

San Luis Obispo County Proposition 1E Proposal

Work Plan

Introduction

The San Luis Obispo County Proposal includes Project Alternative 3a of the Flood Control Zone 1/1A Waterway Management Program (WMP). The WMP is a comprehensive set of actions that includes immediate-term, near-term and long-term measures to restore the capacity of the leveed lower three miles of the Arroyo Grande Creek flood channel to increase flood protection to homes, prime agricultural lands, and critical urban infrastructure in the lower Arroyo Grande Creek watershed.

The WMP implements an integrated watershed approach to flood management through a collaborative and community supported process without unfairly burdening communities, neighborhoods or individuals. The WMP (Exhibit I) 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 San Luis Obispo County Flood Control and Water Conservation District (District) and are described in detail in the Arroyo Grande Creek Erosion, Sedimentation, and Flooding Alternatives Study (Exhibit J) completed in January 2006 by Swanson Hydrology and Geomorphology. Alternatives 3a and 3c are the preferred alternatives and are the basis of the WMP. The Alternative 3a Project, included in this proposal, 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;
- **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; and
- **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 **10 year flood event**.

The components of the Alternative 3 project not included in this proposal at this time are:

- **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** (up from the 10 year event included in this proposal); 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.

The existing Arroyo Grande Creek channel capacity is severely reduced due to dense vegetation and accumulated sediment and can only contain the 2.8 year flood event. This proposal includes implementation of the recommended Alternative 3a Project which will provide flood protection from the 10 year event. The Alternative 3a Project is a multifaceted project and includes vegetation thinning, sediment removal and a moderate levee raise, all components of the WMP. Maintenance of a primary low-flow channel, enforced by the presence of a stable riparian corridor, will improve sediment transport conditions throughout the flood control reach which will reduce the need for future maintenance/dredging, improve habitat conditions, and provide continued flood protection for the disadvantaged community of Oceano and the highly productive agricultural areas of Cienega Valley. Award of this grant would advance the completion date of this project approximately 24 years, from 2037 to 2013.

Goals and Objectives

The Flood Control Zone 1/1A Waterway Management Program (WMP) was identified as a high priority project in the San Luis Region Integrated Regional Water Management Plan (IRWMP). The WMP was identified as a high priority due to the WMP's benefits towards meeting multiple goals and objectives in the IRWMP. The IRWMP identified five immediate term programs for implementation based on their ability to meet multiple goals and objectives and their readiness to proceed to implementation. These five programs are the Water Quality Program, Water Supply Program, Ecosystem Preservation and Enhancement Program, Groundwater Monitoring and Management Program and Flood Management Program. The WMP helps benefit three of the five Programs. The Alternative 3a Project recommended in the WMP was selected for inclusion in this proposal based upon funding criteria including implementation requirements, need, benefit to disadvantaged communities, stakeholder consensus, and readiness to proceed. The Goals and Objectives of the Alternative 3a project, the degree to which this phase of the project meets the goals and objectives of the greater WMP, and how the Proposal relates to the adopted San Luis Region's IRWMP are described below.

The Flood Control Zone 1/1A Alternative 3A Project, was categorized into the IRWMP Flood Management Program based on the primary benefits offered by the project. However, the project helps meet the goals and objectives of the other integrated programs and works to provide synergistic benefits for the Region as described in the following sections.

Flood Management Program Goals and Objectives

The goal of the San Luis Region IRWMP Flood Management Program is to develop, fund, and implement an integrated, watershed approach to flood management through a collaborative and community supported process without unfairly burdening communities, neighborhoods or individuals.

The Flood Control Zone 1/1A WMP is a comprehensive set of actions that includes immediate-term, near-term and long-term measures to restore the capacity of the leveed lower three miles of the Arroyo Grande Creek flood channel to increase flood protection to homes, prime agricultural lands, and critical urban infrastructure in the lower Arroyo Grande Creek watershed. The WMP also addresses a high priority objective for the region – providing increased flood protection for the disadvantaged community of Oceano and the highly productive agricultural region of Cienega Valley.

The ultimate goal of the Flood Control Zone 1/1A WMP is to provide flood protection from the 20-year flood event. The Alternative 3a Project of the WMP will provide flood protection from the 10-year event while also capitalizing on opportunities for enhancing stream and riparian habitat. Selection of the Alternative 3a Project instead of the full scale WMP recommendation was made to address the goal of implementing community supported projects that will not unfairly or unreasonably burden the community through increased assessments. Phased implementation of the WMP allows the assessments to be maintained at an affordable level for the Zone 1/1A landowners. At the current level of assessments, project funding would be available by 2037. Award of this grant funding would advance the completion date of this project approximately 24 years, from 2037 to 2013.

The Flood Control Zone 1/1A WMP and the Alternative 3a Project supports the following IRWMP Flood Management Program objectives:

- Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation.
- Integrate ecosystem enhancement, drainage control, and natural recharge into development projects.
- Develop financial programs for drainage and flood control projects.
- Evaluate and minimize the risk of dam and levee failures.
- Develop and implement public education, outreach, and advocacy.

The Alternative 3a Project is also related to two other integrated programs in the San Luis Obispo Region IRWMP - the Ecosystem Preservation and Enhancement Program and the Water Quality Program.

Ecosystem Preservation and Enhancement Program Goals and Objectives

The goal of the San Luis Obispo IRWMP Ecosystem Preservation and Enhancement Program is to protect, enhance and restore the region's natural resources including open spaces; fish, wildlife and migratory bird habitat; special status and native plants; wetlands; estuarine, marine, and coastal ecosystems; streams, lakes, and reservoirs; forests; and agricultural lands without unfairly burdening communities, neighborhoods or individuals.

The Flood Control Zone 1/1A WMP and the Alternative 3a Project will improve the geomorphic function by removing accumulated sediment, establishing a primary low-flow channel, and creating secondary overflow channels to improve flood conveyance and sediment transport. Maintenance of a primary low-flow channel, enforced by the presence of a stable riparian corridor, will improve sediment transport conditions throughout the flood control reach which will reduce the need for future maintenance/dredging. Improving the geomorphic condition, minimizing maintenance requirements, and improving water quality of the environmentally sensitive Arroyo Grande Creek supports the following environmental objectives:

- Purchase and conserve through easements, preserve, enhance, and restore land in ecologically sensitive ecosystems.
- Manage stream flows to fish bearing streams, support a region-wide fish passage barrier prevention, circumvention and removal program, and implement fish friendly stream and river corridor restoration projects.
- Reduce the effects of invasive plant species, manage public properties to re-establish rare and special status native plant populations, and promote native drought tolerant plantings in municipal and residential landscaping.

Water Quality Program

The Flood Control Zone 1/1A WMP and the Alternative 3a Project primarily benefit the San Luis Obispo IRWMP Flood Management Program but also support the following water quality objectives through the removal of sediment and improved sediment transport conditions in the channel:

- Support the development and implementation of TMDLs.
- Implement NPDES Phase II Storm Water Management Programs.
- Implement the California NPS Plan and the RWQCB Conditional Agricultural Waiver Program for irrigated agriculture.

The Alternative 3a Project included in this proposal meets the goals and objectives as described above. The project, if funded, will be the first phase of the overall WMP and includes raising the levees to protect the area from the 10 year event. Ultimately, full implementation of the WMP will require increasing the levee height to protect the area from a 20 year event and raising the UPRR Bridge above the 20 year water surface elevation to increase the flood capacity of the channel. The Alternative 3a Project delivers an equivalent degree of benefit towards the environmental and water quality goals and objectives as the overall WMP by completing the full scale sediment and vegetation management measures. However, the Alternative 3a Project will be designed to protect against the 10 year event as compared to the 20 year level of protection from the overall WMP. Award of this grant would advance the completion date of the Alternative 3a project approximately 24 years, from 2037 to 2013. If the grant is awarded, the projected completion date of the second and final phase of the WMP (Alternative 3c Project) would be advanced by approximately 20 years, from 2076 to 2056.

Purpose, Need and Consistency with the San Luis Obispo IRWMP

The Alternative 3a Project included in this proposal addresses a critical need for the region as identified in the adopted San Luis Obispo County IRWMP. The project's purpose, need and consistency with the San Luis IRWMP are described below.

Purpose

The Alternative 3a Project, included in this grant proposal, is the initial and necessary first step in implementing the overall WMP and providing critically needed flood protection for the disadvantaged communities of Oceano and Cienega Valley farmland. The project includes completing final design, permitting and construction of the project to provide flood protection from the 10 year event (with 2-ft. freeboard; protection from the 16.6 year event with no freeboard). The Alternative 3a Project involves implementation of the 1st year vegetation and sediment management, and a moderate levee raise to increase channel capacity to contain the 10 year flood event. This project would improve the flow characteristics of the channel by reducing channel roughness through vegetation thinning and removal and would enhance geomorphic function by removing accumulated sediment, establishing a primary low-flow channel, and creating secondary overflow channels to improve flood conveyance and sediment transport. This project would also increase channel capacity through a moderate levee raise of approximately 1.5 feet. The proposed levee raise, in conjunction with the vegetation and sediment management, will increase flood protection along the flood control channel from a return period flood of 4.6 years under current conditions to a return period flood of 10 years with 2 feet of freeboard (16.6 year flood protection with no freeboard). Maintenance of a primary low-flow channel, enforced by the presence of a stable riparian corridor, will improve sediment transport conditions throughout the flood control reach which will reduce the need for future maintenance/dredging and provide continued flood protection for the disadvantaged community of Oceano and the highly productive agricultural areas of Cienega Valley.

Award of this grant would advance the completion date of the Alternative 3a project approximately 24 years, from 2037 to 2013 and advance the completion date of the overall WMP (20 year protection) by an equivalent 20 years. Following completion of the Alternative 3a project, the County can work towards implementation of the remaining WMP measures required to provide protection from the 20 year event and meet all of the objectives of the WMP. These measures would build upon the Alternative 3a project by increasing the levee height and raising the UPRR bridge to accommodate the 20 year event.

Need

On March 5, 2001, the most extensive flood damage occurred since the channel was constructed in 1961. Heavy rainfall of approximately seven (7) inches in February plus four (4) inches on March 4 and early on March 5, with a season total of about 16 inches, caused the creek to rise above its banks as it flowed through Oceano. As it rushed to the ocean, it picked up all types of debris, including fallen trees. When it came to the Arroyo Grande Creek flood control channel in Oceano, it passed the 22nd Street Bridge and Union Pacific Railroad Bridge with such force that the water plus the debris was enough to break an approximate 150 foot gap in the south levee, causing a devastating flood that inundated hundreds of acres of farmland adjacent to the creek.

By breaching downstream of the railroad tracks, on the south side in the lower reach of the flood control channel, flooding was largely confined to the westernmost agricultural land in the Cienega Valley (rather than all the agriculture land in the Proposition 218 Zone of Benefit). Fields were under 10 to 12 feet of water in some locations. The hardest hit area was Bejos Seeds Inc., a national distributor of vegetable produce seeds, which experienced approximately \$500,000 in losses due to the flood (Exhibit K).

Immediately, work crews began repairing the levee in order to prepare for more potential storms in the 2001 rainy season. The total emergency watershed project cost was estimated at \$400,000 and included construction (\$188,000), design, environmental monitoring (\$133,000), and project management. The Natural Resources Conservation Service assisted with 75% funding (approximately \$300,000) to repair the levee through Cooperative Agreement No. 69-9104-1-197, Arroyo Grande Levee Repair Emergency Watershed Project (Exhibit L) and with engineering assistance provided by its Emergency Watershed Protection program. The U.S. Army Corp of Engineers also provided technical assistance on the repair.

The wastewater treatment plant, the airport, and most all of the residences and businesses are on the north side of the channel and thus, were unaffected by the 2001 flood. Ultimately, the 2001 flood led to 16 claims against San Luis Obispo County, resulting in a settlement of \$1,000,245, plus \$215,947 in attorney and mediation costs, for a total cost to tax payers of \$1,216,191.

