff:	Intake Date:	Date Reviewed	OIS Site #	OIS Proj #
Invoice No.	Basic Fee	Additional Fees	Billable Hrs	Total Fees

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

3433 Roberto Court, San Luis Obispo, CA 93401
805-781-5912 – FAX: 805-781-1002

Naturally Occurring Asbestos
Construction & Grading Project Exemption Request Form

Applicant Information/ Property Owner		Project Name	
Address		Project Address and /or Assessors Parcel Number	
City, State, Zip		City, State, Zip	
Email Address		Email Address	
Phone Number	Date Submitted	Agent	Phone Number

The District may provide an exemption from Section 93105 of the California Code of Regulations - Asbestos Airborne Toxic Control Measure For Construction, Grading, Quarrying, And Surface Mining Operations for any property that has any portion of the area to be disturbed located in a geographic ultramafic rock unit; if a registered geologist has conducted a geologic evaluation of the property and determined that no serpentine or ultramafic rock is likely to be found in the area to be disturbed. Before an exemption can be granted, the owner/operator must provide a copy of a report detailing the geologic evaluation to the District for consideration. The District will approve or deny the exemption within 90 days. An outline of the required geological evaluation is provided in the District handout **"ASBESTOS AIRBORNE TOXIC CONTROL MEASURES FOR CONSTRUCTION, GRADING, QUARRYING, AND SURFACE MINING OPERATIONS – Geological Evaluation Requirements."**

NOTE: A basic exemption evaluation fee of $150.00 will be charged.

APPLICANT MUST SIGN BELOW:

I request the San Luis Obispo County Air Pollution Control District grant this project exemption from the requirements of the ATCM based on the attached geological evaluation.

Legal Declaration/Authorized Signature _____ Date: _____

OFFICE USE ONLY - APCD Required Element – Geological Evaluation			
Intake Date:	APCD Staff:	OIS Site #:	OIS Project #:
Date Reviewed:	APCD Staff:	Approved	Not Approved
Comments:			

Central Coast Salmon Enhancement, Inc.
229 Stanley Ave.
Arroyo Grande, CA 93420
805/473-8221 Office * 805/473-8167 Fax

FAX

To: Mary Reents **Fax:** 543-2367

From: Steph Wald **Date:** July 7, 2009

Re: Comments on AG WMP **Pages:** 2 including cover

CC:

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Notes:

CENTRAL COAST SALMON ENHANCEMENT, INC.

Fish for Everyone

July 7, 2009

John Farhar
c/o Mary Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401

RE: Comments on NOP-IS for AGWMP

Hello:

Please accept the following comments for the Arroyo Grande Creek Waterways Management Plan Notice of Preparation and Initial Study.

For the Biological Resources section, I would suggest that taking beaver management into consideration would strengthen the management program. As was discussed at the NOP meeting on June 25th, the ability to manage beaver will influence the success of revegetating the area with canopy trees. Perhaps the EIR could take a close look at how other management programs deal with beaver and what the best strategies are to manage for steelhead and RLF habitat where beaver are not removed. This might involve looking at the following issues:

1. Do beaver dams pose a migration barrier threat for Steelhead/rainbow trout (SHT)?
2. Do beaver dams create pools that attract SHT allowing them to remain in the levee area?
3. Do the artificial pools increase liability for SHT fish kills when pumping occurs in drought years and in unseasonably warm temperatures in the flood control channel as occurred in June 2008?
4. Might beaver exclusion fencing be part of mitigation or management program to protect planted canopy trees?

While these issues are indirect impacts of the proposed project, I believe addressing them within the context of the EIR process may be prudent in the long run. Thank you for your consideration.

Sincerely,

Stephnie Wald

Stephnie Wald
Watershed Projects Manager

PO Box 277, Avila Beach, CA 93424

Phone: 805-473-8221 Fax: 805-473-8167 www.centralcoastsalmon.com

Cienaga Seabreeze Park Inc.
2300 Cienaga
Oceano, CA. 93445

JUN 16 2009

June 15, 2009

Mr John Farhar
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

Dear Mr Farhar,

Thank you very much for your "NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT" and in response we are happy to submitt The Information you have requested.

The primary person to contact at the Cienaga Seabreeze Senior Mobil Home Park is:

Mr Bill Edmonson
8273 E. Church
Sanger, CA 93657
Phone; 559-907-3777

The secondary person to contact would be the following person:

Thomas H. Bowman
2300 Cienage SP-51
Oceano, CA 93445-8925
Phone; 805-481-9757

We have no information at this time for your questions number 2, 3, 4, and 5. If we can be of further help please let us know.

Sincerely,

Thomas H. Bowman
Cienage Seabreeze Senior Mobil Home Park

817 Valley Rd.
Arroyo Grande, CA
July 10, 2009

Dept. of Public Works -
Mrs. Mary Reents.

I was unable to attend the meeting in Oceano because of eye surgery so please consider my comments.

Project A. Vegetation management.

Gaps in the riparian buffer should not be revegitated in the channel — especial the willows. Cottonwood would be a bad choice because of the fuzz from the blossome — bad for pollen allergies & messy on house screens, etc.

The channel should be clean and clear of all weeds and vegitation that drops seeds.

I don't think its is a good plan to construct large wood structures in the flood control channel to provide

habitat for steelhead or red legged frogs. The channel is dry most of the year except during a heavy rain. The resulting water is usually very fast flowing (roaring) during heavy rains. It destroys any habitat.

Since I am paying the assessment charge annually - $4.20, besides in addition to the $7.00 Los Berros assessment for 1-1A, I cannot afford more taxes or assessments for any further work done on the Los Berros channel.

Thank you -

Marjorie Gilliam

Charlie Lackie
2828 Biddle Ranch Road
San Luis Obispo, CA 93401

July 8, 2009

Attn: John Farhar
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

Dear John Farhar:

I am responding to your June 5, 2000 letter regarding the preparation of a draft environmental impact report pertaining to the Arroyo Grande Creek Channel. My concerns are: 1) the quality of the dirt brought in to use as fill for any project related to the levee, 2) maintaining the integrity of my existing well as it relates to any levee project, 3) the protection of my parcel's agricultural viability.

1) My concerns regarding any fill materials are related to how soil born diseases could deleteriously affect my existing organic avocado orchard and future agricultural projects intended for my parcel. Avocados are particularly sensitive to a number of soil born diseases. My existing avocado orchard is immediately adjacent to the area of the levee. I do not want to have any diseases introduced to my property and would like the environmental impact report to consider this issue.

2) I would like for your report to address the location of my existing well and how to best protect it during any levee improvement/maintenance projects.

3) My parcel consists of 4.37 acres, small by agricultural standards. It is my hope your report will consider that any reduction of my agricultural land will jeopardize its agricultural use.

It is my hope that your report will seriously consider how any reduction of my agricultural land would negatively impact the viability of continuing agricultural use.

I greatly appreciate your consideration of my concerns.

Yours truly,

Charlie Lackie

Charlie Lackie
(805) 235-8695

JUN 22 2009

6. **FURTHER COMMENTS.** Please provide any further comments or information that will help the county to scope the document and determine the appropriate level of environmental assessment.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than **30 days** after receipt of this notice.

The project description, location, and the probable environmental effects are contained in the attached materials and are available online at SLOCountyWater.org.

Please send your response to the attention of Mr. John Farhar, Project Manager, at the following address:

John Farhar
County of San Luis Obispo
Department of Public Works
c/o Mary B. Reents
Morro Group/SWCA
1422 Monterey Street, Suite C200
San Luis Obispo, CA 93401-2954

We will need the name of a contact person in your agency. If you have any questions regarding the NOP or the proposed project, please contact Ms. Mary Reents at (805) 543-7095, extension 103.

In addition, an EIR scoping meeting will be held on June 25, 2009 at 6:00 pm at the Oceano Community Services District Meeting Room, located at 1655 Front Street, Oceano, San Luis Obispo County, California. The EIR scoping meeting will be open to all interested parties and provide an opportunity for input relating to the scope and content of the EIR.

Reviewed by:

Signature Ellen Carroll

Ellen Carroll
County of San Luis Obispo
Environmental Coordinator

THE CONTACT PERSON FOR THE FOLLOWING PARCELS IS: SOREN STEJER
528 WATER ST
W. SACRAMENTO CA 95605

075.011.020
052.011

Reference: *California Administrative Code, Title 14, Section 15082*

Appendix B.
Waterway Management Plan

ARROYO GRANDE CREEK CHANNEL WATERWAY MANAGEMENT PROGRAM

FINAL REPORT

prepared for

for San Luis Obispo County Flood Control and Water Conservation District Zones 1 and 1A Flood Control District

prepared by

John Dvorsky, Principal Scientist

WATERWAYS CONSULTING, INC.

October 2010

TABLE OF CONTENTS

LIST OF FIGURES, TABLES, AND PHOTOS

Appendices

1.0 PURPOSE, CONTEXT, AND GOALS

1.1 Purpose of the Arroyo Grande Creek Channel Waterway Management Program

The Arroyo Grande Creek Channel Waterway Management Program (WMP) is a comprehensive set of actions designed to restore the capacity of the levied lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel (Figure 1) to provide flood protection up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel. The WMP establishes a framework for how the lower portion of Arroyo Grande and Los Berros Creeks will be managed, long-term, to meet the goals established by Zones 1 and 1A (Zone 1/1A) of the San Luis Obispo County Flood Control and Water Conservation District (District) (Figure 1).

Management, within the context of the WMP, includes a combination of capital improvement projects, long-term maintenance activities, active restoration and enhancement projects, mitigation measures, performance monitoring, monitoring of implemented projects, programmatic elements, and adaptive management that responds to the performance monitoring activities. A description of each of these management activities are included in the WMP with enough detail so that the WMP will act as a guiding document on how to implement the project or program, how the project or program's success will be monitored, and what mitigation or protection measures will be required as part of project or program implementation.

1.2 Waterway Management Program Project Elements

The WMP was developed subsequent to an alternatives analysis that evaluated options to reduce flooding, manage sediment, and improve habitat conditions in the Arroyo Grande Creek Channel. The program alternatives were developed in cooperation with the community, the Coastal San Luis Resource Conservation District (RCD) and the District and are described in detail in the Arroyo Grande Creek Erosion, Sedimentation, and Flooding Alternatives Study (Alternatives Study) completed in January 2006 by Swanson Hydrology and Geomorphology. Alternatives 3a and 3c are the preferred alternatives and are the basis of the proposed Waterway Management Program. Alternative 3 includes the following key project elements:

- ***Vegetation Management:*** Manage riparian vegetation annually to improve flood capacity. Within the riparian corridor support a continuous canopy cover of mature trees and fill existing gaps while encouraging species diversity.

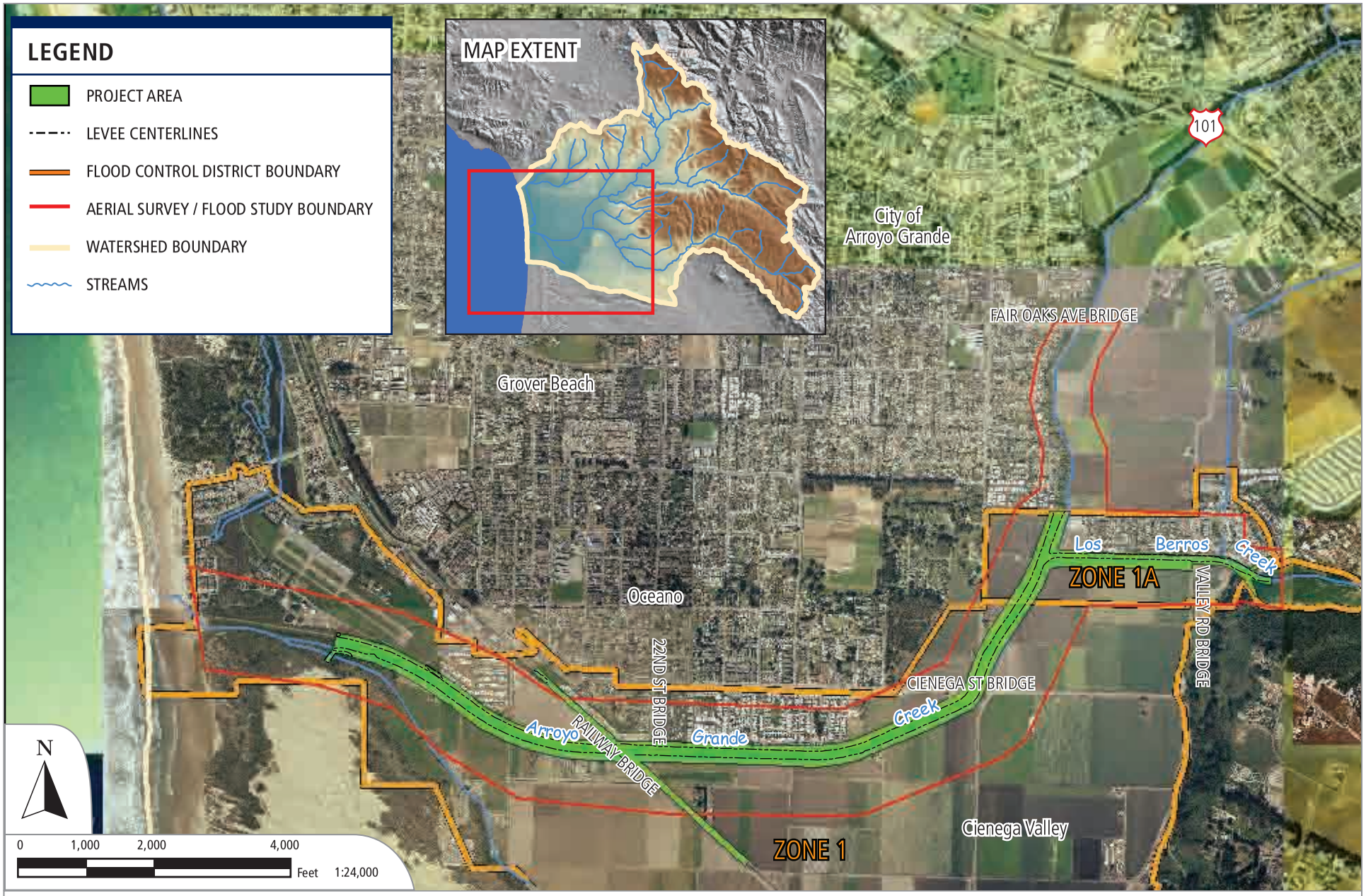

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FIGURE 1: General location map for the project and study areas on Arroyo Grande Creek. The hydrology and sediment loads are dominated by tributaries such as Los Berros

- ***Sediment Management***: Conduct sediment management in a way that will improve flood capacity and enhance geomorphic function so as to minimize future sediment accumulations that require intensive management;
- ***Levee Raise:*** Raise levees throughout the flood control channel to ultimately achieve a channel capacity that will protect the adjacent community and farmland up to a 20-year flood event; and
- ***Raise UPRR Bridge:*** Raise the Union Pacific Railroad Bridge above the 20-year water surface elevation to increase the flood capacity of the channel.

1.3 Project Background

Arroyo Grande Creek has a long history of flood impacts to agriculture and human habitation that dates back to the time of the early settlements in the mid-19th century. Historical accounts and a geomorphic analysis of the lower watershed and Cienega Valley suggest that much of the valley floor was at grade with the Creek and consisted of a broad thicket of willows and other riparian trees (Dvorsky, 2004). From the time of the earliest settlements, use of the valley for homesteading, agricultural production, dairies, and cattle ranching required clearing of vegetation and active management of the channel and floodplain (Figure 2). Management, in those days, consisting primarily of ditching the channel to provide a predictable flow path, building levees, removing willow thickets, and leveling the land. Much of these activities were carried out by individual landowners with little to no coordinated efforts between adjacent property owners.

In the 1950's, severe flooding from Arroyo Grande Creek resulted in inundation of prime farmland in the Cienega Valley and significant impacts to existing infrastructure. At the time, Arroyo Grande and adjacent communities were primarily rural with a combined population of less than 5,000 residents. To reduce future economic impacts to the agricultural economy and the growing urban and rural residential population, the community organized the Arroyo Grande Creek Flood Control Project (Project). The Project, led jointly by the USDA-Soil Conservation Service/Arroyo Grande Resource Conservation District, was completed in 1961 to protect homes and farmland in La Cienega Valley. (These organizations are now known as the USDA-Natural Resources Conservation Service and the Coastal San Luis RCD, respectively.)

The main feature of the Project was a levee system and trapezoidal channel that confined Arroyo Grande Creek from its confluence with Los Berros Creek downstream to the Pacific Ocean (Photo 1). In addition, the lower portion of Los Berros Creek from the Valley Rd Bridge to the confluence with Arroyo

A: Remnant riparian area evident in 1939 aerial photo, (highlighted in red), no longer exists in 2002 aerial photo.

B: Wide floodplain / riparian area evident in 1939 aerial photo, in 2002 aerial photo riparian area is confined by agricultural fields.

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FIGURE 2: A) 1939 and 2003 comparison of aerial photos showing remnant floodplain and channel features. B) 1939 and 2002 comparison of aerial photos showing changes to riparian width.

Grande Creek was diverted from its pre-1960 channel, which ran along the southern edge of La Cienega Valley, to its current confluence upstream of the Highway 1 Bridge. Runoff from the Meadow Creek watershed, which runs though Pismo Lake, was designed to enter Arroyo Grande Creek through a pair of flap gates, known as the Sand Canyon Flap Gates, near the Pismo State Beach. Maintenance of the Project, following construction was the responsibility of the District (Zone 1/1A), RCD, and NRCS per a maintenance agreement. Landowners within the zone are assessed an annual fee to support management and maintenance of the flood control reach.

Photo 1. Constructed trapezoidal channel at UPRR bridge in 1958.

The original flood control channel was built in 1959 and was designed to carry a discharge of 10,120 cubic feet per second (cfs), which, at the time of the analysis, was determined to have a recurrence of once every 100 years. Maintenance of the flood control channel as required by the 1959 Operation and Maintenance Agreement between the District, NRCS, and the CSLRCD (1959 Agreement), consisted primarily of vegetation and sediment removal to maintain the design geometry and capacity of the channel and routine maintenance of the levee system and associated infrastructure. Maintenance activities in recent years were restricted by a combination of lack of funding (Zone 1/1A maintenance funds had not risen appreciably since the creation of the special district) and environmental concerns about the impacts of vegetation and sediment removal on aquatic and riparian habitat in the flood control reach.

Environmental concerns and restrictions increased following the listing of the California red-legged frog (*Rana aurora draytonii*), in 1996, and steelhead (*Oncorhynchus mykiss*), in 1997. Protection of critical habitat for these two species meant that past maintenance activities, required under the 1959 Agreement with the NRCS and RCD, were no longer feasible. Limited sediment management did occur in November 1999 and October 2001 but pursuit of subsequent sediment management projects ended when the District pursued a permit in 2002 and it was determined that a Coastal Development Permit (CDP) was required. Although the Coastal Commission issued a CDP, they required preparation of a comprehensive analysis of the alternatives available for long-term flood protection, to be completed in three years. The District felt that development of a comprehensive plan would require more time and the 2002 CDP was withdrawn.

The requirements put forth by the Coastal Commission led the U.S. Fish and Wildlife Service, NOAA Fisheries, and the California Department of Fish and Game to also request that a more comprehensive strategy be prepared to manage the flood control reach through a maintenance program that specifically protects aquatic habitat. The 1959 Agreement was terminated by all parties on December 1, 2009. The termination of the agreement recognizes that the original project has reached its design life (50 years) and achieved its intended purpose. Parties to the agreement concur that major changes in watershed regulations, hydrology and objectives for the watershed require a new watershed plan not consistent with the 1959 maintenance agreement.

In 1999, the US Army Corps of Engineers developed a study to assess the existing capacity of the flood control reach. The results suggested that the system currently has a reduced capacity of 1,700 cfs which equates to a recurrence interval of approximately 2-year to 5-years (USACE, 2001). The capacity of the as-built channel (the channel as built in 1961), according to the USACE model, was determined to be 6,500 cfs with an associated level of protection between the 10-year and 20-year runoff event. These results showed that even with 1961 geometry, where sediment has been removed, the capacity of the channel has been reduced by approximately 1,000 cfs, most likely due to changes in the levee geometry from settlement and erosion. The USACE study pointed to the need for a more detailed alternative assessment to define project opportunities and costs associated with improving overall capacity and flood protection.

On March 5, 2001, during a high intensity rain event, the levee was breached on the south side between the mouth and the Union Pacific railroad bridge (Photos 2 and 3). It was estimated by observers in the field at the time of the levee breach that the levee would have overtopped upstream of the 22nd Street bridge had the levee not breached and lowered the overall water surface. Hundreds of acres of

farmland and several residences were flooded in La Cienega Valley. Impacts from the flooding persisted beyond the winter season as many of the lower lying areas with clay soils located in the southern portion of the valley remained saturated. The northern levee remained intact, thereby protecting several residential developments, the Oceano Aiport, and the regional wastewater treatment plant that services the communities of Arroyo Grande, Oceano and Grover Beach.

Photo 2. Oblique photo of flooding in the Cienega Valley following the levee breach of March 2001 (looking south).

Photo 3. Close-up view of the levee breach and flooding of farmland in March 2001 (looking at south levee from north levee).

As a result and subsequent to the 2001 flooding, the RCD, on behalf of the District, contracted with the consulting firm of Swanson Hydrology and Geomorphology (SH+G) to develop a range of flood protection alternatives, known as the Alternatives Study, which was completed in January 2006. The Alternatives Study focused in-depth on erosion sources, sedimentation and hydrology as they relate to recurring flooding in the lower reaches of the creek. The final study described six different

"Alternatives", or sets of feasible projects and management actions, that could be implemented to manage flooding in Zone 1/1A, and provides estimates of the degree of flood protection afforded by each Alternative. The Zone 1/1A Task Force, a technical subcommittee of the Zone 1/1A Advisory Committee, met with SH+G staff twice during 2005 to provide feedback and recommendations regarding which options to consider for analysis in the Alternatives Study, and to review preliminary results. The Zone 1/1A Task Force consisted of representatives from U.S. Fish and Wildlife, California Department of Fish and Game, the Coastal Conservancy, NOAA/NMFS, Regional Water Quality Control Board, San Luis Obispo County Public Works and Environmental Planning Departments, City of Arroyo Grande, Oceano Community Services District, Central Coast Salmon Enhancement, Zone 1/1A Advisory Committee, and U.S. Army Corps of Engineers.

The completion of the Alternatives Study provided Zone 1/1A with a range of viable solutions to improve flood capacity in the channel(s). The Zone 1/1A Advisory Committee endorsed Alternative 3 as the preferred alternative and in 2006 the property owners in Zone 1/1A approved additional property tax assessments to substantially enhance maintenance and operation efforts to the Arroyo Grande and Los Berros Creek Channels. Funding was now available to develop and carry out a long-term management plan for the flood control channel. In fall 2007, SLO County Public Works drafted a Notice of Preparation and a Request for Qualifications for preparation of an environmental impact report/environmental assessment and assistance with regulatory permitting. Representatives of the Zone 1/1A Advisory Committee Task Force joined SLO County Public Works staff in reviewing applications, conducting interviews, and selecting a consulting firm to recommend to the SLO County Board of Supervisors for contract. The firm selected was the Morro Group, now SWCA, Inc., partnering with SH+G (now Waterways Consulting) to prepare a Waterway Management Program (WMP) that includes project actions described under Alternative 3 of the Alternatives Study combined with enhancement actions that improve habitat conditions in the flood control reach for steelhead, California red-legged frog, and other species that rely on the aquatic environment.

In addition to activities specifically addressed in the WMP relating to the Arroyo Grande Creek channel, a Memorandum of Understanding (MOU) is in place that is designed to improve watershed conditions and limit sediment delivery from upslope areas to impacted reaches Arroyo Grande Creek such as the flood control reach. The County of San Luis Obispo and the County Flood Control and Water Conservation District became a signatory to the Arroyo Grande Creek Watershed MOU on April 22, 2008. The purpose of the MOU is to enhance an overall understanding of watershed issues and promote consensus between the parties in order to better protect, manage and enhance the Arroyo Grande Creek watershed.

The MOU recognizes that some of the agencies have existing responsibilities within the watershed and that those autonomous responsibilities will continue. The intent of the MOU involves educating each other on those efforts and identifying how collaborative efforts in the watershed management can be implemented in the future more efficiently and effectively. Future implementation of collaborative efforts will require development of cost sharing agreements and action plans, which will need separate approval by participating agencies.

By signing the MOU, the County showed its support for collaborative watershed management. Other signatories of the MOU include: the City of Arroyo Grande, RCD, and the Central Coast Salmon Enhancement. The RCD and the Central Coast Salmon Enhancement have become key advocates for the MOU and are working with other resource agencies to become signatories, including: US Fish and Wildlife Service, Natural Resource Conservation Service, CA Department of Fish and Game, and CA Department of Parks and Recreation. The CA Regional Water Quality Control Board was solicited for signature, but was unable to sign and instead endorsed the MOU.

1.4 Project Need

The proposed project is needed to provide the residents of Zone 1/1A with improved flood protection. Prior to the termination of the 1959 maintenance agreement, the District, RCD, and NRCS were responsible for operation and maintenance of the leveed lower three miles of Arroyo Grande Creek. As concerns for environmental protection have increased, the District has been limited in its ability to conduct periodic maintenance to reduce flood risks to adjacent landowners and sustain the channel's design capacity. Consequently, the existing channel has a severely reduced capacity and can only provide protection up to the 4.6 year flow recurrence event. This level of flood protection is inadequate and severely limits the ability of Zone 1/1A to meet its obligations to residents in the District. This was evidenced during the 2001 levee system breach on the south side which inundated hundreds of acres of farmland and several residences. It could have been much worse if the system breached on the north side. However, the northern levee remained intact, thereby protecting several residential developments, the Oceano Airport, and the South County Sanitation District Wastewater Treatment Plant that services the communities of Arroyo Grande, Oceano, and Grover Beach.

2.0 EXISTING CONDITIONS

2.1 Project area

Arroyo Grande Creek is a 157 square mile coastal watershed located in west-central San Luis Obispo County (Figure 3). The mainstem of Arroyo Grande Creek flows through the cities of Arroyo Grande and Oceano and is an important regional waterway, providing agricultural and municipal water to the communities of Arroyo Grande, Grover Beach, Oceano, Pismo Beach, and Avila Beach by way of Lopez Reservoir located in the upper portion of the watershed. An expanding urban population and a desire to maintain the region's agricultural roots has resulted in an increasing demand on the natural and biological resources of the Arroyo Grande Creek watershed.

The Waterway Management Program project area is located along the lower portion of mainstem Arroyo Grande and Los Berros Creeks within San Luis Obispo County, California. The project area is a linear corridor with two segments: (1) beginning on Arroyo Grande Creek 0.14 mile upstream of the confluence of Los Berros Creek and continuing downstream to the upper edge of the Arroyo Grande Creek lagoon at the Pacific Ocean, and (2) beginning at the Century Lane Bridge on Los Berros Creek and continuing downstream to the confluence with Arroyo Grande Creek (Figure 1). The total project length is approximately 3.5 miles.

The project area ends just upstream of a euryhaline coastal lagoon that occurs at the mouth of Arroyo Grande Creek (Figure 4). Portions of the lagoon lie within the Pismo Dunes State Reserve and the lagoon bisects Pismo State Beach. Similar to other coastal lagoons in central California, the mouth of the creek is seasonally obstructed by a sand bar that forms in spring and persists until winter rains are sufficient to hydraulically force the sand bar to open. During drought or periods of prolonged dry weather the sand bar may not open at all. When the sand bar is in place depths in the lagoon can increase causing the lagoon to backwater a significant distance up into the flood control channel.

2.2 Larger watershed context

Though it is difficult to definitively describe what Arroyo Grande Creek may have historically looked like, historical accounts from early settlers and an understanding of the physical setting provides a glimpse into the past and a picture of how the channel functioned. A key feature in the existing landscape of Arroyo Grande is Lopez Dam. Lopez Dam is located at a point in the watershed where there is a

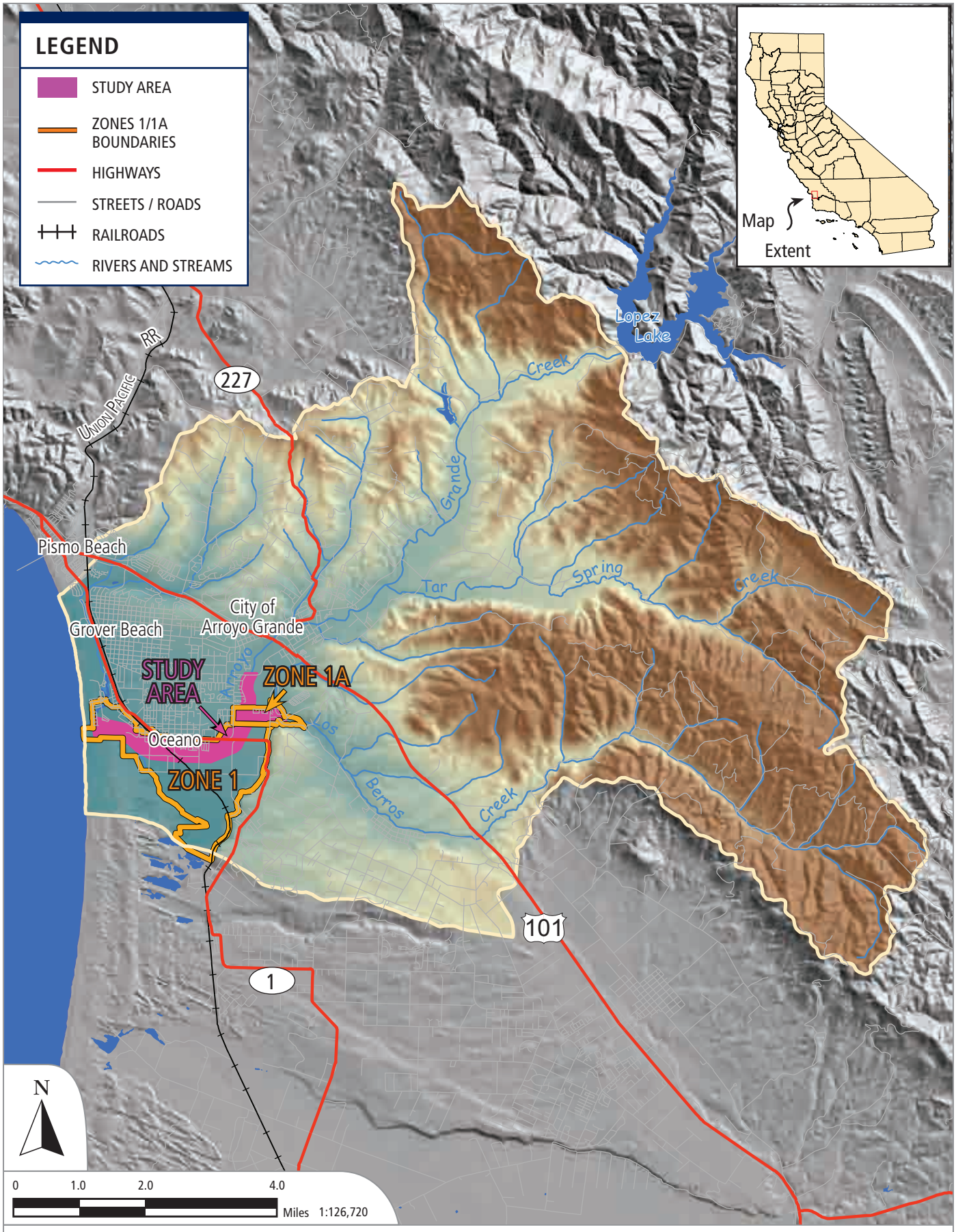

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FIGURE 3: Study area for the WMP. The WMP includes the levees, channel and riparian areas on lower Arroyo Grande Creek and lower Los Berros Creek within the Zone 1/1A Flood Control District.

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FIGURE 4: Lagoon and flapgate locations.

transition from confined mountain valley to an unconfined coastal plain. Dams are often sited in such a location because they provide a convenient constriction point for a dam, thereby minimizing the amount of earthen material required to impound a relatively large area upstream. Downstream of Lopez Dam the channel is much flatter, the valley much wider and historic floodplain deposits occur across the entire valley bottom (Figure 5). This area represents a depositional zone within the watershed where large quantities of water and sediment transported from the upper watershed historically spread across the valley floor, creating the large alluvial valley that exists today. Channels in steep, higher gradient valleys can transport more sediment than channels in lower gradient, wide valleys because the energy required to move sediment is a function of an energy gradient that is related to surface water slope and depth. This is often referred to as the sediment transport competence of the flow. In the lower portions of the mainstem, near the Community of Oceano, the floodplain deposits are extensive. Combined with the potential for a sand berm to form at the mouth, high tides and storm surges during peak flow events, and the constricting presence of the sand dunes, this portion of the system can be classified as deltaic in nature. The lower portion of the channel historically supported a large lagoon that extended into the Meadow Creek wetlands to the north of the existing levee.

2.3 Biological conditions

2.3.1 Botanical resources

Six plant community types occur within the Project Area including willow riparian woodland, riparian scrub, coyote brush scrub, ruderal (weedy) grassland, in-stream wetlands, and landscape tree groves. The willow riparian woodland habitat type comprises the majority of the proposed flood control area. In addition to the main plant community types, four special status species have been identified as having the potential to occur in the project area including sand marshwort, La Graciosa thistle, Gambels watercress, and San Bernardino aster. The potential for these species to occur is based on a records search of the California Native Plant Society (CNPS) and California Natural Diversity Database (CNDDB) inventories and the presence of suitable habitat on site.

When the flood control channel was constructed in 1959 all riparian vegetation was removed from the channel, resulting in a flat-bottom trapezoidal channel devoid of all vegetation. This condition was maintained for many decades with periodic dredging of the channel to maintain overall capacity. Due to concerns associated with the presence of threatened species, past management activities that maintained flood conveyance were restricted. Since 2006 vegetation is annually managed as part of a program conducted by the District with assistance from the RCD. The current program acquires annual permits from California Department of Fish and Game and the California Coastal Commission.

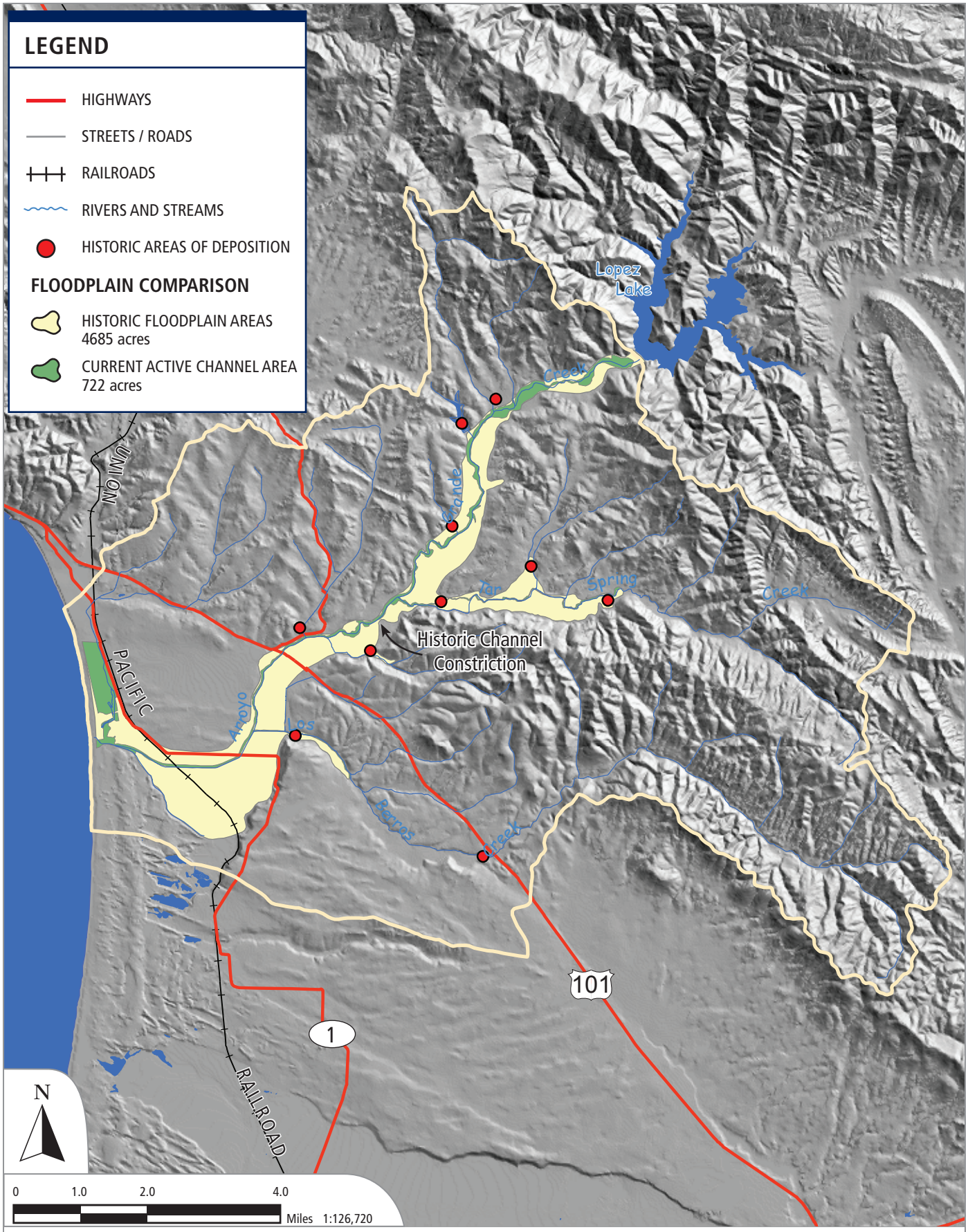

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FIGURE 5: Historic versus existing active channel areas on Arroyo Grande Creek and tributary channels downstream of Lopez Reservoir. Mapped surfaces represent areas of active deposition and storage of sediment delivered from the upper watershed. Loss of potential sediment storage in the lower valley results in transport and delivery of supplied sediment to the flood control reach.

2.3.2 Fisheries resources

Historically, Arroyo Grande Creek supported a large native population of steelhead (*Oncorhynchus mykiss*). Land use impacts in the watershed and construction of Lopez Dam and Reservoir has greatly reduced their numbers to a point where only a small run of adult steelhead occur today. Access to historic spawning habitat upstream of Lopez Reservoir was completely cut off due to construction of the dam in the late 1960's. The remaining habitat consists of the mainstem of Arroyo Grande Creek downstream of the dam and short reaches of year-round flow on tributaries such as Los Berros and Tar Springs. Unfortunately, the mainstem of Arroyo Grande Creek downstream of Lopez Reservoir, Los Berros Creek, and Tar Spring Creek do not provide the prime spawning and rearing habitat that historically occurred upstream of Lopez Reservoir. The accessible reaches of the mainstem of Arroyo Grande Creek consist of approximately 14 miles of channel along the mainstem, 14 miles of channel along Los Berros and an equal amount along Tar Springs.

In 1997, steelhead (*Oncorhynchus mykiss*) runs along the Central Coast of California were listed as threatened under the Endangered Species Act. Due to their declining numbers and federal protection, awareness has been raised about the fate of the steelhead run in Arroyo Grande Creek and a strategy is being pursued to restore this population through habitat enhancement measures downstream of Lopez Reservoir.

The most recent habitat assessment and steelhead abundance surveys were conducted in 2004 and 2006, respectively. Habitat assessments of the entire mainstem of Arroyo Grande Creek below Lopez Reservoir were conducted in the summer of 2004 by the California Conservation Corps (Close and Smith, 2004). Those data were then used to develop a random sample of discreet habitat units for a fish abundance survey conducted in the fall of 2006 (Dvorsky and Hagar, 2008). Within the Project Area a total of five discreet habitat units were sampled representing approximately 840 feet of channel. All of the habitat units were sampled via snorkeling and one of the habitat units was sampled via both snorkeling and electrofishing. The number of steelhead observed via snorkeling in all five habitat units sampled as part of the study was five. No steelhead were captured via electrofishing in the single habitat unit.

In the 2006 study, steelhead were markedly more abundant upstream of the flood control channel than within the flood control reach and then declined within the vicinity of Lopez Dam. In general low numbers of steelhead visually observed and sampled during the 2006 survey are consistent with previous studies on Arroyo Grande Creek which have suggested low steelhead adult returns, poor

quality habitat, and impacts from loss of historic, high quality habitat present above Lopez Reservoir. The observations summarized in the 2008 report suggest that the best habitat present in the system occurs in the upper portions of Reach 2, Reach 3, and the lower portion of Reach 4 (Figure 6; Tables 1 and 2). Habitat conditions in the upper portions of Reaches 4, 5, 6, and 7 appear to be significantly influenced by a lack of high flows due to regulation by Lopez Reservoir. The lack of channel flushing flows has resulted in a narrow low-flow channel that lacks complexity (Close and Smith, 2004). In addition, much of the bed of the channel consists primarily of silt that likely limits spawning. The presence of excessive fine sediment loads in streams has been shown to limit macroinvertebrate production, reduce the amount of cover habitat available to juvenile salmonids, and limit successful spawning (Terhune, 1958; McNeil and Ahnell, 1964; Vaux, 1962; Cooper, 1965; Daykin, 1965). Portions of Reaches 2, 3, and 4 probably exhibit higher steelhead abundance because unregulated flows from Los Berros, Tar Springs, and Corbett/Carpenter Creeks allow for introduction of coarse material for spawning and flushing of fine sediment from pools and riffles.

In addition to steelhead a number of other species of fish occur in the system including Sacramento sucker, California roach, and threespine stickleback. Non-native fish species include bullhead, centrarchids, and mosquitofish.

Fisheries resources were evaluated in the lagoon from 2003 through 2006 (Rischbieter 2004; Rischbieter 2006; Rischbieter 2007). The purpose of the lagoon study was to understand fish use of the lagoon and evaluate the impacts that off-highway vehicles have on habitat quality and use. Off-highway vehicles are currently permitted to cross the mouth of Arroyo Grande Creek to gain access to the State Vehicular Recreation Area. In the 2006 study a total of 13 species of fish were collected from the lagoon including steelhead and tidewater goby. The highest densities of steelhead occurred in February 2006 with a decline in relative abundance through the summer and into fall of 2006.

2.3.3 Other Threatened & Endangered species

The California red-legged frog is a State Species of Special Concern and is Federally listed as threatened. This species is found in quiet pools along streams, in marshes, and ponds. Red-legged frogs are closely tied to aquatic environments, and favor intermittent streams which include some areas with water at least 0.7 meters deep, a largely intact emergent or shoreline vegetation, and a lack of introduced bullfrogs and non-native fishes. This species' breeding season spans January to April (Stebbins 1985). Females deposit large egg masses on submerged vegetation at or near the surface. Embryonic stages require a salinity of $\leq$4.5 parts per thousand (Jennings and Hayes 1994). They are generally found on

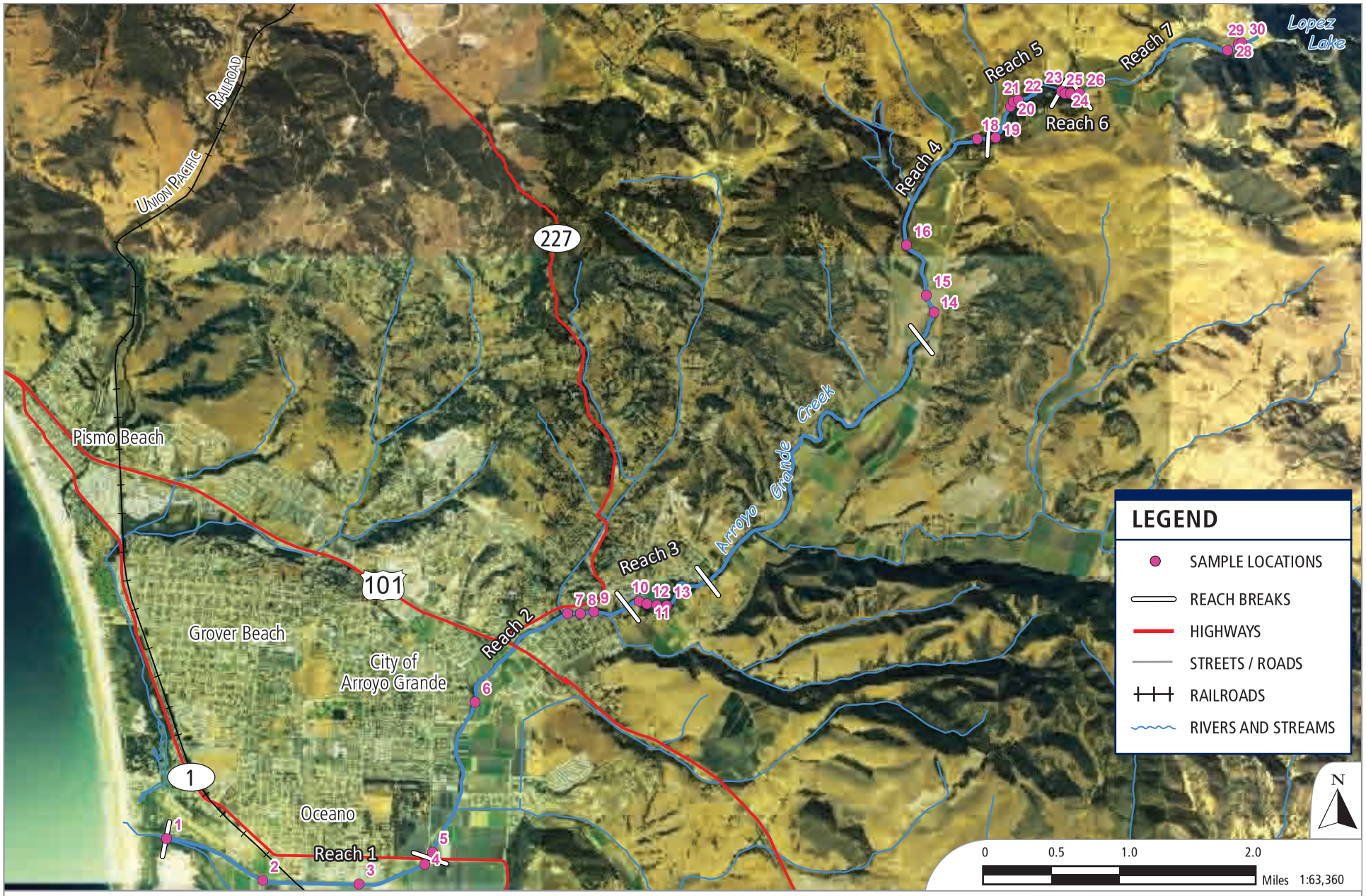

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FIGURE 6: Map indicating sample locations for the 2006 relative fish abundance study and geomorphic reaches along Arroyo Grande Creek.

Table 1

Reach	Sample Unit #	Steelhead	Sacramento Sucker	California Roach	Threespine Stickleback	Speckled Dace	Sculpin	Bullhead Catfish
1	3		19	15	12	1		
2	8	6	58	22		1	7	1
3	13	8	31	25	2	10		
4	14	3	10		1			
5	22	6	5		1			
6	23	4	12					1
7	28		13					

Table 2

Reach	Unit #	Electrofishing Total Catch	Snorkel Total Count
1	1		1
	2		1
	3	0	1
	4		2
2	5		0
	6		0
	7		21
	8	6	14
	9		15
3	10		28
	11		7
	12		12
	13	8	22
4	14	3	20
	15		6
	16		16
	18		3
5	19		1
	20		10
	21		2
	22	6	3
6	23	4	3
	24		1
	25		5
	26		0
7	28	0	4
	29		0
	30		9
	Grand Total	**27**	**207**

Note: Gray highlights denote habitat units that were electrofished and visually sampled.

TABLES 1 & 2: Table 1 - Fish species abundance as determined from electrofishing surveys in Arroyo Grande Creek, October 2006; Table 2 - Steelhead abundance in Arroyo Grande Creek based on electrofishing and visual surveys, October 2006.

streams having a small drainage area and low gradient (Hayes and Jennings 1988). Recent studies have shown that although only a small percentage of red-legged frogs from a pond population disperse, they are capable of moving distances of up to 2 miles (Bulger 1999). The red-legged frog occurs west of the Sierra Nevada-Cascade crest and in the Coast Ranges along the entire length of the state. Much of its habitat has undergone significant alterations in recent years, leading to extirpation of many populations. Other factors contributing to its decline include its former exploitation as food, water pollution, and predation and competition by the introduced bullfrog and green sunfish (Moyle 1973, Hayes and Jennings 1988).

California red-legged frogs have been observed within the flood control reach of Arroyo Grande Creek (Essex Environmental 2002; CSLRCD 2005). The flood control reach is expected to provide summer foraging habitat for the frog; however, due to swift winter flows through the study area, it is not likely to provide suitable frog breeding habitat. The lack of vegetation and dry summer conditions in the Los Berros Creek portion of the study area make it unsuitable for California red-legged frogs. The study area is not within the currently designated critical habitat for California red-legged frog (USFWS 2005).

2.4 Hydrologic and hydraulic conditions

Winter peak flow events on Arroyo Grande Creek can be characterized as flashy and are tied closely to the duration and magnitude of winter rainfall and antecedent soil moisture conditions. In most years, the rainy season begins in October, but the soil moisture demand of the surrounding areas is not met until a significant amount of precipitation has occurred. Once the ground is saturated, a greater percentage of the precipitation is converted to stream flow during storm runoff and the continual contribution of groundwater and subsurface flow to stream channels increases the winter baseflows. Precipitation is typically much lower during April, but the stream flows remain elevated as groundwater and subsurface flow continues to contribute water to the streams. By May, the water levels in the streams are typically low and relatively unresponsive to small spring thundershowers.

Historically, in lower Arroyo Grande Creek, summer baseflow was primarily maintained by releases from Lopez Reservoir. Summer releases from Lopez Reservoir were conducted to recharge the aquifer and meet the municipal water needs and those of the farming community. Currently, downstream releases are conducted on a daily basis throughout the year to ensure that environmental and agricultural needs are being met. This downstream release flow regimen is expected to change once the flood control district completes an on-going Habitat Conservation Plan (HCP). It is anticipated that the HCP will be completed within the next 2-3 years. Although it is rare due to the moderate coastal climate in the area

and the presence of a summer marine layer, off-shore winds can result in unusually warm temperatures on the coastal plain. When these conditions occur, heavy pumping of the local aquifer for agricultural uses can result in temporary dewatering of portions of lower Arroyo Grande Creek.

In the 1950's, the AG Creek flood control channel was designed to handle a 100-year storm, then calculated to be 10,120 cubic feet per second (cfs). However, since construction of the flood control channel, additional data has been collected that better describes less frequent peak discharge events such as the 50-year and 100-year recurrence events. In addition, urbanization of the watershed has likely altered the timing, magnitude, and frequency of high flow events. Both the 1999 Army Corps of Engineers report and 2006 Alternatives Study now calculate the 100-year flood at more than 19,200 cfs, almost twice the 1950's estimate of 10,120 cfs (USACE 1999; SH+G 2006). More frequent events also have a higher discharge than what was calculated when the flood control channel was constructed. The modeling has also been improved allowing for more precise estimates of channel roughness and the influence of debris and sediment on the ability of a channel to convey water. Consequently, even if regulatory constraints were not present and the original cross-sectional area of the flood control channel was restored, the Project could not protect adjacent property owners during a 100-year event.

Most recent estimates of peak flow hydrology for the Arroyo Grande Creek channel were conducted in 1998-99 by the U.S. Army Corps of Engineers, Los Angeles District. These data show the effect of the dam on peak flow in lower Arroyo Grande Creek. Downstream of Lopez Dam, a 2-year event is only 25% of what it would be if the dam were not present. During a 100 year event it is approximately half. The opposite is true for summer baseflow conditions. Winter peak flows are stored in Lopez Reservoir for release in the dry summer months for groundwater recharge for municipal and agricultural uses. Historically, those releases have been managed to maximize recharge and minimize the amount of water that reaches the Pacific Ocean. Currently, additional releases are being made for environmental considerations as well. Therefore, higher base flows occur along lower Arroyo Grande Creek than under pre-dam conditions. The hydrologic record suggests that median summer baseflow conditions prior to construction of Lopez ranged between 1.5 to 2.5 cubic feet per second (cfs), as opposed to 3 to 4 cfs post-dam. During dry and drought years, the data suggest that the Creek would periodically dry up between July and October pre-dam but maintain flows between 0.5 and 2 cfs post-dam (Stetson, 2004).

3.0 PROJECT ELEMENTS

Following completion of the Alternatives Study, the Task Force that was directed to oversee completion of the study met to discuss the proposed project alternatives and to make a decision on how to move forward. The approach selected by the Task Force was to pursue a phased implementation of Alternative 3 as funding within the local flood control district became available and/or opportunities arose to pursue grant funding or long-term loans. Alternative 3, once completely implemented, would provide flood protection up to the modeled 20-year return period. Given limited funding on an annual basis, the need to fund the environmental review and regulatory permitting, and the ongoing vegetation management program, Alternative 3 would most likely be implemented in several phases to eventually provide the expected level of flood protection (Figure 7).

Alternative 3 includes the following components:

- Annual vegetation management;
- An initial phase of sediment removal with maintenance in subsequent years;
- Raising existing levees in two stages representing protection from 10-year and 20-year floods; and,
- Raising and/or retrofitting the Union Pacific Railroad Bridge that crosses Arroyo Grande Creek to improve conveyance and reduce flood risk.

3.1 Current Efforts

Currently, the District conducts annual vegetation management, but has not conducted any sediment removal since 2001. No sediment removal has been authorized due to environmental restrictions and requirements put forth by regulatory agencies that a more comprehensive strategy be prepared to manage the flood control reach (see section 1.3).

In 2006 the RCD received a permit on behalf of the District, from California Department of Fish and Game to begin a vegetation management program through the flood control reach from approximately the Union Pacific Bridge upstream to Los Berros Creek. The vegetation maintenance program generally followed the approach laid out in the Alternative Study, limbing up existing vegetation to encourage formation of a riparian canopy, removal of smaller stems and trunks to reduce cross-sectional

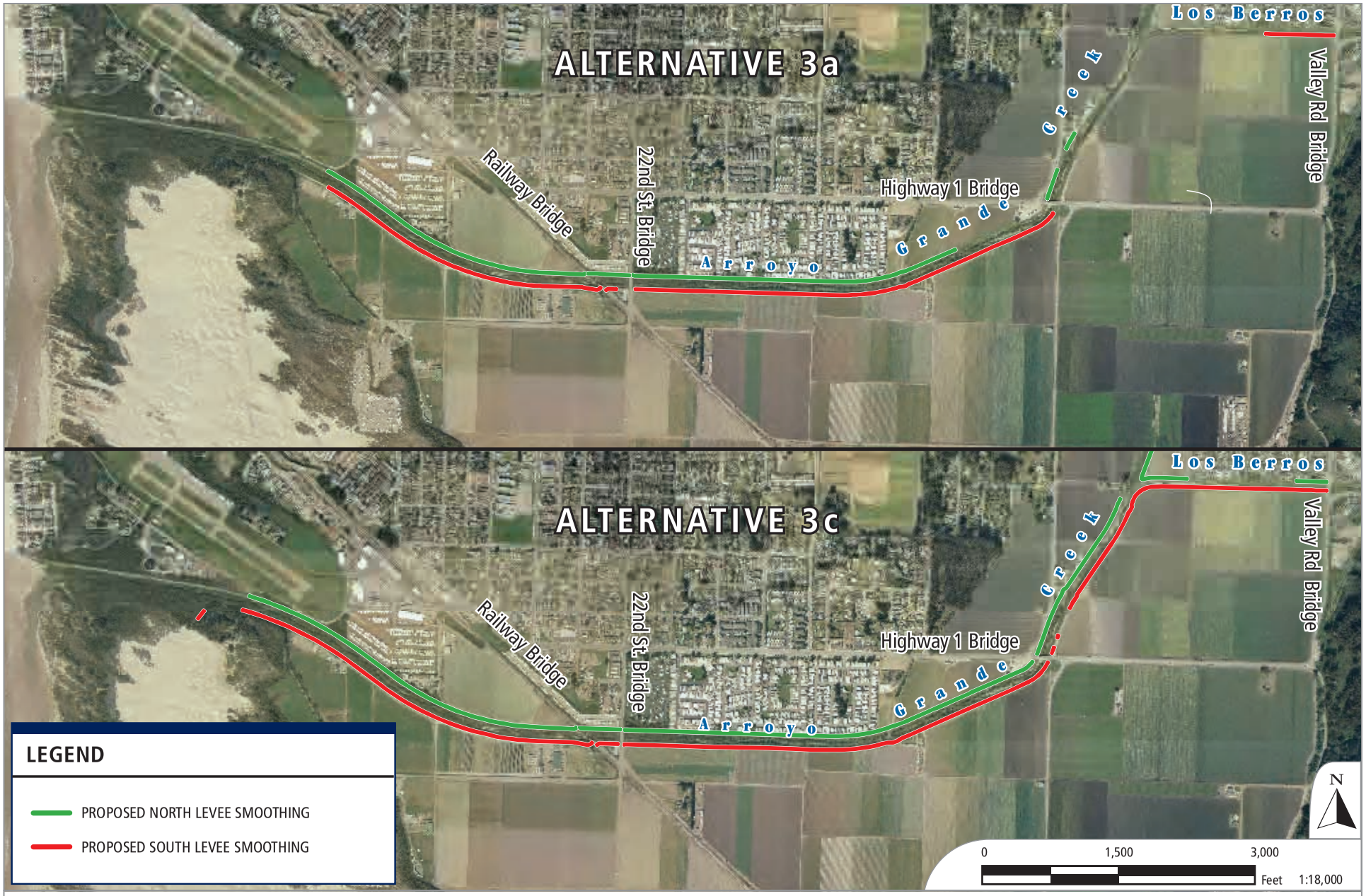

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FIGURE 7: Plan views of levee raise locations for Alternative 3a - Levee Smoothing (10-year protection), and Alternative 3c - Levee Raise (20-year protection). Under Alternative 3a, the north levee is raised approximately 4-inches above the south levee to provide additional protection to residential areas as compared to the south levee which is dominated by agricultural land uses. Under Alternative 3c, levee raising would occur along most of the flood control reach including the Los Berros channel.

roughness, and invasive removal. In 2007 the RCD received a permit, on behalf of the District, from the Coastal Commission to extend the vegetation management program within the Coastal Zone from the Union Pacific Railroad Bridge to just downstream of Guitton's Crossing. Vegetation management activities utilizing these principles has greatly improved the riparian canopy and complexity throughout the Arroyo Grande Creek Channel while at the same time providing increased flood protection. Improvements in the riparian canopy conditions are illustrated in Photos 4-9.

The long-term effectiveness of the existing vegetation management program, conducted by the District with assistance from the RCD, to reduce the potential for flooding on lower Arroyo Grande Creek is limited by the following factors:

1. The current vegetation management program is only permitted by short-term agreements with the California Department of Fish and Game and the California Coastal Commission. The program does not require a U.S. Army Corps of Engineers permit and therefore does not have incidental take statements issued by U.S. Fish and Wildlife and National Marine Fisheries Service that would protect the District from an enforcement action if ESA listed species were "taken" during annual maintenance activities. The current permits only allow for biological monitors to be present during maintenance activities and avoid areas where species, mainly California red-legged frog, are found. This has resulted in a lack of vegetation management along portions of the channel, creating segments where channel roughness is high relative to upstream and downstream segments and flood conveyance is low. Because overall flood conveyance is generally limited by the segment with the least conveyance, discontinuities in the vegetation management program have reduced flood conveyance along the entire flood control reach.
2. The current permit does not allow for complete removal of all woody vegetation outside the 10 foot buffer or any long-term program to manage sediment. The program proposed in the Alternatives Study was developed to protect the primary low flow channel and maintain a functional riparian corridor while providing improved flood protection by increasing conveyance. Outside the designated riparian corridor, secondary channels would be created and maintained for flood conveyance. Meeting the competing objectives of improving flood capacity and protecting aquatic and riparian resources required this compromise.

The need to address the reduced flood protection of the levee system due to sediment accumulation, the obstruction at the UPRR Bridge, and the limitations in the annual vegetation management program prompted the preparation of the WMP. The intent of the WMP is to define how lower Arroyo Grande and Los Berros Creek Channels will be managed to provide long-term reductions in flood risk and improved aquatic habitat conditions for key species of interest. The key components of the WMP

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PHOTOS 4,5,6: Times series of photographs looking upstream of 22nd St. Photos show recovery and improvement of the riparian corridor along the Arroyo Grande Creek Channel following sediment removal in 1999 and annual vegetation management activities after 2006.

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PHOTOS 7,8,9: Times series of photographs at UPRR bridge. Photos show recovery and improvement of the riparian corridor along the Arroyo Grande Creek Channel following sediment removal in 1999 and annual vegetation management activities after 2006.

include vegetation management, sediment management, two phases of levee raise, and replacement or modification of the Union Pacific Railroad Bridge.

3.2 Vegetation Management

For vegetation management activities, a differentiation is made between the Arroyo Grande Creek Channel and Los Berros Creek Channel. Because the relative size of these channels are completely different and the flood control channel reach of Los Berros lacks any appreciable flow in the summertime, vegetation management activities need to be different to reflect site conditions, opportunities, and constraints.

The vegetation management program for the Arroyo Grande Creek Channel will consist of maintaining a 10-foot buffer on both sides of the low-flow channel to provide riparian habitat and streamside cover to protect aquatic habitat (Figure 8). Where riparian vegetation exists on the Los Berros Creek Channel, a 5-foot buffer on each side of the active low flow channel will be maintained. Each buffer would be measured at breast height (i.e. - similar to the technique of measuring tree trunk diameters at breast height) and does not necessarily represent the width of the riparian canopy. Depending upon the maturity of the trees, the upper portion of the tree canopy would likely extend well beyond the buffer width although the exact future width of the canopy would be unknown and would vary (Figure 9).

The buffer would also act to maintain a primary low-flow channel that has developed over the last several years by providing root strength along the low flow channel margins. Woody vegetation outside of the buffer would be removed completely to allow for high flows to access secondary channels (see sediment management program) and provide for increased conveyance and flood capacity. Non-woody herbaceous vegetation would not be removed as they are expected to lay down during a large flow event. Willows present within the buffer would be limbed up to reduce cross-sectional roughness but still provide adequate stream shading and riparian habitat.

Management activities within the buffer will consist of the following:

- Trees greater than 4” in diameter on the banks of the active channel, from the toe of the active stream channel uphill to a distance of 10 feet from the channel (5 feet for Los Berros), will have horizontal branches trimmed to a height of not more than six feet from ground level. If creek shade is provided by adjacent larger trees, willow sprouts less than 4” in diameter will be cut to within 6” of the ground. Trimming the trees on the banks in this manner will encourage growth

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FIGURE 8: Conceptual cross-section view.

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FIGURE 9: Typical view of vegetation maintenance activities.

in the upper canopy of the trees, improving their ability over time to shade the creek, while also improving channel capacity to handle high flows by lowering the roughness coefficient.

- No trees will be removed within the buffer area with the exception of trees that have fallen over and are a risk to the integrity of the levee (e.g. – lodged against levee or bridge) or have the potential to increase the risk of flooding (e.g. – have fallen across the channel and are obstructing flow). All root balls will be left intact to enable resprouting and to help stabilize soils.

All woody vegetation within the buffer occurring 50 feet upstream and 30 feet downstream of existing bridges will be removed completely.

- Vegetation management activities will be conducted by hand crews and will include the use of mechanized and non-mechanized hand equipment such as chainsaws, loppers, etc. No debris will be allowed to enter the stream channel and debris from invasive species will be separated, bagged and disposed of at a designated landfill. Native vegetation cut from the channel will be mulched on site and either used as mulch on the back side of the levees or removed to a designated off-site area.

To improve riparian habitat through the project area, existing gaps in the riparian buffer would be revegetated with native riparian species including cottonwood, sycamore, and willow, with the exception of the Los Berros portion of the project area. Los Berros Creek differs from Arroyo Grande Creek in that it is not a perennial channel therefore vegetation characteristics are different and it lacks a mature riparian corridor. Cottonwood, sycamore, and alder will be planted at random along the length of the Arroyo Grande Creek Channel to encourage long-term diversity in the riparian corridor. Vegetation management activities will be combined with an active program to remove non-native vegetation from the flood control channel. Non-native species to be actively removed include Himalayan blackberry, English ivy, fennel, weeping willow, giant reed, castor bean, poison hemlock, and geranium. Non-native species management activities could include use of goats, application of herbicides, or removal by hand of plant and rootball. Non-native vegetation removed from the channel will be bagged and disposed of accordingly to limit their spread.

Vegetation management would be conducted as often as necessary to maintain a composite roughness of 0.04 through an adaptive management approach that would include reconnaissance surveys and site visits with regulatory agency staff. Vegetation management activities would likely occur annually depending on the amount of re-growth and funding. Based on vegetation management activities that

have occurred over the last four years, regrowth of managed vegetation during the spring and summer is heavy, requiring annual maintenance.

Vegetation management involving tree trimming would occur as late as possible in the summer and fall of each year to maximize stream shading during the warmer summer months and would only occur between July 1 and October 15 of any given year. If tree trimming activities occur prior to August 15 protocols to avoid impacts to nesting birds will be followed. Vigorous regrowth of willow is expected in late winter and spring providing low, overhanging vegetation during critical months for steelhead and red-legged frog rearing (Photo 10). In the Los Berros Creek Channel, since there are few trees but an overgrowth of non-native species, vegetation management to remove the invasive species would occur in early spring to prevent the vegetation from going to seed. If activities occur prior to July 1, protocols to avoid impacts to the low flow channel will be followed. These will include a start date no earlier than April 15 in the Los Berros Channel and activities will occur when the channel is dry and with agency authorization. Removing the invasive species prior to them going to seed will reduce vigorous regrowth during the following winter/spring and promote the growth of native species.

Photo 10. Spring/early summer regrowth of vegetation in the flood control channel just upstream of the 22nd St Bridge.

3.3 Sediment Management

The need for constant dredging of the flood control channel to maintain design capacity is primarily rooted in two geomorphic principles that dictate sediment delivery and transport in the flood control reach. They include:

1. Much of lower Arroyo Grande Creek downstream of Lopez Dam historically consisted of a broad floodplain characterized by an ephemeral active channel that migrated across the floodplain in response to sediment deposition and debris jams. The loss of that function has resulted in delivery of high sediment loads to the lower reaches of the watershed resulting in excessive sediment deposition in the flood control reach.
2. The original flood control channel design did not consider the concept of a "bankfull" channel when sizing bed dimensions. Bankfull can be defined as the stage that corresponds to the discharge at which channel maintenance is the most effective. It is at the bankfull discharge where, over time, the largest volume of sediment is moved and in-stream morphologic features, such as pools and riffles, are created.

Field observations in the flood control reach, following an extended period with no appreciable dredging, suggests that a bankfull or primary low-flow channel width of approximately 20-25 feet has developed along the Arroyo Grande Creek channel (bankfull was difficult to evaluate in areas backwatered by beaver dams). The flood control channel design created a bottom width of 60-70 feet, resulting in excessive sediment deposition because flow was spread out, resulting in shallower water depths and less energy to move sediment (shear stress, a measure of the water's ability to do work, is a function of flow depth). Consequently, the geomorphic setting and design geometry are an important reason why there is a need to constantly remove sediment from the channel. Maintenance of a primary low-flow channel, enforced by the presence of a stable riparian corridor, will improve sediment transport conditions through the flood control reach.

To enhance geomorphic function, improve flood conveyance, and "set" the flood control channel to an initial condition that will enhance sediment transport, a two step process has been proposed for sediment management within the project area. The two step process consists of an initial phase of sediment removal that will be completed the first year, followed by a long-term sediment management program that will rely on periodic monitoring of sediment conditions in the channel and consultation with permitting agencies to "reset" conditions back to the first year condition.

The first year sediment removal program will include removal of sediment on the levee side of the riparian buffers (Figure 9). Where excessive sediment has built up in the designated off-channel areas, sediment would be removed to a depth of 1.5-foot above the thalweg elevation of the Arroyo Grande Creek Channel and 1-foot above the Los Berros Creek Channel, as measured at a riffle. These depths were estimated as the appropriate bankfull depth for these channels based on field indicators. Sediment that has accumulated as a bar feature along the buffers will not be removed, thereby encouraging higher velocity flows along the primary and secondary channels and enhancing sediment transport conditions.

Overflow or secondary channels will be excavated in designated off-channel areas to create overflow paths during high flow events. In natural systems, the primary channel contains low flows, whereas secondary channels become activated during higher flows that, on average, occur once a year (Figure 10). The Arroyo Grande Creek flood control channel currently lacks the secondary channels that are found in more natural, low gradient stream environments. Based on the current configuration of the primary (low flow) channel, secondary channels will crisscross the primary channel as the primary channel meanders between the levee side slopes (see Appendix B - Preliminary Engineering Design Plans).

During high flow events, the intersection of the primary and secondary channels are expected to be areas of complex flow conditions that will create localized eddies, backwaters, and scour. To take advantage of these high energy areas and encourage development of complex cover habitat for steelhead and red-legged frog, two types of large woody structures will be constructed at these locations (see Appendix B for details on the proposed log structures). One type of large wood structure will be placed at the downstream end of each secondary channel as it conflues with the primary channel. The structure will provide protection from any headcutting into the secondary channel and therefore enforce the location of the primary channel. The structure has also been designed to encourage pool scour at the confluence and mimic an undercut bank (similar to lunker structures traditionally used to enhance fish habitat). Because pool habitat and escape cover is lacking through the flood control reach, improvements to these physical habitat characteristics are expected to greatly improve aquatic habitat. In addition, these structures will provide escape cover for adults migrating through the reach to preferred spawning and rearing habitat areas that occur upstream of the flood control reach.

The second type of large wood structure would protect the head of bar that would exist at the downstream side of the confluence. This structure would also enforce maintenance of the primary and

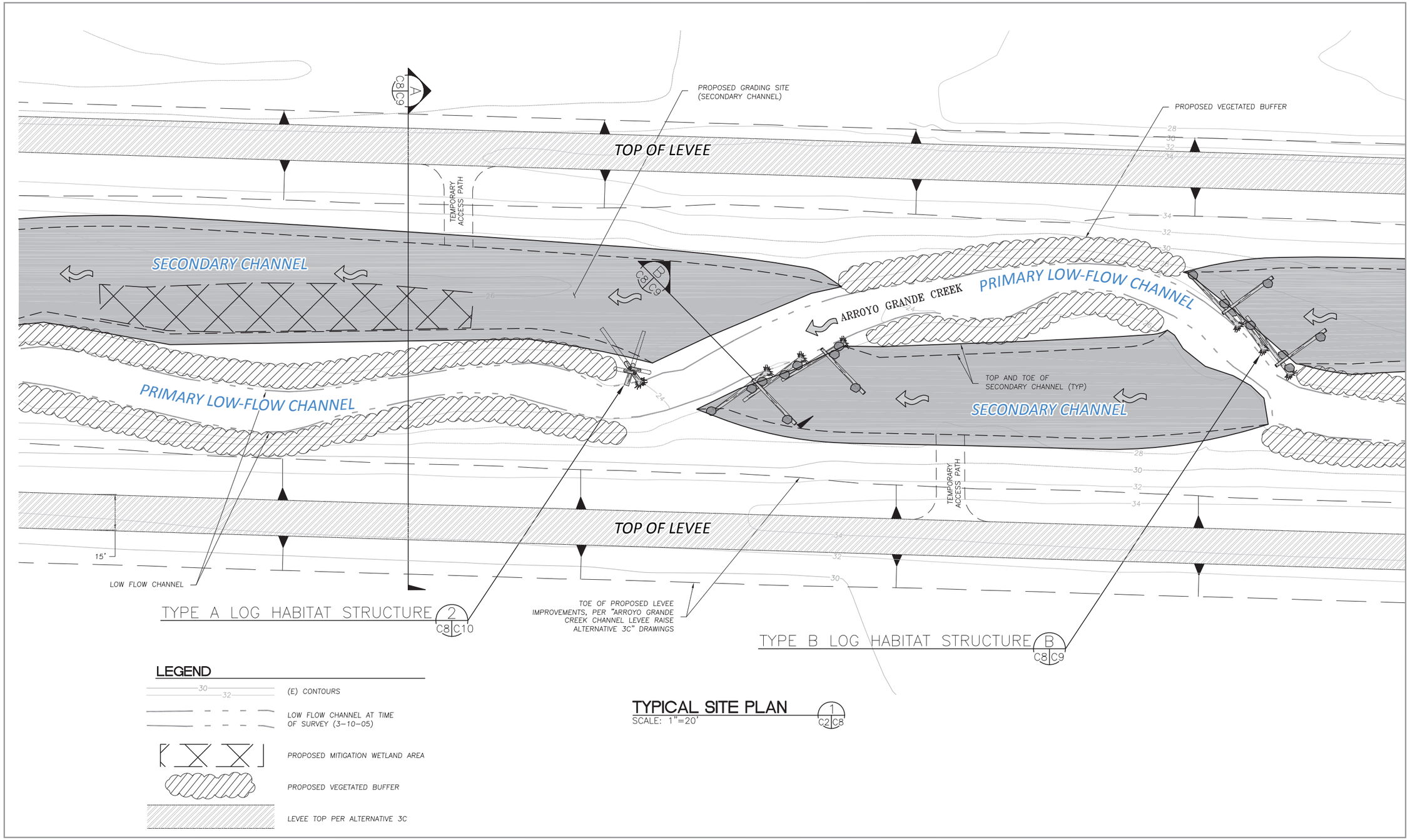

FIGURE 10
Conceptual sediment and vegetation management plans for the Arroyo Grande Creek Channel.

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secondary channel locations and create a hard point that would encourage turbulence and creation of a pool at the confluence of the channels. Although both types of structures are designed to meet different habitat and channel stability objectives, they will promote pool scour, encourage variability in substrate and flow field conditions, and provide deep pools and cover habitat for steelhead and red-legged frog.

Some maintenance of the secondary channels is expected over the long-term. Post first-year sediment management activities will likely consists of an excavator, located on the top of the levee, scooping and removing built up sediment. Removed sediment will be placed in a dump truck, also located at the top of the levee, to take the sediment off-site to a County approved area. Long-term sediment management activities are not expected to involve removal of vegetation or use of equipment within areas with flowing water.

Cross-sections will be monitored periodically to assess the performance of the channel in moving supplied sediment. Modeling presented in Chapter 4 of the Alternatives Study (SH+G, 2006) suggests that increased sediment transport conditions through the flood control reach will not negatively impact the Arroyo Grande Creek lagoon. To ensure that the depth of the lagoon is not impacted, additional cross-sections will be established at the lagoon and monitored following significant runoff events. Cross-sections will also be established along the flood control reach to provide information on the need to do spot removal of accumulated sediment to ensure that the project passes target flood flows. Annual maintenance will also be a component of the overall vegetation and sediment management program. A similar program has been successful on the San Lorenzo River in Santa Cruz County despite concerns about steelhead and Coho salmon (SH+G et al, 2002). In the case of the San Lorenzo River, secondary channels have developed a gravel/cobble surface due to scouring action and lack of fine sediment deposition. The objective of the annual maintenance program is to keep the secondary channels open for flood flows.

3.4 Raise Existing Levees

A key component of the Waterway Management Program involves raising the existing levees to improve flood protection along lower Arroyo Grande Creek. The levees would likely be raised in two phases to ultimately achieve flood protection up to a 20-year flood event. The first phase would raise the levees to an elevation that would provide 10-year flood protection. The second phase would achieve the desired 20-year flood protection. Both phases would incorporate sediment and vegetation management activities to achieve the desired level of flood protection. The levees would be raised along most of

lower Los Berros Creek Channel and along Arroyo Grande Creek Channel from the Los Berros confluence to the upstream end of the lagoon (Figure 8). The existing levees will be raised with the inside slope of the levee at 2:1, the outside levee at a slope of 1.5:1 and top of levee width not less than 15 feet (see Appendix B - Engineering Design Plans for details on the proposed levee raise). All levee raising work would take place on the outside of the existing levee, where feasible, and not impinge upon the existing Ordinary High Water (OHW).

3.5 Union Pacific Railroad Bridge

The Union Pacific Railroad (UPRR) Bridge, located near the downstream end of the flood control reach, presents an obstruction to flow under current conditions (Photo 11). In addition, the bridge does not cross at a 90 degree angle to the flood control channel and the abutments do not run parallel to the flow path of Arroyo Grande Creek. Under the proposal to raise the adjacent levees to provide 20-year flood protection, the UPRR Bridge would need to be modified, raised, or replaced to enable the levee raise. The UPRR Bridge does not need to be modified for the smaller (10-year protection) levee raise project. Given funding issues, it is unclear when the bridge would be modified, raised, or replaced in relation to the proposed levee raise.

Photo 11. Union Pacific Railroad (UPRR) bridge during the 2001 flood.

Any plan to modify, raise, or replace the UPRR Bridge would require work within OHW and within the low flow active channel. A temporary shoo fly track would be constructed adjacent to the existing bridge to provide uninterrupted service along the UPRR line during construction activities. The project

may require temporary dewatering activities during certain phases of the construction which would be accompanied by standard water quality and aquatic habitat protection measures. It is also likely that a small amount of riparian vegetation would need to be removed in the riparian buffer area (beyond the already proposed vegetation removal 50 feet upstream and 30 feet downstream of the bridge), necessitating revegetation efforts following construction.

4.0 MONITORING AND ADAPTIVE MANAGEMENT PLAN

4.1 Goals and objectives

Two key elements of the WMP, namely the vegetation and sediment management programs, will require activity within Arroyo Grande Creek over the long-term and in some cases on an annual basis. To maximize the benefit of these activities, reduce the costs to Zone 1/1A, and protect vital biological resources, long-term management will need to be adaptive to the conditions on site in any given year and will require a regulatory approach that is flexible within the objectives defined by the management program. An integral element of the management program is a well-defined monitoring program that provides the data necessary, in a timely manner, to effectively manage the system. This section outlines the proposed Mitigation and Monitoring Plan that will guide long-term vegetation and sediment management within the flood control reach.

4.2 Vegetation management

4.2.1 Goal

The goal of the vegetation management program is to maintain a balance between flood protection along lower Arroyo Grande Creek and protection of natural resources that rely on a healthy riparian corridor to protect important aquatic habitat. The vegetation management program, as outlined in Section 3.1 accomplishes these objectives in two ways:

1. Management of riparian vegetation to maintain a cross-sectional roughness of 0.04, and
2. Maintenance of a continuous corridor of riparian vegetation along the established primary (low flow) channel.

It is expected that vegetation management activities will occur on an annual basis, requiring a large crew working in the channel between April 15 and October 15. To ensure that vegetation management activities are carried out in a consistent manner, all workers will need to be properly trained and abide to the protection measures proposed in the WMP.

4.2.2 Monitoring and Performance Measures

Management of vegetation for flood control through the project reach has been conducted annually for the last three years and is expected to continue indefinitely on an annual basis. Because some of the work related to vegetation management is subjective and the level of effort may vary from year to year depending on growth rates, high flow conditions the previous year, and an inherent variability in year to year effort, annual monitoring will be required to direct management activities. The annual monitoring of vegetation conditions is meant to be a key component of an adaptive management strategy that seeks to respond to changing conditions, both from a flood control and natural resource perspective, based on defined performance measures. A summary of the performance measures and monitoring efforts associated with each is provided in Table 3 and are as follows:

- **PM VEG-1:** Finalize the annual vegetation management work plan by July 1. The draft work plan should be submitted for review and comment by the regulatory agencies by May 1 with comments provided by the regulatory agencies by June 1. The final work plan should be in place by July 1 for implementation. If invasive removal is needed, a final work plan just for invasive removal shall be in place by May 1. The work plan will address Performance Measures 2 through 4.
    - **MON VEG-1:** Each year in late spring, a report will be prepared defining the proposed vegetation management work plan to be conducted in the summer and early fall. The work plan will incorporate field notes and maps to define the management actions that will be carried out each year. Issues addressed in the work plan will include proposed areas of revegetation based on mapped gaps in riparian vegetation, locations and densities for focused plantings of non-willow species, areas and species type of non-native removal efforts, and depictions of areas where woody vegetation needs to be removed outside the riparian buffers. The work plan should be detailed and specific enough to provide a year-to-year road map to the group tasked with conducting the proposed activities. Where feasible, woody vegetation outside of the buffer recommended for removal should be flagged to allow independent review by regulatory agency staff.
- **PM VEG-2:** Increase riparian canopy cover. The primary objective of maintaining a riparian buffer is to create a continuous riparian canopy through the project area that provides benefit to terrestrial and aquatic species that rely on cover habitat, cool water temperatures, and other functions provided by a continuous and diverse riparian corridor. The objective of this performance measure would be to maintain or increase riparian canopy cover through the project area.

Activity	Performance Measure	Monitoring Element	Current Status of Parameter	Performance Target	Frequency
Vegetation Management	**PM VEG-1**: Finalize Work Plan	**MON VEG-1**: Prepare vegetation management work plan	Not Applicable	Annual work plan finalized by July 1[1]. Work plan will address PM VEG 2-4.	Annually following adoption of the WMP
	PM VEG-2: Increase riparian canopy cover	**MON VEG-2**: Measure canopy cover through project reach	To be measured following adoption of the WMP and Year 1 vegetation management to establish a baseline	Maintain or increase % canopy cover above baseline conditions.	Every three years following adoption of the WMP
	PM VEG-3: Increase riparian species diversity	**MON VEG-3**: Measure canopy species diversity through project reach	To be estimated following adoption of the WMP and Year 1 vegetation management to establish a baseline	County will consult with agency staff to determine targets based on success of diversity efforts over first 10 years of management	Every three years following adoption of the WMP
	PM VEG-4: Eliminate invasive species	**MON VEG-4**: Map invasive vegetation that occurs within project reach	Invasive species populations not currently mapped. Would be mapped prior to initial vegetation management activities.	1. Provide map of invasive species populations prior to Year 1 vegetation management	Update invasive species map every three years following adoption of the WMP
				2. No net increase of invasive species populations after Year 2015.	
Sediment Management	**PM SED-1**: Finalize Work Plan	**MON SED-1**: Prepare sediment management work plan	Not Applicable	Work plan finalized by September 1 of year prior to sediment management activities. Work plan will address PM SED 2-5.	As needed according to cross-section and hydraulic modeling results
	PM SED-2: Aggradation does not cause loss of 2-foot levee freeboard	**MON SED-2**: Cross-section monitoring through project reach	Not Applicable	Modeling results show that freeboard still exists above expected level of protection.	As needed according to reconnaissance assessment of sedimentation through flood control reach
	PM SED-3: Project does not result in long-term aggradation of lagoon	**MON SED-3**: Cross-section monitoring of lagoon	Baseline will be surveyed prior to first-year sediment management activities	Lagoon sedimentation patterns are within the range of natural variation.	Every three years following adoption of the WMP
	PM SED-4: Improve cover habitat for salmonids	**MON SED-4**: Evaluate habitat conditions in the project reach (Flosi et al)	Baseline to be established from CCC survey conducted in 2004.	Maintain or increase the cover rating for the project area as compared to baseline.	Every three years following adoption of the WMP
	PM SED-5: Improve maximum pool depth		Baseline to be established from CCC survey conducted in 2004.	Maintain or increase the average maximum pool depth in project area as compared to baseline.	Every three years following adoption of the WMP

1 - If invasive removal is proposed on Los Berros prior to June 15, that portion of the annual Work Plan will need to be finalized by May 1.

TABLE 3
Summary of the performance measures and monitoring efforts.

- **MON VEG-2:** Measure canopy cover every three years and report the percent cover in the annual Vegetation Management Workplan. The area of measurement shall include that between the centerlines of the north and south levees and the east and west project boundaries, as shown in Figure 1.

- **PM VEG-3:** Increase riparian species richness and density in the project area. Candidate species include but are not limited to sycamore, alder, and cottonwood. A performance target will be adapted as necessary during annual consultation with regulatory agencies.
  - **MON VEG-3:** Preparation of the first Vegetation Management Workplan shall include (1) a description of the number and approximate diameter at breast height (DBH) of the existing candidate species within the project area and (2) a planting plan for candidate species. Each subsequent annual workplan shall include an update of the number of individual candidate species, the DBH, and a planting/maintenance plan, as applicable.

- **PM VEG-4:** Achieve a riparian corridor that is free of invasive non-native species. Non-native invasive species are prevalent throughout the project reach although they have not been mapped. Consequently, a baseline will need to be established in the summer of 2010 and an eradication strategy will need to be developed and discussed in the annual work plan. The performance target would be to conduct most of the eradication efforts prior to 2015 with no net increase in infected areas beyond 2015. Key species to eradicate would be Arundo, ivy, Himalayan blackberry, and castor bean. Removal techniques may include application of herbicide, removal by hand of plant and rootballs, or the use of goats.
  - **MON VEG-4:** Map the presence of significant areas of non-native invasive species within the project area.

4.3 Sediment management

4.3.1 Goal

The goal of sediment management activities is to increase and maintain flood capacity through the project reach while at the same time improving instream aquatic habitat and reducing the need for maintenance dredging in the future. These goals will be achieved through an initial dredging of previously built up sediment to create secondary channels and integration of habitat enhancement structures consisting of large wood. Sediment management activities, including Year 1 and future activities, incorporate Best Management practices, monitoring activities, and performance measures that are well tested and have proven to be important as part of an overall strategy to adaptively manage channel conditions.

4.3.2 Monitoring and Performance measures

Monitoring of the sediment management portion of the project is directly related to the performance of the elements of the sediment management plan. Secondary channels are being proposed to enhance sediment transport through the reach and reduce the frequency of dredging activities. Concerns were also raised about the impact sediment management activities in the flood control reach will have on sediment transport into and through the lagoon.

Performance measures for the sediment management portion of the project are focused on preparation of the work plan and assessing the quality of instream aquatic habitat and how aquatic habitat function changes over time in response to sediment management activities. Aquatic habitat conditions were last surveyed in 2004 and relative fish abundance sampled in 2006. These studies would act as a baseline to evaluate the benefits of the proposed sediment management activities moving forward. The results from these studies suggest that the Arroyo Grande Creek Channel is primarily used by steelhead adults as a migratory corridor and marginally as rearing habitat for juveniles. Monitoring and performance measures summarized in Table 3 and included below address these concerns through a monitoring program that directly responds to management actions that address sediment reduction and habitat enhancement activities.

- **PM SED-1:** Finalize a work plan for sediment management activities by September 1 of year prior to when activities are expected to occur. The work plan should be submitted for review and comment by the regulatory agencies by August 1 with comments provided by the regulatory agencies by August 15. The work plan will address Performance Measures 2 through 5.
    - **MON SED-1:** Prepare, review and finalize work plan for sediment management.
- **PM SED-2:** Sedimentation in the project area does not reduce capacity in any one location beyond the defined freeboard.
    - **MON SED-2:** Cross-section monitoring will be conducted periodically in the flood control reach to determine if sediment accumulation in the secondary channels has reduced conveyance to the extent where additional sediment management is required. Cross-section monitoring data will be used in conjunction with the hydraulic model to determine if the levee freeboard has been compromised. Freeboard has been defined as 2-feet under all modeled alternatives in the Alternatives Study. For example, under the action that only includes vegetation and sediment management, the flood control channel is expected to provide protection up to the 4.6 year event with 2 feet of freeboard. In any given year, if the cross-section data and modeling results show that a

4.6 year event cannot be contained without the freeboard, Zone 1/1A would prepare a sediment management plan, based on the cross-section monitoring data, to remove sediment from the secondary channels to achieve 4.6 year flood protection with 2 feet of freeboard. Cross-section monitoring and preparation of a sediment management work plan would consist of the following:

1. Permanent cross-section locations will be established and monumented along the project reach following Year 1 sediment management activities. Cross-sections will be established every 500 feet along the channel and at the upstream and downstream sides of each of the bridges.
2. All of the established cross-sections will be measured Year 1 and roughness will be estimated for each to establish a baseline. A report will be produced and a database established.
3. Periodically, at the discretion of the District, Zone 1/1A, a portion of the cross-sections will be re-surveyed to evaluate the degree of sedimentation. The cross-sections surveyed in any given year will be incorporated into the hydraulic model along with the roughness estimates and a determination will be made regarding the need for dredging of any secondary channels.
4. Re-surveying of established cross-sections should occur as early as possible following the cessation of winter rains (i.e. – April/May). A report cataloging the results of the survey will be used to determine if a sediment management plan is necessary.
5. If sediment management is required, a sediment management plan will be prepared outlining where sediment management is needed, what quantity of sediment will be removed, when the activity will occur, and what equipment and approach will be used. The sediment management plan will be submitted to the agencies for review and comment.
6. If a sediment management plan is prepared, it should be submitted for comment to the agencies by August 1 of the year prior to any proposed dredging activities. Agency comments shall be received by August 15 following submittal of the sediment management plan.

- **PM SED-3:** Sediment management activities in the project area do not result in long-term aggradation in the lagoon and loss of lagoon volume. Evaluation of this performance measure will require a survey of the lagoon prior to the first year of sediment management activities to establish a baseline condition. The performance goal will be to not reduce the lagoon volume

by more than 25% from the baseline based on a six year moving average of measured conditions.

- **MON SED-3:** To evaluate potential long-term sediment impacts on the lagoon from sediment management activities in the flood control reach, cross-sections will be established in the lagoon.
    1. A total of four cross-sections will be established, approximately equally spaced throughout the lagoon. The cross-sections will be established in 2010 to develop a baseline and to understand year-to-year natural variability in lagoon morphology prior to initiation of long-term sediment management activities.
    2. The four cross-sections will be monitored every 3 years following the first year sediment management activities and a report will be prepared.
    3. If after 9 years sediment management shows no effect on the lagoon, then cross-sections monitoring will be reduced, following discussions with regulatory agencies.

- **PM SED-4:** Increase or maintain the cover rating through the project reach. Cover habitat is important for rearing juvenile steelhead, especially with the known presence of non-native predatory species, as well as providing refuge areas for adult steelhead during high flow conditions. A baseline of the cover rating will need to be established for the project area. The last comprehensive habitat survey of the project area was in 2004 by the CCC's. Depending upon the timing of first year sediment management activities additional surveys may be required to establish baseline conditions.
    - **MON SED-4:** To evaluate changes in aquatic habitat conditions along the Arroyo Grande Creek Channel, habitat assessments will be conducted through the project reach every three years using protocols established in the California Salmonid Stream Habitat Restoration Manual (Flosi et al, 1998). The habitat assessment will repeat the work conducted by the California Conservation Corps in 2004 or a later survey if it is determined to represent a better baseline condition. The assessment work will be conducted in late summer/early fall of each monitoring year with a report prepared and submitted by December 1. The report should also include recommendations for adaptive management.
- **PM SED-5:** Increase or maintain average maximum pool depth through the project reach. Deep pool habitat is important for steelhead and is currently lacking in the project reach. Most of the pools are shallow, bordering on glide habitat with little to no complexity. A long-term goal of the project would be to improve local scour to enhance pool formation. A baseline of average maximum pool depth will need to be established for the project area. The last comprehensive

habitat survey of the project area was in 2004 by the CCC's. Depending upon the timing of first year sediment management activities additional surveys may be required to establish baseline conditions.

- **MON SED-5:** Same as MON SED-4.

4.4 Protection measures

The following measures have been proposed to protect natural resources within the project area during all proposed activities included within the WMP:

- **PM-1:** RLF are assumed to occur throughout the AG Creek flood control channel during the season that vegetation management activities are likely to happen. To protect RLF, the following protection measures must be adhered to:

  1. To allow for the potential disturbance of habitat or the necessary temporary relocation of RLF during maintenance and/or construction activities, take protection for RLF must be obtained as part of the 404 process with U.S. Army Corps of Engineers. This process will require consultation with U.S. Fish and Wildlife Service who will issue a Biological Opinion for the project. The Biological Opinion may contain protection measures in addition to those outlined in this section that must be adhered to.
  2. A Service-approved biologist will survey the project site no more than 48 hours before the onset of work activities. Given the length of time that vegetation management activities are likely to occur, daily surveys may need to occur that precede work in any particular section of the channel. If any life stage of the California red-legged frog is found and these individuals are likely to be killed or injured by work activities, the approved biologist will be allowed sufficient time to move them from the site before work activities begin. The Service-approved biologist will relocate the California red-legged frogs the shortest distance possible to a location that contains suitable habitat and will not be affected by activities associated with the proposed project. The Service-approved biologist will maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs (digital preferred) to assist him or her in determining whether translocated animals are returning to the original point of capture.
  3. Before any management or construction activities begin, a Service-approved biologist will conduct a "worker awareness" training session for all personnel involved in the

activity. At a minimum, the training will include a description of the ecology of the California red-legged frog and its habitat, its protected status, and the specific measures being implemented for this project to avoid harm to and conserve the California red-legged frog for the current project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

4. During maintenance or construction activities, if a RLF is observed within an area where activities are occurring, all activities will cease and qualified biologist will be contacted. Activities can not resume until the qualified biologist has either temporarily relocated the RLF or the amphibian has been identified as another species.
5. Weed whackers will NOT be used by maintenance crews so as to reduce the risk of harming RLF.
6. A monitoring report and completion form will be prepared by the qualified biologist and sent to the Ventura Fish and Wildlife Office following completion of the activity.

- **PM-2:** For any work performed between February 15 and August 15, a qualified biologist will conduct the necessary surveys for nesting birds. If active nests are identified, work in those particular areas will be delayed until after August 15 or the biologist has determined the young have fledged.
- **PM-3:** When feasible, all work activity occurring within the active low flow channel shall be conducted when the channel is dry or at its lowest flow condition (late summer).
- **PM-4:** If management or construction activities require the temporary dewatering and relocation of fish, these activities will utilize gravity flow and will be constructed, operated, and removed according to the following conservation measures:
    - Where diversions are appropriate, they will be constructed independently for each project element, or group of project elements, so as to minimize the duration that any particular segment of stream channel is dewatered.

- **PM-5:** Dewatering activities may require the temporary relocation of fish. To protect fish resources the following measures will be adhered to in order to minimize potential steelhead mortality during relocation activities:
    1. Block nets will be placed at the upper and lower extent of the diversions or coffer dams to ensure that salmonids upstream and downstream do not enter the areas proposed

for dewatering. Block nets will not be removed until installation of all cofferdams, bypass pipes or channels, diversion dams or other facilities designed to dewater or divert flow, are completed.

2. If electrofishing techniques are utilized during fish relocation activities, at least one member of the field crew will be familiar with NMFS electrofishing guidelines and have a minimum of 100 hours of field experience with electrofishing techniques.
3. Electrofishing may not be performed if water temperatures exceed 18^{o} Celsius, or could reasonably be expected to rise above this temperature during the activities.
4. Electrofishing shall not be utilized in areas where water conductivity is greater than 350 uS/cm. Only direct current (DC) shall be used. At least one assistant shall aid the biologist during electrofishing by netting stunned fish and other aquatic vertebrates.
5. Each electrofishing session must start with all equipment settings (voltage, pulse width, and pulse rate) set to the minimums needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured, and not allowed to exceed the specified maxima: Voltage = 100V (Initial) – 400V (Max); Pulse width= 500 uS (Initial) – 5 uS (Max); Pulse rate = 30 Hz (Initial) – 70 Hz (Max).
6. A minimum of three passes with the electrofisher will be utilized to ensure maximum capture probability of salmonids within the area proposed for dewatering, unless the number of fish captured in the second pass is less than 10 percent of the first pass. In that case, two passes are adequate. If steelhead are present on any pass, a minimum of 20 minutes will separate the beginning of each pass through the Project reach to allow time for fish that are not captured to become susceptible to electrofishing again.
7. All captured fish will be held in water with temperatures not greater than ambient in-stream temperatures. If cooling is used, water temperatures will be maintained not more than three degrees Celsius less than ambient in-stream temperatures. All captured fish will be held in well oxygenated water, with a dissolved oxygen level of not less than seven parts per million. Prior to release, the following information shall be recorded: 1) Enumerate fish by species, 2) Visual determination of age of steelhead, 3) Enumerate steelhead injuries and fatalities by age class, 4) Enumerate successfully relocated steelhead by age class for each relocation site, and 5) Date and time of release of steelhead to each relocation site. Steelhead shall be subject to the minimum handling and holding times required. All captured fish will be allowed to recover from electrofishing and other capture gear before being returned to the stream. All captured fish will be processed and released prior to any subsequent electrofishing pass or netting effort.

8. All captured fish will be released upstream of the block nets to facilitate redistribution into dewatered areas following construction activities.

- **PM-6:** During all management or construction activities, Best Management Practices, consistent with those recommended by the Regional Water Quality Control Board and the California Department of Fish and Game, should be adhered to. They include the following:

    1. The contractor shall only use the approved access routes shown on the plans. No persons, equipment, or material shall be allowed outside the designated limits of disturbance.
    2. The stockpile areas for removed sediment that are adjacent to the levee and have potential for entering the active channel shall be fully enclosed with silt fence and boundary fence.
    3. All equipment shall be stored, maintained and refueled in a designated portion of the stockpile area. The contractor shall adhere to a spill prevention plan, to be prepared by the contractor and submitted for review by the engineer.
    4. Contractor shall immediately stop all operations and devote all on-site personnel to the containment and clean up of any fuel, fluid or oil spill, to the satisfaction of the engineer.
    5. The contractor shall be responsible for continuous dust control in accordance with the conditions of the permits. The contractor shall be responsible for the regular cleaning of all mud, dirt, debris, etc., from any and all adjacent roads and sidewalks.
    6. All excess soil shall be disposed of off-site or at locations to be designated in the permit documents.
    7. No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction-related materials or wastes, oil, or petroleum products or other organic material or earthen material shall be allowed to enter into, or be placed where it may be washed by rainfall or runoff into the creek. Any of these materials placed within or where they may enter the creek shall be removed immediately. When construction is complete, any excess material shall be removed from the work area so that such materials do not wash into the creek.
    8. Adequate erosion control measures shall be constructed and maintained to prevent the discharge of earthen materials to the creek from disturbed areas under construction and from completed construction areas. All disturbed areas of bed and bank shall be

stabilized, winterized, and vegetated with appropriate native vegetation prior to the end of the work window.

9. No equipment shall be operated in areas of flowing or standing water. No fueling, cleaning or maintenance of vehicles or equipment shall take place within any areas where an accidental discharge to the creek may occur; construction material and heavy equipment must be stored outside of the ordinary high water mark. All work done within the creek shall be completed in a manner so as to minimize impacts to beneficial uses and habitat; measures shall be employed to minimize disturbances along the channel that will adversely impact the water quality of the creek.

4.5 Beaver management

The beaver is an important mammal to California, as well as to North America, from a historical and aesthetic perspective. Beaver can be beneficial elements of the ecosystem by creating wetland habitat for a variety of wildlife species including fish, birds, amphibians, reptiles, and other mammals. This variety of wildlife is in turn valued for recreational, scientific, educational and aesthetic purposes. This increase in biodiversity of wildlife is a great asset to open space areas and is often highly valued by trail users and residents. In some areas beaver activity is also helpful in retaining storm water runoff and improving water quality by trapping sediment, nutrients, and pollutants. The dams act as natural check dams during floods and high water, reducing erosion and slowing the water enough to encourage sediment deposition. Water behind beaver dams also create additional shoreline and enable water-loving plants and trees to grow and thrive.

Beaver activity can also have detrimental effects. Their actions can sometimes lead to flooding of roads and trails, the loss of trees and shrubs, and the destruction of both public and private property. Their impacts often occur suddenly and dramatically. Beavers are usually not noticed in an area until valuable trees have been felled or flooding occurs. When beavers and their dams are deemed a nuisance, the initial response is to breach the dam. Although this can be a quick fix solution, the dams are usually rebuilt fairly quickly.

In the case of the flood control channel, the presence of beaver dams causes sediment to accumulate in the channel, especially in overbank areas that may not be scoured if the dams are breached. The accumulation of sediment results in less conveyance during a flood event and an increased need to periodically remove sediment.

With regard to aquatic habitat, anecdotal evidence suggests that the beaver dams may enhance rearing habitat for juvenile steelhead by creating deeper pools with complex cover habitat around flooded willows. The downside of the beaver ponds are that they tend to not persist through the entire low flow summer season and they may inhibit outmigration of adult steelhead in the spring, as was the case in the summer of 2008.

The impacts the beaver dams have on flood control in the Arroyo Grande Creek Channel is dramatic. Not only do the dams directly reduce flood conveyance due to the impoundment of water, they result in significant deposition of coarse bed material that builds up in the channel and reduces flood conveyance long term. Because of the confined nature of the constructed flood control channel, loss of conveyance in one area dramatically impacts conveyance upstream for a considerable distance as the zone of sediment deposition propagates upstream. Beaver also may threaten the efficacy of achieving a diverse, continuous, riparian corridor along the Arroyo Grande Creek Channel as they cut down larger trees and create gaps in the canopy.

Although the numbers of beavers currently using the Arroyo Grande Creek Channel and their distribution in the Arroyo Grande system are unknown, their existing and expected future impact is significant enough to warrant active management of the beaver. The District and Zone 1/1A, have, and will, be making a considerable investment in flood management and habitat enhancement measures. Consequently, it has been recommended during preparation of the WMP that active beaver management be included as a tool to ensure that flood control is maintained and that future sediment management activities are not compromised by beaver activity.

Beaver management activities allowed under the WMP would include capture and relocation, removal of existing dams, and where necessary capture and euthanization of individual beavers. If euthanization is used as an alternative to capture and relocation, a depredation permit would be necessary from the California Department of Fish and Game. Beaver management activities will be conducted in a way as to be sensitive to the local community. Beaver management activities in any given year, where feasible, will be specified in the annual work plan prepared for vegetation management activities. Removal of beaver dams will require the same environmental protection measures as vegetation management activities including use of non-mechanized equipment and RLF surveys prior to conducting work. A biological monitor, with a federal permit to handle steelhead, should also be present during dam removal activities in case fish are stranded as a result of the action.

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Appendix A

Historical Summary of lower Arroyo Grande Creek

Arroyo Grande Creek has a long history of flood impacts to agriculture and human habitation that dates back to the time of the early settlements in the mid-19th century. Historical accounts and a geomorphic analysis of the lower watershed and Cienega Valley suggest that much of the valley floor was at grade with the Creek and consisted of a broad thicket of willows and other riparian trees (Dvorsky, 2004). From the time of the earliest settlements, use of the valley for homesteading, agricultural production, dairies, and cattle ranching required clearing of vegetation and active management of the channel and floodplain. Management, in those days, consisting primarily of ditching the channel to provide a predictable flow path, building levees, removing willow thickets, and leveling the land. Much of these activities were carried out by individual landowners with little to no coordinated efforts between adjacent property owners.

The historic channel likely had a much wider active floodplain, as compared to the incised condition it is in today. The entire valley bottom most likely consisted of a series of active channels, flood channels, and abandoned channels with backwater wetlands that all occurred at, or near, the elevation of the current valley floor. The active channel was likely to be an ephemeral feature, shifting from one location to another based on sediment deposition, debris jams, or other obstructions. In some areas the channel was likely braided, where the floodplain was wide, and a single thread channel where constrictions such as bedrock outcrops narrowed the floodplain.

Several lines of evidence suggest that the channel exhibited these characteristics including remnant channel and floodplain areas observed on historic aerial photos and historic accounts from early settlers (Figure 2). Historic accounts from early settlers, presented below, are taken from a book by Robert Brown, a local historian, entitled, “Story of the Arroyo Grande Creek”, published in 2002:

> “..When Francisco and Manuela Branch came here in 1837 to establish their home, the valley was described as a ‘thicket of swamp and willow and cottonwood, a monte, as it was called by the Spanish…”

> “…The great adobe, built by Branch, was midway up the valley on a hill just below the present day Branch School. From that point on to the ocean the creek had no channel; it just spread out in the monte, creating bogs and ponds as it made its way to the sea.”

> “W. H. Findley, who came here in 1875 said in a speech delivered in 1911:’A large part of this beautiful valley was still covered with primeval forests through which the flood waters of the

> Arroyo Grande had been spreading for untold ages…we helped make the channel and reclaim the land. We felled the forests and built our homes…'"

> "As far as the creek is concerned, the early settler, Branch, did some clearing of the monte when he first arrived, but it wasn't until 1863-64 that nature extended a hand and lent assistance by sending the Central Coast a devastating drought. A lot of wetlands dried up and it was easier to channel the creek."

The historic accounts, along with an analysis of historic photos dating back to 1939 (Dvorsky, 2004) point to Arroyo Grande Creek being a completely different channel than it is today. Much of the existing channel has been straightened, confined, constricted, and deepened. Floodplain areas have been converted to agricultural fields and the associated riparian forests have been removed. Many of these changes occurred in the late 1800's and early 1900's as evidenced in these historic accounts (Brown, 2002):

> "…The Arroyo Grande Creek became used as a boundary line and it kept shifting, it made good business sense to get a fixed line somewhere. The way the creek shifted around and tore up the land when it flooded, it was necessary to create a definite channel on the south side of the valley."

> "The channel formed by Francis Branch and others basically flowed along the south side of the valley…A second ditch brought the creek water down to a farm….This ditch had been extended down the north side of the valley to lands…To divert water into their ditch, Beckett and Young had put up a temporary dam across the main creek. The heavy rainfall in 1883-84 was early and was followed by additional rains in October and November, which coming before the temporary dam had been removed for the winter, resulting in a strong flow of water down the ditch on the north side of the valley. So heavy was the flow that the main channel of the creek swung to the north side of town, where it had remained ever since."

> "…The farmers all up and down the creek were working to straighten the creek and prevent further damage should another such flood ever come."

> "While the amount of damage done is great, including the loss of practically all bridges and the washing out of roads, it has some compensation. The channel of the Arroyo Grande Creek was

> never in better condition to carry future floods than it is now. The channel has been widened, many bad corners cut off and the creek bed is four to six feet deeper than it was…"
>
> "…In the winter of 1969, before the dam, it became furious and frothy to the belly of the Harris Bridge, 30 feet above the gorge that Mr. Harris and some engineers had dynamited in the early part of the century, for the creek had a lethal history."

Despite the best intentions and well-laid plans of land owners to control Arroyo Grande Creek and reduce impacts to adjacent farmlands and infrastructure, the history of the creek from settlement to present has been a series of devastating floods that have greatly impacted the residents of the area. Severe flood damage has been documented in the Arroyo Grande valley in 1883-84, 1893, 1895, 1907, 1909, 1911, 1914, 1936-37, 1943, 1952, and 2001. The valley avoided the significant flood events that occurred elsewhere on the central and south coast in 1969, 1983, and 1997, most likely due to flood storage in Lopez Reservoir.

The lower Arroyo Grande Creek, or Cienega Valley, is especially vulnerable to flooding because it lies at the downstream, lower gradient terminus of a highly erosive watershed. Much of the erosion occurring in the upper watershed is transported and delivered to the floodplains that make up the lower valley. Historically, much of the transported sediment was deposited onto broad floodplains of the lower alluvial valleys of Arroyo Grande Creek, Tar Springs Creek, and Los Berros Creek (Figure 3). Due to conversion of floodplain areas to agricultural and residential uses, much of the sediment that historically was deposited on the floodplain ends up being deposited in backwater areas behind bridges, beaver dams, or in lower gradient areas, such as the lower Arroyo Grande Creek Channel.