The high flood risk of the current condition and the previous event described highlights the need to take immediate action on specific elements of the overall WMP to begin increasing the capacity of the channel. Based on hydraulic modeling of the channel, it is estimated that the lower three miles of Arroyo Grande Creek would overtop during a 4.6-year storm (approximately 2.8 year flood protection with 2-ft. freeboard), leaving residential neighborhoods to the north and farmlands to the south with only minimal flood protection. The original channel was built to accommodate the 50 year event (in 1961) with freeboard. The existing channel's capacity is severely reduced due to dense vegetation and accumulated sediment.

The Zone 1/1A region includes the disadvantaged community of Oceano and the highly productive agricultural region of Cienega Valley. Any flood protection projects in this zone would have to be funded by assessments collected from the landowners in the zone. The current property tax assessments of Zone 1/1A were approved in 2006 and average \$400 per residential property. Based on the current revenue generated from these assessments, Zone 1/1A is able to save approximately \$200,000 per year towards capital reserves to fund the project. This assumes no other maintenance or improvements are needed to the channel.

Consistency with IRWMP

The Flood Control Zone 1/1A WMP (Exhibit I) was identified as a flood management strategy in Section D1.4 Flood Management of the San Luis IRWMP (Exhibit D). Flood Control Zone 1/1A is centered on Arroyo Grande Creek and includes communities from Arroyo Grande to Oceano. The Zone 1/1A WMP is a comprehensive set of actions designed to increase the capacity of the leveed lower three miles of Arroyo Grande Creek while simultaneously enhancing water quality and sensitive species habitat within the managed channel. Actions include raising the height of the existing levees, managing in-channel vegetation to enhance habitat, reducing sediment deposition within the channel, implementing specific sediment removal projects, and raising the Union Pacific Railroad Bridge to accommodate higher water levels. The Alternative 3a Project of the WMP accomplishes all of the same objectives with an intermediate levee raise to provide protection from the 10 year event instead of the 20 year event as offered by the overall WMP and does not include raising the UPRR Bridge to accommodate the 20 year event.

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 of Arroyo Grande Creek such as the flood control reach of the proposed project through coordinated efforts with several cities, resource agencies and the county. The County of San Luis Obispo and the District became signatories to the Arroyo Grande Creek Watershed MOU on April 22, 2008 (Exhibit U). 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.

By signing the MOU, the County showed its support for collaborative watershed management. Other signatories of the MOU include: the City of Arroyo Grande, South San Luis Obispo County Sanitation District, San Luis Obispo Coastal Resource Conservation District (RCD), Natural Resource Conservation Service, 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, 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.

As described in the IRWMP, the Alternative 3a Project is consistent with the following San Luis Obispo IRWMP objectives through the following project activities:

San Luis Obispo IRWMP Objective

Develop and implement public education, outreach, and advocacy.

Alternative 3a Project Activity

The WMP and Alternative 3a Project were developed through a collaborative and community supported process. The WMP and Alternative 3a Project were developed in cooperation with the community, the Coastal San Luis 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 (Exhibit J).

San Luis Obispo IRWMP Objectives

Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation.

Evaluate and minimize the risk of dam and levee failures.

Integrate ecosystem enhancement, drainage control, and natural recharge into development projects.

Alternative 3a Project Activity

Raise levees throughout the flood control channel to achieve a channel capacity that will protect the adjacent community and farmland up to a 10 year flood event. Additionally, the Alternatives Study, which established the preferred alternatives in the WMP, included a sediment source analysis and reduction program in which sources of sedimentation within the Arroyo Grande Creek watershed were identified along with treatment options and were prioritized based on greatest benefit to the watershed.

San Luis Obispo IRWMP Objectives

Purchase and conserve through easements, preserve, enhance, and restore land in ecologically sensitive ecosystems.

Manage stream flows to fish bearing streams, support a region-wide fish passage barrier prevention, circumvention and removal program, and implement fish friendly stream and river corridor restoration projects.

Reduce the effects of invasive plant species, manage public properties to re-establish rare and special status native plant populations, and promote native drought tolerant plantings in municipal and residential landscaping.

Alternative 3a Project Activity

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.

San Luis Obispo IRWMP Objectives

Support the development and implementation of TMDLs.

Implement NPDES Phase II Storm Water Management Programs.

Implement the California NPS Plan and the RWQCB Conditional Agricultural Waiver Program for irrigated agriculture.

Alternative 3a Project Activity

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.

San Luis Obispo IRWMP Objective

Develop financial programs for drainage and flood control projects.

Alternative 3a Project Activity

Pursue Proposition 1E grant funding opportunity to support project construction and advance the completion date of the project approximately 25 years.

Project List

This grant proposal includes only one project, the Flood Control Zone 1/1A WMP, Alternative 3a Project. Table 3-1 includes an abstract of the project, the current status of the project in terms of percent completion of design and the implementing agency.

Table 3-1: Summary of Project in Proposal

Project	Current Status	Priority (Ranking)	Implementing Agency
<p>Flood Control Zone 1/1A Waterway Management Program, Alternative 3a Project includes completing design, permitting and construction of the project to provide flood protection from the 10 year event. The existing channel capacity is severely reduced due to dense vegetation and accumulated sediment and can only contain the 4.6 year flood event (2.8 year flood event with 2-foot freeboard). This project would improve the flow characteristics of the channel by reducing channel roughness through vegetation thinning and removal and would enhance geomorphic function by removing accumulated sediment, establishing a primary low-flow channel, and creating secondary overflow channels to improve flood conveyance and sediment transport. The project will also increase channel capacity with a moderate levee raise of approximately 1 to 3 feet. This project will provide urgently needed flood protection for the disadvantaged community of Oceano and the highly productive agricultural areas of Cienega Valley. Award of this grant would advance the completion date of this project approximately 24 years, from 2037 to 2013.</p>	<p>30% Design EIR certified and adopted by County Board of Supervisors</p>	<p>Immediate</p>	<p>County of San Luis Obispo</p>

Integrated Elements of Projects

This grant proposal includes only one project so there are no required coordination activities or integrated elements between projects. However, there are synergies between Alternative 3a Project activities that result in added value as described below.

The Alternative 3a Project would improve the flow characteristics of the Arroyo Grande Creek by reducing channel roughness through vegetation thinning and removal and would enhance geomorphic function by removing accumulated sediment, establishing a primary low-flow channel, and creating secondary overflow channels to improve flood conveyance and sediment transport. Maintenance of a primary low-flow channel, enforced by the presence of a stable riparian corridor, will improve sediment transport conditions throughout the flood control reach which will reduce the need for future maintenance/dredging and provide continued flood protection for the disadvantaged community of Oceano and the highly productive agricultural areas of Cienega Valley. The primary objective of the project is to provide this improved flood conveyance, however, the project activities can be implemented and coordinated through a synergistic approach that provides added environmental and water quality values.

The Alternative 3a Project capitalizes on opportunities for enhancing stream and riparian habitat quality while enhancing flood protection levels. By creating a secondary overflow channel enforced by the presence of a stable riparian corridor, sediment transport will be improved and future maintenance, dredging and channel disturbances will be minimized. Creating a stable geomorphic design improves sediment transport conditions and protects the water quality. Additionally, reducing maintenance and channel activities protects the environmentally sensitive habitat of the Arroyo Grande Creek from water quality impacts and loss of vegetation during maintenance activities. Finally, establishing a designed riparian corridor reduces the effect of invasive plant species and allows the establishment of native plant populations.

The Alternative 3a Project also plays a critical role in solving problems locally, assisting disadvantaged communities and addressing environmental justice issues as described below.

Solving problems locally and maintaining local control

In April 2003, the County Board of Supervisors, acting as the San Luis Obispo County Flood Control and Water Conservation District, passed a “Resolution to Relinquish the Arroyo Grande and Los Berros Diversion Flood Control Channels and Appurtenant Structures to the State of California”. 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. On June 14, 2005, County Board of Supervisors unanimously voted to delay for 12 months relinquishment to DWR of maintenance responsibility for Arroyo Grande Creek Flood Control Channel, in order to give the local community time to investigate options for managing the channel locally. As a result of community efforts, in April 2006, the San Luis Obispo County Public Works Department coordinated preparation of an Assessment Engineers Report and Proposition 218 ballots were mailed to Zone 1/1A property owners for a vote on whether to increase local assessments for channel maintenance. On June 8, 2006, the SLO County Clerk-Recorder's Office announced passage of the Proposition 218 measure with 89% of votes cast. Consequently, County Board of Supervisors voted unanimously to rescind their 2003 resolution to relinquish the flood control channel to DWR, thereby keeping management of the channel in local hands. This project contributes to maintaining local control of the San Luis Region's water resources.

Assisting Disadvantaged Community Members and Addressing Environmental Justice Issues

The Alternative 3a Project serves the disadvantaged community (DAC) of Oceano as shown in Figure 3-1. The general approach to identifying DAC in the sub-regions served by the project was to download the 2000 Median Household Income (MHI) Block Group Maps from the Census Bureau websites. 2000 Census Data for the State of California was also downloaded from the Census Bureau website to establish the statewide MHI and determine whether Block Groups met the definition for a DAC (MHI of 80% or less of the statewide MHI). Data from the 2000 Census shows **Statewide MHI at \$47,493**. To qualify as a DAC, the Block Group would need to have an MHI of **\$37,994 or less** ($80\% * \$47,493 = \$37,994$).

The unincorporated community of Oceano qualifies under the State's definition as a disadvantaged community (DAC Block Group MHI = \$37,774) and consists of predominately Hispanic residents. However, these neighborhoods are contained within a larger community that is clearly not economically disadvantaged. As result, the area has the advantage of equal treatment because of their location within the larger community, but is distinct enough to qualify for various forms of financial assistance to ensure that both basic community infrastructure improvements and community amenities are provided.

Major needs of the disadvantaged communities within Oceano can be met through implementation of the San Luis Obispo IRWMP and the regional water management programs recommended in the plan. The Flood Control Zone 1/1A Waterway Management Program, Alternative 3a Project directly benefits the disadvantaged community of Oceano. This project will provide urgently needed flood protection through vegetation and sediment management and a moderate levee raise. The combined project will increase flood protection along the flood control channel from a return period flood of 4.6 years under current conditions to a return period flood of 10 years with 2 feet of freeboard (16.6 year flood protection with no freeboard). Award of this grant would advance the completion date of this project approximately 25 years, from 2037 to 2012.

Regional Map

Figure 3-2 is a San Luis Obispo County regional map that shows the Community of Oceano, Arroyo Grande Creek the location of Alternative 3a Project, in relationship to the entire San Luis Obispo County.

Figure 3-1: Disadvantaged Community Map and Alternative 3a Project Benefit Area

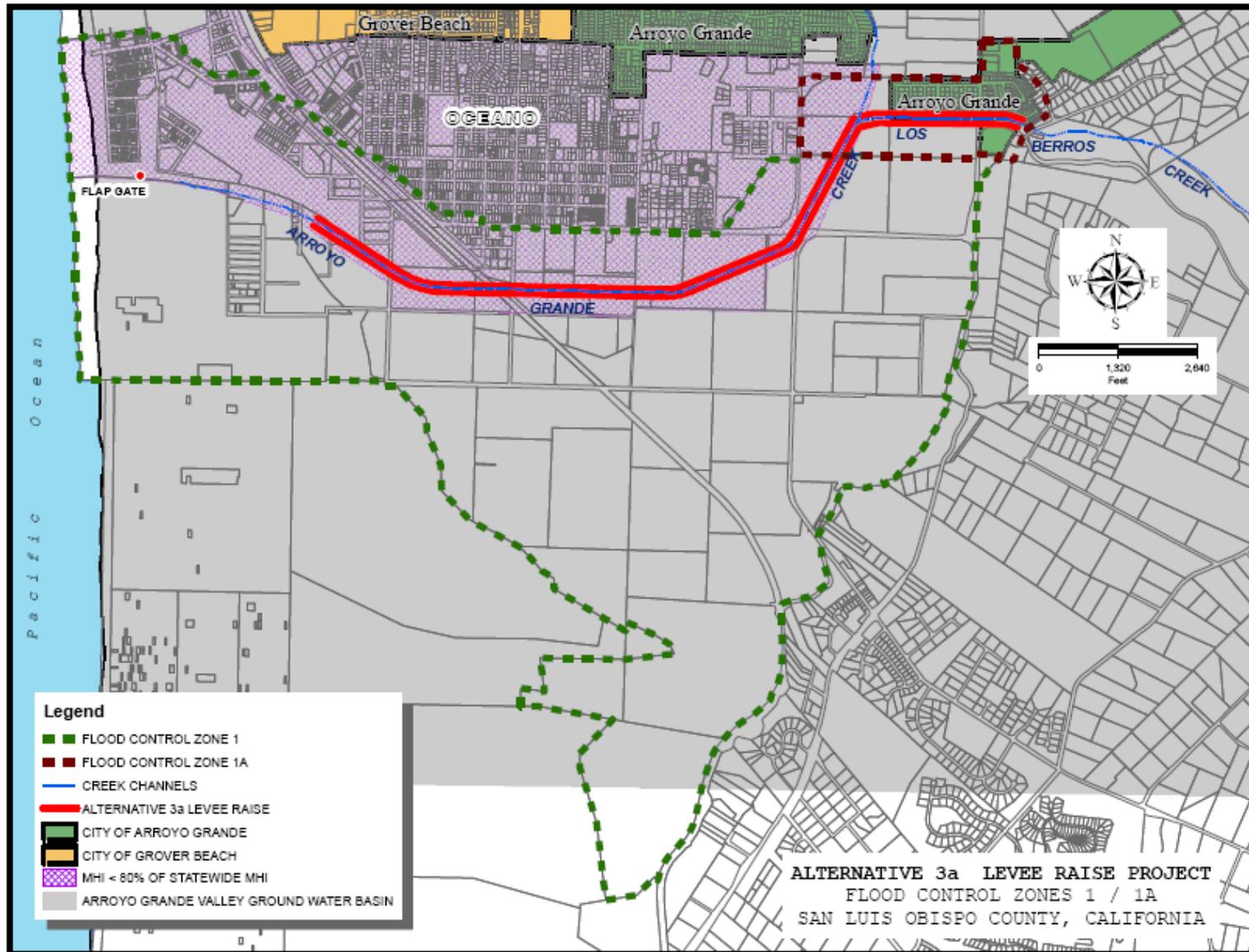


Figure 3-2: San Luis Obispo County Regional Map



Completed Work

A description of the work that has been completed or is expected to be completed on the Flood Control Zone 1/1A Waterway Management Program (WMP), Alternative 3a Project prior to September 1, 2011 is described below.

The Flood Control Zone 1/1A (Zone 1/1A) WMP represents the whole of the planning and work efforts by the San Luis Obispo Flood Control and Water Conservation District (District) for management and maintenance of the Arroyo Grande Creek and Los Berros Creek flood control channels through Zones 1 and 1A. The channels are in the lower Arroyo Grande Creek watershed (Figure 3-3). Management and maintenance of the channels and appurtenant structures is the responsibility of the District, under the purview of the County Public Works Department. Landowners within the zone, called “Zone 1/1A”, are assessed special property tax fees to support the maintenance work. The County decision-making is guided by the Zone 1/1A Advisory Committee which is made up of agriculturalists and other landowners within the zone, and has been meeting regularly since June 2001.

The Arroyo Grande Creek Channel WMP (Exhibit I) was completed and adopted by the District on November 2, 2010. The WMP was developed subsequent to an alternatives analysis that evaluated ten 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 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 (Exhibit J). Alternative 3 is the preferred alternative and is the basis of the proposed WMP. Alternative 3 project elements, located in the leveed lower three miles of the Arroyo Grande Creek flood control channel as shown in Figure 3-4 and Figure 3-5, include the following:

- **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;
- **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. This project element is only required in conjunction with the 20 year levee raise when implemented.

This proposal includes the Alternative 3a Project of the WMP which includes completing final design plans for the 1st year vegetation management, 1st year sediment management, and initial phase of levee raising, to provide 10 year flood protection. Ultimately, the Alternative 3c Project will be completed and 20 year flood protection with free board will be provided for the region. The associated EIR for the WMP, which includes the impacts of each of the project elements listed above, has been completed and was certified by the District’s governing body, the San Luis Obispo County Board of Supervisor’s, on November 2, 2010 (Exhibit A-Certification and Exhibit M - EIR).

The high flood risk of the current condition highlights the need to take immediate action on specific elements of the overall WMP to begin increasing the capacity of the channel. Based on hydraulic modeling of the channel, it is estimated that the lower three miles of Arroyo Grande Creek would overtop during a 5-year storm (approximately 2.8 year flood protection with 2-ft. freeboard), leaving residential neighborhoods to the north and farmlands to the south with only minimal flood protection.