In the 1950's, severe flooding from Arroyo Grande Creek resulted in inundation of prime farmland in the Cienega Valley and significant impacts to existing infrastructure. At the time, Arroyo Grande and adjacent communities were primarily rural with a combined population of less than 5,000 residents. To reduce future economic impacts to the agricultural economy and the growing urban and rural residential population, the community organized the Arroyo Grande Creek Flood Control Project (Project). The Project, led jointly by the USDA-Soil Conservation Service/Arroyo Grande Resource Conservation District, was completed in 1961 to protect homes and farmland in La Ciénega Valley. (These organizations are now known as the USDA-Natural Resources Conservation Service and the Coastal San Luis RCD, respectively.)

The main feature of the Project was a levee system and trapezoidal channel that confined Arroyo Grande Creek from its confluence with Los Berros Creek downstream to the Pacific Ocean (Photo 1). In addition, the lower portion of Los Berros Creek from the Valley View Bridge to the confluence with Arroyo Grande Creek was diverted from its pre-1960 channel, which ran along the southern edge of La Cienega Valley, to its current confluence upstream of the Highway 1 Bridge. Runoff from the Meadow Creek watershed, which runs though Pismo Lake, was designed to enter Arroyo Grande Creek through a pair of flap gates near the Pismo Dunes State Vehicular Recreation Area. Maintenance of the Project, following construction, was the responsibility of Zone 1/lA, under the purview of the County Public Works Department. Landowners within the zone are assessed an annual fee to support management and maintenance of the flood control reach.

Photo 1. Constructed trapezoidal channel at UPRR bridge in 1958.

The original flood control channel was built in 1959 and was designed to carry a discharge of 7,500 cubic feet per second, which, at the time of the analysis, was determined to have a recurrence of once every 50 years. Maintenance of the flood control channel by the District, RCD, and NRCS since completion of the project in 1961 consisted primarily of vegetation and sediment removal to maintain the design geometry and capacity of the channel and routine maintenance of the levee system and associated infrastructure. The frequency of maintenance varied depending on rainfall and runoff conditions that preceded maintenance. Maintenance activities in recent years was restricted by a combination of lack of funding (Zone 1/1A maintenance funds had not risen appreciably since the creation of the special

district) and environmental concerns about the impacts of vegetation and sediment removal on aquatic and riparian habitat in the flood control reach.

Environmental concerns and restrictions increased following the listing of the California red-legged frog (*Rana aurora draytonii*), in 1996, and steelhead (*Oncorhynchus mykiss*), in 1997. Protection of critical habitat for these two species meant that past maintenance activities, authorized under the 1959 Operation and Maintenance Agreement with the NRCS and RCD, was no longer feasible. The agencies overseeing protection of sensitive species, including the U.S. Fish and Wildlife Service, NOAA Fisheries, and the California Department of Fish and Game, requested that a more comprehensive strategy be prepared to manage the flood control reach through a maintenance program that specifically protects aquatic habitat.

In the interim, Arroyo Grande was experiencing a development boom. During the late 1990's, 625 new home sites were approved in the City of Arroyo Grande in a period of 5 years. This number represents an increase of almost 10% in a city with only 6,750 housing units (US Census, 2000.). Much of the development, both proposed and existing, provides little in the way of stormwater management or Best Management Practices (BMP's) that limit runoff and reduce impacts to the hydrology of the watershed. Consequently, an increase in impervious surfaces within the watershed contributed to increased runoff to the flood control reach with increased risk of flooding. A flood estimated to occur once every 50 years in 1955 is now estimated to have a recurrence interval of 15-20 years due to changes in the hydrology of the lower watershed (defined as the watershed below Lopez Dam). In addition, much of the development occurred on steep, highly erodible soils. Sediment eroded from disturbed lands are eventually transported to the flood control reach, resulting in impacts to low lying agricultural land through increased flooding and flood risk.

In 1999, the US Army Corps of Engineers developed a study to assess the existing capacity of the flood control reach. The results suggested that the system currently has a reduced capacity of 1,700 cfs which equates to a recurrence interval of approximately 2-year to 5-years (USACE, 2001). The capacity of the as-built channel (the channel as built in 1961), according to the USACE model, was determined to be 6,500 cfs with an associated level of protection between the 10-year and 20-year runoff event. These results showed that even with 1961 geometry, where sediment has been removed, the capacity of the channel has been reduced by approximately 1,000 cfs, most likely due to changes in the levee geometry from settlement and erosion. The USACE study pointed to the need for a more detailed alternative assessment to define project opportunities and costs associated with improving overall capacity and flood protection.

On March 5, 2001, during a high intensity rain event, the levee was breached on the south side between the mouth and the Union Pacific railroad bridge (Photos 2 and 3). It was estimated by observers in the field at the time of the levee breach that the levee would have overtopped upstream of the 22nd Street bridge had the levee not breached and lowered the overall water surface. Hundreds of acres of farmland and several residences were flooded in the La Cienega Valley. Impacts from the flooding persisted beyond the winter season as many of the lower lying areas with clay soils located in the southern portion of the valley remained saturated. The northern levee remained intact, thereby protecting several residential developments, the Oceano Aiport, and the regional wastewater treatment plant that services the communities of Arroyo Grande, Oceano and Grover Beach.

Photo 2. Oblique photo of flooding in the Cienega Valley following the levee breach of March 2001 (looking south).

Photo 3. Close-up view of the levee breach and flooding of farmland in March 2001 (looking at south levee from north levee).

In April of 2003, the County Board of Supervisors passed a "Resolution to Relinquish the Arroyo Grande and Los Berros Diversion Flood Control Channels and Appurtenant Structures to the State of California". County Public Works Department staff recommended that maintenance responsibilities be turned over

to the State Department of Water Resources (DWR) because the County had not been able to maintain the channel due to regulatory requirements, inadequate funding from the Zone 1/1A assessments, and the cost of liability insurance. The State is mandated to accept this responsibility under Water Code Section 12878. In fall 2004, the responsible entity, the Division of Flood Management at DWR, initiated the process of establishing a new Maintenance Area for flood control along lower Arroyo Grande Creek.

In February of 2005, DWR issued a Statement of Necessary work with the goal of initiating maintenance work on the channel in July 2005. Because the State Water Code mandates that DWR maintain the channel by restoring it to its original 1958 design, DWR was faced with a difficult and expensive regulatory process in order to obtain the necessary environmental permits. Due to the presence of two federally listed species, restoring the original design would likely result in requirements to develop and implement costly mitigation measures to compensate for habitat loss that would be paid locally through the Zone 1/1A assessment process. There are no provisions in the Water Code which allows DWR to study or implement other acceptable flood control designs or alternatives that would also be more environmentally acceptable.

During late 2002 the SLOCFCWCD allocated money for a Program Evaluation and Engineering Alternatives Analysis Study of the lower Arroyo Grande Creek flood control channel. This study was intended to evaluate a wide range of flood control alternative projects and provide a plan to manage flooding at the most downstream section of the creek. When the SLOCFCWCD began the process of relinquishing maintenance of the channel over to the State, it also withdrew the funding for this study. The Zone 1/1A Advisory Committee, comprised of agriculturalists and other local residents, and various stakeholders, actively lobbied the County Board of Supervisors to restore this funding so that the plan could be developed. In June 2004, the SLOCFCWCD approved to the RCD to conduct “The Erosion, Sedimentation, and Flooding Alternatives Study” (Alternatives Study). The County grant was matched by the State Coastal Conservancy, and augmented from the State Dept of Parks and Recreation Off-Highway Vehicles Division.

The County and the Zone 1/1A Task Force, consisting of Zone 1/1A property owners and stakeholder organizations, worked together over the ensuing months to organize a Proposition 218 election to raise sufficient funds to provide a basic level of flood channel maintenance without putting an oppressive financial burden on Zone 1/1A property owners. When the returned ballots were counted on June 8, 2006, the Prop 218 measure passed with more than 89% of the votes cast. As a result of the overwhelming passage of the Prop 218 measure for Zone 1/1A, on June 27, 2006, the County Board of Supervisors, acting as the SLOCFCWCD, rescinded their 2003 resolution to relinquish the flood channel

to DWR. By keeping the maintenance responsibility local, channel maintenance can be conducted both in a more flexible and environmentally sensitive manner than would have been possible under DWR.

The consulting firm of Swanson Hydrology and Geomorphology (SH+G) was contracted by the RCD to conduct the Alternatives Study, and began work in February 2005. A Technical Advisory Team met with SH+G staff twice during 2005 to provide feedback and recommendations regarding which options to consider for analysis in the Alternatives Study, and to review preliminary results. The Technical Advisory Team consisted of representatives from U.S. Fish and Wildlife, California Department of Fish and Game, the Coastal Conservancy, NOAA/NMFS, Regional Water Quality Control Board, San Luis Obispo County Public Works and Environmental Planning Departments, City of Arroyo Grande, Oceano Community Services District, Central Coast Salmon Enhancement, Zone 1/1A Advisory Committee, and U.S. Army Corps of Engineers.

The Alternatives Study was completed in January 2006. The Alternatives Study focused in-depth on erosion sources, sedimentation and hydrology as they relate to recurring flooding in the lower reaches of the creek. The final study described six different "Alternatives", or sets of feasible projects and management actions, that could be implemented to manage flooding in Zone 1/1A, and provided estimates of the degree of flood protection afforded by each Alternative. The Study also discussed and analyzed the projected benefits of necessary watershed-wide management activities, such as floodplain restoration, stream restoration, and sediment control, to diminish flood risk and reduce the frequency of dredging through the flood control reach.

With the 2006 passage of the Proposition 218 measure, funding was now available to develop and carry out a long-term management plan for the flood control channel. In fall 2007, SLO County Public Works drafted a Notice of Preparation and a Request for Qualifications for preparation of an environmental impact report/environmental assessment and assistance with regulatory permitting. Representatives of the Zone 1/1A Advisory Committee Task Force joined SLO County Public Works staff in reviewing applications, conducting interviews, and selecting a consulting firm to recommend to the SLO County Board of Supervisors for contract. The firm selected was the Morro Group, now SWCA, Inc., partnering with SH+G (now Waterways Consulting) to prepare a Waterway Management Program (WMP) that includes project actions described under Alternative 3c of the Alternatives Study combined with enhancement actions that improve habitat conditions in the flood control reach for steelhead, California red-legged frog, and other species that rely on the aquatic environment.

Appendix B

Preliminary Engineering Design Plans

ARROYO GRANDE CREEK CHANNEL SEDIMENT AND VEGETATION MANAGEMENT PLAN

CONCEPTUAL PLANS

PROJECT DESCRIPTION

THESE PLANS PROVIDE DETAILS FOR THE REMOVAL OF SEDIMENT FROM ARROYO GRANDE AND LOS BERROS CREEK CHANNELS IN THE COUNTY OF SAN LUIS OBISPO. CONSTRUCTION ACTIVITIES WILL CONSIST OF EXCAVATION AND DISPOSAL OF SEDIMENT FROM THE CHANNEL FLOODPLAINS AND INSTALLATION OF LOG HABITAT STRUCTURES.

GRADING SUMMARY

TOTAL CUT VOLUME =	21,332 CY
TOTAL FILL VOLUME =	0 CY
NET CUT =	21,332 CY

THE ABOVE QUANTITIES ARE APPROXIMATE IN-PLACE VOLUMES CALCULATED AS THE DIFFERENCE BETWEEN EXISTING GROUND, AS MAPPED IN 2006, AND THE PROPOSED FINISH GRADE. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF EARTH TO BE CONSTRUCTED.

THE ABOVE QUANTITIES HAVE BEEN CALCULATED FOR PERMITING PURPOSES ONLY AND HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.

THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS EARTH MATERIALS.

PRIOR TO COMMENCEMENT OF CONSTRUCTION, CONTRACTOR SHALL PERFORM AN UPDATED CROSS SECTION SURVEY TO DETERMINE ACTUAL CONDITIONS.

GENERAL NOTES

1) PREPARED AT THE REQUEST OF:
SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

2) AERIAL MAPPING OF THE PROJECT AREA WAS PERFORMED BY:
CENTRAL COAST AERIAL MAPPING, INC.
710 FIERO LN #24
SAN LUIS OBISPO, CALIFORNIA 93401
(805)543-4307
JOB# 2005-841
PHOTOGRAPHY DATE: 3/10/2005

3) ELEVATION DATUM: NAVD 88, BASED ON NGS BENCHMARK X 532, PID "FV0421", ELEVATION= 13.5'

4) HORIZONTAL DATUM: HORIZONTAL COORDINATES CONSTRAINED TO NGS MONUMENT HPGN CA 05 05, PID "FV2048", NAD83, CALIFORNIA STATE PLAN ZONE 5

5) APN'S. T.B.D.

6) ELEVATIONS AND DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF. CONTOUR INTERVAL IS 2 FEET

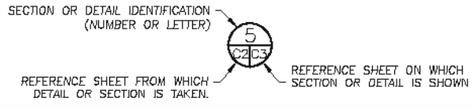
7) PROPERTY LINES ARE NOT SHOWN HEREON.

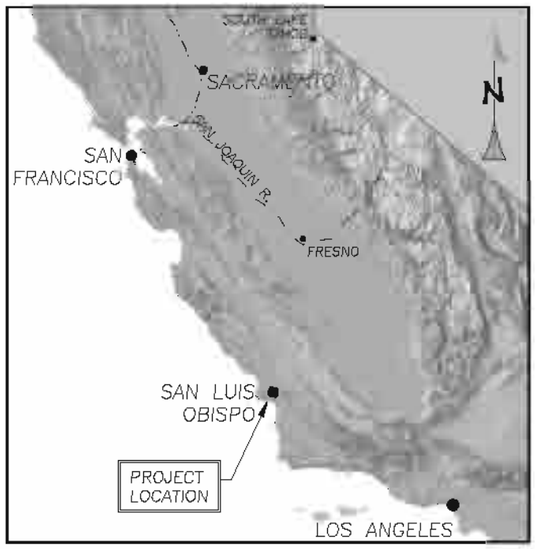
8) ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE CURRENT EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS FOR CONSTRUCTION OF LOCAL STREETS AND ROADS (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS", AND SHALL BE SUBJECT TO APPROVAL OF THE OWNER

9) THE COUNTY PUBLIC WORKS DEPARTMENT SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. A QUALIFIED CIVIL ENGINEER WITH EXPERIENCE IN THE INSTALLATION OF FEATURES OF THE TYPE SHOWN ON THESE PLANS, SHALL PROVIDE INSPECTION SERVICES DURING THE CONSTRUCTION PROCESS.

10) CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.

SECTION AND DETAIL CONVENTION





REGIONAL MAP
N.T.S

VICINITY MAP
N.T.S.

SHEET INDEX

GENERAL NOTES CONT'D

11) EXISTING UNDERGROUND UTILITY LOCATIONS:

LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES OR FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION.

PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, CONTRACTOR SHALL DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS, AND SHALL BE SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. CONTRACTOR TO CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.

UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.

UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

12) SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, HE SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

13) THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

14) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.

15) THE CONTRACTOR SHALL PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.

16) ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL.

17) THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. ALL MATERIALS SHALL BE STORED WITHIN APPROVED CONSTRUCTION AREAS.

18) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AT HIS EXPENSE, ALL PERMITS AS REQUIRED BY THE LOCAL AGENCIES, INCLUDING BUT NOT LIMITED TO, ENCROACHMENT, GRADING AND LANE CLOSURES NOT PREVIOUSLY OBTAINED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS.

19) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

20) NO CONSTRUCTION SHALL BE STARTED WITHOUT PLANS APPROVED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS. THE DEPARMENT OF PUBLIC WORKS SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION AND OF THE TIME AND LOCATION OF THE PRE-CONSTRUCTION CONFERENCE ANY CONSTRUCTION PERFORMED WITHOUT PRIOR NOTIFICATION TO THE DEPARTMENT OF PUBLIC WORKS WILL BE REJECTED AND WILL BE AT THE CONTRACTOR'S RISK.

21) THE CONTRACTOR SHALL NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER

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PREPARED AT THE REQUEST OF:
SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND
WATER WCONSERVATION DISTRICT

COVER SHEET

ARROYO GRANDE CREEK CHANNEL SEDIMENT AND VEGETATION MANAGEMENT PLAN CONCEPTUAL PLANS

DESIGNED BY:	B.M.S
DRAWN BY:	B.M.S.
CHECKED BY:	M.W.W
DATE.	9/21/09
JOB NO.:	08-707

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
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EROSION CONTROL AND ACCESS NOTES

1. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A DETAILED CONSTRUCTION SCHEDULE, INCLUDING DETAILS OF SITE B.M.P.S AND INTENDED WORKING HOURS.

2. ACCESS TO LEVEES SHALL BE FROM EXISTING ESTABLISHED ACCESS POINTS.

3. ACCESS TO ALL GRADING SITES SHALL BE ALONG THE EXISTING LEVEES TOP ACCESS ROADS. WE ANTICIPATE THAT AN EXCAVATOR WILL ACCESS THE CHANNEL AT EACH GRADING SITE BY WALKING DOWN THE LEVEE SLOPE. THE EXCAVATOR SHALL ACCESS EACH GRADING SITE ALONG A SINGLE ACCESS PATH, AS SHOWN ON SHT. C8. ACCESS PATHS SHALL BE ESTABLISHED AT THE DIRECTION OF THE ENGINEER.

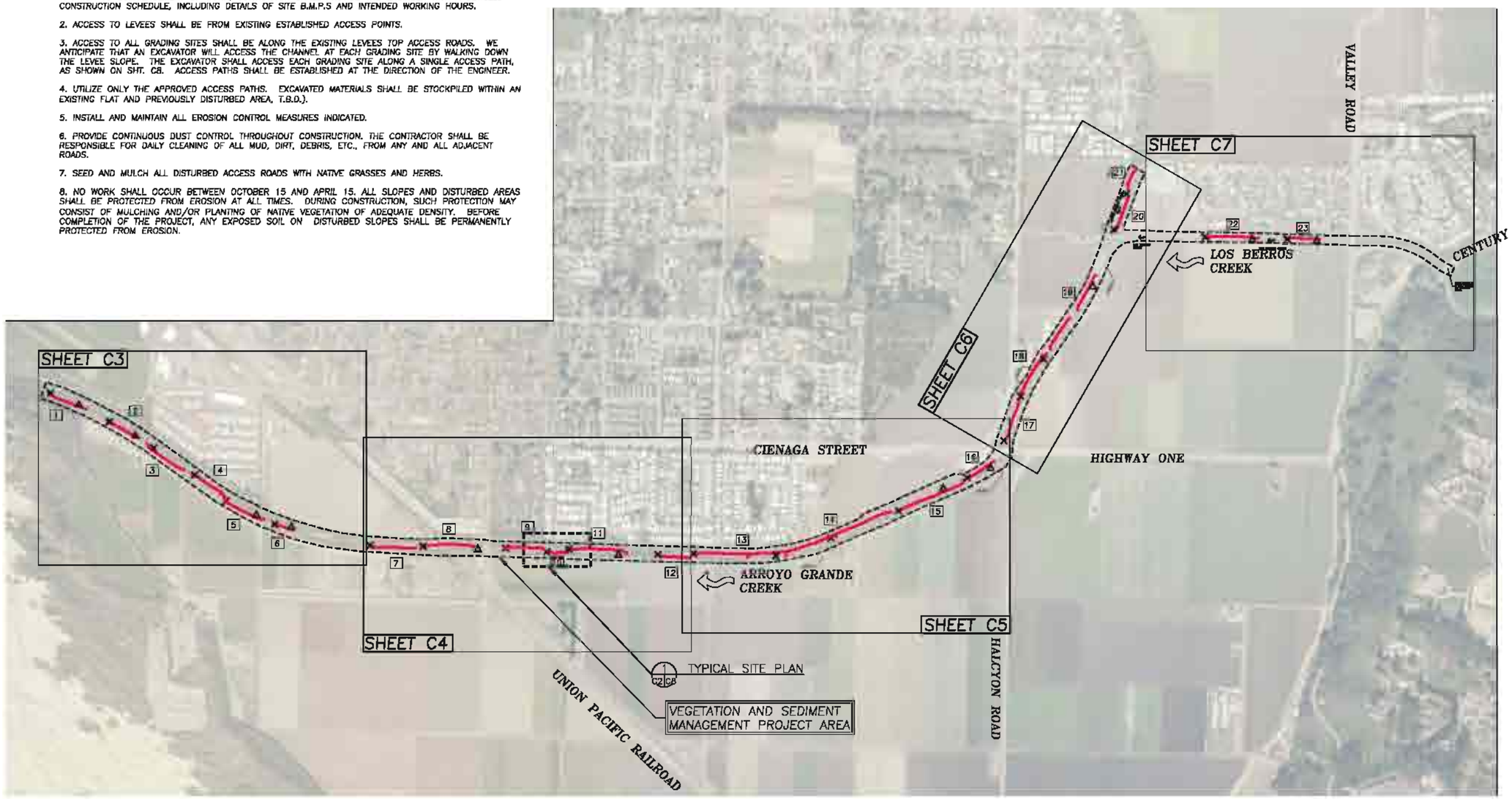
4. UTILIZE ONLY THE APPROVED ACCESS PATHS. EXCAVATED MATERIALS SHALL BE STOCKPILED WITHIN AN EXISTING FLAT AND PREVIOUSLY DISTURBED AREA, T.B.D.).

5. INSTALL AND MAINTAIN ALL EROSION CONTROL MEASURES INDICATED.

6. PROVIDE CONTINUOUS DUST CONTROL THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY CLEANING OF ALL MUD, DIRT, DEBRIS, ETC., FROM ANY AND ALL ADJACENT ROADS.

7. SEED AND MULCH ALL DISTURBED ACCESS ROADS WITH NATIVE GRASSES AND HERBS.

8. NO WORK SHALL OCCUR BETWEEN OCTOBER 15 AND APRIL 15. ALL SLOPES AND DISTURBED AREAS SHALL BE PROTECTED FROM EROSION AT ALL TIMES. DURING CONSTRUCTION, SUCH PROTECTION MAY CONSIST OF MULCHING AND/OR PLANTING OF NATIVE VEGETATION OF ADEQUATE DENSITY. BEFORE COMPLETION OF THE PROJECT, ANY EXPOSED SOIL ON DISTURBED SLOPES SHALL BE PERMANENTLY PROTECTED FROM EROSION.



PROJECT AREA OVERVIEW
SCALE: 1"=500'

LEGEND

- △ TYPE "A" LOG HABITAT STRUCTURE (11 TOTAL)
- × TYPE "B" LOG HABITAT STRUCTURE (24 TOTAL)
- [9] GRADING SITE IDENTIFICATION NUMBER
- PROPOSED GRADING SITE (SECONDARY CHANNEL)

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SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER WCONSERVATION DISTRICT

PROJECT AREA OVERVIEW

ARROYO GRANDE CREEK CHANNEL SEDIMENT AND VEGETATION MANAGEMENT PLAN CONCEPTUAL PLANS

DESIGNED BY:	B.M.S.
DRAWN BY:	B.M.S.
CHECKED BY:	M.W.W.
DATE:	9/21/09
JOB NO.:	08-707

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

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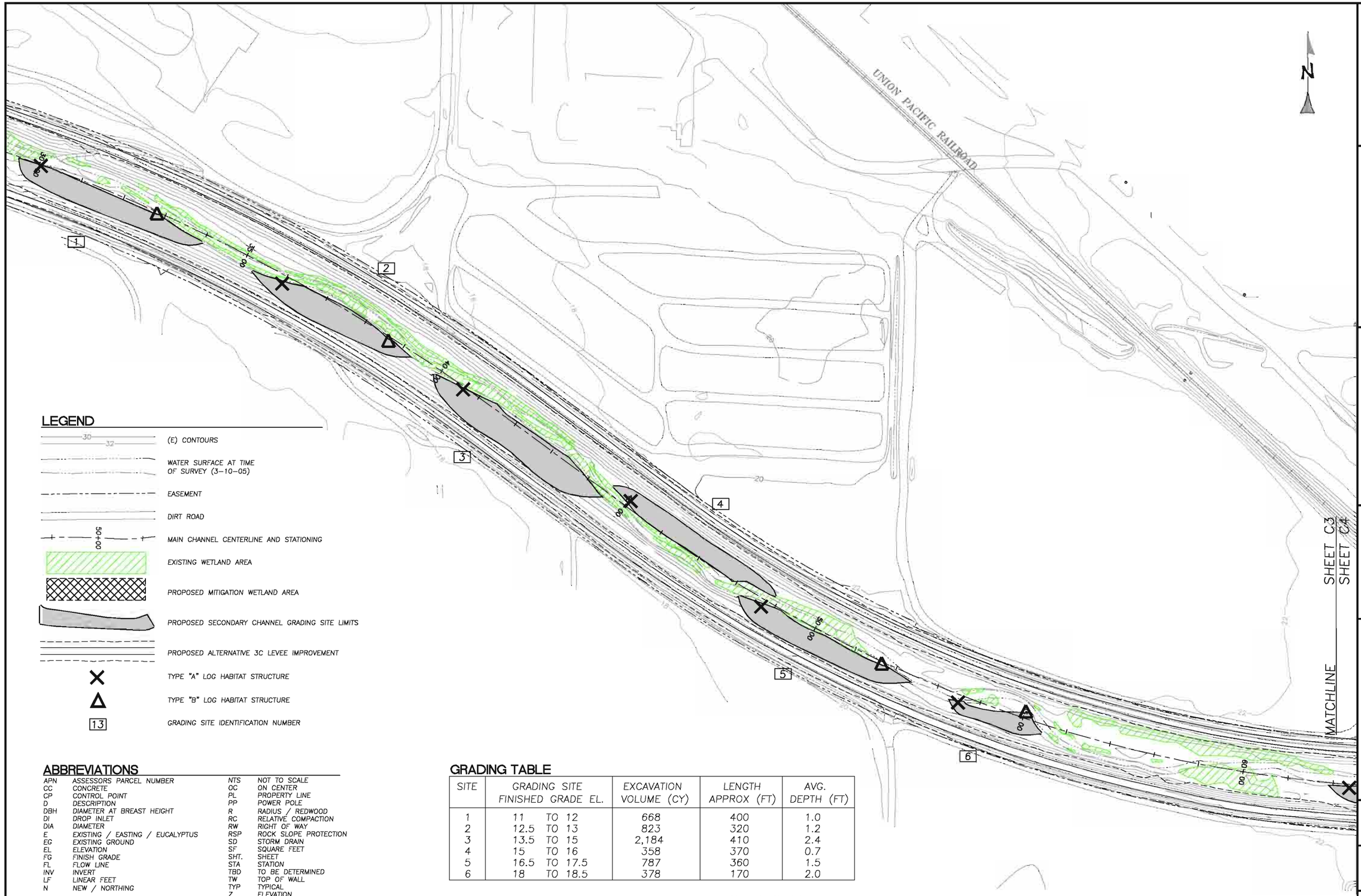

LEGEND

- (E) CONTOURS
- WATER SURFACE AT TIME OF SURVEY (3-10-05)
- EASEMENT
- DIRT ROAD
- MAIN CHANNEL CENTERLINE AND STATIONING
- EXISTING WETLAND AREA
- PROPOSED MITIGATION WETLAND AREA
- PROPOSED SECONDARY CHANNEL GRADING SITE LIMITS
- PROPOSED ALTERNATIVE 3C LEVEE IMPROVEMENT
- TYPE "A" LOG HABITAT STRUCTURE
- TYPE "B" LOG HABITAT STRUCTURE
- 13 GRADING SITE IDENTIFICATION NUMBER

ABBREVIATIONS

APN	ASSESSORS PARCEL NUMBER	NTS	NOT TO SCALE
CC	CONCRETE	OC	ON CENTER
CP	CONTROL POINT	PL	PROPERTY LINE
D	DESCRIPTION	PP	POWER POLE
DBH	DIAMETER AT BREAST HEIGHT	R	RADIUS / REDWOOD
DI	DROP INLET	RC	RELATIVE COMPACTION
DIA	DIAMETER	RW	RIGHT OF WAY
E	EXISTING / EASTING / EUCALYPTUS	RSP	ROCK SLOPE PROTECTION
EG	EXISTING GROUND	SD	STORM DRAIN
EL	ELEVATION	SF	SQUARE FEET
FG	FINISH GRADE	SHT.	SHEET
FL	FLOW LINE	STA	STATION
INV	INVERT	TBD	TO BE DETERMINED
LF	LINEAR FEET	TW	TOP OF WALL
N	NEW / NORTHING	TYP	TYPICAL
		Z	ELEVATION

GRADING TABLE

SITE	GRADING SITE FINISHED GRADE EL.	EXCAVATION VOLUME (CY)	LENGTH APPROX (FT)	AVG. DEPTH (FT)
1	11 TO 12	668	400	1.0
2	12.5 TO 13	823	320	1.2
3	13.5 TO 15	2,184	410	2.4
4	15 TO 16	358	370	0.7
5	16.5 TO 17.5	787	360	1.5
6	18 TO 18.5	378	170	2.0

SITE PLAN

SCALE: 1"=100'

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SITE PLAN
1 OF 5

ARROYO GRANDE CREEK CHANNEL SEDIMENT AND VEGETATION MANAGEMENT PLAN CONCEPTUAL PLANS

DESIGNED BY:	B.M.S.
DRAWN BY:	B.M.S.
CHECKED BY:	M.W.W.
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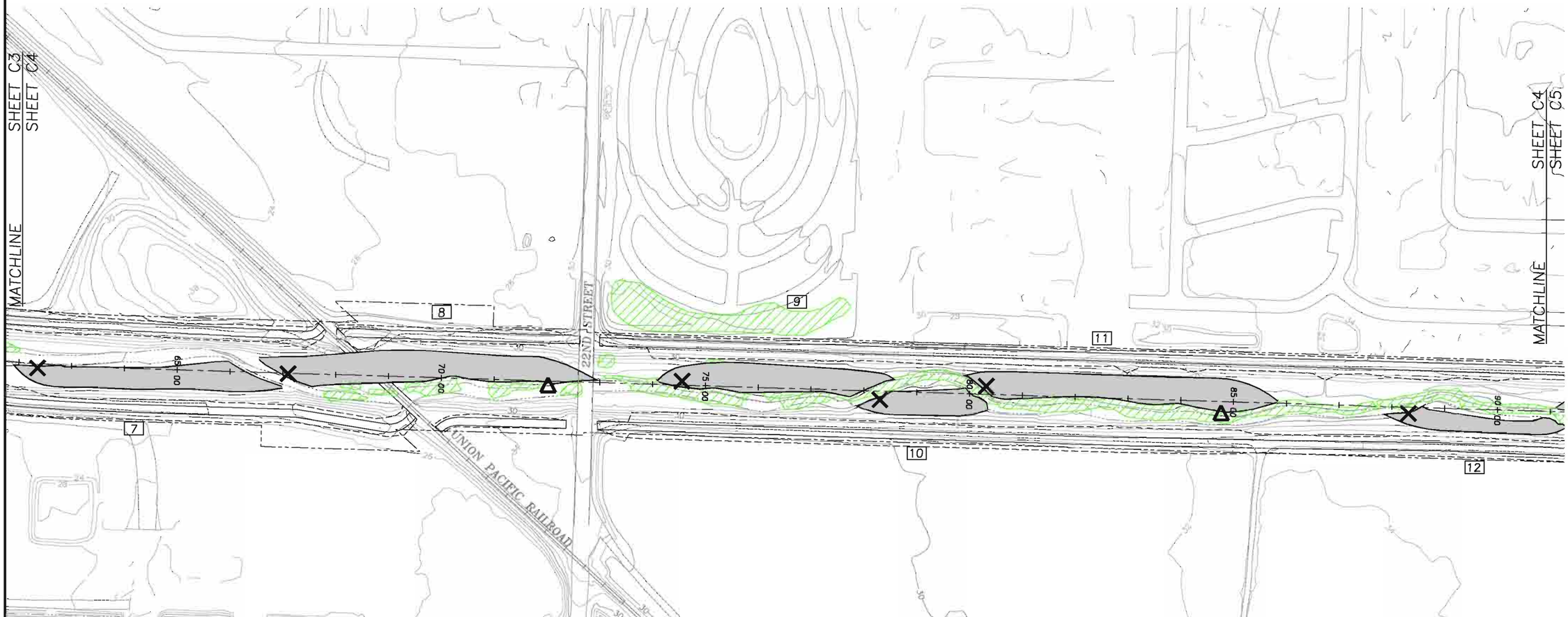

SITE PLAN
SCALE: 1"=100'

GRADING TABLE

SITE	GRADING SITE FINISHED GRADE EL.	EXCAVATION VOLUME (CY)	LENGTH APPROX (FT)	AVG. DEPTH (FT)
7	21 TO 22	193	450	0.3
8	22 TO 24	1,121	560	1.1
9	24.5 TO 25.8	738	400	1.0
10	25.8 TO 26.1	498	210	1.4
11	26.2 TO 28.5	1,262	530	1.3
12	29 TO 29.2	243	300	0.6

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WWW.WATWAYS.COM

SITE PLAN
2 OF 5

ARROYO GRANDE CREEK
CHANNEL SEDIMENT
AND VEGETATION
MANAGEMENT PLAN
CONCEPTUAL PLANS

DESIGNED BY: B.M.S.
DRAWN BY: B.M.S.
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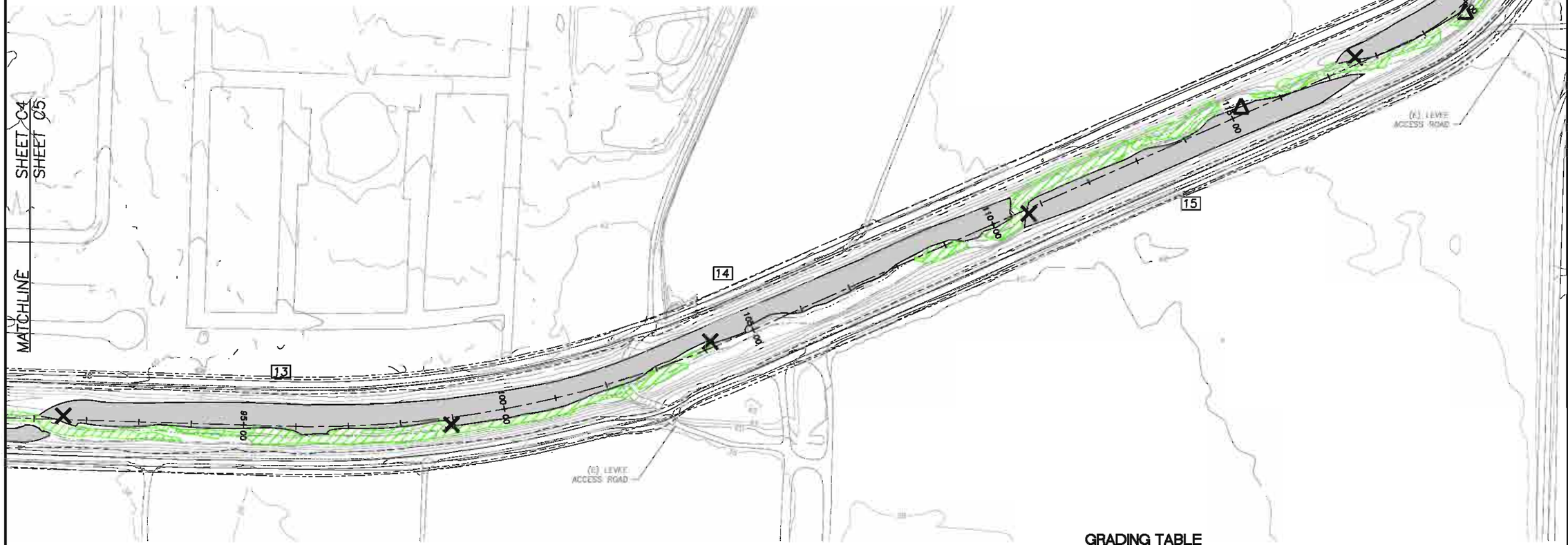

SITE PLAN
SCALE: 1"=100'

GRADING TABLE

SITE	GRADING SITE FINISHED GRADE EL.	EXCAVATION VOLUME (CY)	LENGTH APPROX (FT)	AVG. DEPTH (FT)
13	29.5 TO 31.5	2,700	830	1.8
14	31.5 TO 35	3,110	1,030	2.0
15	35.5 TO 37	1,309	660	1.2
16	37.5 TO 38.5	516	310	1.1

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SITE PLAN
3 OF 5

ARROYO GRANDE CREEK
CHANNEL SEDIMENT AND VEGETATION MANAGEMENT PLAN
CONCEPTUAL PLANS

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SITE PLAN
SCALE: 1"=100'

GRADING TABLE

SITE	GRADING SITE FINISHED GRADE EL.	EXCAVATION VOLUME (CY)	LENGTH APPROX (FT)	AVG. DEPTH (FT)
17	38.5 TO 40.5	605	400	1.2
18	40.5 TO 44	615	490	0.8
19	44 TO 46	504	800	0.5
20	47 TO 48	767	350	1.3
21	48.5 TO 49	532	250	1.3

PREPARED AT THE REQUEST OF:
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER WCONSERVATION DISTRICT

CONCEPTUAL
NOT FOR CONSTRUCTION

WATERWAYS CONSULTING
4038 SWIFT ST.
SANTA CRUZ, CA 95060
PH:(831)423-2312 FAX:(866)819-8847
WWW.WATWAYS.COM

SITE PLAN
4 FO 5

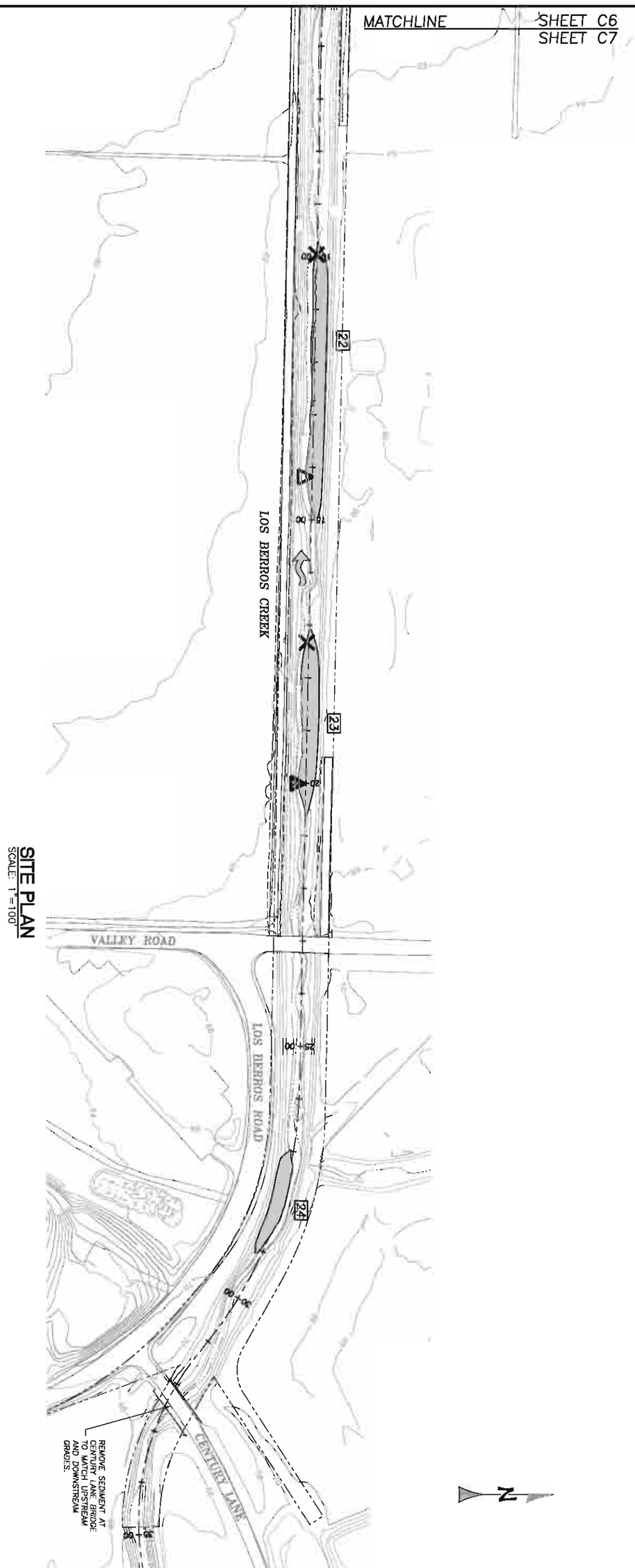
ARROYO GRANDE CREEK
CHANNEL SEDIMENT
AND VEGETATION
MANAGEMENT PLAN
CONCEPTUAL PLANS

DESIGNED BY: B.M.S.
DRAWN BY: B.M.S.
CHECKED BY: M.W.W.
DATE: 9/21/09
JOB NO.: 08-707

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

C6 | 6 OF 10

R:\LAND PROJECTS\04-4.36_ARROYO GRANDE FLOOD CONTROL\dwg\Sediment-Management_Plans\30% Sediment Management_9-21-09.dwg 9/22/2009 9:21:56 AM PDT



SITE PLAN

SCALE: 1"=100'

GRADING TABLE

SITE	GRADING SITE FINISHED GRADE EL.	EXCAVATION VOLUME (CY)	LENGTH APPROX (FT)	AVG. DEPTH (FT)
22	52.5 TO 54.5	825	480	1.5
23	55.5 TO 56	592	320	1.7
24	60.2 TO 60.6	106	140	0.7

C7

7 OF 10

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 1"

DESIGNED BY: B.M.S.
DRAWN BY: B.M.S.
CHECKED BY: M.W.W.
DATE: 9/21/09
JOB NO.: 08-707

ARROYO GRANDE CREEK CHANNEL SEDIMENT AND VEGETATION MANAGEMENT PLAN CONCEPTUAL PLANS

SITE PLAN 5 OF 5

PREPARED AT THE REQUEST OF: SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER WCONSERVATION DISTRICT

CONCEPTUAL

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WATERWAYS CONSULTING
4038 SWIFT ST.
SANTA CRUZ, CA 95060
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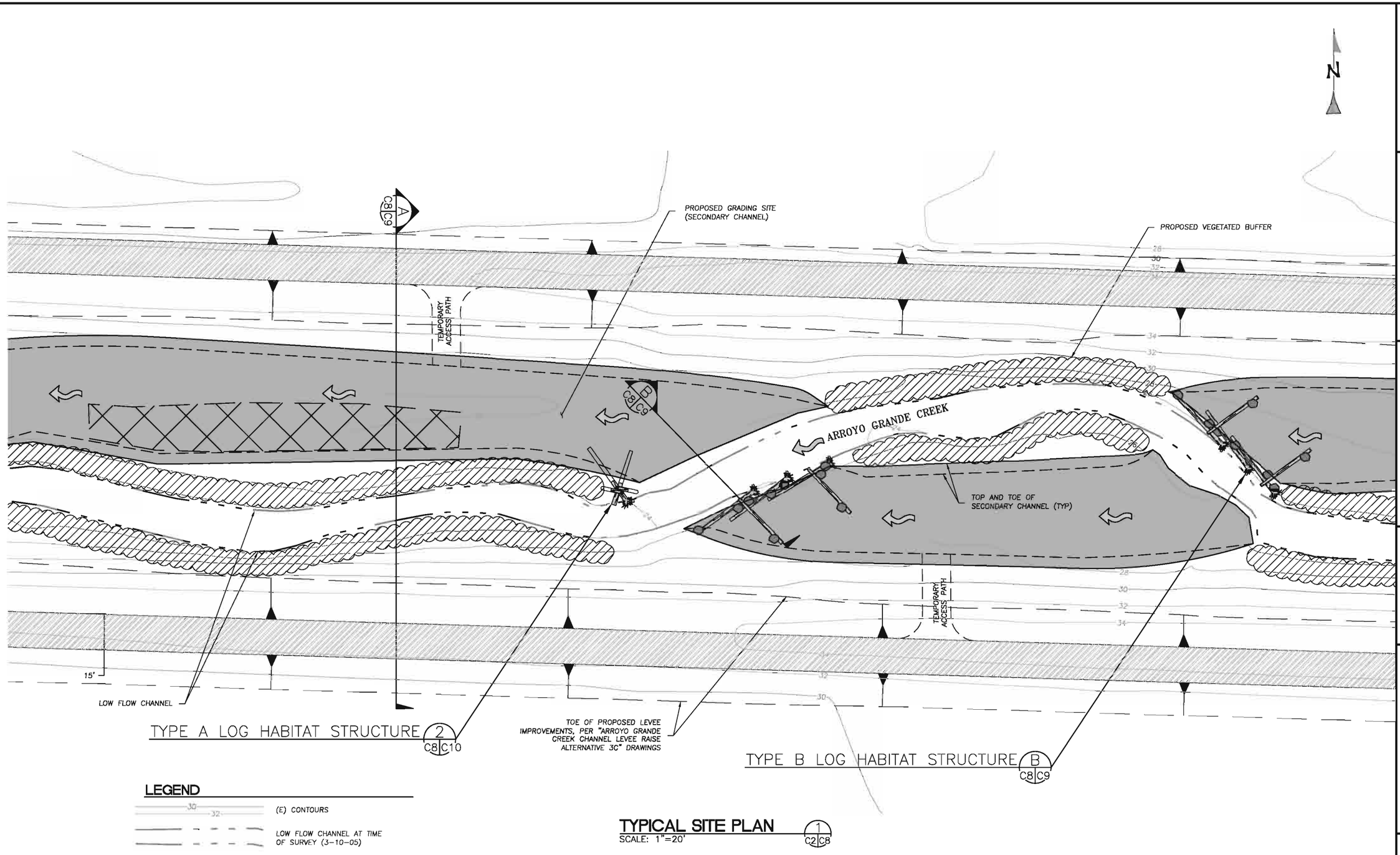
R:\LAND PROJECTS\04-436_ARROYO GRANDE FLOOD CONTROL\dwg\Sediment-Management_Plans\30% Sediment Management_9-21-09.dwg 9/22/2009 9:21:56 AM PDT



TYPICAL SITE PLAN

SCALE: 1"=20' (1 C2|C8)

WATERWAYS CONSULTING
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SANTA CRUZ, CA 95060
PH:(831)426-2901 FAX:(888)819-8847
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CONCEPTUAL

NOT FOR CONSTRUCTION

PREPARED AT THE
REQUEST OF:
SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND
WATER WCONSERVATION
DISTRICT

TYPICAL SITE
PLAN

ARROYO GRANDE CREEK
CHANNEL SEDIMENT
AND VEGETATION
MANAGEMENT PLAN
CONCEPTUAL PLANS

DESIGNED BY:	B.M.S.
DRAWN BY:	B.M.S.
CHECKED BY:	M.W.W.
DATE:	9/21/09
JOB NO.:	08-707

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

C8 | 8 OF 10

R:\LAND PROJECTS\04-436_ARROYO GRANDE FLOOD CONTROL\dwg\Sediment-Management_Plans\30% Sediment Management_9-21-09.dwg 9/22/2009 9:40:24 AM PDT

Appendix C.
URBEMIS Data Sheets

7/16/2009 9:52:38 AM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\klmiller\Desktop\Projects\AG Creek\EIR sections\Air Quality\sediment management.urb924

Project Name: AG Creek WMP Sediment Management

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	4.23	55.57	100.50	2.22	102.73	21.01	2.05	23.06	7,133.92

7/16/2009 9:44:11 AM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\klmiller\Desktop\Projects\AG Creek\EIR sections\Air Quality\alt 3a.urb924

Project Name: AG Creek WMP Alternative 3a

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	4.32	50.47	338.82	2.26	341.08	70.78	2.07	72.85	6,296.76

7/16/2009 9:46:29 AM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\klmiller\Desktop\Projects\AG Creek\EIR sections\Air Quality\alt 3c.urb924

Project Name: AG Creek WMP Alternative 3c

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (lbs/day unmitigated)	3.53	38.51	79.24	1.67	80.91	16.57	1.54	18.11	6,802.01

7/16/2009 9:41:49 AM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\klmiller\Desktop\Projects\AG Creek\EIR sections\Air Quality\UPRR Bridge Raise.urb924

Project Name: AG Creek WMP UPRR Bridge Raise

Project Location: San Luis Obispo County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	4.61	53.29	265.83	2.11	267.94	55.55	1.94	57.49	11,104.47

Appendix D.
Biological Resources Background Information

Appendix D. Biological Resources Background Information

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Hoover's bent grass	*Agrostis hooveri*	-- / -- / 1B.2	Stoloniferous herb. Occurs in chaparral, cismontane woodland, valley and foothill grassland; usually sandy soils (6 – 610 meters).	April - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Arroyo de la Cruz manzanita	*Arctostaphylos cruzensis*	-- / -- / 1B.2	Shrub. Occurs in broad-leafed upland forest, coastal bluff scrub, closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland habitats; usually on sandy soil (30 – 310 meters).	December - March	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Santa Lucia manzanita	*Arctostaphylos luciana*	-- / -- / 1B.2	Shrub. Occurs in chaparral and cismontane woodland; usually on shale soils (35 – 850 meters).	February - March	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Morro manzanita	*Arctostaphylos morroensis*	FT / -- / 1B.1	Shrub. Occurs in maritime chaparral, cismontane woodland, coastal dunes (pre-Flandrian), and coastal scrub; usually on sandy loam soils (5 – 205 meters).	December - March	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Pecho manzanita	*Arctostaphylos pechoensis*	-- / -- / 1B.2	Shrub. Occurs in closed coniferous forest, chaparral, and coastal scrub; usually on siliceous shale (125 – 850 meters).	November - March	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Santa Margarita manzanita	*Arctostaphylos pilosula*	-- / -- / 1B.2	Shrub. Occurs in closed coniferous forest, chaparral, and cismontane woodland; usually on shale soils (170 – 1100 meters).	December - March	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
sand mesa manzanita	*Arctostaphylos rudis*	-- / -- / 1B.2	Shrub. Occurs in chaparral and coastal scrub in Lompoc and Nipomo area; usually on sandy soils. (25 - 230 meters).	November - February	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Well's manzanita	*Arctostaphylos wellsii*	-- / -- / 1B.1	Shrub. Occurs in closed cone coniferous forests and chaparral; usually on sandstone (30 – 400 meters).	December - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
marsh sandwort	*Arenaria paludicola*	FE / SE / 1B.1	Perennial herb. Occurs in freshwater marshes; usually with saturated acidic bog soils (3 – 170 meters).	May - August	• Not observed during appropriately timed floristic surveys. • Potential habitat (freshwater marsh) occurs in the project corridor; however, this habitat is considered marginal at best, as no acidic bog occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Miles' milk vetch	*Astragalus didymocarpus* var. *milesianus*	-- / -- / 1B.2	Annual herb. Occurs in coastal scrub habitat (20 - 90 meters).	March - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
San Luis mariposa lily	*Calochortus obispoensis*	-- / -- / 1B.2	Perennial herb. Occurs in chaparral, coastal scrub, and grassland communities on serpentine soils (75 – 730 meters).	May - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine soils) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
La Panza mariposa lily	*Calochortus simulans*	--/--/1.B.3	Bulbiferous herb. Occurs in cismontane woodland, lower montane coniferous forest, valley and foothill grassland/sandy; usually on granitic sometimes serpentinite (395 – 1100 meters).	April - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine soils) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Cambria morning-glory	*Calystegia subacaulis* ssp. *episcopalis*	-- / -- / 1B.2	Rhizomatous herb. Occurs in chaparral, cismontane woodland, coastal prairie (60 – 500 meters).	April - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
San Luis Obispo sedge	*Carex obispoensis*	-- / -- / 1B.2	Rhizomatous herb. Occurs in closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland habitats; usually with serpentine seeps (10 - 790 meters).	April - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine seeps) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
San Luis Obispo owl's clover	*Castilleja densiflora* ssp. *obispoensis*	-- / -- / 1B.2	Annual herb. Occurs in valley and foothill grasslands (10 – 400 meters).	March - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	-- / -- / 1B.2	Annual herb. Occurs in valley and foothill grasslands; usually on alkaline soils (1 – 230 meters).	May - October	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
dwarf soaproot	*Chlorogalum pomeridianum* var. *minus*	-- / -- / 1B.2	Bulbiferous herb. Occurs in chaparral habitat; usually on serpentine soil (45 - 800 meters).	May - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine soils) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Brewer's spineflower	*Chorizanthe breweri*	-- / -- / 1B.3	Annual herb. Occurs in closed coniferous forest, chaparral, cismontane woodland, coastal scrub; usually on gravelly or rocky serpentinite soils (45 – 800 meters).	April - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine soils) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
straight awned spineflower	*Chorizanthe rectispina*	-- / -- / 1B.3	Annual herb. Occurs in chaparral, cismontane woodland, and coastal scrub habitats (85 - 1,035 meters)	May - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
San Luis Obispo fountain thistle	*Cirsium fontinale* var. *obispoense*	FE / SE / 1B.2	Perennial herb. Occurs in chaparral, cismontane woodland, in association with serpentine seeps (35 – 380 meters).	February - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine seeps) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
La Graciosa thistle	*Cirsium loncholepis*	FE / ST / 1B.1	Perennial herb. Occurs in coastal wetlands with dunes (4 – 220 meters).	May - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal wetlands with dunes) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
surf thistle	*Cirsium rhothophilum*	-- / ST / 1B.2	Perennial herb. Occurs in coastal bluff scrub and coastal dune habitats (3 – 60 meters).	April - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal bluff/dunes) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
California saw-grass	*Cladium californicum*	-- / -- / 2.2	Rhizomatous herb. Occurs in meadows and seeps, and marshes and swamps; usually alkaline or freshwater (60 - 600 meters).	June - September	• Not observed during appropriately timed floristic surveys. • Marginal habitat (Freshwater marsh/wetland) occurs within the project corridor area; however, project corridor is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Pismo clarkia	*Clarkia speciosa* ssp. *immaculata*	FE / SR / 1B.1	Annual herb. Occurs in cismontane woodland, valley foothill grasslands, and in openings along the margins of chaparral habitats (25 – 185 meters).	May - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
branching beach aster	*Corethrogyne leucophylla*	-- / -- / 3.2	Perennial herb. Closed-cone coniferous forest, coastal dunes (3 - 60 meters).	May - December	• Not observed during appropriately timed floristic surveys. • No suitable habitat (closed coned coniferous forest/dunes) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
leafy tarplant	*Deinandra increscens* ssp. *foliosa*	-- / -- / 1B.2	Annual herb. Occurs in valley and foothill grasslands (300 - 500 meters).	June - September	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.
dune larkspur	*Delphinium parryi* ssp. *blochmaniae*	-- / -- / 1B.2	Perennial herb. Occurs in chaparral and coastal dune habitats (maritime) (0 – 200 meters).	April - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dunes/maritime chaparral) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
umbrella larkspur	*Delphinium umbraculorum*	-- / -- / 1B.3	Perennial herb. Occurs in cismontane woodland. (400 – 1600 meters).	April - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (cismontane woodland) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.
beach spectaclepod	*Dithyrea maritima*	-- / ST / 1B.1	Rhizomatous herb. Occurs in coastal dune and coastal scrub habitats with sandy substrate (3 – 50 meters).	March - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dune/scrub) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Betty's dudleya	*Dudleya abramsii* ssp*. bettinae*	-- / -- / 1B.2	Perennial herb. Occurs in chaparral, coastal scrub, valley and foothill grassland in serpentinite, rocky soils (20 – 180 meters).	May - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
mouse grey dudleya	*Dudleya abramsii* ssp*. murina*	-- / -- / 1B.3	Perennial herb. Occurs in chaparral, cismontane woodland valley, and foothill grassland (serpentinite) (90 – 440 meters).	May - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Blochman's dudleya	*Dudleya blochmaniae* ssp. *blochmaniae*	-- / -- / 1B.1	Perennial herb. Occurs in coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland on rocky soils, often serpentine (5 – 450 meters).	April - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine/rocky) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
yellow-flowered eriastrum	*Eriastrum luteum*	-- / -- / 1B.2	Annual herb. Occurs in broadleafed upland forest, chaparral, cismontane woodland (290 – 1000 meters).	May - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Blochman's leafy daisy	*Erigeron blochmaniae*	-- / -- / 1B.2	Perennial rhizomatous herb. Occurs in coastal dune habitats with sandy substrate (3 – 45 meters).	July - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dunes) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Indian Knob mountainbalm	*Eriodictyon altissimum*	FE / SE / 1B.1	Evergreen shrub. Occurs in maritime chaparral, cismontane woodland, coastal scrub, on sandstone (80 – 270 meters).	March - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (sandstone) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Hoover's button-celery	*Eryngium aristulatum* var. *hooveri*	-- / -- / 1B.1	Annual/perennial herb. Occurs in vernal pools (3 – 45 meters).	July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (vernal pools) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Ojai fritillary	*Fritillaria ojaiensis*	-- / -- / 1B.2	Bulbiferous herb. Occurs in broadleafed upland forest (mesic), chaparral and lower montane coniferous forest (rocky) (300 - 998 meters).	March - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (vernal pools) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.
San Benito fritillary	*Fritillaria viridea*	-- / -- / 1B.2	Bulbiferous herb. Occurs in chaparral on serpentine soil (200 - 1,525 meters).	March - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal bluff/dunes) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
San Francisco gumplant	*Grindelia hirsutula* var. *maritima*	-- / -- / 1B.2	Perennial herb. Occurs in coastal bluff scrub, coastal scrub, valley and foothill grassland; usually sandy or serpentinite soils (15 - 400 meters).	June - September	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal bluff scrub) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
mesa horkelia	*Horkelia cuneata* ssp. *puberula*	-- / -- / 1B.1	Perennial herb. Occurs in chaparral, cismontane woodland, coastal scrub/sandy, or gravelly (70 - 810 meters).	February - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal scrub/sandy gravelly) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.
Kellogg's horkelia	*Horkelia cuneata* ssp. *sericea*	-- / -- / 1B.1	Perennial herb. Occurs in closed-cone coniferous forest, chaparral (maritime), and coastal scrub with sandy or gravelly openings (10 - 200 meters).	April - September	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Jones's layia	*Layia jonesii*	-- / -- / 1B.2	Annual herb. Occurs in chaparral and valley and foothill grassland on clay or serpentinite soils (5 – 500 meters).	March - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
San Luis Obispo County lupine	*Lupinus ludovicianus*	-- / -- / 1B.2	Perennial herb. Occurs in chaparral and cismontane woodland on sandstone or sandy soils (50 – 525 meters).	April - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (sandstone/sandy soil) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.
Nipomo Mesa lupine	*Lupinus nipomensis*	-- / -- / 1B.1	Annual herb. Occurs in coastal dunes (10 - 50 meters).	December – May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dunes) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Camel Valley bush-mallow	*Malacothamnus palmeri* var. *involucratus*	-- / -- / 1B.2	Deciduous herb. Occurs in chaparral, cismontane woodland, coastal scrub (30 – 1100 meters).	May - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dunes/maritime chaparral) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Santa Lucia bush-mallow	*Malacothamnus palmeri var. palmeri*	-- / -- / 1B.2	Deciduous shrub. Chaparral; usually in rocky soils (60 – 360 meters).	May - July	• Not observed during appropriately timed floristic surveys. • No suitable habitat (chaparral) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
crisp monardella	*Monardella crispa*	-- / -- / 1B.2	Rhizomatous herb. Occurs in coastal dunes and coastal scrub with sandy soils (10 - 120 meters).	April - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dunes and coastal scrub) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
San Luis Obispo monardella	*Monardella frutescens*	-- / -- / 1B.2	Rhizomatous herb. Occurs in coastal dunes and coastal scrub with sandy soils (10 - 200 meters).	May - September	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal dunes and coastal scrub) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
Palmers monardella	*Monardella palmeri*	-- / -- / 1B.2	Rhizomatous herb. Occurs in chaparral and cismontane woodland habitats on serpentine soil (200 - 800 meters).	June - August	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the project corridor, which is outside the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Gambel's watercress	*Nasturtium gambellii*	FE / ST / 1B.1	Rhizomatous herb. Occurs in freshwater and brackish marshes, swamps and the borders of lakes (5 - 451 meters).	April - September	• Not observed during appropriately timed floristic surveys. • Potential suitable habitat (brackish waters) occurs within the project corridor; however, this species was not observed during appropriately timed floristic surveys; rather, the common water cress (*Rorippa nasturtium-aquaticum*) was observed to be prevalent in the channel. • Not expected to occur within the project corridor. • No further studies recommended.
short-lobed broomrape	*Orobanche parishii* ssp*. brachyloba*	-- / -- / 4.2	Perennial herb parasitic. Occurs in coastal bluff scrub, coastal dunes, and coastal scrub (sandy) (3 – 305 meters).	April - October	• Not observed during appropriately timed floristic surveys. • No suitable habitat (coastal bluff scrub, coastal dunes) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
white rabbit-tobacco	*Pseudognaphalium leucocephalum*	-- / -- / 2.2	Perennial herb. Occurs in chaparral, cismontane woodland, and coastal scrub, riparian woodland, usually in sandy or gravelly soils (0 - 2100 meters).	August - November	• Not observed during appropriately timed floristic surveys. • Marginal suitable habitat (riparian woodland) occurs within the project corridor; however, species was not observed during field surveys. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
adobe sanicle	*Sanicula maritima*	-- / SR / 1B.1	Perennial herb. Occurs in chaparral, coastal prairie, meadows and seeps, and valley and foothill grassland habitats on clay and serpentine soil (30 - 240 meters).	February - May	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
black-flowered figwort	*Scrophularia atrata*	-- / -- / 1B.2	Perennial herb. Occurs in closed cone conifer forest, chaparral, coastal dune, coastal scrub, and riparian scrub habitats. Diatomaceous shales (10 - 500 meters).	March - July	• Not observed during appropriately timed floristic surveys. • Potential habitat occurs within the project corridor; however, species was not observed during field surveys. • Not expected to occur within the project corridor. • No further studies recommended.
chaparral ragwort	*Senecio aphanactis*	-- / -- / 2.2	Annual herb. Occurs in chaparral, cismontane woodland, and coastal scrub habitats on alkaline soil (15 - 1800 meters).	January - April	• Not observed during appropriately timed floristic surveys. • No suitable habitat (alkaline) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
Cuesta Pass checkerbloom	*Sidalcea hickmanii* ssp*. anomala*	-- / SR / 1B.2	Perennial herb. Occurs in closed-cone coniferous forest on serpentine soil (600 - 800 meters).	May - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the BS, which is outside of the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.
most beautiful jewel flower	*Streptanthus albidus* ssp*. peramoenus*	-- / -- / 1B.2	Annual herb. Occurs in chaparral, cismontane woodland, and valley and foothill grassland habitats on serpentinite soil (94 - 1,000 meters).	April - September	• Not observed during appropriately timed floristic surveys. • No suitable habitat (serpentine) occurs within the BS, which is outside of the known elevation range. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence
San Bernardino aster	*Symphyotrichum defoliatum*	-- / -- / 1B.2	Rhizomatous herb. Occurs in cismontane woodland, coastal scrub, and foothill grassland near ditches and springs (2 - 2,040 meters).	July - November	• Not observed during appropriately timed floristic surveys. • Suitable habitat occurs within the project corridor; however, species was not observed during field surveys. • A similar species (*Aster chilensis*) was identified throughout the project corridor. Specimens were collected and Dr. David Keil of Cal Poly verified the species as *Aster chilensis*. • Not expected to occur within the project corridor. • No further studies recommended.
saline clover	*Trifolium depauperatum* var. *hydrophilum*	-- / -- / 1B.2	Annual herb. Occurs in marshes and swamps, valley and foothill grassland (mesic, alkaline), and vernal pools (0 - 300 meters).	April - June	• Not observed during appropriately timed floristic surveys. • No suitable habitat (alkaline/vernal pools) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.
caper fruited tripdocarpum	*Tropidocarpum capparideum*	-- / -- / 1B.1	Annual herb. Occurs in valley and foothill grassland habitats on alkaline hills (1 - 455 meters).	March - April	• Not observed during appropriately timed floristic surveys. • No suitable habitat (alkaline) occurs within the project corridor. • Not expected to occur within the project corridor. • No further studies recommended.

Table D-1. Special-status Plant Species Evaluated for Potential for Occurrence within the Project Corridor

Common Name	Scientific Name	Status Federal/ State/CNPS Status & Threat Code	General Habitat Description	Blooming Period	Potential for Occurrence

Status Codes:

Federal:

FE = Federally Endangered

FT = Federally Threatened

State:

SE = State Endangered

ST=State Threatened

SR = State Rare

California Native Plant Society (CNPS):

List 1B = rare, threatened, or endangered in California and elsewhere.

List 2 = rare, threatened, or endangered in California, but more common elsewhere.

List 4 = A watch list. Species are of limited distribution or infrequent.

***Threat Code*:**

.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = Fairly endangered in California (20-80% occurrences threatened)

.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Invertebrates			
vernal pool fairy shrimp *Branchinecta lynchi*	Occur in vernal pool habitats including depressions in sandstone, to small swale, earth slump, or basalt-flow depressions with a grassy or, occasionally, muddy bottom in grassland (Eriksen and Belk, 1999).	FT/-- /--	**Habitat Absent / Occurrence Unlikely:** Vernal pool habitat has not been documented within the project corridor.
California linderiella *Linderiella occidentalis*	Seasonal ponds in grasslands, sandstone depressions, and alluvial flats with hardpan beneath.	--/SA/--	**Habitat Absent / Occurrence Unlikely:** Seasonal pond habitat has not been documented within the project corridor.
mimic tryonia *Tryonia imitator*	Coastal lagoons, estuaries, and salt marshes; found only in permanently submerged areas.	--/SA/--	**Habitat Absent / Occurrence Unlikely:** Known habitat associations for this species occur west of the project corridor. Species last documented at the mouth of the Oceano lagoon in 1970 (CNDDB 2009).
Fish			
tidewater goby *Eucyclogobius newberryi*	Occurs in brackish shallow lagoons and lower stream reaches where water is fairly still, but not stagnant.	FE/--/SSC	**Habitat Present / Occurrence Known**: Suitable aquatic habitat is present within the project site. Species is known to occur within Arroyo Grande Creek.
south-central California coast steelhead ESU *Oncorhynchus mykiss irideus*	Clear, cool water with abundant in-stream cover, well-vegetated stream margins, relatively stable water flow, and a 1:1 pool-to-riffle ratio.	FT, CH /-- /SSC	**Habitat Present / Occurrence Known**: Suitable aquatic habitat is present within the project corridor. Arroyo Grande Creek occurs within Critical Habitat Estero Bay Hydrologic Unit 3310, Oceano Hydrologic Sub- area 331031.

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Amphibians			
California red-legged frog *Rana draytonii*	Aquatic habitats with little or no flow and surface water depths to at least 2.3 feet. Presence of fairly sturdy underwater supports such as cattails.	FT/--/SSC	**Habitat Present / Occurrence Known**: Suitable aquatic habitat is present within the project corridor. Species observed within the project corridor during surveys and known to occur throughout Arroyo Grande Creek.
California tiger salamander *Ambystoma californiense*	Vernal pools within grassland or oak woodlands; require seasonal water, ground squirrel burrows, or other underground refuges.	FT/ST/SSC	**Habitat Absent/ Occurrence Unlikely:** Species is not expected to occur within the project corridor due to the lack of uncultivated grasslands with temporary rain pools. Species has not been documented within the lower reaches of Arroyo Grande Creek.
western spadefoot *Spea hammondii*	Inhabits vernal pools primarily in grassland, but also in valley and foothill hardwood woodlands. Requires seasonal pools for breeding and egg-laying.	--/--/SSC	**Habitat Absent / Occurrence Unlikely:** No vernal pools for breeding have been identified within the project corridor. Species not observed during surveys.
Coast Range newt *Taricha torosa torosa*	Coastal drainages from Mendocino County to San Diego County. Resides in terrestrial habitats and migrates up to 1 km to breed in slow moving streams, ponds, and reservoirs. Frequents terrestrial habitats such as oak woodlands.	--/--/SSC	**Habitat Present / Potential for Occurrence but Unlikely:** Species is known to occur in Arroyo Grande Creek in the vicinity of Lopez Lake. Habitat within the project corridor is marginal. Species not observed during surveys.
Reptiles			
southwestern pond turtle *Actinemys marmorata pallida*	Quiet waters of ponds, lakes, streams, and marshes. Typically in the deepest parts with an abundance of basking sites.	-- /--/SSC	**Habitat Present / Occurrence Known:** Suitable aquatic habitat was observed with the project corridor. This species was observed during surveys.

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
silvery legless lizard *Anniella pulchra pulchra*	Sandy or loose loamy soils with high moisture content under sparse vegetation.	--/--/SSC	**Habitat Absent / Occurrence Unlikely:** Sandy loam occurs within the project corridor but Arroyo Grande Creek is likely too moist and well-vegetated to support the species. Species not observed during surveys.
coast horned lizard *Phrynosoma coronatum frontale*	Coastal sage, chaparral, annual grasslands, oak woodland, riparian woodland, and coniferous forest. Typically in loose, fine soils, with a high sand fraction.	--/--/SSC	**Habitat Present / Potential for Occurrence but Unlikely**: Riparian habitat and sandy soils were observed within the project corridor. Species not observed during surveys.
two-striped garter snake *Thamnophis hammondii*	Inhabits perennial and intermittent streams with rocky beds bordered by dense vegetation. May also utilize stock ponds and other artificially-created aquatic habitats	--/--/SSC	**Habitat Present / Moderate Potential for Occurrence**: Suitable riparian and aquatic habitat is present within the project corridor. Nearest occurrence Guadalupe/Nipomo dunes area (CNDDB 2009). Species not observed during surveys.
Birds			
Cooper's hawk *Accipiter cooperii*	Deciduous riparian woodland habitat throughout California. Nests in deciduous trees and conifers**.**	MBTA/--/--	**Habitat Present / Occurrence Likely:** The project corridor contains suitable nesting and foraging habitat for Cooper's hawk. This species was observed during surveys by SWCA biologists.
sharp-shinned hawk *Accipiter striatus*	Occurs in ponderosa pine, black oak, deciduous riparian areas, mixed conifer, and Jeffrey pine habitats. North facing slopes with plucking perches and close proximity to water (within 275 feet).	MBTA/--/--	**Habitat Present / Potential for Occurrence but Unlikely:** Species has been observed at the Woodlands Development 5.5 miles southeast of Oceano (CNDDB 2009). Although riparian habitat within project corridor may provide suitable habitat for this species, the likelihood of occurrence is considered low.

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
tricolored blackbird *Agelaius tricolor*	(Nesting colony); requires open water, protected nesting substrate (*Juncus* and *Scirpus*), and foraging area with insect prey.	--/--/SSC	**Habitat Absent / Occurrence Unlikely**: Known habitat associations (e.g., open water and nesting substrate) occur within the project corridor, but are considered marginal due to relative amount of nesting substrate. Species not observed during field surveys.
burrowing owl *Athene cunicularia*	Open, dry grasslands, deserts, and scrublands. Subterranean nester, dependent upon burrowing mammals.	MBTA/--/SSC	**Habitat Absent / Occurrence Unlikely:** Known habitat associations are not present within the project corridor. Species not observed during surveys.
ferruginous hawk *Buteo regalis*	(Wintering) open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon-juniper habitats; eats lagomorphs, ground squirrels, and mice; population trends may follow lagomorph population cycles.	MBTA/--/--	**Habitat Absent / Occurrence Unlikely:** project corridor does not contain habitat suitable for wintering ferruginous hawks. Species not observed during surveys of the project corridor.
western snowy plover *Charadrius alexandrinus nivosus*	Occurs on sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	MBTA, FT/ --/SSC	**Habitat Absent / Occurrence Unlikely:** Known habitat associations are not present within the project corridor. Species not observed during surveys.
western yellow-billed cuckoo *Coccyzus americanus*	Nest in riparian forests along broad, lower flood zones of larger river systems. Often found in willow thickets mixed with cottonwoods, sycamores, and presence of a thick under story including blackberry and other sub-shrubs.	FC, MBTA/SE/ --	**Habitat Present / Potential for Occurrence but Unlikely:** The project corridor contains riparian habitat for western yellow-billed cuckoo. The most recent nearby CNDDB occurrence record for the species is a 1932 egg set collection by Santa Barbara Natural History Museum from an unspecified location in San Luis Obispo County (CNDDB 2009). The likelihood of this species occurring within the project corridor is very low.
yellow warbler *Dendroica petechia brewsteri*	Riparian associations, prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging.	MBTA/--/--	**Habitat Present / Occurrence Likely:** Suitable nesting and foraging habitat was observed within the project corridor. .

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
white-tailed kite *Elanus leucurus*	Open grasslands, meadows, or marshlands for foraging close to isolated trees for nesting and perching.	MBTA/--/FP	**Habitat Present / Occurrence Likely:** Suitable foraging and nesting habitat occurs throughout the project corridor. Species not observed during surveys; however, pre-construction nesting bird surveys are recommended. .
California horned lark *Eremophila alpestris actia*	Occurs in short grass prairies, coastal plains, fallow grain fields and alkali flats. Found in coastal regions from Sonoma to San Diego county, and west to the San Joaquin Valley. .	MBTA/--/--	**Habitat Absent / Occurrence Unlikely**: Known habitat associations are not present within the project corridor. Species not observed during surveys.
merlin *Falco columbarius*	Coastal areas, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts and agricultural areas. Requires clumps of trees or windbreaks for roosting in open country.	MBTA/--/--	**Habitat Absent / Occurrence Unlikely:** Known habitat associations for this species are not present within the project corridor. Nearest documented occurrence Santa Margarita Ranch (CNDDB 2009). Species not observed during surveys.
prairie falcon *Falco mexicanus*	Occurs in dry, open terrain that is level or hilly and breeds on cliffs.	MBTA/--/--	**Habitat Absent / Occurrence Unlikely:** project corridor does not contain dry open habitat for foraging or suitable cliff habitat for nesting. Species not observed during surveys.
California condor *Gymnogyps californianus*	Occurs in open savannahs, grasslands, and foothill chaparral, in mountain ranges with moderate altitudes. Nest in deep canyons on rock walls with clefts.	FE/SE/--	**Habitat Absent / Occurrence Unlikely:** Known habitat associations for this species are not present within the project corridor. Species not observed during surveys.
California black rail *Laterallus jamaicensis coturnniculus*	California black rail are shore birds known to frequent tidal salt marshes. These birds utilize densely vegetated mud flats and the high tide line in salt water marsh systems.	--/ST/--	**Habitat Absent / Occurrence Unlikely:** Suitable salt marsh habitat was not observed within the project corridor. Species not observed during surveys.

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
purple martin *Progne subis*	Occupies valley foothill and montane hardwood forests, conifer forests, and riparian habitats. May nest in old woodpecker cavities or in human-made structures such as bridges and culverts. Feeds on insects.	--/--/SSC	**Habitat Present / Occurrence Likely:** project corridor contains suitable riparian and nesting habitat for this species. Species not observed during surveys.
California least tern *Sternula antillarum browni*	Largely a coastal species that feed on fish and nest on sandy dunes or beaches. Once a common species in California; currently nesting colonies are isolated to Southern California and scattered Bay Area beaches.	FE/SE/--	**Habitat Absent / Occurrence Unlikely:** Known habitat associations are not present within the project corridor. Species not observed during surveys.
least Bell's vireo *Vireo bellii pusillus*	Summer resident of southern California. This species occurs in low riparian areas or in dry river bottoms (below 2000 feet). Nests along the margins of willows, *Baccharis* sp. or mesquite.	MBTA,FE/SE/--	**Habitat Present / Potential for Occurrence but Unlikely:** Riparian habitat is present within the project corridor but is considered marginal for least Bell's vireo as the area lacks dense foliage due to maintenance activities and historical disturbances. The nearest known occurrence of this species is a recent observation in Los Osos, CA (San Luis Obispo County Birding Digest 2873).
southwestern willow flycatcher	Breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g., reservoirs); mostly forested wetlands or scrub-shrub wetlands. Wintering habitat includes include brushy savanna edges, second growth, shrubby clearings and pastures, and woodlands near water.	MBTA,FE/SE/--	**Habitat Present / Potential for Occurrence but Unlikely:** Riparian habitat is present within the project corridor but is considered marginal for southwestern willow flycatcher due to the disturbed nature of the habitat and general lack of dense understory. There are no documented occurrences of this species breeding within San Luis Obispo County (Edell 2001).
Other migratory bird species (nesting) Class Aves	Annual grasslands, riparian areas, coastal scrub, chaparral, and oak woodlands may provide nesting habitat.	MBTA/--/--	**Habitat Present / Occurrence Likely:** Nesting habitat occurs throughout the project corridor. No active nests observed during surveys.

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence
Mammals			
American badger *Taxidea taxus*	Occurs in open stages of shrub, forest, and herbaceous habitats; needs uncultivated ground with friable soils.	--/--/SSC	**Habitat Absent / Occurrence Unlikely:** Known habitat associations for this species were not observed within the project corridor. Species not observed during surveys.
pallid bat *Antrozous pallidus*	Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and buildings.	--/--/SSC	**Habitat Present / Potential for Occurrence but Unlikely.** Potential habitat occurs under bridges within the project corridor, but roosting would be unlikely. Species not observed during surveys.
Townsend's big-eared bat *Corynorhinus townsendii*	Occurs in a wide variety of habitats; most common in mesic (wet) sites. May use trees for day and night roosts; however, requires caves, mines, rock faces, bridges or buildings for maternity roosts. Maternity roosts are in relatively warm sites.	--/--/SSC	**Habitat Present / Potential for Occurrence but Unlikely.** Potential habitat occurs under bridges within the project corridor, but roosting would be unlikely. Species not observed during surveys.
western mastiff bat *Eumops perotis*	Found in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc.; roosts in crevices in cliff faces, high buildings, trees, and tunnels.	--/--/SSC	**Habitat Absent / Occurrence Unlikely:** project corridor is in a coastal setting and located outside of semi-arid to arid habitats. Species not observed during surveys.
Other roosting bats Class Chiroptera	Potential for roosting in several natural and artificial habitats.	--/CEQA/--	**Habitat Present / Potential for Occurrence but Unlikely.** Potential habitat occurs under bridges within the project corridor, but roosting would be unlikely. No active bat roosts observed during surveys.

Table D-2. Special-status Wildlife Evaluated for Potential for Occurrence within the Project Corridor

Species Name	Habitat and Distribution	Legal Status Federal/State/CDFG	Rationale for Expecting Presence or Absence

Status Codes

-- = No status

Federal:

FE = Federal Endangered

FT = Federal Threatened

FC = Federal Candidate

CH = Federal Critical Habitat

PCH = Proposed Federal Critical Habitat

MBTA = Protected by Federal Migratory Bird Treaty Act

State:

SE = State Endangered

ST = State Threatened

CEQA = considered sensitive under CEQA

California Department of Fish and Game:

SSC = Special of Special Concern

FP = Fully Protected Species

SA = Not formally listed but included in CDFG “Special Animal” List.

Appendix E.
Geology and Soils Background Information

FUGRO WEST, INC.

PRELIMINARY GEOTECHNICAL REPORT
ARROYO GRANDE CREEK WATERWAYS MANAGEMENT PLAN
LOS BERROS CREEK TO NEAR OCEANO AIRPORT
SAN LUIS OBISPO COUNTY, CALIFORNIA

Prepared for:
County of San Luis Obispo
Department of Public Works

April 22, 2009

FUGRO WEST, INC.

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April 22, 2009
Project No. 3014.029

County of San Luis Obispo
Public Works Department, Utilities Administration
County Government Center, Room 107
San Luis Obispo, California 93401

Attention: Ms. Jill Ogren

Subject: Preliminary Geotechnical Report, Arroyo Grande Creek Waterways Management Plan, Los Berros Creek to near Oceano Airport, San Luis Obispo County, California

Dear Ms. Ogren:

Fugro is pleased to submit this Preliminary Geotechnical Report for the Arroyo Grande Creek Waterways Management Plan in San Luis Obispo County, California. This report was prepared in accordance with our proposal dated April 3, 2008. The proposal was authorized under County Purchase Order No. 25004312, dated April 29, 2008.

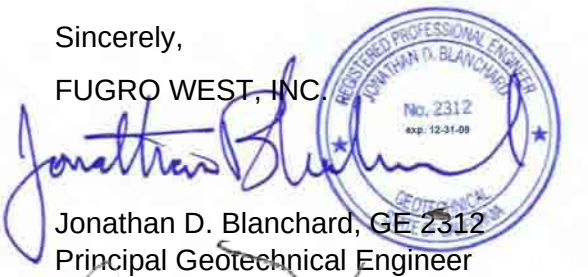
This report presents the results of a preliminary geotechnical evaluation of alternatives to raise the levees along a portion of Arroyo Grande Creek. Site-specific exploration, previous geotechnical studies, published geologic information, and project information provided by the County of San Luis Obispo, Swanson Hydrology + Geomorphology, Cannon Associates, and the Morro Group were used as a basis for preparing this report.

The purpose of this report is twofold: to provide input to the Environmental Impact Report and study being prepared by the Morro Group; and to provide geotechnical alternatives for improving the levee along Arroyo Grande Creek. Preliminary design of the improvements is being prepared by Swanson Hydrology + Geomorphology (SH +G). This report summarizes geologic hazards and geotechnical considerations that are likely to impact the design and construction of the project, and discusses mitigation measures that may be needed to address these items.

We appreciate the opportunity to provide our services on this project. Please contact the undersigned if you have questions regarding this report, or require additional information.

Sincerely,

FUGRO WEST, INC.



Jonathan D. Blanchard, GE 2312
Principal Geotechnical Engineer

Gresham D. Eckrich
Staff Engineer/Geologist

Reviewed by:

Lori E. Prentice, C.E.G. 2312
Principal Engineering Geologist

Copies: 4 – Addressee (1 – pdf on CD ROM)

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1. SITE AND PROJECT DESCRIPTION

The project will generally consist of raising an existing levee from the city limits of Arroyo Grande and the confluence with Los Berros Creek to approximately 2,500 feet downstream of Creek Road, near the Oceano Airport. The location of the site and project limits is shown on Plate 1 - Site Map. The proposed levee improvements will extend along the lower approximately 3½ miles of Arroyo Grande Creek and the lower approximately 1,700 feet of Los Berros Creek (a total of about 7 miles of levee). Arroyo Grande Creek is mainly confined by levees west of Highway 1, and intermittently confined by levees east of Highway 1.

1.1 EXISTING SITE

Los Berros Creek flows west into Arroyo Grande Creek at the eastern terminus of the project. Arroyo Grande Creek then flows westerly to the Pacific Ocean, about 3½ miles downstream of Los Berros Creek. Based on site observations, concrete weirs and check dams are located within the Los Berros Creek channel, and rip-rap boulders associated with construction and maintenance of existing levees were observed along sections of variable length within the Arroyo Grande Creek channel. Bridges span Arroyo Grande Creek at Highway 1/Cienega Street, 22nd Street, and the Union Pacific Railroad (UPRR).

Existing site grades range from approximately elevation 11 feet (SH+G, 2008), at the west end of the project reach, to approximately elevation 63 feet, near the city limits of Arroyo Grande. The existing channel bottom consists mostly of gravel with vegetated banks and levee slopes. Sand and gravel bars have built up within the channel between the slopes of the levees. The existing land use adjacent to the southern levee is predominantly agricultural land planted in irrigated row crops. There is also the Cardoza (horse) Ranch west of Creek Road. The existing land use adjacent to the northern levee is a combination of the Oceano airport, and residential and agricultural plots. Beyond the down stream limits of the project, the south levee is bordered by active sand dunes within the Oceano Vehicle Recreation Area operated by State Parks.

The levees and channelized Arroyo Grande Creek were constructed in the late 1950s as a U.S. Department of Agriculture, Soil Conservation Service project (USDA 1956). Portions of the creek were relocated as part of the construction of the levee system. Downstream of Highway 1, the levees consist of earthen berms. Review of the USDA (1956) plans show the levee embankments designed with 15-foot wide crests, with 1½h :1v to 2h:1v exterior slope inclinations, and 3h:1v interior slope inclinations. As-built plans provided by the County, and cross sections developed from recent topo, show that the interior slopes were constructed as steep as about 2h:1v. The interior height of the channel slopes indicated on the plans ranges from about 11 to 14 feet. The exterior slope height appears to have been designed about 5 to 12 feet above the adjacent grades downstream of Highway 1. However, upstream of Highway 1, the existing levee is less pronounced and more intermittent, with a design height generally less than about 3 feet above adjacent grades. The existing stream channel upstream of Highway 1 is increasingly incised to the east, with localized areas of near vertical creek banks, likely from bank erosion.

As part of the levee construction (USDA 1956), the alignment of Los Berros Creek was altered. Prior to 1956, Los Berros Creek appears to have merged with Arroyo Grande Creek downstream of their current confluence, closer to the western limits of the project and along the southwestern edge of Cienega Valley. The approximate pre-1956 Los Berros Creek alignment is shown on Plate 2. This channel appears to serve as a seasonal drainage path.

The levee was damaged by the 2003 San Simeon Earthquake. Damage to the southern levee, as evidenced by cracking and settlement of the berm, was observed by the County near Creek Road following the earthquake. Based on reports discussed by the U.S. Geologic Survey (Holzer et al. 2004), the damage was likely related to liquefaction and settlement of the foundation support soil in response to the earthquake. The County subsequently repaired the levee by regrading areas where the cracking was observed. We understand that the County performs periodic tree trimming and vegetation management of the channel as part of the maintenance of the levee system. Levee maintenance was being performed at the time of our field work in the summer of 2008.

1.2 FLOOD CONTROL IMPROVEMENTS

In the project area, Arroyo Grande Creek receives storm water runoff from the Arroyo Grande Flood Control Channel, referred to as Zones 1 and 1A of the San Luis Obispo County Flood Control and Water Conservation District (Morro Group, 2008). The project will involve flood control improvements along the northern and southern banks of the Arroyo Grande and Los Berros Creeks. The project is intended to provide increased flood control benefits and riparian enhancement through vegetation management and sediment control within Arroyo Grande Creek channel. The preliminary designs under consideration for the project are described as Alternatives 3a, 3b and 3c in a memorandum prepared by Swanson Hydrology + Geomorphology (SH+G, 2008).

Alternative 3c is the main alternative evaluated for this study. The geotechnical aspects of the proposed flood control improvements for Alternative 3c include raising the height of the levees by approximately 3 to 6 feet along roughly 3 miles of the creek. Raising the levees will increase the channel capacity and elevate the levees above the 20-year water surface with 2 feet of freeboard. Alternative 3c involves placement of the greatest quantity and lineal extent of imported or native fill relative to Alternatives 3a and 3b.

2. WORK PERFORMED

2.1 PURPOSE

The purpose of this report is to provide a preliminary engineering evaluation regarding the geotechnical feasibility of raising the levee along Arroyo Grande Creek for the preliminary design and as input to the Environmental Impact Report. The main geotechnical considerations that we have evaluated for this project are:

- Potential for the levee to be impacted by geologic hazards;

- Characterization of the soil and groundwater conditions along the alignment of the levee relative to foundation design, constructability, and seismic vulnerability; and
- A preliminary evaluation of the stability of planned levee improvements relative to slope stability, erosion, seepage, and feasibility for design.

2.2 SCOPE

To evaluate the geotechnical considerations for the project, we have executed the following scope of work:

- Meeting and consulting with members of the design team regarding our approach to providing geotechnical services for the project, and to review the project objectives;
- Reviewing selected published geologic maps and reports, previous geotechnical studies performed along the levee and for bridges that span the creek channel, and as-built plans for the existing levee;
- Performing site visits to observe the general site conditions, coordinate the field exploration program, and collect near-surface samples of selected stream channel materials;
- Laboratory testing of selected samples obtained from the site to assist in characterizing the material properties of the streambed and bank sediments encountered;
- Performing field exploration consisting of advancing six (6) cone penetration test soundings to depths of approximately 43 to 50 feet; and
- Preparing this Preliminary Geotechnical Report for the project that provides our opinions and recommendations regarding:
  - Geologic and seismic setting;
  - Soil and groundwater conditions encountered;
  - Predominant soil and formational units in the project area;
  - Historical seismicity including the impact that the 2003 San Simeon Earthquake had on the site;
  - Potential for the site to be impacted by geologic hazards (such as strong ground motion, fault rupture, liquefaction, seismic settlement, landsliding, flooding, tsunami or seiche, or dam inundation);
  - Potential for erosion, hydrocollapse, subsidence, expansive or collapsible soil conditions;
  - Potential to encounter naturally occurring asbestos or radon gases;
  - Areas that pose geologic hazards;

- Potential for geologic conditions to cause site alterations (such as grading) to adversely impact the project;
- Construction or geotechnical considerations that could impact the project, such as the need for dewatering, excavation characteristics of the geologic materials, and anticipated grading;
- A discussion of the existing levees, and alternatives to dredge the creek, and raise the levees;
- Anticipated site preparation, grading, and slope inclinations that can be used for preliminary design and planning (and subject to change based on design-level studies); and
- Mitigation measures for project development and preliminary design as necessary to address potentially significant impacts.

2.3 FIELD EXPLORATION

Field exploration activities consisted of performing six (6) electric cone penetration test (CPT) soundings, collecting hand samples from the creek, and performing a hand auger boring adjacent to the levee. The logs of the CPT soundings and hand auger boring are presented in Appendix A. The approximate locations of the CPT soundings, hand samples and hand auger boring are shown on Plate 2 – Field Exploration Plan.

2.3.1 Cone Penetration Testing

Fugro Geosciences of Santa Fe Springs, California performed the CPT work for this project on July 22, 2008. CPT soundings were advanced to depths of approximately 43 to 50 feet below the ground surface. The CPT soundings were performed using an electronic piezocone penetrometer. The penetrometer was advanced into the ground using a hydraulic ram mounted within a truck having a weight of at least 20 tons. The piezocone has a diameter of approximately 1.7 inches. Cone tip resistance (q_c), sleeve friction (f_s), and penetration pore pressures measured behind the tip (u_2) were recorded during penetration using an on-board computer. Data were collected from the penetrometer at approximately 2 centimeter intervals to provide a nearly continuous profile of the subsurface conditions encountered during penetration. The friction ratio (FR) was computed for each value of q_c and f_s recorded. The data was retrieved electronically for use in subsequent geotechnical analyses. CPT data and soil behavior type classifications were used in conjunction with historical boring information to evaluate soil boundaries encountered at the site.

2.3.2 Hand Samples

Fugro personnel collected thirteen (13) bulk samples from within the Arroyo Grande Creek channel on July 14 and 22, 2008. Samples of the sediments were collected from the active streambed and from bars and bank materials above the water surface in the creek. Descriptions of the samples obtained are included with the laboratory test results in Appendix B.

2.3.3 Hand Auger Boring

One hand auger boring was advanced adjacent to the southern levee by Fugro on August 14, 2008. The hand auger had a diameter of 4 inches, and was excavated in the agricultural field east adjacent to the southern levee just north of Creek Road. The hand auger boring was drilled to a depth of approximately 4½ feet. Samples were obtained at selected intervals from the boring using a hand-driven modified California sampler and from excavated cuttings. The hand driven sampler had an outside diameter of approximately 3 inches, and contained six (6) 1-inch high brass rings. The sampler was driven using a 5-pound slide hammer.

2.4 LABORATORY TESTING

Laboratory tests for grain size distribution and direct shear strength were performed on selected samples recovered from the field exploration program. The tests were performed in general accordance with the applicable standards of ASTM. The results of the tests are presented in Appendix B.

2.5 PREVIOUS STUDIES

The U.S. Geological Survey (Holzer et al., 2004) previously performed a geotechnical study in the project vicinity. The study focused on liquefaction and liquefaction-induced lateral spreading that occurred in Oceano in response to the 2003 San Simeon Earthquake. As part of that study, the USGS performed three CPT soundings (SOC 036, 035 and 037) on the Arroyo Grande Creek Levee within the project limits. The soundings were performed in this area of the levee because the USGS observed evidence of instability of the levee and liquefaction within the field adjacent to the levee. The data from those CPT soundings were used to assist in our characterization of the subsurface conditions for this report. The logs of those CPT soundings performed by the USGS are included with the Fugro CPT logs in Appendix A. The approximate locations of the CPT soundings performed by the USGS are also shown on Plate 2.

We reviewed logs of test borings from Caltrans (1956, 1984) and San Luis Obispo County (1984) as part of geotechnical investigations for the State Route 1 Bridge and 22nd Street Bridge, respectively. This boring information was used to help characterize the subsurface profile for the site. The approximate locations of the bridge borings are shown on Plate 2.

2.6 GENERAL CONDITIONS

Fugro prepared the conclusions and professional opinions presented in this report in accordance with generally accepted geotechnical engineering principals and practices at the time and location this report was prepared. This statement is in lieu of all warranties, expressed or implied.

This report has been prepared for San Luis Obispo County and their authorized agents only. It may not contain sufficient information for the purposes of other parties or other uses. If any changes are made in the project as described in this report, the conclusions and

recommendations contained in this report should not be considered valid unless Fugro reviews the changes and modifies and approves, in writing, the conclusions and recommendations of this report. The report and drawings contained in this report are preliminary, intended for design-input purposes; they are not intended to act as construction drawings or specifications.

Soil and rock deposits will vary in type, strength, and other geotechnical properties between points of observation and exploration. Additionally, groundwater and soil moisture conditions can also vary seasonally or for other reasons. Therefore, we do not and cannot have complete knowledge of the subsurface conditions underlying the site. The conclusions and recommendations presented in this report are based upon the findings at the points of exploration, and interpolation and extrapolation of information between and beyond the points of observation, and are subject to confirmation based on the conditions revealed during construction.

The scope of services did not include any environmental assessments for the presence or absence of hazardous/toxic materials in the soil, surface water, groundwater, or atmosphere. Any statements or absence of statements, in this report or data presented herein regarding odors, unusual or suspicious items, or conditions observed are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous/toxic assessment. Site conditions

3. SITE CONDITIONS

3.1 GEOLOGIC SETTING

The project is located in the Arroyo Grande and Cienega Valleys and within the Coast Ranges geologic and geomorphic province. That province consists of north-northwest-trending sedimentary, volcanic, and igneous rocks extending from the Transverse ranges to the south into northern California. Rocks of the Coast Ranges province are predominantly of Jurassic and Cretaceous age; however, some pre-Jurassic, along with Paleocene-age to Recent rocks are present. The surficial geology in the project vicinity, as mapped by Hall et al. (1973), is shown on Plate 3 – Regional Geologic Map.

The Arroyo Grande and Cienega Valleys and adjacent eolian (windblown) dune sand deposits are the dominant geomorphic features within the project vicinity. The valleys were formed during a period of low sea level (the Wisconsin glacial stage), as coastal streams adjusted to the drop in sea level by carving into the landscape. A subsequent rise in sea level produced a dynamic depositional environment reflected in the discontinuous and variable subsurface stratigraphy. Approximately 800 feet of interlayered and unconsolidated sediments have been deposited within the valleys, dip gently to the west, and are underlain by bedrock consisting of Pismo Sandstone or similar sedimentary rocks.

As shown on Plates 2 and 3, the predominant geologic units mapped in the study area are surficial sediments comprised of dune sand deposits (Qs), older-stabilized dune sand deposits (Qos), and alluvium (Qal). The dune sands (Qs and Qos) mapped by Hall et al. (1973) are referred to as eolian deposits (Qe) by Hanson et al. (1994) on Plate 6. Hall identified older

dune sands as eolian deposits that have been stabilized and subsequently covered by vegetation. The alluvium is associated with sediment that has been deposited along Arroyo Grande Creek and Los Berros Creek, and the floor of the Arroyo Grande and Cienega Valleys. Surficial sediments are primarily underlain by weakly consolidated units of the age-equivalent of Paso Robles Formation and Careaga Sandstone.

Also depicted on Plate 2, a portion of the site along the creek was previously occupied by dune sand and an extensive pre-settlement Estero, according to an 1873-1874 map produced by the U.S. Coast Survey (Holzer et al., 2004). According to the USGS (2004) report, this area was subsequently "subdivided and turned into developable lots by leveling dunes and filling in swamp areas with dune sand in March 1927." Presumably, the creek alignment was altered as a consequence of this development. The approximate limits of the Pre-Existing Estero reported by Holzer et al. are noted on Plate 2.

3.2 SUBSURFACE CONDITIONS

The subsurface conditions encountered generally consisted of artificial fill (Af) materials overlying alluvium deposits (Qal). Logs for this and previous explorations are presented in Appendix A. The locations of the explorations are shown on Plate 2. Subsurface profiles summarizing our interpretation of the soil conditions encountered along the alignment of Arroyo Grande Creek within the project limits are shown on Plates 4a and 4b. A discussion of the geologic units encountered is provided below. Our interpretation of subsurface conditions is based on the CPT correlations developed by Robertson and Campanella (1986) and our hand auger boring log, and is generally supplemented by logs of previous explorations (USGS, 2004; Caltrans, 1956, 1984; San Luis Obispo County, 1984).

Artificial Fill (Af). Artificial fill materials were encountered in each of the CPT soundings advanced through the existing levee. Fill materials were encountered from the ground surface to approximately 2½ to 10½ feet below the ground surface. The artificial fill generally consisted of the earth materials placed during the construction of the existing levee, except in C-2 advanced within an adjacent parking lot (near the intersection of Halcyon Road and Highway 1). The artificial fill materials encountered in the CPT soundings consisted predominantly of medium dense to very dense sand (SP or SW) and silty sand (SM).

Alluvium Deposits (Qal). The alluvium encountered likely contained undifferentiated units of floodplain, fluvial, and estuarine sediments deposited along Los Berros Creek and Arroyo Grande Creek. The alluvium was encountered below the artificial fill materials to the maximum depth explored, approximately 43 to 50 feet below the existing ground surface. The alluvium encountered has been characterized as two predominant units of sandy alluvium (Qal1, Qal2), and three predominant units of fine-grained alluvium that were encountered at various depths within and below the sandy alluvium (Qal3, Qal4 and Qal5). Our interpretation of the subsurface conditions is shown on Plates 4a and 4b - Subsurface Profile.

Qal1. This unit consisted predominantly of loose to medium dense sandy material encountered below the levee fill and/or surficial clay units. The sandy alluvium was interbedded with various units of the fine grained alluvium as shown on Plates 4a and 4b. The unit was

encountered from at or near the creekbed elevation to depths of approximately 10 to 15 feet below the creek bed where penetrated. This upper sand unit consists of mostly silty sand (SM) to sandy silt (ML) and sand (SP or SW). This unit would also include the gravel and gravelly sand (SP or SW) streambed material.

Qal2. This unit consisted predominantly of dense to very dense sandy alluvium encountered below the upper Qal1 sand unit at a depth of approximately 10 to 15 feet below the streambed elevation. This lower sand unit consists mostly of sand (SP/SW), silty sand (SM) and gravelly sand or gravel (GP/GW). The layer is interbedded at various depths with finer grained alluvial units (Qal4), as shown on Plates 4a and 4b. The USGS soundings (SOC 035, 036 and 037) encountered materials classified as very dense cemented or overconsolidated sand (SP/SW) or clayey sand (SC). Where penetrated near and downstream of Highway 1, this unit was underlain by a deeper fine grained alluvium (Qal5) at depths of approximately 30 to 55 feet below the creek bed. The unit was encountered to the maximum depth explored, approximately 40 feet below the creek bed in C-1.

Qal3. This unit consisted of a shallow layer of predominantly stiff to very stiff clay and silt that was encountered near or just below the levee fill in most of the explorations (see Plates 4a and 4b). The thickness of this unit ranged from approximately 2 to 15 feet. The unit is generally thin (less than 4 feet thick) downstream of Highway 1, and increases in thickness upstream of Highway 1. This unit consisted of mostly clay (CL/CH), silty clay (CL-ML), sandy silt (ML) and clayey silt (ML), and hard cemented or overconsolidated fine grained material.

The hand auger boring (H-1) was drilled near the Creek Road adjacent to the southern levee to obtain a sample of this material for direct shear testing (used in our slope stability analyses). Based on the test results, the sample of the clayey sand had a friction angle of approximately 38 degrees and a cohesion of approximately 100 pounds per square foot.

Qal4. This unit consisted of 2- to 10-foot-thick layers and lenses of stiff to very stiff fine grained alluvium that was interbedded at various depths throughout the sandy Qal1 and Qal2 units (Plates 4a and 4b). A zone of about 15 feet of soft to medium stiff clay was encountered in the USGS CPT sounding 37. The soft clay is likely estuarine deposits associated with the pre-settlement Estero noted on Plate 2.

Qal5. This unit consisted of a deeper, very stiff to hard fine grained alluvium encountered at depths ranging from approximately 30 to 50 feet below the creekbed in USGS CPT soundings 35 and 36, and Fugro's CPT sounding C-3. This unit is inferred to underlie all other units within the alluvium, to the maximum depth explored, approximately 95 feet below the creekbed in USGS Sounding 35. This unit consists mostly of sediment classified as clay (CL/CH), silty clay (CL-ML), sandy silt (ML), and clayey silt (ML).

3.3 GROUNDWATER CONDITIONS

Groundwater was encountered in C-3 during our July 2008 field exploration program at a depth of approximately 14 feet below the ground surface. The sounding holes created by C-1, C-2, C-4, C-5, and C-6 caved following removal of the CPT probe at approximate depths of 9, 9,

11, 11, and 9½ feet, respectively. Groundwater levels and caved surfaces were typically encountered at approximately the same elevation as the water elevation in Arroyo Grande Creek. Groundwater was encountered at a depth of approximately 3 feet (elevation +17 feet) in the hand auger boring. During our field exploration program, the water in Arroyo Grande Creek was observed to be approximately ½ to 2½ feet deep. Variations in groundwater levels and soil moisture conditions will occur depending on changes in precipitation, runoff, tidal fluctuations, irrigation schedules, and other factors.

3.4 SEISMIC CONDITIONS

3.4.1 Faulting

The locations of the main faults mapped in the Central Coast area are shown on Plate 5 – Regional Fault Map. The majority of the faults within the Coast Ranges province and the Sierra de Salinas belt generally trend north-northwest. The California Geological Survey (CGS 1996, formerly the California Division of Mines and Geology) considers major faulting within the project vicinity to be related to the San Luis Range fault zone (a compilation of several named fault strands), the Los Osos fault, the offshore Hosgri fault, and the San Andreas fault. The CGS fault database consists of active and potentially active faults that are considered by the CGS to be capable of affecting regional seismicity in California.

Fugro utilized the fault search routine in FRISKSP (Blake, 2000) to identify active and potentially active mapped faults and fault segments within a 62-mile radius of the project vicinity. The site coordinates (latitude and longitude) for the Arroyo Grande Creek Waterways Management Plan vicinity were estimated to be 35.0952° latitude and -120.6030° longitude. Summarized below are nine (9) faults and fault segments that were considered to be the most capable of producing high ground motion within the project vicinity. Additional information is presented in the California Geological Survey (CGS, 2002) fault database.

Summary of Fault Characteristics

Fault	Approximate Distance From Site (mile)	Maximum Moment Magnitude (M_w)	Fault or Fault Segment Length (km)	Slip Rate (mm/yr)
San Luis Range (S. Margin)	1.8	7.2	64 ± 6	0.2 ± 0.1
Los Osos	6.2	7.0	44 ± 4	0.5 ± 0.4
Casmalia (Orcutt Frontal Fault)	11	6.5	29 ± 3	0.3 ± 0.2
Hosgri	14	7.5	169 ± 17	2.5 ± 1.0
Rinconada	16	7.5	190 ± 19	1.0 ± 1.0
Lions Head	16	6.6	41 ± 4	0.02 ± 0.02
Los Alamos – Baseline	28	6.9	28 ± 3	0.7 ± 0.7
San Juan	31	7.1	68 ± 7	1.0 ± 1.0
San Andreas (Cholame)	42	7.3	63 ± 6	34 ± 5

San Luis Range Fault System. The San Luis Range fault system is the closest mapped fault to the site. The California Geologic Survey (CGS, 2002) groups the Oceano, Wilmar Avenue and several other faults as the San Luis Range fault system, which they consider to be potentially active. The Wilmar Avenue and Oceano faults, shown on Plate 6 – Local Fault Map, are interpreted by CGS to be a part of the San Luis Range fault system. No known active faults cross the site and the site is not located within a designated Alquist-Priolo Earthquake Fault Zone.

The mapped locations of the Wilmar Avenue and Oceano faults shown on Plate 6 are inferred offsets in well logs and steps in the Franciscan bedrock from geophysical data. Within the Cienega Valley, the inferred locations of the faults are concealed by relatively deep alluvium. It is our opinion that the presence of the faults does not pose a significant fault rupture hazard to the project. However, significant ground motion could impact the site if an earthquake were to occur on the San Luis Range fault system within the life of the project.

3.4.2 Historical Seismicity

The project is located within a seismically active region of Central California. Historical records indicate that the area has been subject to various seismic events over the last 183 years (PG&E, 1988). A summary of Magnitude 2 and greater seismic events recorded from 1933 through March 2008 by the Council of the National Seismic System (CNSS 2008) are presented on Plate 7 - Historical Seismicity Map. Examples of relatively strong ground motion that has reportedly been experienced near the project area are the seismic events of 1830, 1857, 1913, 1916, 1917, 1952, 1966, 1980, and 2003.

The 1830 event is estimated to be an approximately M5.0 earthquake that occurred from a poorly located source near San Luis Obispo. The effects of the 1830 event were generally observed between the Los Osos and Rinconada faults. The 1857 event (the Fort Tejon earthquake) occurred on the Mojave segment of the San Andreas fault, and reportedly resulted in damage in central and southern California. The 1913 event is estimated to be an approximately M5 earthquake that occurred along the southwestern margin of the San Luis/Pismo block near Arroyo Grande. The 1916 event is estimated to be an approximately M5.0 earthquake that occurred near Avila, possibly along the Los Osos fault or faults along the southwestern margin of the San Luis/Pismo block. The 1917 event is estimated to be an approximately M5.0 earthquake that occurred near Lopez Canyon between the Rinconada and West Huasna faults. The 1952 earthquake is estimated to be a M6.0 earthquake occurring within the Nacimiento Fault Zone. The 1966 event (the Parkfield earthquake) is estimated to be an approximately M6.0 earthquake that occurred on the San Andreas fault. The 1980 event is estimated to be an approximately M5.0 earthquake that occurred offshore near Point Sal along the Casmalia fault zone, and near its intersection with the Hosgri fault.

The 2003 event (the San Simeon Earthquake) is estimated to have been a M6.5 earthquake resulting in a ground acceleration of about 0.29 ± 0.04g in the project vicinity (Holzer et al., 2004). The epicenter of the 2003 earthquake was located approximately 51 miles northwest of the site, near the Nacimiento fault zone, and near the previous M6.0 1952 Bryson Earthquake. According to Holzer et al. both the Bryson and San Simeon Earthquakes caused

damage in Oceano. Evidence of liquefaction in the fields along Cardoza Ranch (Plate 2) and displacement of the Arroyo Grande Creek levee were both documented by the Holzer et al. team following the 2003 earthquake.

4. GEOTECHNICAL ANALYSIS

4.1 SEISMIC HAZARD ANALYSIS

A preliminary probabilistic seismic hazard evaluation for the site was performed using the computer program FRISKSP (Blake, 2000) and the USGS Hazard Calculator program based on the 2007 California Building Code (CBC). The current CBC was adopted by the County in January 2008, and was used to define the seismic hazard exposure for this preliminary evaluation. The CBC seismic design code is referenced to the American Society of Civil Engineers ASCE 7-05 report. The program FRISKSP is based on FRISK (McGuire, 1978) and has been modified for the probabilistic estimations of seismic hazards using three-dimensional earthquake sources. The results of our preliminary evaluation are tabulated below.

Our evaluation was used to estimate earthquake effects corresponding to the Maximum Considered Earthquake (MCE). The MCE is defined by the code as an earthquake having a 2 percent chance of being exceeded in 50 years (Statistical Return Period of approximately once every 2,475 years). Design earthquake ground motions for liquefaction and other geotechnical analyses are defined as two-thirds ($^2/_3$) of the corresponding MCE ground motions.

Based on velocity data estimated in the USGS (Holzer et al., 2004) study and subsurface conditions encountered at the site, the Soil Profile Type selected for our evaluations was Site Class D, "S_D". This soil profile type corresponds to a stiff soil profile with an average shear wave velocity ranging between 600 and 1,200 feet per second (180 and 360 meters per second), according to the CBC (2007). The average velocity for the upper 100 feet was estimated at approximately 224 meters per second (m/s) for explorations SOC035, SOC036 and SOC037. Although liquefaction can be a basis for modifying the site class, only portions of the site were estimated to have a potential for liquefaction and associated loss in strength under the MCE (discussed in Section 4.2 of this report).

FRISKSP was used to estimate the peak horizontal acceleration using the attenuation relationship proposed by Boore et al. (1997) and assuming an average shear wave velocity of 250 m/s in the upper 100 feet. The MCE was estimated to result in an approximately peak horizontal ground acceleration of 0.7g, and is assumed to occur from an M7.0 event on the San Luis Range Fault System for the purposes of our evaluation. The ground motion was reduced by two-thirds to 0.46g as input to our seismic hazards evaluation.

4.2 LIQUEFACTION AND SEISMIC SETTLEMENT

Liquefaction is defined as the loss of soil strength due to an increase in soil pore water pressures that results from seismic ground shaking. In order for liquefaction to occur, three general geotechnical conditions need to occur: 1) groundwater is present within the potentially liquefiable material; 2) the soil is granular and meets a specific range of grain sizes; and 3) the soil is in a loose state of low relative density. If those conditions are present and strong ground

motion occurs, portions of the soil column could liquefy, depending upon the intensity and duration of the strong ground motion. Seismic settlement can occur in relatively loose sands, similar to soil types that are vulnerable to liquefaction, but can also occur in soils that are unsaturated and above the groundwater table.

The manifestation and damage that can be associated with liquefaction is strongly dependent on the duration of the ground motion. Liquefaction and seismic settlement hazards were evaluated using NCEER guidelines (Youd and Idriss, 2001) for the design M7.0 earthquake having a ground acceleration of 0.46g. Earthquakes that occur closer to a site generally result in higher ground motions than a similar magnitude earthquake that could occur away from the site. The design earthquake ground motion (0.46g) is higher than the San Simeon Earthquake ground motion (0.25g, adjusted for site-specific amplification effects). The stronger ground motion from the design earthquake would likely result from a near-field earthquake occurring within only 1 to 6 miles of the site, much closer than the San Simeon Earthquake. For purposes of comparison, we also conducted liquefaction analyses using data from the San Simeon Earthquake effects (M6.5 and 0.25g). The USGS (2004) study reports that liquefaction resulting from the San Simeon Earthquake significantly impacted the south levee within the western limits of the project.

Field data from the CPT soundings were used to estimate liquefaction and seismic settlement for the analysis. These data were then imported into a geographic information system (GIS) to spatially orient the digital information. Liquefaction analyses were subsequently performed using a programmed algorithm. The results of the analyses are presented with the subsurface profiles presented on Plates 4a and 4b, and on logs of the individual CPT soundings in Appendix C. The red lines on these plates are the estimated CPT tip resistance needed to resist liquefaction for the seismic conditions considered. A blue zone between the red line and the CPT tip resistance indicates a zone of potentially liquefiable soil.

Various soil layers within the sandy alluvium units (Qal1 and Qal2 on Plates 4a and 4b) are potentially liquefiable under the design earthquake. The fine-grained units of the alluvium (Qal3, Qal4 and Qal5 on Plates 4a and 4b) consist mostly of clay and are not considered susceptible to liquefaction. The existing levee fill (Af on Plates 4a and 4b), though underlain by the potentially liquefiable foundation support soil, appears to be relatively compact and has a low potential for liquefaction.

The potentially liquefiable soil was encountered within two zones of the sandy alluvium: an approximately 13-foot thickness of sand encountered just below the levee within the Qal1 unit at the west end of the project, and relatively thin, interbedded loose to medium dense sand layers within the Qal1 and Qal2 units encountered at various depths and locations over the site. The first area (near Cordova Ranch) has the greatest potential for liquefaction, and is within the Pre-settlement Estero area where liquefaction resulted in damage to the south levee following the San Simeon Earthquake. Our analysis suggests that the interbedded sandy units identified outside the Pre-settlement Estero area are generally denser and likely did not experience significant liquefaction in response to the San Simeon Earthquake.

Manifestation of liquefaction could impact the existing or proposed levee as settlement, instability, or cracking of the levee. We estimate that approximately 2 to 9 inches of seismic settlement could occur along the levee due to liquefaction under the design earthquake. Seismic settlement is estimated to be approximately 2 to 4 inches upstream of about Creek Road and approximately 3 to 9 inches within the Pre-settlement Estero Area downstream of about Creek Road. An evaluation of potential instability of the levee associated with liquefaction is discussed in the following section. The estimated higher settlement downstream of Creek Road is the same area where instability and settlement of the levee was reported following the December 2003 San Simeon Earthquake.

4.3 SLOPE STABILITY

The purpose of the slope stability analysis was to provide a basis for recommending slope inclinations for the preliminary design of the proposed levee improvements, and to evaluate the stability of the proposed embankments relative to the geotechnical feasibility of raising the levees. Slope stability analyses were evaluated for static loading conditions, pseudostatic (earthquake) loading, and post-liquefaction static loading conditions. The loading conditions analyzed as well as the results of our slope stability analyses are presented in Appendix D.

Slope stability analyses were performed for typical cross sections estimated at a location on the north levee embankment in the vicinity of Sta. 72, and at a location on the south levee embankment near Sta. 30 on the Cardoza Ranch that was destabilized by the 2003 San Simeon Earthquake. For both sections, slope stability was evaluated for the interior (creek side) and exterior (land side) levee slopes. The surface profiles at the cross section locations were selected based on cross sections provided by SH+G (2008b). The stability of the existing levees at these two locations was estimated under the existing static slope conditions, and considering liquefaction of the foundation support soil that reportedly occurred during the 2003 San Simeon Earthquake. The estimated stability of the existing slope levee provides a basis for evaluating the impact raising the levee will have on slope stability.

Two proposed embankment configurations were evaluated, each with six (6) feet of artificial fill placed above the existing embankment crest elevation. The first proposed configuration was evaluated with the raised levee centered on the centerline of the existing levee, and with the exterior and interior slope graded to an inclination of 2h:1v. The second proposed configuration was evaluated with the crest of the raised levee moved landward with a flatter interior slope that would match the existing approximately 3.5h:1v slope inclination. The exterior slope was evaluated using a 2h:1v inclination, the same as the first configuration.

4.3.1 Slope Stability Criteria

For the purpose of evaluating analytical results, the San Luis Obispo County (2005) Guidelines for Engineering Geology Reports considers slopes stable when the estimated factor of safety from slope stability analyses is at least 1.5 under static loading conditions, and at least 1.1 under pseudostatic (earthquake) loading conditions when using a horizontal pseudostatic coefficient of 0.15. These values are consistent with local practice and CDMG (1997) guidelines

for slope stability evaluations. A factor of safety of 1.0 represents the theoretical boundary below which a slope is no longer stable and experiences failure. Factors of safety greater than 1.0, such as those stated above, are typically used to define stable slope conditions in practice to help account for uncertainties in characterizing subsurface conditions and limitations of analyses used to evaluate slope stability. We considered the potential for liquefaction to impact the levee slopes in the analysis. Ground motions and liquefaction generated by the 2003 San Simeon earthquake are reported to have resulted in damage to a portion of the southern levee and sand boils near the Cardoza Ranch (USGS, 2004).

4.3.2 Analysis Methods

The slope stability analyses were performed using the computer program GSTABL7 (Gregory, 2001). GSTABL7 was used with STEDwin (Van Aller 2002) to estimate factors of safety for slope stability under static and pseudostatic loading conditions. GSTABL7 requires the user to input the ground surface profile; subsurface profile; soil properties including unit weight (γ), friction angle (ϕ), and cohesion (c); groundwater levels; and the analysis method to be used. Plots of the output, soil properties, and conditions used for the analyses are presented in Appendix C. Slope stability analyses were performed using the modified Bishop method to estimate factors of safety for circular failure surfaces. A key to the results of our slope stability analyses is presented on Plate C-1 in Appendix C.

4.3.3 Selection of Shear Strength Parameters

For our static load stability analyses, “static” shear strength parameters were assigned to selected subsurface units based on correlations with CPT data. The shear strength of sand units were modeled as cohesionless, based on a phi-only (ϕ) analysis estimated from the CPT data. The shear strength of fine-grained units was modeled as solely cohesive, based on the undrained shear strength estimated from the CPT data (S_u, noted as the cohesion intercept, c). Direct shear strength testing was performed on a relatively thin unit of clayey sand (SC) encountered at the base of levee embankments, because the strength of this unit was found to significantly influence the stability results. The layer was modeled as having both friction (ϕ) and cohesion (c) based on the additional direct shear test.

For our post-liquefaction stability analyses, “static” strength parameters were assigned to compacted fill, alluvium encountered above the groundwater table, medium dense “liquefiable” sand, and fine-grained soil layers because these units were considered as having limited or low potential for strength loss due to liquefaction. Post-liquefaction undrained residual shear strength values ($S_{u,r}$) were assigned to liquefiable soil units using correlations to CPT data and methods recommended by Seed and Harder (1990), which were mainly the loose sand units below the groundwater table (Qal1 on Plates 4a and 4b). The post-liquefaction undrained residual shear strength value was assigned as an equivalent value of cohesion (c) with a frictional angle (ϕ) equal to zero.

4.3.4 Groundwater Conditions

The groundwater levels used in our slope stability analyses were based on our field observations discussed in Section 3.3 of this report. The groundwater level was modeled near or above the existing water level in the creek. Rapid drawdown can occur in poorly drained soil as flood water recedes, typically resulting in surficial instability or slumping of the slope face. Specific analysis for rapid drawdown conditions was not performed, because the existing embankment soil is relatively well-drained sandy material and in our opinion should experience drainage to draw water away from the slope face as the flood water recedes. Additionally, the interior slopes of the existing channel are heavily stabilized by vegetation, except in local areas upstream of Highway 1, where some scouring of the slope has occurred.

4.3.5 Summary of Slope Stability Results

Preliminary plans (SH+G 2008a,b) show that the proposed levees will be raised approximately 3 to 6 feet above the existing top of levee. We estimated factors of safety for the existing and two proposed slope configurations described above. Each configuration was evaluated for two locations: one in the vicinity of Sta. 72 that is upstream of the 22nd Street Bridge, and one in the vicinity of Sta. 30 on the Cardoza Ranch. The estimated factors of safety for the existing and proposed levee slope conditions are generally considered stable under static loads. However, the estimated factors of safety for the existing and proposed embankment conditions are considered unstable when considering post-liquefaction of the underlying foundation support soils (mainly within the Qal1 unit shown on Plates 4a and 4b) in the vicinity of the Cardoza Ranch. Instability of the levee associated with liquefaction mainly occurs because the excess porewater pressure generated by the design earthquake is sufficient to essentially force loosely packed sand particles apart causing the soil to lose strength.

Sta. 72 Vicinity, North Levee Upstream of 22nd Street. The estimated factors of safety for this vicinity exceed those needed for slope stability for the existing and proposed conditions. The estimated factors of safety were greater than 1.7 for static loading conditions, and greater than 1.2 for pseudostatic (earthquake) loading conditions. The soils encountered in this area, although prone to liquefaction and moderate seismic settlement under the design earthquake, do not appear to be prone to significant loss in strength in response to liquefaction that would cause the estimated factor of safety of the slope to be considered unstable. For preliminary design, this evaluation generally suggests that the existing and proposed levee slope configurations considered in our evaluations are relatively stable under static and earthquake loading conditions upstream of about Creek Road (outside the limits of the Pre-settlement Estero noted on Plate 2). A summary of the slope stability results for this vicinity is provided in the following table.

Summary of Slope Stability Results for Sta. 72 Vicinity on North Levee upstream of 22nd Street Bridge

Condition		Estimated Factor of Safety		
		Static Loading	Pseudostatic (earthquake) Loading	Post-Liquefaction
Existing	Interior 3.5h:1v Slope	2.5	1.5	2.5
	Exterior 2h:1v Slope	1.7	1.2	1.7
Proposed Configuration 1: 6-foot levee raise centered on existing levee	Interior 2h:1v Slope	1.9	1.3	1.8
	Exterior 2h:1v Slope	1.7	1.2	1.7
Proposed Configuration 2: 6-foot levee centered outside existing channel and levee)	Interior 3.5h:1v Slope	2.5	1.5	2.2
	Exterior 2h:1v Slope	1.7	1.2	1.7

Sta. 30 Vicinity, South Levee on Cardoza Ranch. The estimated factors of safety for this vicinity exceed those needed for slope stability for the existing and proposed conditions when considering static loads, but are potentially unstable when considering post-liquefaction conditions associated with the design earthquake. This is essentially the same areas where instability of the levee was reported by the USGS (Holzer et al. 2003) following the December 2003 San Simeon Earthquake. The estimated factors of safety for the existing levee when considering post-liquefaction conditions were approximately 0.8 to 1.1, and generally below the minimum factor of safety of 1.1 considered to be stable by the County guidelines when considering earthquake loading conditions. The estimated factor of safety for post-liquefaction conditions falls to 0.5 to 0.8 when considering the proposed levee configurations. For preliminary design, this evaluation generally suggests that the existing and proposed levee slopes are relatively stable under static loads, and potentially unstable when considering earthquake (post-liquefaction) conditions downstream of about Creek Road (within the limits of the Pre-settlement Estero noted on Plate 2). A summary of the slope results for this vicinity is provided in the following table.

Slope Stability Results for Sta. 30 Vicinity on South Levee on Cardoza Ranch

Condition		Estimated Factor of Safety		
		Static Loading	Pseudostatic (earthquake) Loading	Post-Liquefaction
Existing	Interior 3.5h:1v Slope	2.6	1.5	0.8
	Exterior 1.5-2h:1v Slope	1.9	1.3	1.1
Proposed Configuration 1: 6-foot levee raise centered on existing levee	Interior 2h:1v Slope	1.9	1.3	0.5
	Exterior 2h:1v Slope	1.9	1.3	0.8
Proposed Configuration 2: 6-foot levee centered outside existing channel and levee)	Interior 3.5h:1v Slope	2.6	1.5	0.7
	Exterior 2h:1v Slope	1.9	1.3	0.8

5. GEOLOGIC HAZARDS AND GEOTECHNICAL CONSIDERATIONS

The following sections present a summary of geologic hazards that were evaluated for the project, our opinion regarding the potential for the hazards to impact the project, and preliminary recommendations for mitigation of the hazard, if needed.

5.1 APPROACH

The County has provided input regarding how potential impacts to the levee that may be related to earthquake/seismic related hazards should be evaluated. Earthquake related hazards and their associated impacts have been evaluated and discussed specific to the project. However, the County has stated that the project will not include potentially costly mitigations for seismic hazards that may damage the levee. We understand that the County's approach to mitigating seismic hazards will generally be to repair damages in response to earthquakes, should they occur. The County feels that given economic constraints, the most beneficial use of the available funds would be to provide increased flood protection. A factor in this decision is the unlikeliness that there would be full flows in Arroyo Grande Creek at the same time as a damaging earthquake. It is anticipated that if an earthquake occurs and damage is realized, that the County would have the opportunity to make repairs to the levee system before high flows would inundate the channel. The County will consider alternatives to mitigate or partially-mitigate seismic hazards if they can be relatively easily accomplished within the economic constraints of project.

The assessment of hazards is therefore discussed relative to potential impacts to the project, relative to the existing levee conditions, the general type of mitigation that may be needed to address seismic related hazards, and whether or not we recommend that potential impacts of the hazard be considered in the County operation, maintenance and emergency response planning for the levee.

5.2 FAULT RUPTURE

Fault rupture is the displacement of the ground surface created by movement along a fault plane during an earthquake. The project vicinity is not located within a designated Alquist-Priolo Earthquake Fault Hazard Zone. The Alquist-Priolo Earthquake Fault Zoning Act identifies areas of known active faults, and the main purpose of the act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. While habitable structures can be sited away from known active faults, uninhabited infrastructure, such as the levees proposed for this project, may not be able to be sited away from faults and therefore would have to cross any fault that were present.

A fault rupture hazard would exist where the levee would cross directly on an active fault, and rupture of that fault could displace the ground surface upon which the levee is located. The closest mapped active fault to the project vicinity is the Oceano fault. The Oceano fault is considered potentially active, and to be a part of the San Luis Range fault system. The Oceano fault is mapped approximately 1,000 feet southwest of the western terminus of the project, as shown on Plate 6. The potential for fault rupture to impact the project site is considered low and no mitigation for fault rupture is recommended.

Mitigation: None anticipated.

5.3 STRONG GROUND MOTION

The potential exists for strong ground motion to affect the project during the design lifetime. Strong ground motion (shaking) can occur in response to local or regional earthquakes. The project site is located within a seismically active area, and has been impacted by historic earthquakes in the recent past (such as the 2003 San Simeon Earthquake). The recency of the San Simeon Earthquake however does not suggest that the project area is more prone to earthquakes, or has a greater frequency of earthquakes, than it did prior to 2003. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Those effects are discussed in subsequent sections of this report regarding liquefaction, seismic settlement, ground lurching, and slope instability.

As discussed in Section 4.1 of this report, the design earthquake for this project is estimated to be a M7.0 event with a corresponding peak ground acceleration of approximately 0.46g. Design earthquake ground motions for liquefaction and other geotechnical analyses are defined as two-thirds ($^2/_3$) of the corresponding MCE ground motions. The MCE was defined based on the CBC as an earthquake having a 2 percent chance of being exceeded in 50 years (Statistical Return Period of approximately once every 2,475 years).

Mitigation: Seismic data and site classification for the design of levees should be reviewed and updated in the design-level Geotechnical Report in accordance with applicable County codes, ordinances, and guidelines. The report should provide ground motion parameters (magnitude and peak ground acceleration) for use in geotechnical analyses, such as for evaluating slope stability, liquefaction, and seismic settlement.

5.4 LIQUEFACTION AND SEISMIC SETTLEMENT

As discussed in Section 4.2, the existing levee is underlain by geologic units that may contain sediments susceptible to liquefaction. The potentially liquefiable soil was encountered within two zones of the sandy alluvium: 1) an approximately 13-foot thickness of sand encountered just below the levee within the Qal1 unit (see Plate 4a) at the west end of the project, and 2) relatively thin, interbedded loose to medium dense sand layers within the Qal1 and Qal2 units encountered at various depths and locations over the site. The first area (near Cordova Ranch) has the greatest potential for liquefaction, and is within the Pre-settlement Estero area where liquefaction and seismic settlement damaged the southern levee following the San Simeon Earthquake in 2003. Our analysis suggests that the interbedded sandy units identified outside the Pre-settlement Estero area are generally denser and likely did not experience significant liquefaction in response to the San Simeon Earthquake.

Manifestation of liquefaction could impact the existing or proposed levees as settlement, instability, or cracking of the levees. We estimate that approximately 2 to 9 inches of seismic settlement could occur along the levees due to liquefaction under the design earthquake. Seismic settlement is estimated to be approximately 2 to 4 inches upstream of about Creek Road and approximately 3 to 9 inches within the Pre-settlement Estero Area downstream of about Creek Road. An evaluation of potential instability of the levees associated with liquefaction is discussed in the following section. The estimated higher settlement downstream of Creek Road is within the area where instability and settlement of the levees was reported following the December 2003 San Simeon Earthquake.

Mitigation of liquefaction potential can be relatively costly. Mitigation methods for this project could consist of either removal and replacement of potentially liquefiable soils with properly compacted fill (estimated to be at least 13 feet below the existing streambed near Cardoza Ranch), or in-situ ground improvement to deeply compact the soil and thereby reduce the potential for liquefaction and seismic settlement to impact the levees, or widening the crest width and designing the levee with flatter slopes to help limit slope movement associated with liquefaction and slope instability (however, right-of-way and channel constraints may limit the feasibility and practicality of this mitigation method).

Alternatively, liquefaction and seismic hazards can be addressed in an Emergency Response Plan (ERP) for the levee improvements. The ERP should recognize the potential for liquefaction and seismic hazards to impact the levee, and delineate specific high hazard areas that should be inspected for damage following an earthquake.

Mitigation: A design-level geotechnical report should be prepared to evaluate potential mitigation methods for liquefaction and seismic settlement, and/or address geotechnical issues

that should be considered in the ERP. An ERP should be prepared as part of the design to identify high seismic hazard areas along the levees and protocols for responding and inspecting the levee following a damaging earthquake.

5.5 GROUND LURCHING

Ground lurching occurs as the ground is accelerated during a seismic event. As evidenced by the Loma Prieta, Landers, Northridge, and San Simeon Earthquakes, the effects of ground lurching can damage earthen fills. Ground lurching occurs due to detachment of underlying stratigraphic units, allowing near-surface soil to move differentially from underlying soil. The site is within a seismically active region of Central California that is prone to moderate to large earthquakes. It is therefore our opinion that there is a potential for ground lurching to impact the site. Ground lurching is generally not a geologic hazard that can be prevented, and therefore is mitigated by implementing preparedness measures.

Mitigation: Address in ERP with other seismic hazards.

5.6 LANDSLIDING AND SLOPE INSTABILITY

5.6.1 Landslides

The project site is generally on relatively flat terrain and not in areas that would be subject to large-scale landslides. The site is not within an area of mapped landslides, unstable formations, or known instability that would impact the levees or creek.

Mitigation: None anticipated.

5.6.2 Static Slope Stability

Destabilization of a slope occurs when the driving mechanisms associated with the slope exceed the resistance capacity of the soils comprising the slope. We performed preliminary slope stability analyses of selected portions of the slopes to evaluate slope stability and the geotechnical feasibility of raising the levee. The slope stability evaluation is discussed in Section 4.3 of this report. Failure surfaces may be surficial or deep-seated, with varying degrees of soil displacement as a consequence. The estimated factors of safety for the existing slopes and proposed embankment configurations are considered stable under static loading conditions. Design and construction of slopes should be further evaluated in subsequent design-level geotechnical reports. The destabilization of the embankment slopes could also be triggered by bank erosion/scour, undercutting the toe of slopes, grading, animal burrows, or other factors that should be periodically reviewed and maintained following construction.

Mitigation: The design-level geotechnical report should be prepared to recommend final slope inclinations for design of the levee improvements. Periodic review and maintenance of the improved channel and levee should be provided to help maintain vegetation, remove debris, and repair areas of scour, erosion, burrowing, or other changes to the channel slopes (see Scour and Erosion, Section 5.8).

5.6.3 Seismic Slope Stability and Lateral Spreads

We evaluated the stability of existing and proposed levee embankments under pseudo-static (earthquake) load conditions and post-liquefaction conditions, as discussed in Section 4.3 of this report). The destabilization of a slope can be triggered by forces (ground accelerations) associated with seismic activity. Additionally, a reduction in strength (resistance capacity) of constituent soils may be a consequence of seismically-induced liquefaction, potentially resulting in slope instability of the levee slopes and/or stream banks (a type of lateral spreading). Lateral spreading typically develops on sloping ground underlain by liquefiable soils or where free-face conditions can develop in a liquefiable soil, such as along a river bank or drainage. According to the USGS report (Holzer et al. 2004), lateral spreading was observed in areas along the perimeter of the Oceano Lagoon (north of the project site) following the December 2003 San Simeon Earthquake.

For preliminary design, the slope stability evaluation suggests that the existing and proposed levee embankments are generally stable under earthquake loading and post-liquefaction conditions upstream of about Creek Road. However, the existing and proposed embankments for the levee are potentially unstable within the Pre-settlement Estero area downstream of Creek Road (see Plate 2). Our evaluation also suggests that there is a potential for liquefaction and instability to impact the levee within the Pre-settlement Estero area whether the levee is raised or not. Mitigation of liquefaction hazards, as discussed in Section 5.4 of this report, would also help improve the stability of the levee slopes, but likely would be costly.

Mitigation: Address in ERP with other seismic hazards. The main mitigation for slope instability associated with seismic hazards in the ERP will be for the County to respond to earthquakes, and repair areas that may be damaged by these hazards. The design-level geotechnical report should address the potential for slope instability to occur in association with liquefaction, the extent to which the hazard could impact the design of improvements, and whether the hazard can be mitigated by modifying the geometry of the raised levee within the scope, right-of-way, and economic constraints of the project.

5.7 SUBSIDENCE AND COLLAPSE

The project site is not in an area where the withdrawal of subsurface fluids is known to have caused ground subsidence. The greatest potential for subsidence would be if potentially compressible soils were impacted by lowering of the groundwater table during construction dewatering. The buoyancy of the soil above a specific depth decreases as groundwater levels are lowered. Lowering of the groundwater level therefore increases the effective weight of the soil above that depth, which can cause the soil to subside (settle) under the increased weight of the ground above it.

Our subsurface exploration and geologic maps indicate the project area is underlain by heterogeneous alluvium deposits. The alluvium is currently saturated from near the creekbed elevation downward. We do not anticipate that dewatering will be necessary for construction purposes. However, if dewatering is planned, the potential for subsidence in association with lowering of the groundwater table should be evaluated.

Mitigation: None anticipated.

5.8 SCOUR AND EROSION

SH+G is performing the hydraulic analysis and estimating scour depths along Arroyo Grande Creek and Los Berros Creek for this project. As input to their analysis, Fugro obtained samples of selected streambed and stream channel materials within the project extent and performed grain size analysis. The stream channel deposits observed along the streambed consist predominantly of gravel and sand. The bank materials generally consist of interbedded layers of erodable granular and fine-grained soils. Erosion of the channel slopes has occurred in localized areas of scour observed during our July 2008 site visits, particularly in areas upstream of Highway 1.

Graded fill slopes associated with the levee improvements will be subject to sheet and rill erosion. Erosion of soils can be accelerated where soils are exposed directly to runoff and/or areas of concentrated storm runoff, such as at culvert outlets. Site drainage and landscape improvements can be designed to reduce the potential for soil erosion. We observed abundant vegetation along the interior levee slopes and within the creek channel, which likely decreases the susceptibility of surficial soils to erosion.

The stream channel is a dynamic environment that will likely change and respond to changes in flow and rainfall seasonally. The existing levee slopes within the channel of Arroyo Grande are mostly stabilized by vegetation with graded slope inclinations of about 3:1 or flatter. Maintaining vegetation within the channel and maintaining the channel slopes can be used to mitigate the affects of scour and erosion.

Mitigation: On-going maintenance or other measures should be provided to reduce the potential for scour of the levee slopes. Erosion control measures, such as hydro-seeding, erosion control matting, and maintenance, should be provided to reduce the potential for erosion while vegetation is being established on new slopes. On-going maintenance of the slopes should be provided, as-needed, to assist in establishing appropriate vegetation, to repair areas where localized scour and erosion may impact slopes, and to remove debris from the channel that may dam or adversely channel the flow of water within the channel. Energy dissipation and erosion control devices should be provided at outlets of drainage pipes and in areas where there are concentrated flows of runoff to reduce the potential for erosion.

5.9 EXPANSIVE SOILS

Expansive soil generally consists of fine-grained soil of high plasticity (clay) that can damage near-surface improvements in response to shrinking and swelling associated with changes in soil moisture content. The expansion potential of the soil used to construct a levee can influence the strength and permeability of the levee. While clay material near the core of an embankment can help to limit seepage through the embankment, shrinking and swelling of the clay soil can also influence the stability and maintenance of the slope face. The existing levees appear to be constructed of predominantly sandy sediment having a low potential for expansion,

therefore, surficial soils having a high potential for expansion are not anticipated to impact the levee improvements.

Mitigation: The design-level geotechnical report should provide recommendations for fill material that can be used in raising the levee. The recommendations should consider the expansion potential and other geotechnical properties of the soil relative to controlling the seepage and slope stability conditions for the new levees.

5.10 HYDROCOLLAPSE POTENTIAL

Hydrocollapse or hydroconsolidation describes soils that are prone to settling when subjected to wetting or saturation. Hydroconsolidation can result in differential settlement and possible cracking of the levee, particularly if the soils vulnerable to collapse are left in-place below the levee fill. The levee fill itself will be constructed of compacted fill that should not be prone to excessive settlement or collapse due to wetting. Shallow near surface soils, such as expansive clay soil and loose dune sand may be vulnerable to collapse. Near surface soils that may be vulnerable to collapse are typically removed during site preparation and grading and replaced with compacted (engineered) fill. Soils below the groundwater (creekbed) level are not prone to post-construction settlement associated with hydrocollapse.

Mitigation: The design-level geotechnical report should provide recommendations for site preparation and grading to reduce the potential for settlement associated with hydrocollapse to impact the levee.

5.11 TSUNAMIS AND INUNDATION

Tsunamis are long-period sea waves created due to seismic events or submarine landslides and have historically occurred in the project region. Tsunamis can range in height from a few feet to greater than 50 feet, and can result in run-ups, or bores, extending great distances up streams, rivers, and creeks. As evidenced by recent events around the world, tsunamis can have devastating impacts on coastal areas. The project vicinity is located at elevations ranging from approximately el. +11 feet above mean sea level (MSL) to approximately el. +63 feet MSL near the city limits of Arroyo Grande. The County of San Luis Obispo has prepared web-based tsunami inundation maps (http://www.sloplanning-maps.org/ed.asp?bhcp=1) that show coastal areas that may be vulnerable to inundation from tsunami below about el. +40 feet MSL. The inundation zones are generally the coastal areas along San Luis Bay, and low lying areas along Arroyo Grande Creek. Nearly the entire project site is located below the estimated tsunami run-up elevation shown on the County website. As a result, tsunami run-ups may be considered a potential hazard to the existing levee and surrounding area. The presence of the levees would not increase the susceptibility of the project vicinity, and may provide moderate protection from smaller events should they occur.

According to Kilbourne and Mualchin (1980), the following historical tsunamis have occurred in the project region:

Historical Tsunami Run-up

Year	Estimated Tsunami Generation Location	Estimated Impact Location	Estimated Tsunami Run-up (feet)
1868[1]	Unknown	Morro Bay	Unknown
1878[2]	Unknown	Morro Bay	Unknown
1927	Local	Pismo Beach	6 feet
1946	Aleutian Trench	San Luis Obispo Bay	4-5 feet
1960	Chile-Peru Trench	Central Coast	>3 feet
1964	Gulf of Alaska	Central Coast	>3 feet

[1] Speculative

[2] Reportedly overtopped the sand spit that separates the bay from the ocean (SLO County 1999).

Mitigation: None anticipated. Tsunami hazards are typically addressed by developing warning systems and evacuation plans for coastal areas. The San Luis Obispo County Office of Emergency Services is responsible for the emergency response plan.

5.12 DAM INUNDATION

The project site is located downstream of Lopez Lake and two dams: the Lopez Canyon Dam and the Lopez Terminal Dam. According to the County of San Luis Obispo Safety Element (1999), the entire project extent is subject to inundation due to dam failure.

Mitigation: None anticipated. Dam inundation hazards are typically addressed by developing warning systems and evacuation plans for vulnerable areas. The San Luis Obispo County Office of Emergency Services is responsible for the emergency response plan.

5.13 NATURALLY OCCURRING ASBESTOS

Naturally occurring asbestos (NOA) is common in serpentine rock throughout San Luis Obispo County. The California Air Resources Board has identified serpentine rock as having the potential to contain asbestos. Serpentine rock is typically a constituent of Franciscan Formation mélange, which has not been mapped or encountered within the project limits. The grading for the project should therefore not encounter areas containing serpentine rock. Therefore, it is our opinion that there is a low potential for NOA to impact the project. If encountered, mitigation for NOA typically consists of dust control during earthwork operations to reduce the potential for asbestos dust from being an inhalation hazard.

Mitigation: The County will likely require a letter prepared by a geotechnical professional for the project that specifically identifies whether or not NOA is considered to be a potential hazard for the project.

5.14 RADON GASES

Radon gases are generally associated with Mesozoic granitic rocks and derivative Tertiary sedimentary rocks, and Tertiary marine sedimentary rocks. Radon hazards are generally related to an accumulation of radon gases within homes and housing structures and do not apply to the proposed levee project. The San Luis Obispo County Safety Element (1999) has identified these geologic formations as having high equivalent uranium (eU) concentrations. These formations have not been mapped or encountered within the project site. We do not anticipate components of the project will be planned for areas potentially containing rocks with high eU concentrations, nor would the raising of the levee have any impact on this hazard. Therefore, it is our opinion that there is a low potential for this hazard to impact the project.

Mitigation: None anticipated.

5.15 EMBANKMENT SEEPAGE AND PIPING

During sustained high-flow events, water permeating through the levee embankments may daylight on the exterior levee slopes, resulting in localized erosion of embankment material. Continued seepage and erosion can lead to piping, which generally consists of a tunnel-like void in the embankment that results from erosion of the embankment fill caused by uncontrolled seepage daylighting on the face of the exterior slope of the levee. The existing levee appears to be constructed of compacted sandy material that could be vulnerable to piping in the event that sustained flows at flood levels within the creek occurred.

Steady state seepage refers to the stabilized water level and zone of seepage through the levee at a sustained water level within the flow channel. The potential for steady state seepage to develop within the embankment is generally expected to be relatively low because the storm events for the project are likely to have a short duration (typically only a few hours in duration). We anticipate the typical duration of high-flow events may be short enough that a hydraulic gradient capable of daylighting on the exterior slope is unlikely to develop. We did not observe visual evidence of seepage or erosion of the existing embankment material that would indicate that piping or seepage through the levee has occurred in the past.

Mitigation for seepage and piping can consist of providing low permeability fill materials within the levee embankment to slow the rate of seepage through the embankment and/or providing drainage on the outer slopes of the levee to collect and control seepage. Drainage materials, if used, are designed with graded-granular filters that will help to retain the levee fill where the seepage exits the embankment and prevent piping. The design-level geotechnical study should include a detailed seepage analysis of the levee considering the flood levels and storm durations. It is likely that the design of the new levees can include provisions for using a layer of low-permeability materials within the embankment to control seepage. The near-surface alluvium encountered adjacent to the levees appears suitable for use as low-permeability material but would need to be evaluated for the project.

Mitigation: The design-level geotechnical report should address and evaluate seepage conditions through the embankment for the design storm events and water levels, and address

the need for control of seepage and drainage to avoid piping and seepage from daylighting on the exterior slopes of the levee.

5.16 FOUNDATION SEEPAGE

Foundation seepage refers to underflow beneath the levee that results when the higher water level (high gradient) in the creeks infiltrates the creekbed, and then flows beneath the levee to the lower water level outside the levee (low gradient). Similar to embankment seepage discussed above, uncontrolled seepage daylighting beyond the exterior slope of the levee can result in boils, piping, and instability of the foundation soils where the seepage exits the ground. Piping of the subsurface can erode foundation materials and potentially destabilize the embankment.

A hand auger boring drilled adjacent to the exterior slope of the levee near Creek Road encountered groundwater at a depth of about 3 feet below the ground surface. Water was flowing in Arroyo Grande Creek at the time of the exploration. The water level suggests that the foundation soils beneath the levee embankments are saturated to some extent by the normal dry-season water flow within the creek. As a result, it is possible that rising water levels within the channel may increase the rate of seepage beneath the embankment relatively quickly.

The exit gradient refers to the hydraulic gradient where the foundation seepage will daylight on the outside of the levee slopes. The critical gradient refers to when seepage force exceeds the effective weight of the soil, heaves the soil, and typically causes a boil to form beyond the exterior slope of the levee. For design, exit gradients should be subcritical and are preferred to be 5 to 6 times below critical. We preliminarily evaluated seepage forces beneath the embankment near Creek Road considering the 20-year water surface elevation as defined by SH+G (2008b). The exit gradients were estimated to be subcritical for the raised levee condition, but by a factor of about 2, less than the optimal factor of 5 to 6.

The design-level geotechnical study should include a detailed seepage analysis of the levee foundation considering the flood levels and storm durations. Mitigation for foundation seepage can consist of cutoff walls, impervious blankets, or relief wells or drainage systems to control or reduce exit gradients.

Mitigation: The design-level geotechnical report should address and evaluate seepage conditions through the embankment foundation for the design storm events and water levels, and address the need for control of seepage and drainage to avoid piping and seepage from daylighting beyond the exterior slopes of the levees.

5.17 VEGETATION MANAGEMENT

Vegetation growing within the channel can block flows and reduce flood protection. The existing channel is relatively heavily vegetated with brush and small trees. Management of vegetation can impact seepage conditions if the root systems of dying or cut trees are left in-place to decay within the embankment. The County was performing a vegetation management program with the California Conservation Corps at the time of our field work. The program generally consisted of trimming low limbs from trees within the channel, and cutting smaller

brush and vegetation on the channel slopes. Root holes and voids left from the decayed or pulled roots can shorten seepage paths through the embankment increasing the potential for seepage or piping to extend through the embankment.

Mitigation: Management of the vegetation within the Arroyo Grande Creek channel should include removal of dead trees, and repair of voids left from pulled or decaying roots by filling the voids with properly compacted soil.

5.18 SEDIMENT REMOVAL - DREDGING

Accumulation of sediment within the channel of Arroyo Grande Creek can reduce flood protection by blocking flow within the channel. Sediment will be removed from the existing channel as part of the project. Disposal of sediment will require that the sediments within the channel be characterized to evaluate whether or not the sediments are compatible with the disposal area in accordance with U.S. Army Corps requirements. Characterization typically includes laboratory tests for grain size and chemical compatibility. The properties of the sediment are then compared to potential disposal sites being considered to identify a suitable site for disposal. Typical disposal sites can include beach replenishment with sandy material, agricultural fields to replace lost fine-grained sediment, stockpiles to provide construction material resources, or as on-site fill material for the levee construction.

The sediment observed within the channel appears to be comprised of sand and gravel bars that have formed within the channel. Based on review of the project plans and water level observed during our field observations, most of the sediment that likely will be removed appears to be near or above the water level in the creek. If so, the sediment therefore likely would be removed by mechanical methods (such as by an excavator or other earth moving equipment).

Mitigation: The design-level geotechnical report should include characterization of the channel sediment that will be removed, and evaluate the suitability of the material for on-site use during the levee construction. The report should also discuss anticipated excavation conditions (above or below water) and appropriate excavation methods.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY OF FINDINGS

- The soils encountered along the project extent consisted of the existing levee fill material founded on alluvial deposits. The levee fill consisted of mostly medium dense to very dense sandy materials. The alluvium was encountered to the maximum depths explored, approximately 100 feet below the ground surface, and consisted of interbedded loose to very dense sandy soils and medium stiff to hard clay materials (see Plates 4a and 4b). Water was observed flowing in the creek at the time of our July 2008 field exploration program. Groundwater was encountered as shallow as approximately 9 feet below the existing top of levee and about 3 feet below the exterior toe of the levee, in explorations advanced for this study.

- The levees and channel along Arroyo Grande Creek were constructed in the late 1950's as a U.S. Department of Agriculture, Soil Conservation Service project (USDA 1956). The location of the creek is controlled by channels and levees, and portions of the creek were relocated as part of the construction of the levee system. The existing earthen levee is about 3 to 12 feet above adjacent grades. The USDA (1956) plans show the levees were designed with a 15-foot wide crest and side slopes graded to inclinations of 1½ h:1v to 2h:1v on the exterior slopes and 3h:1v on the interior channel slopes. The existing levees are less pronounced and more intermittent upstream of Highway 1, where the design height of the levee is generally less than about 3 feet above adjacent grades as shown on the plans. The existing stream channel upstream of Highway 1 is increasingly incised to the east, with local areas of near vertical creek bank and erosion.

- Geologic hazards relating to fault rupture, landsliding, subsidence, hydrocollapse, naturally occurring asbestos, and radon gases are unlikely to impact the project. The site is located within the inundation area identified by the County for failure of Lopez Canyon Dam or tsunami. The site is located within a seismically active area, and could be impacted by seismic hazards related to liquefaction, seismic settlement and slope instability. The County stated that their approach to mitigating seismic hazards will be to repair damages in response to earthquakes should they occur, and to focus the project on improving flood protection.

- Geotechnical considerations relating to scour, erosion, and seepage should be considered in the design, construction, and maintenance of the project. A detailed seepage analysis of the proposed raised levee configuration and design flood conditions should be provided to evaluate whether or not specific measures, such as provisions for drainage, low permeability materials, or flatter slopes will need to be included in the project design.

- The western limits of the project are located within an area underlain by a Pre-settlement Estero that has subsequently been filled in as a result of development and realignment of the channel. This area was documented by the County and USGS (Holzer et al. 2003) as an area where relatively extensive liquefaction and lateral spreading occurred (including damage to a portion of the southern levee) in response to the 2003 San Simeon Earthquake. The existing and proposed levees in this area have the potential to be impacted by liquefaction of the ground beneath the embankment, incur estimated seismic settlements of up to approximately 9 inches, and result in slope instability for the design earthquake. Upstream of Creek Road, the proposed and existing levees were estimated to be stable under the design earthquake but could experience seismic settlements of approximately 2 to 4 inches. Mitigation for these hazards should be considered in the emergency response and maintenance plan for the project.

- Slope stability analyses of the preliminary levee configurations suggest that the levee can be raised to the conceptual design height and should be stable under static loading and the anticipated flood levels. However, the stability of the levees likely would be compromised by liquefaction of the foundation soil within the Pre-

Settlement Estero area west of about Creek Road. Because it is unlikely that there would be full flows in Arroyo Grande Creek at the same time as a damaging earthquake, the County anticipates that if an earthquake were to occur and damage is realized, they would have the opportunity to make repairs to the levee system before high flows would inundate the channel. The existing levee is vulnerable to this potential hazard whether the height of the levee is raised to improve flood protection or not.

- The existing channel is relatively heavily vegetated with brush and small trees. Management of vegetation can impact seepage conditions if the root systems of dying or cut trees are left in-place to decay within the embankment. The County was performing a vegetation management program with the California Conservation Corps at the time of our field work. The program generally consisted of trimming low limbs from trees within the channel, and cutting smaller brush and vegetation on the channel slopes. Root holes and voids left from decayed or pulled roots can shorten seepage paths through the embankment increasing the potential for seepage or piping to extend through the embankment. Management of the vegetation should include removal of dead trees, and repair of voids left from pulled or decaying roots by filling the voids with properly compacted soil.
- Sediment will be removed from the existing channel as part of the project. The sediment that we observed within the channel is mostly comprised of sand and gravel bars that have formed within the channel. Based on review of the project plans and water level observed during our field observations, most of the sediment that likely will be removed appears to be near or above the water level in the creek. If so, the sediment would likely be removed using mechanical methods (such by an excavator or other earth-moving equipment). If excavation depths are lower, and/or the water levels higher, hydraulic dredging equipment may be used to clear saturated sediment from channels that are below the water level.

6.2 GEOTECHNICAL CONSIDERATIONS FOR CONSTRUCTION

6.2.1 Site Preparation and Grading

Grading for the improvements is likely to consist of placing fill material to raise and widen the existing levees. Prior to grading, the site should be cleared and grubbed. Where relatively small (less than approximately 1 foot) increases in the levee height may occur, the grading will likely be performed within the footprint of the existing levee. Prior to placing fill over the existing levee material, the surface of the existing fill should be scarified and compacted in-place to provide a suitable surface for placing additional fill. Voids or depressions left from clearing and grubbing, or possible rodent holes, should be filled with compacted material. Compacted fill can then be placed to finished grade.

Where higher grade raises are proposed and new fill will be placed beyond the footprint of the existing levee, additional site preparation could be needed prior to placing fill. The near-surface soil within the agricultural fields adjacent to the existing levees is likely loose, and should be removed prior to placing fill material. Site preparation in these areas will likely consist

of removing the existing soil from areas to receive fill to a depth of about 2 to 3 feet below the existing ground surface. The new fill can then be placed on the undisturbed subgrade. Soft or yielding subgrade conditions should be stabilized by placing a mat of dry, compacted fill over the undisturbed subgrade. Where fill is placed over the existing fill, the new fill should be keyed and benched several feet into the existing levee slope to provide a uniform transition with the existing levee fill. The final grading and depth of removal should be evaluated during the design-level geotechnical evaluation.

6.2.2 Use of On-site Soil

Excavated on-site soil that is free or organics and deleterious materials should generally be suitable for use in levee construction. Dredged or wet soil removed from excavations will need to be dried to a moisture content suitable for compaction prior to being placed as compacted fill. Fine-grained soil that appears to be present to a depth of several feet within the agricultural fields may be suitable to provide a blanket of impervious fill within the new levees. The quality of and need for this material should be considered in the design-level geotechnical study.

6.2.3 Groundwater

Groundwater was encountered at approximately 3 feet below the existing ground surface near Creek Road. Groundwater levels will vary depending on the time of construction, and should be considered in the excavation plans for the project. Dewatering and control of groundwater will likely be needed for excavations performed within the existing channel, or extending more than about 2 to 3 feet below the existing ground surface.

6.2.4 Excavation

The existing soil encountered along the levee can likely be excavated using conventional earth-moving equipment. Excavations extending below the levee or within the channel will need to consider the potential for encountering wet and yielding ground. Wet soils within the channel, or below the adjacent grade within the agricultural fields, will likely not support heavy construction traffic, such as self-loading scrapers or haul trucks, without stabilization. Subgrade stabilization and maintenance of haul roads will likely be needed to provide suitable access for construction traffic.

6.3 GEOTECHNICAL CONSIDERATIONS FOR DESIGN

The design of the levee will be geotechnically intensive. This preliminary evaluation identified geotechnical considerations relating to slope stability, seepage, and grading that should be considered in the design of the project. The design-level geotechnical study will likely involve additional slope stability and seepage analyses to provide specific recommendations for design, and to confirm the preliminary slope inclinations provided in this report. The report will also provide material requirements for compacted fill, low-permeability materials, and drainage as needed for the improvements based on the results of the additional analyses.

6.4 COMPARISON OF EXISTING AND PROPOSED CONDITIONS

Because the existing and proposed levees are vulnerable to various geologic hazards, our assessment of hazards is discussed relative to potential impacts to the project and relative to the existing levee conditions. The following table provides a comparison of the existing and proposed raised-levee conditions relative to the geologic hazards and geotechnical considerations that were evaluated for the project.

The following is the ranking of hazards that we used in the comparison.

Low: There is a low potential for the hazard to impact the project, because either review of the hazard suggests there is no potential for it to occur, the hazard has not been documented to be present at the site, the hazard has already been mitigated by the existing levee, or it will be mitigated as part of normal design and construction practice.

Moderate. There is a potential for the hazard to impact the project, the hazard can either only be partially mitigated or mitigation of the hazard reduces the risk of damage but it cannot be completely mitigated, or the site could be impacted by a hazard that has a low or uncertain rate of recurrence.

High. The hazard is likely to impact the project within the design life of the project, or the hazard is present and requires mitigation by applicable design standards and codes.

Comparison of Geologic Impacts to Existing Condition

Hazard	Description of Hazard	Potential to Impact the Existing Levee	Change due to Raising Levee	Comments
Fault Rupture	Rupture of a fault beneath a site or structure that can cause upheaval, cracking, and displacement of ground surface.	Low	Same	There are no known active faults that cross the project.
Seismic Shaking	Ground motion that results from nearby or regional earthquakes. The design earthquake is a M7.0 event resulting in a peak horizontal ground acceleration of about 46% of gravity that should be considered in geotechnical analyses for slope stability and liquefaction.	High	Nearly the same	See liquefaction and slope stability hazards.
Liquefaction and Seismic Settlement	Loss of strength and displacement of ground surface that normally occurs in loose sandy soil below the groundwater table. Portions of the soil column beneath Arroyo Grande Creek are prone to liquefaction and seismic settlement under the design earthquake effects, particularly downstream of about Creek Road.	High	Same	Hazard likely to be addressed by emergency response planning (ERP).
Slope Instability – static loading	The stability of the levee embankment under normal static (not earthquake) loads that may occur at existing or flood level conditions.	Low	Same	Factors of safety above minimums for stability for existing and proposed levee.

Hazard	Description of Hazard	Potential to Impact the Existing Levee	Change due to Raising Levee	Comments
Slope Instability – seismic loading including lateral spreads **downstream of Creek Road**	The reduced stability of the levee embankment when considering horizontal forces, liquefaction of the foundation support soil, and potential lateral displacement that could occur in response to the design earthquake.	High	Nearly the same	Hazard likely to be addressed by ERP.
Slope Instability – seismic loading including lateral spreads **upstream of Creek Road**	Same as above.	Low to Moderate	Nearly the same	Factors of safety above minimums for stability for existing and proposed levee. Address in ERP.
Ground Lurching	Detachment of underlying stratigraphic units within the ground, allowing near-surface soil to move differentially from underlying soil, as a result of inertial forces associated with an earthquake.	Moderate	Same	Address in ERP.
Landslides	The potential for a site to be unstable as a result of the location being underlain by existing landslides. The area along Arroyo Grande Creek is flat and not prone to landslides.	Low	Same	No existing landslides.
Subsidence	Settlement of the ground surface due to extraction of fluids, such as may occur due to pumping from an oil field or water well. Subsidence is common where there are highly compressible soils in areas where the groundwater table is artificially lowered causing the effective weight of the soil to increase.	Low	Same	Lowering of the groundwater table is not anticipated.
Scour and Erosion	Removal of sediment within the creek, along its banks, or the surface of the levees due to stream flow. Scour and erosion can cause degradation of the streambed or bank erosion that can cause slopes to be unstable. Vegetation within the existing channel and on the levee slope is the primary protection of the slopes within the existing channel.	Moderate	Same	Scour conditions to be addressed in the design of levees. Maintenance of channel should include debris removal that may cause localized scour.
Expansive Soils	Shrinking and swelling of a soil in response to changes in soil moisture. Shrinking and swelling of soil within a levee could result in fissures or cracks that can lead to seepage.	Low	Same	Levee materials encountered predominantly consisted of granular soils having low expansion potential.
Hydrocollapse	Settlement that occurs within a soil with relatively high porosity in response to wetting of the soil, typically due to irrigation, flooding, or rainfall.	Low	Same	Soils are either not susceptible or will be removed and replaced with compacted fill during normal site preparation and grading.
Tsunami	Long-period sea waves created due to seismic events or submarine landslides, that can bore up coastal rivers and streams causing flooding and destruction due to fast moving water and severe erosion. The project site is located within the coastal inundation zones shown on the County website.	Moderate	Reduced	Some increased flood protection will be provided by higher levees, but final levee height is below the County estimated depth of inundation.

Hazard	Description of Hazard	Potential to Impact the Existing Levee	Change due to Raising Levee	Comments
Dam Inundation	Flooding due to failure or breach of an upstream dam or impoundment. The site is downstream and within the inundation zone for Lopez Dam.	High	Reduced	Some increased flood protection will be provided by higher levees, but the levees will not be designed to retain flooding due to a dam failure.
Naturally Occurring Asbestos	Potential for air-born dust particles to cause an inhalation hazard, particularly to construction workers performing earthwork or causing dust.	Low	Same	Serpentinitic rocks in San Luis Obispo County are known to contain asbestos, but have not been mapped or encountered within project vicinity.
Radon Gases	Potential for geologic formations containing equivalent uranium concentrations to cause inhalation hazards within homes.	Low	Same	Hazard not applicable to levee project, and is not known to be present within the project limits.
Embankment Seepage and Piping	Erosion and potential instability of the levee resulting from uncontrolled seepage through the levee embankment, and subsequent erosion of the levee embankment due to seepage forces daylighting on the outside slope of the levee. Raising the levee can increase the potential hydraulic gradient through the levee, and the severity of this potential hazard.	Low	Increased	The anticipated short duration for anticipated high-flow events may not have sufficient duration to cause steady-state seepage that would impact the levee. Because the impacts of seepage are important to the stability of hydraulic earth structures, seepage and any necessary mitigation should be addressed in the design of the levees. The existing levee does not appear to have been impacted by uncontrolled seepage or piping.
Foundation Seepage	Erosion and potential instability of the levee resulting from uncontrolled seepage beneath the levee embankment, and subsequent piping of the foundation support soil due to seepage forces daylighting outside of the levee footprint. Raising the levee can increase the potential hydraulic gradient through the levee, and the severity of this potential hazard.	Low to moderate	Increased	The anticipated short duration anticipated for high-flow events may not have sufficient duration to cause steady-state seepage that would impact the levee. However, because the impacts of seepage are important to the stability of hydraulic earth structures, seepage and any necessary mitigation should be addressed in the design of levee. The existing levee does not appear to have been impacted by uncontrolled seepage or piping beneath the levee.

Hazard	Description of Hazard	Potential to Impact the Existing Levee	Change due to Raising Levee	Comments
Vegetation Management	Vegetation growing within the channel can block flows and reduce flood protection. The existing channel is relatively heavily vegetated with brush and small trees. Management of vegetation can impact seepage conditions if the root systems of dying or cut trees are left in-place to decay within the embankment. Root holes and voids left from the decayed or pulled roots can shorten seepage paths through the embankment increasing the potential for seepage or piping to extend through the embankment.	High	Same	Management of the vegetation should include removal of dead trees, and repair of voids left from pulled or decaying roots by filling the voids with properly compacted soil for either the existing or proposed levee condition.
Sediment Removal – Dredging	Accumulation of sediment within the channel of Arroyo Grande Creek and reduction of flood protection by blocking flow within the channel. Existing sediment within Arroyo Grande Creek will be removed as part of the project, and will need to be disposed of or re-used onsite.	High	Same	Ongoing maintenance of the channel should include periodic removal of sediment for either the existing or proposed conditions.

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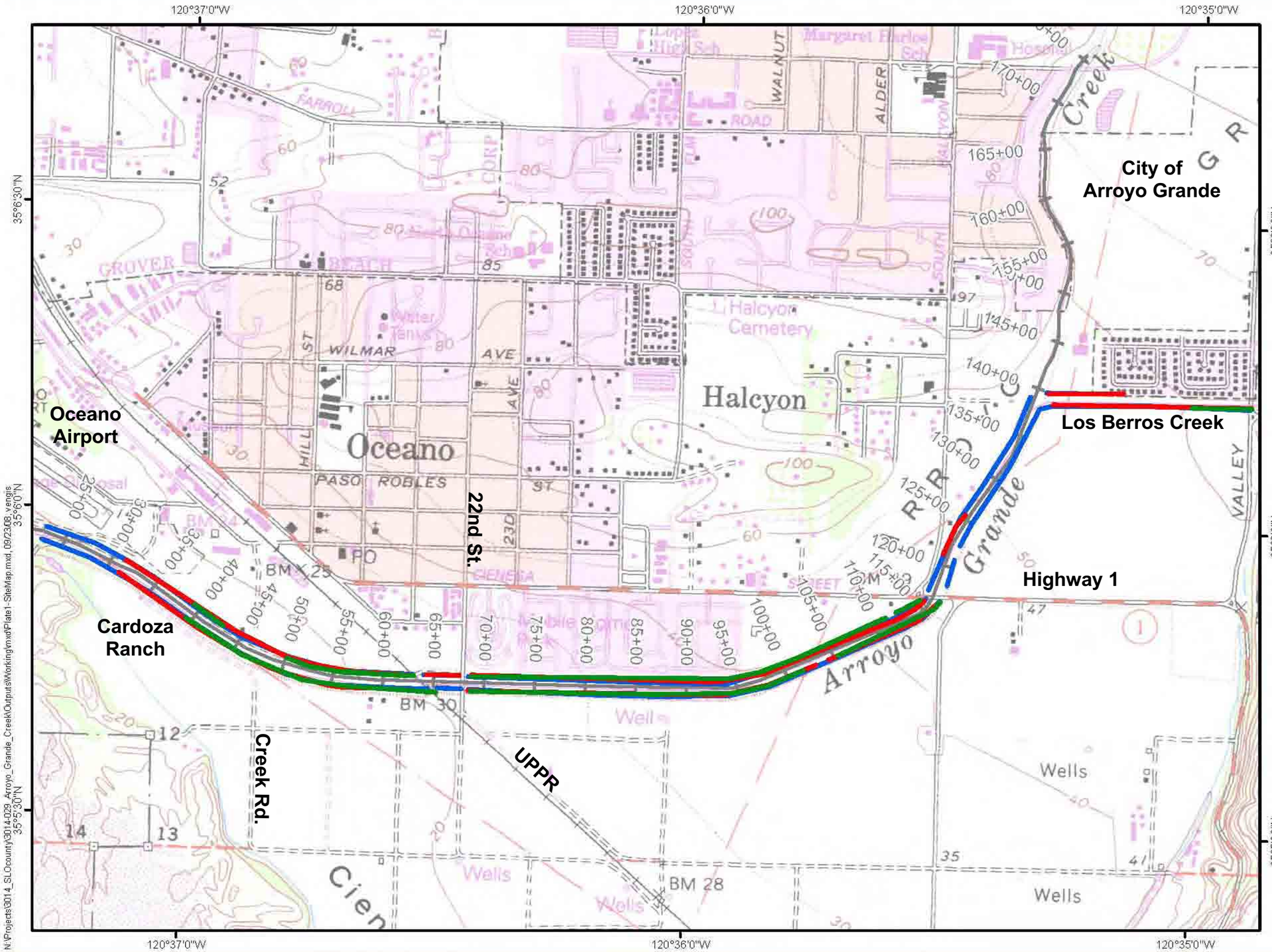
PLATES

County of San Luis Obispo
Project No. 3014.029



Legend

- Alt-3a Proposed levees
- Alt-3b Proposed levees
- Alt-3c Proposed levees
- Centerline Along Levee with Stationing

N

Horizontal Scale: 1:12,000

0 500 1,000 2,000 Feet

SITE MAP
Arroyo Grande Creek
Waterways Management Plan
San Luis Obispo County, California

PLATE 1

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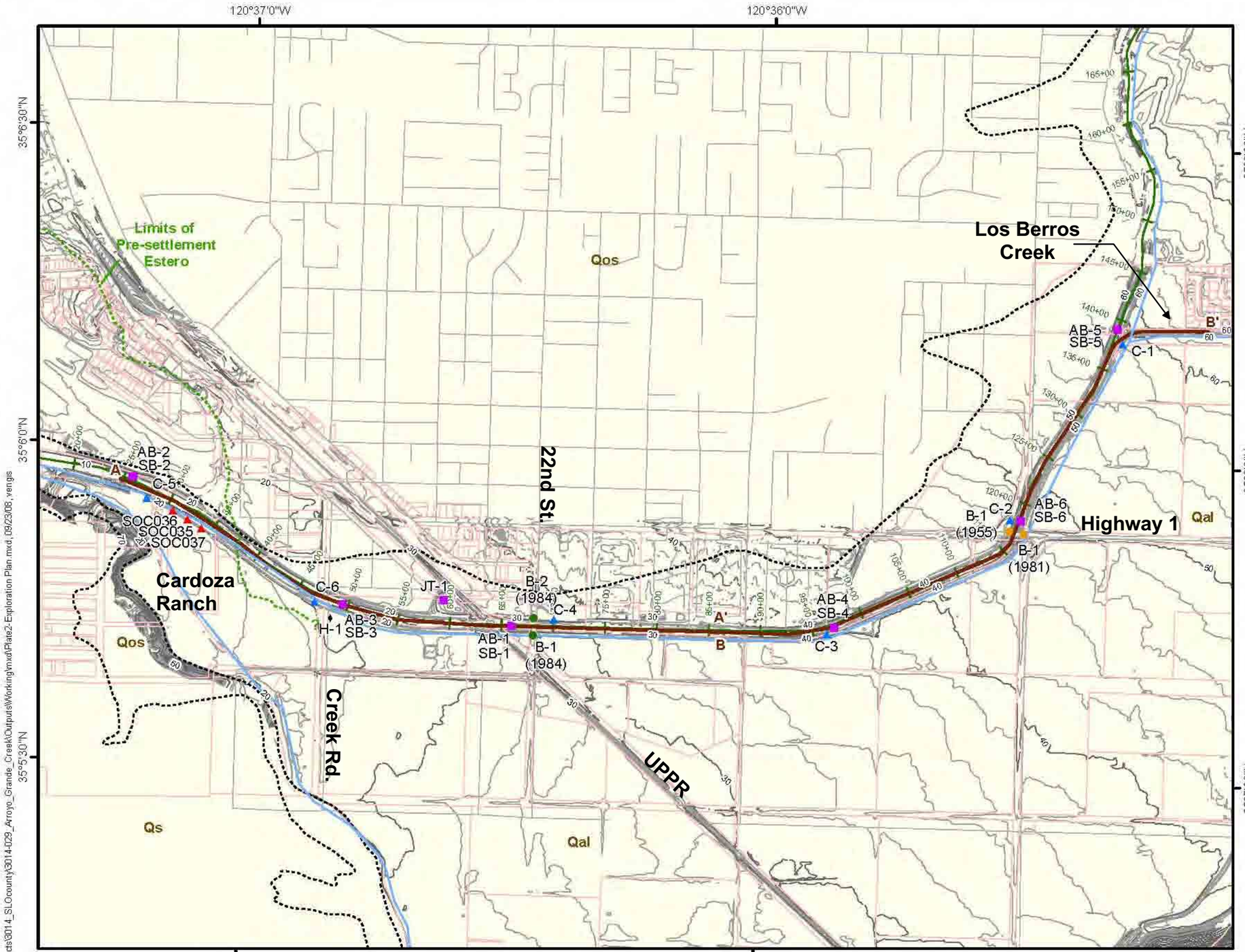

Legend

Approximate Exploration Locations

- Fugro CPT
- USGS SCPT
- Caltrans Boring (Year of Study)
- SLO County Boring (Year of Study)
- Hand Auger Boring
- Hand Samples
  - SB Collected from Streambed
  - AB Collected Above Water Surface
  - JT Collected from J.Taylor's Property
- Profile Line
- Centerline Along Levee with Stationing
- Roads
- 10 foot contour
- 2 foot contour
- Parcels within Zones 1 and 1a

Geology

- Contact
- Limits of Pre-settlement Estero
- Qal Alluvial Deposits
- Qs Sand Dune Deposits
- Qos Older Sand Dune Deposits

N

Horizontal Scale: 1:12,000

1,000 500 0 1,000 Feet

FIELD EXPLORATION PLAN
Arroyo Grande Creek
Waterways Management Plan
San Luis Obispo County, California

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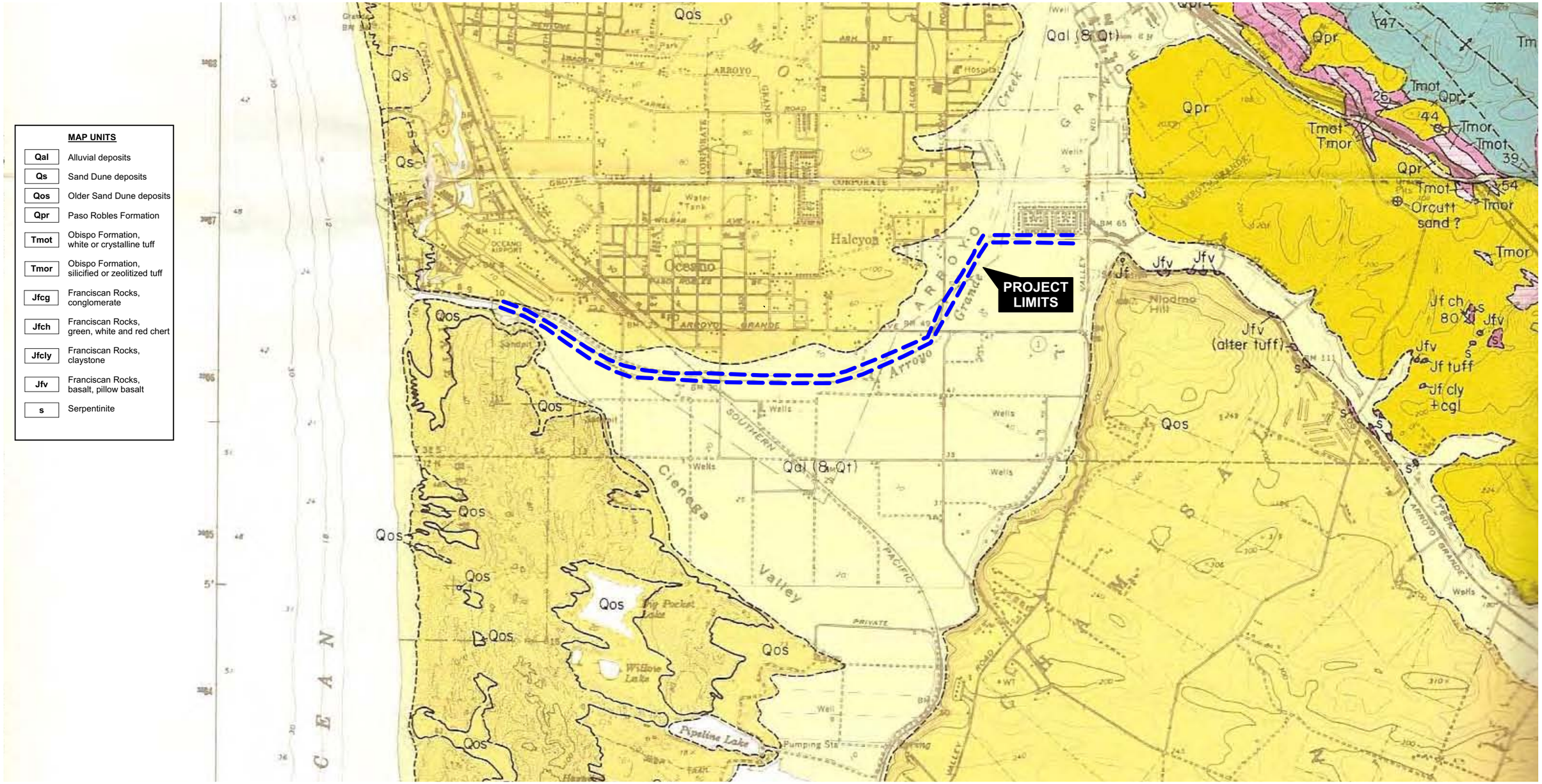
PLATE 2



BASE MAP SOURCE: Geology of the Arroyo Grande 15' Quadrangle, San Luis Obispo County (Hall, 1973).

LEGEND

Contact - Dashed where approximately located or inferred; queried where doubtful; dotted where concealed

High-angle fault - Dashed where approximately located or inferred; dotted where concealed and inferred; queried where uncertain. Arrows show relative direction of movement on cross sections when known; queried where uncertain.

Thrust or reverse fault - Dashed where approximately located or inferred, dotted where concealed and inferred; queried where concealed or doubtful. Sawteeth on upper plate. Dip of fault plane between 30° and 80°

Photo lineament - Queried where uncertain

Synform - Trace of axis at surface. Dashed where approximately located. Flanks coverate downward in folds and in rocks whose stratigraphic sequence is unknown.

Antiform - Trace of axis at surface. Dashed where approximately located. Flanks diverge downward in folds and in rocks whose stratigraphic sequence is unknown.

Strike and dip of beds uncertain

Marker beds

Conglomerate or gravel bed

Sandstone

Siltstone or diatomaceous siltstone

Tuff

Breccia

Strike and dip of flow banding

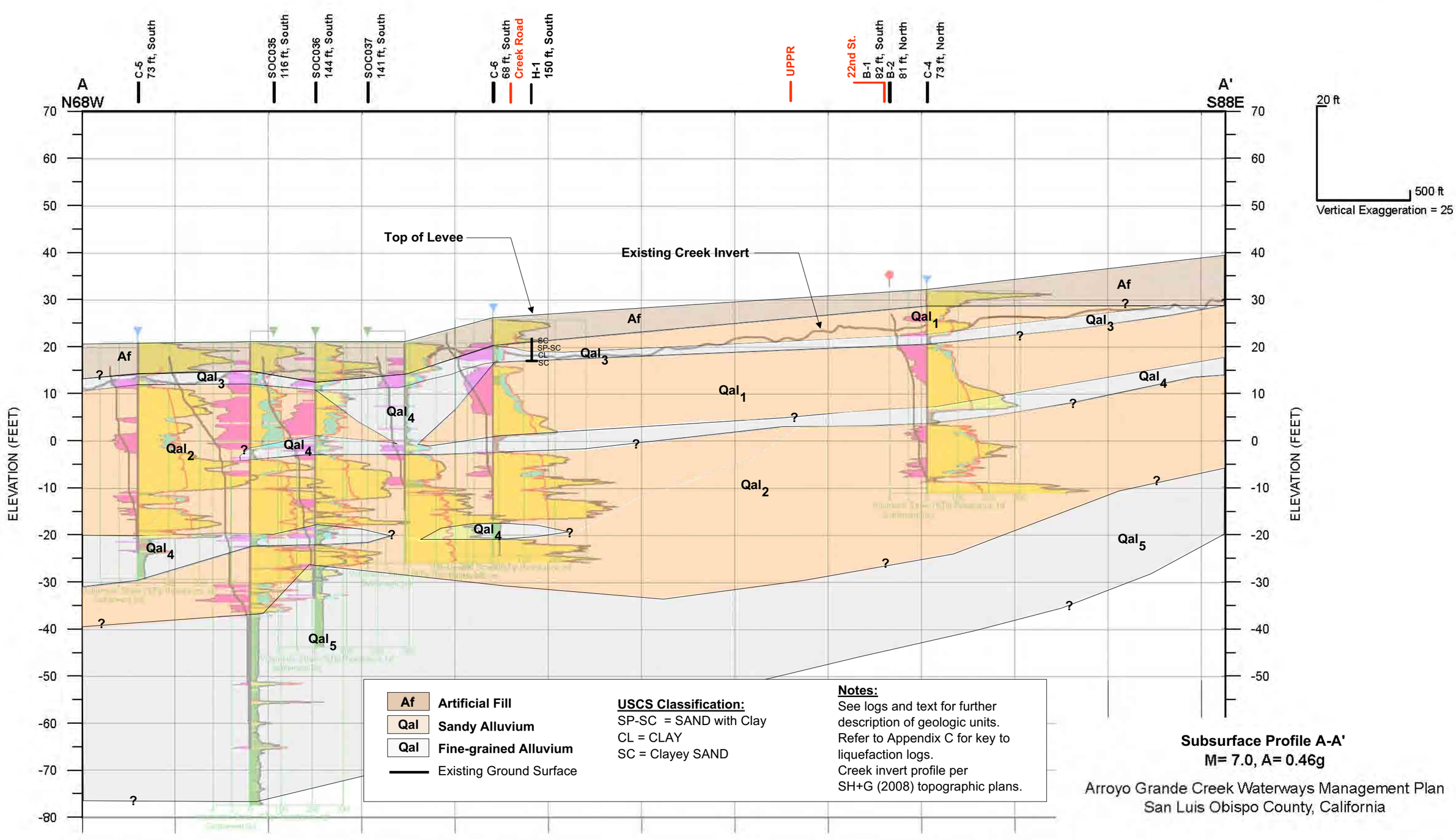
x6193 Megafossil locality - U.C.L.A. locality number

Vollmer Ranch name/property owner

NORTH
0 1000 2000
FEET

REGIONAL GEOLOGIC MAP
Arroyo Grande Creek
Waterways Management Plan
San Luis Obispo County, California

PLATE 3



Subsurface Profile A-A'
M= 7.0, A= 0.46g

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE 4a

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\GIS\Data\XSect\Xsect_2008_July\MXD\ProfileA.mxd, 08/11/08, CDean

B
N88W

B'
E

C-3
50 ft, Sout

Highway 1
B-1
89 ft, East
B-1
56 ft, West
C-2
84 ft, West

C-1
45 ft, Sout

Existing Creek Invert

Af
Qal_1
Qal_2
Qal_3
Qal_4
Qal_5

ELEVATION (FEET)

20 ft
500 ft
Vertical Exaggeration = 25

Af	Artificial Fill
Qal	Sandy Alluvium
Qal	Fine-grained Alluvium
	Existing Ground Surface

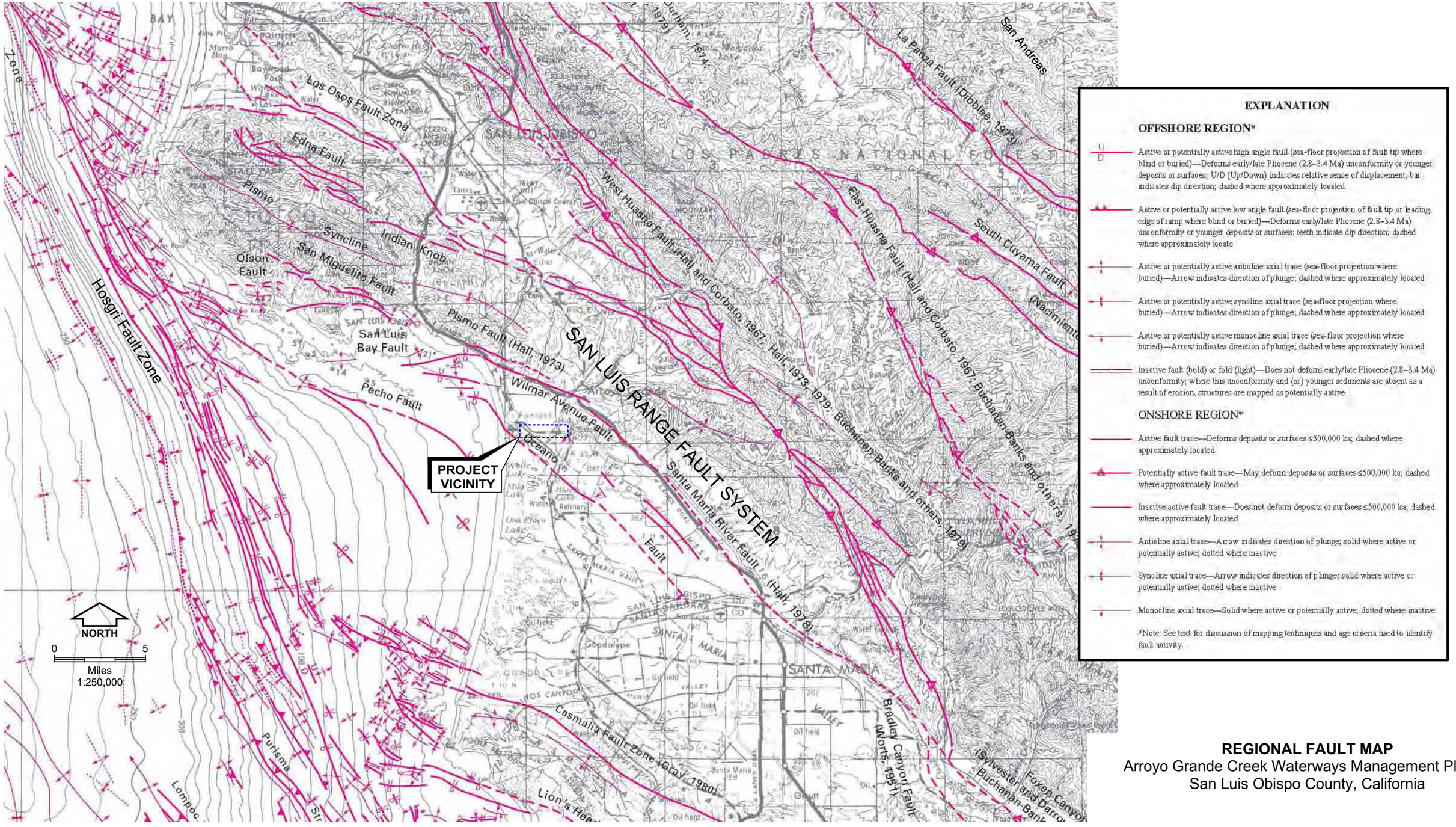
USCS Classification:
SP-SC = SAND with Clay
CL = CLAY
SC = Clayey SAND

Notes:
See logs and text for further description of geologic units.
Refer to Appendix C for key to liquefaction logs.
Creek invert profile per SH+G (2008) topographic plans.

Subsurface Profile B - B'
M=7.0, A=0.46g

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\GIS\Data\XSect\Xsect_2008_July\MXD\ProfileB.mxd, 08/11/08, CDean



EXPLANATION

OFFSHORE REGION*

U/D — Active or potentially active high angle fault (sea-floor projection of fault tip where blind or buried)—Deforms early/late Pliocene (2.8–3.4 Ma) unconformity or younger deposits or surfaces; U/D (Up/Down) indicates relative sense of displacement, bar indicates dip direction; dashed where approximately located.

Active or potentially active low angle fault (sea-floor projection of fault tip or leading edge of ramp where blind or buried)—Deforms early/late Pliocene (2.8–3.4 Ma) unconformity or younger deposits or surfaces; teeth indicate dip direction; dashed where approximately locate

Active or potentially active anticline axial trace (sea-floor projection where buried)—Arrow indicates direction of plunge; dashed where approximately located

Active or potentially active syncline axial trace (sea-floor projection where buried)—Arrow indicates direction of plunge; dashed where approximately located

Active or potentially active monocline axial trace (sea-floor projection where buried)—Arrow indicates direction of plunge; dashed where approximately located

Inactive fault (bold) or fold (light)—Does not deform early/late Pliocene (2.8–3.4 Ma) unconformity; where this unconformity and (or) younger sediments are absent as a result of erosion, structures are mapped as potentially active

ONSHORE REGION*

Active fault trace—Deforms deposits or surfaces ≤500,000 ka; dashed where approximately located

Potentially active fault trace—May deform deposits or surfaces ≤500,000 ka; dashed where approximately located

Inactive active fault trace—Does not deform deposits or surfaces ≤500,000 ka; dashed where approximately located

Antiline axial trace—Arrow indicates direction of plunge; solid where active or potentially active; dotted where inactive

Syncline axial trace—Arrow indicates direction of plunge; solid where active or potentially active; dotted where inactive

Monocline axial trace—Solid where active or potentially active; dotted where inactive

*Note: See text for discussion of mapping techniques and age criteria used to identify fault activity.

REGIONAL FAULT MAP
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

BASE MAP: Lettis et al. (2004), Faults and Folds in Onshore and Offsore Regions of South-Central California.

Madonna Construction
"Oceano" I
11 to -294 Q & Tc
-294 to -1297 Tf, Tm?, Tsq
-1297 to -1698 T or KJf?
-1698 to -2030 KJf

PROJECT LIMITS

MAP UNITS

Qb	Beach deposit
Qes	Estuarine deposit
Qe	Eolian deposit
Qeo	Older Eolian deposit
Qf	Fluvial and alluvial deposits
Qc	Colluvial deposit
Qm	Marine terrace deposit
Qoa	Older alluvial deposit
Tca	Cereaga sandstone
Tmpm	Miguelito member of Pismo Formation
KJf	Franciscan Complex
KJfmv	Metavolcanics
KJfch	Red, white or green cherts
KJfg	Graywacke
S	Serpentinite

BASE MAP SOURCE: Quaternary Geologic Map of the Southern Margin of the San Luis Range from Shell Beach to the Santa Maria Valley, South-Central California, Plate 3 (Hanson et al., 1994).

LEGEND

Fault - Dashed where approximately located; dotted where concealed; U = up/D = down indicates relative sense of displacement; small arrow and number indicate strike and dip of fault exposed in outcrop; sawteeth on upper plate of thrust fault

Aerial photo lineament - Or fault-related feature; dashed where less distinct; queried where uncertain; hachures indicate topographic scarp and show direction; ld = linear drainage, tc = tonal contrast, v = vegetation lineament, dd = deflected drainage, bis = break in slope, s = saddle, shb = side hill bench

Marine terrace strandline - Solid where well constrained; double dot dash where concealed; dotted where eroded; altitude shown in meters

Contact - Dashed where approximately located or inferred; queried where uncertain

Strike and dip of bedding

Syncline - Showing trace of axial surfaces and direction of plunge

Anticline - Showing trace of axial surface and direction of plunge

Borehole - GS-1 - U.S. Geological Survey (unpublished data, G. Yates, Water Resource Division); MBO-2 - California Department of Water Resources (1972); altitude of subsurface of formations shown in meters

Borehole - Completed as part of Long-Term Seismic Program (PG&E, 1988)

Exploratory oil well - Producer, name of well, and depth (meters) are indicated

Closed depression

Spring

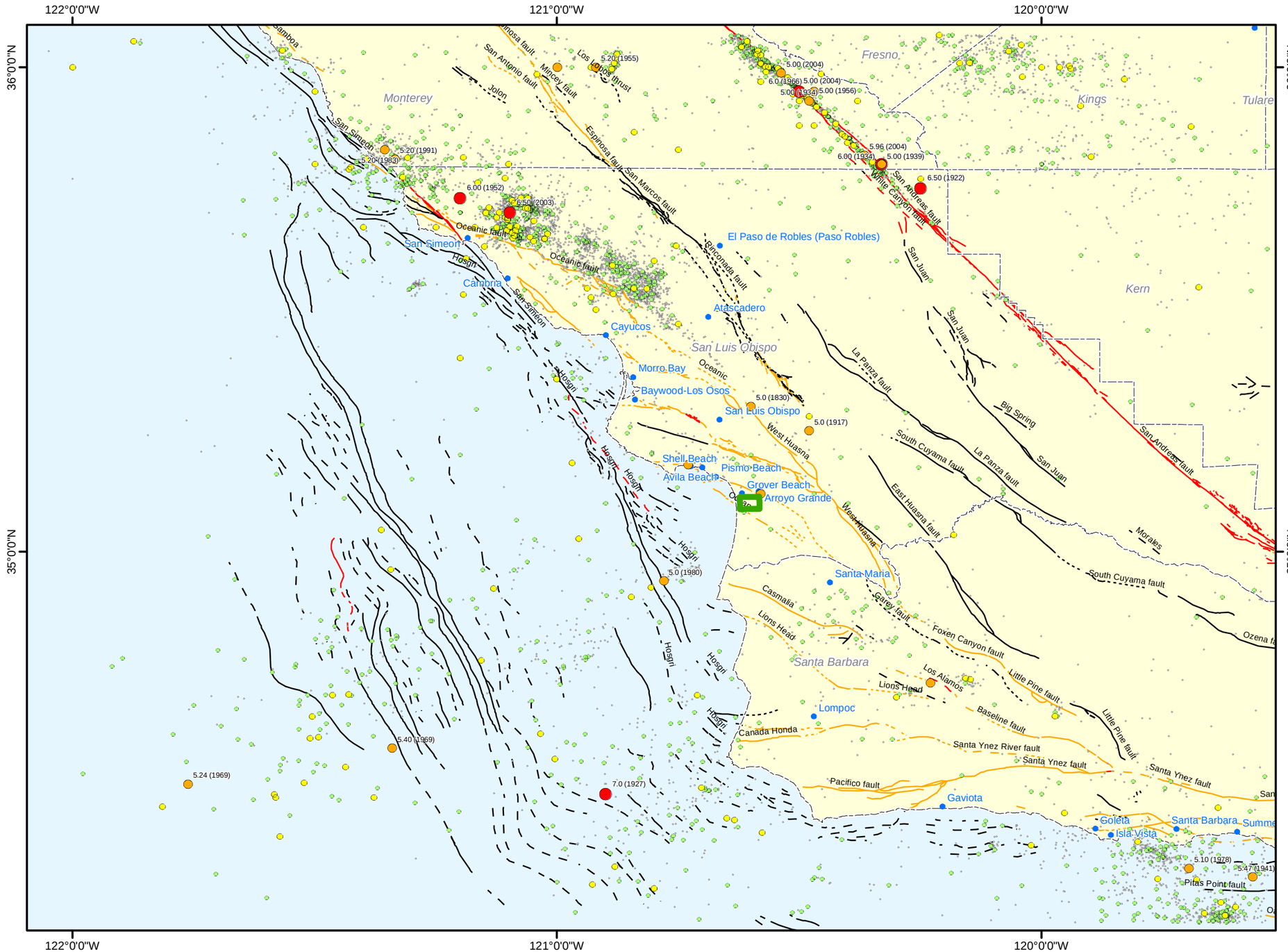
Bedrock exposure

Limit of mapping

NORTH
0 1000 2000
FEET

LOCAL FAULT MAP
Arroyo Grande Creek
Waterways Management Plan
San Luis Obispo County, California

PLATE 6



Legend

Project Area

Earthquake Magnitude

Magnitudes equal to and greater than 5 are labeled.

- 2.0 - 2.9
- 3.0 - 3.9
- 4.0 - 4.9
- 5.0 - 5.9
- >6.0

Faults (dashed where inferred, dotted where concealed)

- Active Fault
- Potentially Active Fault
- Inactive Fault

Source:

1) Earthquake Data:
Earthquake epicenters from:
a) ANSS Composite
Catalog Search, 1933 to 2008,
<www.ncedc.org/anss/> (downloaded March 2008)
b) "Seismotectonic framework, coastal central California", Seismotectonics of the Central California Coast Range, Special Paper 292, Geological Society of America, 1994.

2) Faults:
a) Bryant, 2005
b) Jennings, 1994

N

0 7.5 15 30
Miles

HISTORICAL SEISMICITY MAP
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE 7

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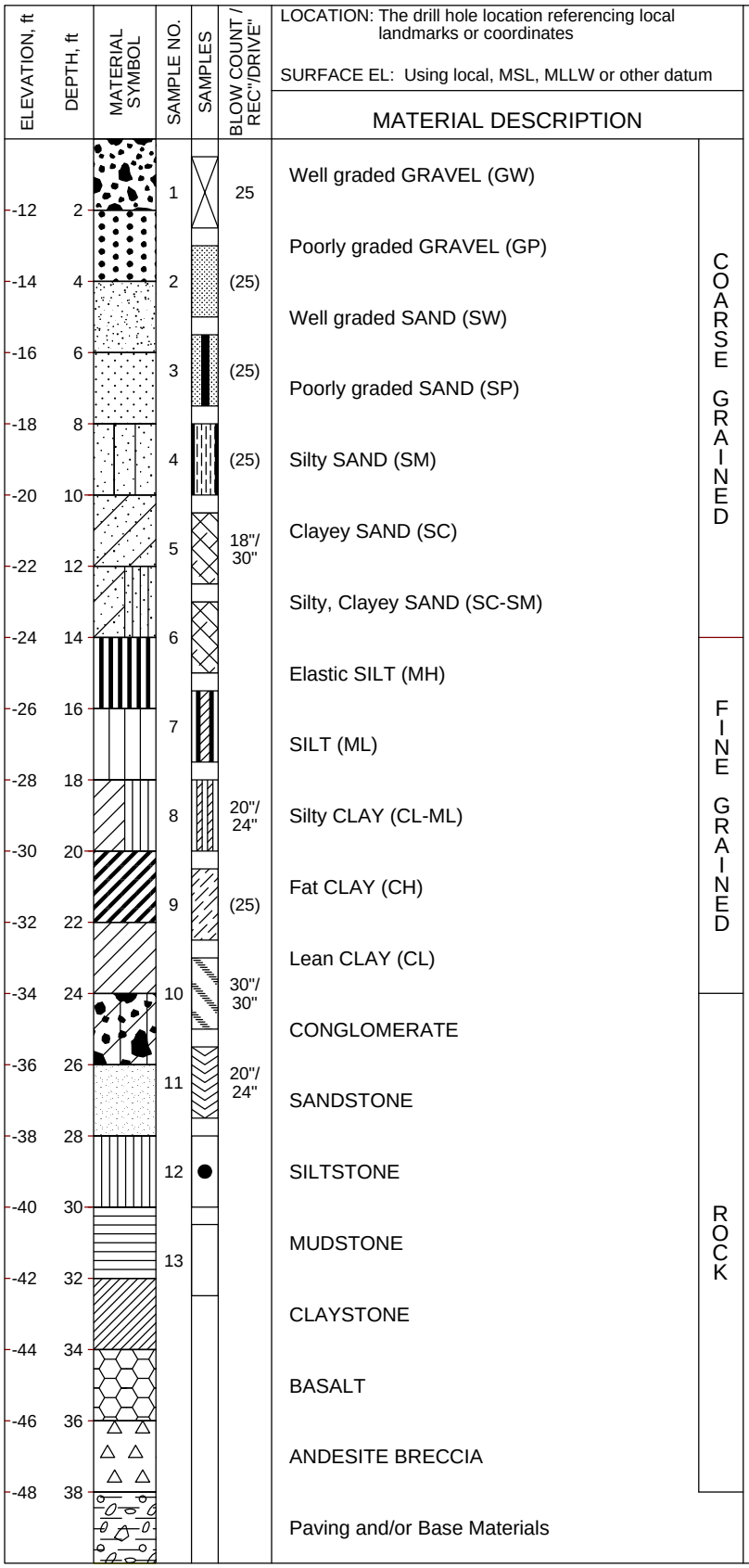
APPENDIX A



General Notes

Soil Texture Symbol

Sloped line in symbol column indicates transitional boundary

Samplers and sampler dimensions (unless otherwise noted in report text) are as follows:

Symbol for:

1	SPT Sampler, driven 1-3/8" ID, 2" OD
2	CA Liner Sampler, driven 2-3/8" ID, 3" OD
3	CA Liner Sampler, disturbed 2-3/8" ID, 3" OD
4	Thin-walled Tube, pushed 2-7/8" ID, 3" OD
5	Bulk Bag Sample (from cuttings)
6	CA Liner Sampler, Bagged
7	Hand Auger Sample
8	CME Core Sample
9	Pitcher Sample
10	Lexan Sample
11	Vibracore Sample
12	No Sample Recovered
13	Sonic Soil Core Sample

Sampler Driving Resistance

Number of blows with 140 lb. hammer, falling 30" to drive sampler 1 ft. after seating sampler 6"; for example,

Blows/ft	Description
25	25 blows drove sampler 12" after initial 6" of seating
86/11"	After driving sampler the initial 6" of seating, 36 blows drove sampler through the second 6" interval, and 50 blows drove the sampler 5" into the third interval
50/6"	50 blows drove sampler 6" after initial 6" of seating
Ref/3"	50 blows drove sampler 3" during initial 6" seating interval

Blow counts for California Liner Sampler shown in ( )

Length of sample symbol approximates recovery length

Classification of Soils per ASTM D2487 or D2488

Geologic Formation noted in bold font at the top of interpreted interval

Strength Legend

Q = Unconfined Compression
u = Unconsolidated Undrained Triaxial
t = Torvane
p = Pocket Penetrometer
m = Miniature Vane

Water Level Symbols

- Initial or perched water level
- Final ground water level
- Seepages encountered

Rock Quality Designation (RQD) is the sum of recovered core pieces greater than 4 inches divided by the length of the cored interval.

KEY TO TERMS & SYMBOLS USED ON LOGS

PLATE A-1

LOCATION: Approximately 25' south of South Levee, and approximately 14' east of Creek Road

SURFACE EL: 20 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
			1			**ALLUVIUM (Qal)** TOPSOIL: loose, dry Clayey SAND (SC): loose to medium dense, dark brown, moist	107	92	12	48			
18	2		2			Poorly-graded SAND with clay (SP-SC): loose, light brown, moist to wet							
			3			Lean CLAY (CL): soft to medium stiff, moist to wet Clayey SAND (SC): medium dense, brown, wet							
16	4		4										
14	6												
12	8												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 4.5 ft
DEPTH TO WATER: 3.0 ft

DRILLING METHOD: 4-inch-dia. Hand Auger
DRILLED BY: C.Stoehr
LOGGED BY: C.Stoehr

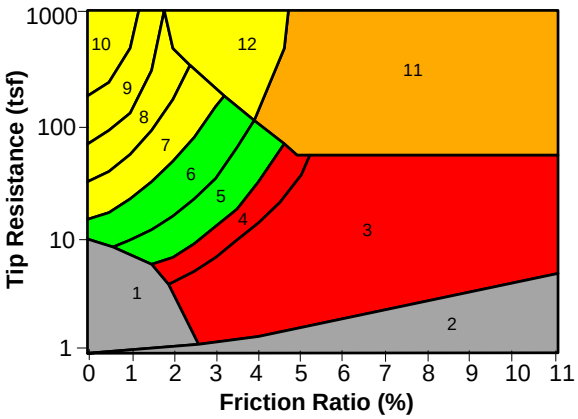
DRILLING DATE: August 14, 2008

LOG OF BORING NO. H-1

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE A-2

COLOR LEGEND FOR FRICTION RATIO TRACES



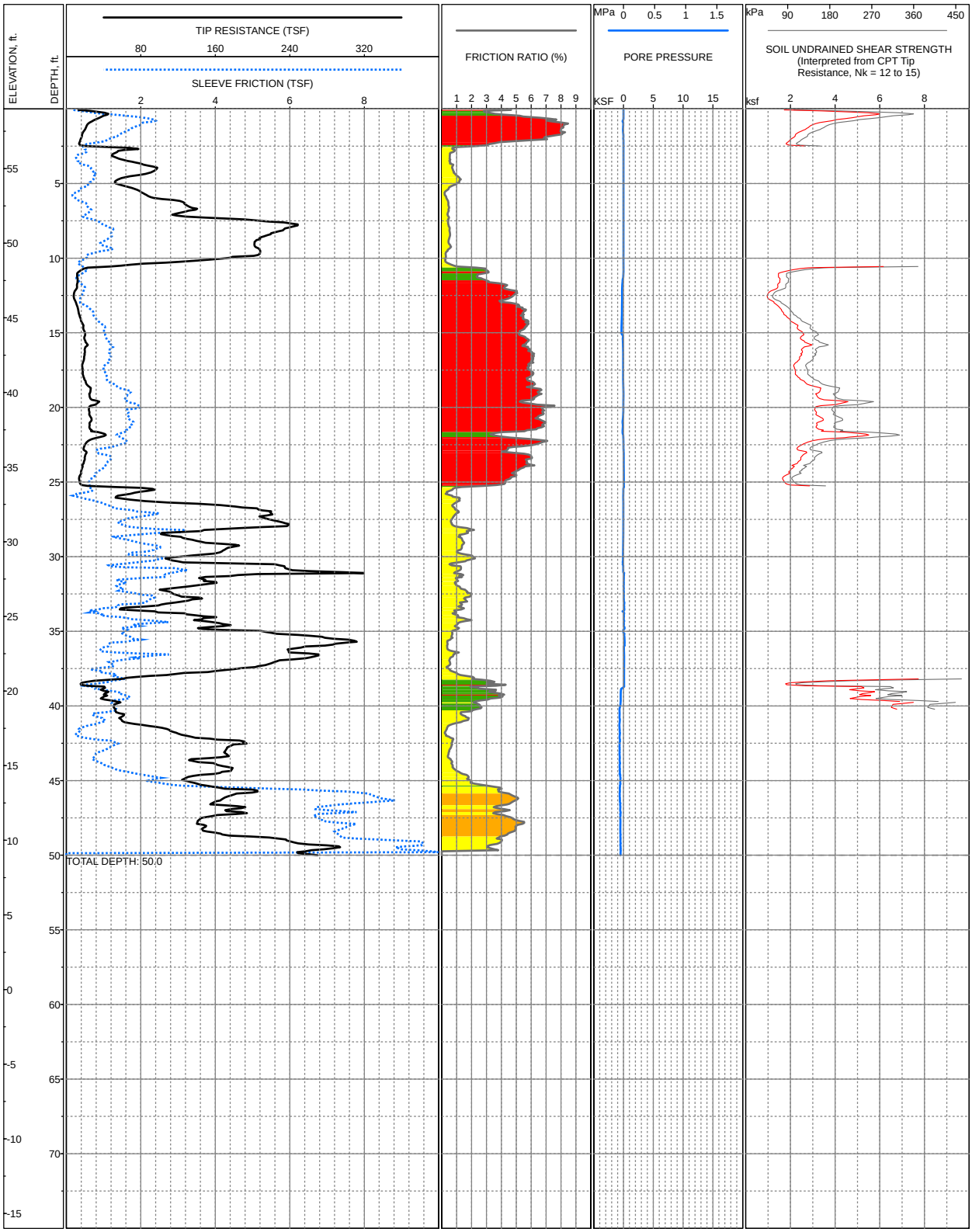
Zone	Soil Behavior Type	U.S.C.S.
1	Sensitive Fine-grained	OL-CH
2	Organic Material	OL-OH
3	Clay	CH
4	Silty Clay to Clay	CL-CH
5	Clayey Silt to Silty Clay	MH-CL
6	Sandy Silt to Clayey Silt	ML-MH
7	Silty Sand to Sandy Silt	SM-ML
8	Sand to Silty Sand	SM-SP
9	Sand	SW-SP
10	Gravelly Sand to Sand	SW-GW
11	Very Stiff Fine-grained *	CH-CL
12	Sand to Clayey Sand *	SC-SM

*overconsolidated or cemented

CPT CORRELATION CHART
(Robertson and Campanella, 1984)

KEY TO CPT LOGS

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California



COORDINATES: 2,233,857.20N 5,787,490.08W
SURFACE EL: 59.0ft +/- (MSL)
COMPLETION DEPTH: 50.0ft
TESTDATE: 7/22/2008

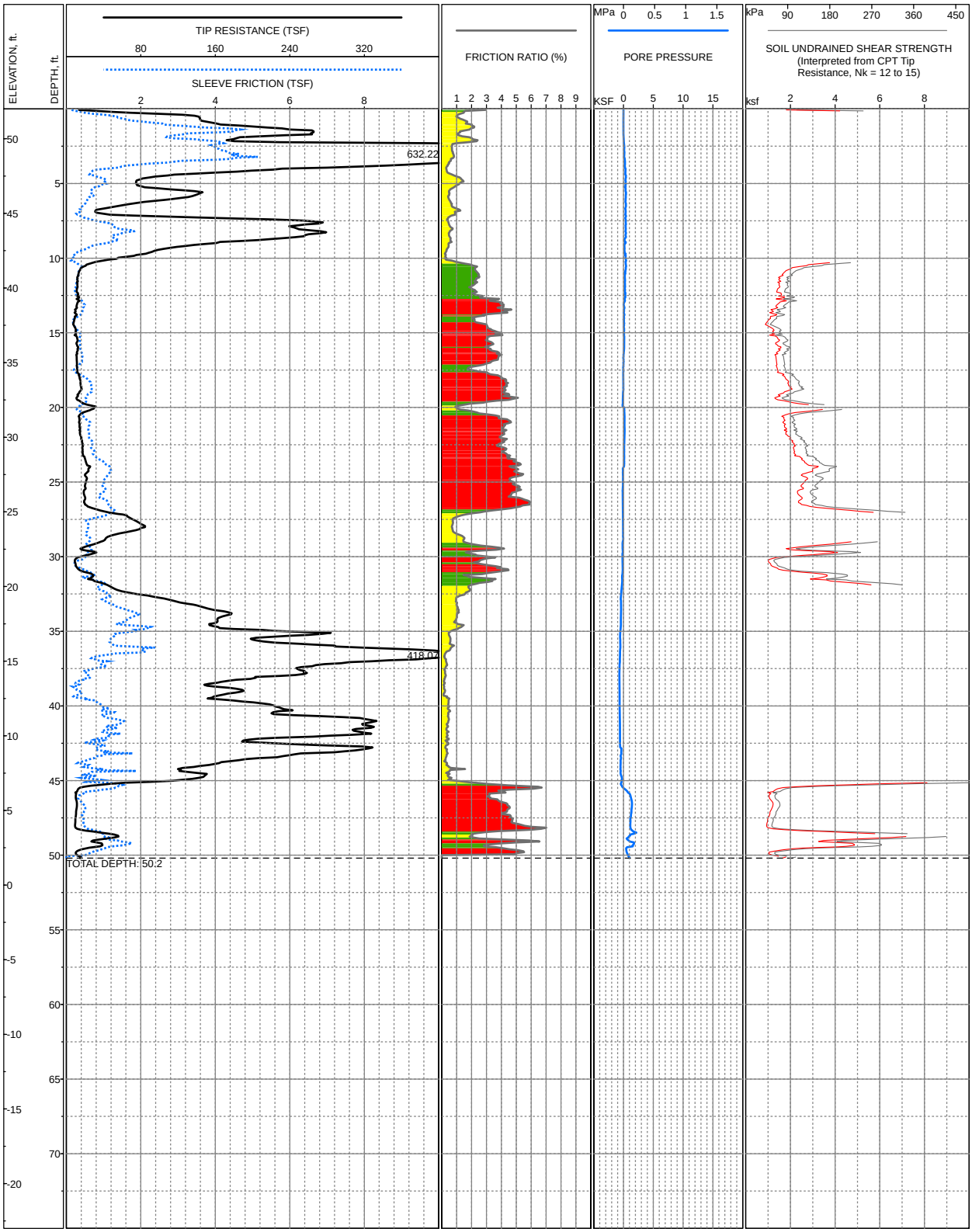
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J.Blanchard

LOG OF C-1

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-4

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Su_2008_08_13\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



COORDINATES: 2,232,173.97N 5,786,405.43W
SURFACE EL: 52.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

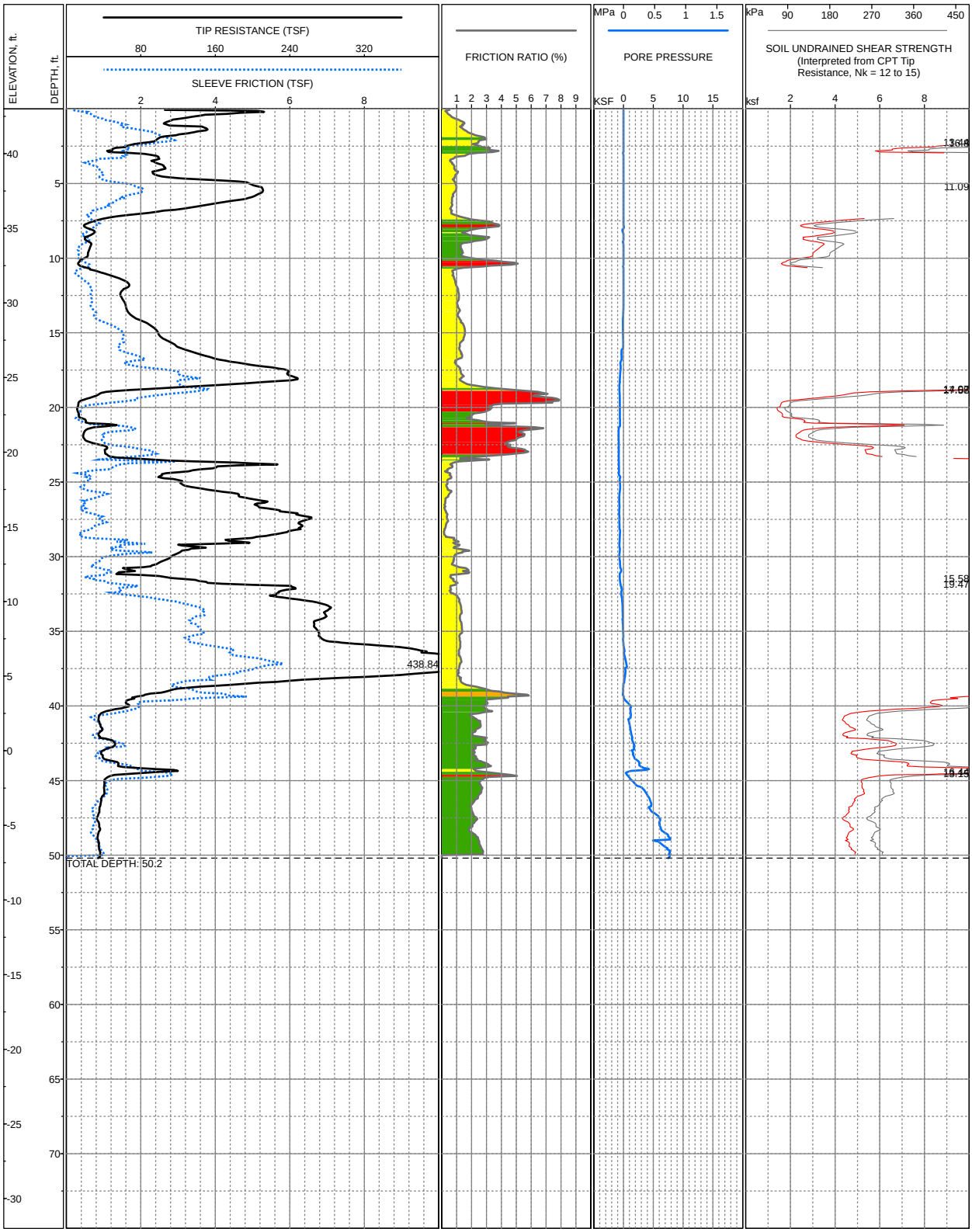
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J.Blanchard

LOG OF C-2

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-5

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Su_2008_08_13\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



COORDINATES: 2,231,087.37N 5,784,635.85W
SURFACE EL: 43.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

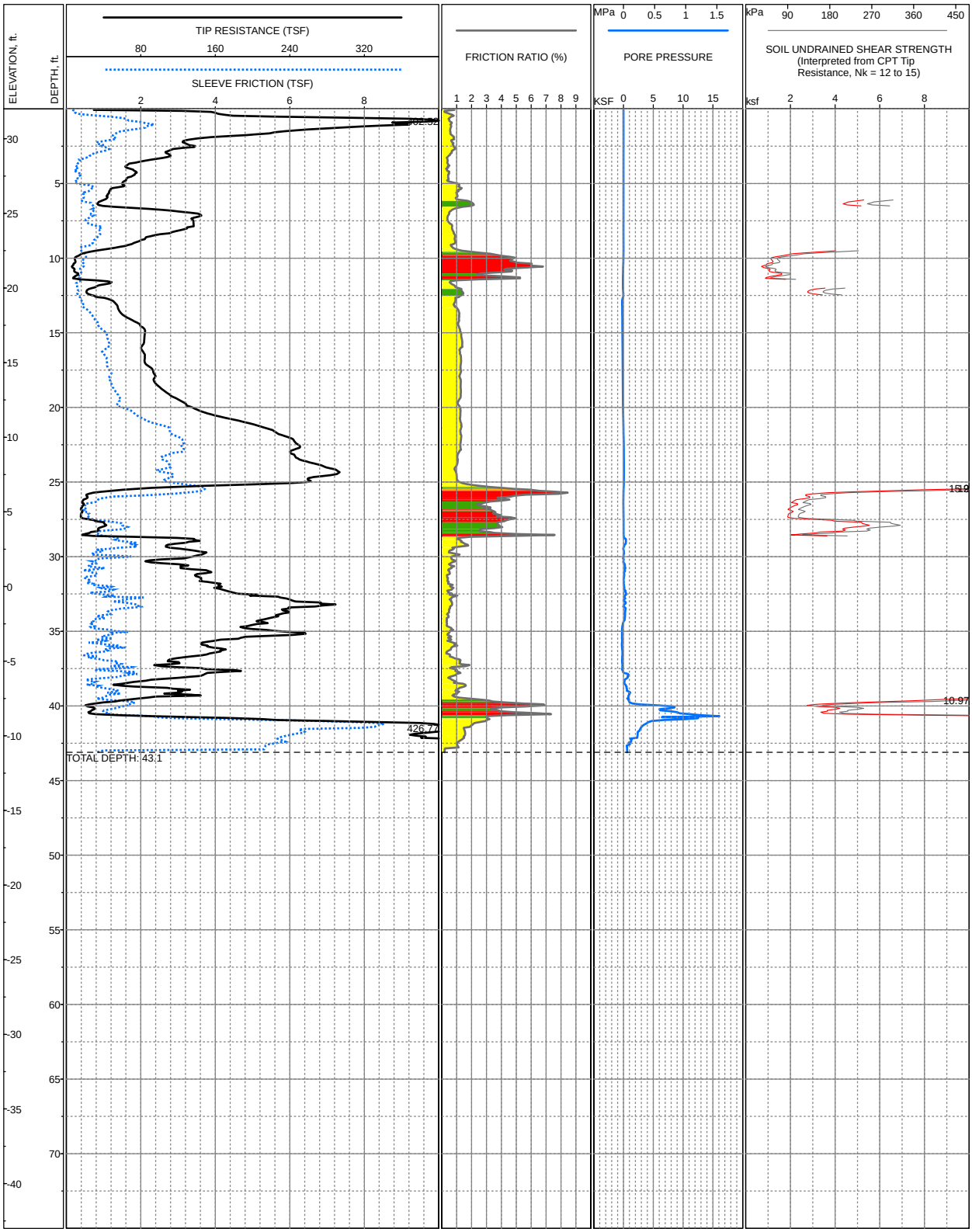
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J.Blanchard