Figure 3-3: Arroyo Grande Creek Watershed Map

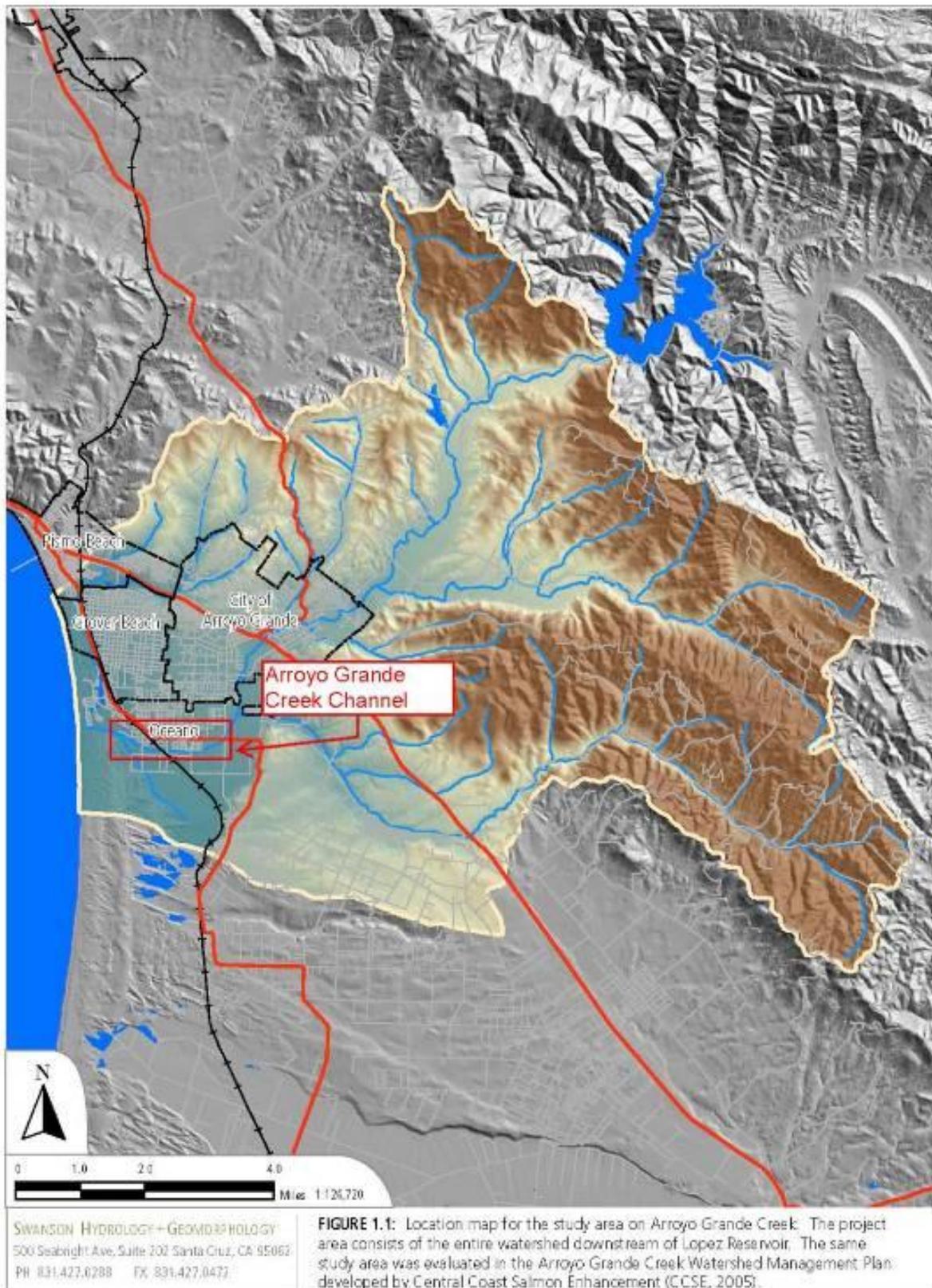


Figure 3-4: Project Area Overview

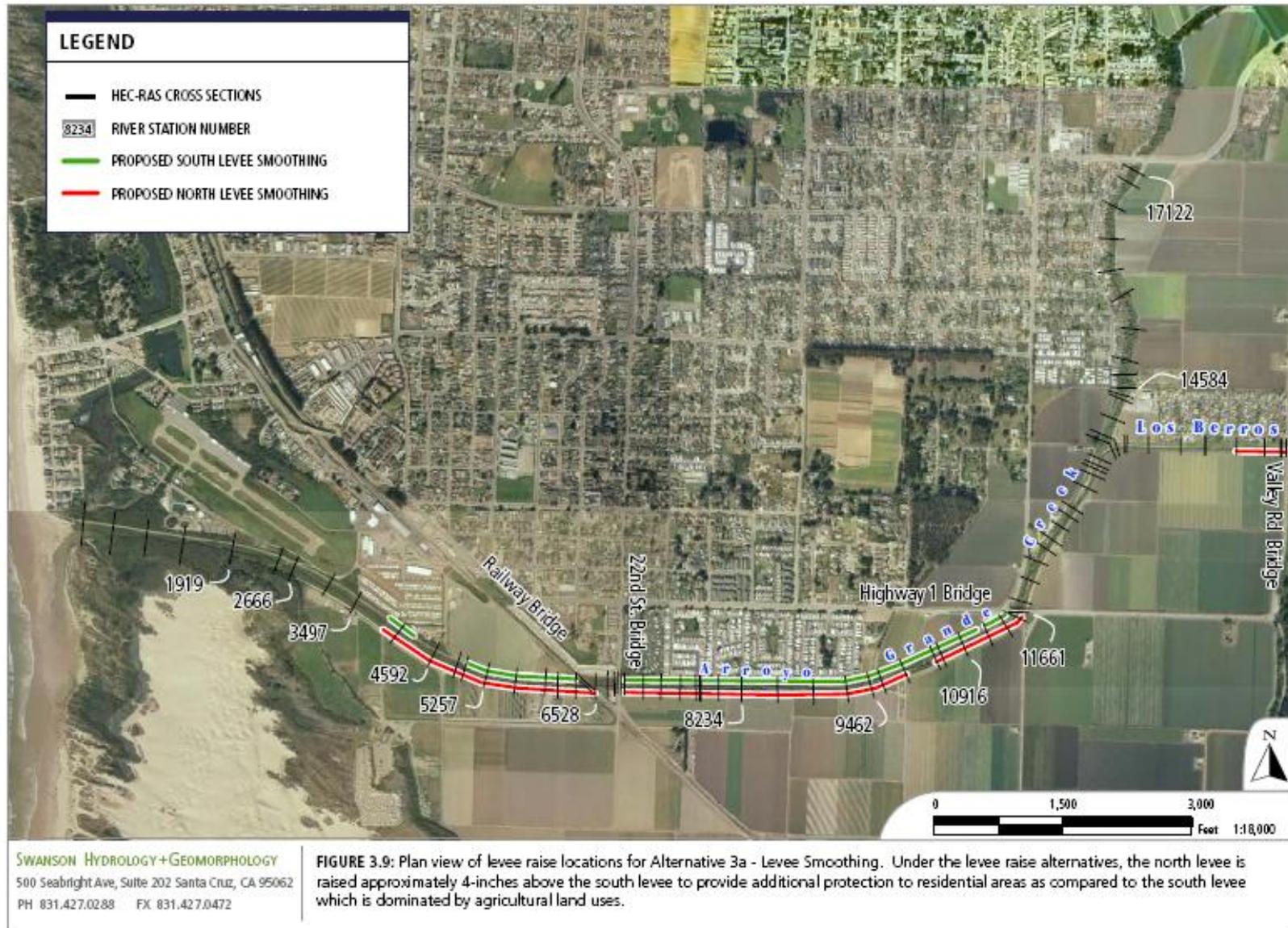
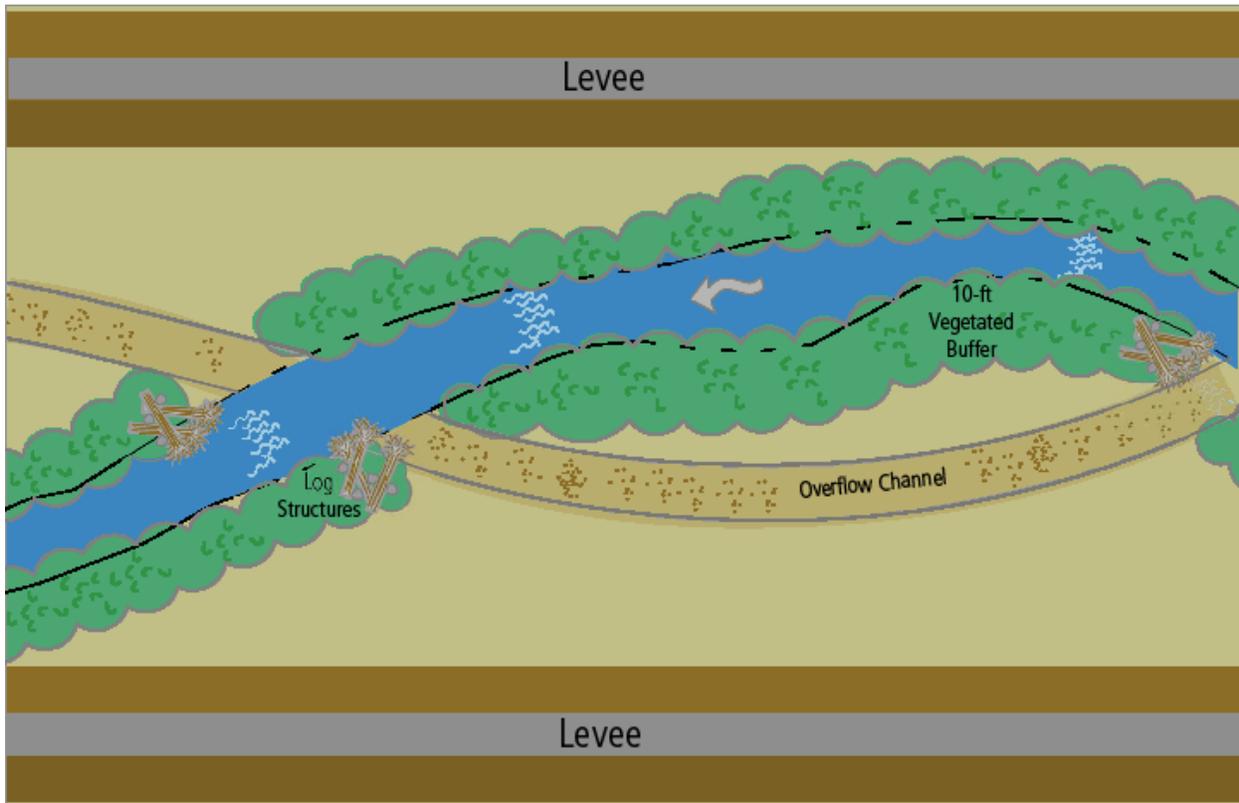


Figure 3-5 Alternative 3a Project Elements



This grant proposal is for implementing the components of the Alternative 3a Project, including the 1st Year Vegetation and Sediment Management and first phase of levee raising to provide 10-year flood protection. The suite of activities that comprise the Alternative 3a Project are critically needed to provide the residents and landowners of Zone 1/1A with improved flood protection. Each component is essential to simultaneously address urgently needed flood protection for the disadvantaged community of Oceano and protection of biological resources providing value to the State of California. The flood control channel was originally designed to provide 50 year flood protection with 2 feet of freeboard to the surrounding community and farmland. Because concerns for environmental protection of creek habitat have increased since the channel was constructed in 1961, 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 2.8 year flow recurrence event with two feet of freeboard. 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 March 2001



This aerial photo was taken shortly after the south levee was broken on March 5, 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.

The proposed Alternative 3a Project is a stand-alone project and is the necessary first step in implementing the overall WMP. Early implementation of the Alternative 3a Project will provide urgently-needed improvement in flood capacity and will provide the foundation for the future phase (Alternative 3c Project) which will further increase the height of the levees to provide the ultimate 20 year level flood protection of the overall WMP and raise the UPRR Bridge to accommodate the 20 year flows. This grant Proposal requests funding for construction of the project, and a portion of the environmental mitigation as described in the Work Items.

In order to maintain the benefits of the Project long after construction has ended, the County will follow the adopted WMP maintenance and management activities to fulfill the maintenance needs of the Zone 1/1A flood channels. The District is currently seeking long-term permitting from the CA Department of Fish & Game, Army Corps of Engineers, Regional Water Quality Control Board, and California Coastal Commission to cover regular and routine channel maintenance. Funding for future maintenance of the channel to maintain the benefits of the project will be through the existing special property tax assessment that was approved in 2006.

Existing Data and Studies

Extensive data has been collected and studies have been performed to support the Alternative 3a Project location, feasibility and approach and the recommendations were developed through a collaborative approach as described below.

In April 2003, the County Board of Supervisors, acting as the San Luis Obispo County Flood Control and Water Conservation District, passed a “Resolution to Relinquish the Arroyo Grande and Los Berros Diversion Flood Control Channels and Appurtenant Structures to the State of California” (Exhibit H). 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. On June 14, 2005, County Board of Supervisors unanimously voted to delay for 12 months relinquishment to DWR of maintenance responsibility for Arroyo Grande Creek Flood Control Channel, in order to give the local community time to investigate options for managing the channel locally. As a result of community efforts, in April 2006, the San Luis Obispo County Public Works Department coordinated preparation of a Proposition 218 Assessment Engineers Report (Exhibit N) and Proposition 218 ballots were mailed to Zone 1/1A property owners for a vote on whether to increase local assessments for channel maintenance. On June 8, 2006, the SLO County Clerk-Recorder's Office announced passage of the Proposition 218 measure with 89% of votes cast. On July 18, 2006 the Board of Supervisors voted to levy the special assessment (Exhibit O). Consequently, County Board of Supervisors voted unanimously to rescind their 2003 resolution to relinquish the flood control channel to DWR, thereby keeping management of the channel in local hands.

In January 2006, the Arroyo Grande Creek Erosion, Sedimentation, and Flooding Alternatives Study (Exhibit J) was completed by the RCD, on behalf of the District. The RCD contracted with the consulting firm of Swanson Hydrology and Geomorphology (SH+G) to develop a range of flood protection alternatives focusing on erosion sources, sedimentation and hydrology as they relate to recurring flooding in the lower reaches of Arroyo Grande 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 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, 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) (Exhibit P). The Zone 1/1A Advisory Committee endorsed Alternative 3 as the preferred alternative. As described in the previous paragraph, 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 the fall of 2007, SLO County Public Works drafted a Notice of Preparation and a Request for Qualifications for preparation of an Environmental Impact Report (EIR)/Environmental Assessment (EA) 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 the 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. The WMP (Exhibit I), which was adopted in November of 2010, has become the long-term management strategy for the Arroyo Grande Creek Flood control channel.

In order to complete the 30% design level plans, a Preliminary Geotechnical Evaluation was completed in April of 2009 (Exhibit Q), which identified geotechnical considerations relating to slope stability, seepage and grading that should be considered in the design of the project. 30% design level plans were evaluated in the CEQA/NEPA review of the entire WMP. The program includes initial vegetation and sediment management and several phases of levee raise projects, which ultimately will provide 20 year flood protection. This 30% design work was completed in September 2009. The 30% design plans for the Alternative 3a Project are included (Exhibits R and S). Additionally, surveying to determine the channel easement boundaries has occurred in preparation of exhibits necessary to obtain construction easements. Channel easement boundaries are shown on the 30% design plans (Exhibits R and S).

The EIR was completed and certified on November 2, 2010 for the WMP and the projects that comprise the WMP, including the Alternative 3a Project. A notification to the Native American Heritage Commission (NAHC) was submitted and a response was received on June 23, 2010 (Exhibit T). After a records search and field survey were conducted in accordance with their response, it was determined that the project would not result in impacts to cultural resources. The areas listed below are those that were assessed and evaluated for impacts as part of the EIR.

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

Significant environmental impacts identified were those to biological resources due to environmentally sensitive Habitat Areas which include 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 due to the repair and construction of the levees in saturated soils where seismic activity is likely and because the levees structures are subject to high storm water flows which could cause significant erosion.

In addition to activities specifically addressed in the WMP relating to the Arroyo Grande Creek channel, a Memorandum of Understanding (MOU) (Exhibit U) is in place that is designed to improve watershed conditions and limit sediment delivery from upslope areas to impacted reaches of Arroyo Grande Creek. 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.

By signing the MOU, the County showed its support for collaborative watershed management. Other signatories of the MOU include: the City of Arroyo Grande, South San Luis Obispo County Sanitation District, San Luis Obispo Coastal Resource Conservation District (RCD), Natural Resource Conservation Service, 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, 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.

Table 3-2: Summary Listing of Existing Data and Studies

Study	Date	Exhibit Number
Resolution to Relinquish the Arroyo Grande and Los Berros Diversion Flood Control Channels and Appurtenant Structures to the State of California	April 2003	H
Arroyo Grande Creek Erosion, Sedimentation, and Flooding Alternatives Study	January 4, 2006	J
Proposition 218 Assessment Engineers Report	March 15, 2006	N
Resolution to levy assessments for Arroyo Grande Creek Maintenance	July 18, 2006	O
Arroyo Grande Creek Memorandum of Understanding	April 2008	U
Preliminary Geotechnical Information	April 2009	Q
Sediment and Vegetation Management Plan 30% Design	September 2009	R
Alternative 3a Project 30% Design	September 2009	S
Native American Heritage Commission Notification Response	June 23, 2010	T
Arroyo Grande Creek Channel Waterway Management Program	Adopted November 2, 2010	I
Arroyo Grande Creek Channel Waterway Management Program Environmental Impact Report	Certified November 2, 2010	M

Project Timing and Phasing

The Alternative 3a Project is the first step in implementing the two-tiered adopted Waterway Management Program designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel. The first phase Alternative 3a Project is a stand alone project that will provide flood protection up to a 10-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel. The second phase Alternative 3c Project builds upon the work completed in phase 1 to increase the levee height to provide flood protection up to a 20-year storm event and raising the UPRR Bridge to accommodate the 20-year flows.

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 (Exhibit V) 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. It is the hope of the District that this program is viewed as self-mitigating and the document is a useful tool that will allow regulatory agencies to issue multi-year permits for the efficient implementation of the program components.