LOG OF C-3

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-6

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Su_2008_08_13\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



COORDINATES: 2,231,221.08N 5,782,003.06W
SURFACE EL: 32.0ft +/- (MSL)
COMPLETION DEPTH: 43.1ft
TESTDATE: 7/22/2008

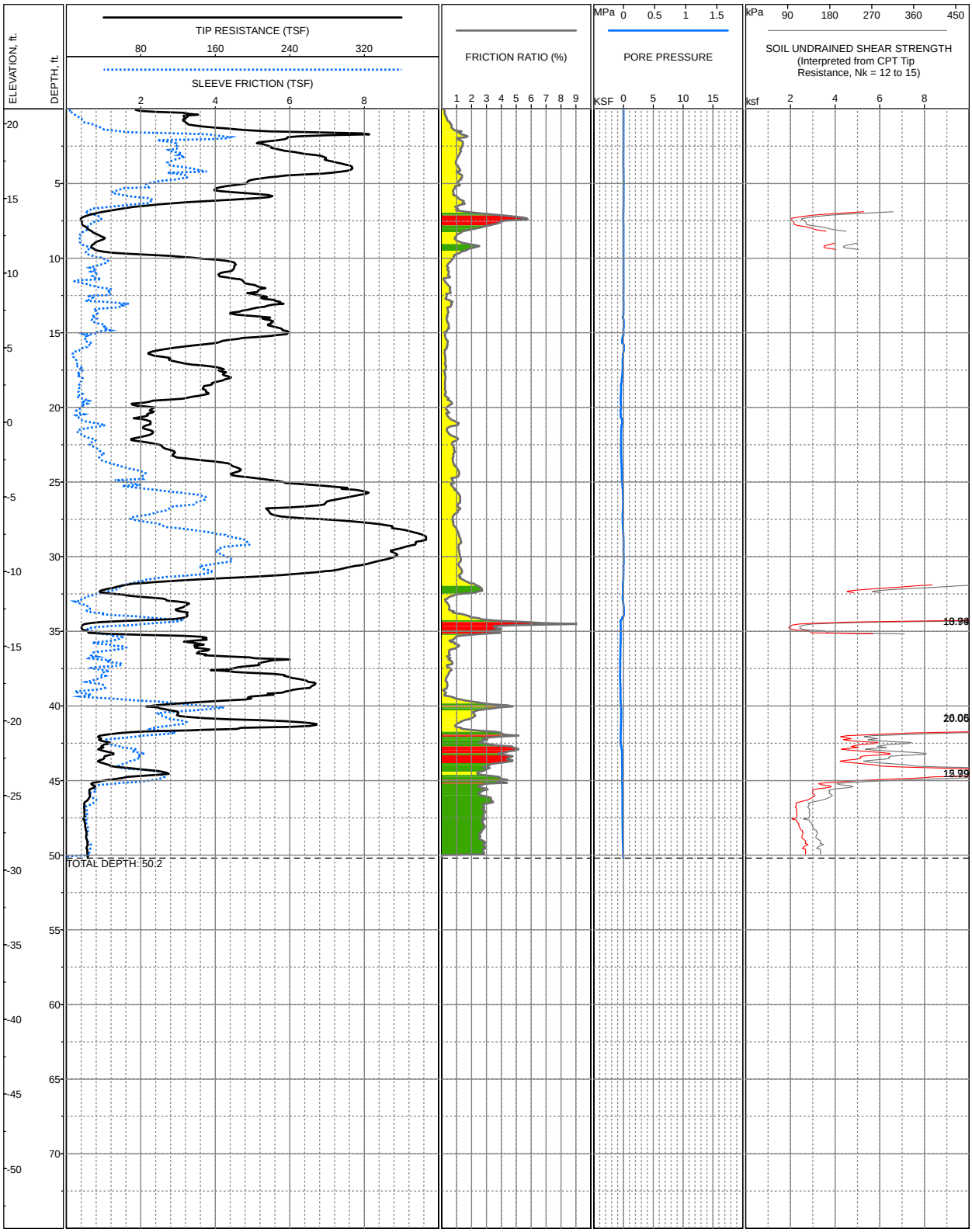
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J.Blanchard

LOG OF C-4

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-7

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Su_2008_08_13\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



COORDINATES: 2,232,390.00N 5,778,074.64W
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

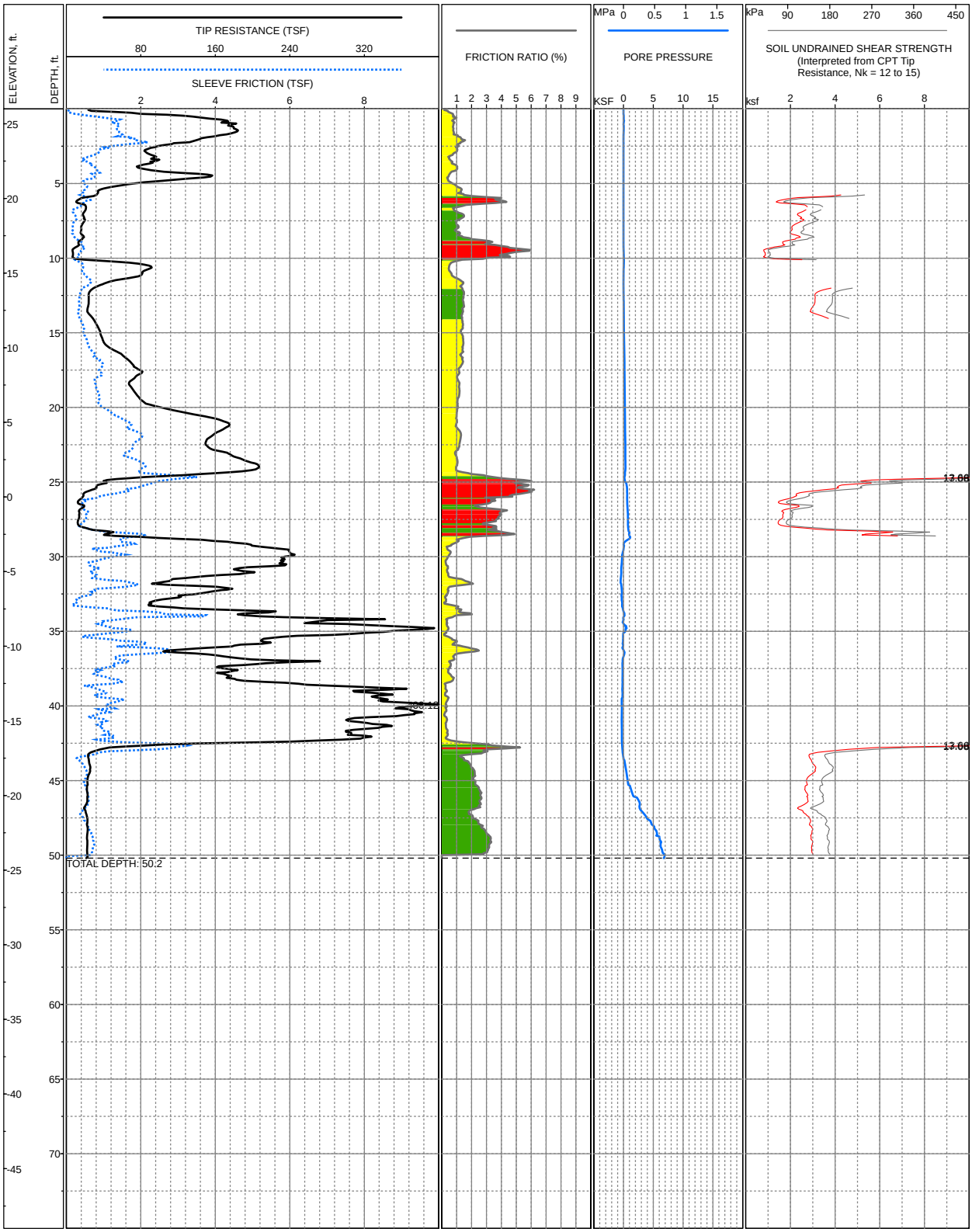
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J.Blanchard

LOG OF C-5

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-8

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Su_2008_08_13\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



COORDINATES: 2,231,397.63N 5,779,691.56W
SURFACE EL: 26.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

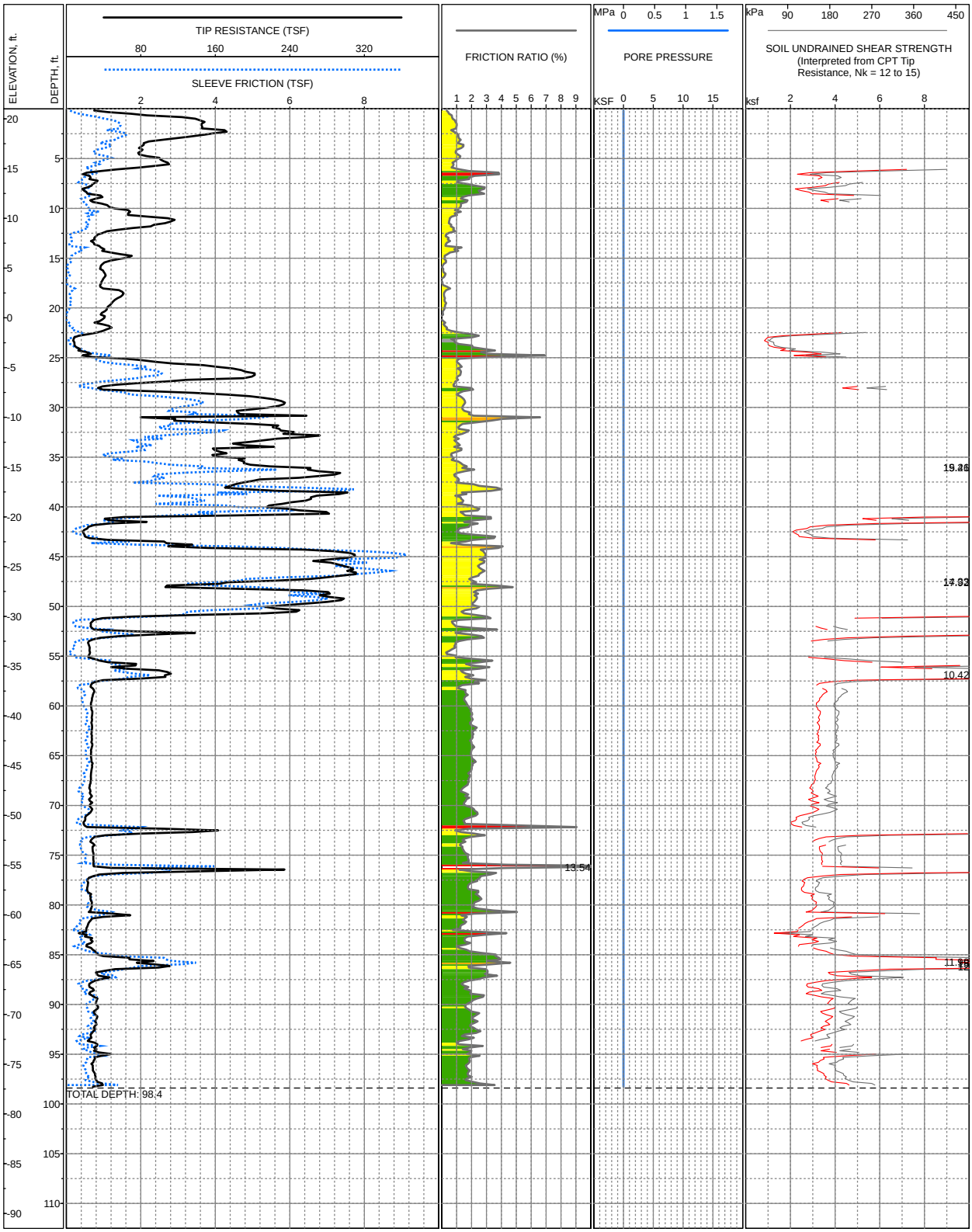
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J.Blanchard

LOG OF C-6

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-9

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Su_2008_08_13\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3350 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 98.4ft
TESTDATE: 3/5/2004

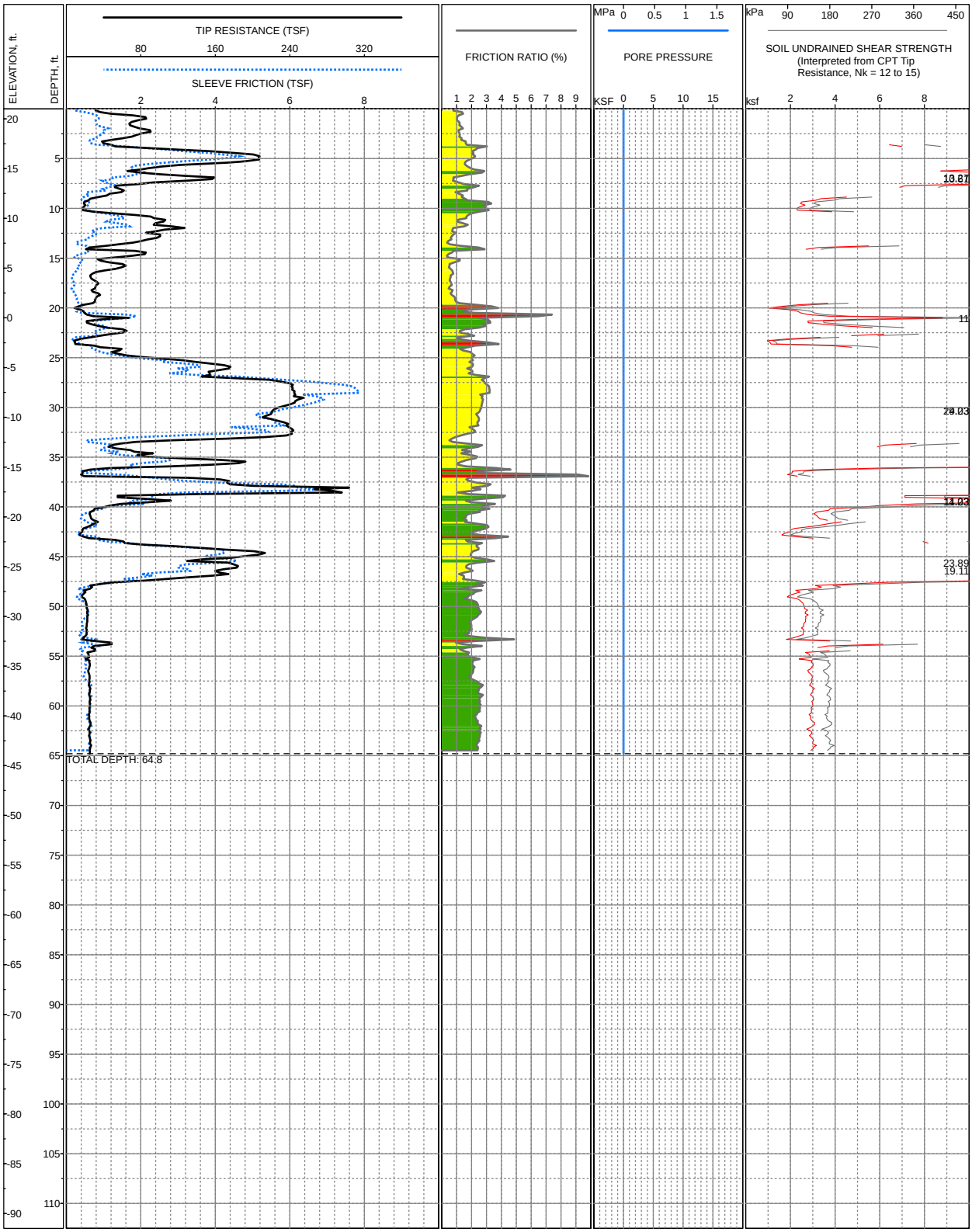
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J.Blanchard

LOG OF SOC035

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-10

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_Su_2008_Aug\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3500 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 64.8ft
TESTDATE: 3/5/2004

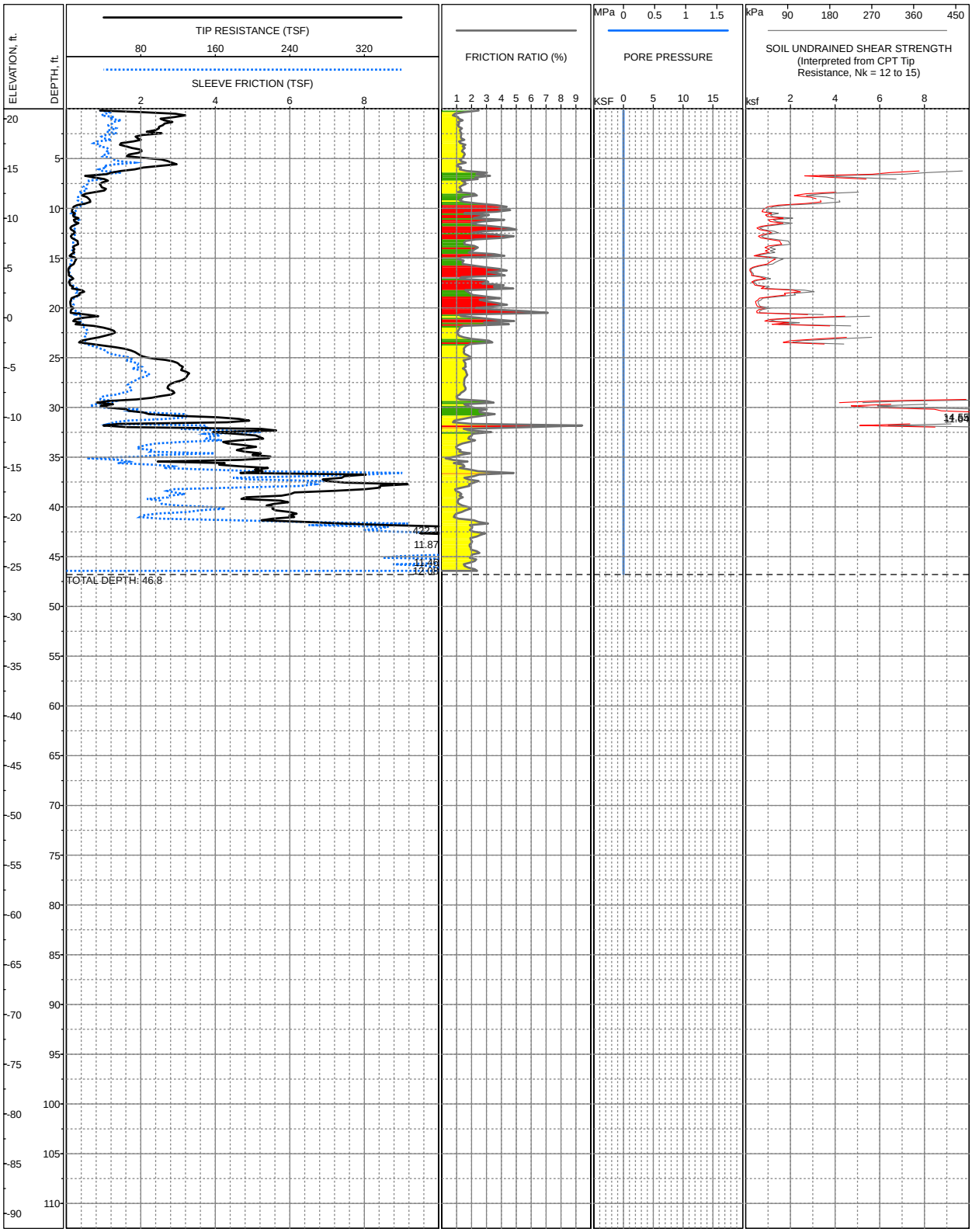
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J.Blanchard

LOG OF SOC036

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-11

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_Su_2008_Aug\MXD\CPTLog_Su.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3250 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 46.8ft
TESTDATE: 3/5/2004

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J.Blanchard

LOG OF SOC037

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo, California

PLATE A-12

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_Su_2008_Aug\MXD\CPTLog_Su.mxd.08/29/2008.ksheil

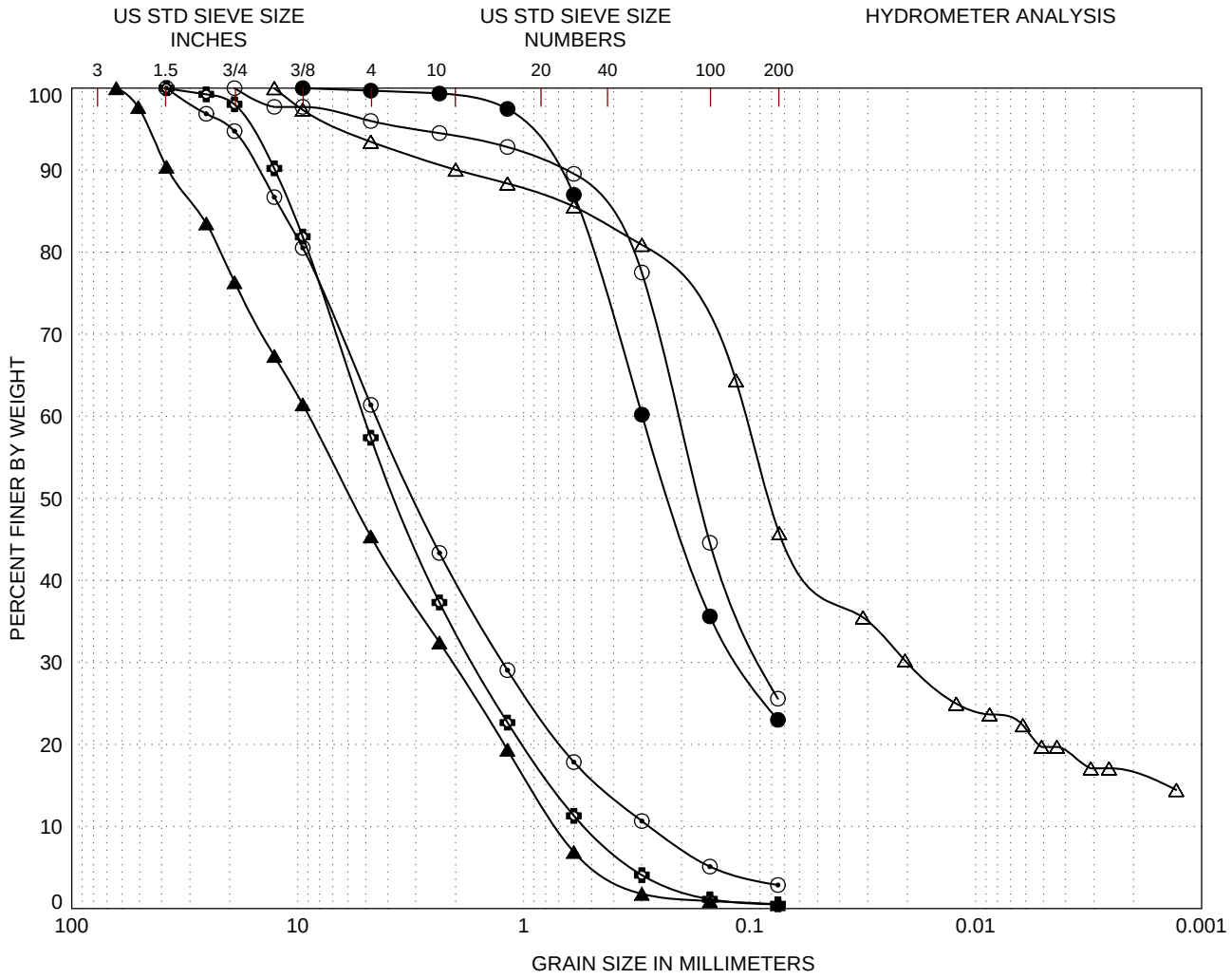
APPENDIX B

DRILL HOLE	DEPTH, ft	SAMPLE NUMBER	MATERIAL DESCRIPTION	UWW pcf	UDW pcf	MC %	FINES %	ATTERBERG LIMITS		COMPACTION TEST		DIRECT SHEAR		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				R-VALUE	EXPANSION INDEX	SAND EQUIVALENT (SE)	Permeability, cm/s
								LL	PI	MAX DD pcf	OPT MC %	C ksf	PHI deg	Qu, ksf	S_U (Cell Prs.) ksf	R	pH	Cl	So_4 (%)				
AB-1	0.0		Silty SAND (SM)				26																
AB-2	0.0		Silty SAND (SM)				23																
AB-6	0.0		Silty SAND (SM)				46																
H-1	1.0	1	Clayey SAND (SC)	107	92	12	48					0.1	38										
SB-1	0.0		Poorly-graded GRAVEL with sand (GP)				1																
SB-2	0.0		Well-graded SAND with gravel (SW)				3																
SB-6	0.0		Well-graded SAND with gravel (SW)				1																

SUMMARY OF LABORATORY TEST RESULTS

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE B-1

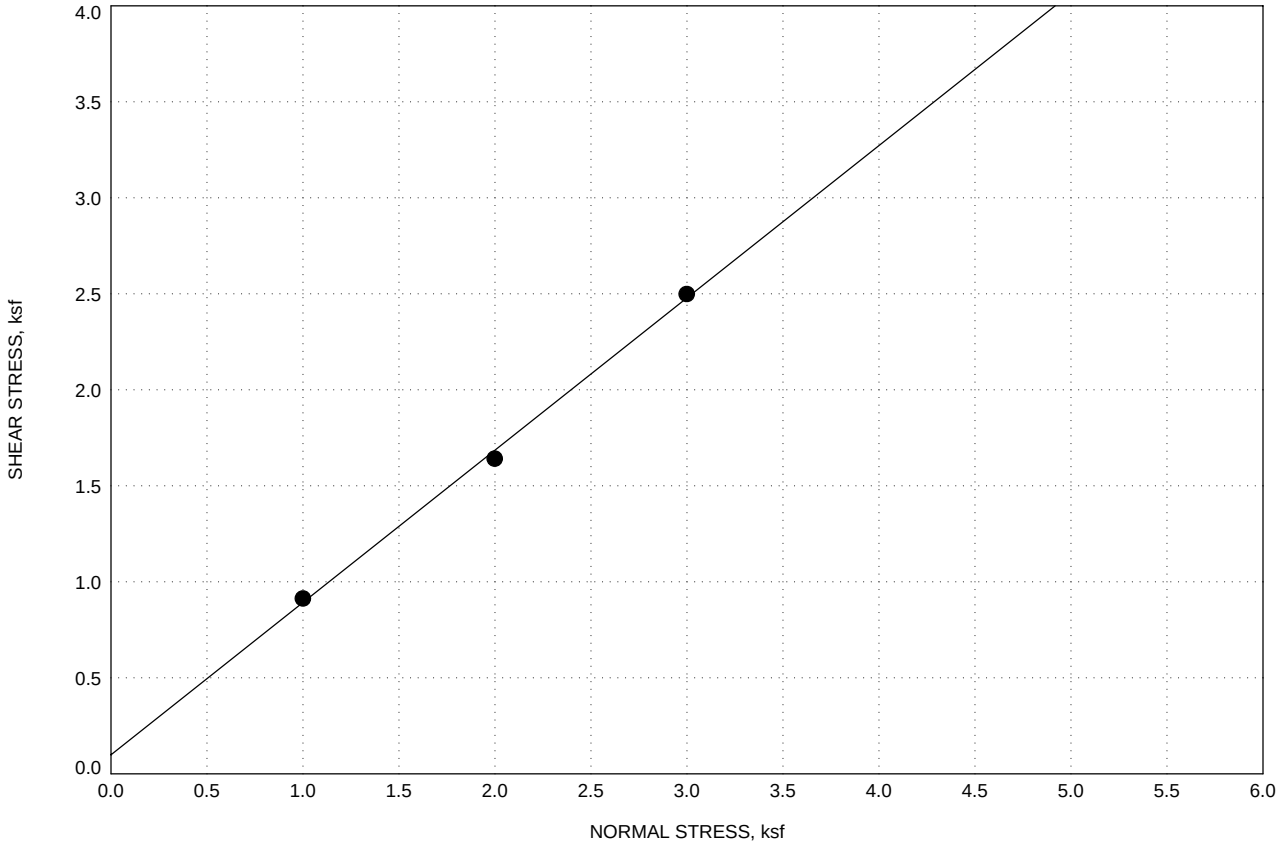


GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	AB-1	0.0	Silty SAND (SM)		
●	AB-2	0.0	Silty SAND (SM)		
△	AB-6	0.0	Silty SAND (SM)		
▲	SB-1	0.0	Poorly-graded GRAVEL with sand (GP)	0.7	12.6
⊙	SB-2	0.0	Well-graded SAND with gravel (SW)	1.2	16.3
✿	SB-6	0.0	Well-graded SAND with gravel (SW)	1.0	9.7

GRAIN SIZE CURVES
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE B-2



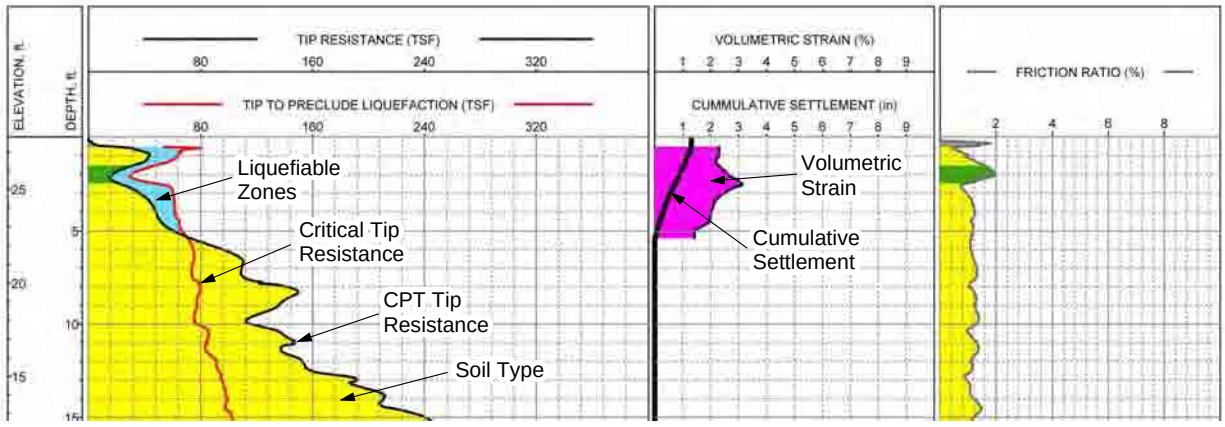
COHESION, ksf	0.1
ANGLE OF INTERNAL FRICTION, deg	38
LOCATION	H-1
DEPTH, ft	1
MOISTURE CONTENT, %	17
UNIT DRY WEIGHT, pcf	92
MATERIAL DESCRIPTION	Clayey SAND (SC)
SAMPLE CONDITION	Ring Sample

DIRECT SHEAR TEST RESULTS

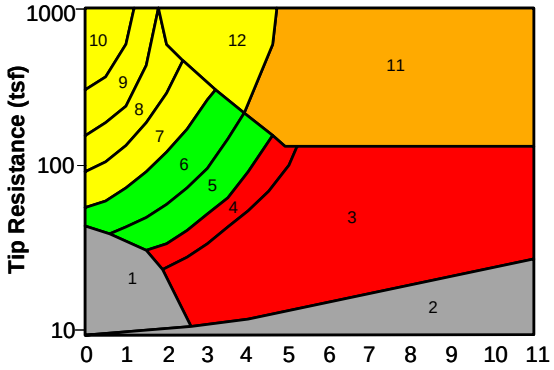
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE B-3

APPENDIX C



COLOR LEGEND FOR FRICTION RATIO TRACES



Zone	Soil Behavior Type	U.S.C.S.
1	Sensitive Fine-grained	OL-CH
2	Organic Material	OL-OH
3	Clay	CH
4	Silty Clay to Clay	CL-CH
5	Clayey Silt to Silty Clay	MH-CL
6	Sandy Silt to Clayey Silt	ML-MH
7	Silty Sand to Sandy Silt	SM-ML
8	Sand to Silty Sand	SM-SP
9	Sand	SW-SP
10	Gravelly Sand to Sand	SW-GW
11	Very Stiff Fine-grained *	CH-CL
12	Sand to Clayey Sand *	SC-SM

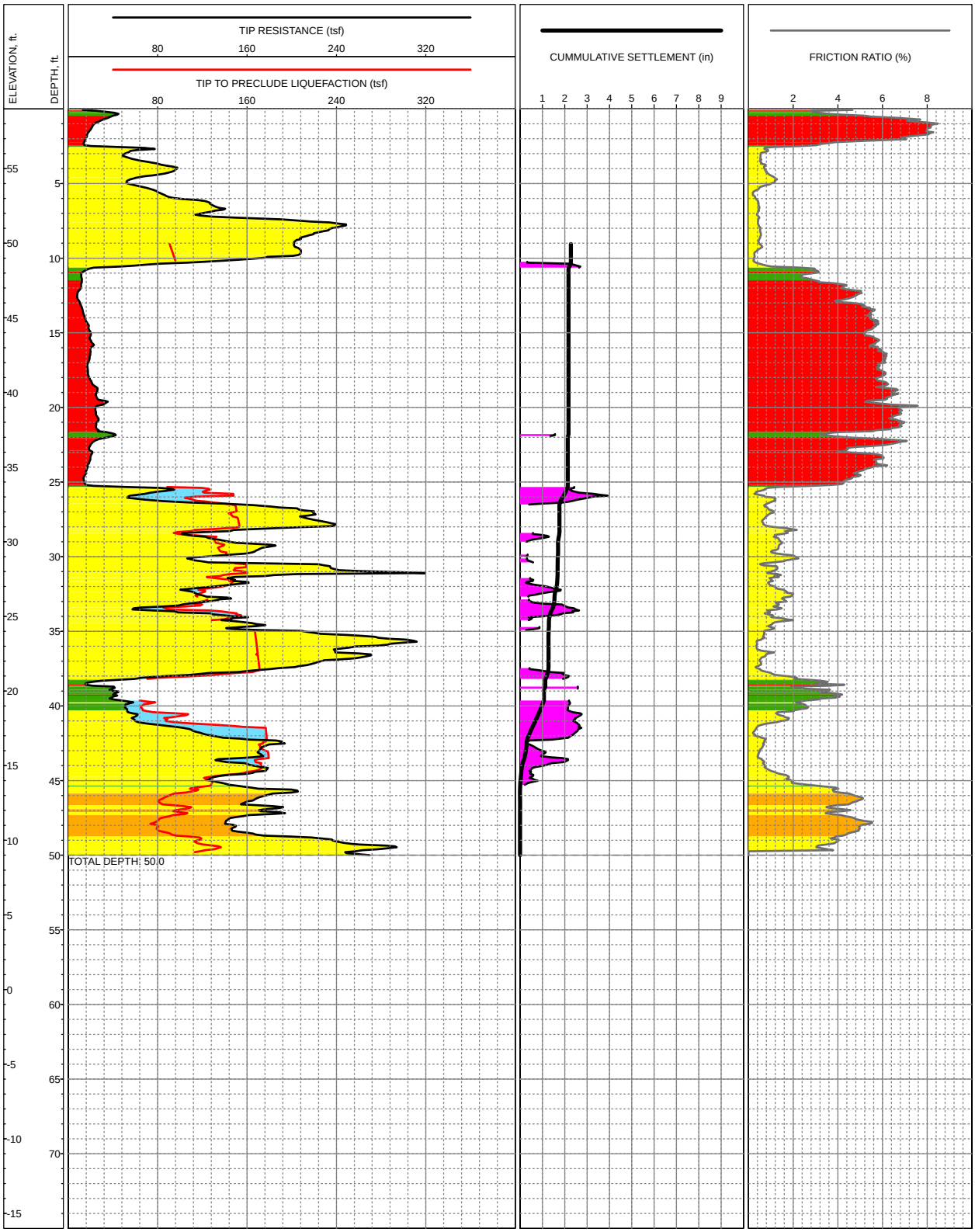
*overconsolidated or cemented

CPT CORRELATION CHART
(Robertson and Campanella, 1984)

KEY TO CPT LOGS

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-1



COORDINATES: 2,233,857.20N 5,787,490.08W
SURFACE EL: 59.0ft +/- (MSL)
COMPLETION DEPTH: 50.0ft
TESTDATE: 7/22/2008

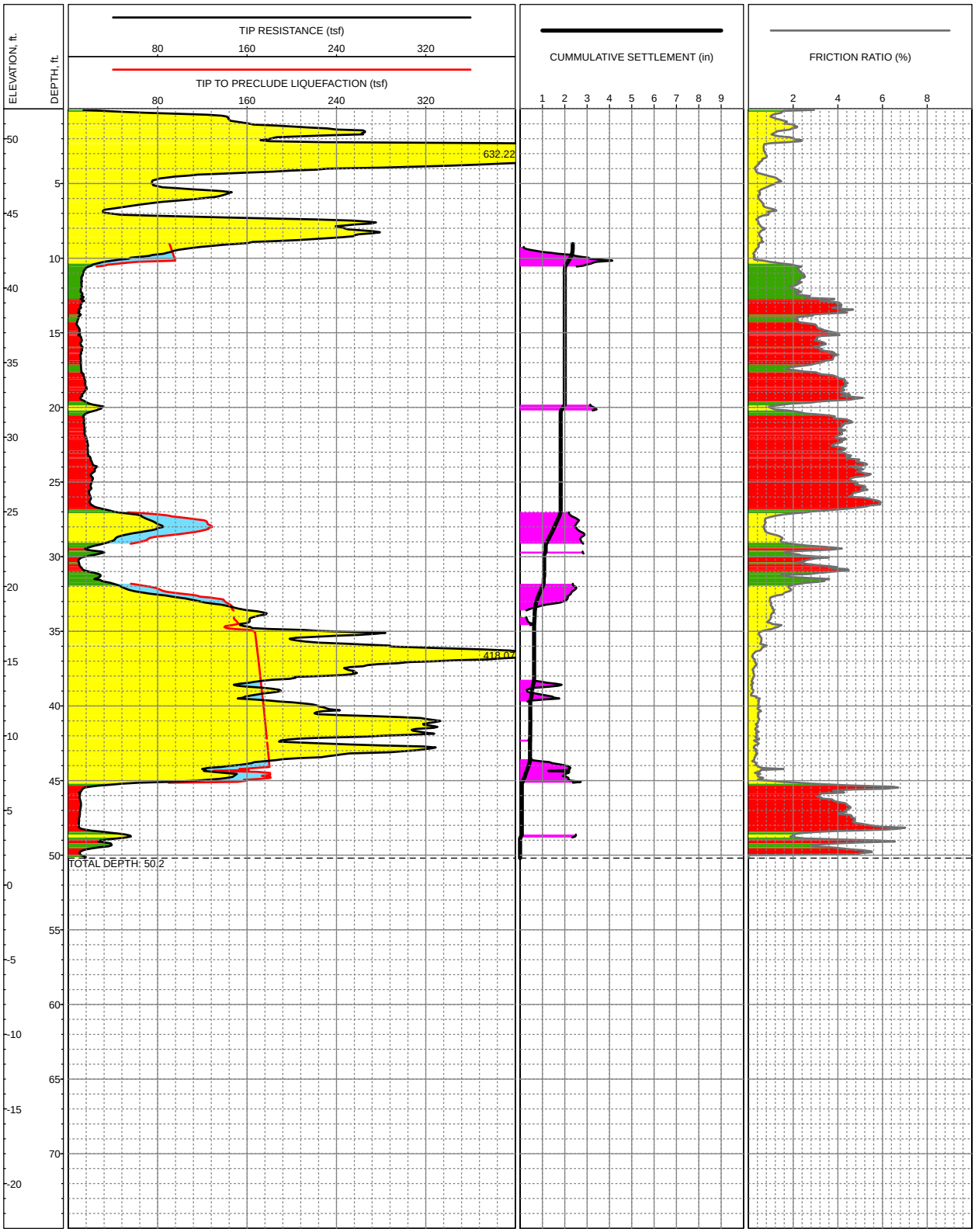
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-1, M7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-2

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,232,173.97N 5,786,405.43W
SURFACE EL: 52.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

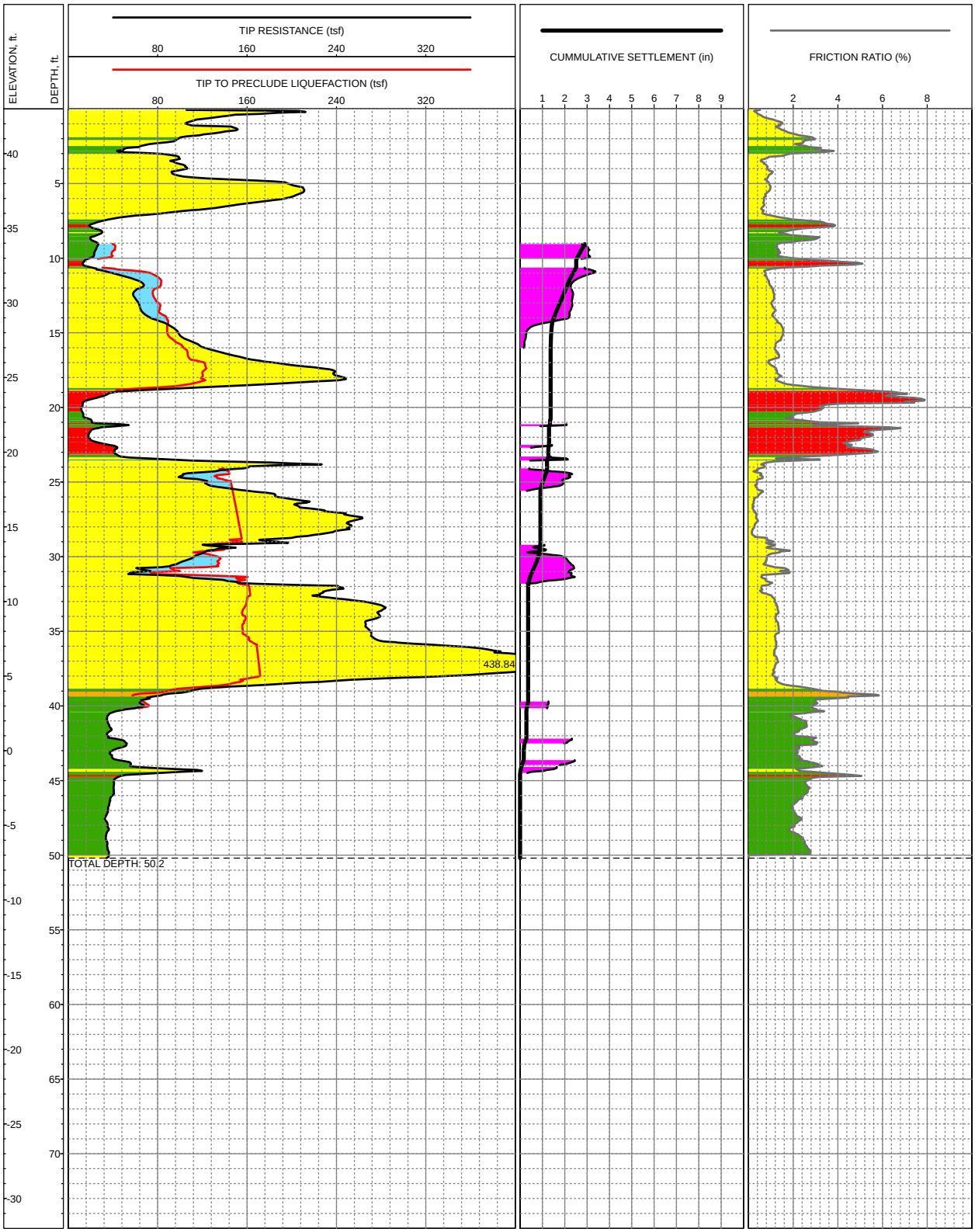
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-2, M7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-3

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,231,087.37N 5,784,635.85W
SURFACE EL: 43.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

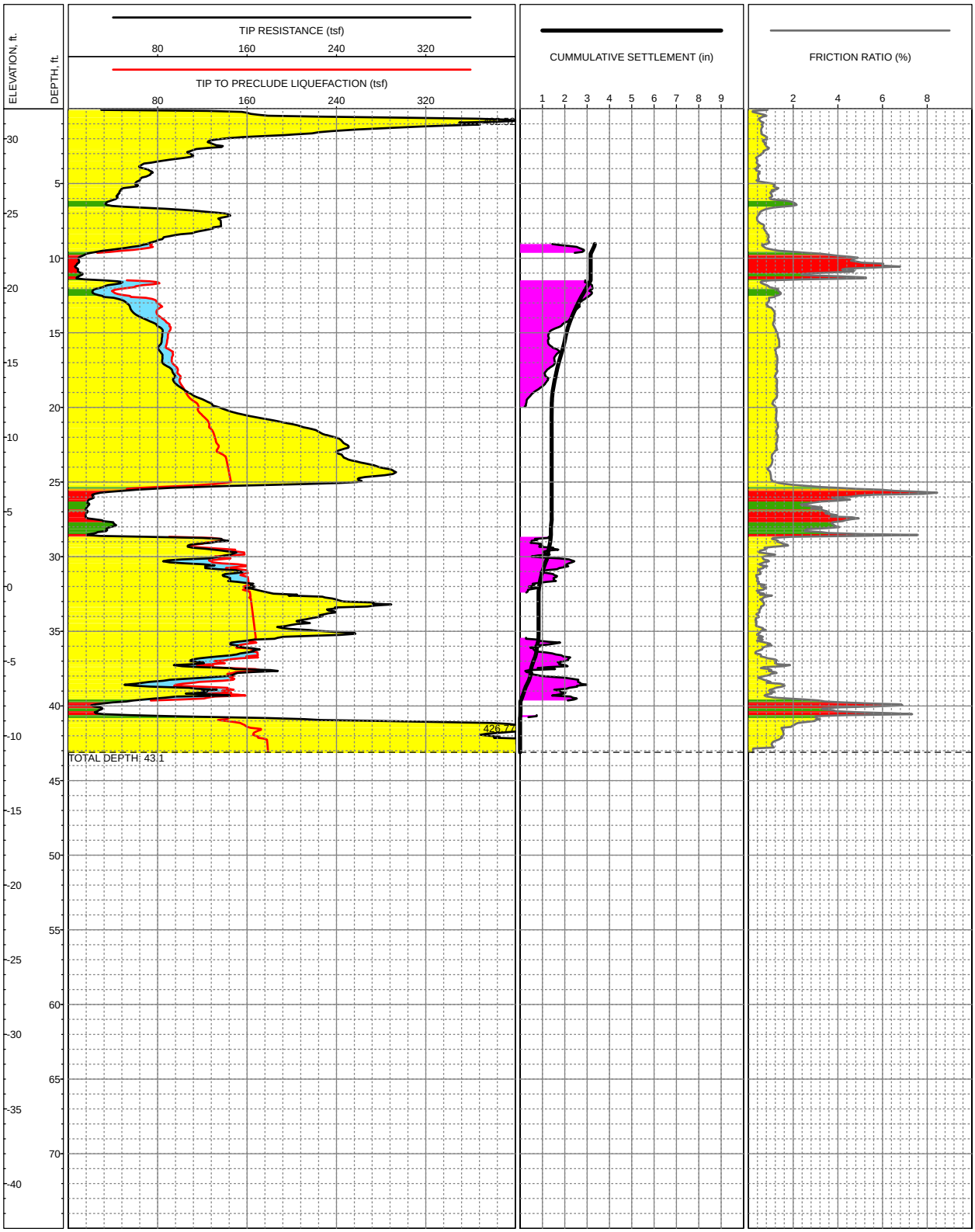
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-3, M7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-4

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,231,221.08N 5,782,003.06W
SURFACE EL: 32.0ft +/- (MSL)
COMPLETION DEPTH: 43.1ft
TESTDATE: 7/22/2008

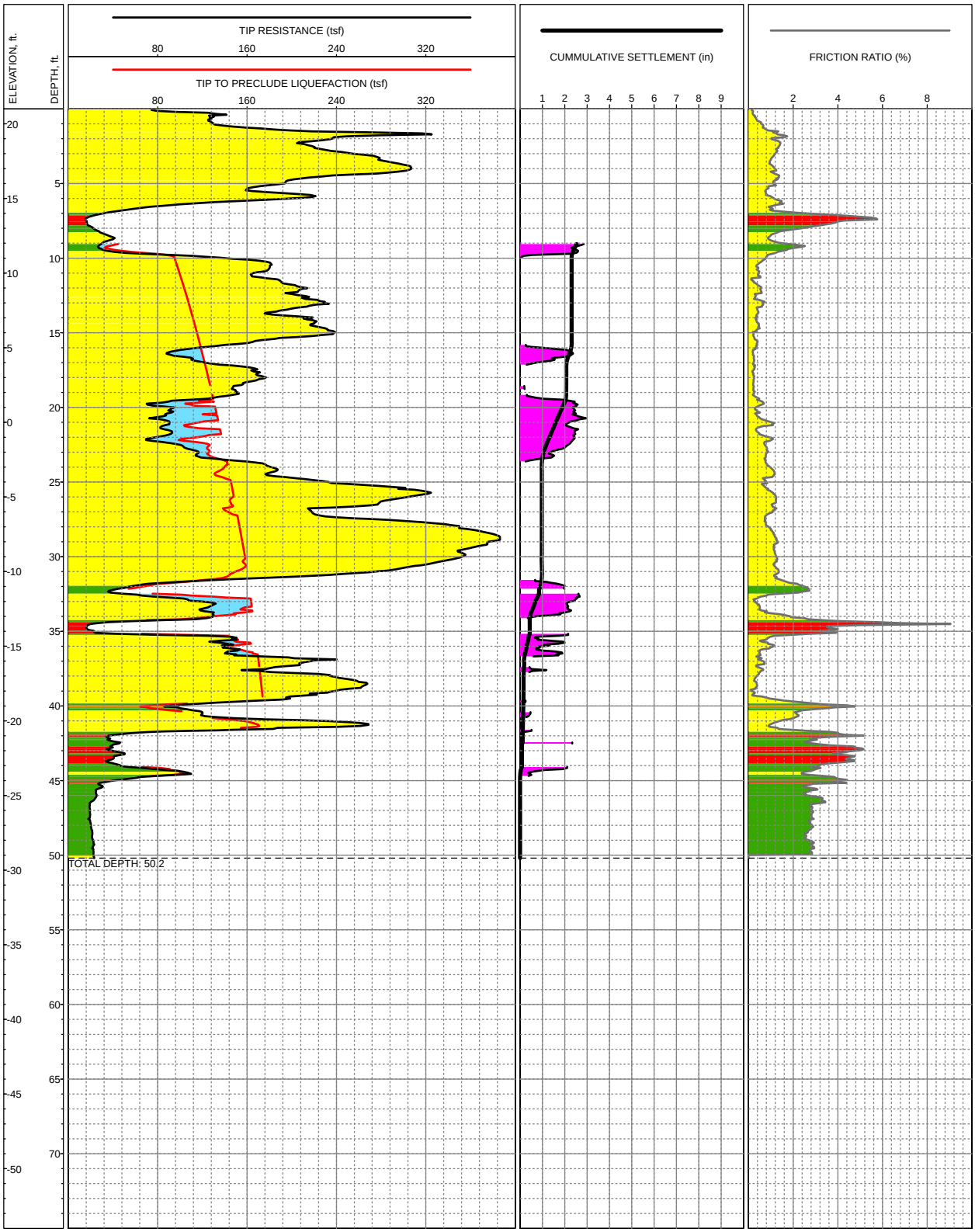
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-4, M7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-5

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,232,390.00N 5,778,074.64W
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-5, M7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-6

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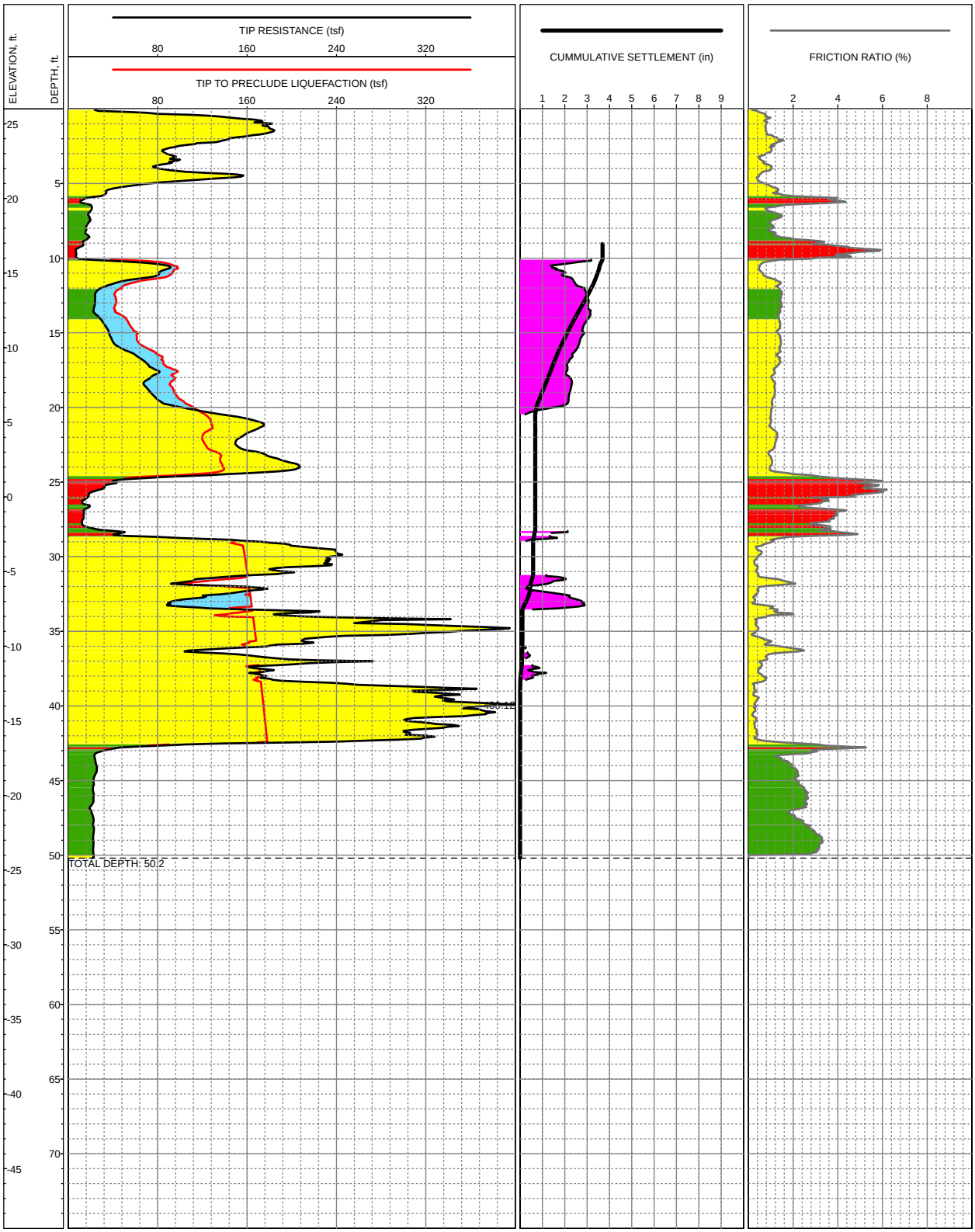


COORDINATES: 2,231,397.63N 5,779,691.56W
SURFACE EL: 26.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

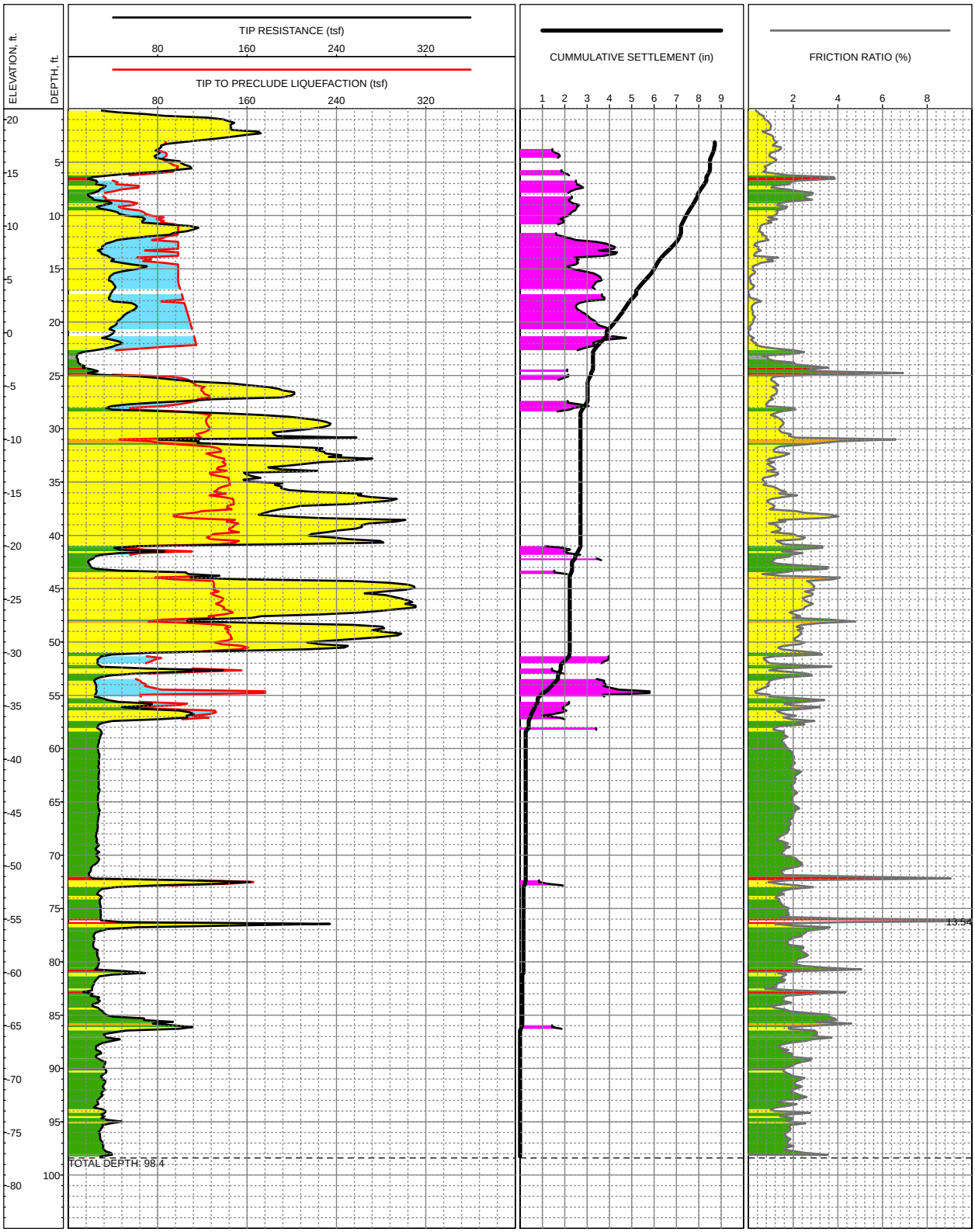
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-6, M7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-7

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



LOCATION: South Levee, Approx. 3350 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 98.4ft
TESTDATE: 3/5/2004

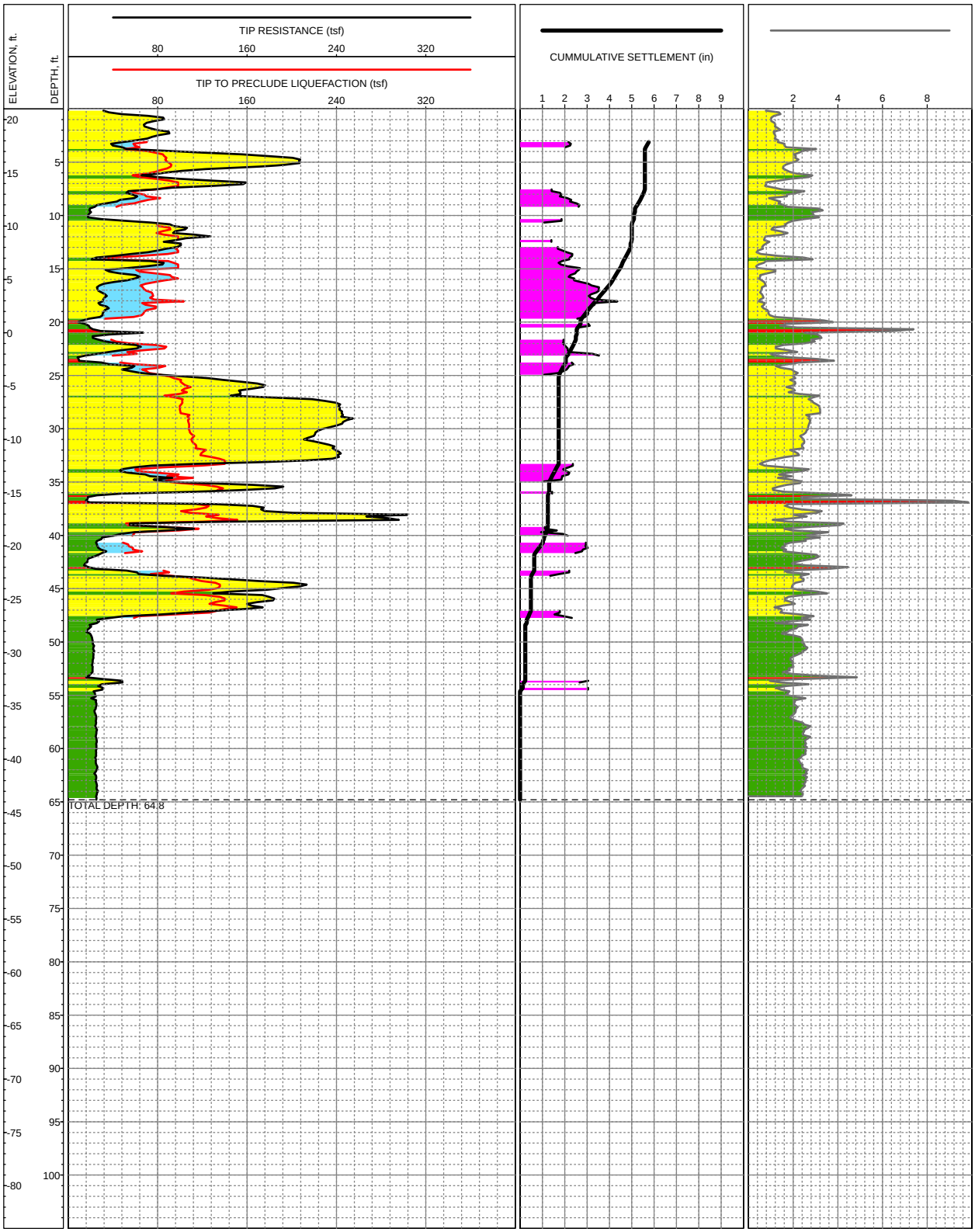
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J Blanchard

LOG OF CPT SOC035, M=7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-8

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_LiquM7.0_A0.46_2008_08_01\MXD\CPTLogs_Liq7_46.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3500 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 64.8ft
TESTDATE: 3/5/2004

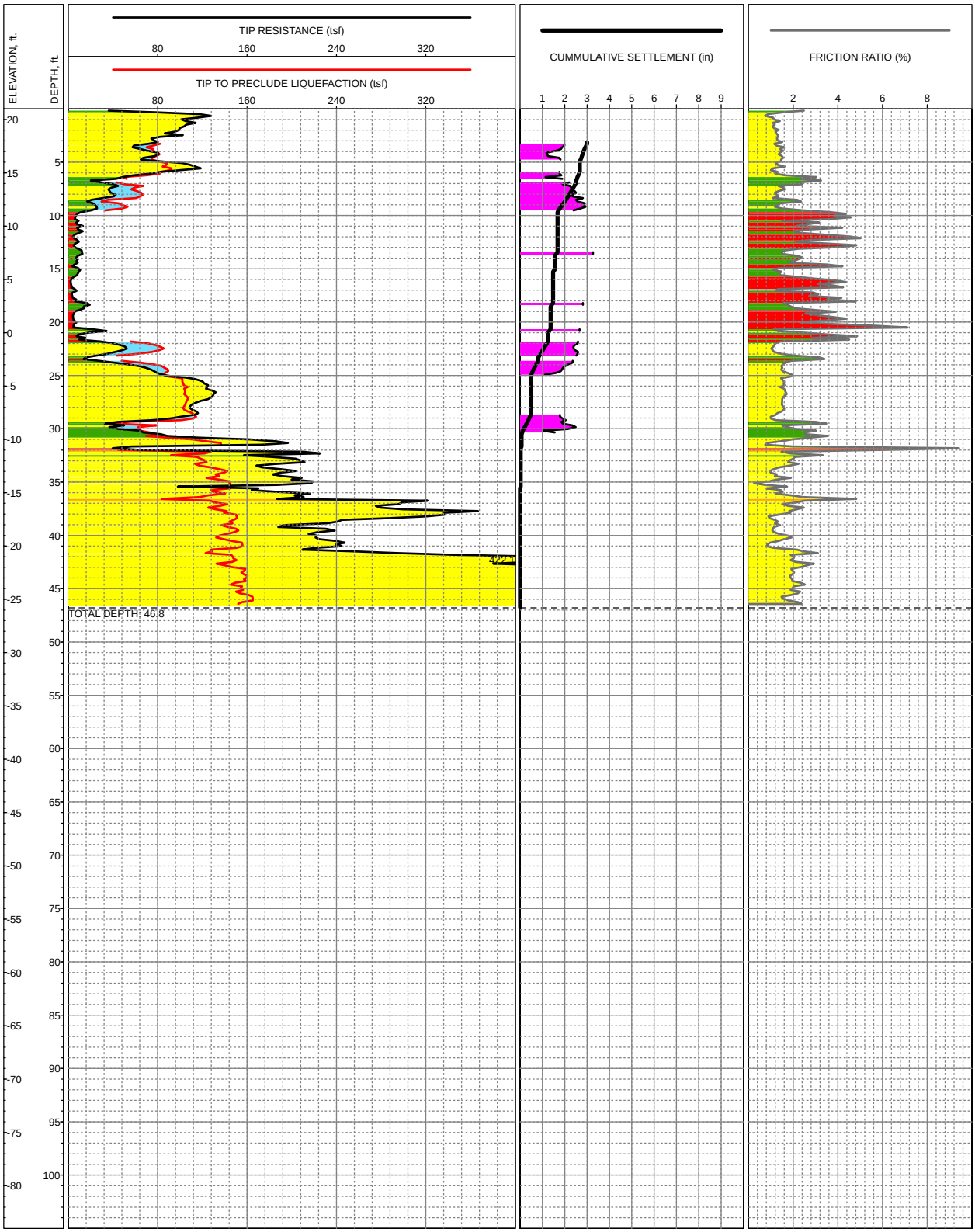
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J Blanchard

LOG OF CPT SOC036, M=7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-9

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_LiquM7.0_A0.46_2008_08_01\MXD\CPTLogs_Liq7_46.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3250 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 46.8ft
TESTDATE: 3/5/2004

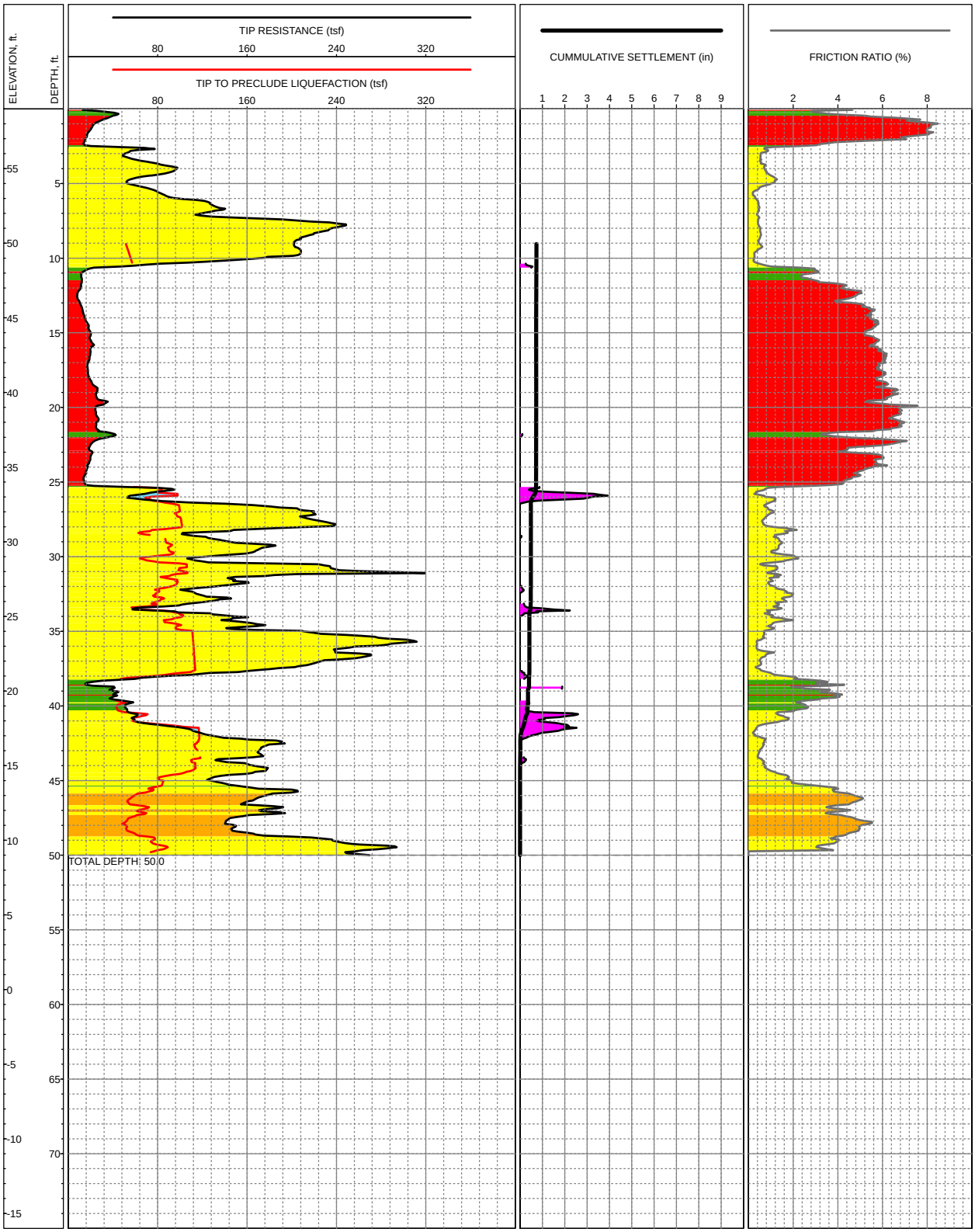
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J Blanchard

LOG OF CPT SOC037, M=7.0, a=0.46

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-10

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_LiquM7.0_A0.46_2008_08_01\MXD\CPTLogs_Liq7_46.mxd.08/29/2008.ksheil



COORDINATES: 2,233,857.20N 5,787,490.08W
SURFACE EL: 59.0ft +/- (MSL)
COMPLETION DEPTH: 50.0ft
TESTDATE: 7/22/2008

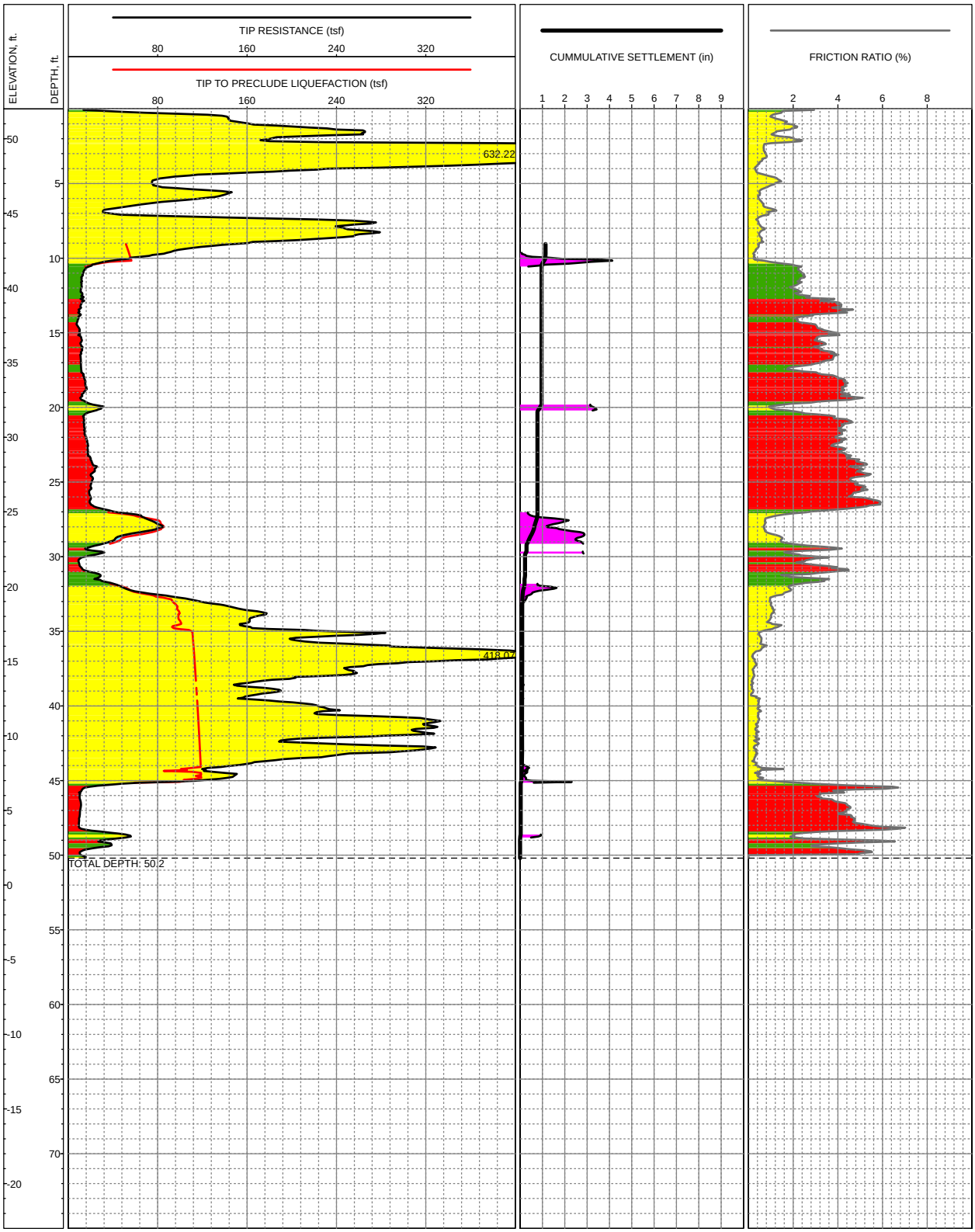
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-1, M6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-11

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,232,173.97N 5,786,405.43W
SURFACE EL: 52.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

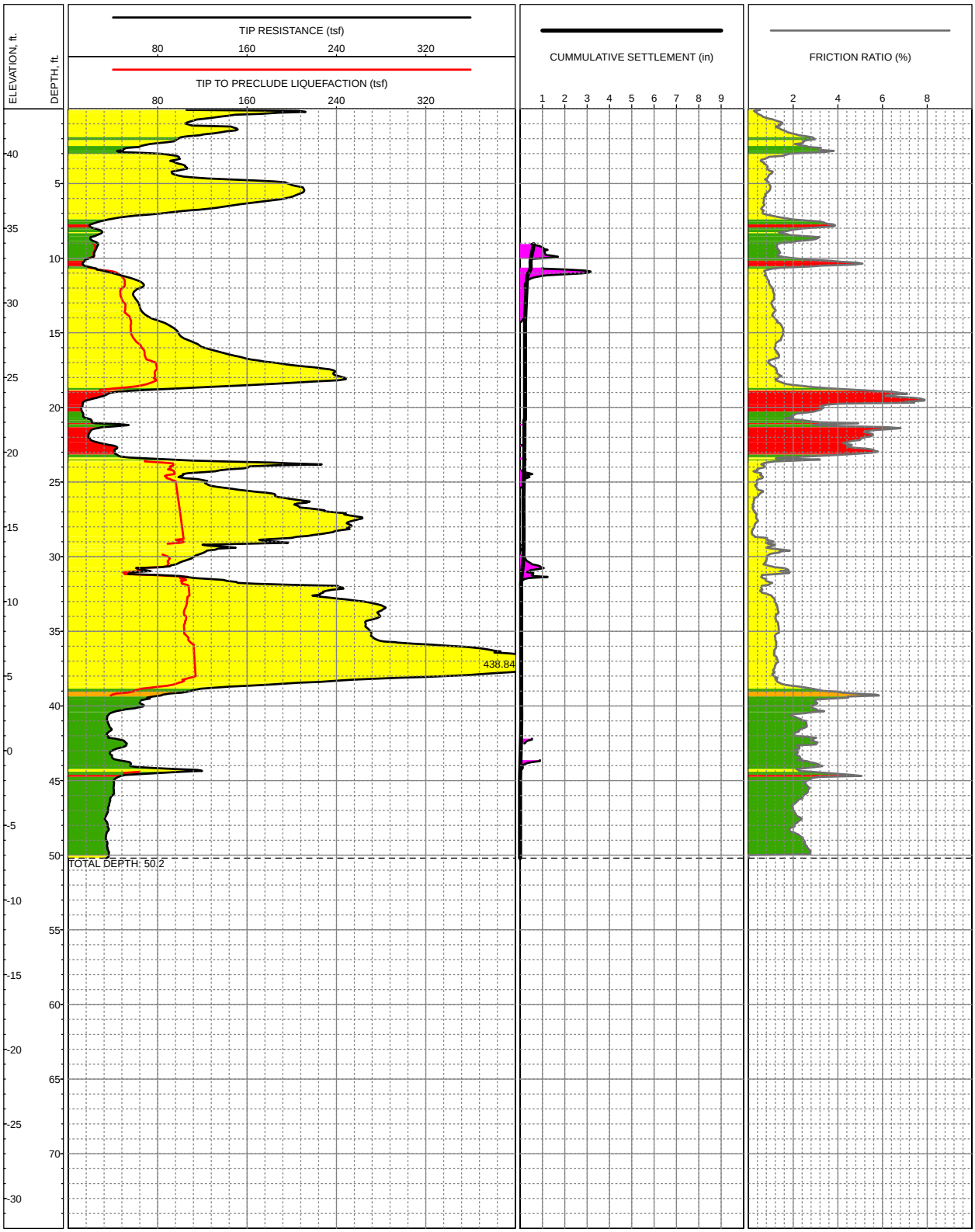
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-2, M6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-12

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,231,087.37N 5,784,635.85W
SURFACE EL: 43.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

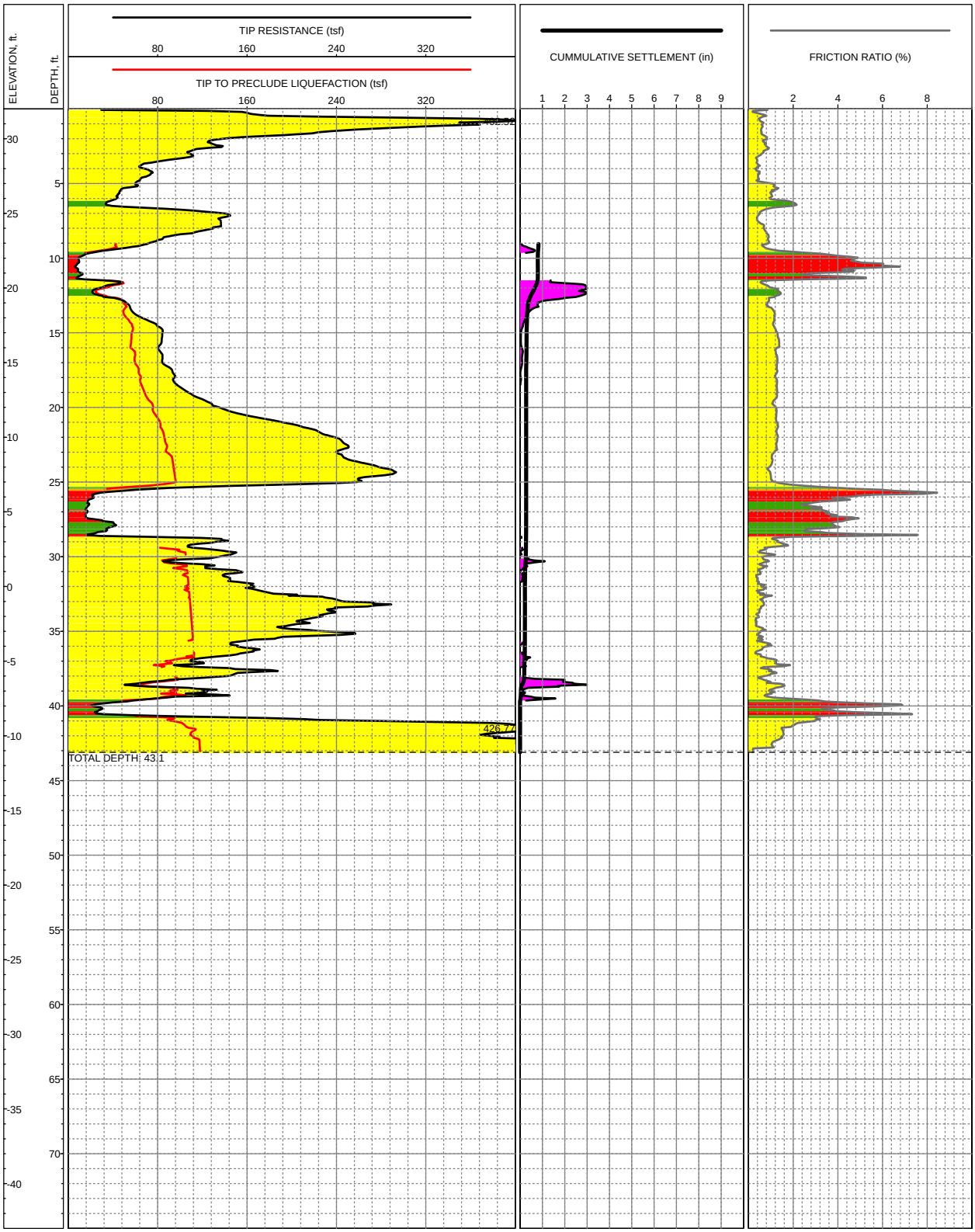
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-3, M6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-13

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,231,221.08N 5,782,003.06W
SURFACE EL: 32.0ft +/- (MSL)
COMPLETION DEPTH: 43.1ft
TESTDATE: 7/22/2008

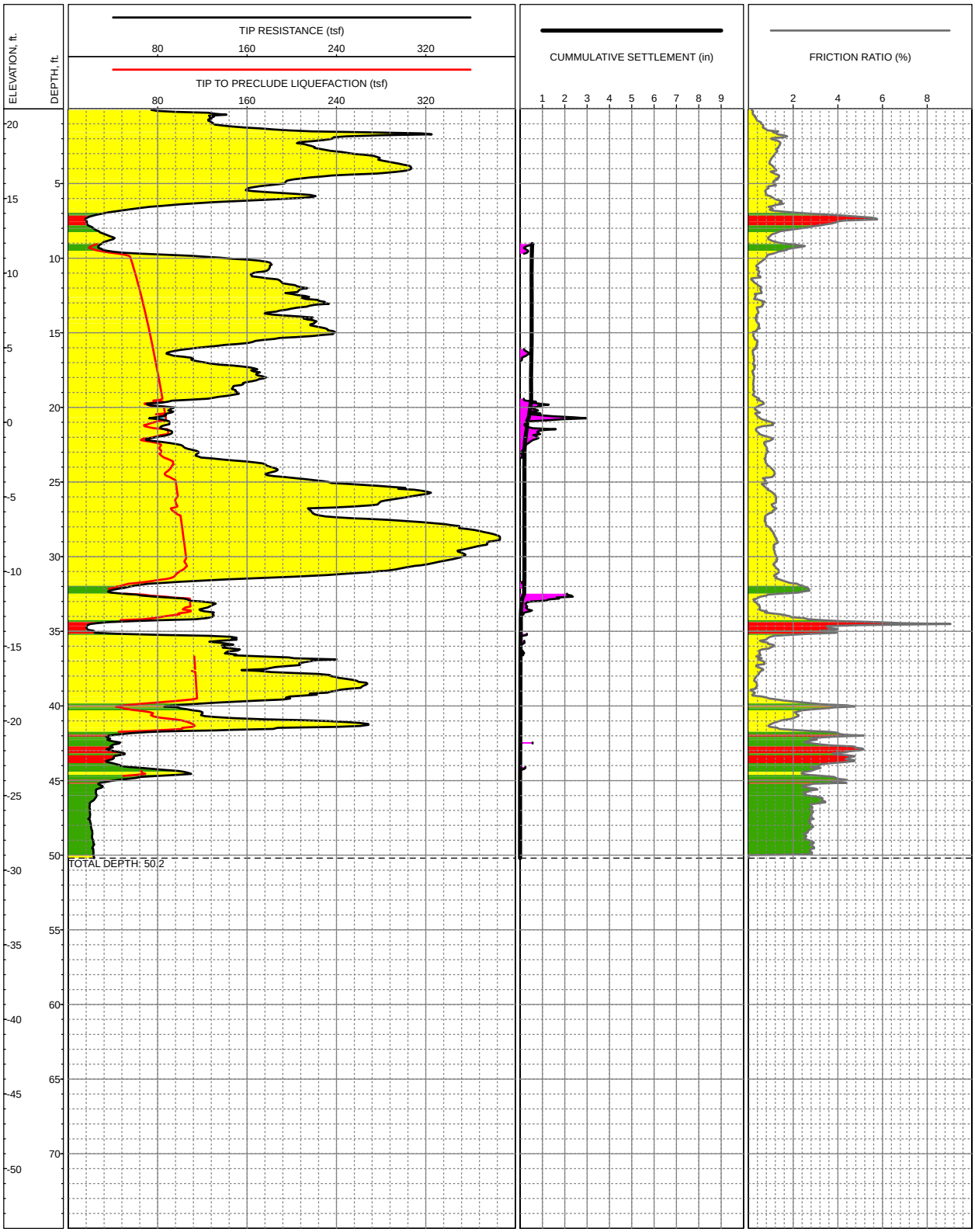
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-4, M6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-14

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,232,390.00N 5,778,074.64W
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

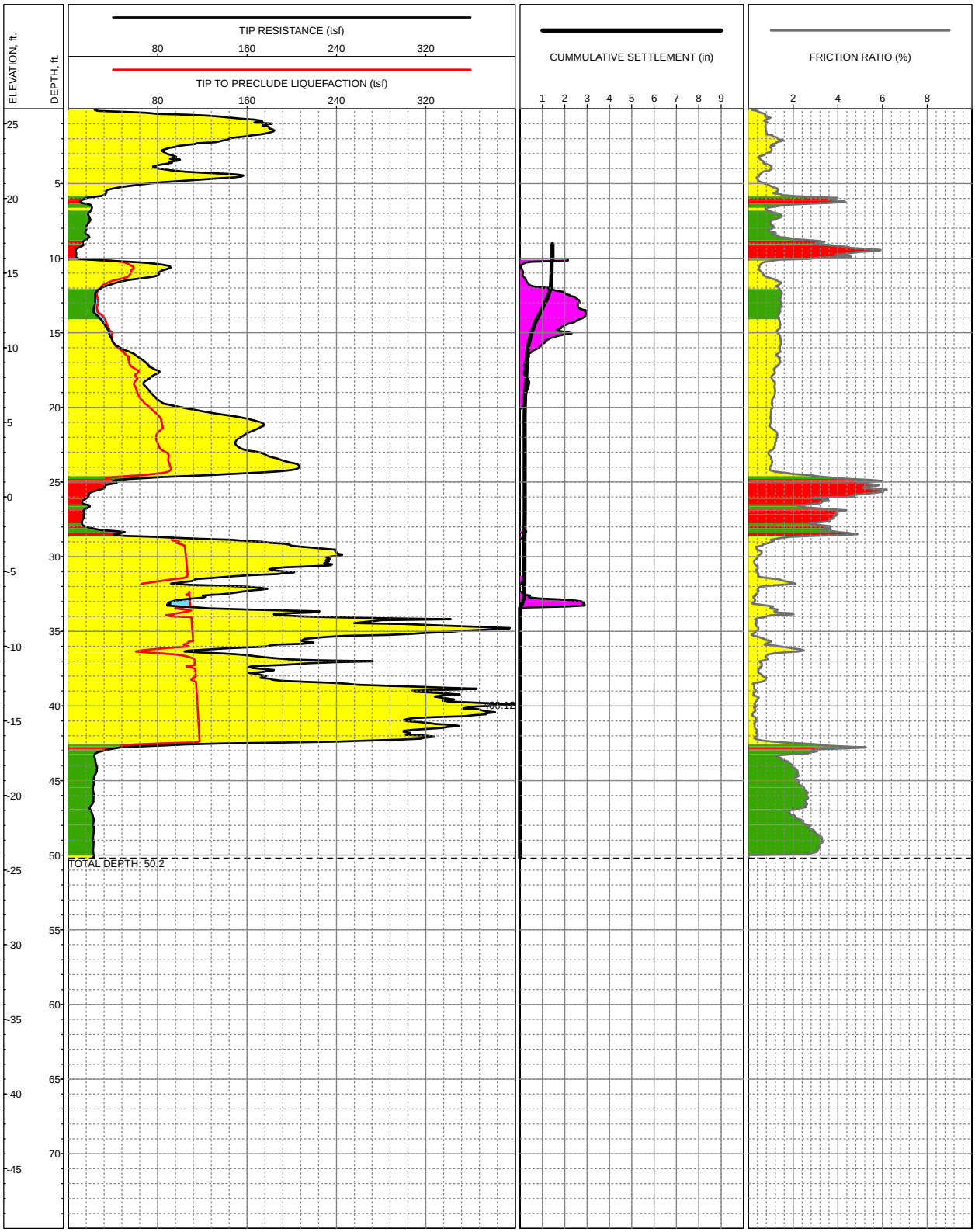
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-5, M6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-15

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



COORDINATES: 2,231,397.63N 5,779,691.56W
SURFACE EL: 26.0ft +/- (MSL)
COMPLETION DEPTH: 50.2ft
TESTDATE: 7/22/2008

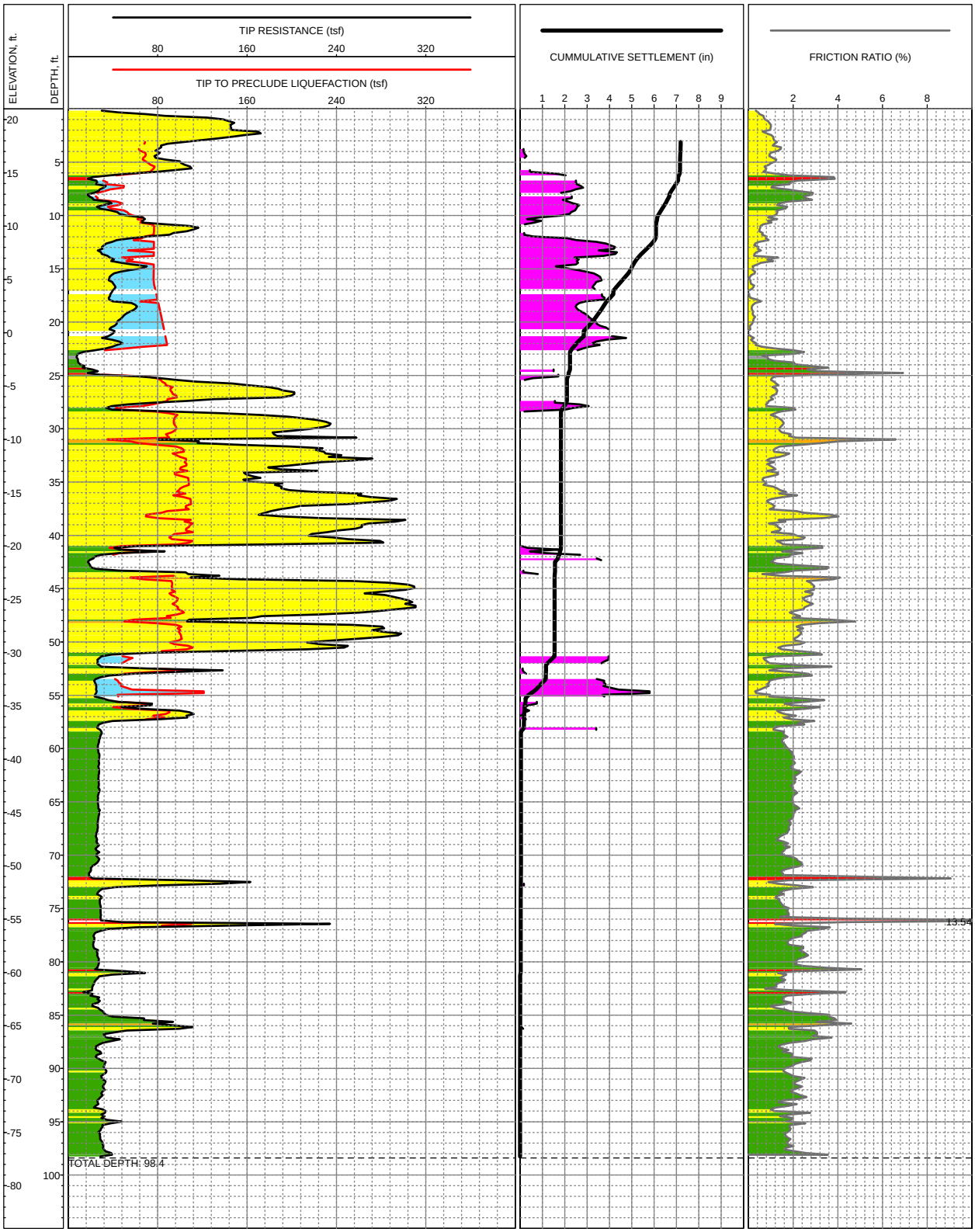
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: J Blanchard

LOG OF CPT C-6, M6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-16

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPT\2008\Logs\Logs_Liq_2008_July\MXD\CPTLogs_Liq.mxd 08/29/2008 ksheil



LOCATION: South Levee, Approx. 3350 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 98.4ft
TESTDATE: 3/5/2004

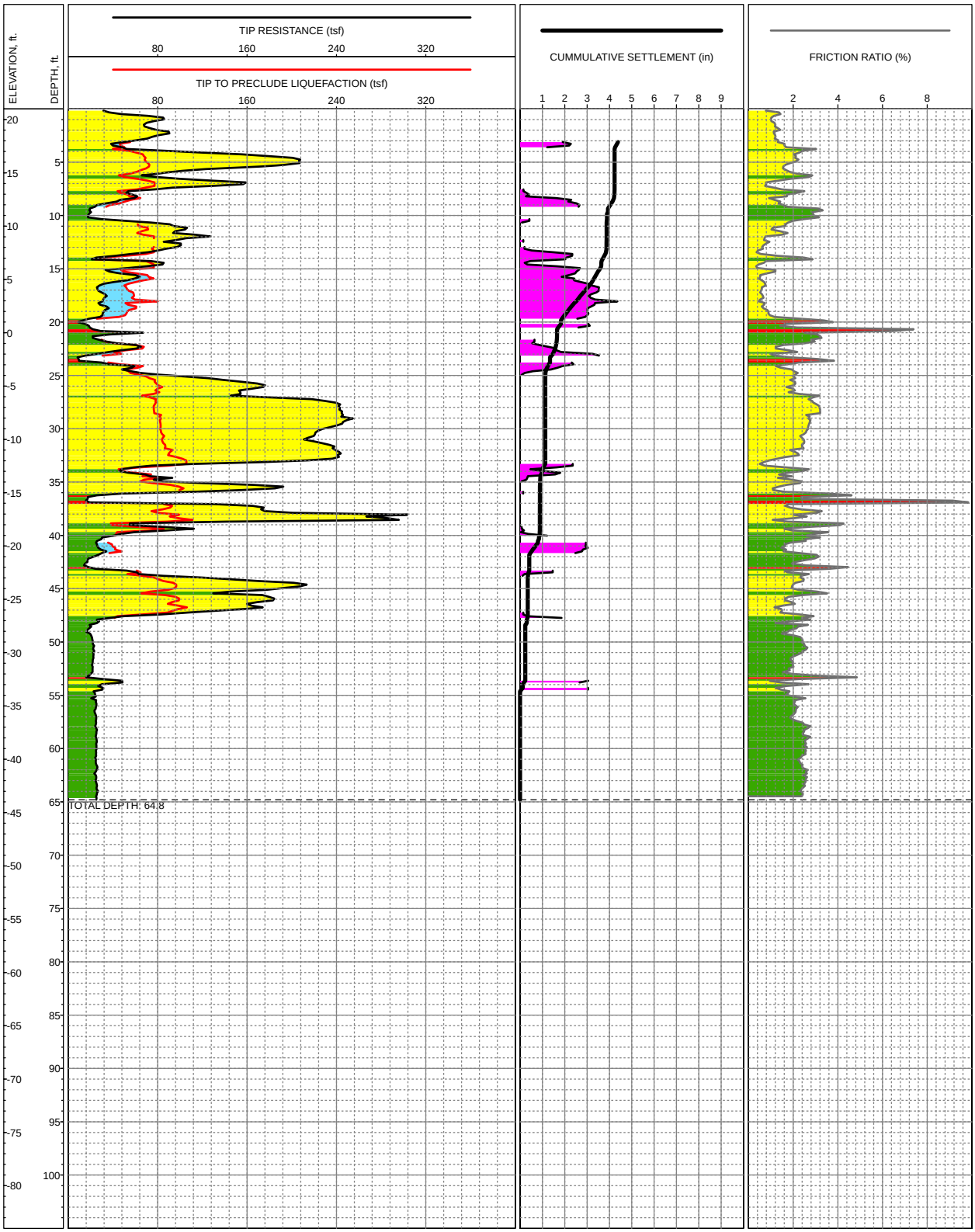
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J Blanchard

LOG OF CPT SOC035, M=6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-17

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_LiquM7.0_A0.46_2008_08_01\MXD\CPTLogs_Liq7_46.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3500 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 64.8ft
TESTDATE: 3/5/2004

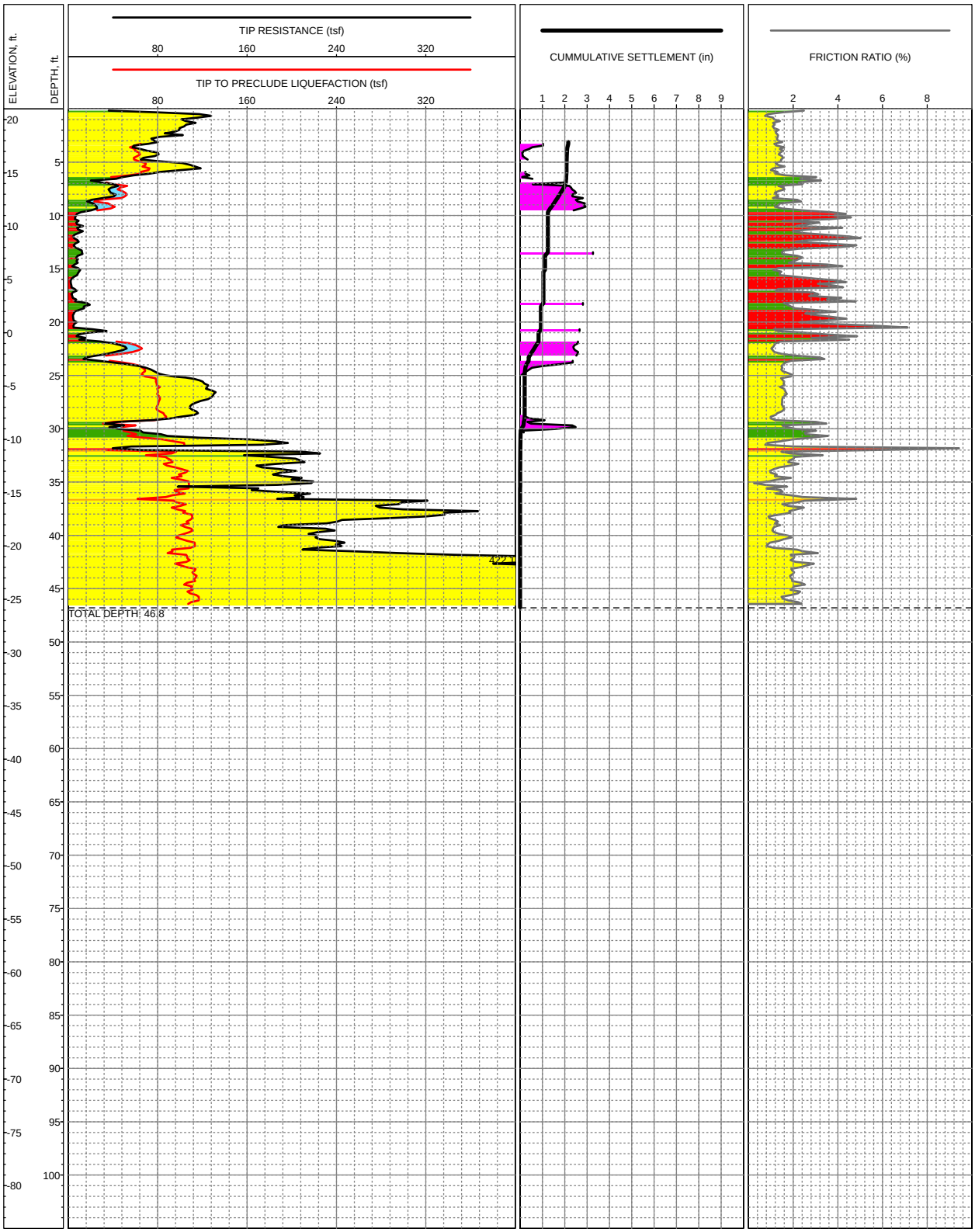
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J Blanchard

LOG OF CPT SOC036, M=6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-18

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_LiquM7.0_A0.46_2008_08_01\MXD\CPTLogs_Liq7_46.mxd.08/29/2008.ksheil



LOCATION: South Levee, Approx. 3250 ft northwest of 22nd St. Bridge
SURFACE EL: 21.0ft +/- (MSL)
COMPLETION DEPTH: 46.8ft
TESTDATE: 3/5/2004

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: USGS
REVIEWED BY: J Blanchard

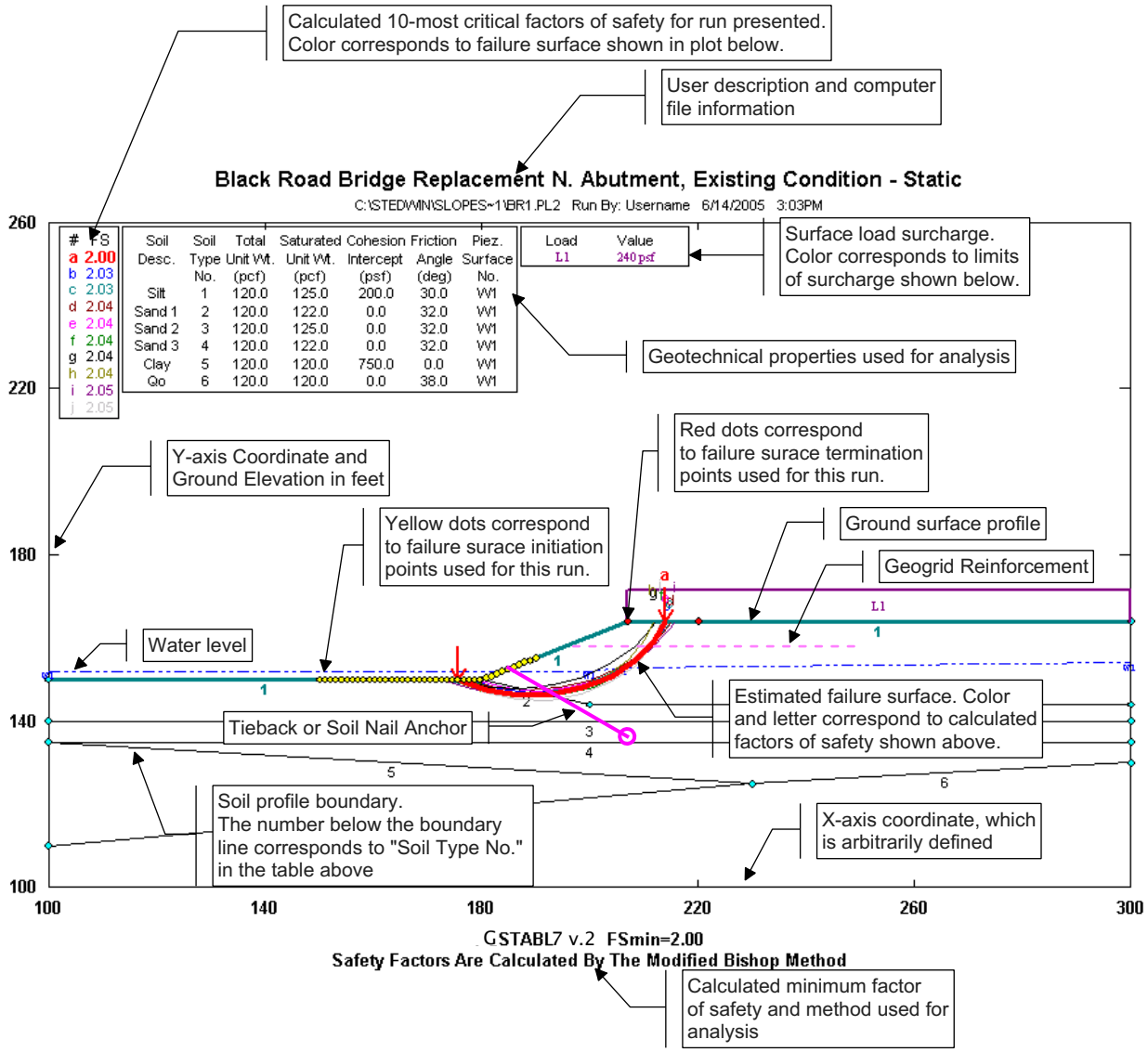
LOG OF CPT SOC037, M=6.5, a=0.25

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE C-19

N:\Projects\3014_SLOcounty\3014-029_Arroyo_Grande_Creek\Explorations\CPTUSGS_2004\Logs\Logs_LiquM7.0_A0.46_2008_08_01\MXD\CPTLogs_Liq7_46.mxd.08/29/2008.ksheil

APPENDIX D



Notes:

1. Plots are shown for run with least calculated factor of safety. Additional termination and initiation limits may have been considered. Typically over 100 surfaces are calculated for each run.

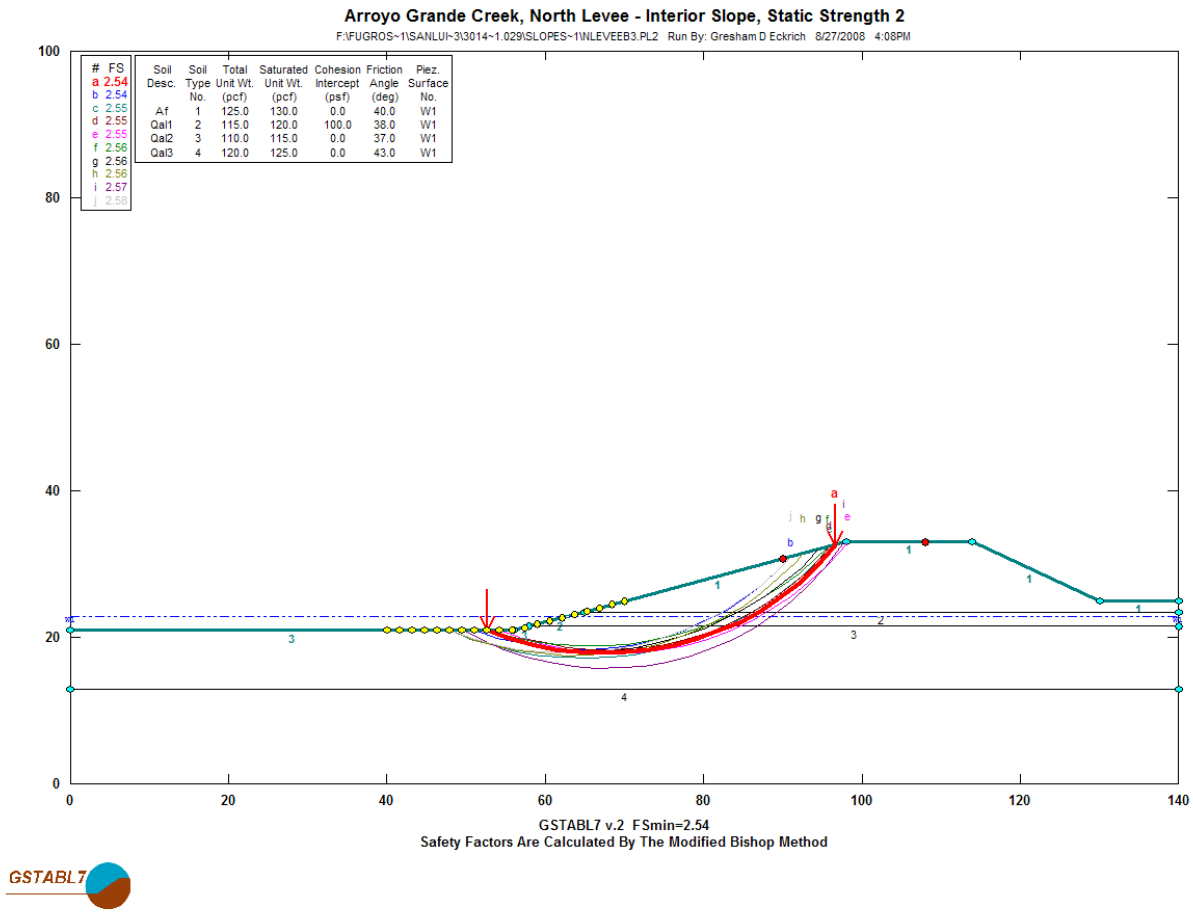
2. Discussion of the results and methodology is provided in the text of the report.

3. The surface and subsurface boundaries are approximate and represent only a generalization of interpreted and inferred subsurface conditions estimated from limited points of exploration.

KEY TO SLOPE STABILITY PLOTS

Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County,California

PLATE D-1



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **2.5**

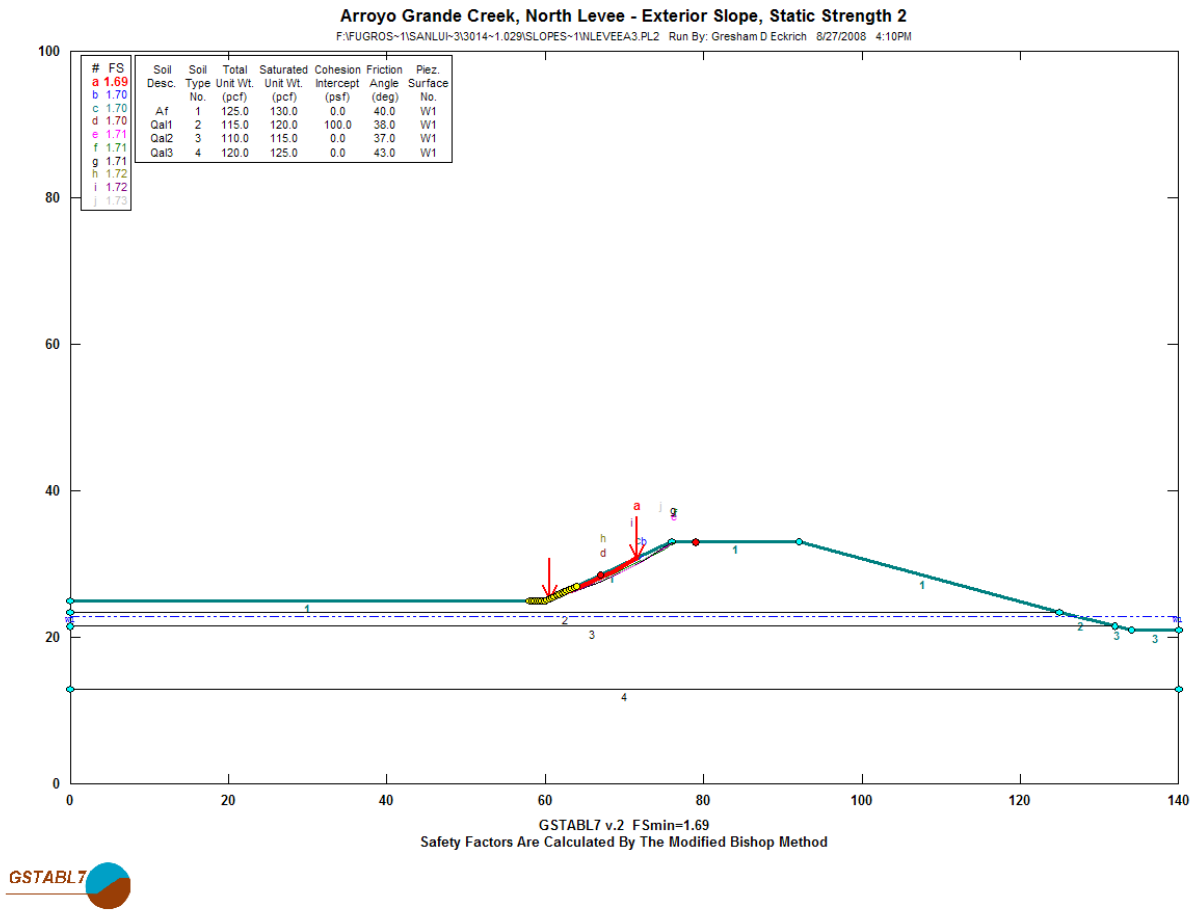
Pseudostatic Loading Condition: **1.5**

Pseudostatic Coefficient: **0.15**

Condition: **Existing Interior Slope, Static Loading**

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-2



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.7**

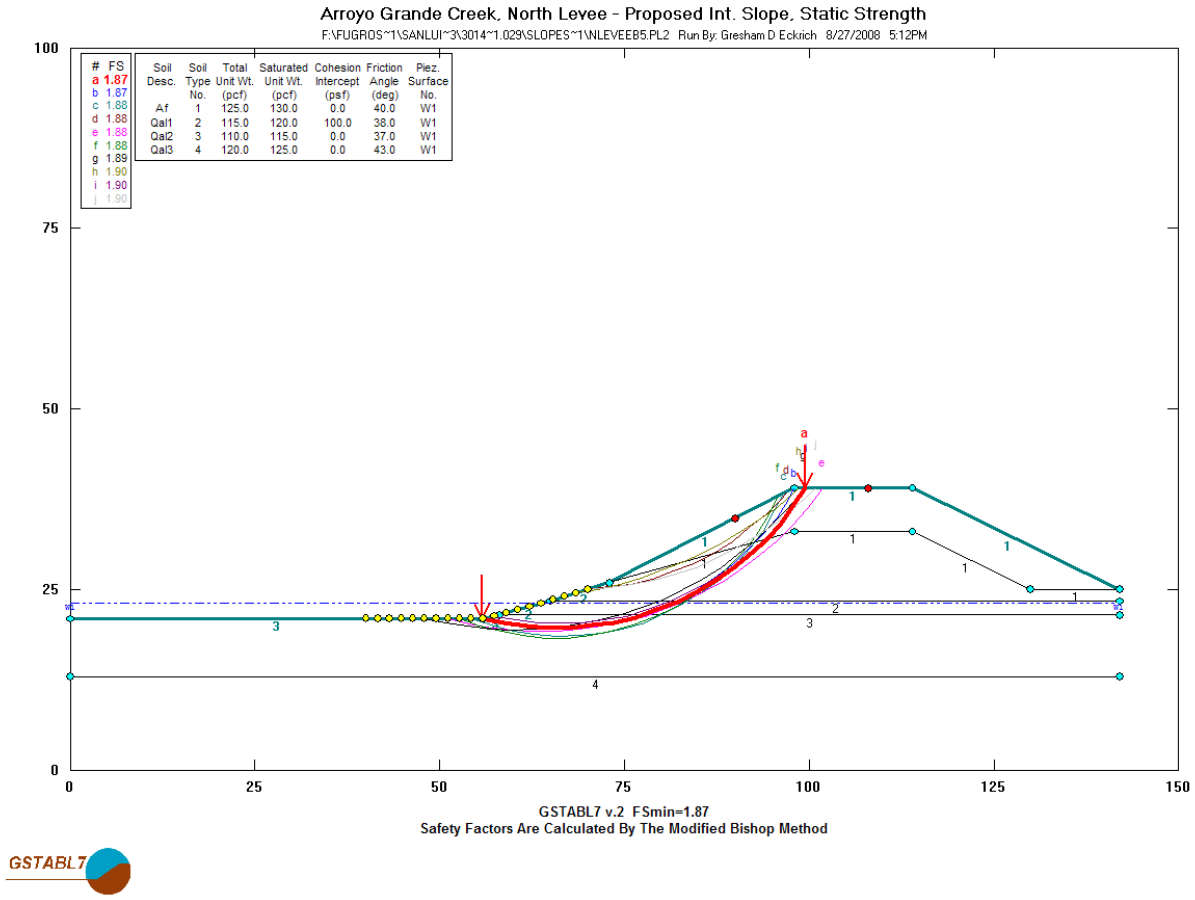
Pseudostatic Loading Condition: **1.2**

Pseudostatic Coefficient: **0.15**

Condition: **Existing Exterior Slope, Static Loading**

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-3



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.9**

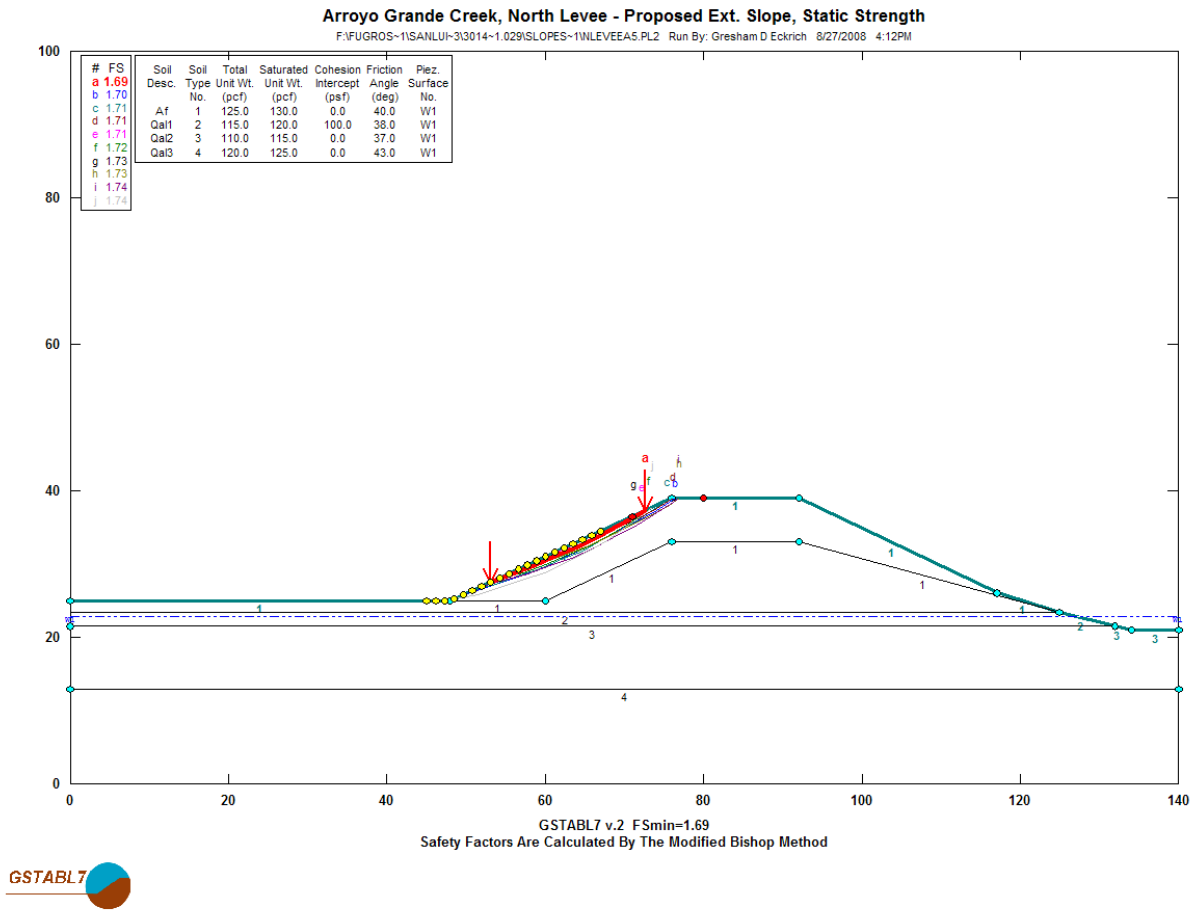
Pseudostatic Loading Condition: **1.3**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Interior Slope 1, Static Loading**

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-4



ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.7**

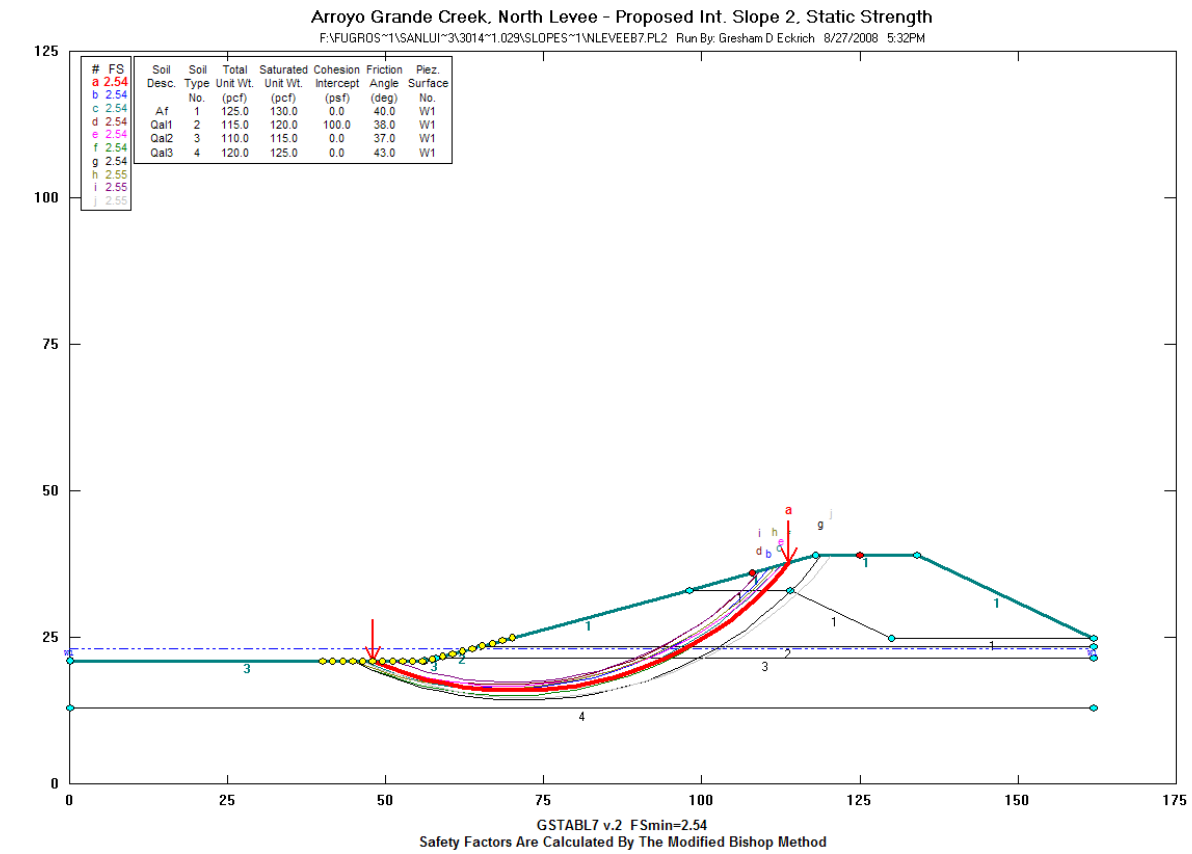
Pseudostatic Loading Condition: **1.2**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Exterior Slope 1, Static Loading**

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-5



ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **2.5**

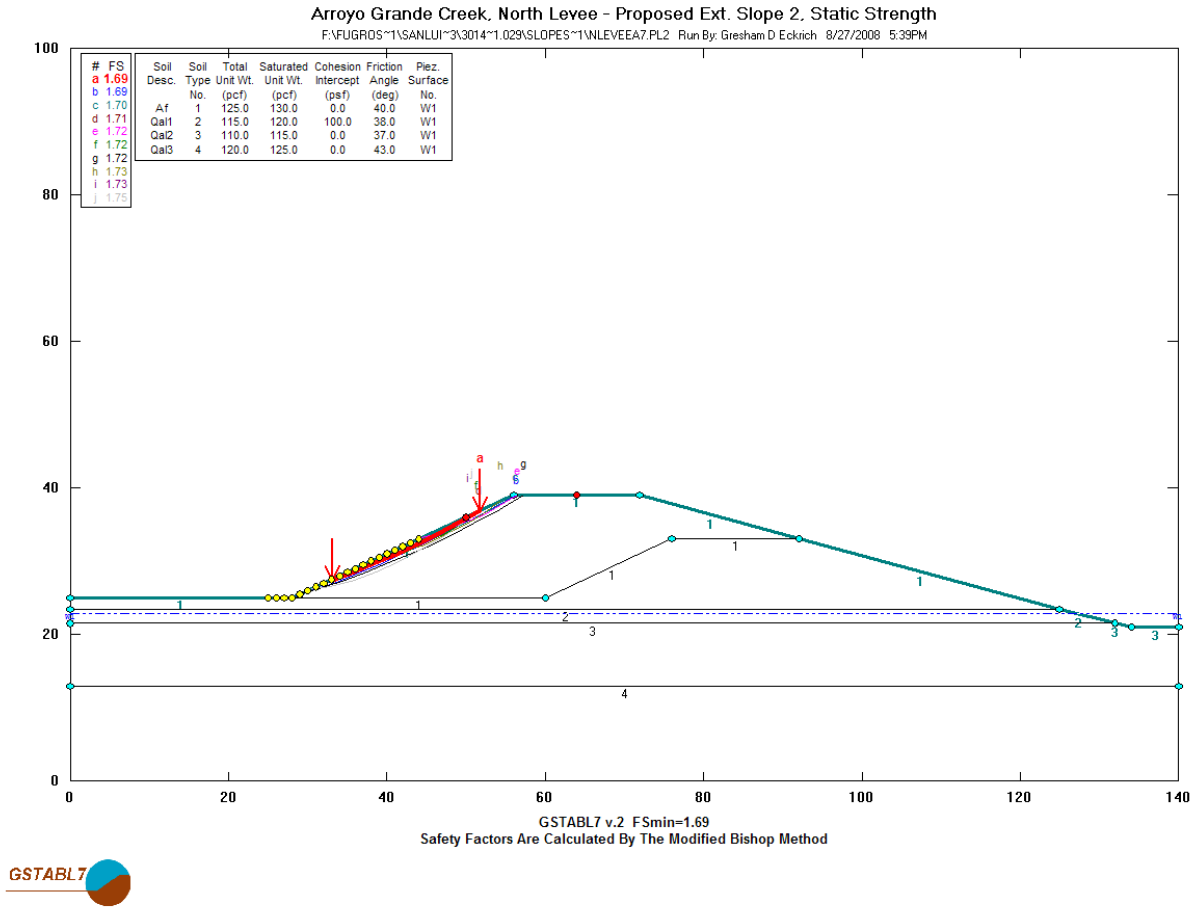
Pseudostatic Loading Condition: **1.5**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Interior Slope 2, Static Loading**

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-6



ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.7**

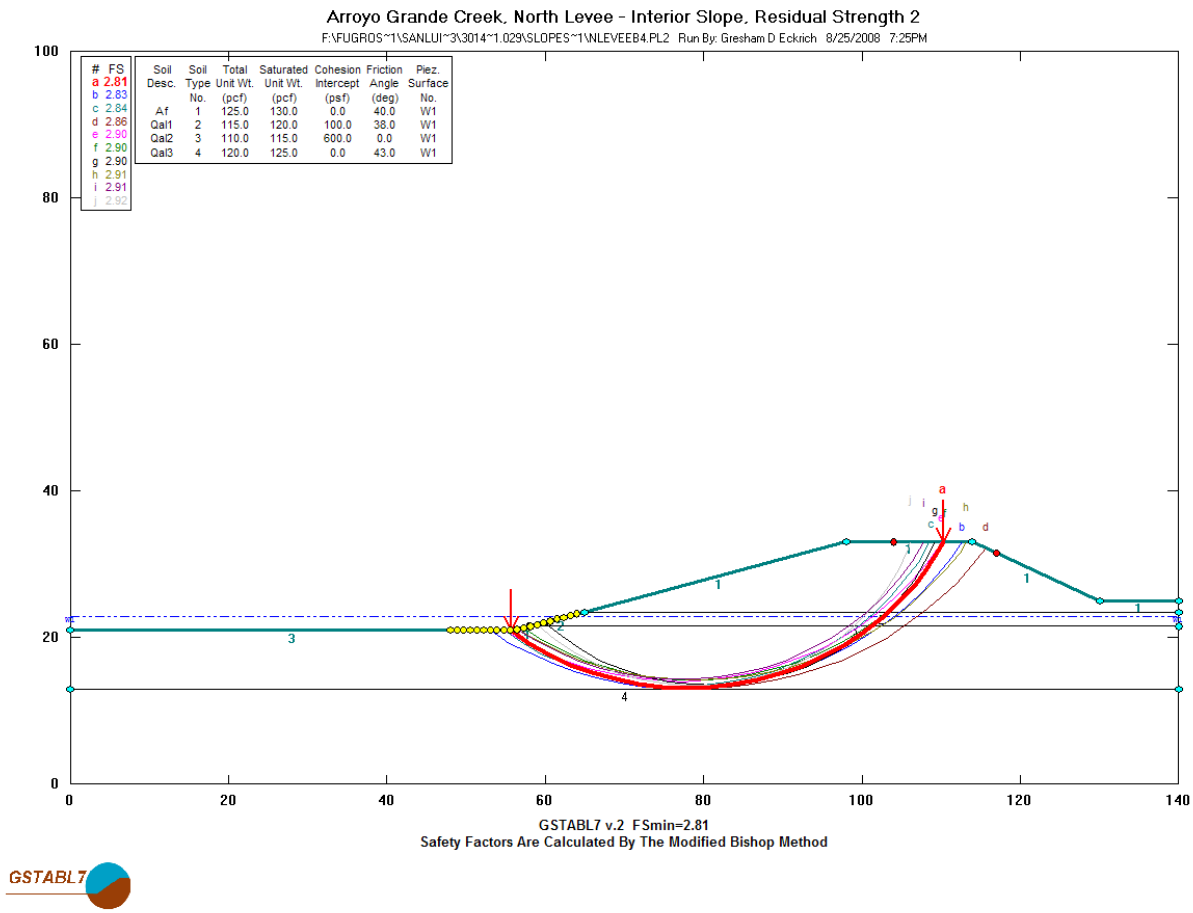
Pseudostatic Loading Condition: **1.2**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Exterior Slope 2, Static Loading**

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-7



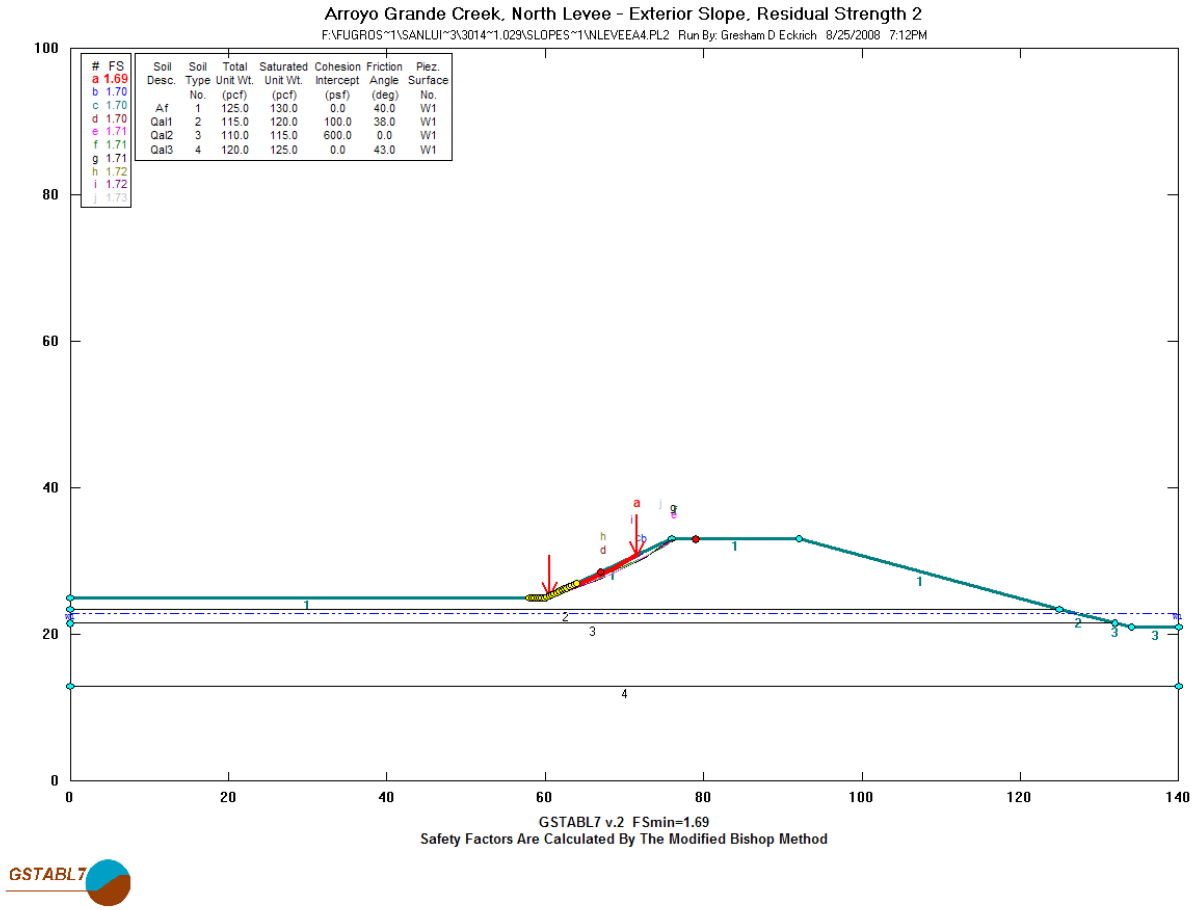
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 2.5

Condition: Existing Interior Slope

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-8



GSTABL7

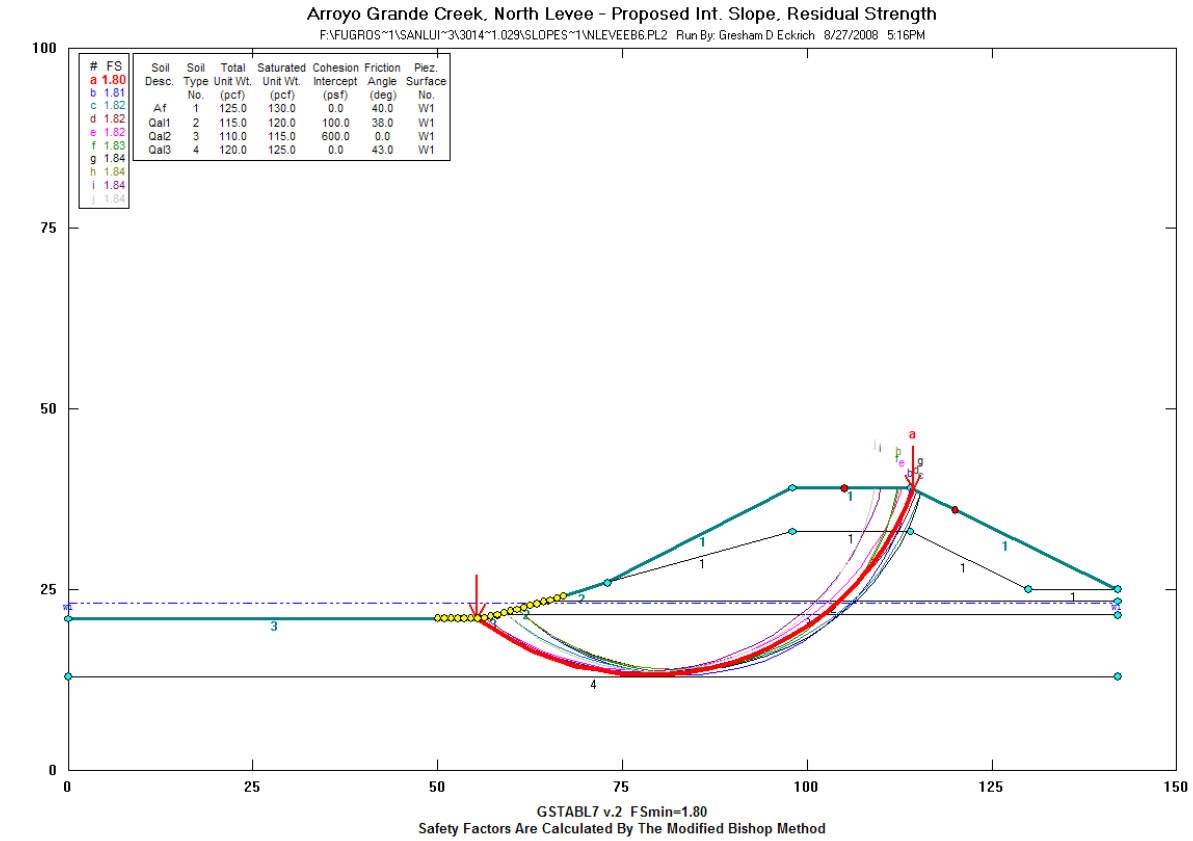
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 1.7

Condition: Existing Exterior Slope

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-9



GSTABL7

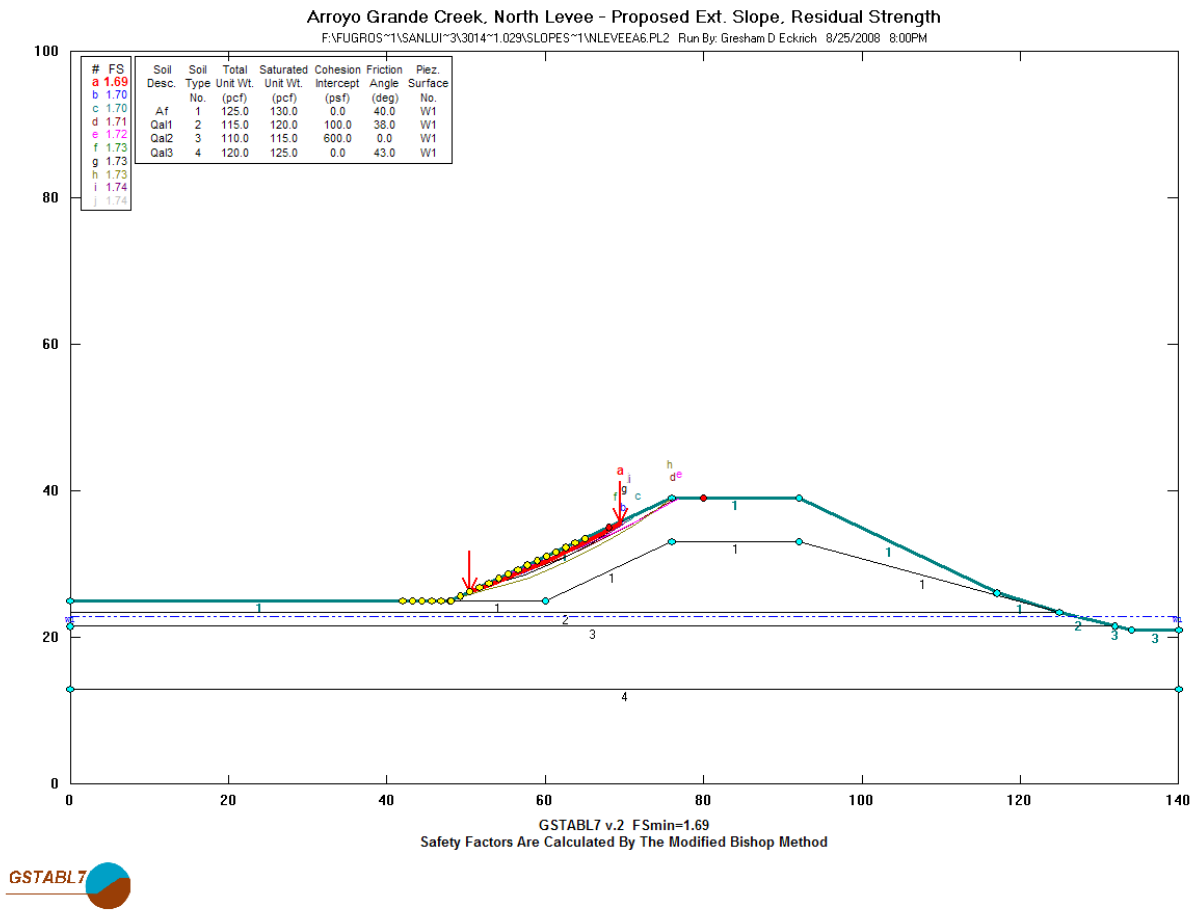
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 1.8

Condition: Proposed Interior Slope 1

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-10



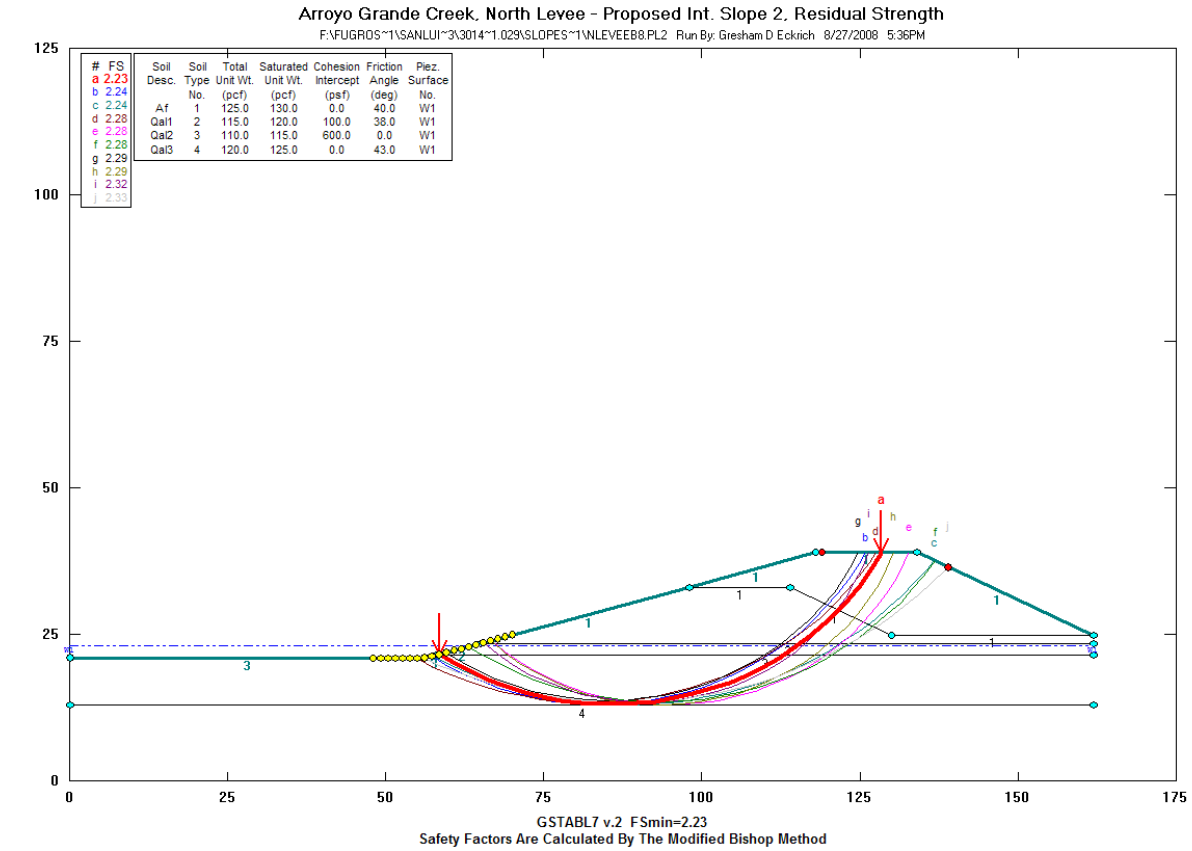
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 1.7

Condition: Proposed Exterior Slope 1

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-11



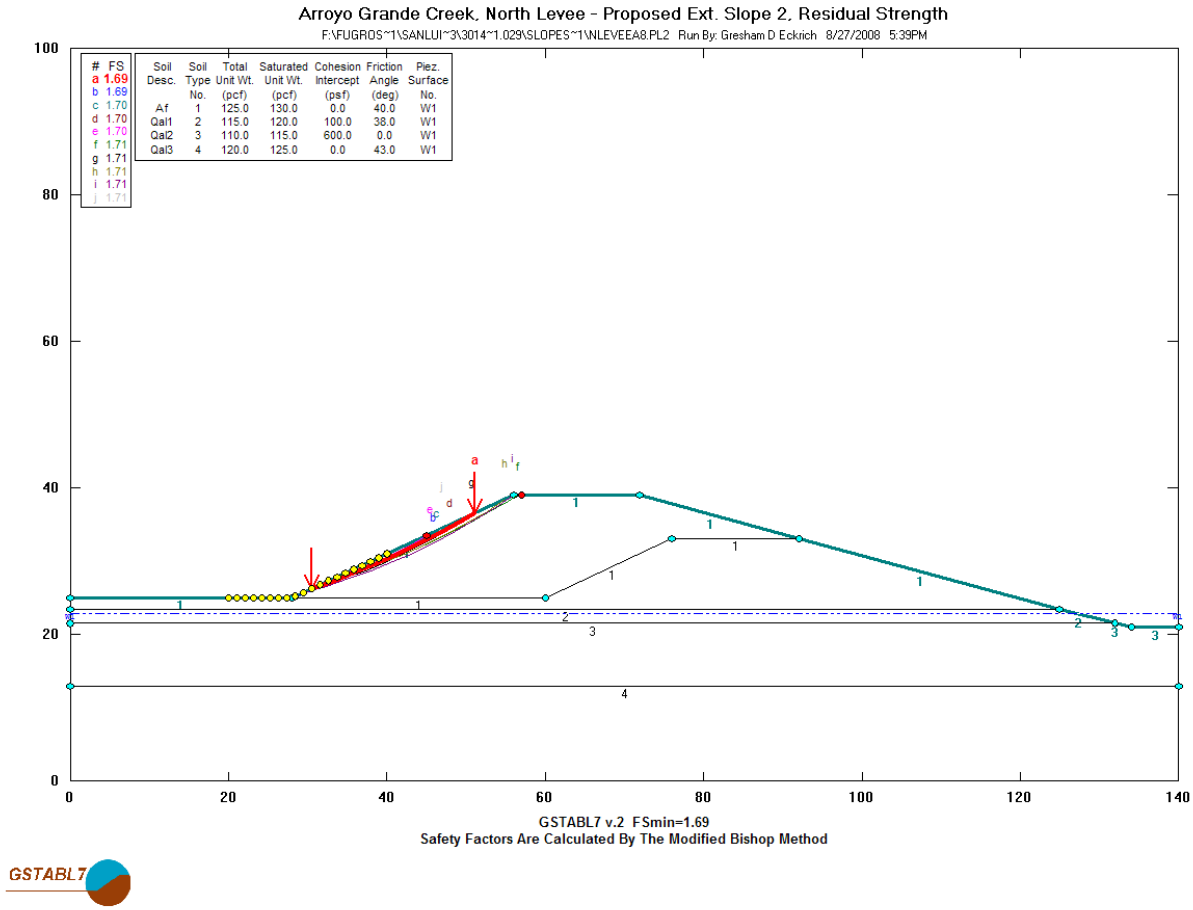
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 2.2

Condition: Proposed Interior Slope 2

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-12



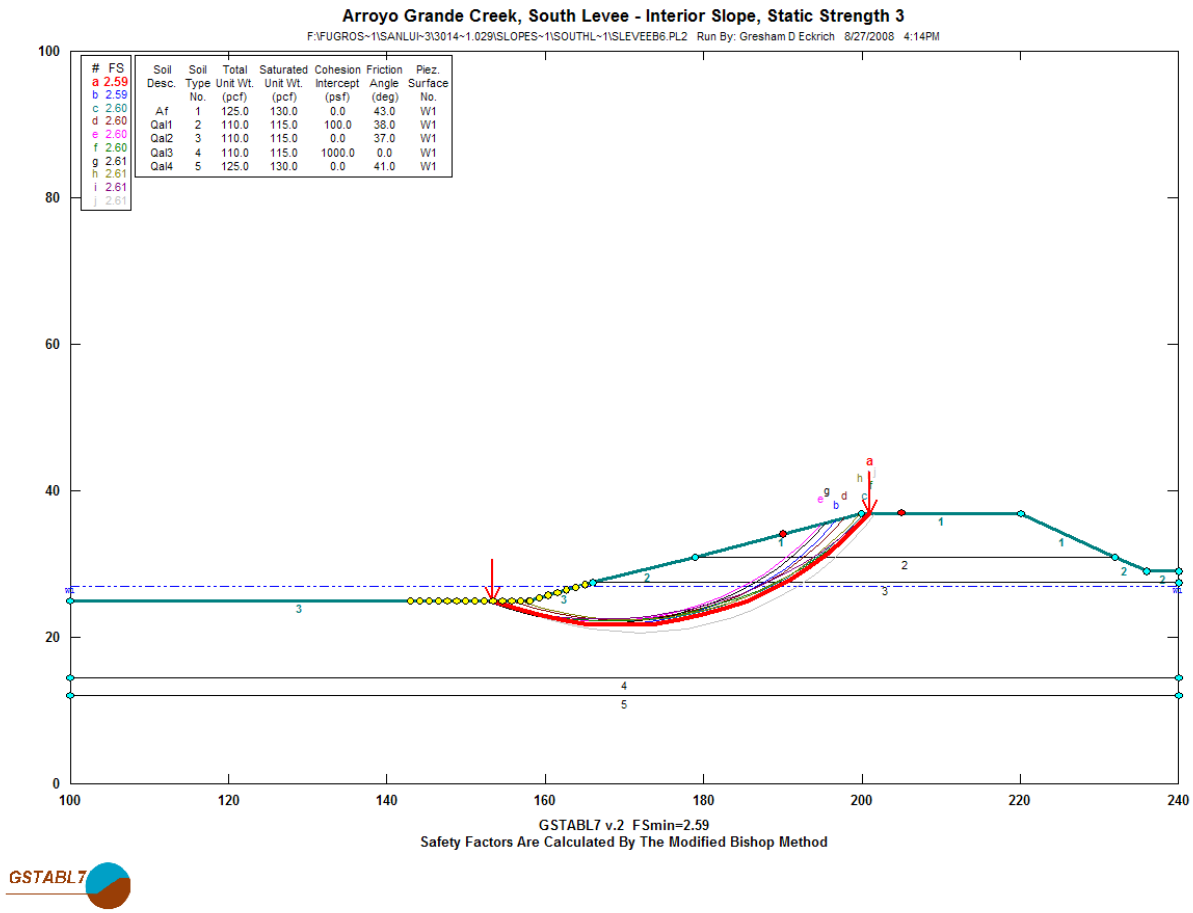
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 1.7

Condition: Proposed Exterior Slope 2

SLOPE STABILITY PLOT FOR NORTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-13



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **2.6**

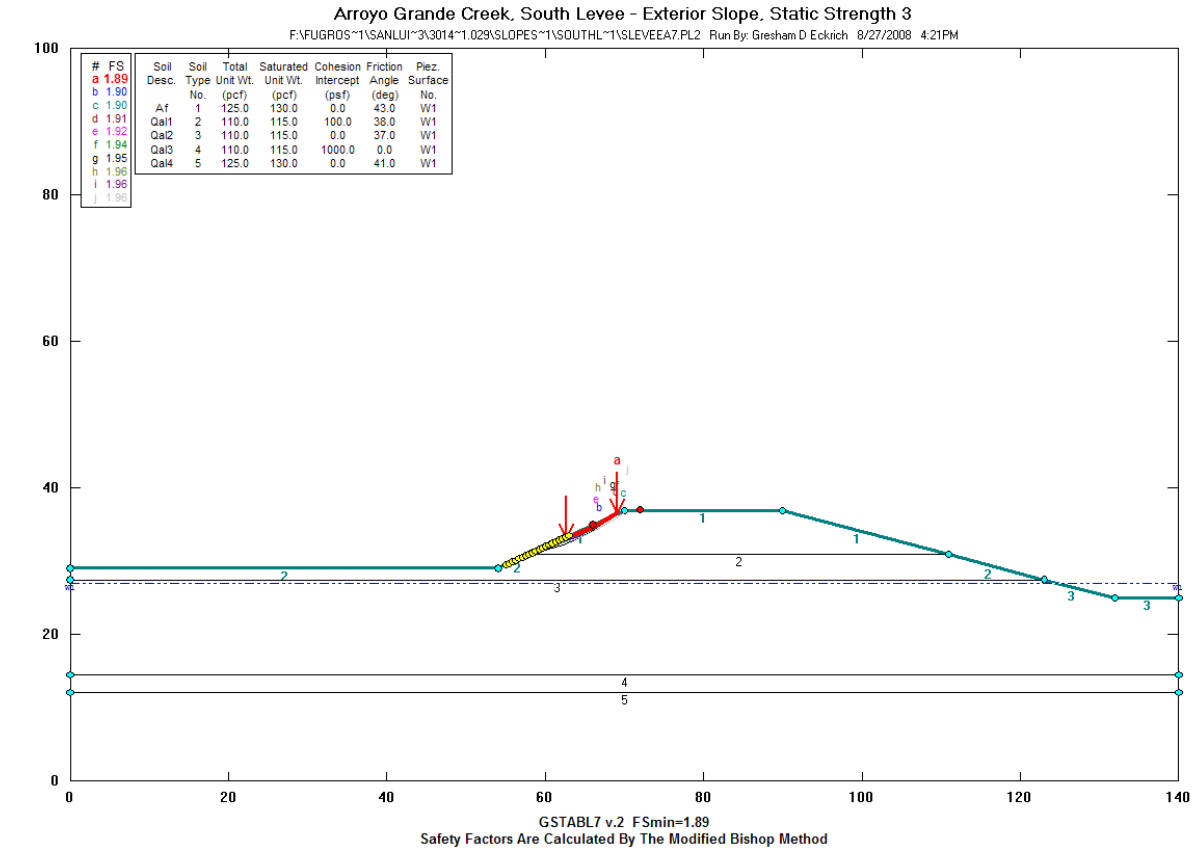
Pseudostatic Loading Condition: **1.5**

Pseudostatic Coefficient: **0.15**

Condition: **Existing Interior Slope, Static Loading**

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-14



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.9**

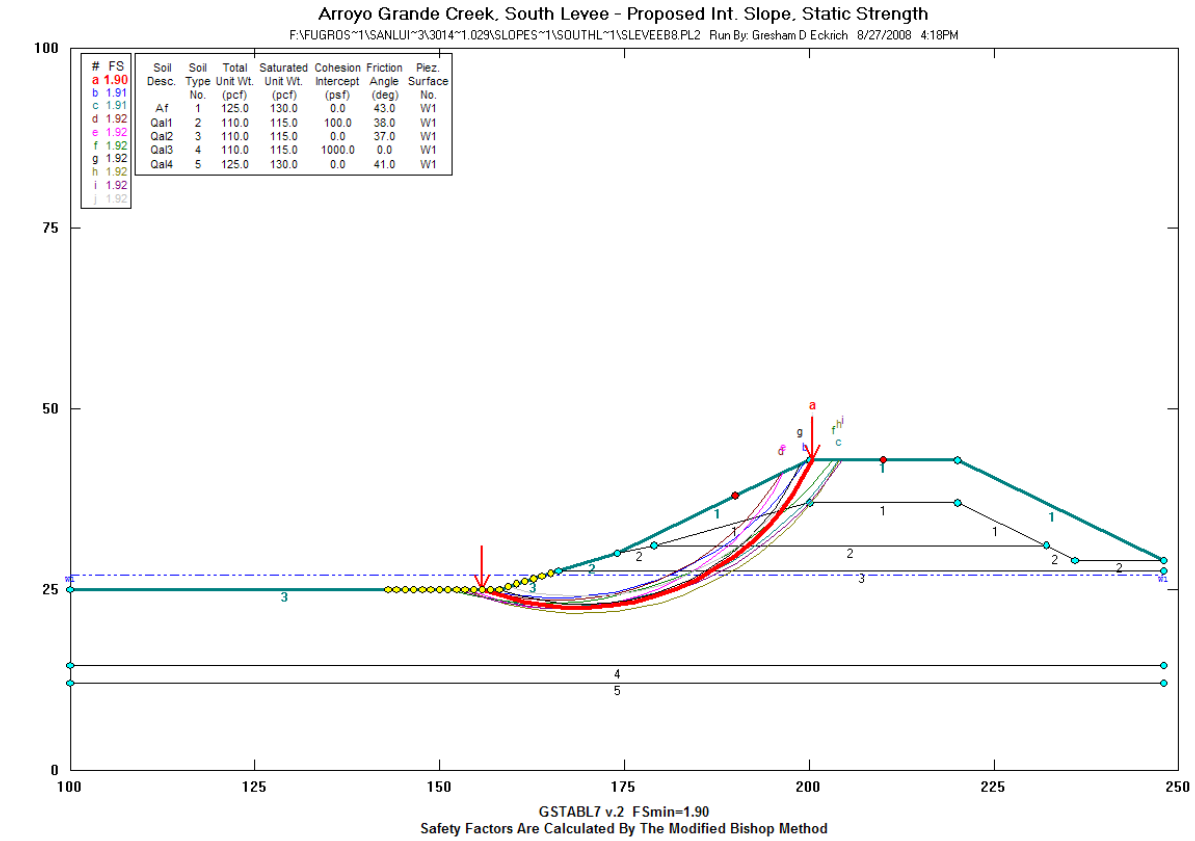
Pseudostatic Loading Condition: **1.3**

Pseudostatic Coefficient: **0.15**

Condition: **Existing Exterior Slope, Static Loading**

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-15



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.9**

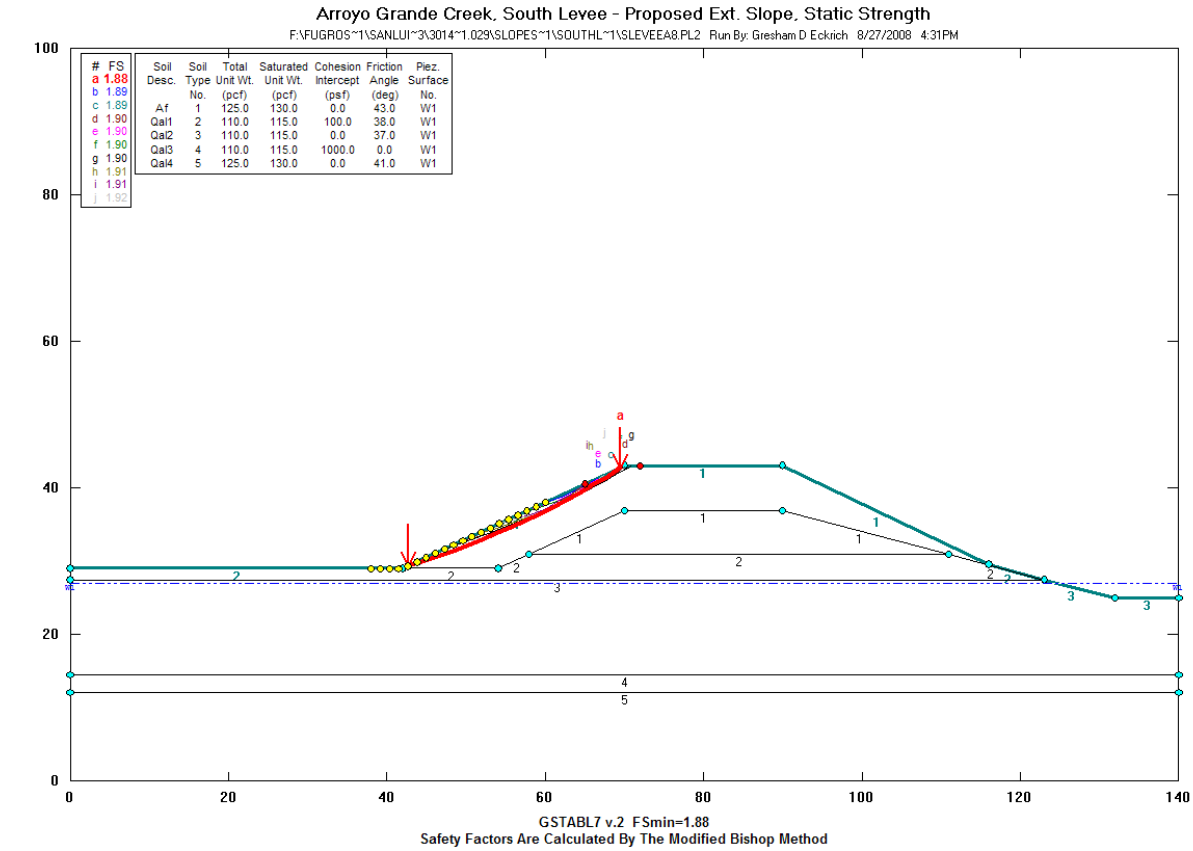
Pseudostatic Loading Condition: **1.3**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Interior Slope 1, Static Loading**

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-16



ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.9**

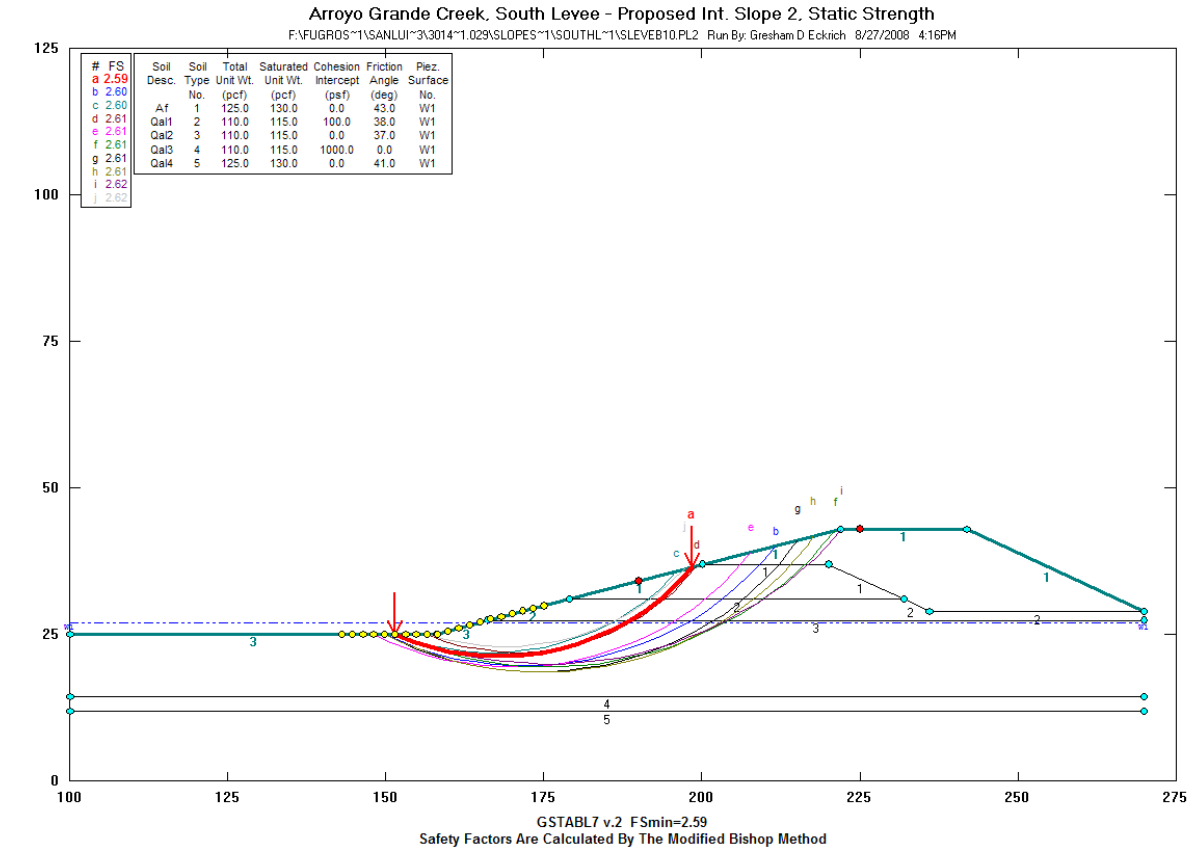
Pseudostatic Loading Condition: **1.3**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Exterior Slope 1, Static Loading**

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-17



ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **2.6**

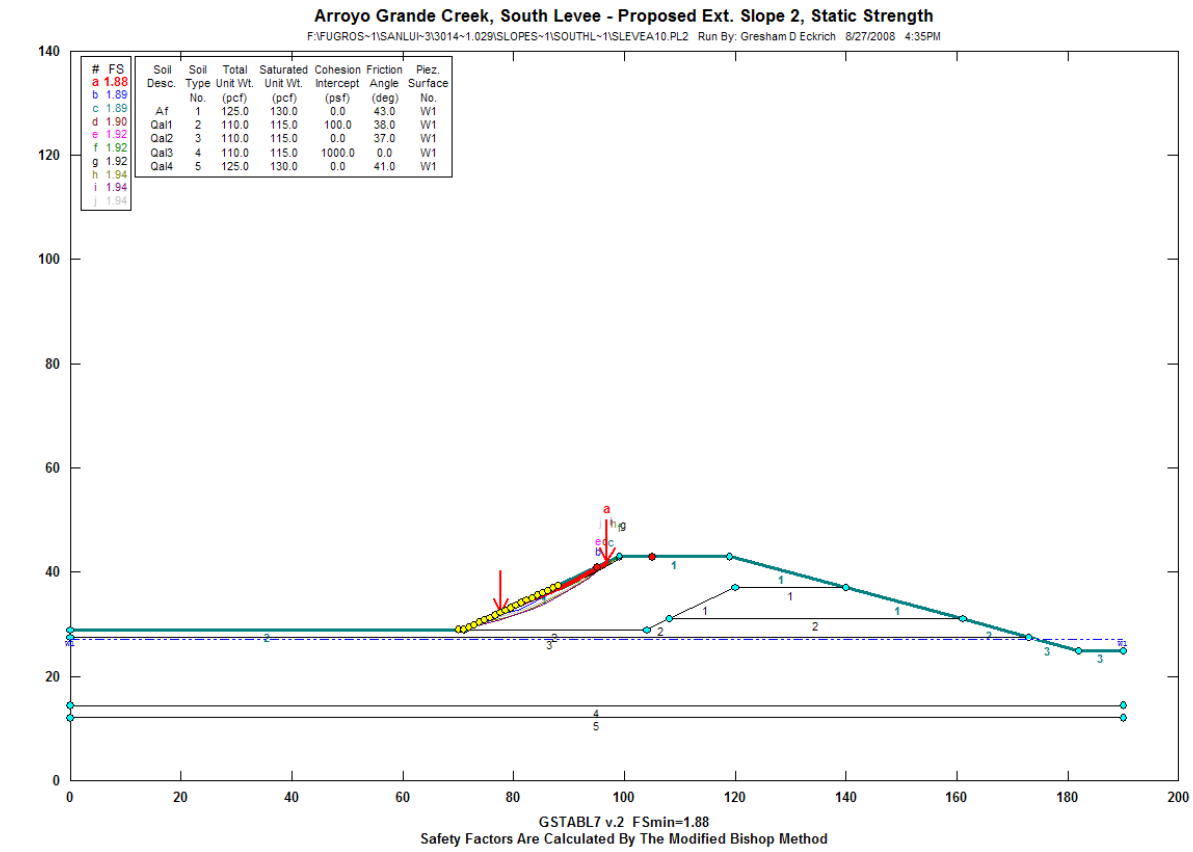
Pseudostatic Loading Condition: **1.5**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Interior Slope 2, Static Loading**

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-18



GSTABL7

ESTIMATED FACTORS OF SAFETY

Static Loading Condition: **1.9**

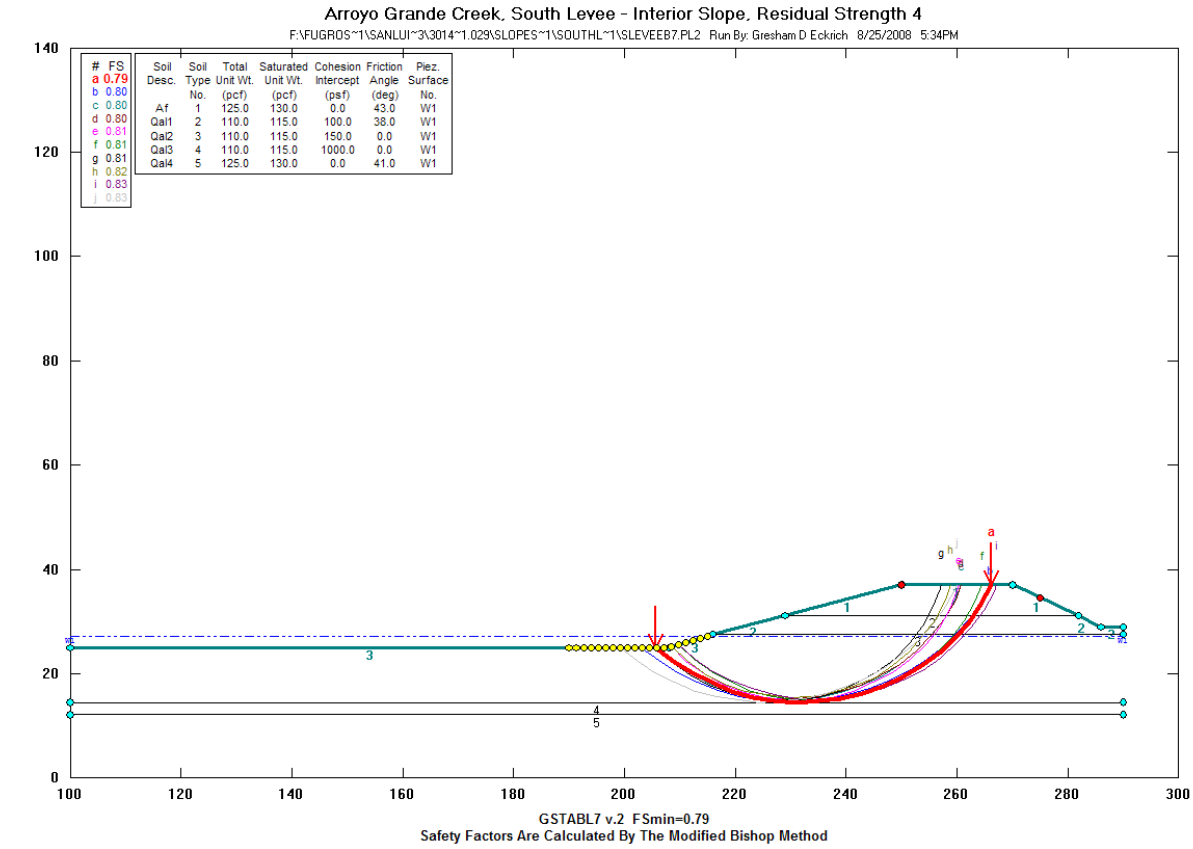
Pseudostatic Loading Condition: **1.3**

Pseudostatic Coefficient: **0.15**

Condition: **Proposed Exterior Slope 2, Static Loading**

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-19



GSTABL7

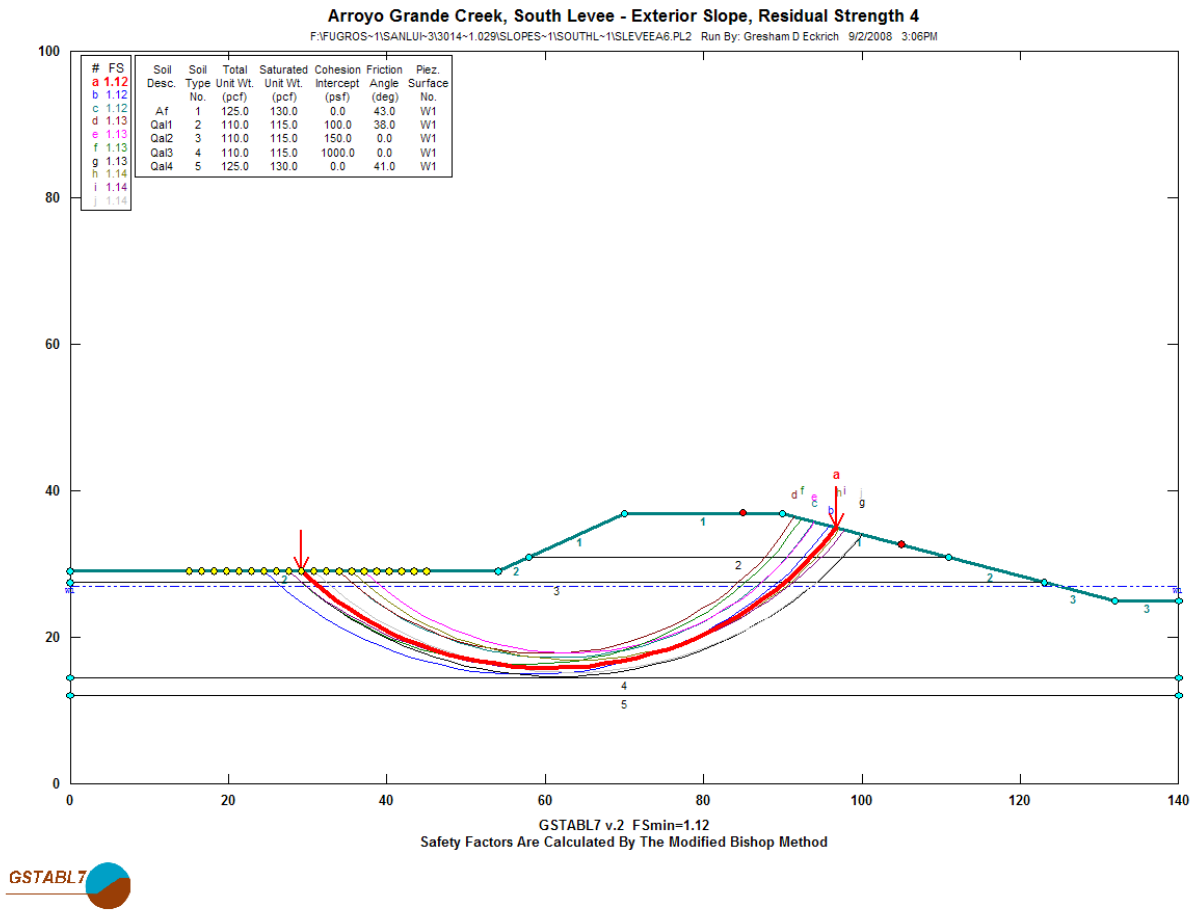
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 0.8

Condition: Existing Interior Slope

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-20



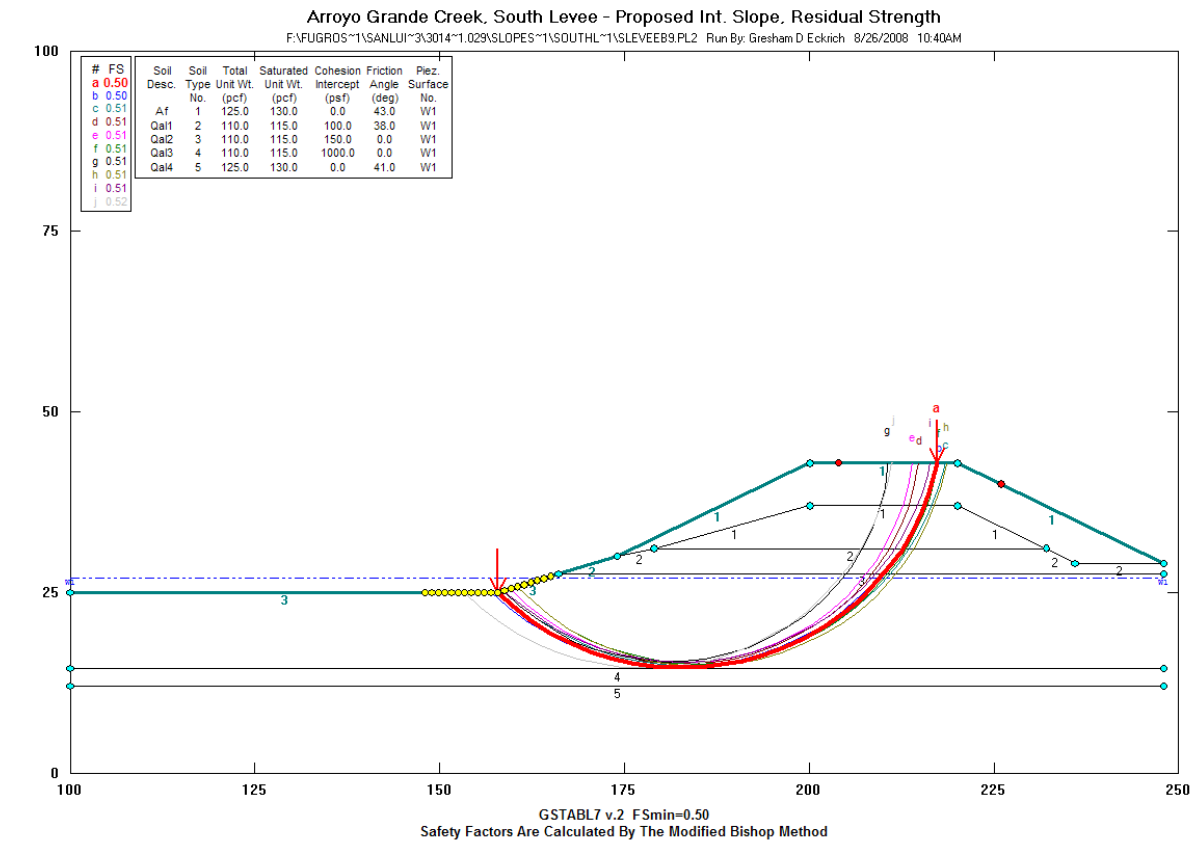
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 1.1

Condition: Existing Exterior Slope

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-21



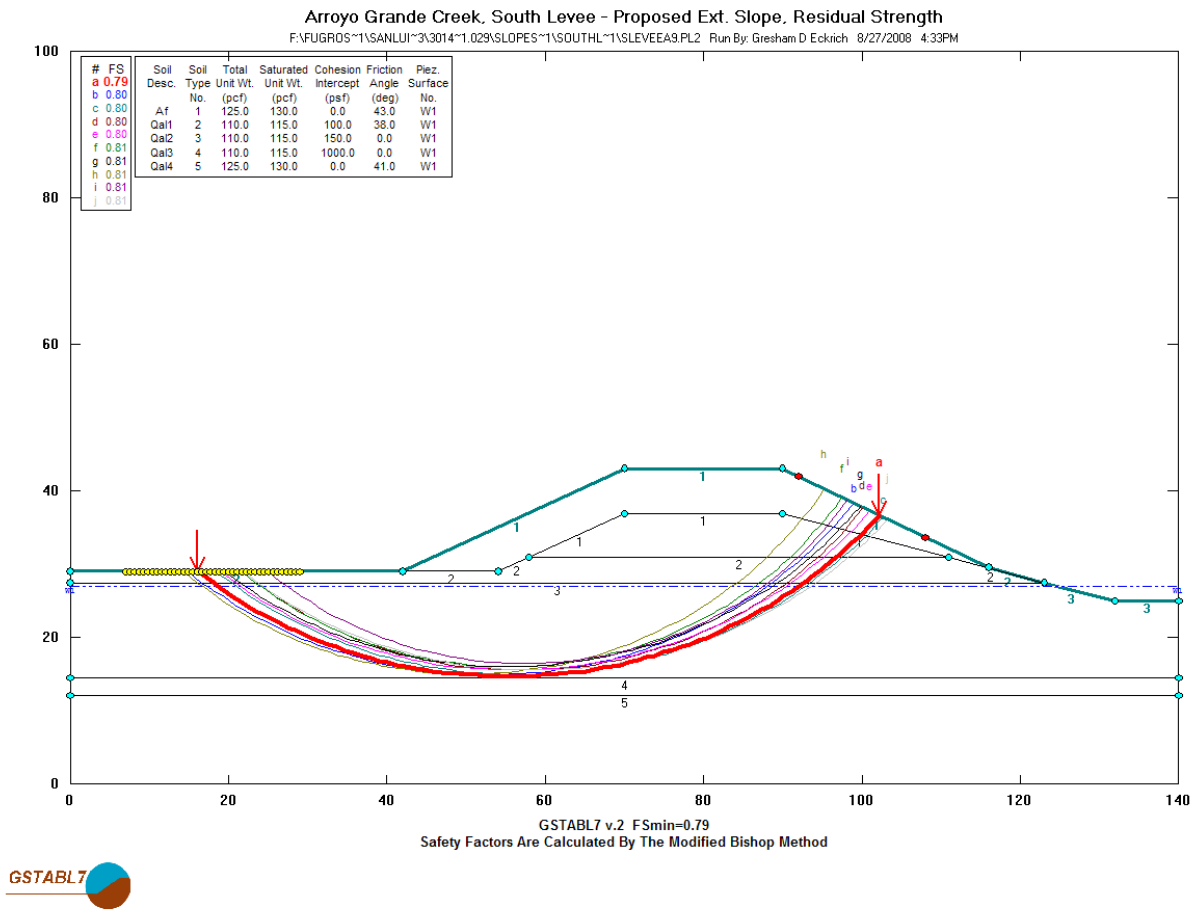
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 0.5

Condition: Proposed Interior Slope 1

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-22



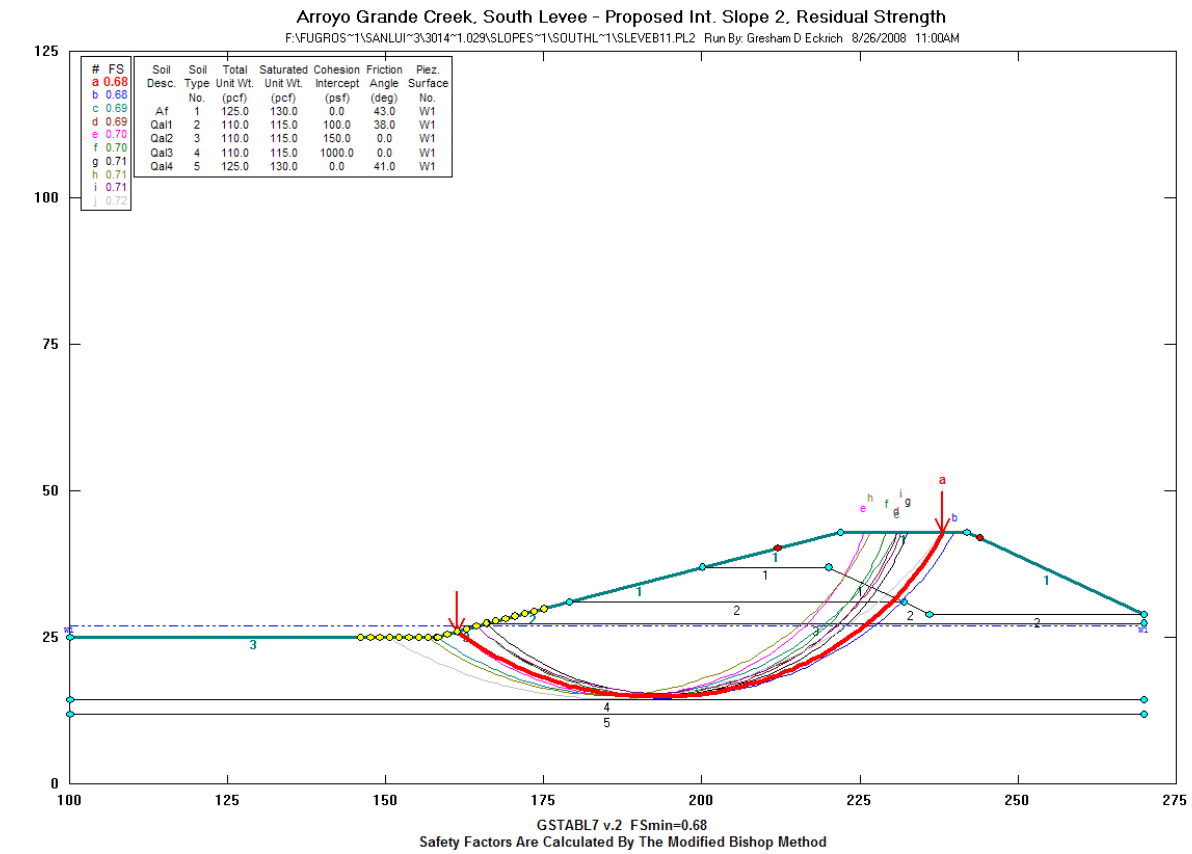
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 0.8

Condition: Proposed Exterior Slope 1

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-23



GSTABL7

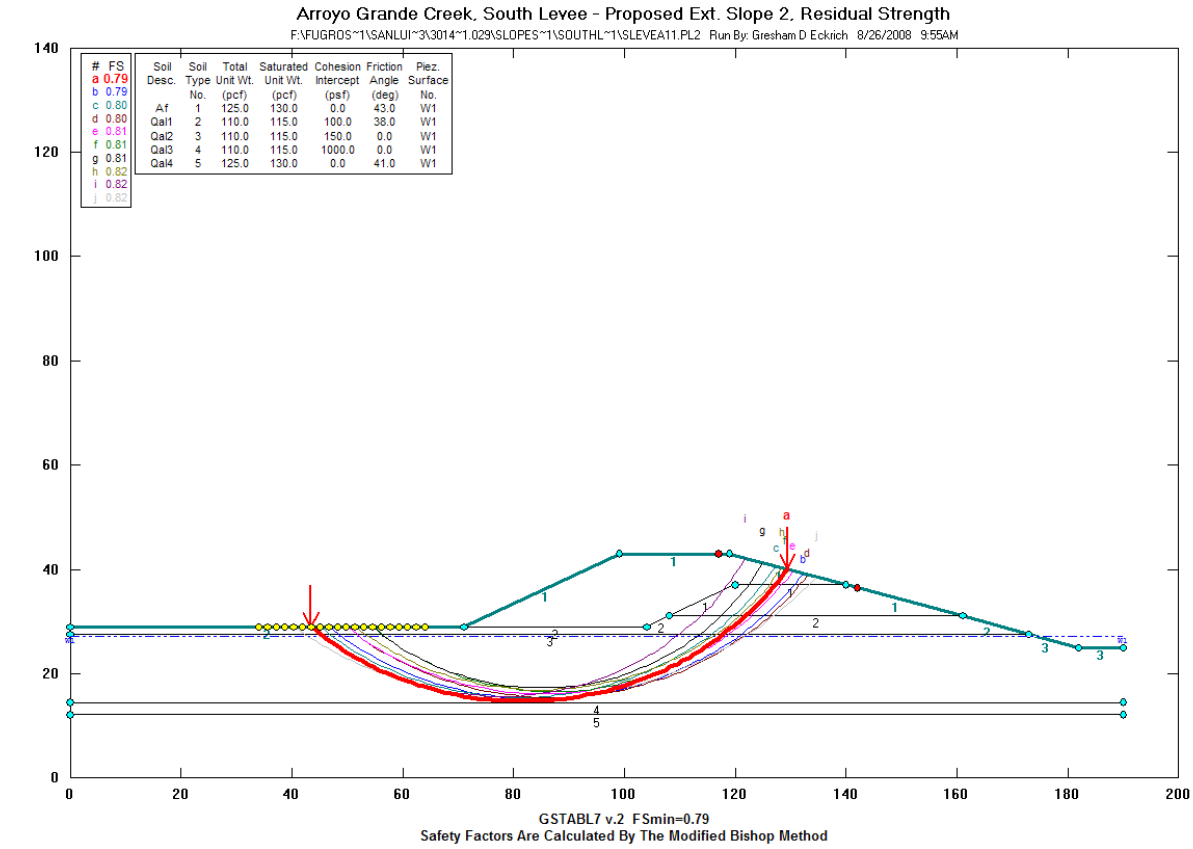
ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 0.7

Condition: Proposed Interior Slope 2

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-24



ESTIMATED FACTOR OF SAFETY

Post-Liquefaction Condition: 0.8

Condition: Proposed Exterior Slope 2

SLOPE STABILITY PLOT FOR SOUTH LEVEE EMBANKMENT
Arroyo Grande Creek Waterways Management Plan
San Luis Obispo County, California

PLATE D-25

Appendix F.
Hazardous Materials Background Information

DRAFT

KLEINFELDER
Bright People. Right Solutions.

PHASE I ENVIRONMENTAL SITE ASSESSMENT
ARROYO GRANDE CREEK
ARROYO GRANDE, CALIFORNIA

August 4, 2009

DRAFT

A Report Prepared for:

Mr. Keith Miller
SWCA, Environmental Consultants
1422 Monterey Street, C200
San Luis Obispo, California 93401

PHASE I ENVIRONMENTAL SITE ASSESSMENT
ARROYO GRANDE CREEK
ARROYO GRANDE, CALIFORNIA

Kleinfelder Job No: 96612

Prepared by:

_____
Terry D. Nephew, R.E.A.
Project Manager/Staff Professional II

Reviewed by:

_____
Jason R. Paul, P.G.
Science and Engineering Group Manager

KLEINFELDER
1410 F Street
Fresno, California 93706
(559) 486-0750

August 4, 2009

TABLE OF CONTENTS

1. SUMMARY

A Phase I Environmental Site Assessment (ESA) was conducted to include properties which contain the Arroyo Grande Creek (AGC) and the conjoined Los Berros Creek (LBC) in west-central San Luis Obispo (SLO) County (site). The AGC/LBC study area runs from 0.14-miles upstream of the confluence of AGC and LBS (to the north), where Los Berros Creek passes under the intersection of Los Berros Road and Century Lane (to the east), through the Cities or Arroyo Grande and Oceano and continues downstream to the upper edge of the Arroyo Grande Lagoon at the Pacific Ocean. The site also includes a portion of the railroad right-of-way extending both north and south of where the tracks bisect 22nd Street (See Plate 2).

The site has been occupied by the un-channelized Arroyo Grande Creek prior to 1965 and occupied by the current Los Beros Creek/Arroyo Grande Creek alignment since 1965. The properties north of the Arroyo Grande Creek, have undergone continually increasing development, including single-family dwellings, rural residences, mobile home parks, agricultural cropland, several inter-modal storage container yards, industrial properties (primarily associated with trucking or shipping businesses), a propane fueling station, an airport, and a sewage treatment facility. The property south of the site has been agricultural or rural residential since about 1900. No other land use has been reported.

The site does not contain structures. However, there are commercial, rural, industrial agricultural, and residential properties immediately adjacent to the creek alignment. No additional uses of the site were noted during our assessment.

No records were noted at regulatory agencies contacted, that suggest the presence of USTs, hazardous materials handling, storage, or releases at the site. Properties in the vicinity of the site appearing on published regulatory agency lists are not anticipated to pose an adverse impact to the site.

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of APN 018-102-138 (site). Any exceptions to, or deletions from, this practice are described in Section 8, Limitations, of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property. Therefore no adverse impacts to the site are anticipated. However, concerns with regard to adjacent facilities were identified and are summarized below.

- The Petroleum pipeline which runs parallel to the creek levee (at two locations), may present a potential risk to soil and groundwater at the site from previous undocumented releases or future releases. No documented releases from the pipeline were identified.

- There are two agricultural equipment storage/maintenance facilities, adjacent to the site. One is located adjacent to the southern branch of the railroad right-of-way portion of the site. This area has several ASTs associated with this facility. There were no signs identifying the nature or name of the business. County of San Luis Obispo Environmental Health Services (CSLOEHS) has been contacted for more information, but to date, Kleinfelder has not received a response. The other facility is located adjacent to the northern portion of the site, near the confluence of AGC and LBC on the east side of AGC. This area also appears to store and possibly maintain agricultural equipment. These types of operations are known to store and mix agricultural chemicals and rinse the application and storage equipment. Resultant agricultural chemicals have the potential to impact the site. Additionally, agricultural operations have been known to have un-documented USTs located at the facilities. Un-documented USTs may be a concern to the site.

- Typically railroad right-of-way soils contain elevated concentrations of arsenic, as well as lead and organochlorine pesticides due to former weed control practices.

During the site reconnaissance, twenty-nine hand auger surface soil samples were collected along the study area, near the creek bottom, and were submitted for naturally occurring asbestos (NOA) analysis. None of the samples collected contained NOA. The analytical results are presented in Appendix D.

Findings of Kleinfelder's assessment are discussed in greater detail in Chapter 7 of this report. This report is subject to the limitations in Chapter 8.

2. INTRODUCTION

The purpose of this assessment is to assist the client in evaluating recognized environmental conditions at the site. A recognized environmental condition is defined by the American Society for Testing and Materials (ASTM) standard as "the presence or likely presence of hazardous substances or petroleum products under conditions that indicate a release into structures on the property or into the ground, groundwater or surface water of the property." Kleinfelder performed this Phase I ESA in general accordance with the scope and limitations of the ASTM; *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E1527-05).*

Report Format

The following sections describe Kleinfelder's work scope:

- Chapter 3, **Site Setting**, is a compilation of information concerning the site's location, physical setting, and geologic and hydrogeologic conditions.
- Chapter 4, **Records Review**, is a compilation of Kleinfelder's review of several databases available from the Federal, State, and local regulatory agencies regarding hazardous substance use, storage, or disposal at the site; and for off-site facilities up to a mile radius from the site. This chapter includes interviews and telephone conversations conducted by Kleinfelder with local regulatory personnel knowledgeable about the site.
- Chapter 5, **History of the Site**, summarizes the history of the site and adjoining properties based on various sources which may include a review of aerial photographs, city or suburban directories, interviews, historical maps, chain-of-title, and information provided to Kleinfelder by the client.
- Chapter 6, **Site Reconnaissance**, describes Kleinfelder's site observations during the site reconnaissance and observations of adjacent parcels.
- Chapter 7, **Findings and Conclusions**, is a presentation of our findings and conclusions regarding the information in Chapters 3 through 6; and presents our opinion regarding the presence of environmental conditions of concern at

the site. Data gaps in historical or regulatory agency research and their significance to the conclusions of the Phase I ESA are presented.

- Chapters 8 and 9 present our **Limitations** and **References**, respectively.

Pertinent documentation regarding the site is included in Appendices A through D of this report.

3. SITE SETTING

The site setting is presented to assess the significance of potential on- and off-site contaminant migration, if present. The site location is presented on Plate 1 (Vicinity Map) and on Plate 2 (Site Plan) in Appendix A. Tables 1 through 3 provide the physical characteristics of the site and bordering properties.

3.1 Physical Setting

The information presented in Table 1 describes the physical location of the site. This information was obtained from maps, public records, and interviews.

TABLE 1
SITE SETTING

ASSESSOR'S PARCEL NUMBER AND ADDRESS	Portions of APN 061;-091-029, -161-011, -008, -010, -126-006, -007, -321-002, -003, -331-001, -002, -003, -004, -005, 062-122-009, -010, -151-004, 075-011-020, -022, -038, -039, -042, -053, -031-016, -032-005, -006, -008, -009, -010, and -011. No addresses assigned to the site.
LOCATION	Site extends from 0.14-miles upstream of the confluence of AGC and LBS (to the north), where LBC passes under the intersection of Los Berros Road and Century Lane (to the east), through the Cities or Arroyo Grande and Oceano and continues downstream to the upper edge of the Arroyo Grande Lagoon at the Pacific Ocean. The site also includes a portion of the railroad right-of-way extending both 1400 ft. north and 2100 ft. south of where the tracks cross 22nd Street (See Plate 2). Approx. 3.5 miles of creek channels.
TOWNSHIP & RANGE	Portion of sections 31, 32, and 33, Township 32 South, Range 13 East, Oceano Quadrangle
ACREAGE	Approximately 15,550 linear feet or 36-acres (with an average creek width of 100-feet).
CURRENT USE	Creek right-of-way
PROPOSED USE	No change of use. Modifications to raise the levees, remove sediments, and to manage vegetation.

Table 2 presents information about the physical setting of the site. This information was obtained from published maps.

TABLE 2
PHYSICAL SETTING

USGS TOPOGRAPHIC QUADRANGLE	Oceano Quadrangle	No structures are depicted at the site. The site elevations range from approximately 20-feet in the western portion of the site to approximately 70-feet above sea level at the northeastern portion of the site.
GEOLOGIC MAP	San Luis Obispo Sheet	Quaternary basin deposits and Nipomo Mesa, which consists of Aeolian sand deposits.
SOIL TYPES	Marimel sandy clay loam (1) Mocho variant fine sandy loam (2)	1) Very deep, poorly-drained soil on flood plains and alluvial fans. Formed in alluvium derived predominantly from sedimentary rock. Permeability is moderately slow. 2) Very deep, well-drained soil on alluvial fans and plains. Formed in alluvium weathered from sedimentary rock. Permeability is moderately rapid.
OIL AND GAS FIELDS	California Division of Oil and Gas Maps	According to map W-45, there are no oil or gas wells located on site or within one mile of the site.

Information on the regional geology and hydrogeology is presented on Table 3. This information was obtained from published data and maps, interviews with public agencies knowledgeable about the site, and from previous investigations conducted by Kleinfelder in the vicinity of the site.

TABLE 3
REGIONAL GEOLOGY AND HYDROGEOLOGY

REGIONAL GEOMORPHIC PROVINCE	The Site is located in the Coastal Ranges Geomorphic Province consisting of marine sedimentary and mélange metamorphic rocks resting on a basement complex of metamorphic and igneous rocks. Surficial deposits are derived from erosion of variable rock units of the Coastal Ranges. Local surface deposits are primarily wind-blown sands.
DEPTH TO GROUNDWATER (Source: Department of Water Resources, Spring 2004	Groundwater has been reported at approximately 40-80 feet below ground surface in the vicinity of the site
GROUNDWATER FLOW DIRECTION (Source: DWR)	Southwest
REGIONAL GROUNDWATER QUALITY PROBLEMS (Source: EDR, Kleinfelder Library)	Groundwater resources at coastal communities have been impacted by salt-water intrusion due to over drafting of potable groundwater for agricultural and municipal water supplies.

A brief drive-by survey of the parcels adjacent to the site was conducted on the same day as the site reconnaissance. A summary of the surrounding properties is presented on Table 4.

TABLE 4
SURROUNDING PROPERTIES

NORTH	Single-family dwellings, industrial, agricultural, an airport, waste treatment facility, and commercial facilities.
SOUTH	Single-family dwellings (rural), industrial, agricultural, and commercial facilities.
EAST	Agricultural property
WEST	Oceano dunes

4. RECORDS REVIEW

4.1 Regulatory Agency Database Review

The purpose of the records review is to obtain and review records that would help to evaluate recognized environmental conditions in connection with the site and bordering properties.

Federal, state and local regulatory agencies publish databases or "lists" of businesses and properties that handle hazardous materials or hazardous waste, or are the known location of a release of hazardous substances to soil and/or groundwater. These databases are available for review and/or purchase at the regulatory agencies, or the information may be obtained through a commercial database service. Kleinfelder contracted with a commercial database service, Environmental Data Services (EDR), to review the regulatory agency lists for references to the site and any listings within the appropriate ASTM minimum search distances to the site. The EDR database search results are included in Appendix B, EDR ASTM Search. Table 5 summarizes the federal and state databases reviewed by EDR.

TABLE 5
RECORDS REVIEWED-SEARCH DISTANCE

LIST	SEARCH RADIUS	FINDINGS
FEDERAL		
NPL	1-mile	None listed
CERCLIS	½ mile	None listed
RCRA-TSD	1-mile	None listed
RCRA-GEN	Site & bordering	None listed
ERNS	Site	None listed
CORRACTS TSD	1-mile	None listed
Non-CORRACTS TSD	½ mile	None listed
STATE		
BEP/AWP/EnviroStor	1-mile	None listed
SWIS/SWAT	½ mile	None listed
LUST	½ mile	One listed
SLIC	½ mile	None listed
UST	Site & bordering	One listed
CHMIRS	Site and bordering	None listed
CORTESE	½ mile	One listed

The site does not have an address and does not appear on any of the records complied by EDR and reviewed by Kleinfelder.

Orphan Summary/Unmapped Sites Report

Due to poor or inadequate address information, several properties could not be mapped by EDR. These properties were included in an orphan summary/unmapped properties report, which was reviewed by Kleinfelder. The orphan summary/unmapped properties report was reviewed to assess the potential for off site properties to affect the site. Because they have incomplete addresses, these properties are not practically reviewable as defined by the ASTM standard.

Discussion of Agency Records for the Site

Local Agency Records

Local regulatory agencies were contacted for reasonably ascertainable and practically reviewable information regarding recognized environmental conditions present at facilities in the area of the site. A summary of information obtained is provided on Table 6 and discussion follows:

TABLE 6
AGENCY RECORDS SUMMARY

AGENCY	CONTACT NAME	TYPE OF INFORMATION
San Luis Obispo County Assessor's Office	Receptionist	Assessors parcel map included in Appendix C. Appraisal records not reviewed as owner authorization was not provided.
City of Arroyo Grande and Oceano Building Department	File Clerk	Building permit records revealed no records of USTs, hazardous materials storage, or handling on file for the site.
County of San Luis Obispo Environmental Health Services	File Clerk	Information concerning hazardous material usage, UST investigations and permits. No records were on file for the site.
State of CA Regional Water Quality Control Board	Corey Walsh	LUST records for facility located north of the site were reviewed.
Office of the State Fire Marshal/Pipeline Safety Division	Kathy Battles	Pipeline survey of petroleum pipelines near the study area.

BeJo Seed Inc., an organic seed business is located adjacent to the site at 1972 Silver Spur Place. Records reviewed at the County of San Luis Obispo Environmental Health Services (CSLOEHS) had information that they had a hazardous business plan. However, the business plan was not in the file and could not be located. The business may store fuels or other chemicals, however, no indication of such storage or use was noted during our site reconnaissance.

Discussion of Agency Records for Surrounding Properties

Federal Lists

CERCLIS Properties

The CERCLIS database contains information on potentially hazardous waste sites that have been reported to the EPA pursuant to the Comprehensive Environmental

Response, Compensation and Liability Act (CERCLA, a.k.a., the Superfund program). No active CERCLIS listed properties are located within one-half mile of the site.

NPL Properties

The National Priorities List (NPL) includes sites that the United States Environmental Protection Agency (EPA) considers threats to public health and the environment, and for which Superfund monies have been allocated. The NPL is derived from the CERCLIS List and identifies over 1,200 sites for priority cleanup under the Superfund program. The list is primarily based on a score that the site receives from the EPA's Hazard Ranking System. There were no NPL properties located within one-mile of the site.

RCRA CORRACTS TSD Properties

The EPA maintains a database of Resource Conservation and Recovery Act (RCRA) facilities that are undergoing "corrective action." A "corrective action order" is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility's boundary and can be required regardless of when the release occurred, even if it predates RCRA. This portion of EPA's RCRA database contains information on Treatment, Storage or Disposal (TSD) facilities with corrective action activity. There are no RCRA CORRACTS TSD facilities located on or within one-mile of the site.

RCRA non-CORRACTS TSD Properties

This portion of the RCRA database lists hazardous waste treatment, storage, and disposal (TSD) facilities that are not currently under corrective action order. There were no TSD properties located within one-mile of the site.

RCRA Generators

The portion of the RCRA database contains information on reporting facilities that generate hazardous wastes as defined by the RCRA. There are no RCRA Generators facilities located on or adjacent to the site.

ERNS

The Emergency Response Notification System (ERNS) is a national database that contains information from spill reports made to federal authorities including the EPA, the United States Coast Guard, the National Response Center and the Department of Transportation. This reporting system contains preliminary information on specific releases, including spill location, substance, and responsible party. There are no ERNS hazardous materials incidents listed for the site or adjacent properties.

State Lists

BEP/ AWP/ EnviroStor Properties

Cal-EPA maintains a database of potentially hazardous waste facilities identified as the *Cal-Sites* list. These sites are identified through the historical Abandoned Site Survey Program and federal, state, and county funded site evaluation programs. The *Cal-Sites* lists also includes both the Annual Workplan (AWP) and Bond Expenditure Plan (BEP) sites. The Department of toxic Substances Control's maintains the EnviroStor database, formerly CalSites. There were no properties included in this list located within one-mile of the site.

Regional Water Quality Control Board SLIC list

The California Regional Water Quality Control Board - Central Valley Region (RWQCB) maintains a list of spills, leaks, incidents and complaints (SLIC) that have been reported within their jurisdiction. There are no SLIC locations listed within a one-half mile of the site.

LUST Properties

The RWQCB maintains records of reported leaking underground storage tank (LUST) incidents. The RWQCB is required to submit an annual report to the state that covers the reported leaks of hazardous substances from underground storage tanks.

There is one RWQCB LUST property listed within one-half mile of the site. The Craig Bell property is a former gasoline service station located approximately one-third mile north of the site at the intersection of Front and Cienega Streets. According to reports reviewed at RWQCB, groundwater monitoring and remediation are on-going as of the beginning of 2008. The groundwater contamination plume does not extend beyond a one block area of that facility. This facility is not anticipated to be a concern to the site due to its current status.

UST (Hazardous Substance Storage Container Database) Properties and Facility Inventory Database

The Hazardous Substance Storage Container database and the Facility Inventory Database are historical listings of underground storage tank (UST) sites maintained by the State Water Resources Control Board. More recent information is obtained by contacting the local regulatory agency that regulates USTs.

The site does not appear on UST listings. There is one adjacent facility listed. Fukuhara Farms, located at 1091 South Halcyon Road. It is listed on the historical UST list as having two tanks. A file review conducted at CSLOEHS revealed no evidence of USTs at the facility. However, a 500-gallon diesel above ground storage tank (AST) and a 500-gallon gasoline AST were noted at the facility. Waste oil and filters were also listed, but records did not indicate the waste oil was being stored in a tank (AST or UST). This facility is not anticipated to be a concern to the site due to its status.

Cortese Properties

The Office of Environmental Protection, Office of Hazardous Materials maintains the Identified Hazardous Waste and Substances Site database also known as the Cortese

list. This database identifies contaminated public drinking water supply wells, sites selected for remediation, sites with known toxic releases, UST sites with reported releases, and solid waste disposal facilities where contamination migration is known.

There is one Cortese listed property within a half-mile of the site. The Bell property, discussed above, appears on this list. As previously discussed, this facility is not anticipated to be a concern to the site.

SWIS/SWAT Landfill Properties

The California Integrated Waste Management Board maintains a database of active, inactive and closed landfills, and transfer and composting stations. There are no SWIS/SWAT Landfill listed properties on or within a half-mile of the site.

CHMIRS

The California Hazardous Materials Incident Reporting System (CHMIRS) records hazardous materials spill incidents recorded by the State of California Office of Emergency Services. The site and adjacent properties do not appear on the CHMIRS List.

Environmental Lien and Activity Use Limitation Search

A search for recorded Environmental Liens and Activity Use Limitations was not included in the Scope of Services for this report.

5. HISTORY OF THE SITE

The history of the site was researched to identify obvious uses of the site from the present to first developed use, or back to the earliest readily available resources. Table 7 summarizes the availability of information reviewed during this assessment.

TABLE 7
HISTORICAL INFORMATION REVIEWED

	Years reviewed	Availability
AERIAL PHOTOGRAPHS	1939, 1949,1956, 1966, 1972, 1989, 1994, 2002	EDR
TOPOGRAPHIC MAPS	Oceano, CA Quad 1900,1918, 1952, 1965, 1979, and 1994	EDR and Kleinfelder library
SANBORN FIRE INSURANCE MAPS	None	No historic coverage provided for this area of SLO County.
CITY DIRECTORIES	None	No historic coverage provided for this area of SLO County.
INTERVIEW QUESTIONNAIRE	None	

The site history was established by utilizing historic topographic maps, aerial photographs, and building permit records.

Topographic Maps, and Aerial Photographs

The 1900 and 1918 topographic maps depict the site as the Arroyo Grande Creek. No structures are visible. The adjacent and surrounding properties appear as agricultural and rural residences near the creek alignment, with a few streets depicted in the town of Oceano, north of the site. Railroad tracks, labeled Southern Pacific Railroad, cross the site approximately in the center of the site at 22nd Street.

The 1939 aerial photograph shows the Arroyo Grande Creek in its approximate current pattern. More creek-bottom vegetation than what currently exists is evident. The eastern extension of LBC does not exist. The area south of the creek is relatively rural and agricultural. Oceano is developed north of the site but is less densely developed than today.

The site and surrounding areas appear similar in the 1949 aerial photograph. A large barn is located along the east bank of the creek north of Arroyo Grande Avenue.

The 1952 topographic map depicts conditions at the site similar to those noted in the 1949 aerial photograph. The creek appears to have been channelized, as evidenced by the straightened trace of the creek. The development north of the site is more dense and consistent with what is seen in the 1950s and 1960s aerial photographs. The Pismo Airport is located north of the site.

The 1956 aerial photograph show the site as relatively unchanged, with the exception of less vegetation. LBC does not extend west to intersect AGC. The Pismo Airport is located north of the site. Other surrounding properties appear relatively unchanged. The barn that existed on the 1949 aerial photographs has been replaced by several small structures.

The 1965 topographic map depicts the existing eastern creek branch towards Valley Road, in alignment with Los Berros Road. This feature appears to connect AGC to LBC. The airport name has been changed to Oceano and a residential development is present north of Los LBC.

The 1966 aerial photograph shows the changes to the site, which were depicted in the 1965 topographic map. Conditions on surrounding properties are similar to those noted on earlier aerial photographs, with two exceptions; the addition of a residential area north of LBC and the addition of the sewage treatment facility, located adjacent to the creek between the creek and airport.

The 1972 aerial photograph shows little change to the site and surrounding areas compared to the 1966 photograph.

The 1979 topographic map depicts little change to the site and surrounding areas.

The 1989 aerial photograph shows little change to the site. The surrounding areas are similar with the exception that a mobile home park has been developed near the center and adjacent to the site. Some additional development west of the mobile home park is evident and includes a container storage yard adjacent to the railroad tracks that bisect the site. Large barns appear adjacent and east of the north end of the site.

The 1994 and 2002 aerial photographs show little change to the site and surrounding properties.

The 1994 topographic map depicts little change to the site.

Copies of aerial photographs and topographic maps have been included in Appendix C.

Building Department Permit Records

City Building Department records are issued by address. Since there are addresses assigned to the site, no permits were on file for the site.

City Directories

No review of Polk City Directories and/or Haines Criss-Cross Directories for the County of SLO was conducted for the site, since no addresses have been assigned to the site.

Interviews

Interviews were not conducted since a person with knowledge about the site was not provided to Kleinfelder.

6. SITE RECONNAISSANCE

Representatives from Kleinfelder conducted a site reconnaissance on April 27, 2009 to assess and photograph current site conditions. The approximate site boundaries are shown on Plate 2, "Site Plan," and photographs of the site are presented on Plates 3A through 3E in Appendix A.

The site consists of an approximately 15,500 foot long corridor along the LBC/AGC right-of-way. The LBC/AGC study area runs from 0.14-miles upstream of the confluence of AGC and LBS (to the north), where LBC passes under the intersection of Los Berros Road and Century Lane (to the east), through the Cities or Arroyo Grande and Oceano and continues downstream to the upper edge of the Arroyo Grande Lagoon at the Pacific Ocean. The site also includes a portion of the railroad right-of-way extending both north and south of where the tracks bisect 22nd Street (See Plate 2).

The creek right of way channelized in levees. Land south of the creek is primarily agricultural cropland. There are two residences with adjacent commercial horse riding stables along the central and southwestern portions of the creek. There are also two commercial businesses adjacent to the creek between 22nd Street and Creek Road. One business has agricultural spray equipment and above ground storage tanks (ASTs) in it's yard. The other business has no distinct features or visible operations. The areas north of the site include single-family dwellings, rural residences, mobile home parks, agricultural cropland, several inter-modal storage container yards, industrial properties (primarily associated with trucking or shipping businesses), a propane fueling station (with large propane ASTs), an airport, and a sewage treatment facility (between the airport and the creek). There are petroleum pipeline markers along the southeast creek bank between Cienega Street and Halcion Road. One area is located about one-

tenth mile south of the site that appears to be a farm equipment fueling and agricultural chemical equipment storage and maintenance area. This facility is adjacent to the southern railroad segment the site. No signs were noted that identify the business or purpose of the tanks. Additionally, there is an agricultural equipment storage area located east of the northern-most area of the site. Database information does not reference these facilities.

During the site reconnaissance, observations and conditions likely to be associated with environmental concerns, as described in ASTM standards, were noted and summarized on Table 8.