Incremental levels of the proposed ultimate flood protection will be achieved as each of the following program components is completed: vegetation management, sediment management, and levee raising. This Grant Proposal requests funding for implementing all three components, referred to as Alternative 3a, to provide 10-year flood protection. Grant money will be used to complete these Project work items:

- Implementation of the 1st Year Vegetation and Sediment Management Project
- Implementation of the Alternative 3a Levee Raise Project (average 1.5 feet raise to achieve 10-year flood protection)
- A portion of the construction of environmental mitigation

The Alternative 3a Project would improve the flow characteristics of the channel by reducing channel roughness through vegetation thinning and removal and would enhance geomorphic function by removing accumulated sediment, establishing a primary low-flow channel, and creating secondary overflow channels to improve flood conveyance and sediment transport. Maintenance of a primary low-flow channel, enforced by the presence of a stable riparian corridor, will improve sediment transport conditions throughout the flood control reach which will reduce the need for future maintenance/dredging and provide increased flood protection for the disadvantaged community of Oceano and the highly productive agricultural areas of the Cienega Valley.

This project would also increase channel capacity with a moderate raising of the existing levees along Arroyo Grande and Los Berros Creeks in order to mitigate overtopping where it is likely to occur first. The average levee raise under Alternative 3a is 1.5 feet. The existing levees will be raised while maintaining a minimum 2 horizontal to 1 vertical slope on the levee sides and providing a minimum top width of approximately 15 feet. The project work areas are shown on Figure 3-4.

Alternative 3a will raise the levees along Arroyo Grande Creek from approximately river station 3,300 through river station 11,400, just downstream of the Highway 1 Bridge. A short length of levee along Los Berros Creek, just downstream of the Valley Road Bridge would also be raised under this scenario. Approximately 16,300 cubic yards of imported fill material will be required to provide 10-year flood protection with 2-feet of freeboard, providing adjacent properties protection from the 10-year flood event of 5,400 cfs.

Preliminary scheduling of WMP Alternative 3a, within the constraints of current assessment funding, proposes completion of the project in 2037. It would take Flood Control Zone 1/1A 25 years to accumulate the capital reserves to complete this project. Award of this grant would advance the completion date of the entire Alternative 3a Project approximately 24 years, from 2037 to 2013, providing critical interim 10-year flood protection in advance of ongoing efforts to secure funding for longer-range flood control facility improvements that may be necessary.

Completion of the Alternative 3a project is the first and urgently needed step toward providing flood protection in the lower Arroyo Grande Creek Watershed. The project is a stand alone project that provides 10-year level of flood protection and can be built upon with the Alternative 3c Project that will provide 20-year level of flood protection by increasing the levee height and raising the UPRR Bridge.

Completed Work by Task

Task 1: Project Administration (Budget Category a)

Task 1a: Project Management

The Project Administration task is an on-going task currently being performed by the County. Project status updates are currently prepared on a bi-monthly basis in response to the various stake holders and their meeting schedules. Status updates to the Public Works Department are provided on an as needed basis. As milestones are met, the County project manager documents and notifies sponsoring agencies, stakeholders and the various divisions of the Public Works Department. This activity, along with additional project management activities as described in the Task Section of this Proposal, will continue through project implementation.

Task 1b: Labor Compliance Program

The County has an existing Labor Compliance Program consistent with subdivision (b) of Labor Code Section 1771.5. Demonstration of compliance with this program will be completed as described in Task 1b of the Task Section of this Proposal.

Task 1c: Project Performance Monitoring Plan (PPMP)

Attachment 6 of this Proposal includes Performance Monitoring Tables which provide a preview of the information that would go into the Project Performance and Monitoring Plan (PPMP) and will be used to develop the PPMP. The PPMP will include the following items:

- Project goals
- Desired outcomes
- Output indicators – measures to effectively track output
- Outcome indicators – measures to evaluate change that is a direct result of the work
- Measurement tools and methods
- Targets – measurable targets that are feasible to meet during the life of the Proposal

No additional work will be performed on this task until notification of grant award. If awarded, a PPMP will be prepared prior to completion of final plans, specifications, and estimate for contract bidding as described in Task 1c of the Task Overview section of the Proposal.

Task 1d: Securing of USDA Loan

Securing a loan from the USDA will be necessary in order to meet the matching fund requirements of 50% for Proposition 1E. Zone 1/1A has the ability to incur approximately \$200,000 of debt service which will allow for a loan of up to \$3.5 million. No work on this task will be completed prior to grant award (September 1, 2011). Work to be completed is as described in Task 1d of the Task Section of this Proposal.

Task 2: Land Acquisition (Budget Category b)

Surveying to determine the channel easement boundaries has occurred in preparation of exhibits necessary to obtain construction easements as shown on 30% design plans (Exhibit R). Temporary and permanent construction easements will be acquired as described in Task 2 of the Task Overview Section of the Proposal. Preparation of exhibits, appraisals, and agreements for obtaining temporary construction easements necessary for the vegetation and sedimentation phase of the project (Alternative 3a) will be initiated prior to grant award. Work needed to obtain permanent easements that are necessary for the levee raise phase of the project will be initiated after grant award. No further work on this task is expected to be completed prior to grant award.

Task 3: Planning/Design/Engineering/Environmental Documentation (Budget Category c)

Task 3a: Planning/Environmental Documentation

Completed work under this task is planning for the work needed to establish project design criteria and details. The Waterway Management Program and the project proposed are the end result of a detailed alternatives study that was completed in 2006 by Swanson Hydrology and Geomorphology, a preliminary geotechnical evaluation that was completed in April of 2009, and a record boundary and topographic survey. These items were all necessary to the development and completion of the 30% design plans for Alternative 3a and 3c which are a part of the WMP. Additionally, an Environmental Impact Report was completed and certified on November 2, 2010 for the Waterway Management Program and the projects that comprise the WMP. Additional work required to complete the final design is described in Task 3a of the Task Section of the Proposal.

Milestones:

Preliminary Geotechnical Evaluation (Exhibit Q)
Environmental Impact Report (Exhibit M)

Task 3b: Design/Engineering:

This task involves the work needed to bring the 30% design plans for Alternative 3a (vegetation and sediment management and levee raise) to 100% design including completing a topographic survey to update channel cross sections, updating the existing hydraulic model, completion of design geotechnical report, and preparation of construction documents for the project including plans, specifications, and estimates.

The following activities are proposed to be completed prior to September 1, 2011

- Topographic survey to update existing creek channel cross sections for areas appropriate for sediment removal, installation of log structures and to determine quantities of sediment to be removed. The topographic survey will also be used to determine staging areas, access and construction easements.
- Update existing hydraulic model to reflect current conditions.
- Initiation of Design Geotechnical Report.

Completion of the geotechnical report, design to bring plans to 100 %, and development of specifications and estimates for contract bidding of the project remains to be completed after grant award date. This work will be completed by consultants because much of the previous groundwork done on the project to date has been completed with consultants who are familiar with project, its goals and challenges.

Milestones:

30% Design Plans (Exhibits R and S)
Topographic Survey
Hydraulic Model

July 2011
July 2011

Task 4: Construction/Implementation (Budget Category d)

Currently annual minimal vegetation thinning and invasive removal is done under a restricted California Department of Fish and Game permit. No additional work will be completed for this task prior to grant award date.

Task 5: Environmental Compliance/Mitigation/Enhancement (Budget Category e)

Task 5a: Environmental Compliance:

These are activities associated with permitting and environmental monitoring during construction. The County has initiated work to obtain permits for the construction of the project as well as long term permits that allow the continued maintenance of the channel on a yearly basis after the initial vegetation, sediment management and levee raise are completed. Permitting for the project began in November 2010. A California Coastal Development Permit for the project was submitted in February of 2011. Other agency permit applications (DFG, ACOE) for the project are being prepared and will be submitted in coordination with timing and results of the CCDP process. Final permits are anticipated for December 2011. The County will continue to work with the following agencies to obtain the long term permits:

- California Coastal Commission
- Army Corps of Engineers
- Regional Water Quality Control Board
- California Department of Fish and Game

No additional work on this task has been or will be completed prior to grant award.

Milestones:

California Coastal Development Permit (Exhibit Z)

Task 5b: Environmental Mitigation/Enhancement:

The WMP and its associated Project Alternative 3a is designed to be a self- mitigating document. Therefore mitigation requirements will be implemented as required by the WMP, environmental permits obtained, and the certified EIR. Timing on the implementation of the mitigation will be permit driven.

Enhancement: The Alternative 3a project of the WMP was designed to be an enhancement of the habitat within the channel. As such, enhancements related to the project will begin at implementation of the project

No work will be completed on this task prior to grant award date.

Task 6: Construction Management (Budget Category f)

Construction Management will occur for the duration of the construction period but no activities are scheduled to begin or be completed before the grant award date.

Task 7: Other Tasks – Data Management and Monitoring Deliverables (Budget Category g)

Data Management will occur for the duration of the Project Performance monitoring period and as needed to quantify and verify project performance. No activities are scheduled to occur on this task before grant award date of September 1, 2011.

Task Overview

This section details the specific activities that will be performed to implement the proposal. The task descriptions are presented in a format that will allow it to be used as the scope of work in the grant agreement if the proposal is selected for funding. The task detail is sufficient to demonstrate a high expectation of successful implementation. Additionally, the tasks provide sufficient detail to justify the projects’ cost estimates and are consistent with those used in Attachment 4, Budget, and Attachment 5, Schedule.

The work completed to date or expected to be completed by September 1, 2011 was discussed in the introduction section under “Completed Work”. This section addresses the items which will be implemented after September 1, 2011.

The District has made significant progress towards implementing a project which will increase the capacity of the Arroyo Grande Creek Channel. Development and adoption of the Waterway Management Program (WMP) was the first and most critical step, followed by certification of the EIR which includes the Alternative 3a Project, as demonstrated in the Completed Work section. As the program receives funding, the County will implement the project through the following tasks:

- Task 1: Project Administration
- Task 2: Land Acquisition
- Task 3: Planning/Design/Engineering/Environmental Documentation
- Task 4: Construction/Implementation
- Task 5: Environmental Compliance/Mitigation/Enhancement
- Task 6: Construction Management
- Task 7: Other Task – Data Management

The project and funding status by task is summarized in the table below.

Task	In Progress	Complete by 9/1/11	Funding Requested
Task 1 Project Administration	Yes	No	No
Task 2 Land Acquisition/Easements	No	No	No
Task 3 Planning/Design/Engineering/Environmental	Yes	No	No
Task 4 Construction/Implementation	No	No	Yes
Task 5 Environmental Compliance/Mitigation/Enhancement	Yes	No	Yes
Task 6 Construction Management	No	No	No
Task 7 Other Task – Data Management, Construction Monitoring	No	No	No

The following are task descriptions:

Task 1: Project Administration (Budget Category a)

Task 1a: Project Management

The purpose of this task is to keep the project scope, budget and schedule on track, and to communicate project progress with the Department of Water Resources (DWR), permitting agencies, stakeholders (Zone 1/1A Advisory Group, Water Resources Advisory Committee), and the various divisions of the Public Works Department involved with project delivery. This task includes execution and management of all consultant contracts. San Luis Obispo County Public Works Department has and will continue to be responsible for the daily management of the project under this task. Work under this task includes preparation of invoices, agreements, and county overhead expenses associated with project implementation.

The Project Administration task is an on-going task. Project status updates are currently prepared on a bi-monthly basis in response to the various stake holders and their meeting schedules. Status updates to the Public Works Department are provided on an as needed basis. As milestones are met, the County project manager documents and notifies sponsoring agencies, stakeholders and the various divisions of the Public Works Department.

The County will be the grant administrator and fiscal agent for the Proposition 1E Grant, if awarded. In support of the Proposition 1E Grant, the following administrative tasks will be performed by the County:

- Develop, negotiate, and secure the DWR grant agreements necessary for grant award and implementation. This grant proposal is being submitted by the County for one County sponsored project. Therefore, there is no need for any grant contracts, MOU's or formal agreements for grant administration other than the County's contract with DWR. This project administration task will include preparation of necessary Proposition 1E contract documents, supporting contract documentation, and coordination with DWR to execute the grant agreement.
- Monitor and communicate project and grant progress with DWR and prepare quarterly reports that describe the progress and accomplishments for the quarter, including an assessment of project schedule and budget, and updated schedules and budgets, if appropriate. The quarterly reports shall be prepared consistent with State grant guidelines and in accordance with Project Performance Monitoring Plans.
- Prepare grant reimbursement requests, including completing the DWR invoices and compiling appropriate expenditure documentation per the DWR grant reimbursement requirements. Expenditures documenting both match and reimbursement expenditures will be included. All DWR disbursement requirements will be satisfied immediately following grant contract execution.
- Following project close-out, prepare and submit to DWR a Final Report summarizing the project implementation, demonstrating completion of all task items, and documenting the project costs and grant distributions. The final reports shall be prepared consistent with State grant guidelines. The Final Report will be submitted within 90 days of project completion (including environmental mitigation and compliance work).
- Submit a Post Performance Report to DWR within ninety (90) calendar days after the first operational year of the project has elapsed. In subsequent operational years, the Post Performance Reports shall be submitted by the date specified in the grant agreement. This record keeping and reporting process shall be repeated annually as specified in the grant agreement. The County has assumed Post Performance Reports are required for a total of 10 years after the completed project begins operation.
- The County will promptly notify DWR, in writing, of the following items:
 - a) Events or proposed changes that could affect the scope, budget, or work performed under the grant agreement. The County agrees that no substantial change in the scope of a project will be undertaken until written notice of the proposed change has been provided to State and State has given written approval for such change.
 - b) Any public or media event publicizing the accomplishments and/or results of the grant agreement and provide the opportunity for attendance and participation by DWR's representatives.
 - c) Completion of work on the project.
 - d) Final inspection of a project by a Registered Civil Engineer, in accordance with Standard Condition D-14, and provide DWR the opportunity to participate in the inspection.

Grant funding is not being requested for this work.

Task 1b: Labor Compliance Program

The County has an existing Labor Compliance Program consistent with subdivision (b) of Labor Code Section 1771.5. This task involves the work needed to demonstrate compliance with state labor laws. The County of San Luis Obispo will ensure compliance with state labor codes in three ways:

- The county will submit to the State a letter with associated exhibits documenting compliance with relevant Labor Code requirements.
- The construction contract special provisions will state that adherence to Caltrans State Standard Specifications is required. Section 7 of the State Standard Specifications addresses the requirements of the State labor code for Public Works projects.
- The Construction Manager will review the contractor's payroll submittals for labor compliance as required in the State Standard Specifications.

Grant funding is not being requested for this work. No work on this task will occur until award of grant funding for the project.

Task 1c: Project Performance Monitoring Plan (PPMP)

A Project Performance and Monitoring Plan (PPMP) will be prepared at the initiation of project implementation. The PPMP will present the planned project monitoring, assessment, and performance measures that will demonstrate that the project will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. The PPMP will provide a discussion of the monitoring system to be used to verify project performance with respect to the following San Luis Obispo IRWMP goals and objectives:

- Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation.
- Integrate ecosystem enhancement, drainage control, and natural recharge into development projects.
- Develop financial programs for drainage and flood control projects.
- Evaluate and minimize the risk of dam and levee failures.
- Develop and implement public education, outreach, and advocacy.
- Purchase and conserve through easements, preserve, enhance, and restore land in ecologically sensitive ecosystems.
- Manage stream flows to fish bearing streams, support a region-wide fish passage barrier prevention, circumvention and removal program, and implement fish friendly stream and river corridor restoration projects.
- Reduce the effects of invasive plant species, manage public properties to re-establish rare and special status native plant populations, and promote native drought tolerant plantings in municipal and residential landscaping.
- Protect and improve source water quality.
- Support the development and implementation of TMDLs.
- Implement NPDES Phase II Storm Water Management Programs.
- Implement the California NPS Plan and the RWQCB Conditional Agricultural Waiver Program for irrigated agriculture.

The PPMP will define the parameters and process for measuring output and outcome indicators to demonstrate progress towards the desired project goals. There are three project goals that the completed project will be evaluated against to determine the projects performance.

Goal #1 - Increase the existing flood carrying capacity of the channel to provide 10-year flood protection with freeboard for District Zone 1/1A residents and agriculture.

Goal #2 – Protect biological resources, enhance and protect riparian habitats and habitats supporting sensitive plant or animal species.

Goal #3 – Improve function of flood control facilities and reduce the need for future maintenance.

Performance will be measured through comparison of pre-project baseline surveys of the creek channel and riparian areas with post construction surveys as shown in Figure 3-6. More details of the proposed measurement tools and

methods can be found in Attachment 6, which provides a preview of the information that would go into the PPMP and will be used to develop the PPMP.

Grant funding is not being requested for this work. The PPMP is scheduled to be completed in November 2011.

Deliverables:

Executed DWR Grant Agreement	December 2011
Bi-Monthly Project Baseline Schedule and Updates	On going
Bi-Monthly Project Budget and Updates	On going
Quarterly Reports	Ongoing
Grant Reimbursement Documentation	Ongoing
Labor Compliance Documentation	October 2012, 2013
Project Performance Monitoring Plan	November 2011
Final Report	September 2014
Post Performance Report	March 2015 and annually thereafter
Integration of Data into State Programs	Annually

Task 1d: Securing of USDA Loan

In order to meet matching fund requirements of 50% for Proposition 1E, Zone 1/1a will proceed with obtaining a low interest loan through the USDA's Community Facilities Direct and Guaranteed Loan Program. Zone 1/1A submitted a pre-application for the Waste and Water Disposal Loan and Grant Program through the USDA Rural Development division for Alternative 3a of the WMP in April of 2009. The application was denied because it was deemed ineligible under this program. However, the USDA encouraged the County to reapply under the Community Facilities Program because the County would be eligible for a low interest loan. If grant funding is obtained through Proposition 1E, the District will apply for the loan to cover the matching funds portion of the project approximately \$2.8 million. Zone 1/1A has an available debt service of approximately \$200,000 that is collected through an existing special property tax assessment established in 2006 that can be used to secure a low interest loan of up to \$3.5 million. Work to complete this task will include the following:

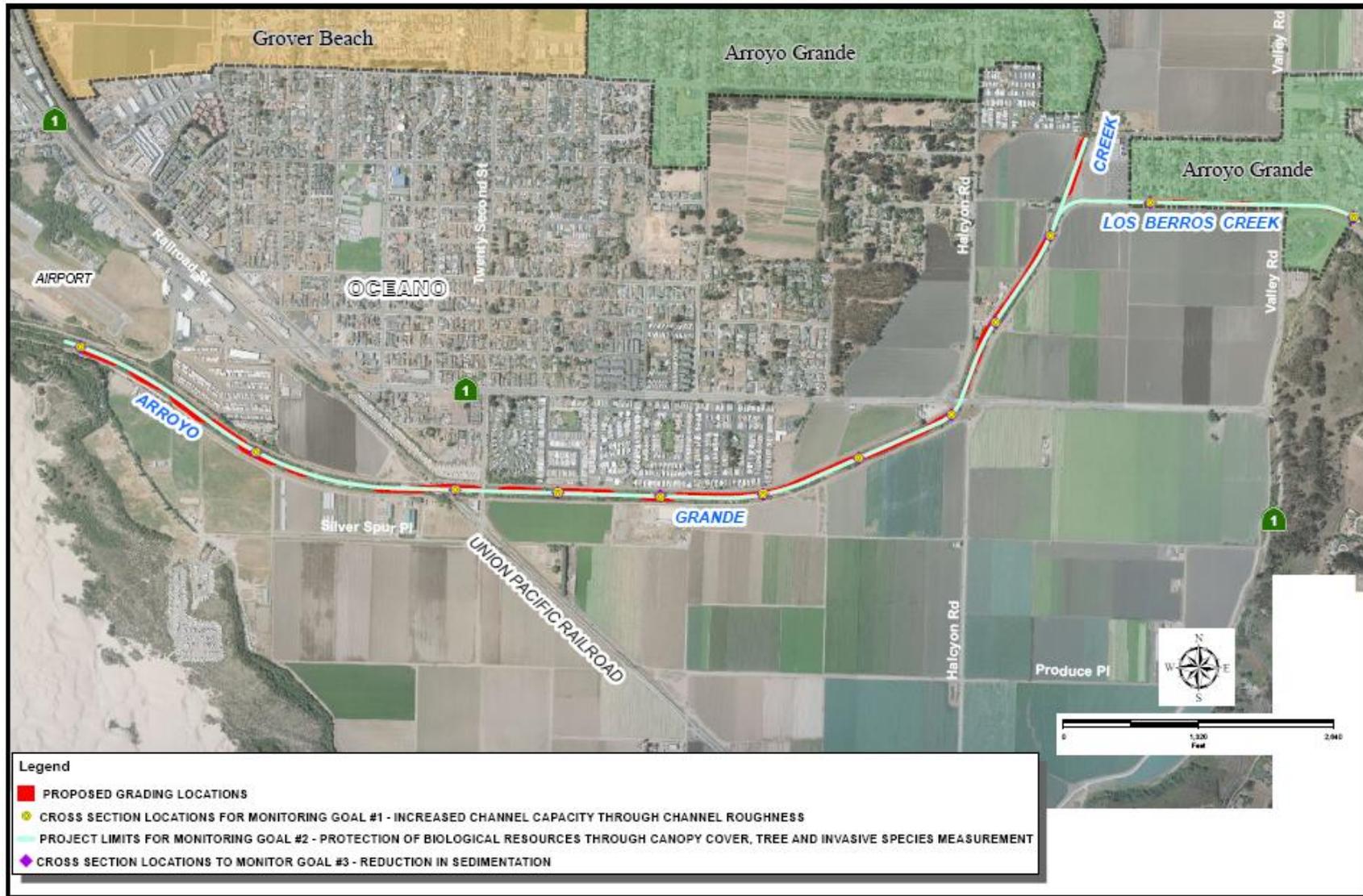
- Preparation of loan pre-application
- Preparation of loan application
- Preparation of loan documents and agreements (if funding is successful)
- Administration and compliance with loan requirements (if funding is successful)

Grant funding is not being requested for this work. No work will be started on this task until after grant award.

Deliverables:

Completed Pre-application for loan	October 2011
Completed Loan application	January 2012
Executed loan agreements	April 2012

Figure 3-6: Project Area and Proposed Monitoring Locations for Alternative 3a Vegetation and Sediment Management and Levee Raise



Task 2: Land Acquisition (Budget Category b)

This task involves the purchase of approximately 10 acres of temporary construction easements and 2 acres of permanent easements to implement the project. The flood control channel is within an existing 200 foot wide permanent easement. Temporary construction easements will be necessary to implement the project. Temporary easements will be necessary for staging areas for equipment and labor as well as stockpiling of materials including removed vegetation and sediment and/or fill material for the levee raise. Additionally, temporary construction easements will be necessary to achieve efficient access routes on and off the levee which will save expenses in the haul time to and from the disposal or fill sites. Approximately 2 acres of permanent easements may be required to provide permanent access for maintenance of the levee slope. In a number of locations, the proposed toe of slope for the levee raise portion of work extends to the existing easement boundary or just beyond it and will require acquisition of additional permanent easement to provide a minimum 10 foot access at the new toe of slope. The number of easements required will be determined in conjunction with development of final design plans. County staff will have to complete appraisals; easement documents and property owner correspondence after final easement requirements are verified. Grant funding is being requested for this task.

Current Status: Surveying to determine the channel easement boundaries as shown on the 30% design plans has occurred in preparation of exhibits necessary to obtain construction easements. No further work on this task is expected to be completed by grant award date.