TABLE 8
SITE OBSERVATIONS

Exterior observations likely to involve the use, storage, disposal, or generation of hazardous substances or petroleum products.		Observed	Not Observed
	Remarks		
Current Use	AGC right-of-way	X	
Past Use	AGC right-of-way		X
Structures			X
Terrain	Slopes slightly to the west	X	
Hazardous chemical and petroleum products in connection with known use.			X
Aboveground storage tanks			X
Underground storage tanks			X
Odors			X
Pools of Liquid			X
Drums			X
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X
Chemical storage or Ag chemical mixing areas			X
Asbestos, lead, PCBs			X
Pits, Ponds, or Lagoons			
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage			X
Solid Waste			X
Waste Water			X
Process waste water			X
Wells			X
Dry wells			X
Surface water	Water was only present in certain areas of creek.	X	
Storm basins/catch			X
Storm drains			X
Drains and sumps			X
Septic system			X
Imported Soil			X
Burned or buried debris			X
Pipelines	Petroleum pipeline markers adjacent to two areas of the site	X	

7. FINDINGS AND CONCLUSIONS

Kleinfelder performed this ESA of the site in conformance with the scope and limitations of ASTM Practice E1527-05. In summary:

7.1 History

The site has been occupied by the un-channelized Arroyo Grande Creek prior to 1965 and occupied by the current LBC/AGC alignment since 1965. The properties north of the Arroyo Grande Creek, have undergone continually increasing development, including single-family dwellings, rural residences, mobile home parks, agricultural cropland, several inter-modal storage container yards, industrial properties (primarily associated with trucking or shipping businesses), a propane fueling station, an airport, and a sewage treatment facility beginning. The property south of the site has been agricultural or rural residential since at least 1900. No other land use has been reported.

7.2 Site Reconnaissance

The site consists of an approximately 15,550 foot long corridor along the LBC/AGC right-of-way. The AGC/LBC study area runs from 0.14-miles upstream of the confluence of AGC and LBS (to the north), where LBC passes under the intersection of Los Berros Road and Century Lane (to the east), through the Cities or Arroyo Grande and Oceano and continues downstream to the upper edge of the Arroyo Grande Lagoon at the Pacific Ocean. The site also includes a portion of the railroad right-of-way extending both north and south of where the tracks bisect 22nd Street (See Plate 2). The site is bordered by commercial, rural, industrial, agricultural, and residential properties immediately adjacent to the creek alignment. No additional uses of the site were noted during our assessment. One area is located about one-tenth mile south of the site that appears to be a farm equipment fueling and agricultural chemical

equipment storage and maintenance area. This facility is adjacent to the southern railroad segment the site. No signs were noted that identify the business or purpose of the tanks. Additionally, there is an agricultural equipment storage area located east of the northern most area of the site. Database information does not reference these facilities.

7.3 Regulatory Review

No records were noted at the regulatory agencies contacted suggesting the presence of USTs, hazardous materials handling, storage, or releases at the site. Properties in the vicinity of the site appearing on published regulatory agency lists are not anticipated to pose an adverse impact to the site.

7.4 Conclusions

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of APN 018-102-138 (site). Any exceptions to, or deletions from, this practice are described in Section 8, Limitations, of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property. Therefore no adverse impacts to the site are anticipated. However, concerns with regard to adjacent facilities were identified and are summarized below.

- The Petroleum pipeline which runs parallel to the creek levee (at two locations), may present a potential risk to soil and groundwater at the site from previous undocumented releases or future releases. No documented releases from the pipeline were identified.

- There are two agricultural equipment storage/maintenance facilities, adjacent to the site. One is located adjacent to the southern branch of the railroad right-of-way portion of the site. This area has several ASTs associated with this facility. There were no signs identifying the nature or name of the

business. CSLOEHS has been contacted for more information, but to date, Kleinfelder has not received a response. The other facility is located adjacent to the northern portion of the site, near the confluence of AGC and LBC on the east side of AGC. This area also appears to store and possibly maintain agricultural equipment. These types of operations are known to store and mix agricultural chemicals and rinse the application and storage equipment. Resultant agricultural chemicals have the potential to impact the site.

- ❑ Typically railroad right-of-way soils contain elevated concentrations of arsenic, as well as lead and organochlorine pesticides due to former weed control practices. Soil sampling and analysis for these constituents should be performed along the railroad portion of the site.

7.5 Data Gaps

Following is a discussion of data gaps documented during the course of our assessment, with their potential impact upon the conclusions of this Phase I ESA:

- A User Questionnaire was not completed by SWCA, Environmental Consultants. The lack of responses to the User Questionnaire is not considered a significant impact to the findings of our assessment, as it is unlikely that the responses would have provided additional sources of information regarding past activities conducted at the site, considering the limited amount of city involvement with the site.

8. LIMITATIONS

Phase I ESAs are non-comprehensive by nature and are unlikely to identify all environmental problems or eliminate all risk. The attached report is a qualitative assessment. Kleinfelder offers a range of investigative and engineering services to suit the needs of our clients, including more quantitative investigations. Although risk can never be eliminated, more detailed and extensive investigations yield more information, which may help you understand and better manage your risks. Since such detailed services involve greater expense, we ask our clients to participate in identifying the level of service that will provide them with an acceptable level of risk. Please contact the signatories of this report if you would like to discuss this issue of risk further.

Kleinfelder performed this environmental assessment in general accordance with the guidelines set forth in the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (Designation E1527-05), in accordance with generally accepted standards of care practiced by other members of our profession in San Luis Obispo County, California at the time the work was completed, and subsequently approved by you as our client. Environmental issues not specifically addressed in the report were beyond the scope of our work and not included in our evaluation.

This report may only be used by SWCA, Environmental Consultants and only for the purposes stated, within a reasonable time from its issuance, but no more than one (1) year from the date of the report. All information gathered by Kleinfelder is considered confidential and will be released only upon written authorization of SWCA, Environmental Consultants, or as required by law. Non-compliance with any of these requirements by SWCA, Environmental Consultants or anyone else, unless specifically agreed to in advance by Kleinfelder in writing, will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party and SWCA,

Environmental Consultants agrees to defend, indemnify, and hold harmless Kleinfelder from any claim or liability associated with such unauthorized use or non-compliance.

Kleinfelder offers various levels of investigative and engineering services to suit the varying need of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present. Although risk can never be eliminated, more detailed and extensive investigations yield more information, which may help understand and mange the level of risk. Since such detailed investigation and analysis involve greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies may be performed to reduce uncertainties. Acceptance of this report will indicate that SWCA, Environmental Consultants has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may be discovered. Kleinfelder will assume no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, generator, or person who arranges for the disposal, transport, storage or treatment of hazardous materials within the meaning of any governmental statute, regulation or order. SWCA, Environmental Consultants will be solely responsible for notifying all governmental agencies, and the public at large, of the existence, release, treatment or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder's services. SWCA, Environmental Consultants will be responsible for all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including samples resulting from Kleinfelder's services.

Regulations and professional standards applicable to Kleinfelder's services are continually evolving. Techniques are, by necessity, often new and relatively untried. Different professionals may reasonably adopt different approaches to similar problems. As such, our services are intended to provide SWCA, Environmental Consultants with a source of professional advice, opinions, and recommendations. Our professional opinions and recommendations are based on our research activities limited by the scope of work, in accordance with the generally accepted consulting practice that exists at the time and may depend on, and be qualified by, information gathered previously by others and provided to Kleinfelder. Consequently, no warranty or guarantee, express or implied, is intended or made.

Land use, site conditions (both on-site and off-site) and other factors will change over time. Since site activities and regulations beyond our control could change at any time after the completion of this report, our observations, findings and opinions can be considered valid only as of the date of the site visit. This report should not be relied upon after 180 days from the date of its issuance (ASTM Standard E1527, Section 4.5).

ASTM Standard E1527-05 requires additional user responsibilities and continuing obligations on the part of the report user, including but not limited to the assessment of comparative fair market property values of the site (if the property was not affected by hazardous substances or petroleum products, Section 6.5), environmental clean-up liens beyond land title records (Section 6.2), and specialized knowledge of the property by the users of Phase I ESA (Section 6.3).

9. REFERENCES

1. EDR report dated May 1, 2009.

2. Agencies (and personnel) interviewed are listed on Table 5 in Chapter 4 and Chapter 6.

3. Aerial photographs; EDR 1939, 1949, 1956, 1966, 1972, 1989, 1994, and 2001.

4. Historical topographical maps for Oceano, California: 1900, 1918, 1952, 1965, 1979 and 1994.

10. QUALIFICATIONS

Kleinfelder is an engineering firm with Engineers, Geologists, and Class I & II Environmental Assessors registered by the Office of Environmental Health Hazard Assessment in California. Kleinfelder is qualified to perform the environmental assessments in accordance with the guidelines of ASTM E1527-05, Standard Practice for Environmental Site Assessment Process.

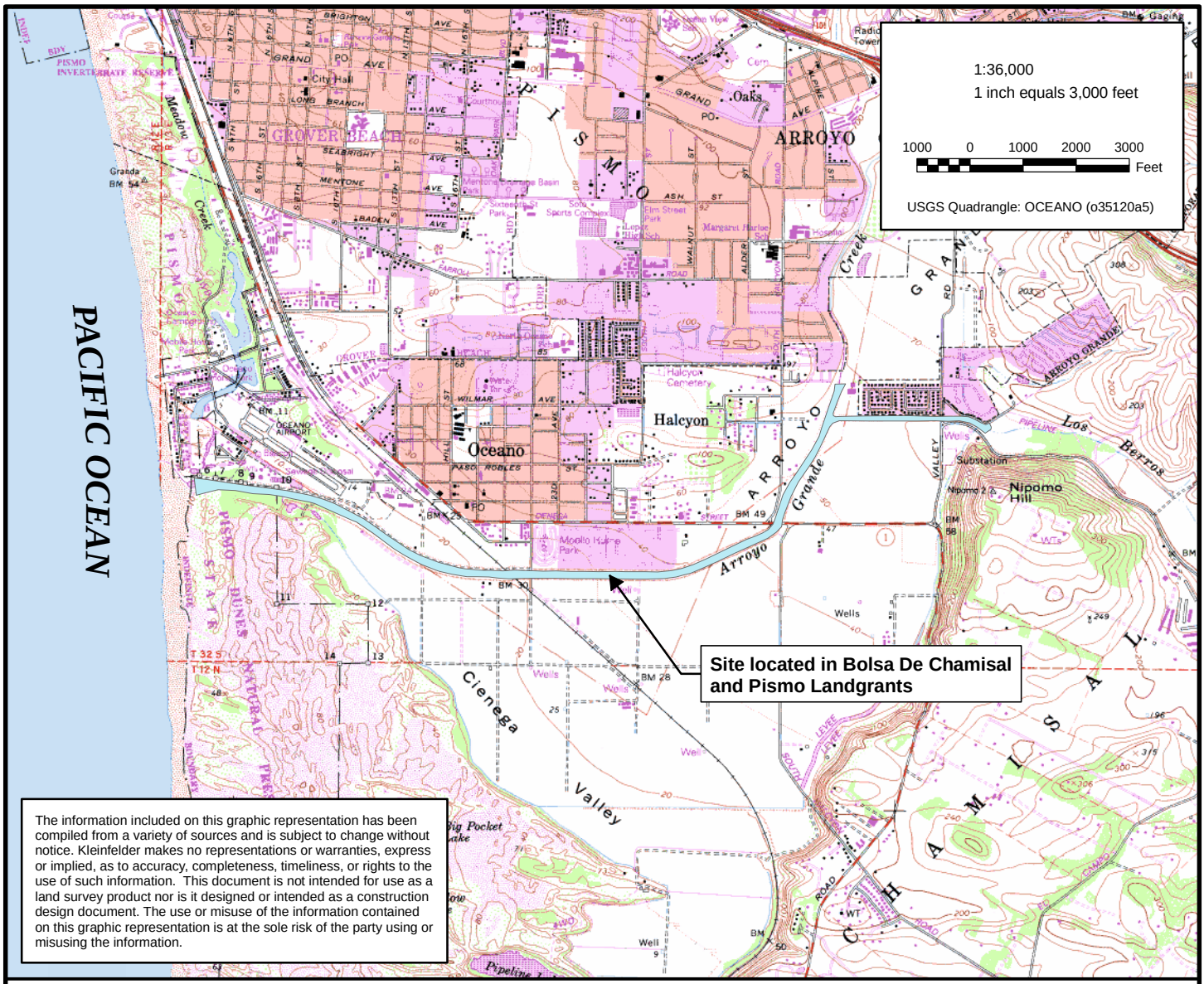
The Environmental professionals responsible for preparing this report are as follows:

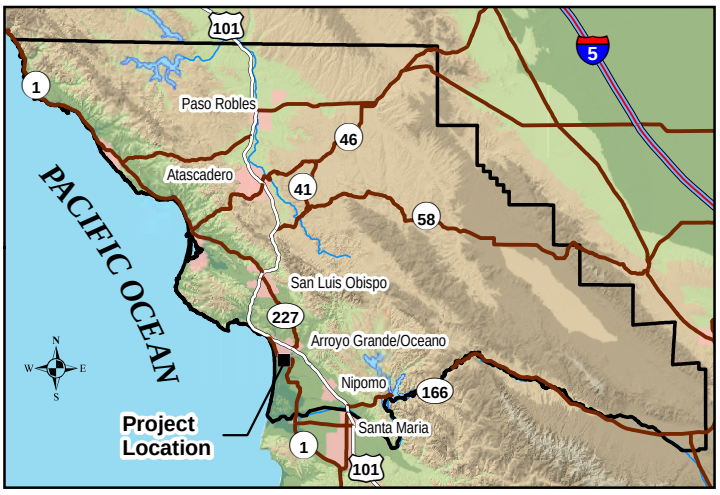
TERRY NEPHEW
Mr. Nephew has fifteen years of experience in the environmental and geotechnical field. His responsibilities include project management responsibilities and technical support for soil, air, and groundwater sample collection at underground fuel storage tank sites; and the construction and maintenance of groundwater, air, and vapor extraction systems for environmental assessment and remediation projects. He has completed the ASTM courses in Environmental Site Assessment for Commercial Real Estate and the Phase II Environmental Site Assessment for Commercial Real Estate. Mr. Nephew is responsible for performing Phase I and II ESAs as well as conducting the field work and has been performing ESAs for agricultural, commercial, industrial, residential properties, and school sites for at least ten years. Mr. Nephew also performs drafting tasks for environmental as well as geotechnical projects using the Automated Computer Assisted Drafting Program (AutoCAD).

Registration
Class I Registered Environmental Assessor, REA-07359

JASON R. PAUL
Mr. Paul has eighteen years of experience in the environmental discipline. He has worked extensively as client liaison with various regulatory agencies and has strong project management skills in working with both public and private sector clients. He has managed and conducted work on numerous soils and groundwater investigation and remediation projects, Phase I Environmental Site Assessments (ESAs), Preliminary Endangerment Assessments, and Risk Assessments. His project experience includes municipal, industrial, agricultural, public utility, commercial, military, and school sites. Mr. Paul's project management responsibilities include formulation of environmental assessment work plans, regulatory agency liaison, supervision of drilling operations, preparation of groundwater sampling and laboratory analysis programs for environmental clients, and supervision of field staff.

Registrations
Geologist, 7557, California, 2003
Cal-OSHA Building Inspector/EPA AH August 5, 2005ERA C-14970, California





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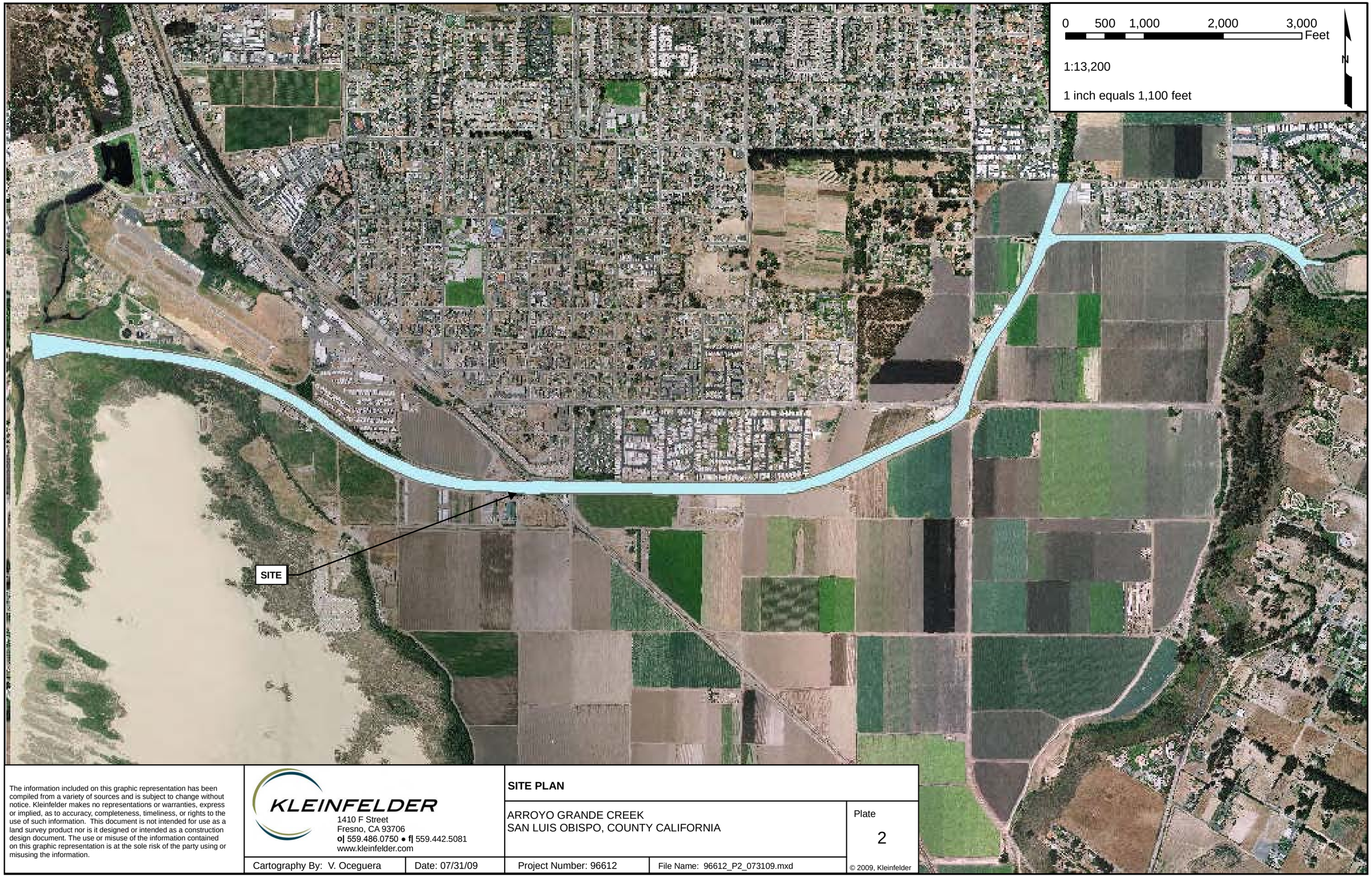
SITE VICINITY MAP

Arroyo Grande Creek

San Luis Obispo County, California

Plate 1

Cartography By: V. Oceguera	Date: 07/31/09	Project Number: 96612	File Name: 96612_P1_073109.mxd



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SITE PLAN

ARROYO GRANDE CREEK
SAN LUIS OBISPO, COUNTY CALIFORNIA

Plate
2

Cartography By: V. Oceguera | Date: 07/31/09 | Project Number: 96612 | File Name: 96612_P2_073109.mxd

View of the creek bottom looking north at the site located at the intersection of Valley Rd. & Los Berros Rd.

View from the intersection of Valley Rd. & Los Berros Rd looking northwest along creek bank.

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Site Photo

Arroyo Grande Creek Levee Project
Arroyo Grande, California

Plate
3A

Drawn by: T. Nephew	Date:11/26/2008	Project Number:966612	File Name: Plate 3A

View of a petroleum pipeline marker located along the creek bank parallel to Halcyon Rd.

View of AST located adjacent to south creek bank approximately even with Elm St. alignment.

KLEINFELDER
1410 F Street
Fresno, California 93706
TEL: 559-486-0750 FAX: 559-442-5081

Site Photo

Arroyo Grande Creek Levee Project
Arroyo Grande, California

Plate
3B

Drawn by: T. Nephew	Date:11/26/2008	Project Number:966612	File Name: Plate 3B

View of agricultural spray business located about 800' south of site, south of Casa Pl.

View of AST at agricultural spray business located about 800' south of site, south of Casa Pl.

KLEINFELDER
1410 F Street
Fresno, California 93706
TEL: 559-186-0750 FAX: 559-442-5081

Site Photo

Arroyo Grande Creek Levee Project
Arroyo Grande, California

Plate
3C

Drawn by: T. Nephew	Date:11/26/2008	Project Number:966612	File Name: Plate 3C

View of agricultural business located between south creek bank and Casa Pl.

View of AST at agricultural business located between south creek bank and Casa Pl.

KLEINFELDER
1410 F Street
Fresno, California 93706
TEL: 559-186-0750 FAX: 559-442-5081

Site Photo

Arroyo Grande Creek Levee Project
Arroyo Grande, California

Plate
3D

Drawn by: T. Nephew	Date:11/26/2008	Project Number:966612	File Name: Plate 3D

View of sprayers at agricultural business located between south creek bank and Casa Pl.

KLEINFELDER
1410 F Street
Fresno, California 93706
TEL: 559-186-0750 FAX: 559-442-5081

Site Photo

Arroyo Grande Creek Levee Project
Arroyo Grande, California

Plate
3E

Drawn by: T. Nephew	Date:11/26/2008	Project Number:966612	File Name: Plate 3E

Arroyo Grande Creek
Oceano, CA 93445

Inquiry Number: 02481113.1r
May 01, 2009

EDR DataMap™ Corridor Study

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

OCEANO, CA 93445
OCEANO, CA 93445

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL RECORDS

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
Delisted NPL	National Priority List Deletions
NPL LIENS	Federal Superfund Liens
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
LIENS 2	CERCLA Lien Information
CORRACTS	Corrective Action Report
RCRA-TSDF	RCRA - Transporters, Storage and Disposal
RCRA-LQG	RCRA - Large Quantity Generators
RCRA-SQG	RCRA - Small Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
DOT OPS	Incident and Accident Data
US CDL	Clandestine Drug Labs
US BROWNFIELDS	A Listing of Brownfields Sites
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
LUCIS	Land Use Control Information System
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
ODI	Open Dump Inventory
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System

PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
RAATS	RCRA Administrative Action Tracking System
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing

STATE AND LOCAL RECORDS

HIST Cal-Sites	Historical Calsites Database
CA BOND EXP. PLAN	Bond Expenditure Plan
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
SWF/LF	Solid Waste Information System
WMUDS/SWAT	Waste Management Unit Database
CA WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
SLIC	Statewide SLIC Cases
LIENS	Environmental Liens Listing
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
AST	Aboveground Petroleum Storage Tank Facilities
Notify 65	Proposition 65 Records
DEED	Deed Restriction Listing
VCP	Voluntary Cleanup Program Properties
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
CDL	Clandestine Drug Labs
RESPONSE	State Response Sites
ENVIROSTOR	EnviroStor Database
HAULERS	Registered Waste Tire Haulers Listing

TRIBAL RECORDS

INDIAN RESERV	Indian Reservations
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
INDIAN UST	Underground Storage Tanks on Indian Land
INDIAN VCP	Voluntary Cleanup Priority Listing

EDR PROPRIETARY RECORDS

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

FEDERAL RECORDS

RCRA-NonGen: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA-NonGen list, as provided by EDR, and dated 11/12/2008 has revealed that there is 1 RCRA-NonGen site within the searched area.

Site	Address	Map ID	Page
CENTRAL COAST TRUCKING	***2100 22ND ST***	***10***	***14***

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 10/30/2008 has revealed that there is 1 FINDS site within the searched area.

Site	Address	Map ID	Page
CENTRAL COAST TRUCKING	***2100 22ND ST***	***10***	***14***

STATE AND LOCAL RECORDS

SWRCY: A listing of recycling facilities in California.

A review of the SWRCY list, as provided by EDR, and dated 01/05/2009 has revealed that there is 1 SWRCY site within the searched area.

Site	Address	Map ID	Page
NEXCYCLE	1909 FRONT ST	8	11

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 01/06/2009 has revealed that there is 1 LUST site within the searched area.

Site	Address	Map ID	Page
BELL CRAIG(FORM SERV STATION) Status: Open - Remediation	1899 CIENEGA	9	12

EXECUTIVE SUMMARY

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within the searched area.

Site	Address	Map ID	Page
M,. FUKUHARA	1091 S HALCYON RD	7	10

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 01/06/2009 has revealed that there are 2 UST sites within the searched area.

Site	Address	Map ID	Page
SLOCO FUEL SITE #1 ARROYO GRAN	840 BRANCH ST	2	3
OCEANO MARKET	1711 FRONT ST	6	9

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 7 HIST UST sites within the searched area.

Site	Address	Map ID	Page
RUNELS BROS	661 VALLEY RD	1	3
PHELAN & TAYLOR PRODUCE	GARDEN STREET	4	4
CERTIFIED FREIGHT LINES INC.	1820 RAILROAD ST	4	4
OCEANO ICE CO.	1730 RAILROAD ST	4	5
S. SAN LUIS OBISPO COUNTY SAN.	***1600 ALOHA PL***	***5***	***5***
M,. FUKUHARA	1091 S HALCYON RD	7	10
SUTTONS EXXON SERVICE	***1899 CIENAGA ST***	***9***	***11***

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 2 SWEEPS UST sites within the searched area.

Site	Address	Map ID	Page
OCEANO C.S.D.	1685 FRONT ST	3	3
AUSTIN'S MARKET	***1711 FRONT ST***	***6***	***8***

EXECUTIVE SUMMARY

HAZNET: The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000-1,000,000 annually, representing approximately 350,000-500,000 shipments. Data from non-California manifests & continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, & disposal method. The source is the Department of Toxic Substance Control is the agency

A review of the HAZNET list, as provided by EDR, and dated 12/31/2007 has revealed that there are 3 HAZNET sites within the searched area.

Site	Address	Map ID	Page
S. SAN LUIS OBISPO COUNTY SAN.	*1600 ALOHA PL*	*5*	*5*
AUSTIN'S MARKET	*1711 FRONT ST*	*6*	*8*
SUTTONS EXXON SERVICE	*1899 CIENAGA ST*	*9*	*11*

EMI: Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies

A review of the EMI list, as provided by EDR, and dated 12/31/2006 has revealed that there is 1 EMI site within the searched area.

Site	Address	Map ID	Page
S. SAN LUIS OBISPO COUNTY SAN.	*1600 ALOHA PL*	*5*	*5*

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.

MAP FINDINGS SUMMARY

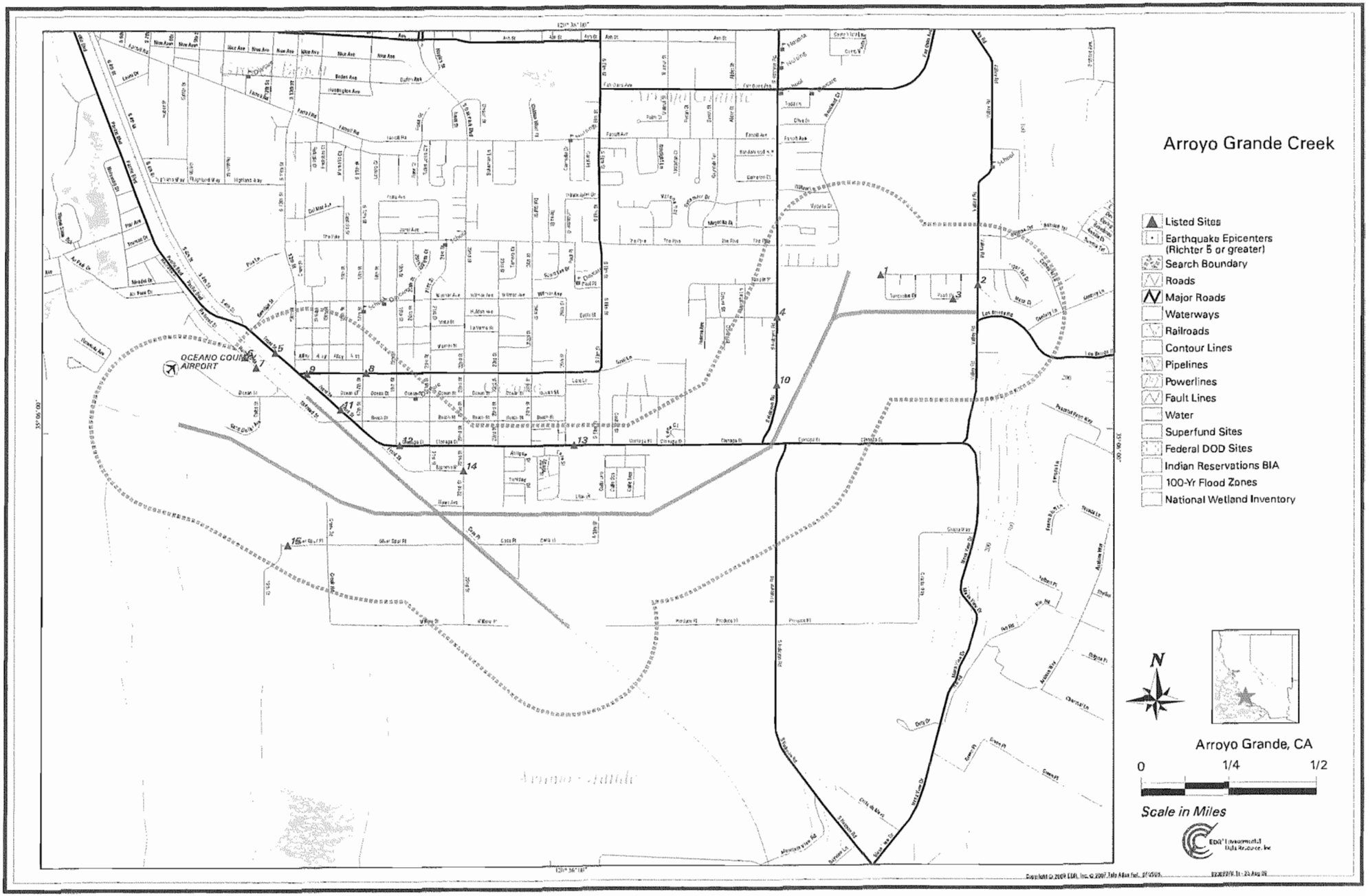
Database	Total Plotted
FEDERAL RECORDS	
NPL	0
Proposed NPL	0
Delisted NPL	0
NPL LIENS	0
CERCLIS	0
CERC-NFRAP	0
LIENS 2	0
CORRACTS	0
RCRA-TSDF	0
RCRA-LQG	0
RCRA-SQG	0
RCRA-CESQG	0
RCRA-NonGen	1
US ENG CONTROLS	0
US INST CONTROL	0
ERNS	0
HMIRS	0
DOT OPS	0
US CDL	0
US BROWNFIELDS	0
DOD	0
FUDS	0
LUCIS	0
CONSENT	0
ROD	0
UMTRA	0
DEBRIS REGION 9	0
ODI	0
MINES	0
TRIS	0
TSCA	0
FTTS	0
HIST FTTS	0
SSTS	0
ICIS	0
PADS	0
MLTS	0
RADINFO	0
FINDS	1
RAATS	0
SCRD DRYCLEANERS	0
STATE AND LOCAL RECORDS	
HIST Cal-Sites	0
CA BOND EXP. PLAN	0
SCH	0
Toxic Pits	0

MAP FINDINGS SUMMARY

Database	Total Plotted
SWF/LF	0
WMUDS/SWAT	0
CA WDS	0
Cortese	0
SWRCY	1
LUST	1
CA FID UST	1
SLIC	0
UST	2
HIST UST	7
LIENS	0
SWEEPS UST	2
CHMIRS	0
LDS	0
MCS	0
AST	0
Notify 65	0
DEED	0
VCP	0
DRYCLEANERS	0
WIP	0
CDL	0
RESPONSE	0
HAZNET	3
EMI	1
ENVIROSTOR	0
HAULERS	0
TRIBAL RECORDS	
INDIAN RESERV	0
INDIAN ODI	0
INDIAN LUST	0
INDIAN UST	0
INDIAN VCP	0
EDR PROPRIETARY RECORDS	
Manufactured Gas Plants	0

NOTES:

Sites may be listed in more than one database


Arroyo Grande Creek
Listed Sites
Earthquake Epicenters (Richter 5 or greater)
Search Boundary
Roads
Major Roads
Waterways
Railroads
Contour Lines
Pipelines
Powerlines
Fault Lines
Water
Superfund Sites
Federal DOD Sites
Indian Reservations BIA
100-Yr Flood Zones
National Wetland Inventory
OCEANO COUNTY AIRPORT
N
Arroyo Grande, CA
0
1/4
1/2
Scale in Miles

1 **RUNELS BROS** **HIST UST** **U001621236**
661 VALLEY RD **N/A**
ARROYO GRANDE, CA 98342

HIST UST:

Region:	STATE
Facility ID:	00000042656
Facility Type:	Other
Other Type:	Not reported
Total Tanks:	0001
Contact Name:	Not reported
Telephone:	8054895727
Owner Name:	RUNELS BROS
Owner Address:	661 VALLEY RD.
Owner City,St,Zip:	ARROYO GRANDE, CA 93420
Tank Num:	001
Container Num:	001
Year Installed:	1935
Tank Capacity:	00000550
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Tank Construction:	Not reported
Leak Detection:	Visual

---

2 **SLOCO FUEL SITE #1 ARROYO GRANDE** **UST** **U003949085**
840 BRANCH ST **N/A**
ARROYO GRANDE, CA 93420

UST:

Global ID:	16731
Latitude:	35.10413
Longitude:	-120.58285

---

3 **OCEANO C.S.D.** **SWEEPS UST** **S106930085**
1685 FRONT ST **N/A**
OCEANO, CA 93445

SWEEPS UST:

Status:	A
Comp Number:	17101
Number:	4
Board Of Equalization:	Not reported
Ref Date:	03-16-93
Act Date:	03-16-93
Created Date:	12-12-90
Tank Status:	A
Owner Tank Id:	Not reported
Swrcb Tank Id:	40-000-017101-000001
Actv Date:	02-13-91
Capacity:	1000
Tank Use:	M.V. FUEL
Stg:	P
Content:	DIESEL
Number Of Tanks:	1

4 **PHELAN & TAYLOR PRODUCE** HIST UST U001585719
GARDEN STREET N/A
OCEANO, CA 93445

HIST UST:

Region:	STATE
Facility ID:	00000041844
Facility Type:	Other
Other Type:	FARM
Total Tanks:	0002
Contact Name:	Not reported
Telephone:	8054892413
Owner Name:	PHELAN & TAYLOR PRODUCE CO.
Owner Address:	1860 HIWAY 1
Owner City,St,Zip:	OCEANO, CA 93445
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00004000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Tank Construction:	Not reported
Leak Detection:	None
Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00002000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Tank Construction:	Not reported
Leak Detection:	None

4 **CERTIFIED FREIGHT LINES INC.** HIST UST U001585712
1820 RAILROAD ST N/A
OCEANO, CA 93445

HIST UST:

Region:	STATE
Facility ID:	00000011937
Facility Type:	Other
Other Type:	TRUCKING TERMINAL
Total Tanks:	0001
Contact Name:	SEBASTIAN OIL DISTR.
Telephone:	8054891374
Owner Name:	CERTIFIED FREIGHT LINES, INC.
Owner Address:	1820 RAILROAD AVENUE
Owner City,St,Zip:	OCEANO, CA 93445
Tank Num:	001
Container Num:	01
Year Installed:	1982
Tank Capacity:	00000000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Tank Construction:	Not reported
Leak Detection:	Visual

4 **OCEANO ICE CO.** | HIST UST | U001585717
1730 RAILROAD ST | N/A
OCEANO, CA 93445

HIST UST:

Region:	STATE
Facility ID:	00000038125
Facility Type:	Other
Other Type:	ICE MFG & DISTRIBUTI
Total Tanks:	0001
Contact Name:	Not reported
Telephone:	8054892288
Owner Name:	OCEANO ICE CO., INC.
Owner Address:	1730 RAILROAD ST.
Owner City,St,Zip:	OCEANO, CA 93445
Tank Num:	001
Container Num:	1
Year Installed:	1970
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Tank Construction:	1/4 inches
Leak Detection:	Stock Inventor

---

5 **S. SAN LUIS OBISPO COUNTY SAN.** | HAZNET, HIST UST, EMI | U001585723
1600 ALOHA PL | N/A
OCEANO, CA 93445

HAZNET:

Gepaid:	CAL000253969
Contact:	AARON ALLEN OPERATOR
Telephone:	8054896666
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	PO BOX 339
Mailing City,St,Zip:	OCEANO, CA 934450550
Gen County:	San Luis Obispo
TSD EPA ID:	CAL000190080
TSD County:	San Joaquin
Waste Category:	Asbestos-containing waste
Disposal Method:	H132
Tons:	0.4
Facility County:	San Luis Obispo

HIST UST:

Region:	STATE
Facility ID:	00000058706
Facility Type:	Other
Other Type:	WASTEWATER TREATMENT
Total Tanks:	0001
Contact Name:	R. MICHAEL RHOADES
Telephone:	805489666
Owner Name:	S. SAN LUIS OBISPO COUNTY SANI
Owner Address:	1600 ALOHA PLACE
Owner City,St,Zip:	OCEANO, CA 93445
Tank Num:	001
Container Num:	1

S. SAN LUIS OBISPO COUNTY SAN. (Continued) **U001585723**

Year Installed: 1981
Tank Capacity: 00002133
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Tank Construction: Not reported
Leak Detection: Stock Inventor

EMI:

Year:	2000
County Code:	40
Air Basin:	SCC
Facility ID:	996
Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

Year:	2001
County Code:	40
Air Basin:	SCC
Facility ID:	996
Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

Year:	2002
County Code:	40
Air Basin:	SCC
Facility ID:	996
Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0

S. SAN LUIS OBISPO COUNTY SAN. (Continued) **U001585723**

Part. Matter 10 Micrometers & Smllr Tons/Yr:	0
Year:	2003
County Code:	40
Air Basin:	SCC
Facility ID:	996
Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0
Year:	2004
County Code:	40
Air Basin:	SCC
Facility ID:	996
Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.604
Reactive Organic Gases Tons/Yr:	0.2828284
Carbon Monoxide Emissions Tons/Yr:	1.084
NOX - Oxides of Nitrogen Tons/Yr:	0.199
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0
Year:	2005
County Code:	40
Air Basin:	SCC
Facility ID:	996
Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.604
Reactive Organic Gases Tons/Yr:	.2828284
Carbon Monoxide Emissions Tons/Yr:	1.084
NOX - Oxides of Nitrogen Tons/Yr:	.199
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0
Year:	2006
County Code:	40
Air Basin:	SCC
Facility ID:	996

S. SAN LUIS OBISPO COUNTY SAN. (Continued) **U001585723**

Air District Name:	SLO
SIC Code:	4952
Air District Name:	SAN LUIS OBISPO COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.604
Reactive Organic Gases Tons/Yr:	.2828284
Carbon Monoxide Emissions Tons/Yr:	1.084
NOX - Oxides of Nitrogen Tons/Yr:	.199
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers & Smllr Tons/Yr:	0

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6 **AUSTIN'S MARKET** HAZNET S105083182
1711 FRONT ST SWEEPS UST N/A
OCEANO, CA 93445

HAZNET:

Gepaid:	CAC001329056
Contact:	ROBERT PADILLA
Telephone:	8054893138
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	1711 FRONT ST
Mailing City,St,Zip:	OCEANO, CA 934450000
Gen County:	San Luis Obispo
TSD EPA ID:	CAT080013352
TSD County:	Los Angeles
Waste Category:	Waste oil and mixed oil
Disposal Method:	Recycler
Tons:	1.6680
Facility County:	San Luis Obispo

Gepaid:	CAC001329056
Contact:	ROBERT PADILLA - PROP OWNER
Telephone:	8054893138
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	1711 FRONT ST
Mailing City,St,Zip:	OCEANO, CA 934450000
Gen County:	San Luis Obispo
TSD EPA ID:	CAT080013352
TSD County:	Los Angeles
Waste Category:	Tank bottom waste
Disposal Method:	Recycler
Tons:	1.04
Facility County:	Not reported

SWEEPS UST:

Status:	A
Comp Number:	10701
Number:	2
Board Of Equalization:	Not reported
Ref Date:	03-16-93
Act Date:	03-16-93
Created Date:	02-29-88
Tank Status:	A

AUSTIN'S MARKET (Continued) **S105083182**

Owner Tank Id: 1
Swrcb Tank Id: 40-000-010701-000001
Actv Date: 02-13-91
Capacity: 8003
Tank Use: M.V. FUEL
Stg: P
Content: LEADED
Number Of Tanks: 3

Status: A
Comp Number: 10701
Number: 2
Board Of Equalization: Not reported
Ref Date: 03-16-93
Act Date: 03-16-93
Created Date: 02-29-88
Tank Status: A
Owner Tank Id: 2
Swrcb Tank Id: 40-000-010701-000002
Actv Date: 02-13-91
Capacity: 4407
Tank Use: M.V. FUEL
Stg: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: A
Comp Number: 10701
Number: 2
Board Of Equalization: Not reported
Ref Date: 03-16-93
Act Date: 03-16-93
Created Date: 02-29-88
Tank Status: A
Owner Tank Id: 3
Swrcb Tank Id: 40-000-010701-000003
Actv Date: 02-13-91
Capacity: 3017
Tank Use: M.V. FUEL
Stg: P
Content: REG UNLEADED
Number Of Tanks: Not reported

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6 **OCEANO MARKET** **UST** **U003786096**
1711 FRONT ST **N/A**
OCEANO, CA 93445

UST:
Global ID: 16671
Latitude: 35.10172
Longitude: -120.61642

7 **M,. FUKUHARA** **CA FID UST** **S101620681**
1091 S HALCYON RD **N/A**
ARROYO GRANDE, CA 93420

CA FID UST:

Facility ID:	40001692
Regulated By:	UTNKA
Regulated ID:	00015203
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	8054892630
Mail To:	Not reported
Mailing Address:	1091 S HALCYON RD
Mailing Address 2:	Not reported
Mailing City,St,Zip:	ARROYO GRANDE 93420
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

---

7 **M,. FUKUHARA** **HIST UST** **U001585127**
1091 S HALCYON RD **N/A**
ARROYO GRANDE, CA 93420

HIST UST:

Region:	STATE
Facility ID:	00000015203
Facility Type:	Other
Other Type:	FARM
Total Tanks:	0002
Contact Name:	Not reported
Telephone:	8054892630
Owner Name:	M,. FUKUHARA
Owner Address:	1091 S. HALYCON RD.
Owner City,St,Zip:	ARROYO GRANDE, CA 93420
Tank Num:	001
Container Num:	#2
Year Installed:	Not reported
Tank Capacity:	00000300
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Tank Construction:	Not reported
Leak Detection:	None
Tank Num:	002
Container Num:	#1
Year Installed:	Not reported
Tank Capacity:	00000550
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Tank Construction:	Not reported
Leak Detection:	None

8 **NEXCYCLE** **SWRCY** **S107137399**
1909 FRONT ST **N/A**
OCEANO, CA 93445

SWRCY:

Certification Status:	O
Facility Phone Number:	Not reported
Date facility became certified:	10/1/2001
Date facility began operating:	10/19/2001
Date facility ceased operating:	Still operating
Whether The Facility Is Grandfathered:	Not reported
Convenience Zone Where Faciltiy Located:	3094
Convenience Zone Where Faciltiy Located 2:	Not Accepted
Convenience Zone Where Faciltiy Located 3:	Not Accepted
Convenience Zone Where Faciltiy Located 4:	Not Accepted
Convenience Zone Where Faciltiy Located 5:	Not Accepted
Convenience Zone Where Faciltiy Located 6:	Not Accepted
Convenience Zone Where Faciltiy Located 7:	Not Accepted
Aluminum Beverage Containers Redeemed:	AL
Glass Beverage Containers Redeemed:	GL
Plastic Beverage Containers Redeemed:	PL
Other mat beverage containers redeemed:	Not reported
Refillable Beverage Containers Redeemed:	Not reported

9 **SUTTONS EXXON SERVICE** **HAZNET** **U001585726**
1899 CIENAGA ST **HIST UST** **N/A**
OCEANO, CA 93445

HAZNET:

Gepaid:	CAL000318437
Contact:	LEO FEDEWA
Telephone:	8055434084
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	3455 S OCEANO AVE
Mailing City,St,Zip:	CAYUCOS, CA 934300000
Gen County:	San Luis Obispo
TSD EPA ID:	CAD982446858
TSD County:	Santa Barbara
Waste Category:	Unspecified oil-containing waste
Disposal Method:	H141
Tons:	0.52
Facility County:	San Luis Obispo

HIST UST:

Region:	STATE
Facility ID:	00000035605
Facility Type:	Gas Station
Other Type:	Not reported
Total Tanks:	0004
Contact Name:	LEO SUTTON
Telephone:	8054819561
Owner Name:	CLEO N. & BERNIDENE SMITH
Owner Address:	516 FILLMORE
Owner City,St,Zip:	TAFT, CA 93268
Tank Num:	001
Container Num:	1
Year Installed:	Not reported

SUTTONS EXXON SERVICE (Continued) **U001585726**

Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: Not reported
Leak Detection: None

Tank Num: 002
Container Num: 4
Year Installed: Not reported
Tank Capacity: 00000300
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Tank Construction: Not reported
Leak Detection: None

Tank Num: 003
Container Num: 2
Year Installed: Not reported
Tank Capacity: 00008000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Tank Construction: Not reported
Leak Detection: None

Tank Num: 004
Container Num: 3
Year Installed: Not reported
Tank Capacity: 00004000
Tank Used for: PRODUCT
Type of Fuel: PREMIUM
Tank Construction: Not reported
Leak Detection: None

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9 **BELL CRAIG(FORM SERV STATION)** **LUST** **S101308517**
1899 CIENEGA **N/A**
OCEANO, CA 93445

LUST:
Region: STATE
Global Id: T0607900041
Latitude: 35.0979929
Longitude: -120.610919
Case Type: LUST Cleanup Site
Status: Open - Remediation
Status Date: 2006-10-30 00:00:00
Lead Agency: CENTRAL COAST RWQCB (REGION 3)
Case Worker: Not reported
Local Agency: SAN LUIS OBISPO COUNTY
RB Case Number: 2079
LOC Case Number: Not reported
File Location: Regional Board
Potential Media Affect: Aquifer used for drinking water supply
Potential Contaminats of Concern: Gasoline
Site History: Not reported

LUST REG 3:
Region: 3

BELL CRAIG(FORM SERV STATION) (Continued) **S101308517**

Regional Board:	Central Coast Region
Facility County:	San Luis Obispo
Status:	Pollution Characterization
Case Number:	2079
Local Case Num:	Not reported
Case Type:	O
Substance:	Gasoline
Quantity:	Not reported
Abatement Method:	U
Global ID:	T0607900041
Leak Source:	Tank
Leak Cause:	UNK
How Stopped:	Not reported
How Discovered:	Tank Closure
Release Date:	02/03/1992
Discovered Date:	5/18/90
Enter Date:	01/01/1980
Stop Date:	Not reported
Review Date:	08/07/2002
Enforce Date:	Not reported
Close Date:	Not reported
Enforcement Type:	LET
Responsible Party:	CRAIG BELL
RP Address:	3455 SO. OCEAN
Contact:	Not reported
Cross Street:	HWH 1
Local Agency:	40000
Lead Agency:	Regional Board
Staff Initials:	MTK
Confirm Leak:	Not reported
Workplan:	Not reported
Prelim Assess:	5/10/91
Pollution Char:	01/01/1992
Remedial Plan:	Not reported
Remedial Action:	Not reported
Monitoring:	/ /
Pilot Program:	UST
Interim Action:	y
Funding:	y
MTBE Class:	B
Max MTBE Grnd Wtr:	690
Max MTBE Soil:	Not reported
Max MTBE Data:	10/02/2001
MTBE Tested:	YES
Lat/Long:	35.0979929 / -120.610919
Soil Qualifier:	Not reported
Grnd Wtr Qualifier:	=
Mtbe Concentratn:	19
Mtbe Fuel:	1
Org Name:	Not reported
Basin Plan:	10.31
Beneficial:	MUN
Priority:	Not reported
UST Cleanup Fund ID:	Not reported
Suspended:	Not reported
Operator:	Not reported
Water System:	OCEANO CSD

BELL CRAIG(FORM SERV STATION) (Continued) **S101308517**

Well Name: WELL 05
Distance From Well: 0
Assigned Name: 32S/13E-32D10 M
Summary: RR ACCESS PENDING.

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10 **CENTRAL COAST TRUCKING** **FINDS** **1004676704**
2100 22ND ST **RCRA-NonGen** **CAR000088435**
OCEANO, CA 93445

FINDS:
Other Pertinent Environmental Activity Identified at Site

Registry ID: 110012246462

California - Hazardous Waste Tracking System - Datamart

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

RCRA-NonGen:
Date form received by agency: 12/14/2000
Facility name: CENTRAL COAST TRUCKING
Facility address: 2100 22ND ST
OCEANO, CA 93445
EPA ID: CAR000088435
Mailing address: P O BOX 686
OCEANO, CA 93445
Contact: GEORGE WINSLETT
Contact address: P O BOX 686
OCEANO, CA 93445
Contact country: US
Contact telephone: (805) 474-1446
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: GEORGE C WINSLETT
Owner/operator address: P O BOX 686
OCEANO, CA 93445
Owner/operator country: Not reported
Owner/operator telephone: (805) 474-1446
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: Unknown
Mixed waste (haz. and radioactive): Unknown

CENTRAL COAST TRUCKING (Continued) **1004676704**

Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Violation Status: No violations found

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ARROYO GRANDE	1003109126	RALCCO RECYCLING COMPANY	HIGHWAY 1 AT 801 RALCOA WAY	93420	CERCLIS, FINDS
ARROYO GRANDE	1000174710	NG CO	1111 HWY 101	93420	RCRA-SQG, FINDS
ARROYO GRANDE	U001585141	SEVEN-UP BOTTLING COMPANY	1111 HIGHWAY 101	93420	HIST UST
ARROYO GRANDE	1000251503	PACIFIC BELL	(L4) E/O HIGHWAY FIRST HUNDRED	93420	FINDS, RCRA-NonGen
ARROYO GRANDE	91466331	S31 T31S R13E/8 MI N OF ARROYO GRANDE	S31 T31S R13E/8 MI N OF ARROYO GRANDE	93420	ERNS
ARROYO GRANDE	1003878704	UNION CHEMICALS	2565 WILLOW RD 5W OF HWY 1	93420	CERC-NFRAP
ARROYO GRANDE	S101482188	UNION OIL COMPANY - SANTA MARIA REFINERY	WILLOW ROAD AT HWY 1, 8 MILES N OF GUAD.	93420	ENVIROSTOR
GROVER BEACH	S106245238	JAMES CROOKS TRUCKING INC.	1050 GRIFFIN ST STE E	93433	DRYCLEANERS
GROVER CITY	1003877976	GROVER CITY LANDFILL	16TH & MINTONE	93433	CERC-NFRAP
OCEANO	U001585722	RICHARD PERRY	22ND / SILVERSPUR COURT MAILIN	93445	HIST UST
OCEANO	U001585725	SUTTON'S EXXON	1899 ARROYO GRANDE	93445	HIST UST
OCEANO	U001585711	AUSTINS MOBIL SER	1711 PACIFIC	93445	HIST UST
OCEANO	S106924185	CERTIFIED FREIGHT LINES, INC.	1820 RAILROAD AVE	93445	SWEEPS UST
OCEANO	1004678239	JOE COUPRAKIS	S SIDE OF PIER AVE AND E SIDE	93445	RCRA-SQG, FINDS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/07/2008
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 53

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 11/20/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/17/2008
Date Data Arrived at EDR: 12/22/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 98

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/06/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/06/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 01/23/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 54

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/30/2008
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 34

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/16/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Annually

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 05/14/2008
Date Data Arrived at EDR: 05/28/2008
Date Made Active in Reports: 08/08/2008
Number of Days to Update: 72

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 10/31/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 53

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/26/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 10/01/2008
Date Data Arrived at EDR: 11/14/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Semi-Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 02/06/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/05/2008
Date Made Active in Reports: 09/23/2008
Number of Days to Update: 18

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 03/09/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 11/03/2008
Date Data Arrived at EDR: 01/06/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 83

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/21/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/21/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 55

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 07/13/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 03/25/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 10/31/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 97

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/24/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 04/09/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 04/14/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/08/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 10/08/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 12/04/2008
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/31/2008
Date Data Arrived at EDR: 08/13/2008
Date Made Active in Reports: 09/09/2008
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/04/2007
Date Data Arrived at EDR: 02/07/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 39

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/07/2009
Date Data Arrived at EDR: 01/15/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 74

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/28/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/30/2008
Date Data Arrived at EDR: 10/31/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 53

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/19/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Biennially

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 12/08/2008
Date Data Arrived at EDR: 12/09/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 97

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Varies

STATE AND LOCAL RECORDS

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 02/23/2009
Date Data Arrived at EDR: 02/24/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 43

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/09/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 03/04/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 01/21/2009
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/22/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2008
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Annually

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 22

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Semi-Annually

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/29/2008
Date Data Arrived at EDR: 12/29/2008
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 32

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/13/2009
Date Data Arrived at EDR: 02/17/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 50

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Varies

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 05/09/2008
Date Made Active in Reports: 06/20/2008
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

AST: Aboveground Petroleum Storage Tank Facilities

Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/2007
Date Data Arrived at EDR: 02/10/2009
Date Made Active in Reports: 04/14/2009
Number of Days to Update: 63

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/27/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: No Update Planned

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 8

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 12/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 02/23/2009
Date Data Arrived at EDR: 02/24/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 43

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/23/2008
Date Data Arrived at EDR: 09/24/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 5

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 10/31/2008
Date Data Arrived at EDR: 11/03/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 23

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/24/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 09/30/2008
Date Data Arrived at EDR: 10/06/2008
Date Made Active in Reports: 10/13/2008
Number of Days to Update: 7

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/24/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 02/23/2009
Date Data Arrived at EDR: 02/24/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 43

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 02/17/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 50

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 02/17/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 41

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Varies

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 02/23/2009
Date Data Arrived at EDR: 02/24/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 43

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 12/22/2008
Date Data Arrived at EDR: 12/22/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 36

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 02/06/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 03/13/2009
Date Data Arrived at EDR: 03/17/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 13

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/03/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 20

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/06/2008
Date Data Arrived at EDR: 10/09/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 41

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 03/03/2009
Date Data Arrived at EDR: 03/04/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 26

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/15/2009
Date Data Arrived at EDR: 02/27/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/06/2008
Date Data Arrived at EDR: 10/09/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 41

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 09/08/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/25/2008
Date Data Arrived at EDR: 11/26/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 27

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 76

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 03/13/2009
Date Data Arrived at EDR: 03/17/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 13

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 03/03/2009
Date Data Arrived at EDR: 03/04/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 26

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/23/2009
Date Data Arrived at EDR: 01/23/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 75

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/23/2009
Date Data Arrived at EDR: 01/23/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 76

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/24/2009
Date Data Arrived at EDR: 02/25/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 42

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/14/2009
Date Data Arrived at EDR: 01/15/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 12

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 9

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 07/07/1999
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/26/2008
Date Data Arrived at EDR: 01/27/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 71

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 11/10/2008
Date Data Arrived at EDR: 11/25/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 63

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 02/11/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/14/2008
Date Data Arrived at EDR: 04/10/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 26

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/09/2009
Date Data Arrived at EDR: 02/17/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 51

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Annually

City of Torrance Underground Storage Tank

Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/23/2009
Date Data Arrived at EDR: 02/24/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 44

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 02/05/2009
Date Data Arrived at EDR: 02/17/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 51

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/27/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination

A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites

Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Annually

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 03/02/2009
Date Data Arrived at EDR: 03/18/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/05/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/02/2009
Date Data Arrived at EDR: 03/27/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 12

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/05/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 03/02/2009
Date Data Arrived at EDR: 03/18/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 22

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/26/2009
Date Data Arrived at EDR: 02/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 57

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 04/03/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 11/06/2008
Date Data Arrived at EDR: 11/17/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 9

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/20/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 48

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Contaminated Sites
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 01/30/2009
Date Data Arrived at EDR: 02/03/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 64

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 01/30/2009
Date Data Arrived at EDR: 02/03/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 64

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 01/07/2009
Date Data Arrived at EDR: 01/09/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 18

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 07/16/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 04/03/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 11/01/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 35

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 11/17/2008
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 01/22/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 8

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 03/31/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/01/2008
Number of Days to Update: 12

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 02/10/2009
Date Data Arrived at EDR: 02/25/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 43

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 01/29/2009
Date Data Arrived at EDR: 01/30/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 68

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 01/06/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 21

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 12/29/2008
Date Data Arrived at EDR: 12/29/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 29

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 03/03/2009
Date Data Arrived at EDR: 03/03/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 36

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 01/09/2009
Date Data Arrived at EDR: 01/30/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 01/09/2009
Date Data Arrived at EDR: 02/03/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 65

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/20/2009
Date Data Arrived at EDR: 01/21/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 04/01/2009
Date Data Arrived at EDR: 04/02/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 7

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 02/26/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 8

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2008
Date Data Arrived at EDR: 09/04/2008
Date Made Active in Reports: 09/18/2008
Number of Days to Update: 14

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/09/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 12/29/2008
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 22

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/14/2009
Date Data Arrived at EDR: 02/06/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 62

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 12/11/2008
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 98

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 03/13/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 12/04/2007
Date Made Active in Reports: 12/31/2007
Number of Days to Update: 27

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/27/2009
Date Data Arrived at EDR: 02/25/2009
Date Made Active in Reports: 03/12/2009
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 02/25/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/11/2008
Date Made Active in Reports: 10/02/2008
Number of Days to Update: 21

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/09/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/11/2009
Number of Days to Update: 27

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/22/2008
Date Made Active in Reports: 09/08/2008
Number of Days to Update: 17

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

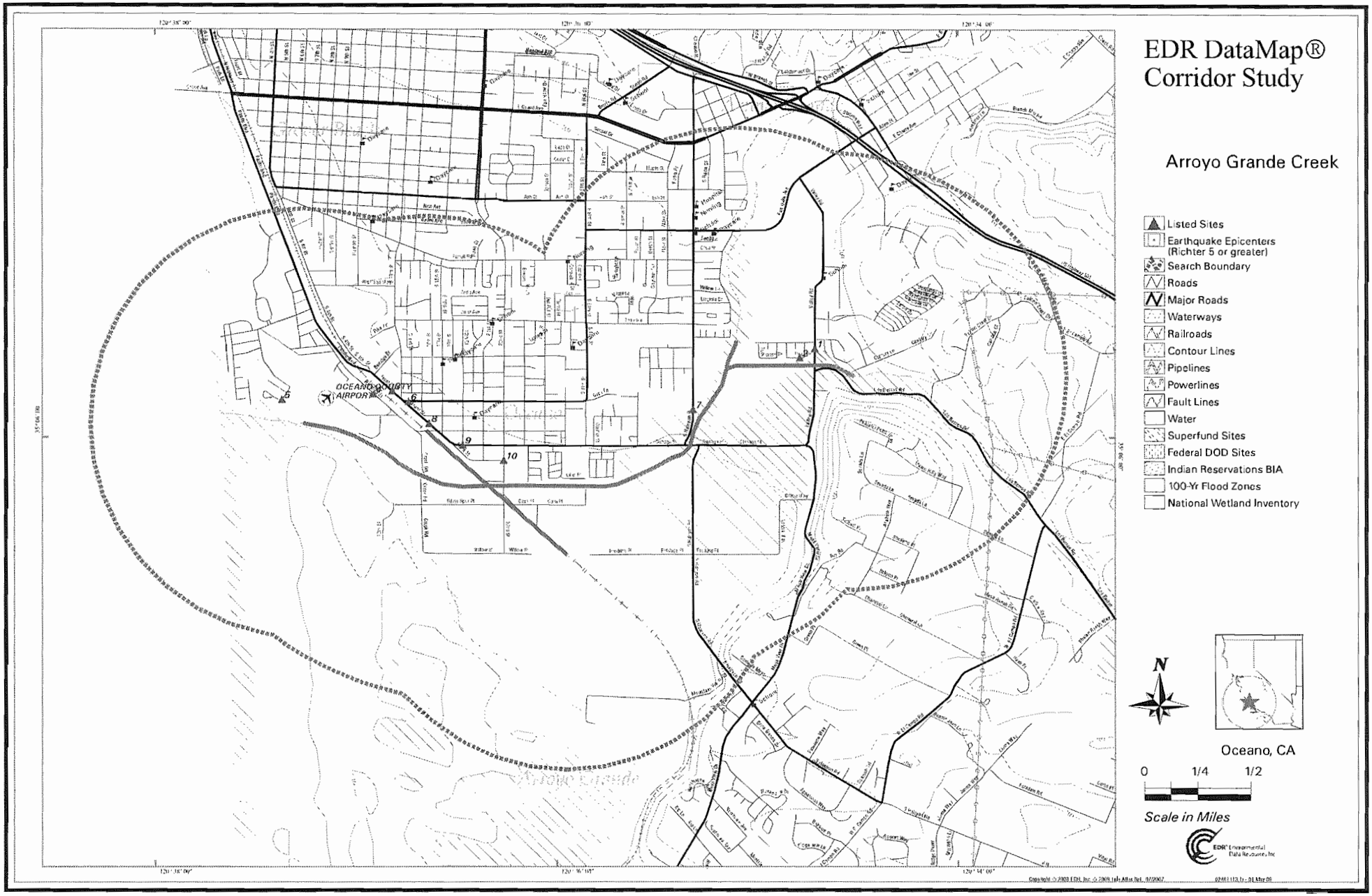
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION


EDR DataMap®
Corridor Study
Arroyo Grande Creek
Listed Sites
Earthquake Epicenters (Richter 5 or greater)
Search Boundary
Roads
Major Roads
Waterways
Railroads
Contour Lines
Pipelines
Powerlines
Fault Lines
Water
Superfund Sites
Federal DOD Sites
Indian Reservations BIA
100-Yr Flood Zones
National Wetland Inventory
OCEANO COUNTY AIRPORT
N
Oceano, CA
0 1/4 1/2
Scale in Miles

Arroyo Grande Creek
Arroyo Grande Creek
Arroyo Grande, CA 93445

Inquiry Number: 2294958.2
August 22, 2008

The EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

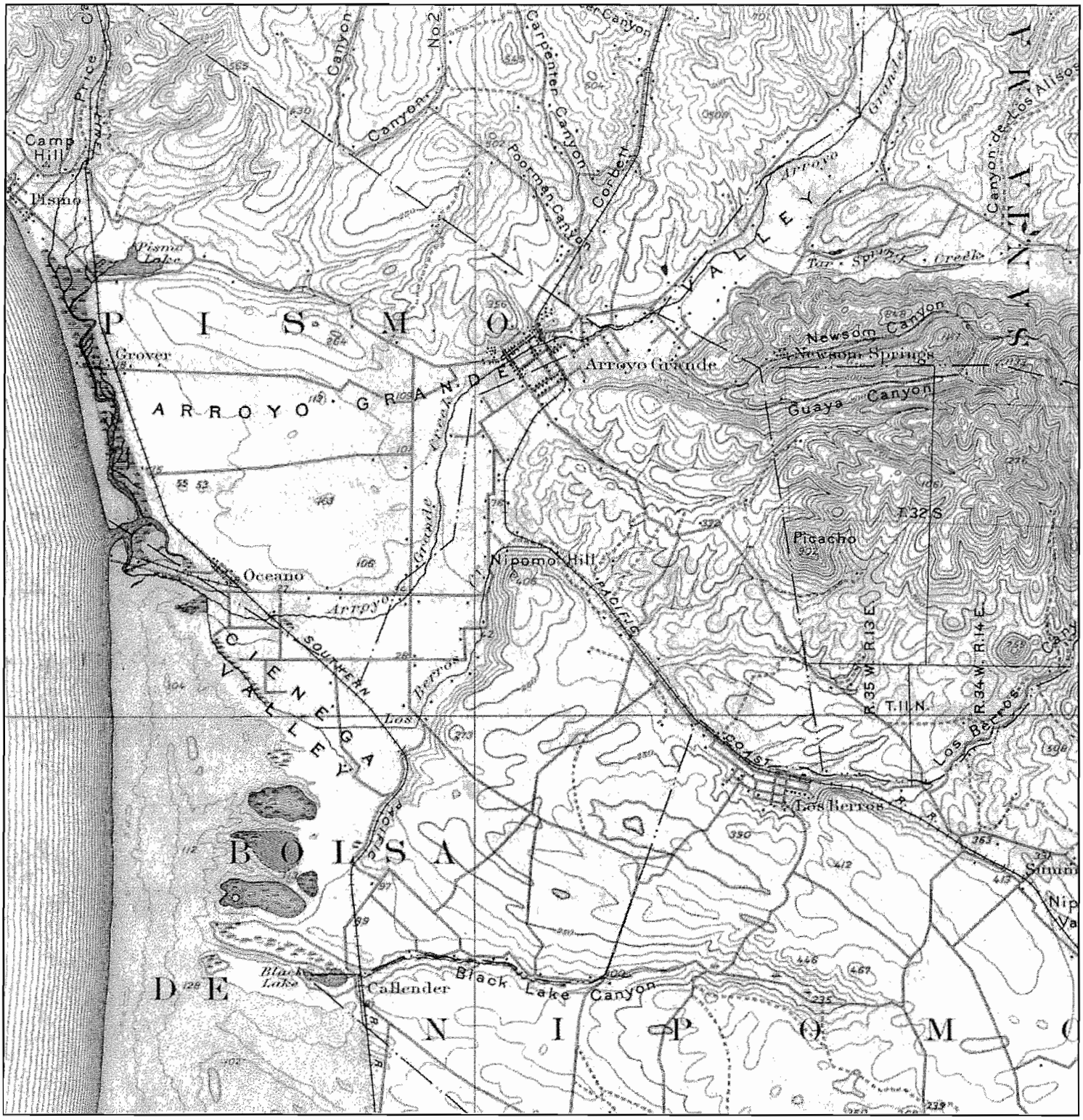
Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Historical Topographic Map

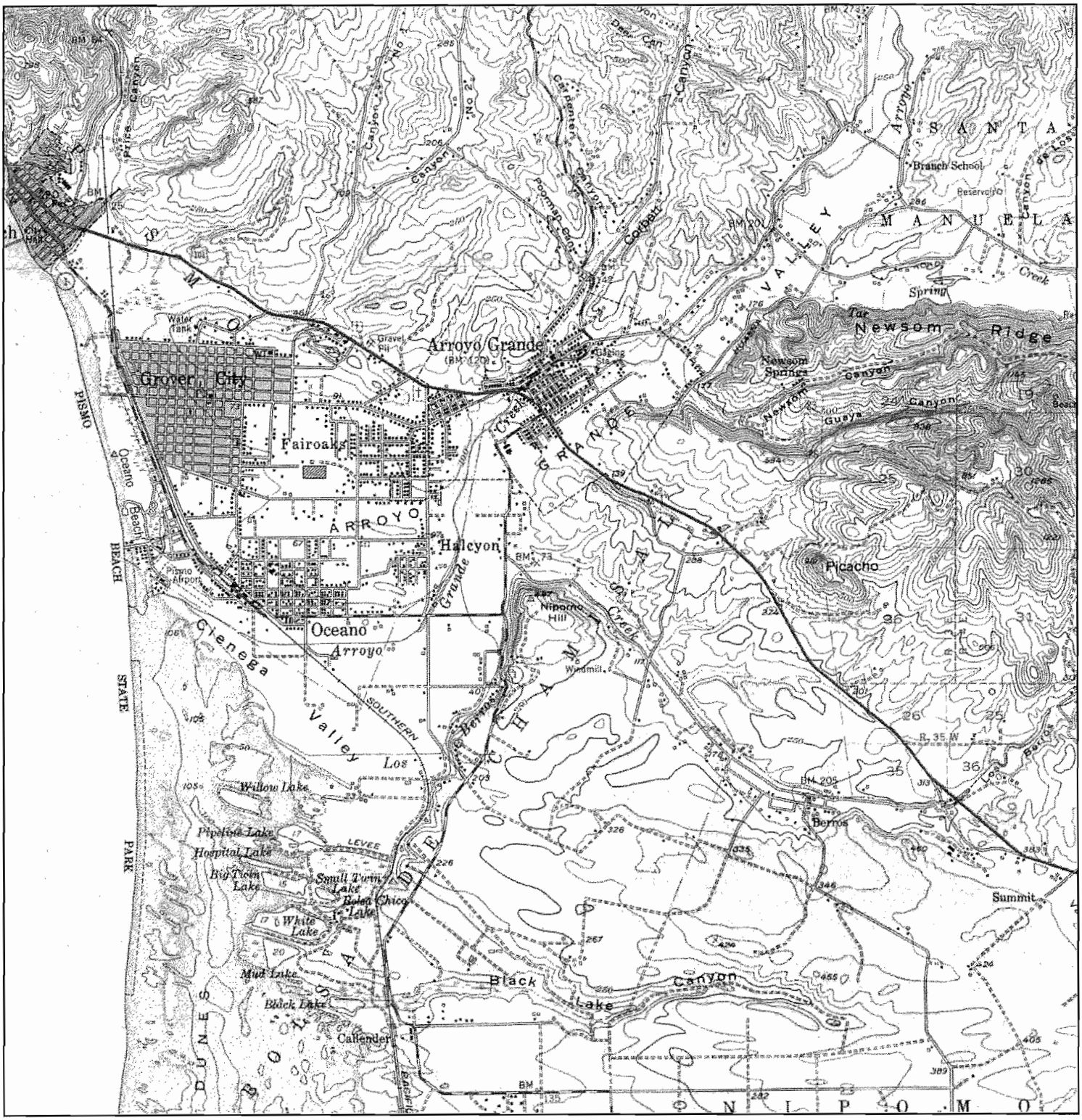
N	TARGET QUAD NAME: SAN LUIS MAP YEAR: 1900 SERIES: 30 SCALE: 1:125000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



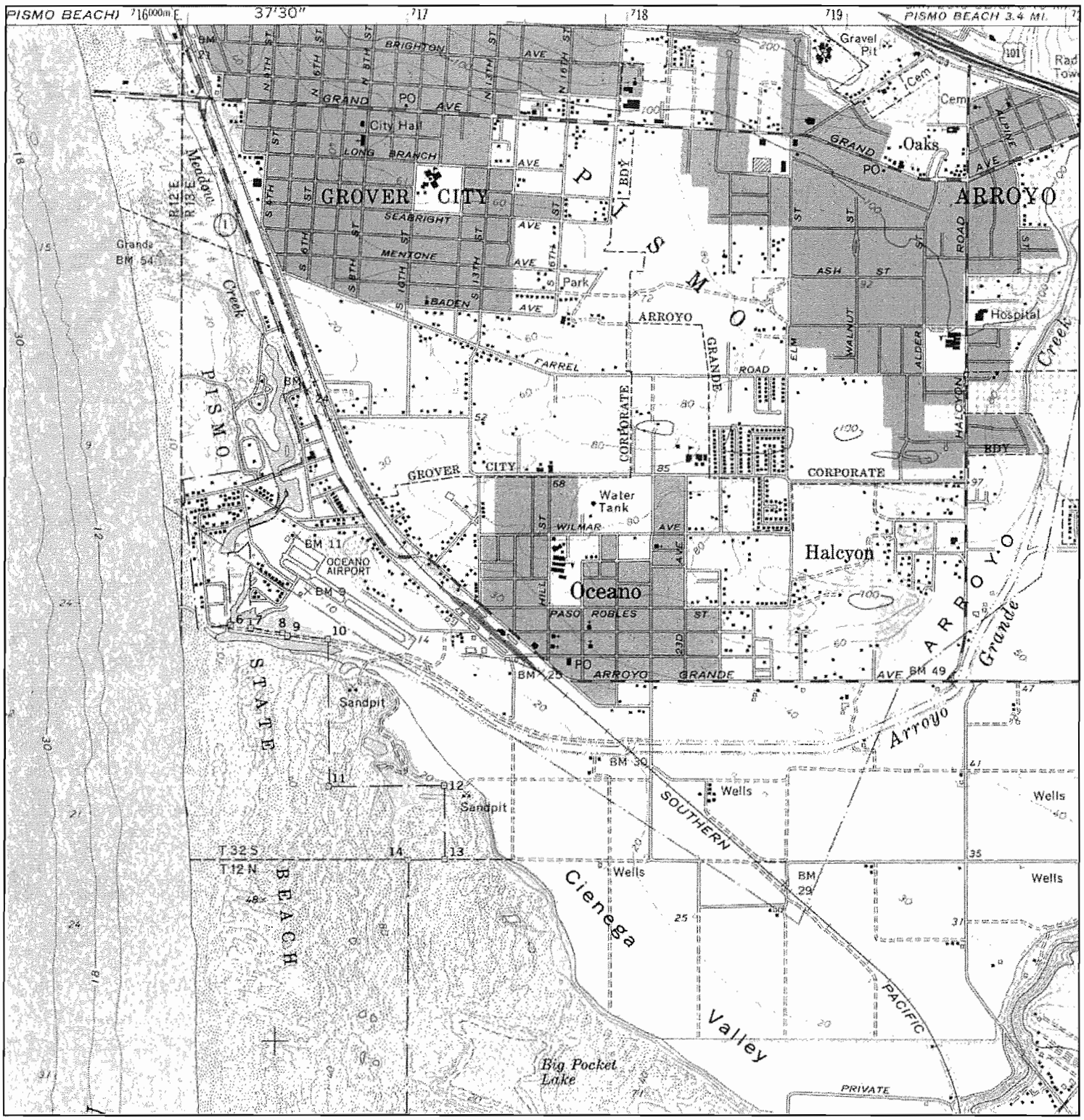
N	TARGET QUAD NAME: ARROYO GRANDE MAP YEAR: 1918 SERIES: 15 SCALE: 1:62500	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



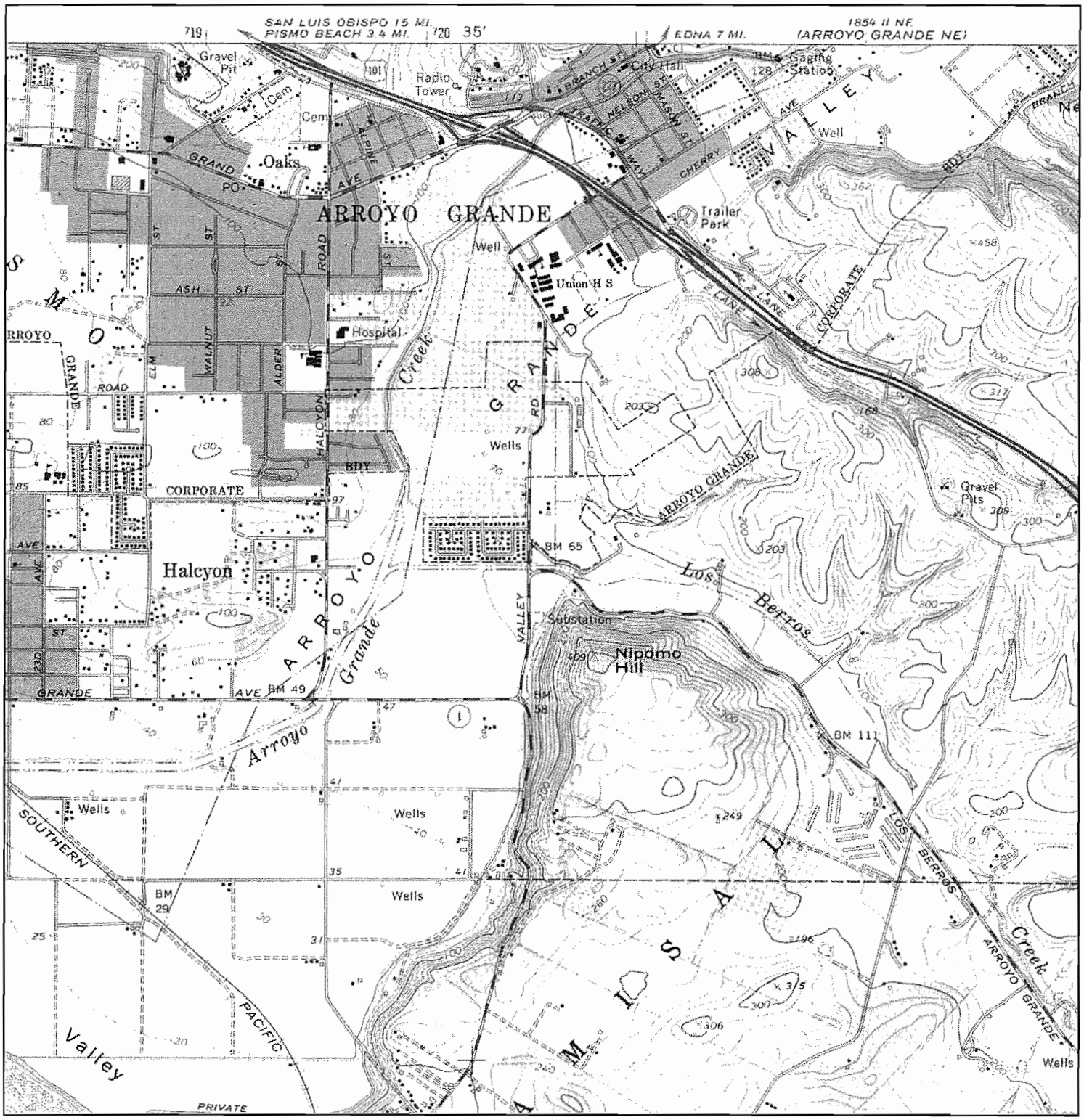
N	TARGET QUAD NAME: ARROYO GRANDE MAP YEAR: 1952 SERIES: 15 SCALE: 1:62500	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



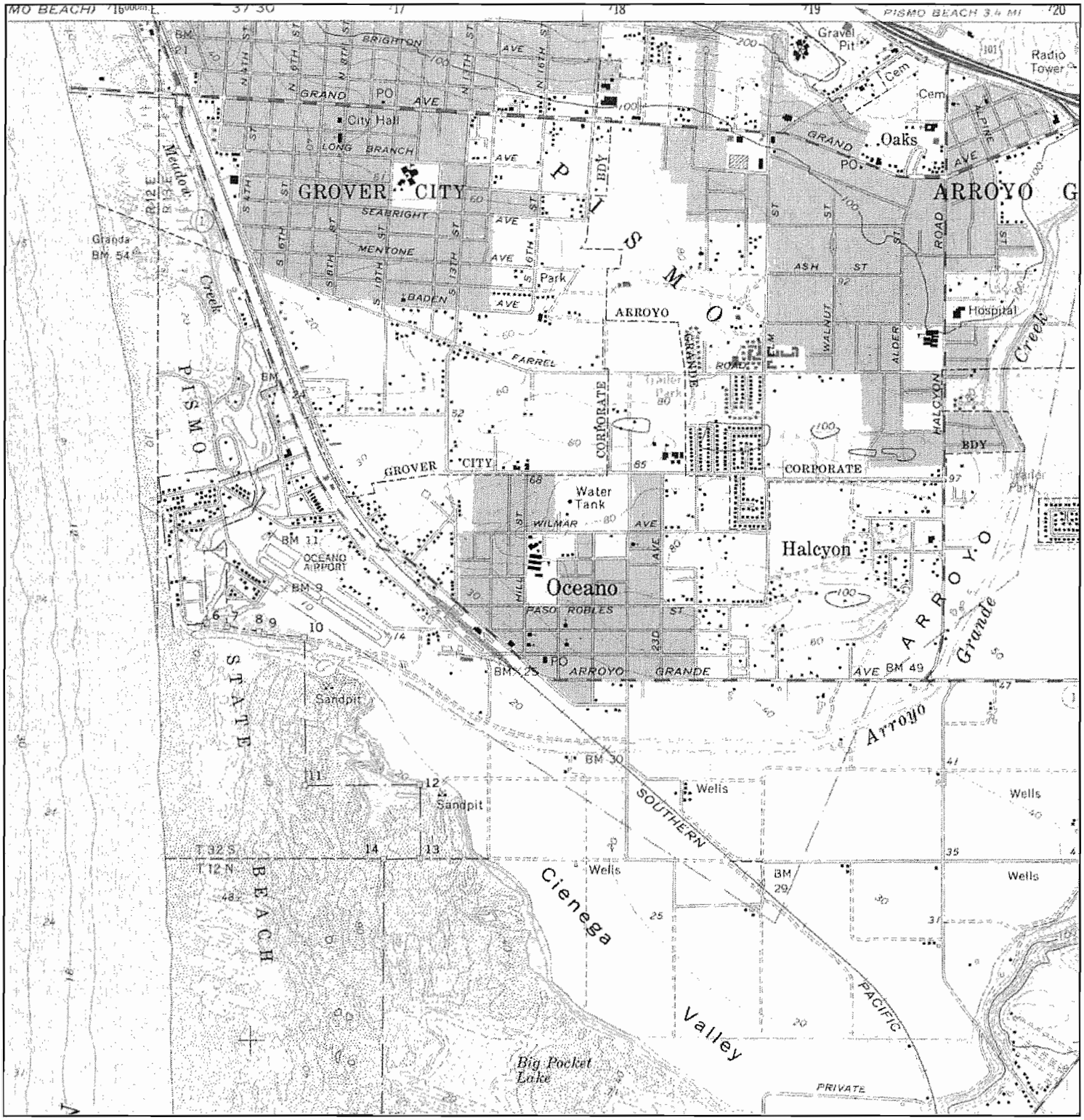
N	TARGET QUAD NAME: OCEANO MAP YEAR: 1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



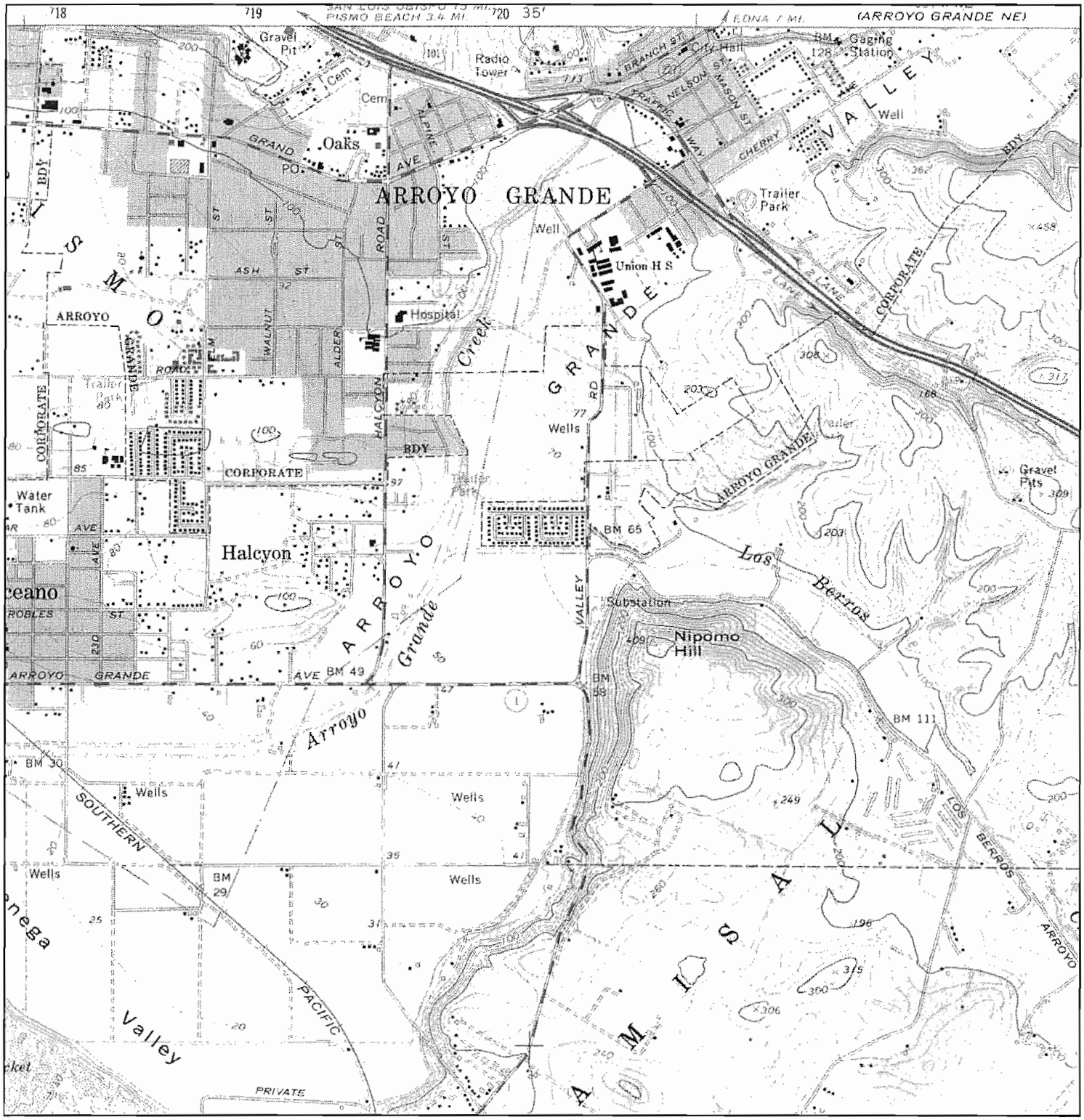
N	TARGET QUAD NAME: OCEANO MAP YEAR: 1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



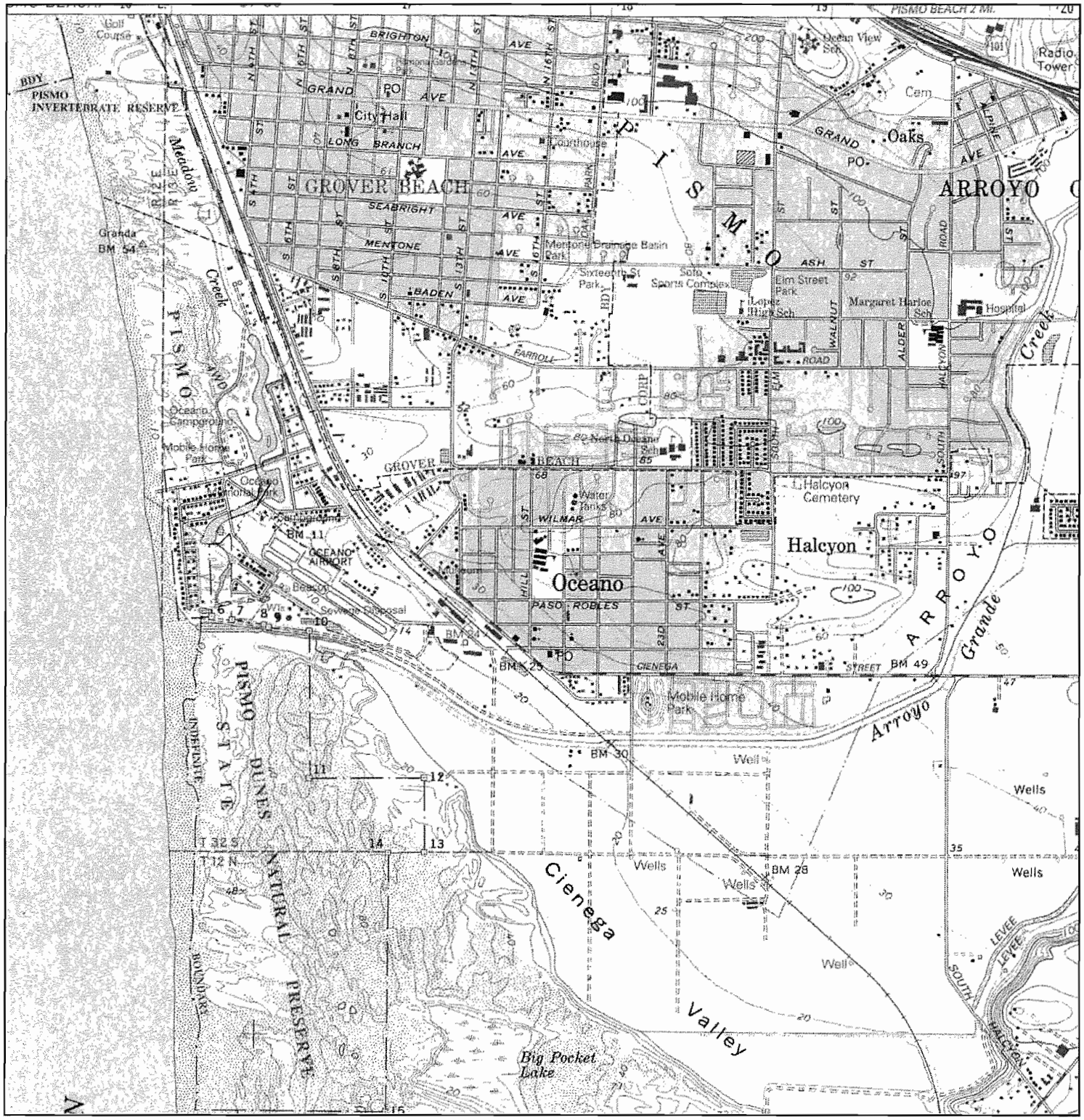
N	TARGET QUAD NAME: OCEANO MAP YEAR: 1979 PHOTOREVISED FROM:1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



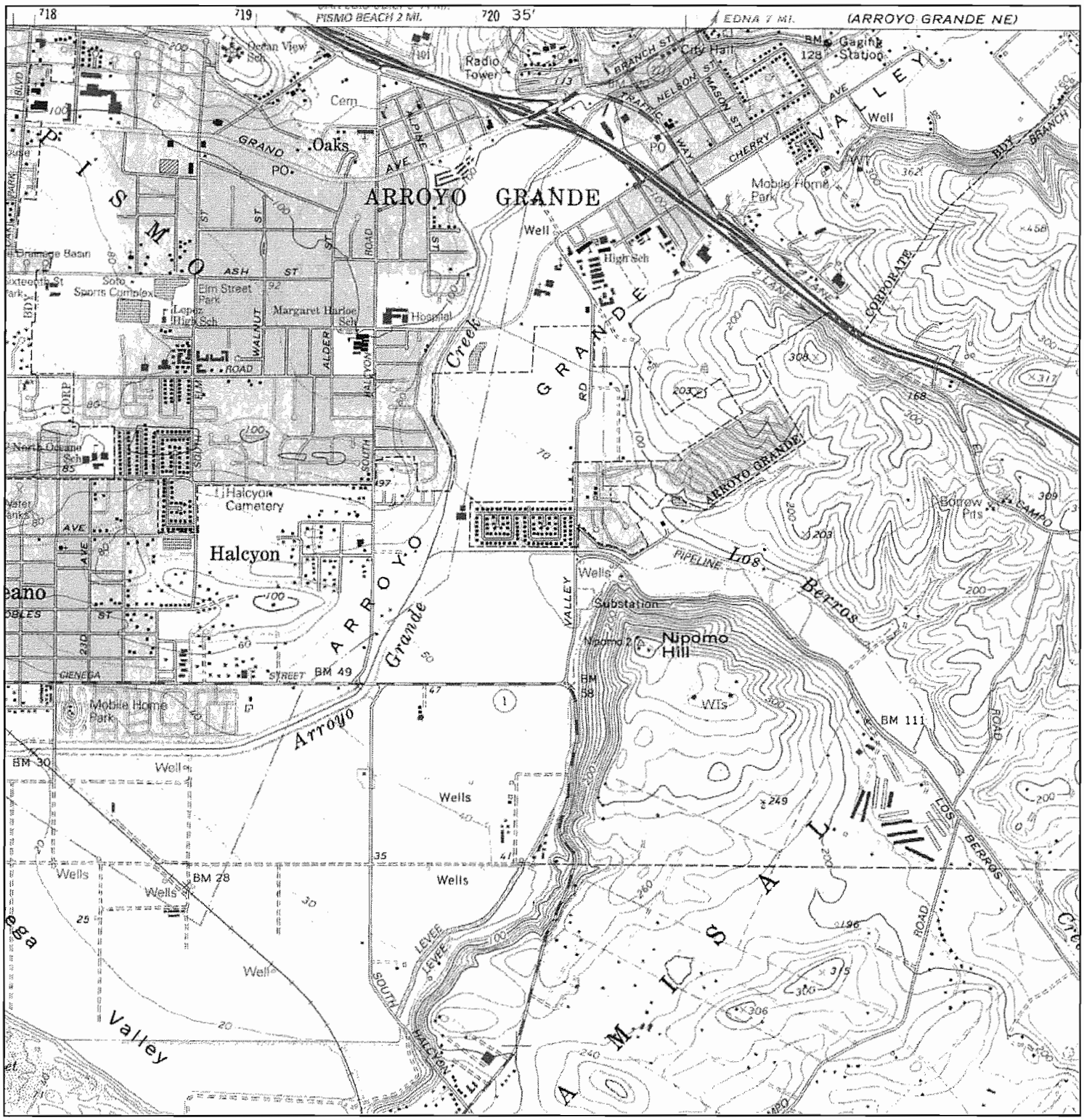
N	TARGET QUAD NAME: OCEANO MAP YEAR: 1979 PHOTOREVISED FROM:1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



N	TARGET QUAD NAME: OCEANO MAP YEAR: 1994 REVISED FROM:1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Historical Topographic Map



N	TARGET QUAD NAME: OCEANO MAP YEAR: 1994 REVISED FROM:1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Arroyo Grande Creek ADDRESS: Arroyo Grande Creek Arroyo Grande, CA 93445 LAT/LONG: /	CLIENT: Kleinfelder, Inc. CONTACT: Kathlien Childers INQUIRY#: 2294958.2 RESEARCH DATE: 08/22/2008

Arroyo Grande Creek
Arroyo Grande Creek
Arroyo Grande, CA 93445

Inquiry Number: 2294958.1
August 25, 2008

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

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. EDRs professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:

Aerial Photography August 25, 2008

Target Property:

Arroyo Grande Creek

Arroyo Grande, CA 93445

Year	*Scale*	*Details*	*Source*
1939	Aerial Photograph. Scale: 1"=666'	Flight Year: 1939	Laval
1939	Aerial Photograph. Scale: 1"=666'	Flight Year: 1939	Laval
1949	Aerial Photograph. Scale: 1"=666'	Flight Year: 1949	Aero
1949	Aerial Photograph. Scale: 1"=666'	Flight Year: 1949	Aero
1956	Aerial Photograph. Scale: 1"=666'	Flight Year: 1956	Hycon
1956	Aerial Photograph. Scale: 1"=666'	Flight Year: 1956	Hycon
1966	Aerial Photograph. Scale: 1"=666'	Flight Year: 1966	Mark Hurd
1966	Aerial Photograph. Scale: 1"=666'	Flight Year: 1966	Mark Hurd
1972	Aerial Photograph. Scale: 1"=666'	Flight Year: 1972	Mark Hurd
1972	Aerial Photograph. Scale: 1"=666'	Flight Year: 1972	Mark Hurd
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS

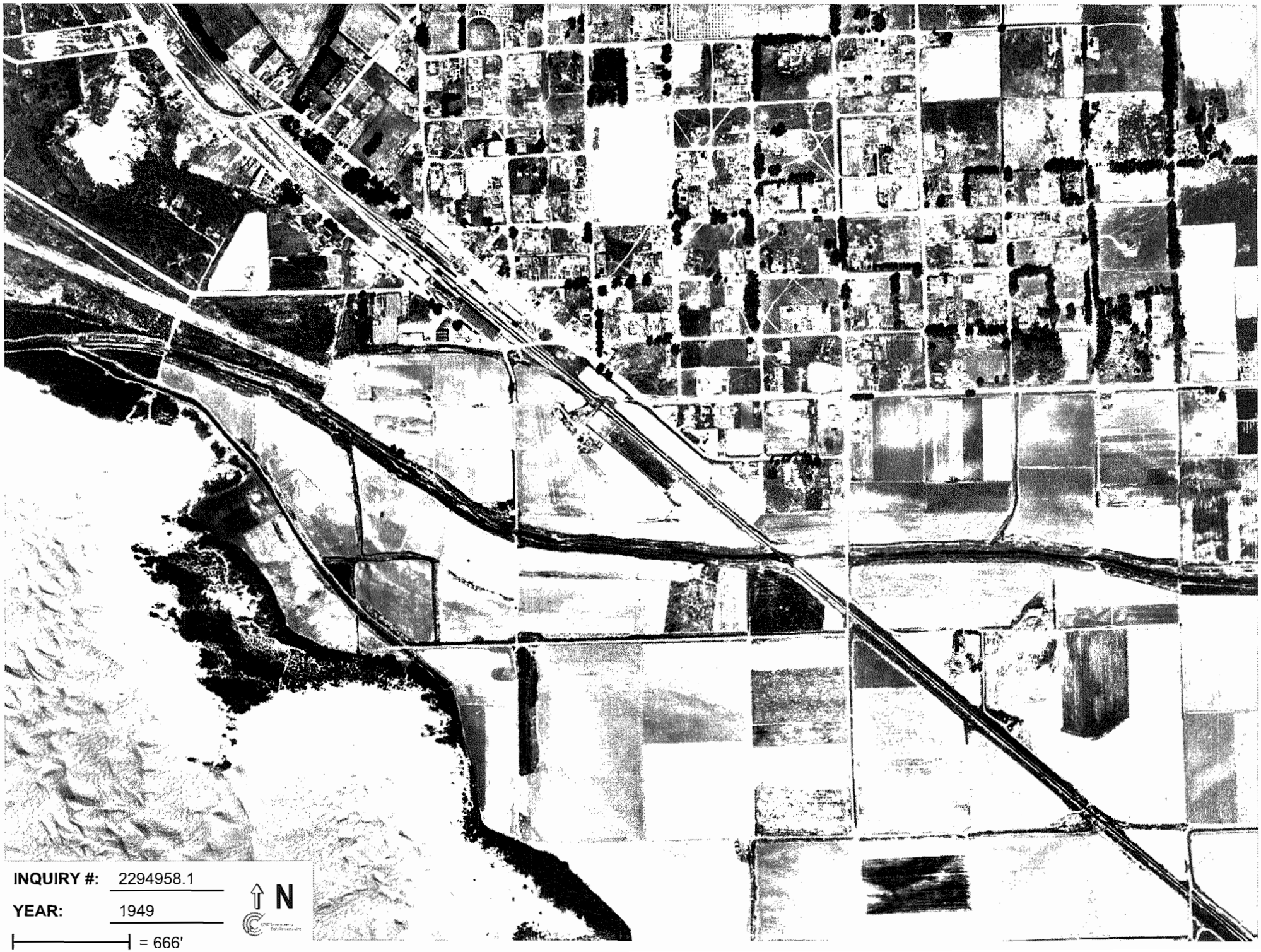
INQUIRY #: 2294958.1

YEAR: 1939

= 666'

N


INQUIRY #: 2294958.1
YEAR: 1939
= 666'
N

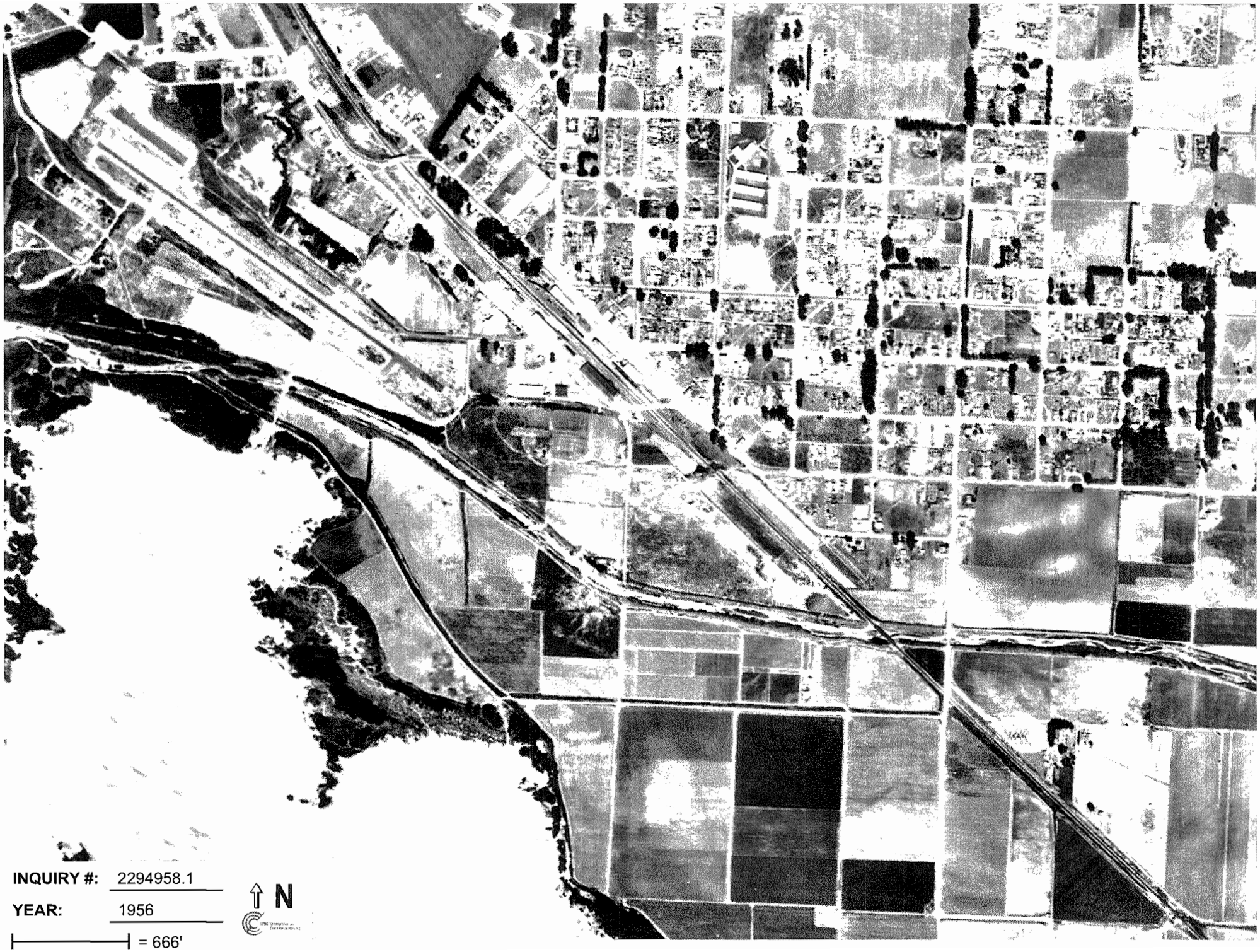

INQUIRY #: 2294958.1
YEAR: 1949
= 666'
N

INQUIRY #: 2294958.1

YEAR: 1949

= 666'

N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YEAR: 1956
= 666'
N


INQUIRY #: 2294958.1
YEAR: 1956
N
= 666'

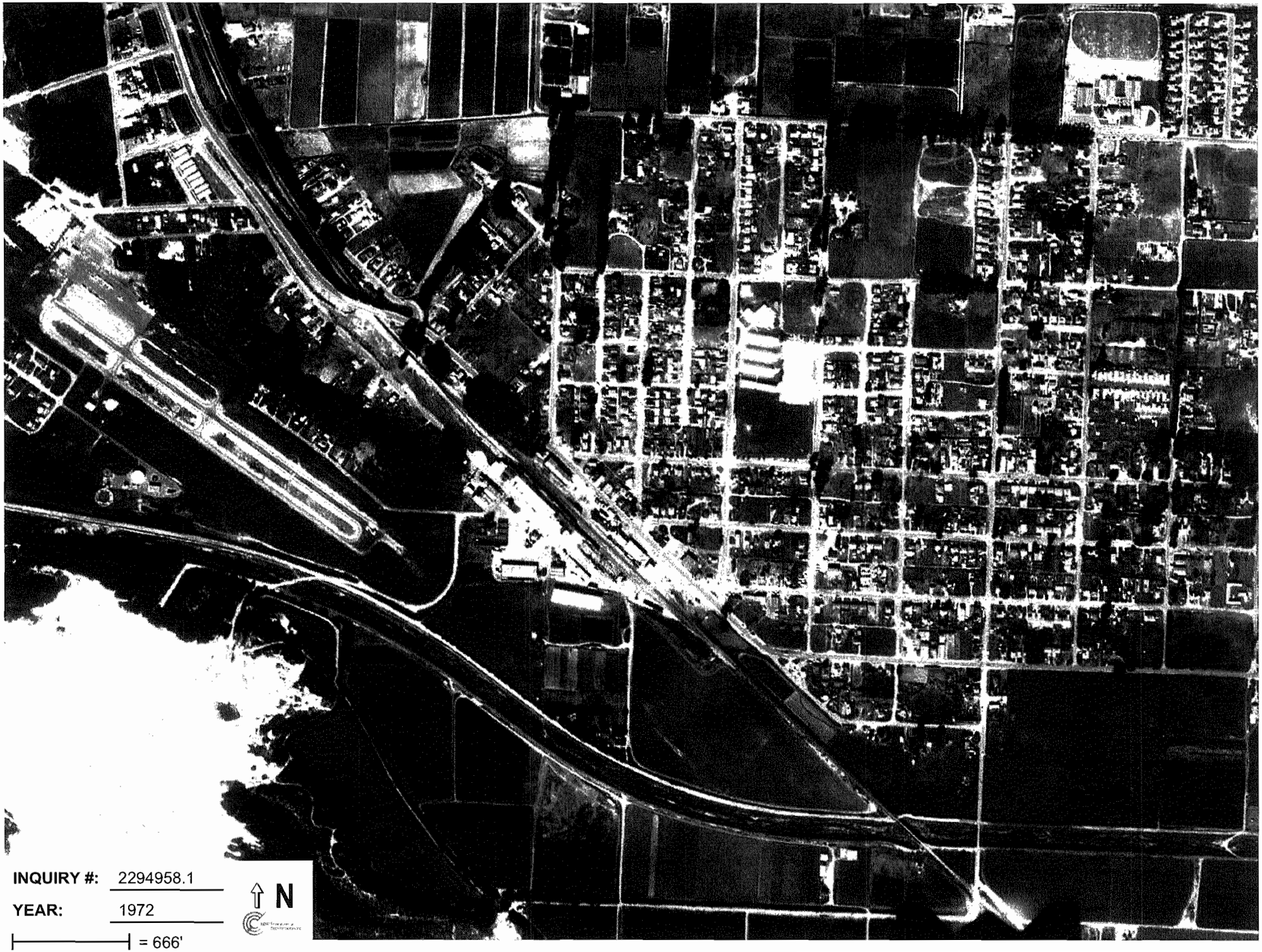

INQUIRY #: 2294958.1
YEAR: 1966
= 666'
N

INQUIRY #: 2294958.1

YEAR: 1966

= 666'

N



INQUIRY #: 2294958.1

YEAR: 1972

= 666'