Deliverables:

Easement Agreements, Exhibits and Appraisals	December 2011
Temporary Construction Easements	December 2011
Permanent Maintenance Easements	August 2012

Task 3: Planning/Design/Engineering/Environmental Documentation (Budget Category c)

Task 3a: Planning/Environmental Documentation

This task includes the work needed to establish project design criteria and details. Work began on this task when the District awarded a contract to SWCA – Morro Group to prepare the WMP and associated Environmental Impact Report on June 3, 2008. The WMP was adopted on November 2, 2010 and, at the same time, the EIR was completed and certified. A Groundwater Management Plan is not required and not included in the workplan. See the Work Completed section for additional planning details.

No further work on this subtask is needed.

Grant funding is not being requested for this work but is submitted as matching funds.

Task 3b: Design/Engineering:

This task involves the work needed to bring the 30% design plans for Alternative 3a (vegetation and sediment management and levee raise) to 100% design including incorporation of mitigation measures for erosion and sedimentation due to channel overtopping. In order to accomplish this it will be necessary to complete a topographic survey updating channel cross sections, updating the existing hydraulic model, completion of a final design geotechnical report, and preparation of construction documents for the project including plans, specifications, and estimates. The topographic survey and updated hydraulic model will be completed prior to the grant award date of September 1, 2011. Therefore, activities under this task only include completion of the geotechnical report, design to bring plans to 100 %, and development of specifications and estimates for contract bidding of the project. This work will be completed by consultants because much of the previous groundwork done on the project to date has been completed with consultants who are familiar with project, its goals and challenges.

Grant funding is not being requested for this task.

Deliverables:

Final Geotechnical Evaluation Report
Bid ready final design plans

December 2011
February 2012

Task 4: Construction/Implementation (Budget Category d)

The construction window for the Alternative 3a project may be limited by environmental agency permits (CDFG, ACOE). Due to the known presence of three endangered species as described in Task 5, vegetation management and sediment removal ideally would be conducted after June 15th and before October 15th to capitalize on the seasonal low water levels in the creek, and minimize the potential presence of other endangered aquatic species such as the steelhead and California red-legged frog. Additionally, grading activities that are required for the proposed levee raise would ideally occur after June 15 and before October 15 to avoid potential impacts to the creek from storm water pollution as well as taking advantage of low creek flows. The project is being separated into two construction seasons to accommodate the constraints noted above. From a logistical stand point, it is not feasible to do the entire project within one construction window. Vegetation management and sediment removal will be done the first year and the levee raise would be completed the following year. A single construction contract is proposed to be awarded with work to be suspended after the first year of construction and re-started the following year to complete the second year of construction (levee raise). The proposed construction schedule in Attachment 5 accounts for these constraints.

Construction standards and methods relating to the vegetation management component will be those required by the environmental permits obtained. The sediment removal component will be based on Caltrans standard specifications as well as utilizing the best management practices of the CASQA guidelines and any requirements stated in the environmental permits. The levee raise component of the project will follow Caltrans standard specifications and drawings as well as the County of San Luis Obispo's Public Improvement Standards for the various items work.

Task 4a Construction Contracting

This task includes the work needed to advertise, bid and award the construction contract. The County has a policy memorandum AD-15 (Exhibit W) which details the County's process in bringing the 100% design plans through advertising, bidding and award of contract, a process that typically takes 3 months.

Proposed bidding schedule. After receiving approval from the Board of Supervisors to advertise in March 2012, bids for this project will be solicited with bid opening in April 2012. Award of contract will occur in May 2012. Insurance and contract details will be finalized prior to the Notice to Proceed which is scheduled for June 2012. The contract will state clearly that work on the vegetation and sediment removal components is to be completed by October 15th of 2012 and the levee raise work will be done the following year during the construction window allowed by the permits (June 15th to October 15th 2013).

Construction standards. All District construction contracts developed and administered by the San Luis Obispo County Public Works Department adhere and reference Caltrans standard specifications. The construction contract will reference Section 7 Caltrans State Standard Specifications and the requirements of the State labor code for Public Works projects in accordance with the Labor Compliance Plan.

Grant funding is being requested for this task. No work has or will be done on this task until final design plans are completed and grant funding is awarded

Task 4b: Construction

First Year Vegetation Management

This task includes performing the initial in-channel vegetation work necessary to achieve the desired cross sectional area roughness of 0.04 to increase channel capacity. This would entail establishing a 10 foot buffer on each side of the low flow channel in Arroyo Grande Creek and a 5 foot buffer on each side of the low flow channel in the Los

Berros Channel; removal of woody vegetation and trees outside the buffer areas and within the areas to be secondary low flow channels; invasive species removal; planting of trees to begin creation of a continuous riparian corridor and canopy along the low flow channel as well as increase riparian diversity (See Exhibit X). All work would be done in accordance with any environmental permits obtained as described in Task 5. This work will increase the existing capacity of the creek by an estimated 69% and increase flood protection from a 2.8 year event with freeboard to a 4.1 year event with freeboard. First Year Vegetation Management construction will be completed in four months from the Notice to Proceed and construction within the creek channel will be completed by October 15th in compliance with the anticipated permit conditions. Grant funding is requested for this task.

Work and deliverables associated with construction reporting and documentation are included in Task 6 Construction Management. No work on this task has been completed or will be completed prior to the grant award. Currently annual minimal vegetation thinning and invasive removal is done under a restricted California Department of Fish and Game permit.

First Year Sediment Removal

This task includes the work necessary to remove accumulated sediment in the channel outside of the riparian buffer areas to establish secondary overflow channels and installation of natural log structures to set the flood control channel to an initial condition that will improve sediment transport and enhance the aquatic habitat by creating riffles and pools (Exhibit X). It is estimated that approximately 21,000 cubic yards of sediment will be removed. This is based on cross sections taken in 2008. Cross sections will be updated as part of the 100% design plan effort described in Task 3 to obtain more accurate quantities and locations. Work would begin with clearing and grubbing of the channel (approximately 13 acres). Sediment removed from the channel would then be hauled away and disposed of in accordance with County regulations. This task also includes sediment removal under three roadway bridges and a railroad bridge. This work in conjunction with the above 1st year vegetation management will increase the existing capacity of the creek by an estimated 92% and provide flood protection from a 4.6 year event with freeboard. First Year Sediment Removal construction will be completed in four months from the Notice to Proceed and construction within the creek channel will be completed by October 15th in compliance with the anticipated permit conditions. Grant funding is requested for this task.

Work and deliverables associated with construction reporting and documentation are included in Task 6 Construction Management. No work on this task has been completed or will be completed prior to the grant award.

Levee Raise

The proposed levee raise is an integral part of the WMP Alternative 3a project. The levee raise, in conjunction with the vegetation and sediment management, will increase flood protection along the flood control channels from a return period flood of 4.6 years under current conditions to a return period flood of 10 years with 2 feet of freeboard (16.6 year flood protection with no freeboard).

Levees on both sides of the channels would be raised to heighten low spots, to mitigate overtopping where it is likely to occur first and to provide 10 year flood protection with 2 feet of freeboard. Repairs to the maintenance access road along the levee tops will be accomplished concurrently. The existing levees will be raised while maintaining a 2 to 1 slope on the levee sides and providing a minimum top width of approximately 15 feet (See Exhibit Y). Preliminary design evaluation indicates that the height increase can be accomplished with levee widening inside of existing easements in most locations. Only approximately 2 acres of additional permanent easement may be required.

Preliminary design of the levee raise proposed that the north levee be raised approximately 4 inches above the south levee to provide additional protection to residential communities of Oceano and Arroyo Grande. The northern levee protects several high density residential developments, as well as the Oceano Airport and the regional wastewater treatment plant that services the communities of Arroyo Grande, Oceano, and Grover Beach. If the north levee is overtopped, risk to human life and critical facilities will be a threat. The southern levee protects hundreds of acres of farmland and several residences.

Alternative 3a raises the levees along Arroyo Grande Creek from approximately river station 3,300 through river station 11,400, just downstream of the Highway 1 Bridge see Figure 3-4. A short length of levee along Los Berros Creek, just downstream of the Valley Road Bridge would also be raised under this scenario. Approximately 16,300 cubic yards of fill material will be required to provide 10-year flood protection with 2-feet of freeboard, providing adjacent properties protection from the 10-year flood event of 5,400 cubic feet per second (cfs). Grant funding is requested for this task.

Work and deliverables associated with construction reporting and documentation are included in Task 6 Construction Management. No work on this task has been completed or will be completed prior to the grant award.

Deliverables:

Board of Supervisors approval to begin Advertisement	March 2012
Bid Opening	April 2012
Award of contract	May 2012
Notice to Proceed	June 2012

Task 5: Environmental Compliance/Mitigation/Enhancement (Budget Category e)

The environmental compliance work is associated with permitting and environmental monitoring, mitigation and enhancements required before, during and after implementation of the project. Requirements to be met will be those outlined in the adopted WMP, EIR and permits, including conducting pre-construction surveys due to the potential presence of nesting birds and other endangered aquatic species such as the tide water Goby, Steelhead and California red-legged frog. See Exhibit AA and Exhibit BB for summary tables of known monitoring, mitigation and enhancements required as part of the EIR and WMP.

Task 5a: Environmental Compliance

The County has initiated work to obtain permits for the construction of the project as well as long term permits that allow the continued maintenance of the channel on a yearly basis after the initial vegetation and sediment management and levee raise are completed. Permitting for the project began in November 2010 as described in the work completed section. The permitting work to be completed involves obtaining all necessary local, state, and federal permits for the project. The project involves thinning and removal of vegetation and sediment within the Arroyo Grande Creek Channel and a moderate levee raise that will require work below ordinary high water. As a result it falls within the jurisdiction of several state and federal agencies. The following is a list of required permits for the project that will need to be obtained prior to implementation of the project.

- California Coastal Development Permit
- Army Corps of Engineers
- Regional Water Quality Control Board 404 Permit
- California Department of Fish and Game 1601 Permit

Because the WMP is an adaptive, self-mitigating program for managing the creek channel, the Alternative 3a project will establish the vision the County has for the creek in terms of the enhanced riparian corridor, creation of overflow channels, and improvements to sediment transport that will then be maintained through an adaptive program. The project will have to be constructed over the course of a 2 year construction period (June through October 2012 and June through October 2013) due in part to restrictions anticipated as a result of environmental agency permits (CDFG, ACOE) and to allow the project to capitalize on the seasonal low water levels in the creek (at times the creek is completely dry). By limiting the construction season, the potential presence of endangered aquatic species such as steelhead and California red-legged frog will be minimized. Environmental monitoring by qualified biologists during the course of construction will be required due to the presence of several endangered species. It is likely that full time monitoring will be needed for the 1st year vegetation and sediment removal phase and to a lesser extent for the levee raise phase of the project.

Grant funding is not being requested for Subtask 5a.

Permitting for the project began in November 2010 before the grant award date with final permits anticipated for December 2011.

Deliverables:

California Coastal Development Permit	December 2011
Army Corps of Engineers	December 2011
Regional Water Quality Control Board 404 Permit	December 2011
California Department of Fish and Game 1601 Permit	December 2011
Final Environmental Monitoring Report for Phase 1 Vegetation and Sediment Removal	June 2013
Final Environmental Monitoring Report for Phase 2 Levee Raise	June 2014

Task 5b: Environmental Mitigation

This task is associated with implementation of identified mitigation measures per the Environmental Impact Report that was certified by the District on November 2, 2010. Timing on the implementation of the mitigation will be permit driven and may involve enhancement of the habitat within the channel, consistent with the adopted WMP and proposed project. Required mitigation per the permits and EIR will be incorporated into the design and final construction drawings to be completed during Task 3b. This task also involves the installation of permanent best management practices (BMP's) on the south levee to mitigate erosion damage that would occur from overtopping during the 11th year storm (any storm greater than the 10-year event).

Work and deliverables associated with mitigation construction reporting and documentation are included in Task 6 Construction Management. No work on this task has been completed or will be completed prior to the grant award.

Grant funding is being requested for Task 5b.