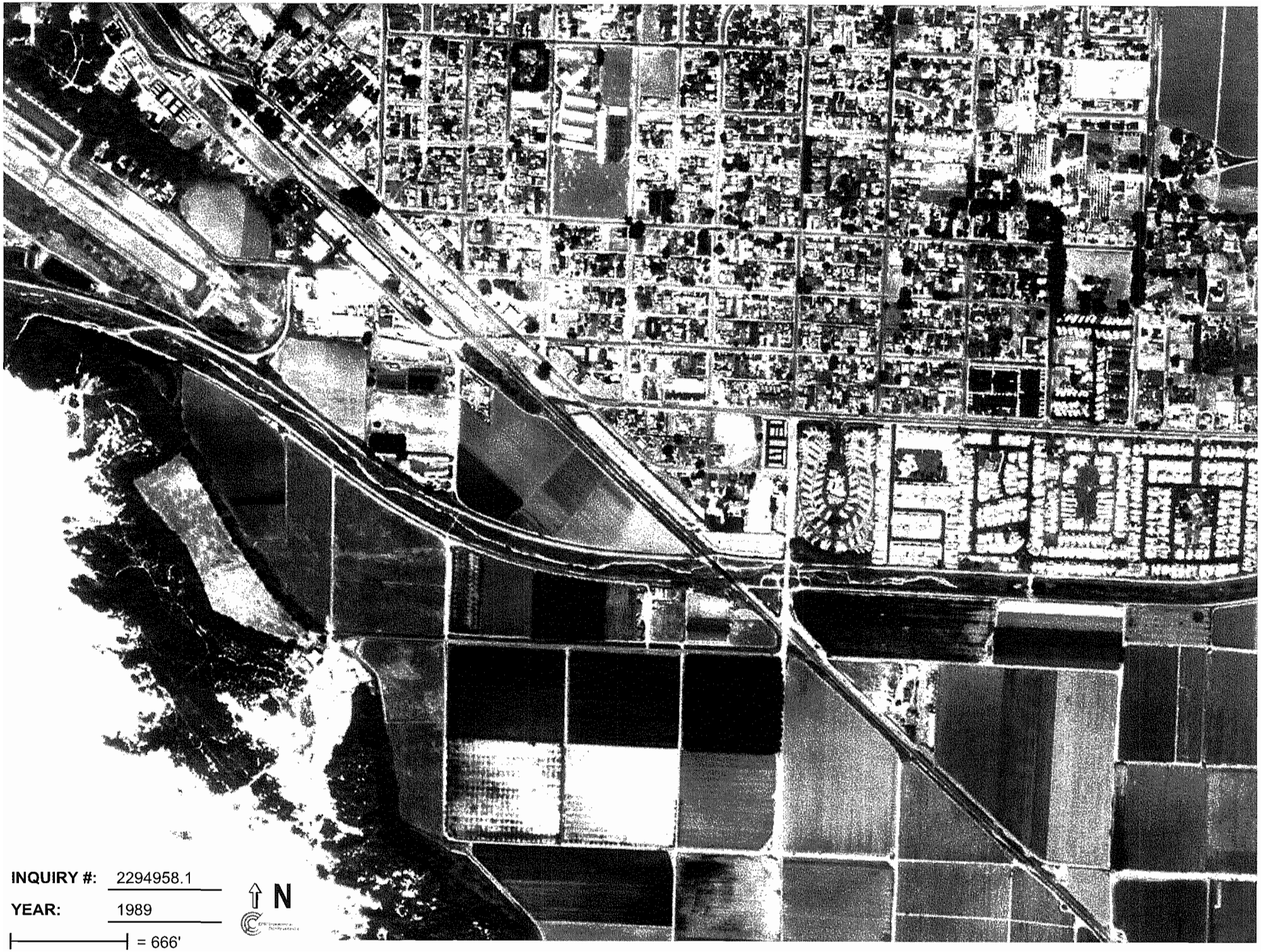
N

INQUIRY #: 2294958.1

YEAR: 1972

= 666'

N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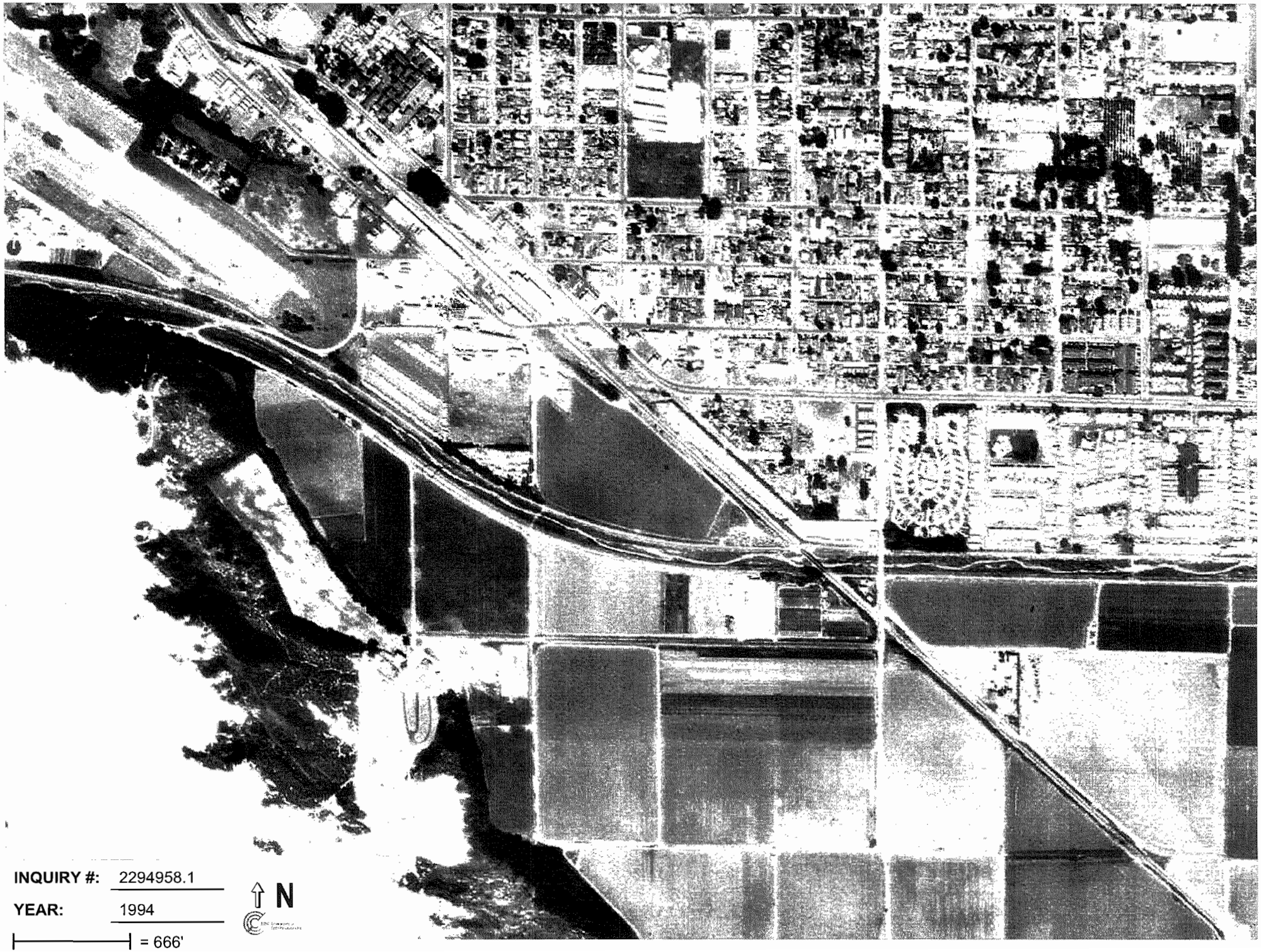
YEAR: 1989
= 666'
N


INQUIRY #: 2294958.1
YEAR: 1989
= 666'
N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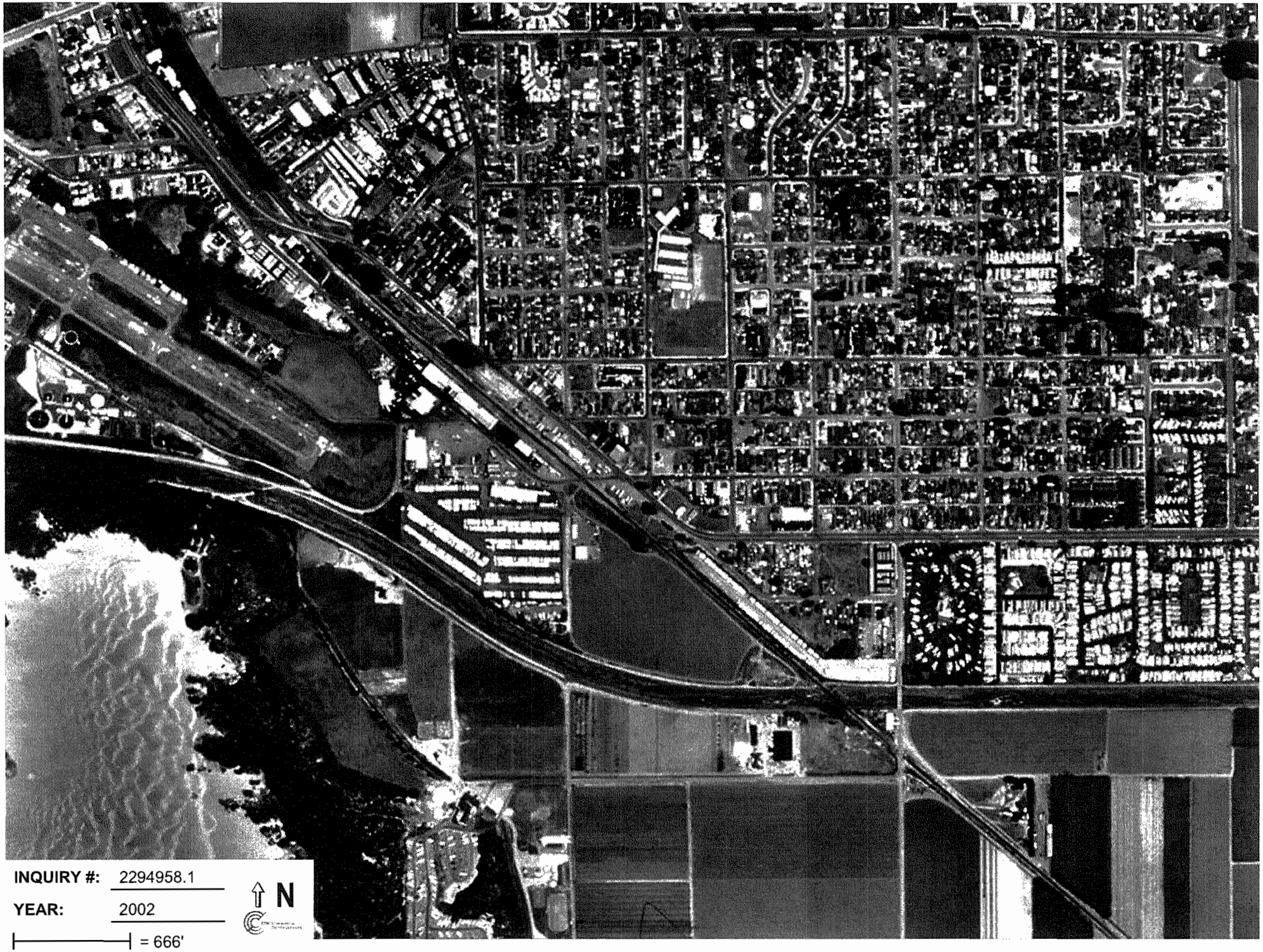
YEAR: 1994
= 666'
N


INQUIRY #: 2294958.1
YEAR: 1994
= 666'
N


INQUIRY #: 2294958.1
YEAR: 2002
= 666'
N


INQUIRY #: 2294958.1
YEAR: 2002
= 666'
N

Arroyo Grande Creek
Arroyo Grande Creek
Oceano, CA 93420

Inquiry Number: 2481087.1
April 29, 2009

The EDR Aerial Photo Decade Package

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Milford, CT 06461
800.352.0050
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:

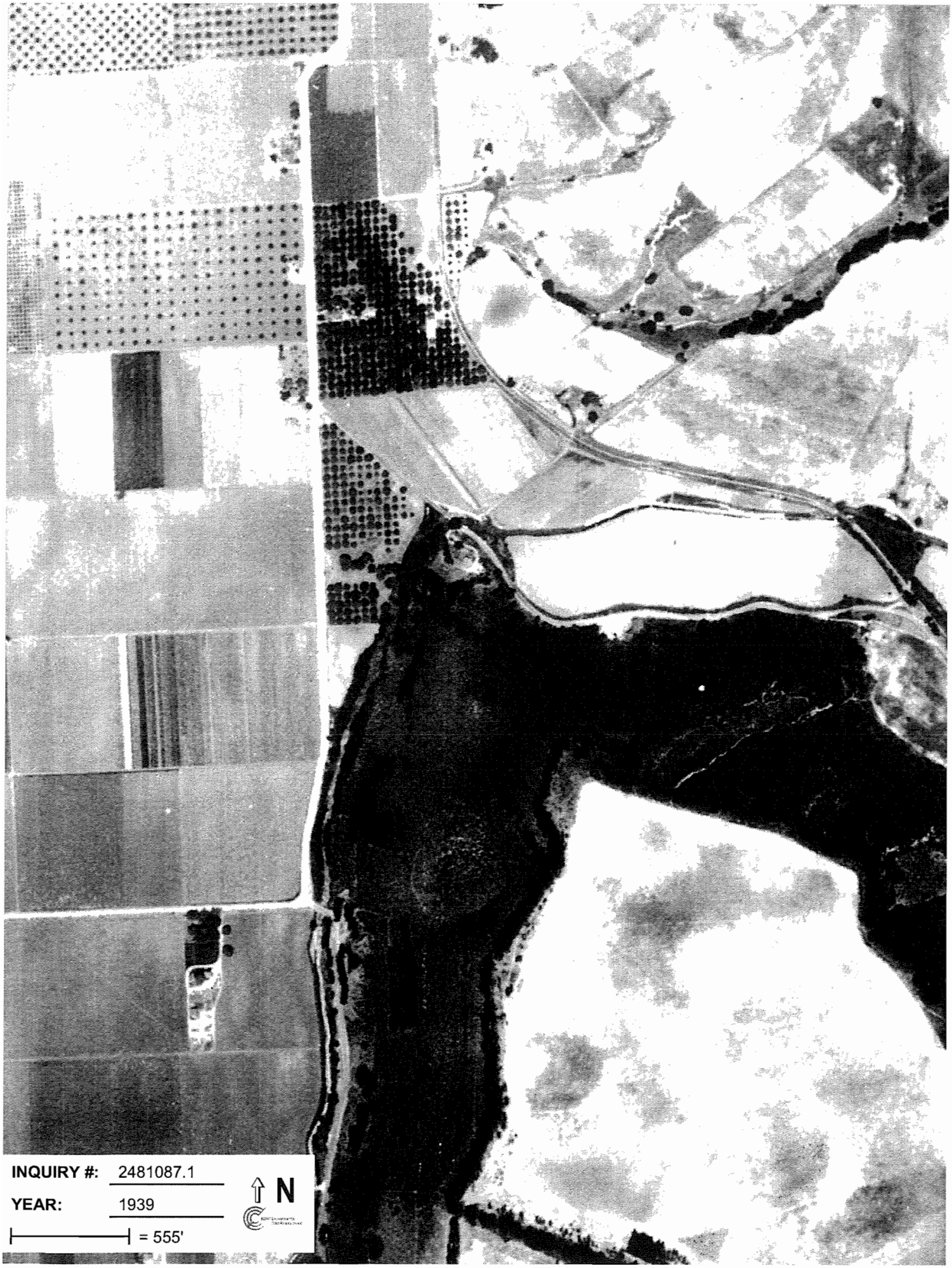
Aerial Photography April 29, 2009

Target Property:

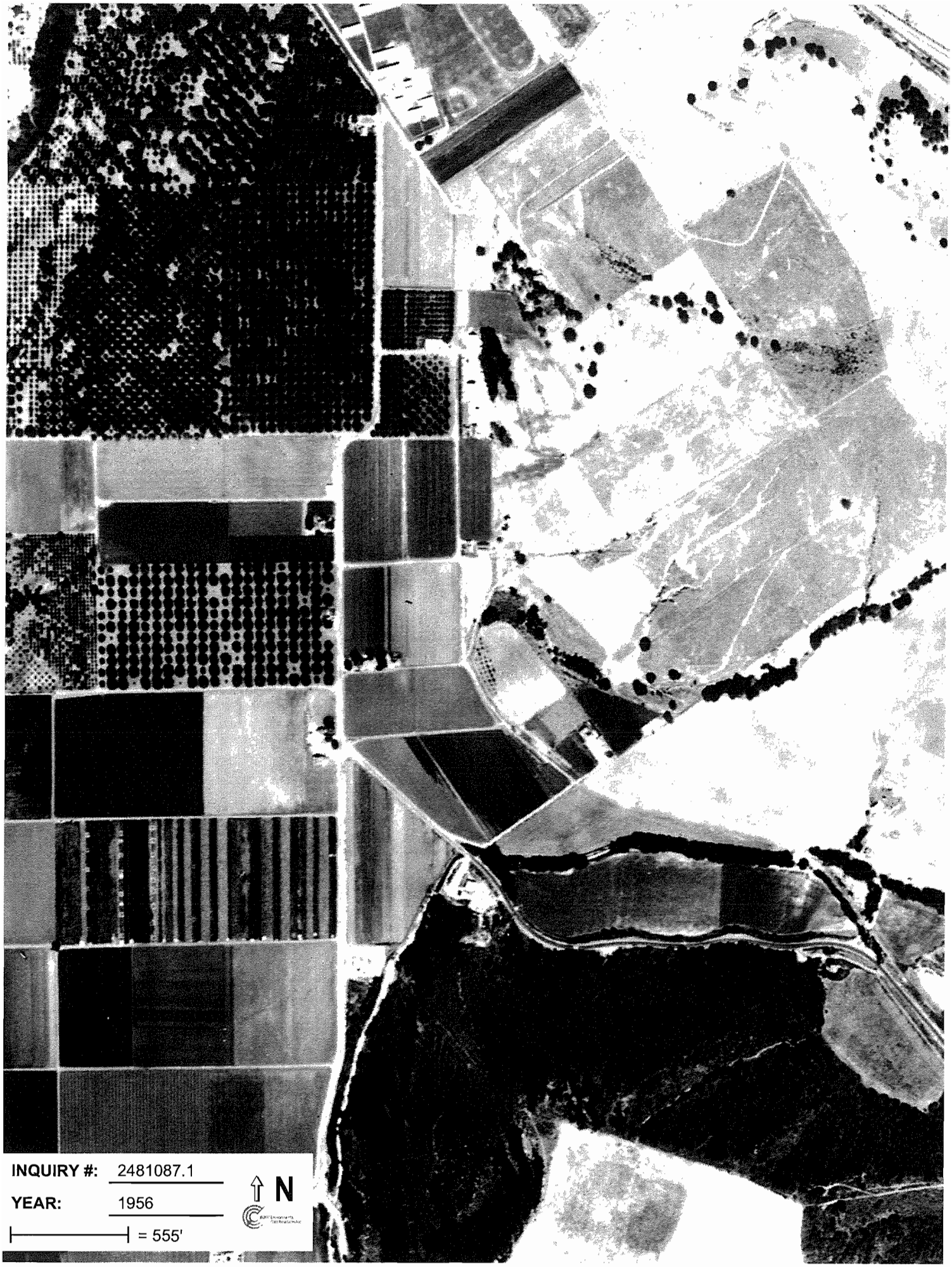
Arroyo Grande Creek

Oceano, CA 93420

Year	Scale	Details	Source
1939	Aerial Photograph. Scale: 1"=555'	Flight Year: 1939	Army
1949	Aerial Photograph. Scale: 1"=555'	Flight Year: 1949	Aero
1956	Aerial Photograph. Scale: 1"=555'	Flight Year: 1956	Hycon
1969	Aerial Photograph. Scale: 1"=555'	Flight Year: 1969	Western
1972	Aerial Photograph. Scale: 1"=528'	Flight Year: 1972	Mark Hurd
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=484'	Flight Year: 2005	EDR


INQUIRY #: 2481087.1
YEAR: 1939
= 555'
N


INQUIRY #: 2481087.1
YEAR: 1949
= 555'
N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= 555'
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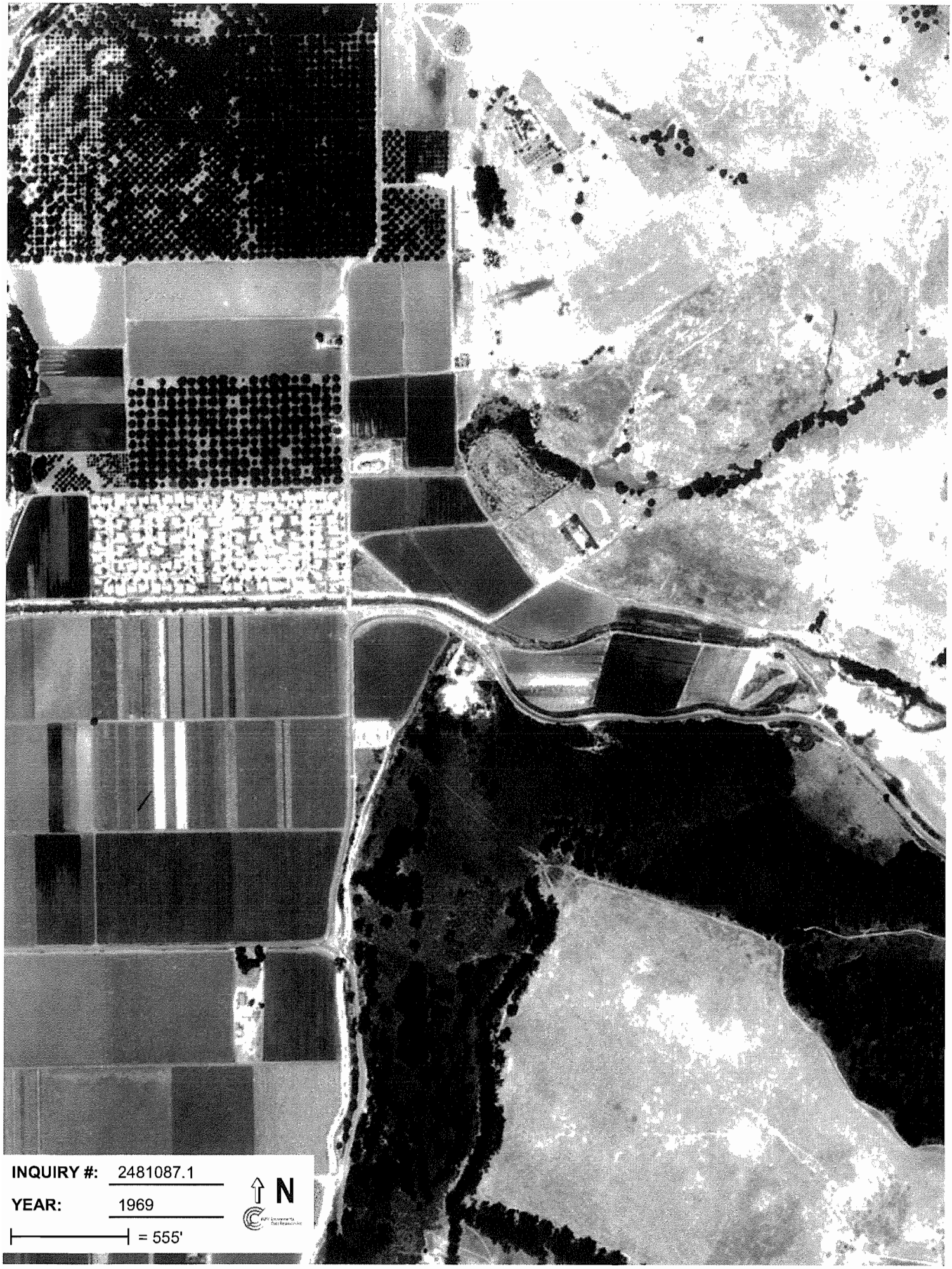
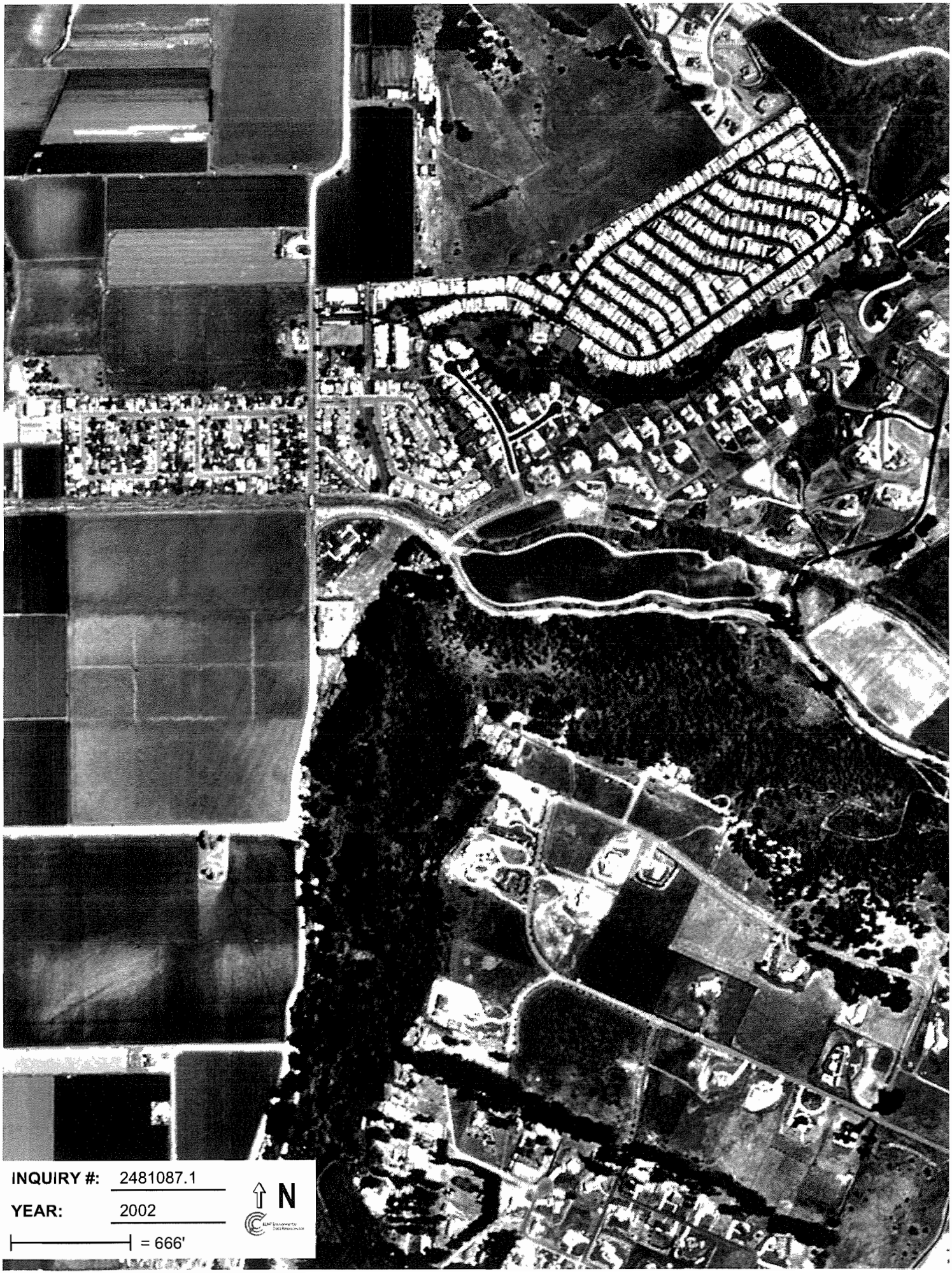

INQUIRY #: 2481087.1
YEAR: 1969
= 555'
N


INQUIRY #: 2481087.1
YEAR: 1972
= 528'
N


INQUIRY #: 2481087.1
YEAR: 1989
= 666'
N


INQUIRY #: 2481087.1
YEAR: 1994
= 666'
N


INQUIRY #: 2481087.1
YEAR: 2002
= 666'
N


INQUIRY #: 2481087.1
YEAR: 2005
= 484'
N

ConocoPhillips

Leo Martinez
Property Tax, Real Estate,
Right of Way and Claims

1232 Park Street, Suite 300
Paso Robles, CA 93446
Phone (805) 226-2656
Fax (805) 239-4410

June 26, 2009

Terry Nephew
Kleinfelder
1410 F Street
Fresno, CA 93706

RE: ARROYO GRANDE CREEK PIPELINE ROUTES
COP FILE NO. 10341

Terry,

In reply to your captioned Preliminary Utility Notice, ConocoPhillips Pipeline Company, successor in interest to Tosco Corporation has facilities in the **project areas that may conflict** with your proposed plans. Enclosed for your information is a copy of our pipeline alignment map as identified below.

D2A493: 8 INCH ORCUTT LINE
12 INCH SANTA MARIA LINE

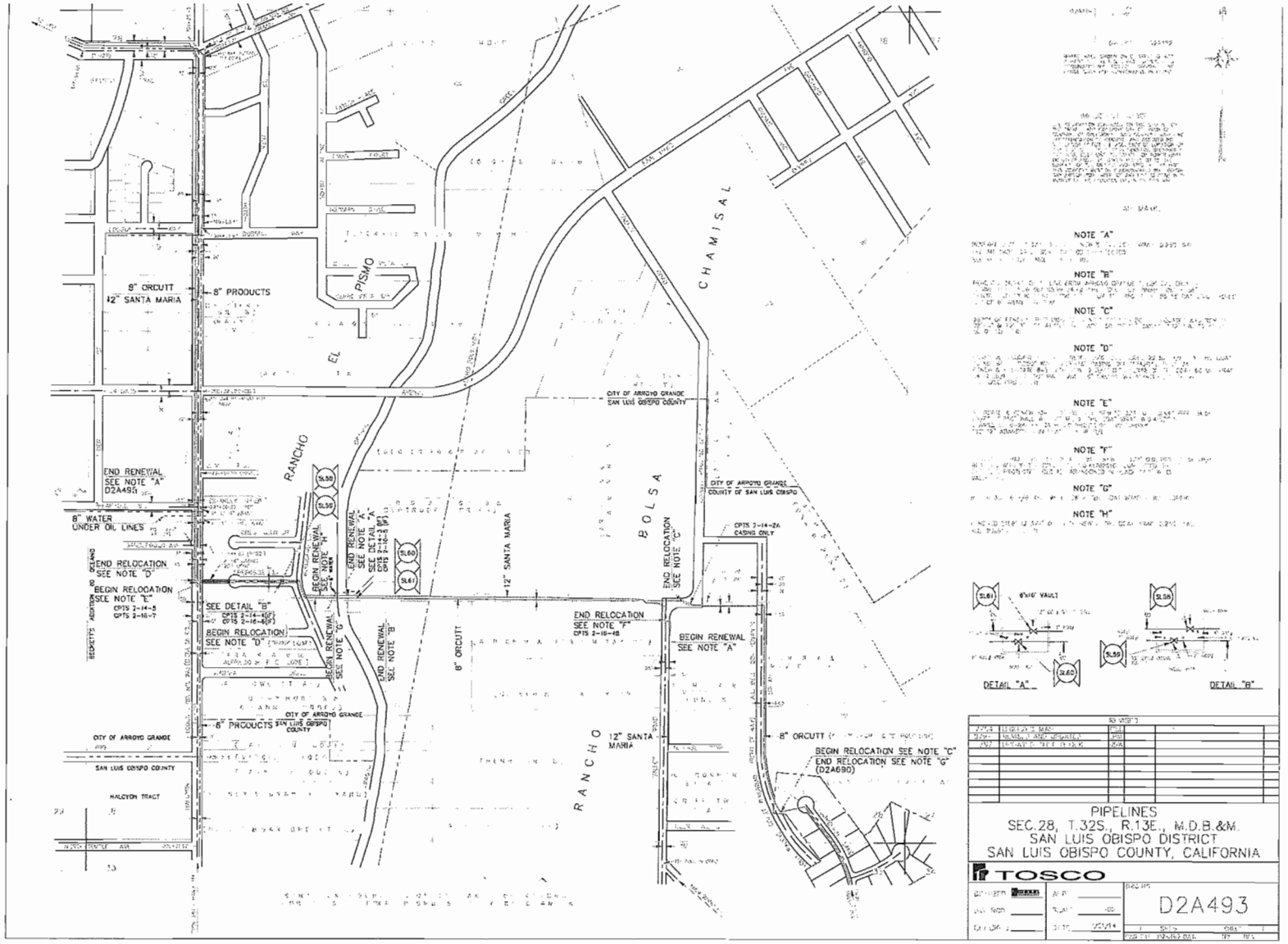
Should you need more definitive information on the horizontal and/or vertical location of any of our facilities, please contact:

Randy Booth – PTRRC Agent at (805) 226-2641
Mark Mitchell – Santa Margarita Area Supervisor at (805) 438-6201

Sincerely,

Leo Martinez

Leo Martinez
Property Tax, Real Estate, Right of Way and Claims



...\D2a-dwgs\d2a493.dwg 6/26/2009 1:57:13 PM - FOR REFERENCE ONLY - OFFICIAL DOCUMENT STORED ELECTRONICALLY -

FORM I – SAN LUIS OBISPO COUNTY CERTIFIED UNIFIED PROGRAM AGENCY (CUPA)

CHEMICAL INVENTORY

(one page per material per building or area)

☒ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
FUKUHARA FARMS

CHEMICAL LOCATION 201
UNDER AWNING OF SHOP BUILDING

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 1

MAP# (optional) 203: 1

GRID# (optional) 204: L5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
PETROLEUM HYDROCARBON

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
WASTE OIL/OIL FILTERS

EHS* ☐ Yes ☒ No 208

CAS# 209
N/A

***If EHS is "Yes", all amounts below must be in lbs.**

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) 211: ☐ a. PURE ☒ b. MIXTURE ☒ c. WASTE

RADIOACTIVE 212: ☐ Yes ☒ No

CURIES 213

PHYSICAL STATE (Check one item only) 214: ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS

LARGEST CONTAINER 215: 55

FED HAZARD CATEGORIES (Check all that apply) 216: ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
	71		221

UNITS* (Check one item only) 221: ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
***If EHS, amount must be in pounds.**

DAYS ON SITE: 222

STORAGE CONTAINER 223:
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ r. OTHER ☐ q. RAIL CAR

STORAGE PRESSURE 224: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226: 100	227: PETROLEUM HYDROCARBON	228: ☐ Yes ☒ No	229
2	230	231	232: ☐ Yes ☐ No	233
3	234	235	236: ☐ Yes ☐ No	237
4	238	239	240: ☐ Yes ☐ No	241
5	242	243	244: ☐ Yes ☐ No	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

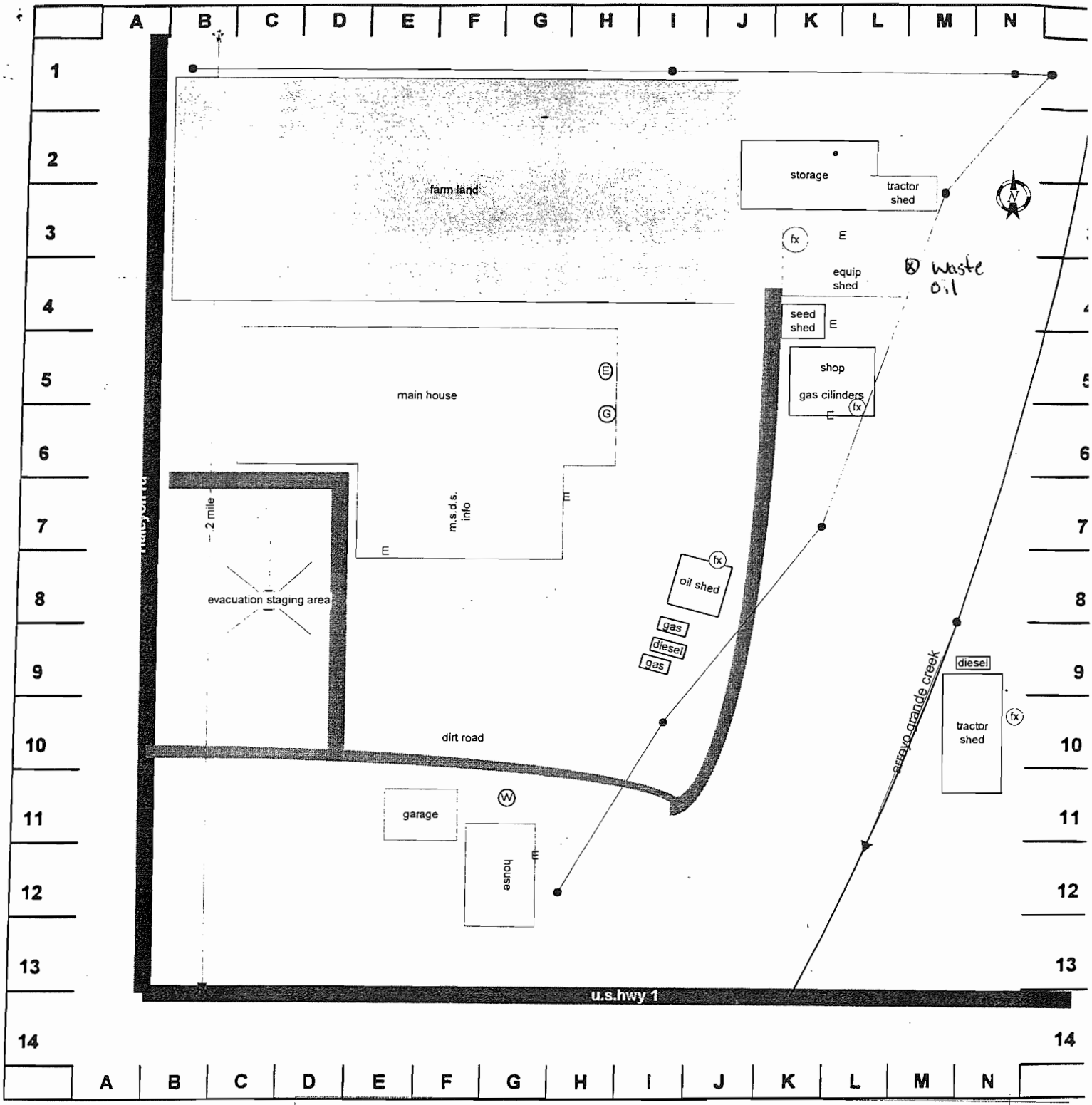
If EPCRA, Please Sign Here

05 2/29/05

San Luis Obispo County CUPA

I.D. #

FORM M - MAP GRID



Scale: 1 inch = ____ Feet

fx	fire extingisher	G	gas shut-off	pt	propane tank
E	entrance	E	electric shut-off		
P	pesticide	W	water shut-off	oxy	fertilizer

evacuation staging area

Business Name: FOKUHARA FARMS Date:

Address: 1091 S. HALCYON RD ARROYO GRANDE 93420

Number of Employees in Facility Depicted Above - Day = Night = Page 2 of 4

c:\document\jpoel\forms\firm-r

FORM I

San Luis Obispo County Hazardous Material Inventory Form - Chemical Description Page

(1) ☐ADD ☐DELETE ☒REVISE

PAGE (2) 3 OF (3) 4

BUSINESS NAME: FUKUHARA FARMS

CHEMICAL LOCATION (4) southeast of house

MAP # (5) 01

GRID # (6) I-9

CHEMICAL LOCATION IS CONFIDENTIAL AND NOT SUBJECT TO PUBLIC DISCLOSURE

CHEMICAL NAME (7) PETROLEUM HYDROCARBON

TRADE SECRET (10) N

COMMON NAME (8) GASOLINE (Includes Unleaded, Regular, etc.)

EHS (11) N

IF EHS BOX IS "Y" ALL AMOUNTS MUST BE IN LBS

CAS # (9) 8006-61-9

TYPE (12) ☐PURE ☒MIXTURE ☐WASTE

PHYSICAL STATE (13) ☐SOLID ☒LIQUID ☐GAS

RADIOACTIVE (14) ☐Y ☒N (15) ☐ µCURIES

HAZARD CATEGORIES (16) ☒FIRE ☐REACTIVE ☐PRESSURE RELEASE ☒ACUTE HEALTH ☒CHRONIC HEALTH

STATE WASTE CODE (17) N/A

UNITS (20) ☒GAL ☐CU FT ☐LBS ☐TONS

MAX DAILY AMT (21) 500

DAYS ON SITE (18) 360

If EHS amounts must be in lb.

AVG DAILY AMT (22) 200

LARGEST CONTAINER (19) 500

ANNUAL WASTE AMT (23) N/A

STORAGE CONTAINER (24)

☒ABOVE GROUND TANK	☐CAN	☐BOX	☐TANK WAGON
☐BELOW GROUND TANK	☐CARBOY	☐CYLINDER	☐RAIL CAR
☐TANK INSIDE BUILDING	☐SILO	☐GLASS BOTTLE	
☐STEEL DRUM	☐FIBER DRUM	☐PLASTIC BOTTLE	
☐PLASTIC/NONMETALLIC DRUM	☐BAG	☐TOTE BIN	

STORAGE PRESSURE (25) ☒AMBIENT ☐ABOVE AMBIENT ☐BELOW AMBIENT

STORAGE TEMPERATURE (26) ☒AMBIENT ☐ABOVE AMBIENT ☐BELOW AMBIENT ☐CRYOGENIC

	(27) %WT	(28) HAZARDOUS COMPONENT	(29) EHS	(30) CAS NUMBER
1	15%	METHYL TERT BUTYL ETHER	☐Y ☒N	1634-04-4
2	15%	TOLUENE	☐Y ☒N	108-88-3
3	21%	XYLENE	☐Y ☒N	1330-20-7
4	5%	BENZENE	☐Y ☒N	71-43-2
5	5%	1, 2, 4 – TRIMETHYL BENZENE	☐Y ☒N	95-63-6

(31) ADDITIONAL LOCALLY COLLECTED INFORMATION

2/27/08

FORM I

San Luis Obispo County Hazardous Material Inventory Form – Chemical Description Page

(1) ☐ ADD ☐ DELETE ☒ REVISE

PAGE (2) 4 OF (3) 4

BUSINESS NAME: FUKUHARA FARMS

CHEMICAL LOCATION (4): southeast of house

MAP # (5): 01

GRID # (6): ~~F8~~ - ~~F9~~

CHEMICAL LOCATION IS CONFIDENTIAL AND NOT SUBJECT TO PUBLIC DISCLOSURE

CHEMICAL NAME (7): PETROLEUM HYDROCARBON

TRADE SECRET (10): ☐ Y ☒ N

COMMON NAME (8): DIESEL FUEL

EHS (11): ☐ Y ☒ N

CAS # (9): 68476-34-6

IF EHS BOX IS "Y" ALL AMOUNTS MUST BE IN LBS

TYPE (12): ☐ PURE ☒ MIXTURE ☐ WASTE

PHYSICAL STATE (13): ☐ SOLID ☒ LIQUID ☐ GAS

RADIOACTIVE (14): ☐ Y ☒ N (15) ☐ µCURIES

HAZARD CATEGORIES (16): ☒ FIRE ☐ REACTIVE ☐ PRESSURE RELEASE ☒ ACUTE HEALTH ☒ CHRONIC HEALTH

STATE WASTE CODE (17): N/A

UNITS (20): ☒ GAL ☐ CU FT ☐ LBS ☐ TONS

MAX DAILY AMT (21): 500

DAYS ON SITE (18): 360

If EHS amounts must be in lb.

AVG DAILY AMT (22): 200

LARGEST CONTAINER (19): 500

ANNUAL WASTE AMT (23): N/A

STORAGE CONTAINER (24):

☒ ABOVE GROUND TANK	☐ CAN	☐ BOX	☐ TANK WAGON
☐ BELOW GROUND TANK	☐ CARBOY	☐ CYLINDER	☐ RAIL CAR
☐ TANK INSIDE BUILDING	☐ SILO	☐ GLASS BOTTLE	
☐ STEEL DRUM	☐ FIBER DRUM	☐ PLASTIC BOTTLE	
☐ PLASTIC/NONMETALLIC DRUM	☐ BAG	☐ TOTE BIN	

STORAGE PRESSURE (25): ☒ AMBIENT ☐ ABOVE AMBIENT ☐ BELOW AMBIENT

STORAGE TEMPERATURE (26): ☒ AMBIENT ☐ ABOVE AMBIENT ☐ BELOW AMBIENT ☐ CRYOGENIC

	(27) %WT	(28) HAZARDOUS COMPONENT	(29) EHS	(30) CAS NUMBER
1	99.5%	DIESEL FUEL	☐ Y ☒ N	68476-34-6
2	0.5%	NAPHTHALENE	☐ Y ☒ N	91-20-3
3		PETROLEUM DISTILLATES	☐ Y ☒ N	NONE
4			☐ Y ☐ N	
5			☐ Y ☐ N	

(31) ADDITIONAL LOCALLY COLLECTED INFORMATION

OK 2/29/08

COUNTY OF SAN LUIS OBISPO
HEALTH AGENCY
PUBLIC HEALTH DEPARTMENT
Environmental Health Division
2156 Sierra Way • P.O. Box 1489
San Luis Obispo, California 93406-1489
Phone: (805) 781-5544 FAX: (805) 781-4211

Susan G. Zepeda, Ph.D.
Health Agency Director

Gregory Thomas, M.D., M.P.H.
Health Officer

Curtis A. Batson, R.E.H.S.
Director

February 23, 1999

Certified Freight Lines, Inc.
P.O. Box 455
Arroyo Grande CA 93420

RE: UNDERGROUND STORAGE TANK (UST) CLOSURE AT: CERTIFIED FREIGHT LINES TERMINAL, 1820 RAILROAD AVE., OCEANO, CALIFORNIA 93445

Our Department issued permit # 589-1-A for the removal of one single wall steel UST used for the storage of diesel fuel.

On January 7, 1999, our staff witnessed the UST removal and the collection of soil samples from the tank excavation and piping system.

Our review of the sample test results received by this Department from Cirrus Environmental, Inc. dated January 14, 1999, indicated the following: the test results for the tank excavation bottom and product lines were reported as 33 mg/kg and 59 mg/kg TPHd.

Based upon the information provided in connection with this UST closure and subject to the provision that the information provided in connection with this closure was accurate and representative of site conditions, no further action related to the UST closure is required by this Department.

If you have any question regarding this matter, please contact this office at (805) 781-5544.

Manuel Negrete

MANUEL NEGRETE, R.E.H.S.
Environmental Health Specialist III

c: Ken Katen, RWQCB

805-781-5544

COUNTY OF SAN LUIS OBISPO HEALTH DEPARTMENT
Division of Environmental Health
P.O. Box 1489, San Luis Obispo, CA 93406

Routine Inspection ____
Reinspection No. ____
Complaint Investigation ____

HAZARDOUS MATERIAL/UNDERGROUND STORAGE TANK/WASTE GENERATOR INSPECTION REPORT/NOTICE OF VIOLATION

Facility Name: CERTIFIED FREIGHT LINES
Facility Address: 1820 RAILROAD OCEANO
Date: 1/7/99
Contact Person: C ENGLE
Title/Position:

HAZARDOUS MATERIALS (2185) (COMP #)
(CA H&S Code, Div. 20, Chap. 6.95)

BUSINESS I.D. FORM

		Compl	Viol
1.	Complete		
2.	Verify emergency phone number		
3.	Location of utilities		
	INVENTORY		
4.	Hazardous material & amounts listed		
5.	Material stored in proper containers & labeled		
6.	Incompatibles not stored together		
7.	Spill containment provided		
	PLOT PLAN		
8.	Plot plan submitted		
9.	Verify streets & adjacent buildings		
10.	Location of hazardous materials		
11.	Fire extinguishers/water source		
12.	Emergency shut-off switches		
13.	Location & verification of MSDS		
14.	Sewer system and/or storm drains		
15.	Staging area		
16.	Changes/modifications in previous year		
	EMERGENCY RESPONSE PLAN		
17.	Adequate emergency response procedures		
18.	Adequate evacuation procedures		
19.	TRAINING PROCEDURES		

UNDERGROUND STORAGE TANKS (COMP #)
(CA H&S Code, Div. 20, Chap. 6.7)

ATL. # GENERAL

		Compl	Viol
20.	Permit to operate		
21.	Inventory reconciliation		
22.	Precision tank test		
23.	Leak detectors		
	TANK CLOSURE		
24.	Permit approved	✓	
25.	Temporary closure	—	
26.	Removal/in place abandonment	✓	
	a) Tanks purged	—	
	b) Tanks rinsed	—	
	c) Soil samples taken	✓	
	WASTE GENERATORS COMP #		
27.	EPA identification number		
28.	Variances and/or exemptions		
29.	Manifests		
30.	Waste oil receipt		
31.	Training program/records		
32.	Contingency plan		
33.	Material stored in proper containers & labeled		
34.	Incompatibles not stored together		
35.	Storage - 90 days		
36.	Fire extinguishers		
37.	Spill containment		

The above marked items represent violations of the California Health & Safety Code and the California Code of Regulations and must be corrected.

COMMENTS
PULLED ONE 10,000 GAL DIESEL UST
2 SOIL SAMPLES TAKEN AT BOTTOM of hole
TEST for TPH as DIESEL

Inspector's Signature M Legat
Owner/Operator Signature

Page ____ of ____

NOTE: Signature indicates receipt of this document only and not an admission of the facts.

COUNTY OF SAN LUIS OBISPO
HEALTH AGENCY
PUBLIC HEALTH DEPARTMENT
Environmental Health Division
2156 Sierra Way • P.O. Box 1489
San Luis Obispo, California 93406-1489
Phone: (805) 781-5544 FAX: (805) 781-4211

Susan G. Zepeda, Ph.D.
Health Agency Director

Gregory Thomas, M.D., M.P.H.
Health Officer

Curtis A. Batson, R.E.H.S.
Director

UNDERGROUND STORAGE TANK CLOSURE PERMIT

PERMIT EXPIRES 04/01/99

PERMIT # 589-1-A

APPROVAL DATE 12/01/98

APPROVED BY JOHN SCHOLTES JS

CONTRACTOR NAME AND ADDRESS

Engel & Gray, Inc.
P. O. Box 5020
Santa Maria CA 93456

FACILITY NAME AND ADDRESS

Certified Freight Lines Terminal
1820 Railroad Avenue
Oceano CA 93445

OWNER NAME AND ADDRESS

Certified Freight Lines, Inc.
P. O. Box 455
Arroyo Grande CA 93421-0455

CONDITIONS AS FOLLOWS:

1. This is not a permit to operate.
2. Permit shall be shown upon request to this Department, County Air Pollution Control District, State Regional Water Board or any representative of local Fire, Building, Planning or Police jurisdiction.
3. Owner, contractor, employees and agents shall comply with all Federal, State and local laws, ordinances, regulations and enactments.
4. This permit does not supersede the requirements of Uniform Fire and Building Code permits required by the local agency having jurisdiction.
5. This permit may be suspended or revoked by this Department for sufficient cause.
6. A 48-hour notice shall be given before inspection, and a fee may be assessed if a 24-hour notice is not received to cancel inspection.
7. Tank must be cleaned and rendered inert or rendered inert and hauled hazardous.
8. All samples must be collected by a certified technician under the guidance of this Department.
9. All samples must be analyzed by a State certified laboratory.

John\Engel & Gray\CLOSURE
mj 12/98

1/7/99 11:00 AM - CARL ENGEL

pd.

SAN LUIS OBISPO COUNTY
APPLICATION FOR PERMIT TO ABANDON
UNDERGROUND HAZARDOUS MATERIALS STORAGE TANK

Application is hereby made by the undersigned for permit to abandon tank(s) in or on premises at: 1730 RAILROAD ST. OCEANO, CA.

PART I

OWNER: Name of Company: OCEANO ICE CO. Contact: W.M. SMITH
Mailing Address: P.O. BOX 338 OCEANO, CA. 93445
Telephone: ( ) 805-489-2288

OPERATOR: Company: SAME Contact: _____
Mailing Address: _____
Telephone: ( ) _____

List previous owners and operators of the tank(s), if applicable:

DATE	OWNER/OPERATOR
_____	_____
_____	_____
_____	_____

Attach a plot plan showing:

_____ Location of all tank(s) and piping and their secondary containment
_____ Leak detection system
_____ Overfill protection system
_____ Scale
_____ North arrow
_____ Property line
_____ Nearest intersection or road
_____ Equipment summary
_____ Existing equipment and equipment to be removed

W.M. Smith
Applicant Signature

2-4-86
Date

PART II

ate Tank Installed: UNKNOWN Volume of Tank (Gallons) 500

Materials stored in tank:

DATE	MATERIAL
DEC 1985	GASOLINE

Type of Primary Containment: ☐ Concrete ☐ Fiberglass ☑ Steel
☐ Fiberglass Coated Steel ☐ Other

Piping/Materials of Construction: ☑ Steel ☐ Fiberglass ☐ Other

Type of Secondary Containment: ☐ Concrete ☐ Fiberglass ☐ Steel
☐ Fiberglass Coated Steel ☐ Other

Was any part of system cathodically protected? NO
If yes, which part(s)?

Describe leak detection system used, if any: INVENTORY CONTROL

Describe overfill protection system used: VISUAL

What is approximate depth to groundwater? UNKNOWN

Basis of determination:

What is the final destination of the tank(s) for disposal?
DESTINATION DEPENDENT ON CONDITION

9/24/86 - excavation looked good. Tank had been cut up on site. Informed them best to have it ~~2 of 2~~ pitted down & to send a letter.

File Memorandum

Date: 6-12-08

To: Site Remediation File

CC:

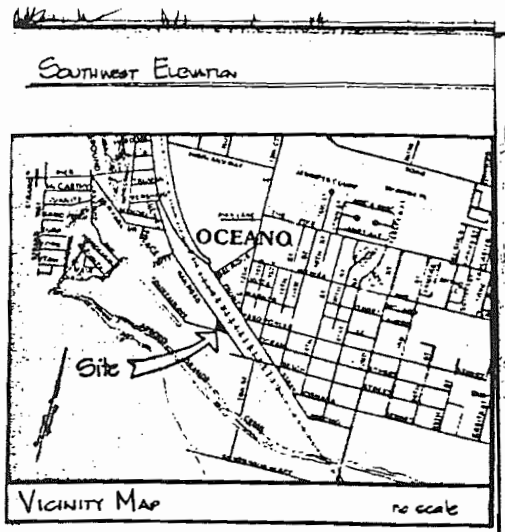
From: Aaron LaBarre, Supervisor Hazardous Materials Program, San Luis Obispo County Environmental Health Services

Re: General Statement regarding future redevelopment

Further action may be required by this department if:

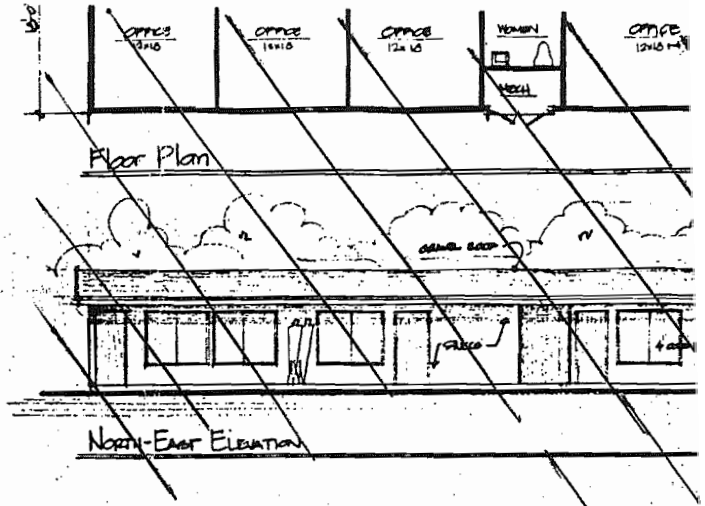
- Hazardous materials/waste that impact soil or groundwater are discovered on site.
- The property is redeveloped.

Further action may include, but not limited to, a review by this Agency, further investigations, soil gas analyses, remedial action, and human health risk assessment.



VICINITY MAP no scale

SOUTHWEST ELEVATION



NORTH-EAST ELEVATION

PLOT PLAN

OCEANO ICE CO.

1730 RAILROAD ST.
OCEANO, CA.

APPROX. SCALE
1" = 40'

DAILY DEPOSIT FORM

PAID 1-20-08

DATE: 1/20/08 DEPOSITED BY: [illegible] DEPOSIT AMOUNT 1.00

INTERNAL ORDER	EHS PGM #	DESCRIPTION	AMOUNT
160R301EH78		Administration	
160R301EHBA		Body Adornment	

INTERNAL ORDER	EHS PGM #	DESCRIPTION	AMOUNT
160R301EH07	7	Hazardous Materials Handlers	
160R301EH11	11	Waste Generators	
160R301EH02	2	Calarp	

160R301EH16	16	Food & Restaurants	
160R301EH36	36	Recreational Health	
160R301EH26	26	Land Use Planning	

160R301EH03	3	UST Inspections	
160R301EH03A	3	UST Removal & Installations	
160R301EH12	12	Above Ground Storage Tanks	

160R301EH42	42	Sewage (Liquid Waste)	
160R301EH44	44	Solid Waste Vehicles	

160R301EH25	25	Emergency Response	
160R301EH29	29	Site Mitigation	
160R340EH		Unocal	
160R301EH01E	1	CUPA Enforcement/AEO	
		Calarp - CUPA fine	
		UST - CUPA fine	
		Hazmat - CUPA fine	
		Waste Gen - CUPA fine	

160R301EH43	43	Well Construction/Destruction	
160R301EH46	46	Water Systems	
160R301EH47	47	Cross-Connection	
160R301EH48	48	Bacteriological Testing	

Trust Accounts

3312500025		State Sur-charge Co of SLO	
3312500020		City of SLO Hazmat Fees	
3312500019		City of SLO State Sur-charge	

0100000C		Public Health Lab	

COPIES	$1.00
NSF CHARGE	

File Memorandum

Date: 6-12-08

To: Site Remediation File

CC:

From: Aaron LaBarre, Supervisor Hazardous Materials Program, San Luis Obispo County Environmental Health Services

Re: General Statement regarding future redevelopment

Further action may be required by this department if:

- Hazardous materials/waste that impact soil or groundwater are discovered on site.
- The property is redeveloped.

Further action may include, but not limited to, a review by this Agency, further investigations, soil gas analyses, remedial action, and human health risk assessment.

1.0 INTRODUCTION

The following report describes the methods and findings of a 1,000 and 500 gallon gasoline underground storage tank removal project conducted at Oceano Market, 1711 Front Street, Oceano CA. (Fig. 1). A total of two single wall, steel underground storage tanks (UST's) were removed on October 5, 2005, under authority of the San Luis Obispo County, Public Health Department, Environmental Health Services Division (PHDEHS).

2.0 TANK EXCAVATION & TRIPLE RINSE CLEANING

During October 5, 2005, the tanks were fully exposed, then Adams Services, Inc. (US EPA #CAL922125668) rivet busted opened and triple rinse cleaned both tanks. A total of 250 gallons of total tank fluid was removed and transported as Non-RCRA Hazardous waste to Demenno Kerdoon (US EPA #CAT080013352) located in Compton, CA for proper recycling. The tank fluid was transported under State Manifest Document Number 24778806. A copy of the tank fluid Uniform Hazardous Waste Manifest is provided in Appendix I.

3.0 TANK REMOVAL

Once the tanks were certified inert by PHDEHS Inspector Mr. Aarron LaBarre, they were lifted to a flat bed carrier and secured for transport. The tanks were subsequently transported to Pacific Coast Recycling, Inc., (Long Beach Station) for destruction. A copy of the tank destruction certificate is provided as Appendix II.

4.0 OBSERVED SOIL TYPES & DEPTH TO WATER ESTIMATE

Native soil types observed in the excavated pit sidewalls and from sample collection, consisted mainly of a moist, loose, well-sorted fine and medium sand. Groundwater is estimated at no greater than 15-feet below grade at this site.

5.0 SOIL SAMPLE COLLECTION

Soil samples were collected the day of the tank removal directly beneath both ends of the 1,000 gallon gasoline tank and beneath the middle of the 500 gallon gasoline tank. The 500 gallon tank had a 5-gallon "belly" tank attached that was full of a gas/ water mixture. Upon removal some of the gas-water mixture spilled before it could be vacuum removed. The impacted soil was immediately placed on 6-mililiter polyethylene sheeting while Inspector LaBarre and Mr. William C. Lachmar discussed general actions that would appropriately address the small spill. It was ultimately decided to take several hand auger samples around the spill area and if nothing was disclosed in the investigative hand auger samples that the small amount of impacted soil could be spread out on the polyethylene sheeting for a period of two days then placed back on-site.

Each tank confirmation soil sample was collected from the teeth of the excavator bucket in one 4-ounce sterile glass sample jar. The samples were immediately given to a mobile laboratory for analyses. The confirmation UST soil samples were collected by Mr. William C. Lachmar (R.G. # 6168), under the direct observation of Inspector Aaron LaBarre. The samples were subsequently transported under proper chain-of-custody documentation to Jones Environmental, Inc. and subsequent subcontracting to Severn Trent, Inc. for organic lead analyses.

6.0 INVESTIGATIVE BORING SOIL COLLECTION METHODS

All hand auger borings conducted for the small spill extent determination were located approximately 3-feet from the spill in more-or-less the four compass directions. Soil samples were collected at 5 and 11-feet bgs in each boring by driving a six-inch long spoon sampler containing two 1-1/2" by 3" long brass sample sleeves into undisturbed soil using a 25# slide hammer. The lead brass sample sleeve was then secured with Teflon lined plastic end caps, clearly labeled, then immediately transported to the mobile laboratory for chemical analyses. A summary of the soil laboratory chemical analyses results is provided in Table 1 and Table 2 below.

TABLE 1:
SUMMARY OF TANK PULL CONFIRMATION SOIL ANALYTICAL RESULTS
In Parts Per Million (mg/kg)
Sampling Date: October 5, 2005

Sample ID	Depth (Feet)	Gas (8015M)	Benzene (8260B	TEX (8260B)	MTBE (8260B)	Organic Pb (6010B)
BKBU-1	1	ND	ND	ND	ND	1.4
PIPE	1	ND	ND	ND	ND	16.3
GTE-6	6	ND	ND	ND	ND	2.1
GTW-6	6	ND	ND	ND	ND	16.6
RT-7	7	ND	ND	0.01/0.0/0.02	ND	18.4
KT-11	11	57	0.031	0.4/0.9/1.5	ND	10.1
KT-14	14	ND	ND	ND	ND	8.3
SP1-Comp	Surface	ND	ND	ND	ND	13.9
SP2-Comp	Surface	ND	ND	ND	ND	8.9
Detect Limit	NA	1.0	0.002	0.002	0.002	0.5

TABLE 2:
SUMMARY OF SMALL SPILL INVESTIGATIVE SOIL ANALYTICAL RESULTS
In Parts Per Million (mg/kg)
Sampling Date: October 6, 2005

Sample ID	Depth (Feet)	Gas (8015M)	Benzene (8260B	TEX (8260B)	MTBE (8260B)	Organic Lead (6010B)
BEW-5	5	ND	ND	ND	ND	---
BEW-11	11	ND	ND	ND	ND	---
BWW-5	5	ND	ND	ND	ND	---
BWW-11	11	ND	ND	ND	ND	---
BSW-5	5	ND	ND	ND	ND	---
BSW-11	11	ND	ND	ND	ND	---
BNW-5	5	ND	ND	ND	ND	---
BNW-11	11	ND	ND	ND	ND	---
Detect Limit	1.0	10.0	0.002	0.002	0.002	0.5

ND = non detect; MTBE = Methyl Tertiary Butyl Ether; TEX = Toluene, Ethylbenzene, Total Xylenes

7.0 Soil Chemical Analyses Results

All collected soil samples were analyzed for those particular petroleum based products and associated constituents as specified by DPHEHS Inspector Mr. Aaron LaBarre. The chemical analyses results indicated non-detectable levels of all combustible products specified for analyses in all soil samples except KT-11, which was collected beneath the belly tank spill upon removal of the 500 gallon UST. Organic Lead concentrations were found at levels that do not pose an environmental health risk when referencing the California Code of Regulations (CCR) Title 22 maximum contaminant levels. Results of sample KT-11 taken immediately after the belly tank spill found a gasoline concentration of 57 parts per million (ppm), with fuel constituent levels registering at 31 parts per billion (ppb) benzene, 390 ppb toluene, 900 ppb ethylbenzene and 1,500 ppb total xylenes. The certified chemical analyses report with QA/QC statement and chain-of-custody is provided in Appendix III.

8.0 Conclusions/Recommendations

Based on the soil chemical analyses results and field observations, it is the opinion of Geo Point Technologies (Geo Point) that no further "action" is warranted at this time. Therefore Geo Point respectfully requests that "closure" be granted this site with respect to the former underground UST's and immediate surrounding area.

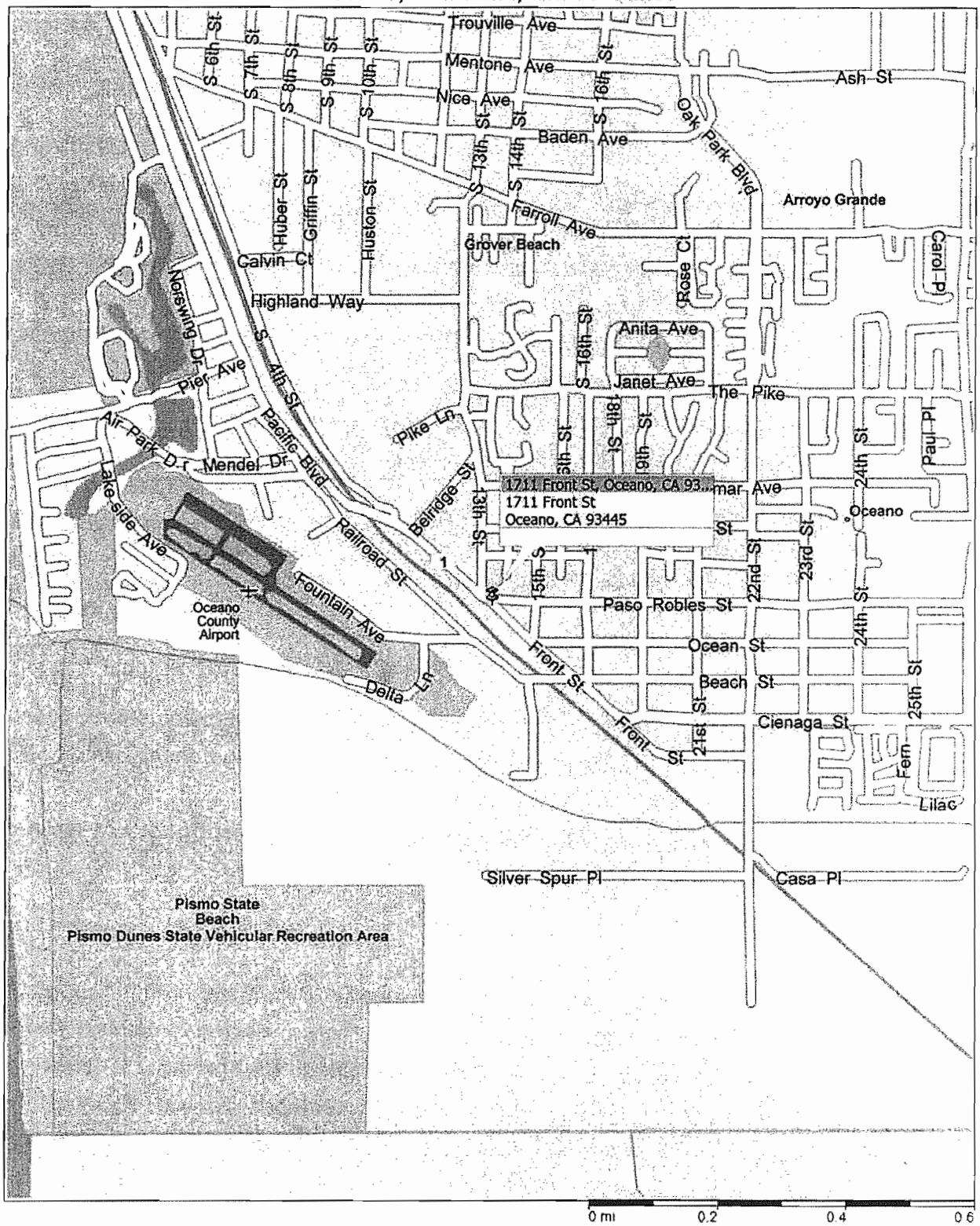
9.0 Report Limitations

Results of this investigation represent conditions at the time and specific locations where soil samples were collected and for the specific constituents categorized for analyses. It does not fully characterize the site for products not specified for analyses, or other areas not investigated. All laboratory work cited in this report was prepared under the direction of Jones Environmental, or Severn Trent Laboratories, Inc. who are solely responsible for the contents and conclusions of the chemical analyses data.

Sincerely,

Geo Point Technologies, Inc.

Oceano, California, United States



NORTH

SITE LOCATION MAP

SITE: Oceano Market

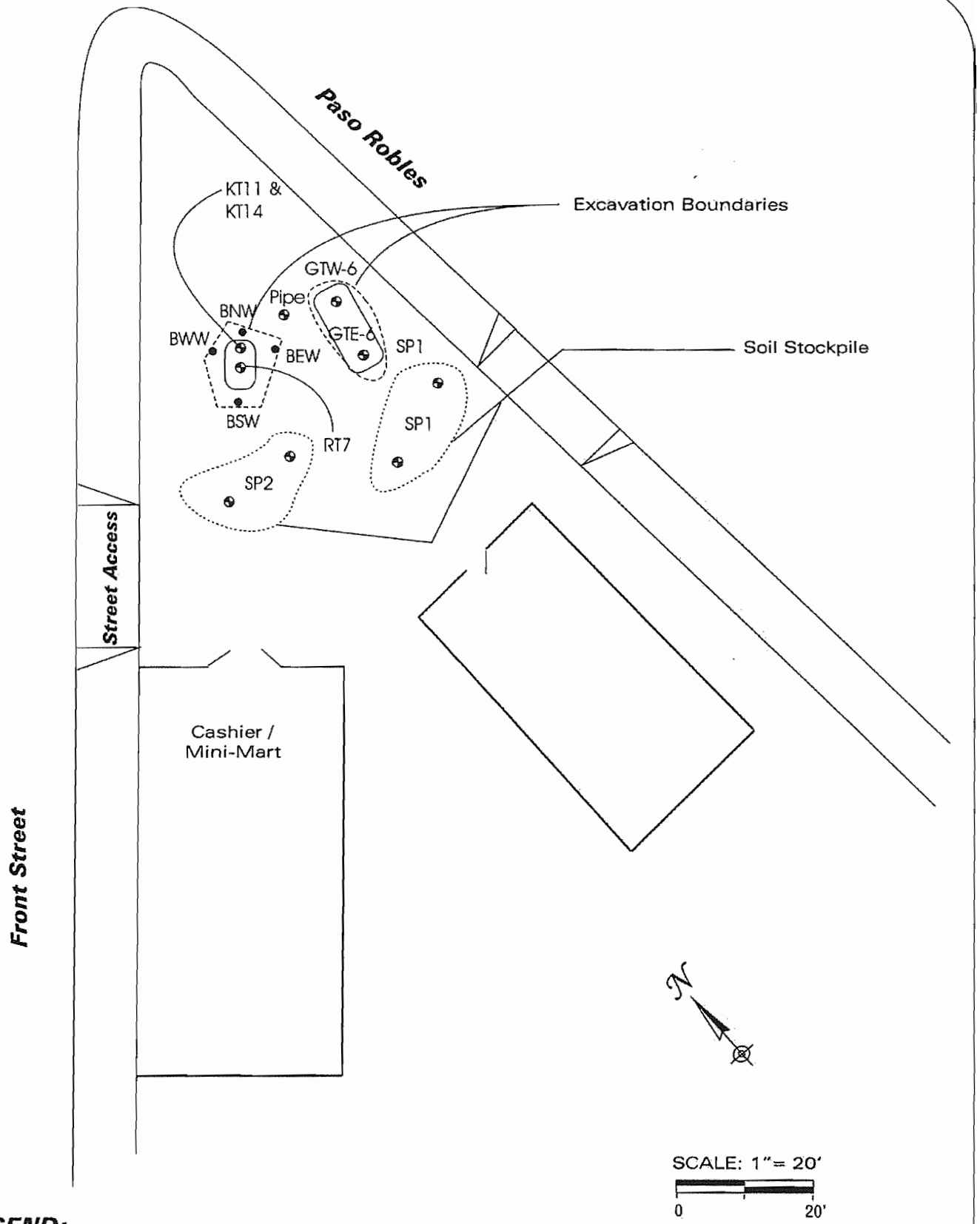
1711 Front Street
Oceano, CA 93445

GEO • POINT TECHNOLOGIES, INC

PROJECT #51005

DRAFTED BY:	WCL
DATE:	11/05

FIG 1



LEGEND:

SWW — Sample Designation

● — Tank Removal Soil Locations

• — Investigative Boring Location

SITE SKETCH MAP

SHOWING ALL BORING LOCATIONS

SITE: Oceano Market

1711 Front Street

Oceano, CA 93345

PT G GEO • POINT TECHNOLOGIES, INC

PROJECT # 51005

DRAFTED BY:	WCL
DATE:	11/05

FIG 2

CUESTA GEOTECHNICAL

An Environmental Service
670 Chorro Street, #D
San Luis Obispo, CA 93401
(805) 543-4084

August 18, 1994

Mr. Richard Aleshire
Regional Water Quality Control Board
81 Higuera Street, Suite 200
San Luis Obispo, CA.

RE: Bell/Webber Property, 1899 Cienega Street, Oceano, California

1.0 Introduction

This report presents the results of Cuesta Geotechnical subsurface investigation. The purpose of the investigation was to determine the extent of gasoline contaminated ground water at the referenced site (appendix A, figure #1). The investigation was conducted in response to a directive from the California Regional Water Quality Control Board (CRWQCB).

2.0 Site Description

The subject property is currently a tire repair shop. This business operates from the site's former gasoline service station building (appendix A, figure #2). No known petroleum products are currently stored or sold on-site. The site is located on the southeast corner of Front Street and Cienega Street. The site elevation is approximately 95 feet above sea level and the topography slopes to the southwest. Southern Pacific Railroad tracks are located approximately 200 feet west of the subject site and parallels Front Street. Oceano's business area is North of the site, while residents are to the East and South. The area between the site and the railroad tracks is trailer storage site.

3.0 Site History

Triangle Gas operated a service station at the subject property that included three underground fuel tanks (regular, unleaded, and diesel) and one underground waste oil tank. The tanks were removed in March, 1990. Gasoline contamination was identified during removal of the tanks and an assessment of the contamination was initiated with the installation of three monitoring wells in May, 1991. These wells were monitored until three additional wells were installed in March, 1993. Assessment of the gasoline contamination from the six monitoring wells showed that 1) ground water was flowing in a westerly direction, 2) ground water depth varied from 6 feet to 9 feet below grade, and 3) the extent of the gasoline contamination was not identified to the North or West.

4.0 Investigation Methodology

4.1 Drilling and Soil Monitoring

Three borings were drilled in the area north and west of the gasoline contaminated ground water plume. The soil was monitored from surface to the ground water, which was identified at approximately 8 feet below grade. Soil samples were obtained from 5 feet below grade and tested with a PID meter. The borings were drilled with a Giddings Drill Rig that utilized 8-inch hollow stem augers. All soils generated during drilling operations remain on-site, placed on and covered by 6 mil. plastic sheeting. To assure the collection of representative data, field procedures as outlined in Cuesta Geotechnical's Quality Assurance and Quality Control Plan (appendix D) were implemented.

The soils encountered during drilling were logged by a registered geologist. The soils were characterized by visual inspection of the drilling cuttings. The soils were classified according to the Unified Soil Classification System and are described on the Boring Logs (appendix B). Following completion of drilling, monitoring wells (MW-7, MW-8, and MW-9) were constructed using 2-inch PVC casing and screen. Additional information concerning the construction of the wells is shown on the Well Construction Logs (appendix B).

To assure that cross contamination did not occur between drilling of successive borings, all equipment contacting subsurface soil or ground water was steam cleaned. The water used in these operations was collected in barrels and remains on-site.

4.2 Ground Water Monitoring and Sampling

Following construction of the monitoring wells, the elevations of the well heads and the depth to ground water were obtained. The wells were then purged in preparation of obtaining ground water samples. Ground water samples were obtained using bailers supplied by a laboratory. The samples were analyzed for the contaminates previous identified, which are total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX). The samples were analyzed using EPA methods 8260 and GC/MS Combination by a state certified laboratory.

5.0 Hydrogeology

Ground water in the Oceano area is generally contained within the permeable Paso Robles Formation sediments and to a lesser extent the older dune sands. Wells that tap these sediments are used mainly for agricultural and domestic supply. Due to the granular nature of alluvial sediments in the area, the uppermost ground water body is generally unconfined and in hydraulic continuity with the ground surface. The primary water body, from which most wells in the area produce water, is generally confined by overlying clay layers (CDWR, 1970). It is anticipated that ground water flow is to the west toward the ocean.

The ground water depth in Oceano varies from greater than 30 feet in the eastern portion to less than 10 feet in the western portion. The static ground water level at the

subject property is approximately 8 feet below grade. The Oceano Community Services District has five wells in this area. Three of these wells are located on 19th Street between The Pike (a street) and Wilmar Avenue and produce from depths greater than 200 feet. The other two wells are located on Front Street between 13th Street and Belridge Street and produce from depths greater than 170 feet.

6.0 Results of the Investigation

6.1 Field Inspection

Soils at the site, as described by the geologist, range from a clayey silt from grade to two feet that overlays medium to coarse grain sands to T.D./24.5 feet. The sediments from 2 feet to 24.5 feet are interpreted to be recent dune sands. Identifiable saturated soils were first encountered at approximately 8 feet below grade (appendix A, figure #3).

During the drilling and sampling of borings MW-7, MW-8, and MW-9, there was no petroleum odor in the vadose zone sands. Soil samples from approximately 2 feet, 5 feet, and 7 feet were tested with a PID meter. The results of these testings indicated there were no petroleum hydrocarbons in these zones.

6.2 Laboratory Analysis

Soil samples were not laboratory analyzed due to the results of the field inspection. Ground water samples were obtained from MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 and analyzed for TPH-BTEX using EPA method 8260 and GC/MS Combination. Samples with the benzene concentration over the state action limit of 1.0 part per billion (ppb) are from MW-1, MW-4, MW-6, and MW-7 (appendix A, figure #4). The results of these analysis are shown in Table #1. The laboratory data sheets and the chain-of-custody forms are included in appendix C.

7.0 Conclusion and Recommendation

Based on the information obtained during Cuesta Geotechnical investigation and previous investigations, the subject property's gasoline contaminated ground water plume appears to has been defined in all directions except to the northwest. MW-7 attempted to define the northerly extent, but this well identified 3.1 ppb benzene and 7900 ppb TPH.

The subject property's ground water flow is currently to the northwest at the north end of the property and to the southwest at the south end of the property. The extent of the ground water contamination at the south end is defined by MW-5, MW-9, and the direction of ground water flow. An attempt to define the northwest extent of the ground water contamination was attempted by MW-7, MW-8. The ground water contamination in MW-7 and the northwesterly ground water flow in the area of MW-6 and MW-7 make it questionable as to whether or not MW-7 and MW-8 define the contamination identified by MW-6. Based on this data, it is recommended that a monitoring well be installed between MW-7 and MW-8. Proposed MW-10 is shown on Appendix A, Figure #4.

Table #1

Cuesta Geotechnical Soil Samples

Sample Site: Bell/Webber Property, 1899 Cienega Street, Oceano, California

Sampling Date: 7/6 & 7/7, 1994

Reporting Units: Ground Water - Parts per Billion/ppm

Sample Location	Benzene	Toluene	Ethyl Benzene	Xylenes	TPH Gasoline
MW-1	**4800**	**26000**	**5100**	**26000**	**120000**
MW-2	ND	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	ND
MW-4	**7300**	**430**	**3100**	**5800**	**39000**
MW-5'	ND	ND	ND	ND	ND
MW-6	**9400**	**15000**	**2700**	**13000**	**110000**
MW-7	**3.1**	25	220	480	**7900**
MW-8	ND	6.0	ND	0.9	ND
MW-9	ND	17	ND	ND	ND
Action Level	1.0	100	680	1000	1000

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)

Bold Above the Maximum Contaminant Level as specified in Title 22, CCR

8.0 Closure

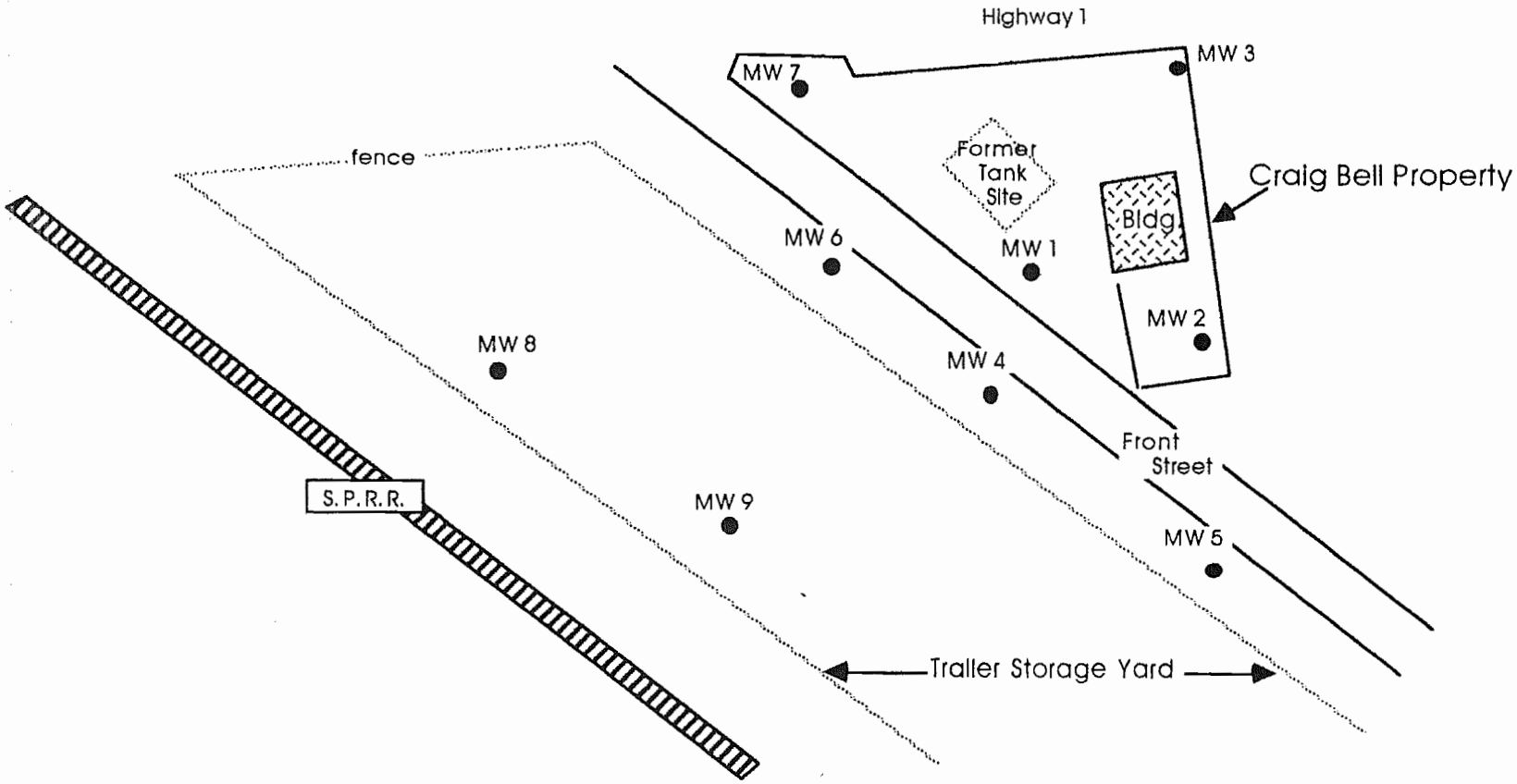
This report has been prepared for the use of the client as it pertains to the property at 1899 Cienega Street, Oceano, California. The findings and conclusions presented in this report are based on the field work, and laboratory testing of ground water samples collected during this investigation. This report may not reflect potential variations in subsurface conditions which may exist between sample locations. All work has been performed in accordance with generally accepted practices in geologic, hydrogeologic and environmental consulting. No warranty, either expressed or implied, is made.

Sincerely,

Leo T. Fedewa
Registered Geologist

Site Map

Figure #2



Legend

- Monitoring Well Site

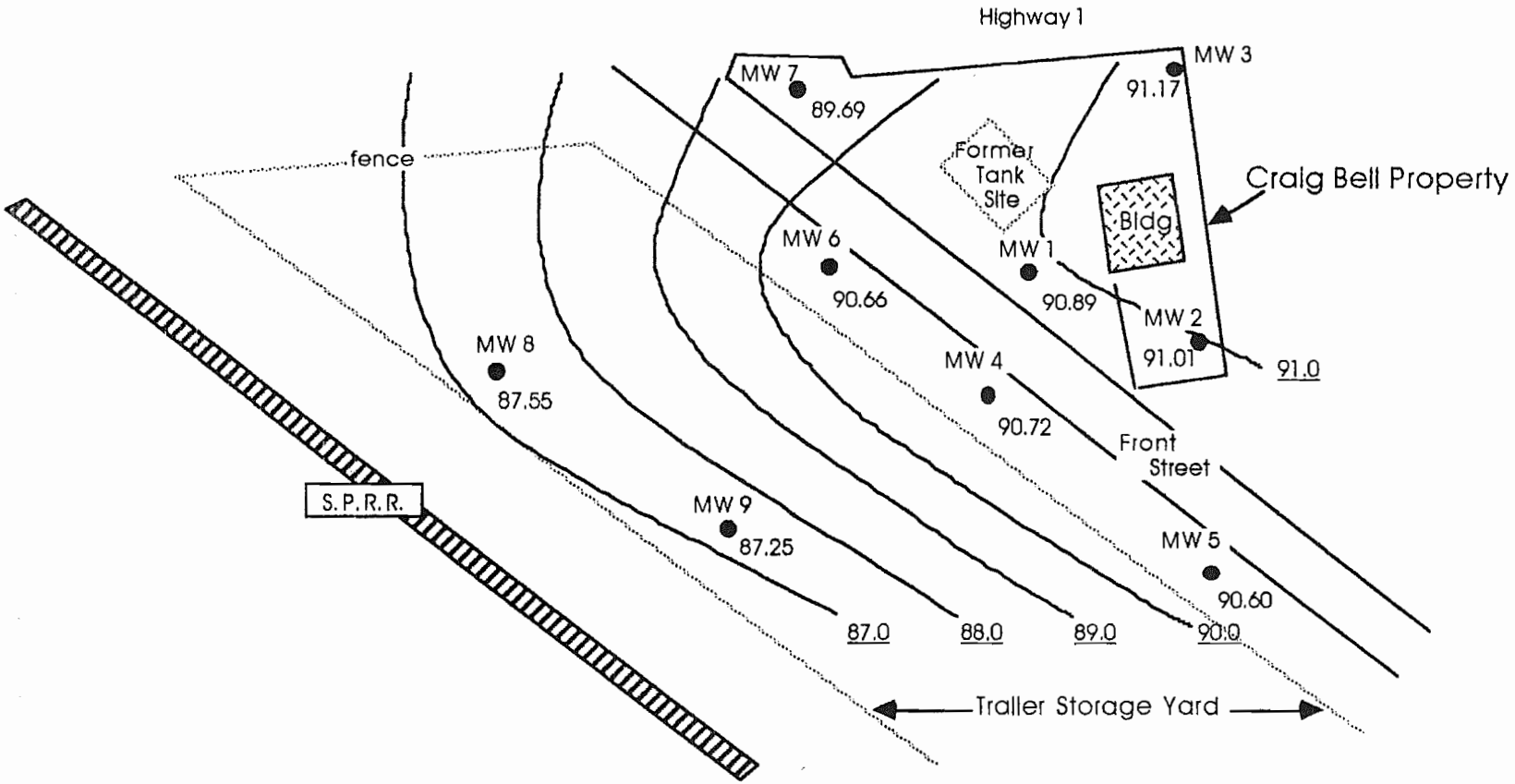
CUESTA GEOTECHNICAL
Environmental Service

San Luis Obispo, CA
(805) 543-4084

Craig Bell Property
1899 Front Street
Oceano, CA

Site Map

Figure #3



Legend

MW 6 ● 90.66 — Monitoring Well Site w/ Elevation Of Ground Water (feet above sea level)

87.0 — Contours On Top Ground Water (feet above sea level)

N

CUESTA GEOTECHNICAL
Environmental Service

San Luis Obispo, CA
(805) 543-4084

Craig Bell Property
1899 Front Street
Oceano, CA

Top Ground Water

GROUNDWATER MONITORING WELLS AND SAMPLING
1899 FRONT STREET, OCEANO CALIFORNIA

MAY 10, 1991

PREPARED FOR

The County of San Luis Obispo
Department of Environmental Health
Attn: Mr. Michael McGee
P.O. Box 1489
2156 Sierra Way
San Luis Obispo, CA 93406

KEN MALONEY/GEOLOGY

P.O. BOX 1392
MORRO BAY, CA 93443
805 772 4819

INTRODUCTION

The subject site is an inoperational service station at the corner of Front Street and Highway 1 in Oceano, California (Figure 1). Several underground fuel tanks were removed in the spring of 1990. During the tank removal evidence of petroleum contamination was evident both in the soil and in the first groundwater, at a depth of about 8 feet. Laboratory anaysis of soil showed contamination above usual clean-up levels. Free petroleum was pumped from the water surface in the tank excavation and recycled by refining. In the weeks following the tank removal much of the petroleum contaminated soil had been removed, aerated, and placed back into the excavation. Verification sampling of this aerated soil is pending.

SCOPE OF SERVICES

On April 23, 1991 the undersigned supervised the installation of three groundwater monitoring wells at 1899 Front Street. The well locations are shown on Figure 2. Well construction details can be found on the appended Monitoring Well Information, and Monitoring Well Detail sheets. The investigation was designed to address the current concerns of the San Luis Obispo County Environmental Health Department.

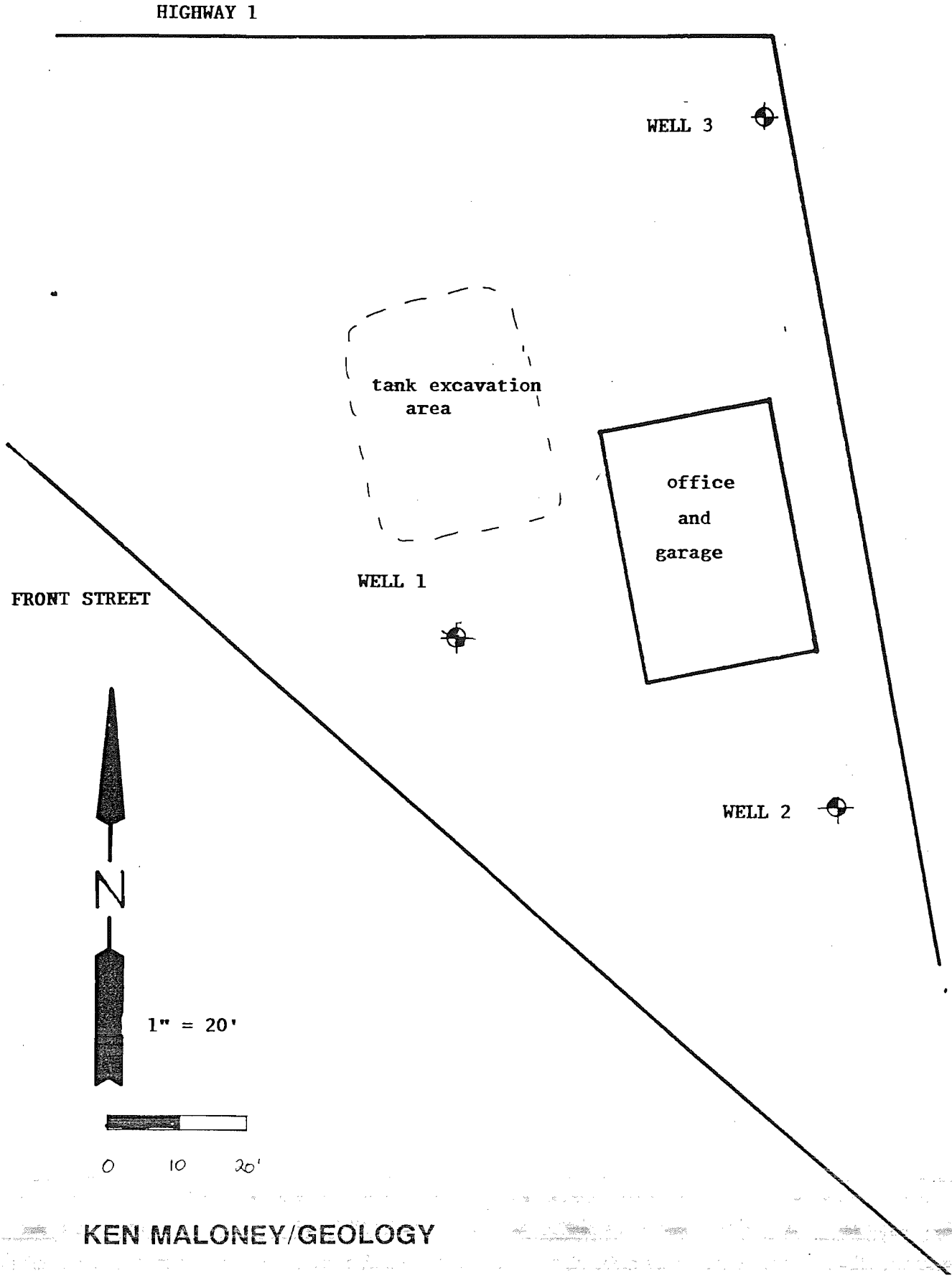
Water elevations were measured and well heads surveyed as to their relative elevations. A three point solution of groundwater flow is attached for data measured 5/5/91, and is discussed in a following section of the report.

SITE CHARACTERISTICS

The subject site is level and is in a mixed neighborhood of commercial and residential zoning. Two single family residences are to the east, a recreational vehicle storage yard and the Southern Pacific Railroad tracks are to the west across Front Street, and commercial and residences are located to the north across Highway 1.

FIGURE 2

BELL PROPERTY 1899 FRONT STREET AND HIGHWAY 1, OCEANO, CALIFORNIA



KEN MALONEY/GEOLOGY

The nearest surface water is Arroyo Grande Creek about 1000 feet south of the site. Some water was noted pooled but not surface flowing on May 5, 1991.

GEOLOGY

The geologic maps of the area (Hall 1973, DWR 1979), show the surface sediments to be Quaternary age (last 2 million years) sand dune deposits. During the well installation the sand dune deposits were found to be fine grained quartz and feldspathic sands. At a depth of approximately 17 feet in Well 3, a gravelly sandy clay was encountered that acts as an aquitard. This clay layer is assumed to be of the Paso Robles Formation, because of the angularity of the cherty shale gravel particles.

SITE GROUNDWATER & GROUNDWATER FLOW DIRECTION

The first groundwater beneath the site is at a depth of about 8 feet. As such the groundwater level approximates the standing water level of Arroyo Grande Creek. It is probable that the source of the groundwater is from precipitation and underflow from the creek. Given the calculated groundwater flow direction of 43 degrees to the northeast, Arroyo Grande Creek is estimated to provide a greater volume of water to the aquifer, than is provided by precipitation. The calculated flow gradient is 0.3 percent which seems too low and indicates a high probability that the groundwater is locally perched.

GROUNDWATER CONTAMINATION

Laboratory analysis shows detectable concentration of petroleum constituents in all three wells. However, only in Well 1 are the constituents found in levels exceeding the usual clean-up limits. Given the calculated groundwater flow direction it can be concluded at this time that the significant groundwater contamination is limited to the area immediately adjacent to Well 1.

FREE PRODUCT

Free or floating petroleum is not present to date in any of the monitoring wells.

TABLE 1
SUBSURFACE ANALYTICAL RESULTS

Well #	benzene	toluene	e-benz	xylene	TPH	date
WATER SAMPLES (IN PARTS PER BILLION)						
1	20,000.	59,000.	6,400.	33,300.	370,000.	04/23/91
2	0.97	1.2	nd	0.61	nd	04/23/91
3	0.79	1.2	nd	2.19	nd	04/23/91

(concentrations in parts per billion.
nd= below detection limits of the analysis.
-- not analyzed,
e-benz is ethylbenzene, TPH is total petroleum hydrocarbons.)

DISCUSSION

A pump and treat method can be used should groundwater require remediation. Details of the system can be developed at the client's request. Installation of at least one additional groundwater well would be necessary if a pump and treat groundwater treatment system is installed.

.....

Sincerely,

Ken Maloney

Ken Maloney
Certified Engineering Geologist
#1513

CUESTA GEOTECHNICAL
An Environmental Service

January 29, 2008

Corey Walsh
Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

RE: Biosparging & Quarterly Groundwater Monitoring:
Bell/Webber Property, 1899 Cienega St., Oceano, CA

During the fourth quarter of 2007, gasoline contaminated groundwater was remediated using biosparging at the Bell-Webber property, 1899 Cienega Street, Oceano; and a quarterly groundwater monitoring/sampling was performed on December 6, 7 and 10, 2007 (Figure 1). This report has been prepared for property owners Craig Bell and Mary Webber.

Biosparging Groundwater

Biosparging was conducted at the referenced site by injecting air into the gasoline-contaminated groundwater during the fourth quarter of 2007. Monitoring of the system indicates it operated between October 1 and 25, 2007. An inspection of the injection system on October 25 found it shut down due to burnt wires from an electrical short in the air compressor pump/motor. Because this unit has required many repairs over the past two years, a new unit was purchased for this site. The new compressor unit was received and installation of the unit was completed on December 31, 2007.

Monitoring of injection parameters (flow rates, pipe pressure) has shown several injection wells with flow rates less than 1 cfm and pipe pressure above 30 psi. Initial injection rates were set at 3 to 4 cfm and line pressures averaged 10 psi. Monitoring of the air injection system with time identified injection wells with decreasing flow rates and increasing piping pressures due to the development of the microbial population, a symptom identified as biofouling, and/or plugging

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volume and then the wells were allowed to recharge within 80% of the water table. The purge logs are presented in Attachment A. Groundwater purged from the monitoring wells is stored on-site in DOT approved drums and will be removed to a recycling facility in the near future. Samples were obtained in 40 milliliter containers that were stored in a cooled ice chest until delivered to the laboratory for analyses. Groundwater samples were analyzed for TPH-gasoline, B, T, E and X constituents using EPA Methods 8015 and 8021.

Site monitoring data showing well construction, groundwater depth, flow direction, and groundwater gradient for approximately three years is listed in Table 2. Groundwater flows from an east to west direction and averages 0.006 feet per foot (Figure 2). The vicinity map (Figure 1) shows water wells identified within a one-mile radius of the site, and Table 3 lists the well's property owners and completion data.

A historical summary of the groundwater analyses is listed in Table 1 and includes groundwater elevations. The laboratory report sheets, QA/QC data and chain of custody record for this quarter are included in Attachment B. This quarter's laboratory analyses identified the following monitoring wells with gasoline contamination or detection limits above the maximum contaminant levels or levels of concern (in ppb):

Well#	Benzene	Toluene	Ethylbenzene	Xylenes	TPH
MW-1	<100	15,000	4,390	21,200	60,000
MW-6	6,090	24,500	2,800	21,900	88,000
MW-7	10.9				4,600
MW-10	962				7,800
MW-12	6.34				
MW-13	398	1,710	2,420	7,230	33,000
Action Level	1	150	700	1,750	1,000

The site maps, Figures 3 and 4, show the extent of benzene and TPH-gasoline, respectively. The laboratory analyses of groundwater samples for December 2007 are generally consistent with the previous results for perimeter non-impacted wells (MW-2, MW-3, MW-5, MW-8, MW-11, MW-12). Wells MW-1, MW-4, MW-6, MW-7 and MW-13, located closest to the source area, generally exhibit stable to increasing constituent concentrations when comparing August and December 2007 results. Historically, there appears to be a trend of higher benzene and TPH

due to the conversion of soluble iron oxide (Fe_{2+}) to insoluble iron oxide (Fe_{3+}) from the injection of oxygen/air to the groundwater. As previously reported, treatment for biofouling was performed in the third quarter 2007 by addition of hydrogen peroxide into the injection wells. The change in injection rates after hydrogen peroxide treatment showed a slight flow increase in a few wells, while most show no marked increase. To address the low flow rates due to soluble iron oxide (Fe_{2+}) being converted to insoluble iron oxide (Fe_{3+}), the Fe_{3+} was converted back to a soluble form by treating the effected injection wells with 90% oxalic acid ($C_2H_2O_4.2H_2O$ in aqueous solution) and 10% citric acid ($H_3C_6H_5O_7$). This was proposed in a September 5, 2007 letter and approved by the RWQCB in an October 26, 2007 email. The oxalic acid/citric acid treatment was performed on December 31, 2007, the same day as the new compressor was started up. Injection flow rates for most wells showed an immediate increase to an average of 4 cfm after treatment.

Dissolved oxygen (DO) levels are monitored in wells MW-1, MW-4, MW-6, MW-7, MW-10, MW-11 and MW-13 approximately every 3 to 5 weeks during system operation and during groundwater sampling events. The DO levels during the December 6 to 10, 2007 monitoring are presented in the purge logs (Attachment A). The distribution of DO levels obtained during the December 2007 monitoring is presented on Figure 5. The relatively low DO levels for the December 2007 monitoring (Figure 5) are likely the result of the biosparging system being shut down since October 25, 2007.

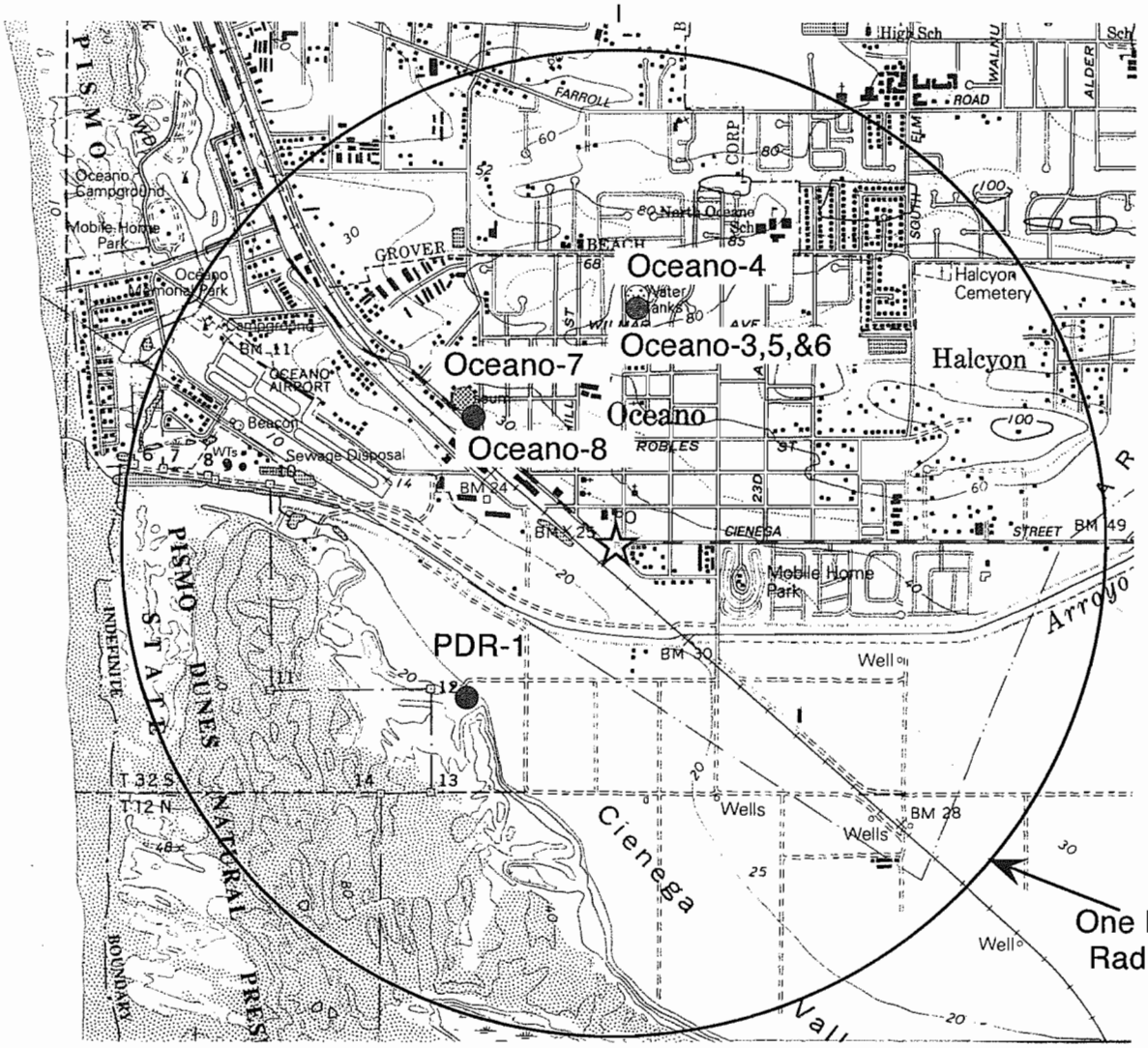
Field monitoring for VOC's using a PID meter was performed to assure biosparged air did not mobilize volatile gasoline constituents to the ground surface. Measurements were obtained from approximately one-inch above the surface of groundwater monitoring wells and air injection wells. All measurements obtained were less than 5 ppm during the injection periods.

Quarterly Monitoring / Sampling

On December 6, 7 and 10, 2007, the fourth quarterly monitoring/sampling was conducted. The extended monitoring/sampling period resulted from rain delaying the sampling. Site monitoring wells MW-1 through MW-13 were monitored (12/6/07) to determine groundwater depth and dissolved oxygen content, and groundwater samples were obtained (Figure 2). Before sampling, each well was purged in an effort to obtain three to four times the casing's

VICINITY MAP W/ GROUNDWATER WELLS

Figur



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

Legend

Groundwater Wells
- Active
- Inactive
- Abandoned

Subject Property

Cuesta Geotechnical — San Luis Obispo,
An Environmental Service — (805) 543-40

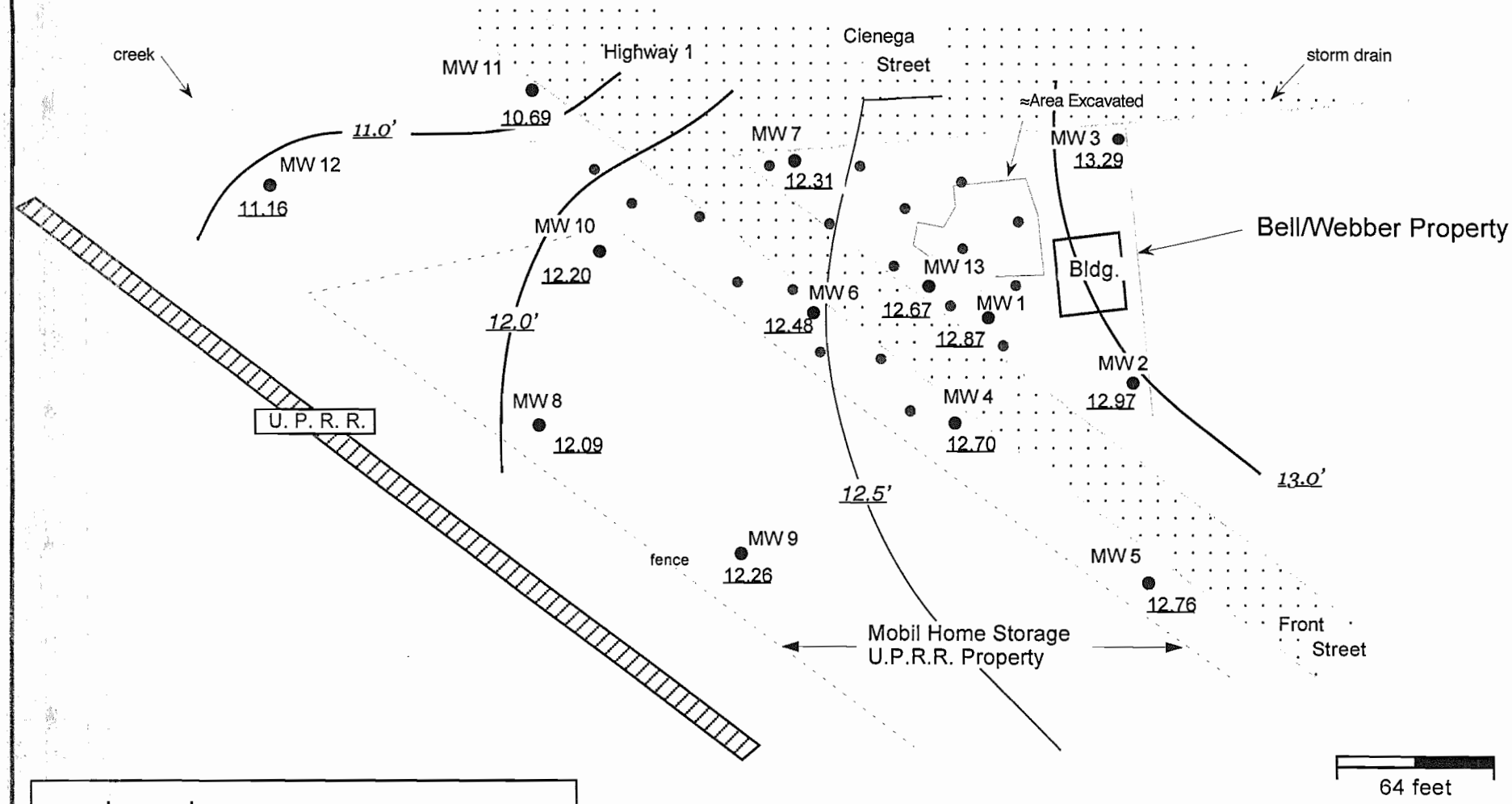
Bell/Webber Property
1899 Cienaga Street
Oceano, CA

Scale:

Date: 10/11

TOP GROUNDWATER

Figure 2



Legend

MW 1
12.87 — Monitoring Well Site w/ Elevation of Groundwater

Biosparging wells

13.0' — Contours On Top Ground Water (feet above sea level)

N

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An Environmental Service

San Luis Obispo, CA
(805) 543-4084

Bell/Webber Property
1899 Cienaga Street
Oceano, CA

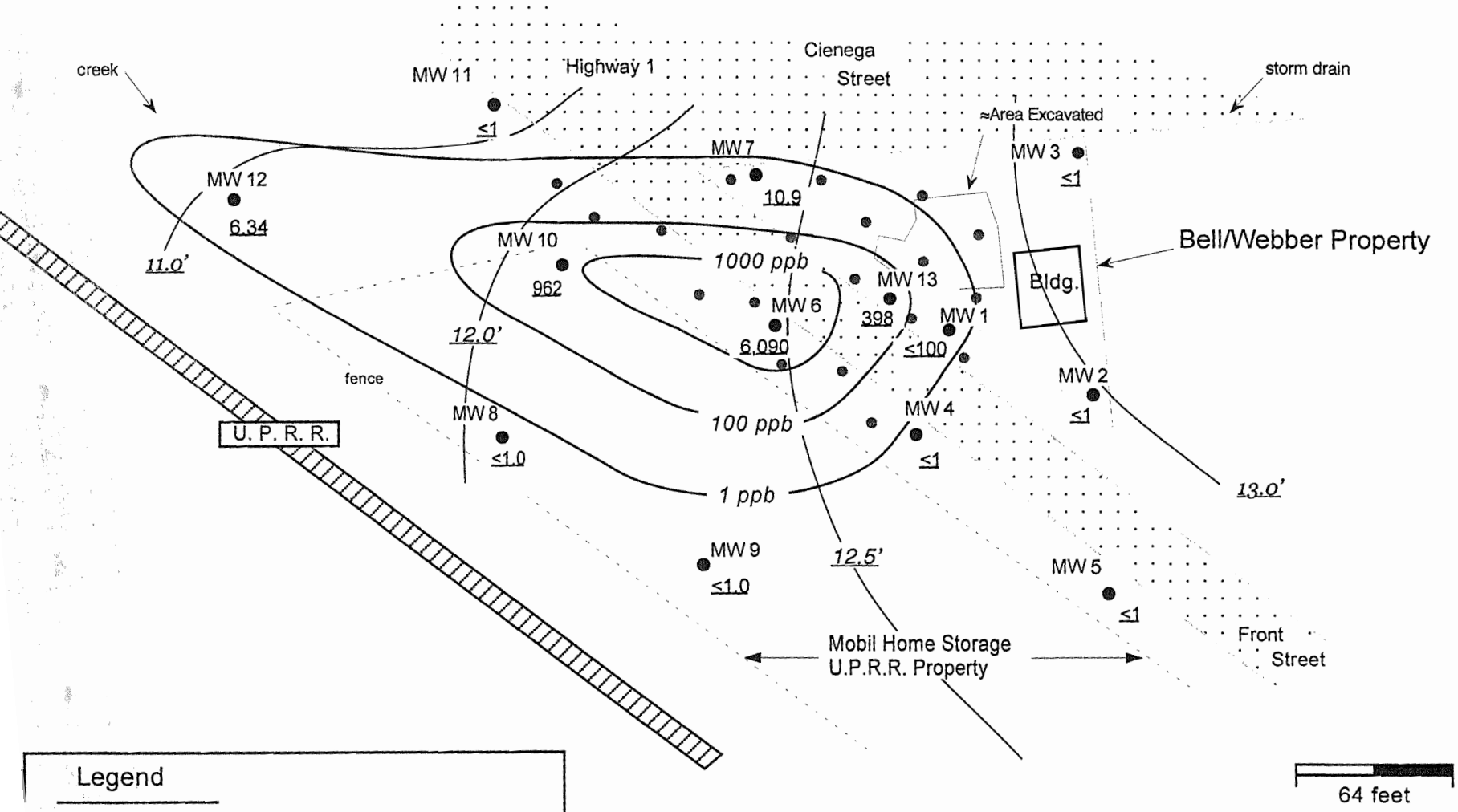
Contours Top Groundwater

Scale: 1"= 64'

Date: 12/6/07

BENZENE CONCENTRATION GROUNDWATER

Figure 3



Legend

MW 6 ● 6,090	Monitoring Well Site Benzene Concentration
100 ppb	Contours: Benzene Concentration
13.0'	Contours: Top Groundwater (feet)
●	Biosparging Wells

N

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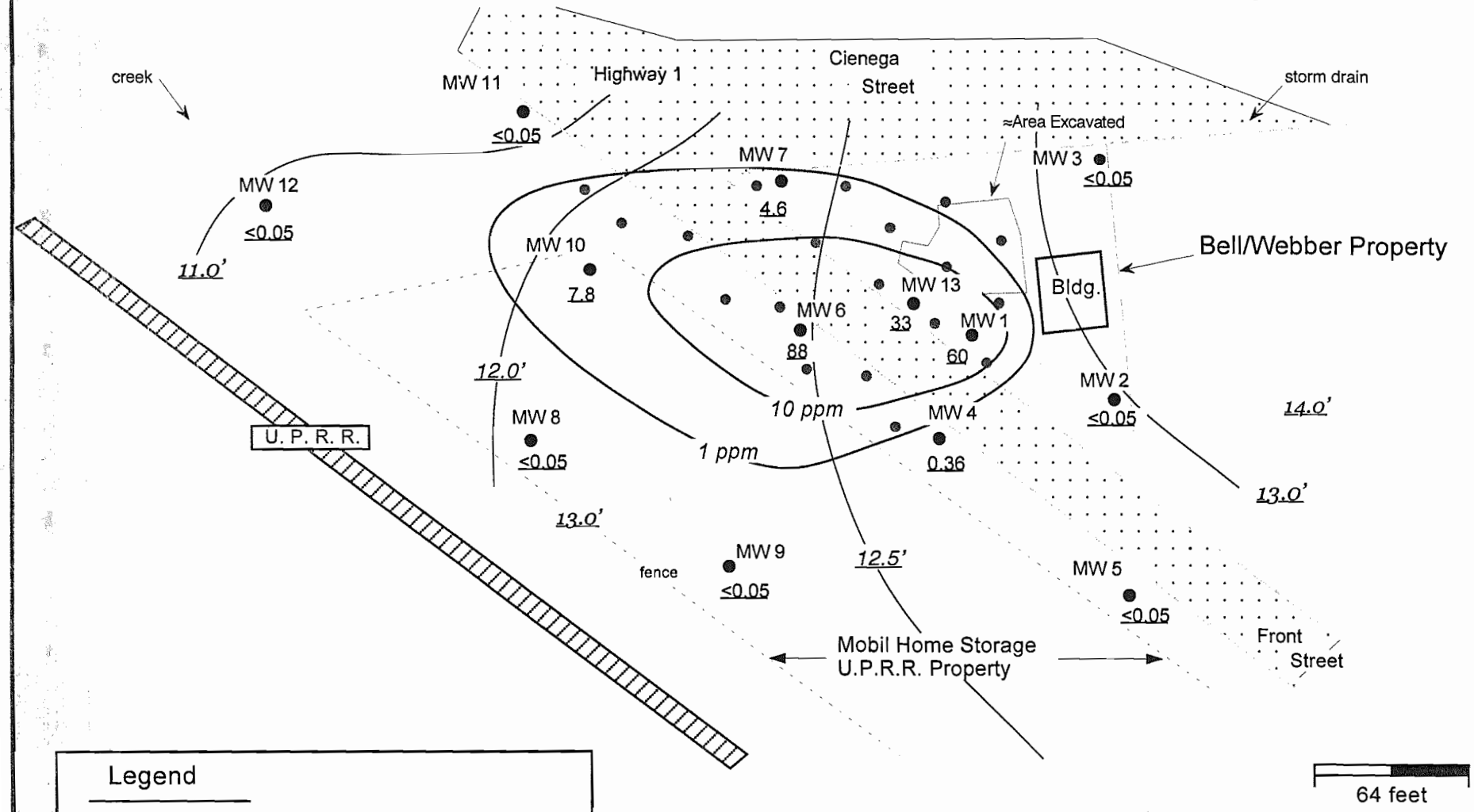
Bell/Webber Property
1899 Cienaga Street
Oceano, CA

Contours: Benzene Concentration

Scale: 1"= 64'

TPH GASOLINE CONCENTRATION GROUNDWATER

Figure 4



Legend

- MW 6 / 88 — Monitoring Well Site; TPHg Concentration (ppm - parts per million)
- 1 ppm — Contours: TPHg Concentration
- 13.0' — Contours: Top Groundwater (feet)
- Biosparging Wells

N

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San Luis Obispo, CA
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Bell/Webber Property
1899 Cienaga Street
Oceano, CA

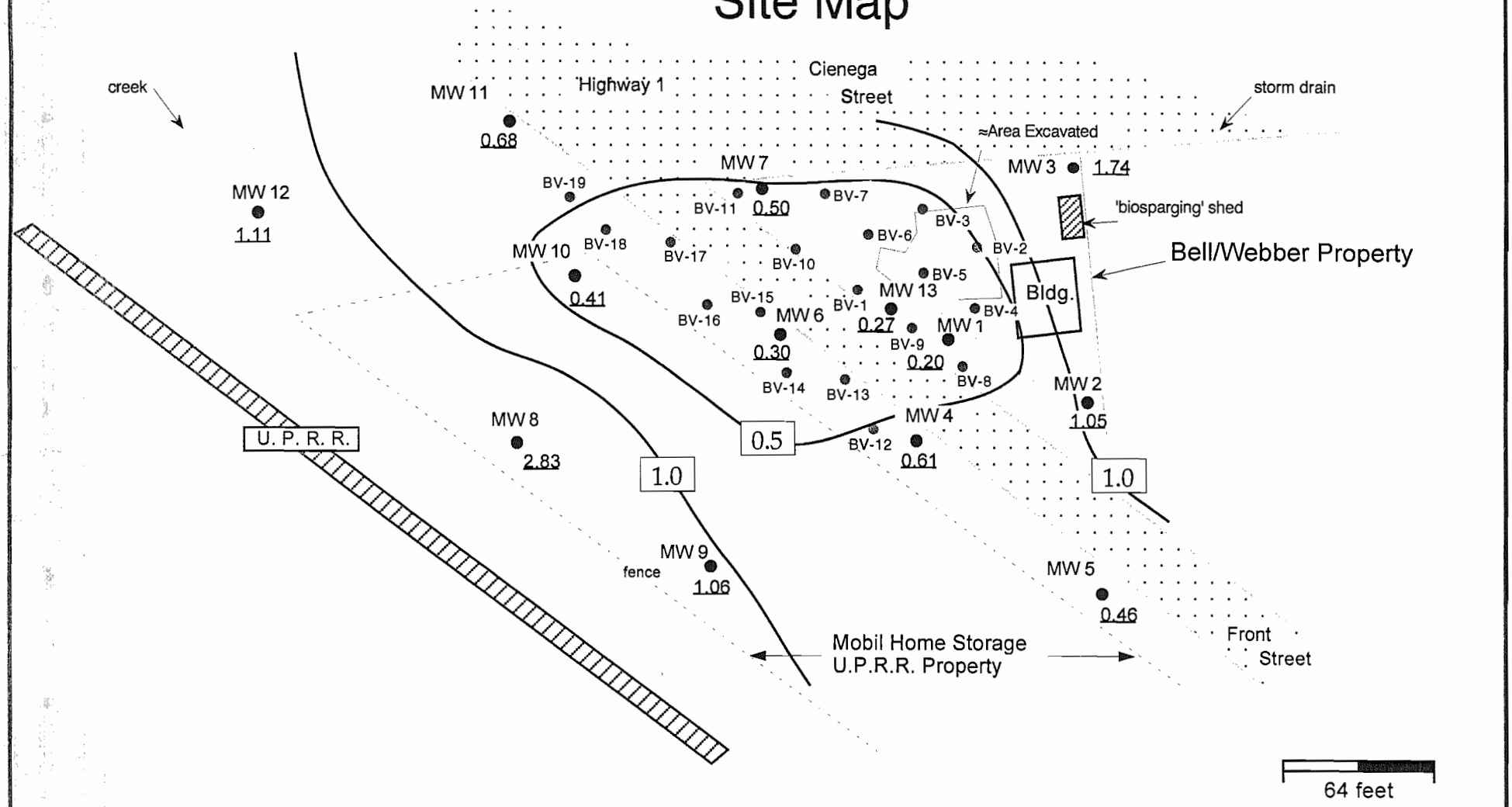
Contours: TPH Gasoline Concentration

Scale: 1"= 64'

Date: 12/10/07

Figure 5

Site Map



Legend

- MW 6 / 0.30 — Monitoring Well; DO-dissolved oxygen level (mg/L)
- 1.0 — Contours dissolved oxygen (mg/L)
- BV-1 — Biosparging Well
- Contaminated Soil Excavated

N

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An Environmental Service

San Luis Obispo, CA
(805) 543-4084

Bell/Webber Property
1899 Cienaga Street
Oceano, CA

Dissolved Oxygen Levels & Biosparging Well Locations

Scale: 1"= 64'

Date: 12/6/07

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Water Samples Location/Date		Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	TPH Gasoline	F.L. feet
MW-1	12/6/07	<100	15,000	4,390	21,200	NT	60,000	12.87
	8/31/07	4.33	6,170	2,150	5,650	NT	58,000	13.70
	5/23/07	10.6	13,400	2,020	10,400	NT	33,000	14.40
	2/28/07	<10	4,100	1,600	7,600	NT	31,000	14.62
	12/6/06	20	5,800	1,400	6,500	NT	41,000	14.05
	8/30/06	<100	5,300	1,800	10,400	NT	60,000	15.00
	6/1/06	<5	3,920	901	6,480	NT	33,300	15.99
	3/16/06	<50	6,710	1,740	10,230	NT	46,000	15.25
	12/20/05	34.1	21,600	4,330	20,240	NT	72,700	13.74
	9/7/05	95	21,800	4,260	22,100	NT	98,400	14.43
	6/1/05	22	3,000	1,900	8,400	NT	62,000	15.47
	3/4/05	37	4,100	2,100	10,000	NT	51,000	15.72
	12/9/04	63	6,800	1,800	8,000	NT	45,000	12.97
	9/22/04	74	13,000	4,300	14,000	NT	110,000	13.03
	6/16/04	96	15,000	3,400	14,000	NT	73,000	14.49
	3/18/04	130	21,000	3,700	22,000	<50	120,000	14.73
	12/16/03	130	21,000	4,400	19,000	<50	81,000	13.33
	10/7/03	130	8,800	2,300	9,300	<50	65,000	13.54
	6/11/03	190	15,000	5,000	22,000	<50	80,000	14.53
	3/26/03	190	12,000	4,000	15,000	<100	120,000	14.76
	1/1/03	170	10,000	2,600	11,000	<100	72,000	14.02
	9/20/02	320	14,000	2,800	14,000	<100	100,000	13.46
	7/11/02	520	24,000	4,100	20,000	<100	110,000	14.01
	4/14/02	650	25,000	5,700	28,000	<500	140,000	14.67
	12/21/01	640	20,000	4,100	21,000	<500	100,000	14.92
	10/2/01	850	20,000	3,500	19,000	690	180,000	14.84
	6/13/01	640	15,000	3,700	19,000	<500	100,000	16.08
	4/11/01	400	6,000	2,900	13,000	<50	79,000	17.14
	1/2/01	730	21,000	4,300	20,000	<50	74,000	14.18
	9/23/00	1,000	27,000	3,800	24,000	<100	88,000	14.72
	3/30/00	580	870	3,600	17,000	<500	85,000	16.92
	10/2/99	1,900	24,000	5,600	27,000	<500	120,000	14.83
	4/2/99	1,200	14,000	4,700	23,000	<100	85,000	17.51
	10/8/98	1,500	17,000	4,900	25,000	<500	150,000	15.65
	1/6/98	1,600	18,000	4,700	25,000		400,000	16.81
	7/2/97	1,800	17,000	3,800	18,000		150,000	15.53
	1/16/97	1,800	16,000	4,400	21,000		89,000	18.57
	9/27/96	3,100	30,000	5,200	27,000	<500	130,000	14.53
	4/4/96	2,100	19,000	4,300	24,000		100,000	17.05
	11/22/95	2,200	19,000	2,800	8,600		99,000	14.98
	6/22/95	4,700	34,000	8,100	48,000		520,000	16.90
	11/10/94	2,400	17,000	3,800	18,000		100,000	13.32
	3/17/93	7,400	22,000	3,300	17,000		84,000	
MW-2	12/10/07	<1.0	<6.0	<1.0	<1.0	NT	<50	12.97
	8/30/07	<1.0	<6.0	<1.0	4.49	NT	<50	13.87
	5/23/07	<1.0	<6.0	<1.0	<1.0	NT	<50	14.51
	2/28/07	<1.0	<6.0	<1.0	1.5	NT	<50	14.66
	12/6/06	<1.0	<6.0	<1.0	2.3	NT	56	14.40
	8/30/06	<0.5	<0.5	<0.5	<0.5	NT	<50	15.40
	6/1/06	<0.5	<0.5	<0.5	<0.5	NT	<10	16.04
	3/16/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.24
	12/20/05	<0.5	0.6	<0.5	<0.5	NT	<10	13.82
	9/7/05	<0.25	<0.25	<0.25	<0.5	NT	<5.0	14.52
	6/1/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.51
	3/4/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.80
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.12
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.20
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	14.18
	3/18/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	14.88
	12/16/03	ND	ND	ND	ND	<0.5	ND	13.52
	10/7/03	ND	ND	ND	ND	<0.5	ND	13.78
	6/11/03	ND	ND	ND	ND	<0.5	ND	14.64
	3/26/03	ND	ND	ND	ND	<0.5	ND	14.88
	12/31/02	ND	ND	ND	ND	<0.5	ND	14.21
	9/20/02	ND	ND	ND	ND	<0.5	ND	13.61
	7/11/02	ND	ND	ND	ND	<0.5	ND	14.12
	4/14/02	ND	ND	ND	ND	<0.5	ND	14.76
	12/21/01	ND	ND	ND	ND	<0.5	ND	15.06
	10/2/01	ND	ND	ND	ND	<0.5	ND	14.96
	6/13/01	ND	ND	ND	ND	<0.5	ND	16.20
	4/11/01	ND	ND	ND	ND	<0.5	ND	17.30
	1/2/01	ND	ND	ND	ND	<0.5	ND	14.32
	9/23/00	ND	ND	ND	ND	<0.5	ND	14.83
	3/30/00	ND	ND	ND	ND	<0.5	ND	16.97
	10/2/99	ND	ND	ND	ND	5.9	ND	14.96
	4/2/99	ND	ND	ND	ND	<0.5	ND	17.14
	10/8/98	ND	ND	ND	0.7	<0.5	ND	15.77
	1/6/98	ND	2.3	ND	2.6		ND	16.80
	7/2/97	ND	ND	ND	ND		ND	15.66
	1/16/97	ND	ND	ND	ND	<0.5	ND	18.54
	9/27/96	ND	1.3	ND	2.4		ND	14.67
	4/4/96	ND	ND	ND	ND		ND	17.11
	11/22/95	ND	ND	ND	ND		ND	15.12
	6/22/95	1.8	1.1	0.6	2.3		48	16.98
	11/10/94	ND	ND	ND	ND		ND	13.37
	3/17/93	ND	ND	ND	ND		ND	
Action Limit**		1	150	700	1,750	5	1,000	

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Water Samples Location/Date		Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	TPH Gasoline	F.L. feet
MW-3	12/6/07	<1.0	<6.0	<1.0	4.04	NT	<50	13.29
	8/30/07	<1.0	<6.0	<1.0	4.77	NT	<50	14.06
	5/24/07	<1.0	17.0	5.89	14.3	NT	<50	14.72
	2/26/07	<1.0	<6.0	<1.0	<1.0	NT	<50	15.07
	12/6/06	<1.0	<6.0	<1.0	<1.0	NT	<50	14.56
	8/29/06	<0.5	<0.5	<0.5	1.9	NT	<50	15.38
	6/1/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.65
	3/16/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.69
	12/20/05	<0.5	4.9	1.5	7.2	NT	<10	14.17
	9/7/05	<0.25	<0.25	<0.25	<0.5	NT	<5.0	14.79
	6/1/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.79
	3/4/05	<0.5	<0.5	<0.5	<0.5	NT	<50	16.25
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.47
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.40
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	14.35
	3/18/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	15.20
	12/16/03	ND	ND	ND	ND	<0.5	ND	13.79
	10/7/03	2.0	16	4.1	22	<0.5	110	14.00
	6/17/03	ND	ND	ND	ND	<0.5	ND	14.85
	3/26/03	ND	1.3	0.8	2.9	<0.5	ND	15.26
	1/1/03	ND	1.4	0.8	3.0	<0.5	70	14.84
	9/20/02	ND	ND	ND	0.8	0.5	ND	13.93
	7/11/02	ND	ND	ND	ND	0.6	ND	14.43
	4/14/02	ND	1.4	0.6	2.8	0.5	ND	15.05
	12/21/01	ND	1.8	ND	2.7	0.9	ND	15.44
	10/2/01	ND	1.3	0.6	2.2	0.8	ND	15.26
	6/13/01	ND	ND	ND	ND	1.2	ND	16.33
	4/11/01	ND	ND	ND	ND	0.6	ND	17.09
	1/2/01	ND	0.7	ND	1.8	0.8	ND	14.63
	9/23/00	ND	ND	ND	ND	0.8	ND	15.18
	3/30/00	ND	ND	ND	ND	0.9	ND	16.88
	10/2/99	ND	0.7	ND	1.7	1.0	ND	15.29
	4/2/99	ND	0.7	ND	1.6	0.8	ND	17.14
	10/8/98	ND	ND	ND	0.9	1.0	ND	16.02
	1/6/98	ND	0.5	ND	1.1		ND	16.84
	7/2/97	ND	ND	ND	ND		ND	15.91
	1/16/97	ND	ND	ND	ND		ND	18.63
	9/27/96	ND	2.1	0.6	3.0	2.1	ND	15.01
	4/4/96	ND	ND	ND	ND		ND	17.01
	11/22/95	ND	ND	ND	ND		ND	15.44
	6/23/95	ND	1.1	ND	1.8		17	17.00
	11/10/94	ND	ND	ND	ND		ND	14.00
	3/17/93	ND	ND	ND	ND		ND	
MW-4	12/6/07	<1.0	<6.0	3.02	4.92	NT	360	12.70
	8/31/07	<1.0	41	399	49	NT	1,900	13.54
	5/23/07	<1.0	<6.0	1,310	2.66	NT	2,200	14.26
	2/26/07	<2.0	<12	1,400	21	NT	4,200	14.38
	12/6/06	<1.0	<6.0	810	8.1	NT	2,700	13.96
	8/29/06	<0.5	2.3	1,700	173.6	NT	14,000	14.83
	6/1/06	1.4	8.9	996	154	NT	7,280	15.81
	3/15/06	0.6	1.2	822	5.2	NT	5,020	15.01
	12/19/05	<0.5	4.4	801	10.3	NT	27,300	13.53
	9/7/05	6.85	16.8	593	341	NT	4,120	14.25
	5/31/05	<0.5	<0.5	<0.5	6.5	NT	760	15.26
	3/3/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.38
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.73
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.67
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.82
	3/17/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	14.52
	12/16/03	ND	ND	ND	ND	<0.5	ND	13.14
	10/7/03	ND	ND	ND	ND	<0.5	50	13.37
	6/11/03	ND	ND	13	ND	0.7	390	14.30
	3/26/03	ND	ND	1.7	ND	<0.5	110	14.53
	12/31/02	ND	ND	ND	ND	0.6	ND	13.66
	9/20/02	ND	ND	ND	ND	<0.5	92	13.26
	7/11/02	ND	ND	ND	ND	<0.5	97	13.80
	4/14/02	ND	ND	ND	ND	<0.5	130	14.49
	12/21/01	ND	ND	ND	ND	0.6	240	15.00
	10/2/01	ND	ND	2.5	ND	0.5	190	14.64
	6/13/01	3.3	ND	210	1.2	2.2	1,300	15.91
	4/11/01	7.1	ND	180	1.1	0.6	1,200	17.07
	1/2/01	12	4.1	1,700	40	4.0	6,700	14.01
	9/23/00	16	14	790	250	2.7	7,300	14.52
	3/30/00	5.7	ND	23	2.2	<0.5	170	16.84
	10/2/99	ND	ND	ND	ND	<0.5	100	14.63
	4/2/99	ND	ND	ND	ND	<0.5	ND	17.15
	10/8/98	ND	ND	ND	ND	<0.5	180	15.45
	1/6/98	33	ND	120	1.4		1,200	16.76
	7/2/97	18	1.9	66	7.0		1,400	15.33
	1/16/97	580	5.6	410	57		3,700	18.79
	9/27/96	300	ND	850	ND	<10	5,500	14.31
	4/4/96	2,000	12	910	280		9,200	16.92
	11/22/95	1,600	ND	1,300	480		26,000	14.78
	6/22/95	6,800	1,100	3,300	7,000		74,000	16.71
	11/10/94	8,200	250	3,400	5,600		46,000	13.04
	3/17/93	3,500	1,700	810	3,100		15,000	
Action Limit**		1	150	700	1,750	5	1,000	

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Water Samples Location/Date		Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	TPH Gasoline	F.L. feet
MW-5	12/7/07	<1.0	<6.0	2.19	12.0	NT	<50	12.76
	8/31/07	<1.0	15.9	6.97	17.6	NT	180	13.59
	5/23/07	<1.0	<6.0	<1.0	<1.0	NT	<50	14.27
	2/26/07	<1.0	<6.0	2.3	<1.0	NT	<50	14.39
	12/6/06	<1.0	<6.0	1.8	<1.0	NT	<50	14.00
	8/29/06	<0.5	<0.5	<0.5	<0.5	NT	<50	14.84
	6/1/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.79
	3/15/06	<0.5	<0.5	<0.5	<0.5	NT	<10	14.96
	12/19/05	<0.5	<0.5	<0.5	<0.5	NT	<10	13.56
	9/7/05	<0.25	<0.25	<0.25	<0.5	NT	<5.0	13.27
	5/31/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.20
	3/3/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.37
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.87
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.97
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.88
	3/18/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	14.48
	12/16/03	ND	ND	ND	ND	<0.5	ND	13.25
	10/7/03	ND	ND	ND	ND	<0.5	ND	13.48
	6/11/03	ND	ND	ND	ND	<0.5	ND	14.36
	3/27/03	ND	ND	ND	ND	<0.5	ND	14.61
	12/31/02	ND	ND	ND	ND	<0.5	ND	13.87
	9/20/02	ND	ND	ND	ND	<0.5	ND	13.35
	7/11/02	ND	ND	ND	ND	<0.5	ND	13.87
	4/14/02	ND	ND	ND	ND	<0.5	ND	14.55
	12/21/01	ND	ND	ND	ND	<0.5	ND	14.81
	10/2/01	ND	ND	ND	ND	<0.5	ND	14.72
	6/13/01	ND	ND	ND	ND	<0.5	ND	15.98
	4/11/01	ND	ND	ND	ND	<0.5	ND	17.15
	1/2/01	ND	ND	ND	ND	<0.5	ND	14.09
	9/23/00	ND	ND	ND	ND	<0.5	ND	14.58
	3/30/00	ND	ND	ND	ND	<0.5	ND	16.75
	10/2/99	ND	ND	ND	ND	<0.5	ND	14.66
	4/2/99	ND	ND	ND	ND	<0.5	ND	16.95
	10/8/98	ND	ND	ND	ND	<0.5	ND	15.53
	1/6/98	ND	ND	ND	1.0		ND	16.60
	7/2/97	ND	ND	ND	ND		ND	15.40
	1/16/97	ND	ND	ND	ND		ND	18.46
	9/27/96	ND	ND	ND	ND	<0.5	ND	14.39
	4/4/96	ND	ND	ND	ND		ND	16.89
	11/22/95	ND	ND	ND	ND		ND	14.89
	6/22/95	ND	ND	ND	ND		ND	16.76
	11/10/94	ND	ND	ND	ND		ND	13.03
	3/17/93	ND	ND	ND	ND		ND	
MW-6	12/6/07	6,090	24,500	2,800	21,900	NT	88,000	12.48
	8/31/07	4,100	14,900	9,470	12,300	NT	67,000	13.29
	5/23/07	3,630	9,490	1,710	9,610	NT	39,000	14.16
	2/26/07	3,100	14,000	2,000	12,000	NT	65,000	14.44
	12/6/06	1,900	9,700	1,200	7,500	NT	46,000	13.84
	8/29/06	6,300	21,000	2,100	10,000	NT	160,000	14.66
	5/31/06	3,590	8,830	1,630	9,480	NT	47,100	15.83
	3/15/06	2,470	6,660	1,570	8,600	NT	46,800	15.23
	12/19/05	3,020	12,100	2,060	10,600	NT	32,200	13.38
	9/7/05	6,980	20,700	2,540	16,700	NT	101,000	14.10
	5/31/05	5,400	16,000	1,800	14,400	NT	76,000	15.19
	3/3/05	2,000	4,800	1,500	8,000	NT	43,000	15.68
	12/9/04	6,200	16,000	2,800	15,000	NT	100,000	12.61
	9/22/04	7,500	20,000	3,700	20,000	NT	120,000	12.59
	6/16/04	7,800	21,000	3,200	18,000	NT	99,000	13.67
	3/17/04	5,400	16,000	2,900	17,000	<500	95,000	14.47
	12/16/03	7,700	20,000	3,100	14,000	<5.0	92,000	13.06
	10/07/03	3,800	8,200	2,100	8,200	<50	86,000	13.06
	6/11/03	8,400	18,000	3,900	15,000	<500	93,000	14.21
	3/26/03	6,000	8,300	3,900	11,000	<100	120,000	14.57
	1/1/03	3,800	5,600	3,500	7,900	<100	140,000	13.89
	9/20/02	6,100	11,000	2,700	9,600	<100	100,000	13.11
	7/11/02	6,900	18,000	3,500	14,000	<100	110,000	13.63
	4/14/02	9,600	22,000	6,200	23,000	<500	160,000	14.40
	12/21/01	8,100	21,000	2,800	14,000	<500	100,000	14.65
	10/2/01	8,900	20,000	2,200	12,000	<100	130,000	14.49
	6/13/01	6,500	6,800	1,400	6,300	<50	46,000	15.75
	4/11/01	690	1,300	400	2,100	<50	14,000	16.90
	1/2/01	10,000	23,000	3,900	16,000	<500	92,000	14.10
	9/23/00	11,000	25,000	2,900	16,000	<500	140,000	14.38
	3/30/00	650	1,800	670	3,100	<50	25,000	16.79
	10/2/99	13,000	22,000	4,900	21,000	<500	130,000	14.50
	4/2/99	3,100	5,200	980	5,500	<20	29,000	17.36
	10/8/98	9,700	12,000	1,700	8,200	<100	70,000	15.30
	1/6/98	2,400	5,800	1,400	7,500		51,000	16.85
	7/2/97	14,000	23,000	2,300	15,000		100,000	15.16
	1/16/97	180	360	310	1,700		20,000	19.14
	9/27/96	12,000	20,000	3,000	17,000	<500	97,000	14.16
	4/4/96	2,600	6,900	1,500	10,000		62,000	16.79
	11/22/95	8,500	17,000	1,800	5,900		91,000	14.64
	6/22/95	8,000	11,000	1,800	9,800		53,000	16.60
	11/10/94	13,000	23,000	4,500	21,000		200,000	13.02
	3/17/93	18,000	35,000	3,700	24,000		130,000	
Action Limit**		1	150	700	1,750	5	1,000	

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Water Samples Location/Date		Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	TPH Gasoline	F.L. feet
MW-7	12/6/07	10.9	101	246	794	NT	4,600	12.31
	8/30/07	2.15	65.2	80.2	351	NT	1,900	12.99
	5/24/07	1.36	11.7	22.1	19.6	NT	360	14.15
	2/27/07	<1.0	<6.0	<1.0	5.8	NT	73	14.31
	12/6/06	7.4	790	590	4,200	NT	17,000	13.58
	8/31/06	1.8	110	170	1,220	NT	9,100	14.75
	6/1/06	2.5	0.9	28.9	103	NT	655	15.83
	3/15/06	1.7	3.7	29.5	165	NT	1,310	15.43
	12/19/05	9.4	393	235	1,152	NT	62,100	13.12
	9/7/05	2.8	117	517	2,950	NT	8,670	13.98
	6/1/05	<0.5	<0.5	<0.5	2.6	NT	87	15.25
	3/4/05	<0.5	<0.5	1.0	6.7	NT	58	16.12
	12/9/04	36	520	420	1,700	NT	9,400	12.35
	9/22/04	31	850	740	2,800	NT	14,000	11.79
	6/16/04	48	710	590	2,900	NT	12,000	13.19
	3/17/04	3.6	1.5	6.1	19	<0.5	180	14.68
	12/16/03	170	1,200	1,100	3,800	<100	19,000	12.86
	10/7/03	30	150	590	1700	<1.0	11,000	12.70
	6/11/03	0.6	4.2	6.1	19	<0.5	220	14.18
	3/26/03	ND	6.1	190	580	<2.0	4,400	14.68
	1/1/03	13	1,100	430	2,600	<2.5	11,000	13.83
	9/20/02	42	540	540	2,200	<5.0	20,000	12.77
	7/11/02	71	2,400	2,000	12,000	<5.0	51,000	13.45
	4/14/02	2.5	12	120	150	<2.0	2,800	14.43
	12/21/01	ND	2.1	290	740	<2.0	6,100	14.81
	10/2/01	120	1,200	420	6,600	<20	54,000	14.42
	6/13/01	8.8	43	61	670	<0.5	2,400	15.73
	4/11/01	ND	ND	0.8	0.9	<0.5	ND	16.78
	1/2/01	58	1,300	2,000	4,600	<20	23,000	13.81
	9/23/00	95	6,500	3,500	15,000	<50	49,000	14.41
	3/30/00	ND	ND	0.9	0.9	<0.5	ND	16.62
	10/2/99	690	10,000	3,400	15,000	<500	62,000	14.48
	4/2/99	1.1	ND	15	19	<0.5	420	17.22
	1/9/99	28	150	230	630	<10	5,700	15.34
	10/8/98	220	1,300	1,200	2,900	<20	21,000	15.36
	1/6/98	13	150	380	2,000		11,000	16.78
	7/2/97	72	890	250	1,800		11,000	15.24
	1/16/97	ND	ND	0.8	1.6		ND	19.08
	9/27/96	190	5,900	3,600	16,000	<50	62,000	14.09
	4/4/96	5.7	ND	7.8	8.9		230	16.67
	11/22/95	32	230	750	2,500		13,000	14.76
	6/22/95	1.6	1.0	11	76		510	16.61
	11/10/94	1,300	9,500	3,000	18,000		80,000	11.91
MW-8	12/10/07	<1.0	<6.0	<1.0	<1.0	NT	<50	12.09
	8/31/07	11.3	51.7	7.45	50.1	NT	330	12.89
	5/23/07	<1.0	<6.0	<1.0	<1.0	NT	<50	13.87
	2/27/07	<1.0	<6.0	<1.0	<1.0	NT	<50	14.47
	12/7/06	3.0	<6.0	4.0	8.5	NT	150	13.67
	8/29/06	<0.5	<0.5	<0.5	<0.5	NT	<50	14.36
	5/30/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.78
	3/15/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.30
	12/19/05	4.6	17.4	4.7	25.6	NT	468	12.93
	9/7/05	<0.25	<0.25	<0.25	<0.5	NT	<5.0	13.61
	5/31/05	<0.5	<0.5	<0.5	<0.5	NT	<50	14.93
	3/3/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.86
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	10.50
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	9.17
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.92
	3/17/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	14.66
	12/16/03	ND	ND	ND	ND	<0.5	ND	11.24
	10/7/13	ND	ND	ND	ND	<0.5	ND	10.94
	6/11/03	ND	ND	ND	ND	<0.5	ND	12.01
	3/26/03	ND	ND	ND	ND	<0.5	ND	13.26
	12/31/02	ND	ND	ND	ND	<0.5	ND	12.39
	9/20/02	ND	ND	ND	ND	<0.5	ND	10.68
	7/11/02	ND	ND	ND	ND	<0.5	ND	13.07
	4/02 to 9/96			Not Sampled				
	4/4/96	ND	ND	ND	ND		ND	14.40
	11/22/95	ND	ND	ND	ND		ND	12.86
	6/22/95	ND	ND	ND	ND		ND	14.36
	11/21/94	ND	ND	ND	ND		ND	10.71
Action Limit**		1	150	700	1,750	5	1,000	

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Water Samples Location/Date		Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	TPH Gasoline	F.L. feet
MW-9	12/10/07	<1.0	<6.0	<1.0	<1.0	NT	<50	12.26
	8/31/07	8.18	22.8	3.94	18	NT	200	13.25
	5/23/07	9.72	<6.0	2.87	<1.0	NT	<50	14.13
	2/27/07	<1.0	<6.0	1.0	<1.0	NT	60	14.23
	12/7/06	5.1	<6.0	2.2	1.0	NT	<50	14.73
	8/29/06	<0.5	<0.5	0.7	<0.5	NT	70	14.54
	5/30/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.98
	3/16/06	1.5	<0.5	3.2	<0.5	NT	<10	14.91
	12/19/05	9.6	1.0	23.4	1.7	NT	280	13.20
	9/7/05	33.7	<0.25	14.7	0.66	NT	196	14.00
	5/31/05	77	<0.5	38	<0.5	NT	350	14.99
	3/3/05	<0.5	<0.5	<0.5	<0.5	NT	<50	15.31
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.10
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	12.26
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	13.61
	3/17/04	15	<0.5	<0.5	<0.5	<0.5	<50	14.51
	12/16/03	ND	ND	ND	ND	<0.5	ND	11.75
	10/7/03	ND	ND	ND	ND	<0.5	ND	11.57
	6/11/03	31	ND	ND	ND	<0.5	65	14.00
	3/26/03	0.8	ND	ND	ND	<0.5	ND	14.31
	12/31/02	ND	ND	ND	ND	<0.5	ND	13.20
	9/20/02	ND	ND	ND	ND	<0.5	ND	11.78
	7/11/02	ND	ND	ND	ND	<0.5	ND	12.20
	4/02 to 9/96			Not Sampled				
	4/4/96	ND	ND	ND	ND		ND	16.71
	11/22/95	13	ND	2.7	14		730	
	6/22/95	5.2	ND	ND	ND		13	15.07
	11/9/94	ND	ND	ND	ND		ND	10.40
MW-10	12/7/07	962	11.5	21.2	21.1	NT	7,800	12.20
	8/31/07	339	<12	9.08	21.6	NT	1,700	12.96
	5/23/07	46.9	<6	56.2	1.67	NT	87	13.86
	2/27/07	4.1	<6	1.6	<1	NT	240	14.76
	12/7/06	2,500	18	1,300	1,700	NT	8,300	13.56
	8/29/06	<0.5	<0.5	<0.5	<0.5	NT	160	14.21
	5/30/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.73
	3/15/06	3.4	<0.5	<0.5	<0.5	NT	<10	15.59
	12/19/05	28.3	4.8	201	7.9	NT	883	13.25
	9/7/05	16.3	0.58	9.99	1.28	NT	602	13.64
	5/31/05	<0.5	<0.5	<0.5	<0.5	NT	<50	14.88
	3/3/05	1.5	<0.5	<0.5	<0.5	NT	<50	16.23
	12/9/04	7,700	26	790	66	NT	15,000	12.63
	9/22/04	7,800	15	2,100	110	NT	15,000	12.05
	6/16/04	6,000	11	1,800	63	NT	11,000	13.25
	3/17/04	930	<10	130	<10	<10	2,700	14.59
	12/16/03	11,000	<20	3,600	120	22	21,000	13.05
	10/7/03	9,000	<100	2,500	180	<100	28,000	12.55
	6/11/03	3,800	<20	2,000	64	<20	12,000	13.83
	3/26/03	2,600	<20	1,400	1,200	<20	9,700	14.51
	12/31/02	5,500	<50	2,000	130	<20	25,000	14.56
	9/20/02	9,400	<50	2,600	<50	<50	38,000	12.56
	7/11/02	6,900	<50	3,200	260	<50	27,000	13.17
	4/02 to 9/96			Not Sampled				
	4/4/96	4.8	ND	ND	ND		ND	16.44
	11/22/95	570	8.1	340	320		3,700	14.24
	6/22/95	25	ND	3.8	ND		95	16.29
	11/10/94	4,200	ND	1,700	5,600		29,000	11.80
MW-11	12/6/07	<1.0	<6.0	<1.0	<1.0	NT	<50	10.69
	8/30/07	<1.0	<6.0	1.75	8.77	NT	<50	11.70
	5/24/07	<1.0	<6.0	<1.0	<1.0	NT	<50	13.04
	2/26/07	<1.0	8.9	2.4	16	NT	100	12.86
	12/7/06	<1.0	<6.0	<1.0	1.1	NT	<50	12.52
	8/30/06	<0.5	<0.5	<0.5	<0.5	NT	<50	13.98
	5/31/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.36
	3/16/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.40
	12/19/05	<0.5	<0.5	<0.5	<0.5	NT	<10	12.78
	9/7/05	<0.25	<0.25	<0.25	<0.5	NT	<5.0	12.52
	5/31/05	<0.5	<0.5	<0.5	<0.5	NT	<50	14.07
	3/4/05	<0.5	<0.5	<0.5	<0.5	NT	<50	16.33
	12/9/04	94	0.7	1.4	0.5	NT	180	11.38
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	9.83
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	11.68
	3/18/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	13.15
Action Limit**		1	150	700	1,750	5	1,000	

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Water Samples Location/Date		Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	TPH Gasoline	F.L. feet
MW-12	12/7/07	6.34	<6.0	<1.0	1.94	NT	<50	11.16
	8/30/07	<1.0	<6.0	<1.0	3.98	NT	<50	11.69
	5/24/07	<1.0	<6.0	<1.0	<1.0	NT	<50	13.09
	2/27/07	<1.0	<6.0	<1.0	<1.0	NT	<50	14.91
	12/6/06	<1.0	<6.0	<1.0	<1.0	NT	<50	12.74
	8/30/06	<0.5	<0.5	<0.5	<0.5	NT	<50	13.46
	5/31/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.21
	3/16/06	<0.5	<0.5	<0.5	<0.5	NT	<10	15.80
	12/19/05	<0.5	<0.5	<0.5	<0.5	NT	<10	12.48
	9/7/05	<0.25	<0.25	<0.25	<0.5	NT	<5.0	12.51
	5/31/05	<0.5	<0.5	<0.5	<0.5	NT	<50	14.51
	3/3/05	<0.5	<0.5	<0.5	<0.5	NT	<50	16.78
	12/9/04	<0.5	<0.5	<0.5	<0.5	NT	<50	11.21
	9/22/04	<0.5	<0.5	<0.5	<0.5	NT	<50	10.14
	6/16/04	<0.5	<0.5	<0.5	<0.5	NT	<50	11.03
	3/18/04	<0.5	<0.5	<0.5	<0.5	<0.5	<50	13.25
MW-13	12/6/07	398	1,710	2,420	7,230	NT	33,000	12.67
	8/30/07	49.0	324	205	479	NT	3,100	13.51
	5/23/07	431	3,550	1,750	7,100	NT	21,000	14.25
	2/27/07	400	3,300	1,600	5,500	NT	24,000	14.54
	12/6/06	33	3,800	1,600	7,800	NT	3,900	13.91
	8/30/06	540	1,300	2,400	13,900	NT	83,000	14.95
	6/1/06	273	977	1,500	12,570	NT	43,900	15.86
	3/16/06	740	5,710	3,100	16,310	NT	57,100	15.20
	12/20/05	150	10,100	3,150	16,590	NT	62,200	13.69
	9/7/05	86.5	837	353	2,210	NT	8,160	14.27
	6/1/05	580	4,900	1,700	18,100	NT	60,000	15.30
	3/4/05	690	7,400	2,500	15,000	NT	72,000	15.65
	12/9/04	700	10,000	3,700	14,000	NT	64,000	12.81
	9/22/04	620	11,000	4,100	15,000	NT	88,000	12.80
	6/16/04	780	6,800	3,000	13,000	NT	56,000	13.82
	3/18/04	1,100	11,000	3,000	16,000	<200	59,000	14.62
	12/16/03	620	12,000	4,200	12,000	<100	71,000	13.16
	10/7/03	740	7,400	3,000	9,900	100	78,000	13.29
	6/11/03	1,400	9,800	4,000	14,000	<100	73,000	14.38
	3/26/03	1,400	15,000	3,900	16,000	<200	83,000	14.62
	1/1/03	1,500	11,000	3,400	14,000	<200	98,000	13.93
	12/4/02	1,300	11,000	3,800	16,000	<200	84,000	13.19
	9/20/02	1,800	12,000	3,700	13,000	<200	110,000	13.26
	7/11/02	1,800	13,000	5,200	24,000	<200	130,000	13.87
	3/9/02	2,300	26,000	5,000	27,000	<50	97,000	14.80
HP-1	2/27/04	1,200	59,000	18,000	100,000	<500	880,000	
HP-2	2/27/04	3,700	37,000	3,400	39,000	<2000	250,000	
Action Limit**		1	150	700	1,750	5	1,000	

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #1

Cuesta Geotechnical: Groundwater Analysis Report*

Sample Site: Bell/Webber, 1899 Cienega Street, Oceano, CA
Reporting Units: Ground water - Parts per billion/ppb
Fluid Level: F.L. - Feet above mean sea level (updated with 2002 well survey data)

Additional Analyses To Evaluate Biosparging

Water Samples Location/Date		Nitrate (mg/L)	Sulfate (mg/L)	Fe2+			
MW-1	6/18/07	<0.4	6.6	-			
	8/31/07	<0.4	11	1.4			
MW-2	6/18/07	23.5	150	-			
	8/31/07	13.8	96	0.11			
MW-3	6/18/07	25.5	98	-			
	8/31/07	23.3	95	0.18			
MW-4	6/18/07	<0.4	10	-			
	8/31/07	<0.4	14	-			
MW-5	6/18/07	13.1	68	-			
	8/31/07	17.9	65	-			
MW-6	6/18/07	<0.4	58	-			
	8/31/07	<0.4	6.9	1.3			
MW-7	6/18/07	NT	NT	-			
	8/31/07	<0.4	3.4		-		
MW-8	6/18/07	2.6	16	-			
	8/31/07	11.0	86	-			
MW-9	6/18/07	16.5	71	-			
	8/31/07	-	-	-			
MW-10	6/18/07	<0.4	38	-			
	8/31/07	-	-	-			
MW-11	6/18/07	NT	NT	-			
	8/31/07	<0.4	20		-		
MW-12	6/18/07	1.54	17	-			
	8/31/07	8.0	36		-		
MW-13	6/18/07	<0.4	10	-			
	8/31/07	-	-	-			
Action Limit		45	250?				

ND Not detected above the analysis' Practical Quantitative Limit (see lab sheet)
** Maximum Contaminant Level as specified in Title 22, CCR

Table #2: Well Data

Site: Bell /Webber Property, 1899 Cienega Street, Oceano, CA (measurements in feet)

WELL ID	Date	Casing Elevation	Total Depth	Casing Interval	Screen Interval	Groundwater Depth	Groundwater Elevation	Flow Direction	Gradient
MW-1	12/6/07	22.78	15	0 to 5.0	5.0 to 15.0	9.91	12.87	W	0.004
	8/31/07	22.78				9.08	13.70	W	0.005
	5/23/07	22.78				8.38	14.40	W	0.004
	2/28/07	22.78				8.16	14.62	SW	0.005
	12/6/06	22.78				8.73	14.05	W-SW	0.007
	8/30/06	22.78				7.78	15.00	SW	0.006
	6/1/06	22.78				6.79	15.99	W	0.002
	3/16/06	22.78				7.53	15.25	SW	0.006
	12/20/05	22.78				9.04	13.74	W	0.005
	9/7/05	22.78				8.35	14.43	SW	0.005
	6/1/05	22.78				7.31	15.47	SW	0.005
	3/4/05	22.78				7.06	15.72	SW	0.008
	12/9/04	22.78				9.81	12.97	W	0.006
	9/22/04	22.78				9.75	13.03	W	0.006
	6/16/04	22.78				8.29	14.49	W	0.02
	3/18/04	22.78				8.05	14.73	SW	0.005
MW-2	12/10/07	23.33	15	0 to 5.0	5.0 to 15.0	10.36	12.97	SW	0.006
	8/30/07	23.33				9.46	13.87	SW	0.005
	5/23/07	23.33				8.82	14.51	SW	0.007
	2/28/07	23.33				8.67	14.66	SW	0.005
	12/7/06	23.33				8.93	14.40	SW	0.01
	8/30/06	23.33				7.93	15.40	SW	0.006
	6/1/06	23.33				7.29	16.04	SW	0.002
	3/16/06	23.33				8.09	15.24	SW	0.005
	12/20/05	23.33				9.51	13.82	SW	0.006
	9/7/05	23.33				8.81	14.52	SW	0.01
	6/1/05	23.33				7.82	15.51	SW	0.005
	3/4/05	23.33				7.53	15.80	S-SW	0.006
	12/9/04	23.33				10.21	13.12	SW	0.006
	9/22/04	23.33				10.13	13.20	SW	0.006
	6/16/04	23.33				9.15	14.18	SW	0.01
	3/18/04	23.33				8.45	14.88	SW	0.005
MW-3	12/6/07	22.20	17	0 to 5.0	5.0 to 17.0	8.91	13.29	W	0.006
	8/30/07	22.20				8.14	14.06	W	0.008
	5/23/07	22.20				7.48	14.72	W-NW	0.006
	2/26/07	22.20				7.13	15.07	W	0.005
	12/7/06	22.20				7.64	14.56	W-NW	0.007
	8/30/06	22.20				6.82	15.38	W-NW	0.006
	5/31/06	22.20				6.55	15.65	NW	0.002
	3/15/06	22.20				6.51	15.69	SW	0.005
	12/20/05	22.20				8.03	14.17	NW	0.01
	9/7/05	22.20				7.41	14.79	NW	0.008
	5/31/05	22.20				6.41	15.79	W	0.004
	3/4/05	22.20				5.95	16.25	SW	0.007
	12/9/04	22.20				8.73	13.47	W-NW	0.008
	9/22/04	22.20				8.80	13.40	NW	0.006
	6/16/04	22.20				7.85	14.35	NW	0.02
	3/18/04	22.20				7.00	15.20	SW	0.005
MW-4	12/6/07	22.52	15	0 to 5.0	5.0 to 15.0	9.82	12.70	W-SW	0.004
	8/31/07	22.52				8.98	13.54	W-SW	0.004
	5/23/07	22.52				8.26	14.26	SW	0.003
	2/26/07	22.52				8.14	14.38	SW	0.004
	12/7/06	22.52				8.56	13.96	NW	0.002
	8/29/06	22.52				7.69	14.83	SW	0.006
	5/30/06	22.52				6.71	15.81	SW	0.002
	3/15/06	22.52				7.51	15.01	S-SW	0.005
	12/19/05	22.52				8.99	13.53	SW	0.005
	9/7/05	22.52				8.27	14.25	SW	0.009
	5/31/05	22.52				7.26	15.26	SW	0.004
	3/3/05	22.52				7.14	15.38	SW	0.008
	12/9/04	22.52				9.79	12.73	W-SW	0.007
	9/22/04	22.52				9.85	12.67	SW	0.005
	6/16/04	22.52				8.70	13.82	SW	0.005
	3/17/04	22.52				8.00	14.52	SW	0.005

Table #2: Well Data

Site: Bell /Webber Property, 1899 Cienega Street, Oceano, CA (measurements in feet)

WELL ID	Date	Elevation	Depth	Interval	Interval	Depth	Elevation	Direction	Gradient
MW-5	12/7/07	22.18	15	0 to 5.0	5.0 to 15.0	9.42	12.76	SW	0.004
	8/31/07	22.18				8.59	13.59	SW	0.003
	5/23/07	22.18				7.91	14.27	SW	0.002
	2/26/07	22.18				7.79	14.39	SW	0.003
	12/6/06	22.18				8.18	14.00	NW	0.002
	8/29/06	22.18				7.34	14.84	SW	0.006
	5/30/06	22.18				6.39	15.79	SW	<0.002
	3/15/06	22.18				7.22	14.96	SW	<0.005
	12/19/05	22.18				8.62	13.56	SW	<0.005
	9/7/05	22.18				8.91	13.27	S	0.015
	5/31/05	22.18				6.98	15.20	SW	0.004
	3/3/05	22.18				6.81	15.37	S-SW	0.006
	12/9/04	22.18				9.31	12.87	SW	0.005
	9/22/04	22.18				9.21	12.97	SW	0.005
	6/16/04	22.18				8.30	13.88	SW	0.005
	3/17/04	22.18				7.70	14.48	SW	0.005
MW-6	12/6/07	22.12	15	0 to 5.0	5.0 to 15.0	9.64	12.48	W	0.004
	8/31/07	22.12				8.83	13.29	W-NW	0.005
	5/23/07	22.12				7.96	14.16	W-NW	0.004
	2/26/07	22.12				7.68	14.44	W	0.005
	12/6/06	22.12				8.28	13.84	NW	0.005
	8/29/06	22.12				7.46	14.66	W	0.006
	5/31/06	22.12				6.29	15.83	W	0.002
	3/15/06	22.12				6.89	15.23	SE	0.004
	12/19/05	22.12				8.74	13.38	W	0.005
	9/7/05	22.12				8.02	14.10	W	0.006
	5/31/05	22.12				6.93	15.19	SW	0.004
	3/3/05	22.12				6.44	15.68	SE	0.008
	12/9/04	22.12				9.51	12.61	SW	0.006
	9/22/04	22.12				9.53	12.59	W	0.006
	6/16/04	22.12				8.45	13.67	W	0.015
	3/17/04	22.12				7.65	14.47	S	=0.005
MW-7	12/6/07	22.34	24.5	0 to 4.5	4.5 to 24.5	10.03	12.31	W-NW	0.006
	8/30/07	22.34				9.35	12.99	NW	0.01
	5/23/07	22.34				8.19	14.15	W-NW	0.005
	2/27/07	22.34				8.03	14.31	W-NW	0.006
	12/6/06	22.34				8.76	13.58	W-NW	0.01
	8/30/06	22.34				7.59	14.75	W	0.006
	5/31/06	22.34				6.51	15.83	NW	0.003
	3/15/06	22.34				6.91	15.43	S	0.004
	12/19/05	22.34				9.22	13.12	NW	0.007
	9/7/05	22.34				8.36	13.98	NW	0.007
	5/31/05	22.34				7.09	15.25	W	0.006
	3/4/05	22.34				6.22	16.12	S-SE	0.007
	12/9/04	22.34				9.99	12.35	NW	0.01
	9/22/04	22.34				10.55	11.79	NW	0.03
	6/16/04	22.34				9.15	13.19	NW	0.025
	3/17/04	22.34				7.66	14.68	NW	<0.02
MW-8	12/10/07	20.08	24	0 to 3.0	3.0 to 23.0	7.99	12.09	NW	0.005
	8/31/07	20.08				7.19	12.89	NW	0.007
	5/23/07	20.08				6.21	13.87	NW	0.005
	2/27/07	20.08				5.61	14.47	W-NW	0.008
	12/7/06	20.08				6.41	13.67	NW	0.006
	8/29/06	20.08				5.72	14.36	W-NW	0.004
	5/30/06	20.08				4.30	15.78	NW	0.003
	3/15/06	20.08				4.78	15.30	S-SE	0.005
	12/19/05	20.08				7.15	12.93	W-SW	0.005
	9/7/05	20.08				6.47	13.61	NW	0.005
	5/31/05	20.08				5.15	14.93	NW	0.002
	3/3/05	20.08				4.22	15.86	SE	0.008
	12/9/04	20.08				9.58	10.50	SW	0.02
	9/22/04	20.08				10.91	9.17	SW	0.03
	6/15/04	20.08				7.16	12.92	W	0.01
	3/17/04	20.08				5.42	14.66	FLAT?	—

Table #2: Well Data

Site: Bell /Webber Property, 1899 Cienega Street, Oceano, CA (measurements in feet)

WELL ID	Date	Elevation	Depth	Interval	Interval	Depth	Elevation	Direction	Gradient
MW-9	12/10/07	20.31	24	0 to 3.0	3.0 to 23.0	8.05	12.26	W	0.004
	8/31/07	20.31				7.06	13.25	W-NW	0.004
	5/23/07	20.31				6.18	14.13	NW	0.004
	2/27/07	20.31				6.08	14.23	W-NW	0.003
	12/7/06	20.31				5.58	14.73	N-NW	0.01
	8/29/06	20.31				5.77	14.54	W-NW	0.003
	5/30/06	20.31				4.33	15.98	NW	0.003
	3/15/06	20.31				5.40	14.91	S-SE	<0.005
	12/19/05	20.31				7.11	13.20	SW	<0.005
	9/7/05	20.31				6.31	14.00	SW	0.009
	5/31/05	20.31				5.32	14.99	W	0.002
	3/3/05	20.31				5.00	15.31	SE	0.008
	12/9/04	20.31				8.21	12.10	W	0.01
	9/22/04	20.31				8.05	12.26	W	0.01
	6/15/04	20.31				6.70	13.61	W	0.005
	3/17/04	20.31				5.80	14.51	E	=0.001
MW-10	12/7/07	20.25	24	0 to3.0	3.0 to 23.0	8.05	12.20	NW	0.009
	8/31/07	20.25				7.29	12.96	NW	0.015
	5/23/07	20.25				6.39	13.86	NW	0.008
	2/27/07	20.25				5.49	14.76	W-NW	0.009
	12/7/06	20.25				6.69	13.56	NW	0.008
	8/29/06	20.25				6.04	14.21	W-NW	0.006
	5/30/06	20.25				4.52	15.73	NW	0.007
	3/15/06	20.25				4.66	15.59	S-SE	0.004
	12/19/05	20.25				7.00	13.25	W-NW	0.004
	9/7/05	20.25				6.61	13.64	NW	0.005
	5/31/05	20.25				5.37	14.88	NW	0.005
	3/3/05	20.25				4.02	16.23	SE	0.006
	12/9/04	20.25				7.62	12.63	W	<0.01
	9/22/04	20.25				8.20	12.05	NW	0.008
	6/15/04	20.25				7.00	13.25	W	0.02
	3/17/04	20.25				5.66	14.59	NW	0.02
MW-11	12/6/07	21.69	18.5	0 to 3.5	3.5 to 18.5	11.00	10.69	NW	0.01
	8/30/07	21.69				9.99	11.70	NW	0.01
	5/23/07	21.69				8.65	13.04	NW	0.012
	2/26/07	21.69				8.83	12.86	W-NW	0.009
	12/7/06	21.69				9.17	12.52	NW	0.01
	8/30/06	21.69				7.71	13.98	W-NW	0.006
	5/31/06	21.69				6.33	15.36	NW	0.003
	3/16/06	21.69				6.29	15.40	_	
	12/19/05	21.69				8.91	12.78	NW	0.006
	9/7/05	21.69				9.17	12.52	NW	0.02
	5/31/05	21.69				7.62	14.07	NW	0.004
	3/4/05	21.69				5.36	16.33	SE	0.005
	12/9/04	21.69				10.31	11.38	NW	0.01
	9/22/04	21.69				11.86	9.83	N	0.03
	6/16/04	21.69				10.01	11.68	NW	0.02
	3/17/04	21.69				8.54	13.15	NW	0.02
MW-12	12/7/07	20.20	18	0 to 3.0	3.0 to 18.0	9.04	11.16	NW	0.007
	8/30/07	20.20				8.51	11.69	NW	0.007
	5/24/07	20.20				7.11	13.09	N-NW	0.005
	2/27/07	20.20				5.29	14.91	W-NW	0.009
	12/6/06	20.20				7.46	12.74	NW	0.01
	8/30/06	20.20				6.74	13.46	W-NW	0.006
	5/31/06	20.20				4.99	15.21	NW	0.005
	3/16/06	20.20				4.40	15.80	SE	<0.005
	12/19/05	20.20				7.72	12.48	W-NW	<0.005
	9/7/05	20.20				7.69	12.51	NW	0.01
	5/31/05	20.20				5.69	14.51	N-NE	0.002
	3/3/05	20.20				3.42	16.78	SE	0.005
	12/9/04	20.20				8.99	11.21	W	0.01
	9/22/04	20.20				10.06	10.14	NW	0.02
	6/16/04	20.20				9.17	11.03	W	0.02
	3/17/04	20.20				6.95	13.25	NW	0.02

Table #2: Well Data

Site: Bell /Webber Property, 1899 Cienega Street, Oceano, CA (measurements in feet)

WELL ID	Date	Casing Elevation	Total Depth	Casing Interval	Screen Interval	Groundwater Depth	Groundwater Elevation	Flow Direction	Gradient
MW-13	12/6/07	22.72	12	0 to 3.0	3.0 to 12.0	10.05	12.67	W	0.004
	8/30/07	22.72				9.21	13.51	W	0.005
	5/23/07	22.72				8.47	14.25	W	0.005
	2/27/07	22.72				8.18	14.54	W	0.005
	12/6/06	22.72				8.81	13.91	W	0.005
	8/29/06	22.72				7.77	14.95	W	0.006
	6/1/06	22.72				6.86	15.86	W	0.002
	3/16/06	22.72				7.52	15.20	S-SE	0.005
	12/19/05	22.72				9.03	13.69	W	0.005
	9/7/05	22.72				8.45	14.27	W	0.005
	6/1/05	22.72				7.42	15.30	W	0.005
	3/4/05	22.72				7.07	15.65	S-SW	0.008
	12/9/04	22.72				9.91	12.81	W	0.006
	9/22/04	22.72				9.92	12.80	W	0.006
	6/16/04	22.72				8.90	13.82	W	0.02
	3/17/04	22.72				8.10	14.62	SW	0.005

File Memorandum

Date: 6-12-08

To: Site Remediation File

CC:

From: Aaron LaBarre, Supervisor Hazardous Materials Program, San Luis Obispo County Environmental Health Services

Re: General Statement regarding future redevelopment

Further action may be required by this department if:

- Hazardous materials/waste that impact soil or groundwater are discovered on site.
- The property is redeveloped.

Further action may include, but not limited to, a review by this Agency, further investigations, soil gas analyses, remedial action, and human health risk assessment.

ATTACHMENT A
PROJECT DESCRIPTION

PROJECT SUMMARY

The Arroyo Grande Creek Channel Waterway Management Program (WMP, proposed project) is being developed through a cooperative effort between the community, the Coastal San Luis Resource Conservation District (RCD) and the San Luis Obispo County Flood Control and Water Conservation District (District). The project is located along the lower reaches of Arroyo Grande Creek, from near the intersection of Los Berros Creek to the Arroyo Grande lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. This area is within Flood Control District "Zones 1 and 1A" (Zone 1/1A).

The County of San Luis Obispo Public Works Department (County) is developing the WMP and preparing California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation, including an Environmental Impact Report (EIR), to obtain the necessary federal and state permits for implementation. The WMP includes the following components:

1. Manage riparian vegetation annually to maintain a composite roughness of 0.040 within the flood control reach, fill existing gaps in the riparian corridor vegetation and encourage species diversity by planting riparian tree species;

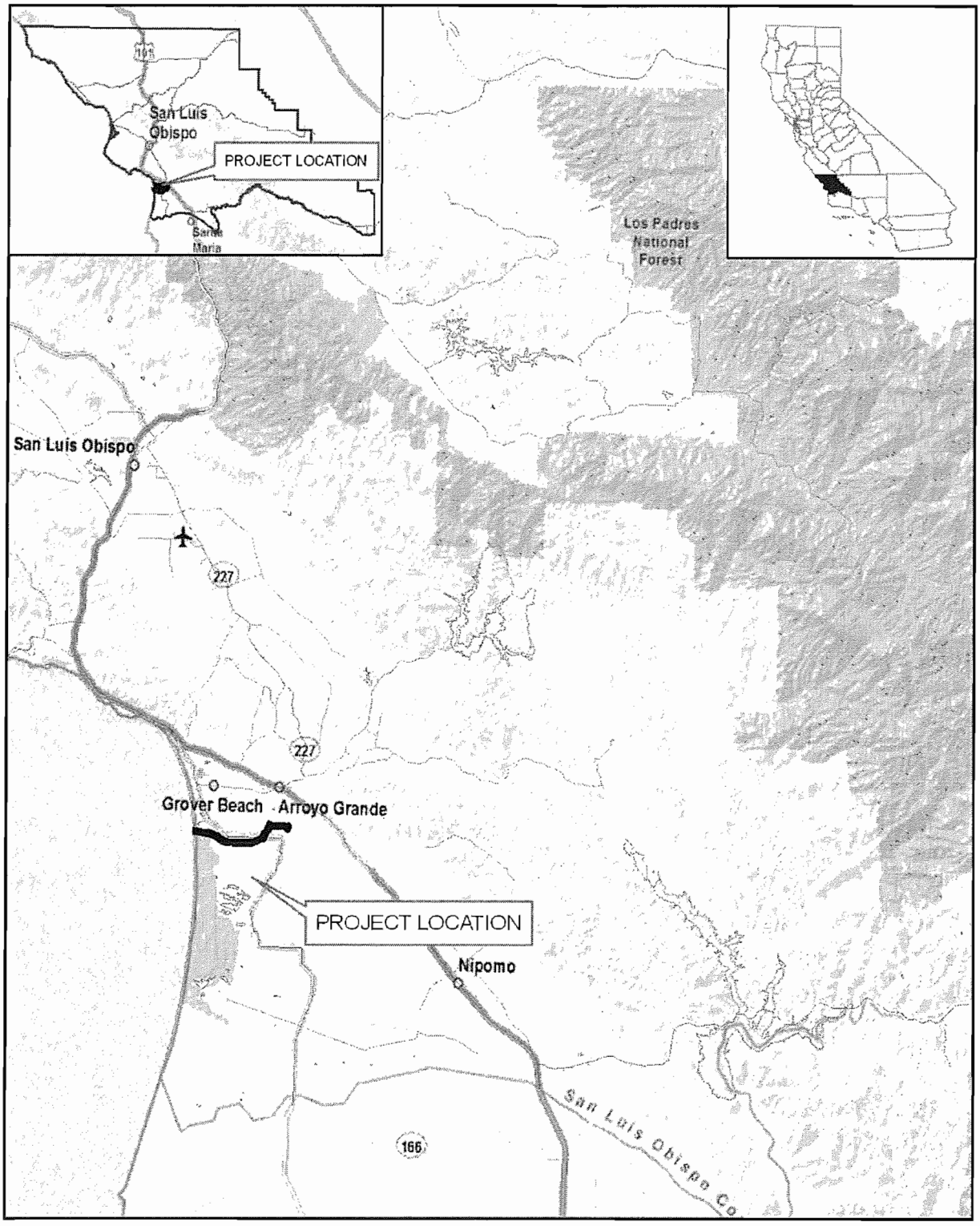
2. Remove sediment to create secondary channels that could be self-maintaining, and monitor annually to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments;

3. Raise levees throughout the flood control channel to achieve channel capacity for up to 10-year flood flows; and

4. Raise levees throughout the flood control channel to achieve channel capacity for up to 20-year flood flows.

PROJECT LOCATION

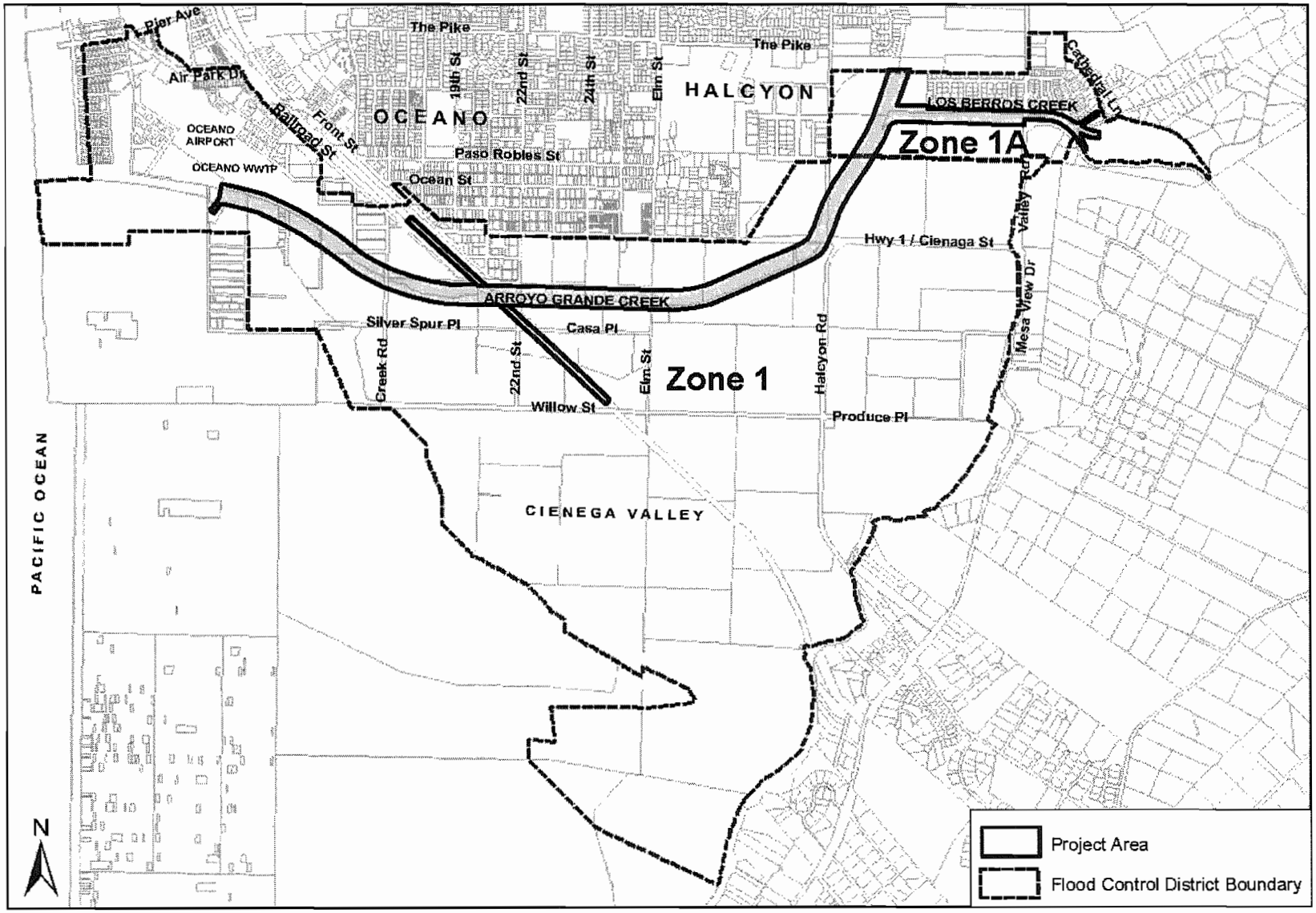
The proposed project is located within San Luis Obispo County, California, near the City of Arroyo Grande and the community of Oceano (refer to Figure 1). The project area is located entirely within the unincorporated areas of San Luis Obispo County. The project area is a linear corridor with two segments: (1) beginning on Arroyo Grande Creek 0.14 mile upstream of the confluence of Los Berros Creek and continuing downstream to the upper edge of the Arroyo Grande lagoon at the Pacific Ocean, and (2) beginning at the Century Lane Bridge on Los Berros Creek and continuing downstream to the confluence with Arroyo Grande Creek (refer to Figure 2). This area is within Zone 1/1A. The total length of the flood control channels addressed in the WMP is approximately 3.5 miles.



Source: ESRI Resources Center.

NORTH
Not to Scale

Project Vicinity Map
FIGURE 1



Source: ESRI Resource Center

Project Location Map
FIGURE 2

PROJECT BACKGROUND

The lower Arroyo Grande Valley has a long history of flooding and severe damage to agricultural and residential lands. Levees were built along lower Arroyo Grande Creek, and the lower portion of Los Berros Creek was diverted in 1961 to provide flood control for the adjacent Cienega Valley. Lopez Lake is a water supply reservoir that also provides the added benefit of some flood storage for the uppermost portion of Arroyo Grande Creek.

In February 2005, the Department of Water Resources (DWR) issued a Statement of Necessary Work with the goal of initiating maintenance work on the channel in July 2005. As mandated by State Water Code, the intended Work Plan was the existing plan developed as part of the 1955 Arroyo Grande Creek Flood Control Project which requires maintaining the channel by restoring it to its original 1958 design. Without Water Code provisions to study or implement alternative flood control designs, DWR was faced with a difficult and expensive regulatory permitting process which would likely result in costly mitigation requirements related to habitat loss for federally-listed species. These costs would have been paid locally through a Zone 1/1A property assessment process.

In response to impending assessments estimated by DWR, the Zone 1/1A Advisory Committee comprised of agriculturalists and other local residents and various stakeholders, actively lobbied the County Board of Supervisors to restore funding for a study of flood control alternatives, which had been dropped with the decision to relinquish responsibility to DWR in 2003. In June 2004, the District approved release of funding to Coastal San Luis RCD to conduct the "Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study" (Alternatives Study). It was prepared in 2006 by Swanson Hydrology + Geomorphology. The Alternatives Study focuses in-depth on erosion sources, sedimentation, and hydrology as they relate to recurring flooding in the lower reaches of the creek.

Following completion of the Alternatives Study the Zone 1/1A Advisory Committee selected a preliminary preferred project alternative which was considered feasible within anticipated funding limits. The selected approach was to pursue vegetation and sediment management within the channel, and a phased implementation of Alternative 3a, at a minimum, as funding within the local flood control district became available. Alternative 3a would provide flood protection up to the 10-year return period and would most likely be implemented in several phases. Alternative 3c would also be pursued as funding allows. Alternative 3c includes all elements of Alternative 3a, and additionally raises the levees and Union Pacific Railroad (UPRR) Bridge to provide flood protection up to the 20-year return period.

PROJECT OBJECTIVE

The primary objective of the WMP is to develop a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel to provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel.

PROPOSED PROJECT

The WMP is currently being prepared, and the information below reflects the most recent information available at the time this Notice of Preparation (NOP) was published. The project description may be refined somewhat for use in the CEQA and NEPA analyses; however, no significant changes are anticipated. Implementation of the WMP would include three distinctive components:

1. Vegetation Management
2. Sediment Management
3. Levee Raising (Alternatives 3a and 3c)

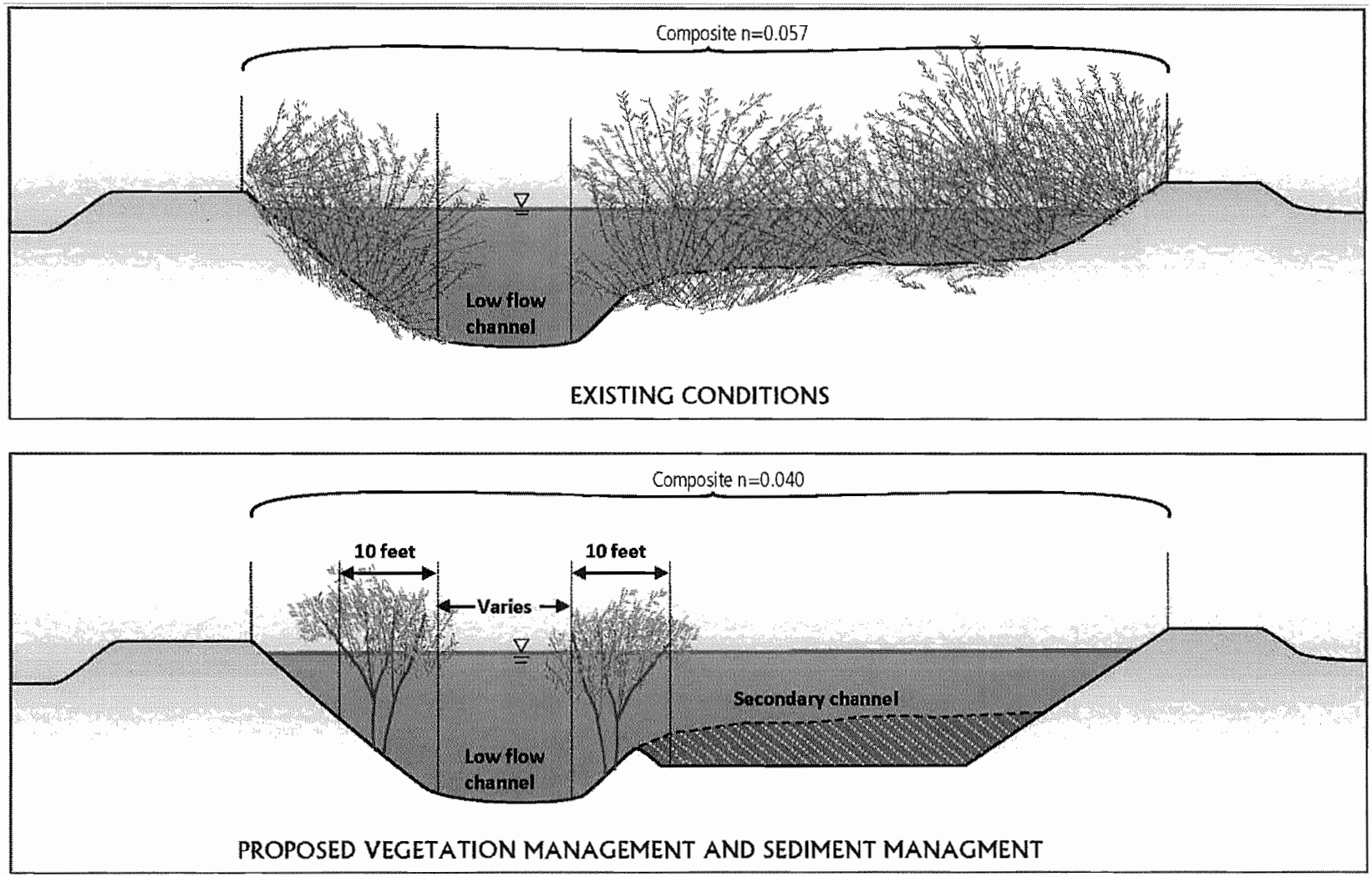
In addition there are a number of known secondary components resulting from implementation of the levee raising components of the project. These include raising of the railroad bridge, raising and/or relocating a portion of Halcyon Road, making improvements to the 22nd Street Bridge, and potentially the relocation of structures located within the Arroyo Grande Channel maintenance easement that encroach on proposed improvements.

A. VEGETATION MANAGEMENT

The vegetation management program would consist of maintaining a 10-foot riparian buffer on both sides of the low-flow channel to provide riparian habitat and streamside cover to protect aquatic habitat. The management would result in an approximate 40-foot riparian corridor, not including canopy width, although this width could vary depending upon the width of the channel and the location of the low-flow channel in relation to the levees. The corridor would also act to maintain a bankfull channel that has developed over the last several years by providing root strength along the low flow channel margins. All vegetation outside of the buffer would be removed completely to allow for high flows to access secondary channels and provide for increased conveyance and flood capacity (refer to Figure 3).

Willows present within the buffer would be limbed up to reduce cross-sectional roughness but still provide adequate stream shading and riparian habitat. Root balls within the riparian buffer would be left intact to encourage spring/summer growth along the bankfull channel edge. Gaps in the riparian buffer would be revegetated with native riparian species including cottonwood, sycamore, and willow. Cottonwood and sycamore would be planted at random along the length of the flood control channel within the buffer to encourage long-term diversity in the riparian canopy.

Vegetation management would be conducted as often as necessary to maintain a roughness coefficient of 0.04 (current roughness is approximately 0.057 on average) through an adaptive management approach that would include reconnaissance surveys and site visits with regulatory agency staff. Based on past experience, vegetation management would be repeated approximately every one to three years, depending on the amount of regrowth. Vegetation management would occur as late as possible in the summer and fall of each year to maximize stream shading during the warmer summer months while avoiding impacts to steelhead. Regrowth of willow is expected in late winter and spring providing low, overhanging vegetation during critical months for steelhead rearing.



Proposed Vegetation & Sediment Management
FIGURE 3

B. SEDIMENT MANAGEMENT

1. Short Term Removal

The Arroyo Grande Creek flood control channel currently lacks the secondary channels that are found in more natural, low gradient stream environments. Therefore secondary, or overflow channels, would be excavated into areas in the channel that have accumulated excess sediment in bars and terraces resulting in reduced flood capacity (refer to Figure 3). At strategic locations, the excavated secondary channels would be connected with the primary channels to allow for complex flow conditions that would encourage scour and sediment transport, and reduce the need for future sediment removal. No sediment in the primary channel would be excavated.

Large wood structures would be placed at the confluence of each active and secondary channel connection to enhance aquatic habitat. Approximately 35 large wood structures are proposed for the project, to promote pool scour, encourage sediment sorting, and provide deep pools and cover habitat for steelhead and red-legged frog. It is currently estimated that this project component would require the removal of approximately 21,000 cubic yards of sediment from the Arroyo Grande Creek and Los Berros channels. Sediment would be hauled by truck to an approved disposal site. The site had not been identified at the time the NOP was published. Heavy machinery would need to operate in the channel during initial sediment removal and during construction of the log structures.

2. Long-term Sediment Removal

Some maintenance (sediment removal) of the secondary channels would be required over the long-term because of the likelihood that significant quantities of fine material would be deposited in the channels. Annual cross-section monitoring would assess the performance of the channel in moving supplied sediment. Cross-sections would be prepared each year following the rainy season. The hydraulic model would also be rerun annually with updated cross-sections and roughness information to assess channel capacity.

The volume of sediment to be removed would vary from year to year, would be considerably less than the initial removal, and in some years may not be required at all. Maintenance of the secondary channel would consist of removal of excess sediment by an excavator located on the top of the levee, and a long-reach bucket would be used to scoop up sediment from designated areas and deposit it in a dump truck to take the sediment off-site to a County approved disposal area. Heavy machinery would most likely not need to access the channel during the annual sediment removal.

C. LEVEE RAISING

The originally constructed flood control channel was believed to provide flood protection from a 50-year storm, but due to challenges in maintaining the channel, such as inadequate funding and regulatory requirements, and changes in the hydrology of the watershed associated with significant changes in land use, the level of flood protection has been reduced. It is estimated that the channels can currently provide flood protection from only a 4.6 year storm. This means that the channel has the probability to overtop once every 4.6 years.

The proposed project includes raising the levees in two stages along portions of the Los Berros Creek Diversion Channel and along Arroyo Grande Creek Channel from the Los Berros confluence to the lagoon. Levee raising would most likely be conducted in phases as funding is available. The levees would ultimately be raised up to 2.5 feet above the 20-year storm flows (i.e., "freeboard"). Although overtopping of the levees is not desired at all, it is more desirable to overtop to the south where flood waters would inundate agricultural fields, rather than housing, the airport and a wastewater treatment plant, and reduce the risk of loss of life. To that end, the north levee is currently approximately 4-6 inches higher than the south levee, and would remain so as a result of the proposed project.

In general, levee slopes would be constructed at a ratio of 2:1 (horizontal:vertical) on the channel side of the levees and 1.5:1 on the outside of the levees due to the limited levee easement area and number of existing structures encroaching on the levees. Retaining walls may also be necessary in some places to minimize the levee footprint due to the proximity of existing structures to the base of the levee. Retaining walls would not be located within the channel. The levees would maintain a minimum top width of 15 feet. Refer to Figures 4a and 4b for the approximate area of disturbance associated with the proposed project.

1. Short-term Levee Raise (Alternative 3a)

The first phase of the levee raising (Alternative 3a) would raise the levees to an elevation that would, along with the vegetation and sediment management discussed above, provide up to 10-year flood protection with freeboard. This raise would focus on "low spots" along the existing levee. The levees would need to be raised in various locations from approximately six inches to as much as two feet. This component would require approximately 14,350 cubic yards of fill material and would be implemented over a period of one or more years, depending on available funding.

2. Longer-term Levee Raise (Alternative 3c)

The longer term levee raise (Alternative 3c) would achieve 20-year flood protection with up to 2.5-feet of freeboard for those parcels included within the special maintenance assessment district. The average levee raise required to implement this component would be approximately 2.8 feet from existing grade, with a maximum raise necessary in some places of approximately 5 feet. These heights would be reduced accordingly if Alternative 3a is implemented first. It is currently estimated that this component would require a total of approximately 67,000 cubic yards of fill, less if Alternative 3a is implemented first. Refer to Figures 4a and 4b for more information regarding the approximate location and extent of the proposed levee improvements.

3. Secondary Components

In some cases, achieving the goals of levee raise Alternatives 3a (10 year protection) and 3c (20 year protection) would require improvements other than vegetation management, sedimentation management, and the levee raise. These are discussed below.

a. Union Pacific Railroad Bridge Replacement

The existing railroad bridge, located downstream of the 22nd Street bridge, hangs low in elevation in the Creek and creates a hydraulic constriction in levee raise Alternative 3c. The bridge would need to be raised or replaced at a higher elevation (approximately 5 feet) to relieve the constriction. Raising the bridge also necessitates raising the railroad tracks approaching the bridge. The raise of the approaching railroad bed would have to begin approximately 1,700 feet north and 2,400 feet south of the bridge, according to conceptual plans prepared by UPRR in 2006 (refer to Figure 4a). The area of disturbance would be approximately three acres (4,100 feet by 30 feet). So that railroad service is not disrupted, a parallel but temporary track would need to be installed. This track is known as a "shoefly" and would allow for uninterrupted railroad service during the bridge raising. The area of disturbance for the shoefly may be approximately the same as that necessary for the bridge raising and immediately west of the current tracks. It would occur mostly within the existing railroad right-of-way. This component of the project may result in earthwork totaling approximately 135,000 cubic yards (90,000 to construct and remove the shoefly, and 45,000 to construct the permanent raise). These construction improvements may require work within the creek channel.

b. Halcyon Road

Halcyon Road was built at an elevation roughly equal to the top of the bank of Arroyo Grande Creek. North of Highway 1, the northwest levee visually disappears becoming part of Halcyon Road. The levee raise for alternative 3c would encroach into a portion of Halcyon Road north of Highway 1 for approximately 600 feet (refer to Figure 4b). Either the road would need to be shifted to the west, or the ground would need to be elevated to achieve the flood protection goal under levee raise alternative 3c. The road would need to be raised along this length approximately 5.5 feet or flood walls could be installed in the channel to an equivalent height.

The Department of Public Works is currently working on plans to improve the Halcyon Road/Highway 1 intersection, and it is expected that the improvements would be coordinated with the implementation of the WMP to minimize the work required and disturbance of the flood control channel. The Halcyon Road project may result in shifting Halcyon Road to the west, and if this project occurs first, it will provide space for the levee improvements to occur.

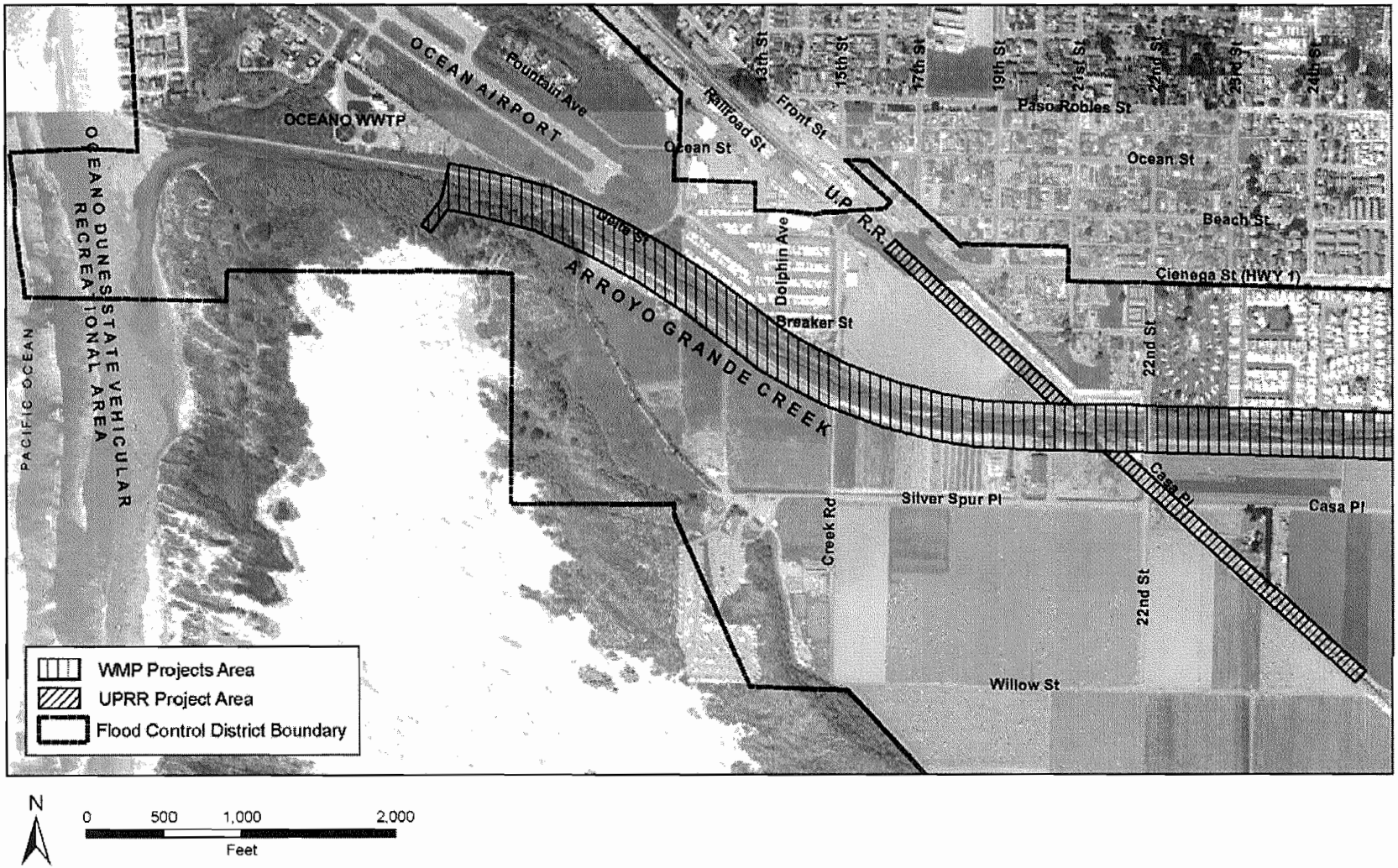
c. Structure Encroachment

There are a number of locations along Arroyo Grande Creek Channel where structures have been constructed within the right-of-way. Many of these structures would be impacted by the construction of Levee Raise Alternative 3a and/or 3c. These structures include water tanks, stalls, a barn, propane tanks, and a mobile home, among others. The degree to which they encroach varies. Some would only be affected by work on alternative 3c, for example. The actual encroachment issues will not be known until the construction plans have been further

refined. It may be possible to design around these structures through the use of retaining walls or other alternate design techniques.

d. 22nd Street Bridge Modification

The 22nd Street Bridge is considered a "perched" bridge. This means that if water is allowed to flow over the bridge it will not continue to flow perpendicular to the bridge deck but would turn and flow parallel, potentially creating flooding to adjacent properties. Alternative 3a would only require the installation of a short length of concrete floodwall along the north side of the upstream levee. As part of alternative 3c, the project would include replacing the open bridge railing with a solid concrete barrier on the upstream side of the bridge. It would also require construction of concrete floodwalls on both the north and south levees, to keep floodwaters in the channel. It should be noted that the 22nd bridge, unlike the railroad bridge does not create a hydraulic constriction.



Project Area
FIGURE 4a

Forensic Analytical

Final Report

Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

Kleinfelder Inc
T. Nephew
1410 "F" Street

Fresno, CA 93706

Client ID:	3640
Report Number:	N001174
Date Received:	11/24/08
Date Analyzed:	12/01/08
Date Printed:	12/01/08

Job ID/Site: 96612-2 - Arroyo Grand Cr.

FASI Job ID: 3640

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
HA-1	10820927	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-2	10820928	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-3	10820929	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-4	10820930	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-5	10820931	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-6	10820932	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-7	10820933	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-8	10820934	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-9	10820935	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-10	10820936	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-11	10820937	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-12	10820938	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-13	10820939	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-14	10820940	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-15	10820941	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-16	10820942	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-18	10820943	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-19	10820944	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-20	10820945	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-21	10820946	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-22	10820947	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-23	10820948	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-24	10820949	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-25	10820950	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-26	10820951	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

HA-27	10820952	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

HA-28	10820953	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

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Sample ID	Lab Number	Layer Description
HA-29	10820954	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Sample ID	Lab Number	Layer Description
HA-30	10820955	**Brown Soil**

Visual Estimation Results:

Layer percentage of entire sample: 100
Visual estimation percentage: None Detected
Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

James Flores, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification (LOQ) = 0.25%. Trace denotes the presence of asbestos below the LOQ. ND = None Detected.

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Appendix G.
2006 Alternatives Study Summary Table

	A	B	C	D	E	F
1	**Preliminary List of Potential Flood and Sediment Reduction Actions**					
2						
3	**#**	**Action**	**Objective**	**Brief Description**	**Pros**	**Cons**
4						
5	1	Levee raise	Increase flood capacity	Includes raising the existing levees to obtain adequate flood protection along the Arroyo Grande Creek Flood Control Channel. The height of the levee will depend upon the level of flood protection required and existing infrastructure elements such as bridges. Levee raise could account for and allow for riparian vegetation and habitat with specific performance-based maintenance requirements.	- Increased flood conveyance and protection of adjacent properties - Improved levee stability if combined with geotechnical evaluation and structural improvements - Ability to confine work to areas outside of ordinary high water	- Level of protection limited by existing infrastructure (i.e. - bridge low chord elevations) - May require purchase of property along edge of levee to accommodate larger footprint
6	2a	Levee setback and raise	Increase flood capacity	Includes all elements of the levee raise with the addition of a levee setback, where appropriate, to increase the overall capacity of the flood channel. Could create an additional floodplain within the channel and allow for integration of expanded wetlands. This option would require purchase of adjacent parcels to setback levee and restore floodplain.	- Could potentially provide a significant increase in conveyance if combined with infrastructure improvements (i.e.-bridge lengthening). With this approach, may be able to forego levee raise. - Could significantly increase functional floodplain area and provide larger riparian corridor and off-channel wetlands	- Without infrastructure improvements, a levee setback approach would not significantly improve conveyance - Increased conveyance may be limited by current constriction at the lagoon - High cost to build a new levee and purchase properties/easements - Significantly loss of high value agricultural land
7	2b	Retain existing levee and build second levee	Increase flood capacity	Would provide for additional conveyance and flood storage without dismantling the existing levee system. The floodplain could be managed differently in existing channel as compared to the overflow/bypass channel. This option would require purchase of adjacent parcels to setback levee.	- Could potentially provide a significant increase in conveyance if combined with infrastructure improvements (i.e.-bridge lengthening). With this approach, may be able to forego levee raise. - Could significantly increase functional floodplain area and provide larger riparian corridor and off-channel wetlands	- Without infrastructure improvements, building a second levee would not significantly improve conveyance - Increased conveyance may be limited by current constriction at the lagoon - High cost to build a new levee and purchase properties/easements - Significantly loss of high value agricultural land
8	3	Bridge modification or replacement	Increase flood capacity and reduce sedimentation in flood control channel	Preliminary observations suggest that existing bridges may constrict flow and result in backwatering, sediment deposition, and levee overtopping. This project will include modifications to existing constrictions to reduce potential flooding. May need to be combined with a levee raise to achieve desired flood protection.	- Combined with a levee raise, this option greatly improves flood conveyance. - Newer bridges could also be designed to minimize debris buildup at piers	- Very costly to replace bridges - Temporary traffic disruptions - Construction related biological impacts of working in channel
9	4	High flow weirs and flood easements	Detain flood waters	This approach would consist of creating a low point in the levee where flood waters could be controlled with known consequences. This option would have to either include agricultural land purchase with potential lease-back option or payment guarantees in the case of crop failure on affected land (i.e. - flood easements).	- Manages flood waters along with risks and impacts - Retains agricultural production with reduced risks due to loss compensation agreements	- Costly to purchase easements and develop smaller perimeter levees to contain flooding - Controlled flooding of farmland has additional impacts other than crop loss, such as sedimentation, impacts from poor water quality, and future productivity losses that may not be compensated for under traditional farm flood easement programs
10	5	Vegetation maintenance program	Increase flood capacity and reduce sedimentation in flood control channel	This alternative would most likely be bundled with other flood protection alternatives and would include an environmentally sound approach to vegetation maintenance with specific roughness targets identified for each reach.	- Cost effective approach to increasing flood conveyance - Sensitive to environmental concerns - Potential tool to improve riparian species diversity and removal of non-natives	- Impacts to aquatic and riparian habitat must be closely monitored - Potential "flood fighting" threat due to downed trees and log jams
11	6	Restoration of floodplain in vicinity of airport	Detain flood waters and restore habitat	Restoring floodplain may be a multiobjective approach that reduces flood risk and mitigates for habitat impacts associated with other flood reduction actions.	- Potentially large floodplain storage area that would remove a portion of the downstream constriction - Potential riparian habitat mitigation area	- Costly to purchase property and restore as floodplain - Ordinances in place discouraging elimination of regional airport facilities
12	7	Restoring floodplain and flood capacity on tributary streams	Detain flood waters, restore habitat, reduce sedimentation in flood control channel	Opportunities may exist to expand floodplain and increase flood storage in several tributary areas such as Los Berros, Tar Springs, and Corbett-Carpenter Creeks. This approach would have the added benefit of reducing sediment inputs to the flood control reach.	- Multi-objective approach to attenuating flood peaks, restoring floodplain, and mitigating for loss of riparian habitat - Net benefit of developing multiple sites on several tributaries can significantly attenuate peak flows	- Cost relatively high due to property or easement acquisitions - Requires detailed design to maximize timing and magnitude of flood attenuation benefits
13	8	Restore floodplain on mainstem Arroyo Grande Creek above flood control channel	Detain flood waters, restore habitat, reduce sedimentation in flood control channel	There are several locations where there may be opportunities to restore floodplain and increase flood storage along the mainstem between Lopez Dam and the flood control channel. The approach could either be a passive or active approach to flood storage.	- Multi-objective approach to attenuating flood peaks, restoring floodplain, and mitigating for loss of riparian habitat - Net benefit of developing multiple sites on several tributaries can significantly attenuate peak flows	- Cost relatively high due to property or easement acquisitions - Requires detailed design to maximize timing and magnitude of flood attenuation benefits
14	9a	Restore historic Los Berros Channel	Redirect portion of high flows away from main channel	Before the flood control project was built, Los Berros Creek entered Arroyo Grande Creek much further downstream. Reactivating this old channel as an overflow channel would reduce stresses on the upper portion of the flood control channel.	- Potentially significant reduction in peak flows along most of the flood control channel - Potential habitat enhancement benefits (e.g. - red legged frog) in Los Berros bypass channel	- Relatively high cost since the channel is not continuous; May require relocation of houses and other structures and new bridges or crossings - Detailed hydrologic/hydraulic evaluation would be required to understand net benefit since the outlet of the channel is upstream of the AG constriction
15	9b	Construct alternative bypass channel	Redirect portion of high flows away from main channel	Construct a new bypass channel as an overflow channel.	- Could potentially provide a significant increase in conveyance if combined with infrastructure improvements (i.e.-new culverts under existing bridges). With this approach, may be able to forego levee raise.	- Without infrastructure improvements, a bypass channel approach would not work - Increased conveyance may be limited by current constriction at the lagoon - High cost to build bypass channel and purchase property/easements - Significantly loss of high value agricultural land
16	10	Alter Lopez Dam operations to provide flood detention	Detain flood waters	The current focus of operations at Lopez Dam are to maximize water storage. Operations could be adjusted to allow for flood detention, though this may impact storage in some years.	- Managing flood waters to limit uncontrolled releases during peak rainfall months would significantly reduce the frequency of flooding through the flood control channel - Managed releases in fall/early winter could improve habitat and sediment conditions (e.g. - flushing flows)	- Potential reduction in water availability during droughts - Study goes beyond scope of addressing Zone 1/1A issues - Potential very costly (water = money)
17	11	Reduce bank erosion on mainstem and gully formation in tributaries	Increase flood capacity and reduce sedimentation in flood control channel	Bank erosion, channel incision and gully formation have been identified as the most significant sources of erosion in the lower watershed. Reducing erosion would reduce the frequency of maintenance dredging required in the flood control reach to maintain flood capacity.	- Maintenance of design flood capacity - Reduce maintenance costs associated with dredging - Improved habitat quality if sediment is primarily fine material - Protection of infrastructure locally due to bank protection	- Benefit of individual projects is difficult to evaluate - Relatively costly when entire program is implemented -
18	12	Excavate benches within channel	Increase flood capacity	Excavate benches to create geomorphically stable channel; allow vegetation on low flow channel banks.	- Increases flood capacity - Can combine with overflow and secondary channels to improve channel morphology and sorting of fines and gravel	- Most likely requires long-term maintenance of overflow areas due to recolonization of riparian vegetation and sedimentation - Significant cost associated with environmental review and permitting - Initial and long-term impacts to riparian corridor
19	13	Sediment retention basin in channel	Reduce sedimentation downstream	Create a stilling basin in channel to settle sediments and reduce loss of channel capacity downstream - perhaps 20-75 acres total. May be especially useful around bridges.	- Focuses sediment management activities in one or several locations	- Costly to develop and difficult to evaluate performance - Environmental impacts associated with fish stranding and water temperatures - Would enhance sediment deposition - Costly environmental impact analysis phase and challenges with permitting
20	14	Off-channel Sediment basin	Reduce sedimentation downstream	Create a stilling basin adjacent to the main channel to settle sediments and reduce loss of channel capacity downstream.	- Focuses sediment management activities in one or several locations	- Costly to develop and difficult to evaluate performance - Environmental impacts associated with fish stranding and water temperatures - Would enhance sediment deposition - Costly environmental impact analysis phase and challenges with permitting
21	15	Flood Plain Management	Non-structural, site specific measures to eliminate and/or minimize flood damage to property or structures	Raise and flood proof structures, install ring levees or floodwalls; move vulnerable structures; install overflow weirs and energy dissipaters to control overflow, improve drainage network to drain flood plain quickly after floods.	- Reduces impacts of flooding rather than reducing risk of flooding - Would be long-term solution - Would provide greater level of flood protection than provided by other alternatives	- Would not likely be feasible to protect farmland - Could potentially be very expensive - Would require coordination that goes beyond the scope of Zone 1/1A
22	16	Maintain/enlarge existing retention basins in housing developments	Detain flood waters	Several housing developments have been identified that have incorporated stormwater detention basins that appear to be poorly designed. Simple modifications could be made to these basins to make them more effective at capturing peak events.	- Manages increases in peak flows associated with urban development - Cost effective	- Benefit limited to urban/developing watersheds - Outside of scope of Zone 1/1A
23	17	Change county and/or local development codes	Reduce impermeable surfaces in developed areas; reduce erosion	Revise zoning and building regulations to reduce upslope impermeable surfaces, allowing for greater infiltration and diminishing flashiness of stream flows. Improve and enforce erosion control rules to reduce delivery of sediment to tributaries and main channel.	- Manages increases in peak flows associated with urban development - Cost effective	- Benefit limited to urban/developing watersheds
24	18	In off-season, rip benches/banks in flood control channel	Increase sediment mobility	Use machinery to loosen soil on upper benches/banks of flood control channel, making it easier for accumulated sediment to be entrained and moved downstream and flushed to ocean during high flows.	- Maintains flood capacity achieved from initial dredging - Encourages improved channel morphology by creating main and overflow channels	- Requires long-term maintenance of overflow areas due to recolonization of riparian vegetation - Significant cost associated with environmental review and permitting - Long-term impacts to riparian corridor - Concerns exist about lagoon sedimentation
25	19	Have all landowners or district self-insure for crop loss	Financial compensation for potential flood loss; reduce flood prevention costs	Rather than implementing expensive engineering fixes, let farmland risk flood losses, and be covered for losses by insurance.	- Manages impacts of flooding rather than reducing risk of flooding - Retains agricultural production with reduced risks due to loss compensation agreements - May prove to be cost effective but would need to be evaluated; Can be combined with flood protection efforts to reduce premiums and frequency of loss	- Controlled flooding of farmland has additional impacts other than crop loss, such as sedimentation, impacts from poor water quality, and future productivity losses that may not be compensated for under traditional farm flood easement programs