Task 6: Construction Management (Budget Category f)

Construction Management will occur for the duration of the construction period. The County of San Luis Obispo will be responsible for development, negotiation and securing all contracts, including construction contractors, construction managers, and environmental monitoring consultants. There are two main components of this task, including:

- **Construction Management** – The County Public Works Department will provide construction manager(s) and will be responsible for:
 - Providing assistance during the bid period;
 - Provide on-site representation for the County;
 - Perform quality assurance and control practices on the work performed; and
 - Analyze and provide recommendations on contractor claims.
 - Maintain construction contract budget, approve contractor pay requests, construction documentation.
 - Oversees environmental mitigation implementation.
- **Engineering Services During Construction (ESDC)** – Engineering services will be contracted with the design engineering firm. The engineer will be responsible for:
 - Performing submittal review;
 - Responding to contractor requests for information;
 - Issuing clarifications;
 - Recommending change orders to the owner; and
 - Creating as-built records for the project based on construction documentation.

The Construction Manager will also be responsible for reviewing the contractor's payroll submittals for labor compliance as required in the State Standard Specifications and Labor Compliance Program.

No work has or will be started until grant funding award. Construction management is not required until the bidding period of the construction phase of the work. Grant funding is not requested for this task.

Deliverables:

Monthly Construction Progress Reports	Ongoing
ESDC Documentation	Ongoing
Notice of Completion	November 2013
As Built Drawings	November 2013

Task 7: Other Tasks – Data Management and Monitoring Deliverables (budget Category g)

As described in Attachment 6, the project performance monitoring program is designed to verify:

1. Cross-sectional roughness, volume, and levee top elevations are consistent with the design plan;
2. Adequate riparian buffer and continuous riparian canopy are maintained and non-native invasive vegetation are eliminated; and
3. Sediment is not accumulating beyond the defined sediment management areas.

The monitoring program will result in the following field surveys and reports:

1. Topographic surveys verifying channel cross sections are consistent with design elevations.
2. Hydraulic modeling reports verifying flood conveyance capacity is consistent with design.
3. Field photos and notes documenting the type and approximate roughness of vegetation cover at designated locations.
4. Mapping of non-native invasive vegetation.

The data from the surveys and reports will be transmitted to the California Environmental Resources Evaluation System (CERES). CERES is an information system developed by the California Natural Resources Agency to facilitate access to a variety of electronic data describing California's rich and diverse environments. The goal of CERES is to improve environmental analysis and planning by integrating natural and cultural resource information from multiple contributors and by making it available and useful to a wide variety of users. The Alternative 3a Project data may contribute to flood management agencies efforts to design improved flood conveyance channels while enhancing the geomorphic function of the channels.

Deliverable:

Annual Data Transfers	Ongoing
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EXHIBIT A

*Planning
J. Ogden*

BOARD OF SUPERVISORS

COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

Tuesday, November 2, 2010

PRESENT: Supervisors Bruce S. Gibson, Adam Hill, K.H. 'Katcho' Achadjian, James R. Patterson and Chairperson Frank Mecham

ABSENT: None

In the matter of **RESOLUTION NO. 2010-315 and 2010-316:**

This is the time set for consideration of resolutions certifying the Final Environmental Impact Report and adopting the Arroyo Grande Channel Waterway Management Program; and a request to designate the Director of Public Works as the authorized representative to file applications for California Department of Water Resources Stormwater Flood Management grants; 4th District.

Chairperson Mecham: opens the floor to public comment.

Mr. Eric Greening, speaks.

Thereafter, on motion of Supervisor K.H. 'Katcho' Achadjian, seconded by Supervisor Adam Hill, and on the following roll call vote:

AYES: Supervisors: K.H. 'Katcho' Achadjian, Adam Hill, Bruce S. Gibson, James R. Patterson, Chairperson Frank Mecham

NOES: None

ABSENT:None

RESOLUTION NO. 2010-315, resolution certifying the Arroyo Grande Creek Channel Management Program Final Environmental Impact Report, Adopting Findings, the Mitigation Monitoring Program, and the Arroyo Grande Creek Channel Waterway Management Program; the Arroyo Grande Creek Channel Waterway Management Program October 2010 and directs staff to pursue funding and implementation of the projects and activities within the Program; and RESOLUTION NO. 2010-316, resolution designating the Director of Public Works as the authorized representative to file applications for California Department of Water Resources Stormwater Flood Management Grants, adopted.

cc: Public Works (2)
11/12/2010 cmc

STATE OF CALIFORNIA)
)
County of San Luis Obispo) ss.

I, **JULIE L. RODEWALD**, County Clerk and Ex-Officio Clerk of the Board of Supervisors, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors, as the same appears spread upon their minute book.

WITNESS my hand and the seal of the said Board of Supervisors, affixed this 12th day of Novemer, 2010.

(SEAL) **JULIE L. RODEWALD**
County Clerk and Ex-Officio Clerk of the Board of Supervisors

By *CM Christensen*
Deputy Clerk

Public Works
Open

BEFORE THE BOARD OF SUPERVISORS

of the

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Tues day, November 2, 2010

PRESENT: Supervisors Bruce S. Gibson, Adam Hill, K.H. 'Katcho' Achadjian, James R. Patterson and Chairperson Frank Mecham

ABSENT: None

RESOLUTION NO. 2010-315

RESOLUTION CERTIFYING THE ARROYO GRANDE CREEK CHANNEL MANAGEMENT PROGRAM FINAL ENVIRONMENTAL IMPACT REPORT, ADOPTING FINDINGS, THE MITIGATION MONITORING PROGRAM, AND THE ARROYO GRANDE CREEK CHANNEL WATERWAY MANAGEMENT PROGRAM

The following resolution is now offered and read:

WHEREAS, the lower Arroyo Grande Valley has a long history of flooding and severe damage to agricultural and residential lands resulting in levees being built along lower Arroyo Grande Creek and the lower portion of Los Berros Creek, which was diverted in 1961 to provide flood control; and

WHEREAS, the flood control channel has experienced a significantly reduced capacity due to sediment accumulation and vegetation growth necessitating regulatory permitting to conduct channel maintenance activities; and

WHEREAS, in 2005, the District approved funding for an Alternatives Study which was completed and a preferred alternative was selected by the Zone 1/1A Advisory Committee which became the Arroyo Grande Creek Channel Waterway Management Program; and

WHEREAS, on December 1, 2009, the 1959 Maintenance Agreement was terminated by all parties (District, NRCS, SLCRCD), nevertheless, the District and Resource Conservation District (RCD) desire to coordinate on maintenance of the Creek Channel; and

WHEREAS, a Notice of Preparation was circulated to interested parties and responsible agencies for the preparation of a Draft Environmental Impact Report regarding implementation of the Arroyo Grande Creek Channel Waterway Management Program; and

WHEREAS, a Draft Environmental Impact Report was completed and circulated for a 45 day public review on June 3, 2010; and

WHEREAS, comments were received and revisions were incorporated into the Final Environmental Impact Report (FEIR); and

WHEREAS, the District held a public meeting on November 2, 2010, to certify the FEIR for the proposed Arroyo Grande Creek Channel Waterway Management Program; and

WHEREAS, at said meeting, the Flood Control and Water Conservation District heard and received all oral and written protests, objections, and evidence, which were made, presented, or filed, and all persons present were given the opportunity to hear and be heard in respect to any matter relating to the Arroyo Grande Creek Channel Waterway Management Program.

NOW THEREFORE, BE IT RESOLVED AND ORDERED by the Flood Control and Water Conservation District of the County of San Luis Obispo, State of California, in a regular meeting assembled on the second day of November, 2010, certifies that the Arroyo Grande Creek Channel Waterway Management Program Final Environmental Impact Report (FEIR), which is attached hereto (Attachment "C") and incorporated herein, has been prepared and completed in compliance with the California Environmental Quality Act, California Public Resources Code Section 21000 et seq.

The Flood Control and Water Conservation District reviewed and considered the information contained in the FEIR and that the FEIR reflects the lead agency's independent judgment and analysis. Furthermore, the Flood Control and Water Conservation District hereby adopts the recommended findings of the County Environmental Coordinator and the Mitigation Monitoring Plan, which are attached hereto (Attachment "B") and incorporated herein as though fully set forth.

NOW THEREFORE, BE IT FURTHER RESOLVED AND ORDERED that the Arroyo Grande Channel Waterway Management Program of October, 2010 (Attachment "A") is hereby adopted and the Public Works Director and/or his designee shall pursue funding and implementation of the projects and activities within said program which is attached hereto (Attachment "A") and incorporated herein as though fully set forth.

#####

Upon motion of Supervisor Achadjian, seconded by Supervisor Hill, and on the following roll call vote, to wit:

AYES: Supervisors Achadjian, Hill, Gibson, Patterson, Chairperson Mecham

NOES: None

ABSENT: None

ABSTAINING: None

the foregoing Resolution is hereby adopted.

FRANK MECHAM
Chairperson of the Board of Supervisors

ATTEST:

JULIE L. RODEWALD
Clerk of the Board of Supervisors

By: C.M. CHRISTENSEN
Deputy Clerk

(SEAL)

APPROVED AS TO FORM AND LEGAL EFFECT:

WARREN R. JENSEN
County Counsel

By: /s/ Timothy J. McNulty
Deputy County Counsel

Dated: 10/20/2010

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STATE OF CALIFORNIA, }
County of San Luis Obispo, } ss.

I, JULIE L. RODEWALD, County Clerk and ex-officio Clerk of the Board of Supervisors, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors, as the same appears spread upon their minute book.

WITNESS my hand and the seal of said Board of Supervisors, affixed this 12TH day of November, 2010.

JULIE L. RODEWALD
County Clerk and Ex-Officio Clerk of the Board of Supervisors

(SEAL)

By 
Deputy Clerk.

BEFORE THE BOARD OF SUPERVISORS

of the

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Tuesday, November 2, 2010

PRESENT: Supervisors Bruce S. Gibson, Adam Hill, K.H. 'Katcho' Achadjian, James R. Patterson and Chairperson Frank Mecham

ABSENT: None

RESOLUTION NO. 2010-316

RESOLUTION DESIGNATING THE DIRECTOR OF PUBLIC WORKS AS THE AUTHORIZED REPRESENTATIVE TO FILE APPLICATIONS FOR CALIFORNIA DEPARTMENT OF WATER RESOURCES STORMWATER FLOOD MANAGEMENT GRANTS

The following Resolution is now offered and read:

WHEREAS, the State of California has established Stormwater Flood Management Grant funding pursuant to the Disaster Preparedness and Flood Prevention Bond Act of 2006 (Public Resource Code Section 5096.800 et seq.) (Also known as Proposition 1E); and

WHEREAS, the Director of Public Works is especially suited to ensure that grant application materials related to water projects are prepared in a complete, efficient, and adequate manner; and

WHEREAS, the Director of Public Works has the authority to ensure that projects are carried out in full compliance with the applicable permits and agreements;

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District, that application be made to the California Department of Water Resources and State Water Resources Control Board to obtain Stormwater Flood Management Grant funding pursuant to the Disaster Preparedness and Flood Prevention Bond Act of 2006 (Public Resource Code Section 5096.800 et seq.), for the Arroyo Grande Creek Channel Waterway Management Program project Alternative 3A/3C proposal. The Director of Public Works of the County of San Luis Obispo is hereby authorized and directed to prepare the necessary data, make investigations, execute a grant agreement with (approved as to form by County Counsel) the California Department of Water Resources and file such application.

Upon motion of Supervisor Achadjian, seconded by Supervisor Hill, and on the following roll call vote, to wit:

AYES: Supervisors Achadjian, Hill, Gibson, Patterson, Chairperson Mecham

NOES: None

ABSENT: None

ABSTAINING: None

the foregoing Resolution is hereby adopted.

FRANK MECHAM
Chairperson of the Board of Supervisors

ATTEST:

JULIE L. RODEWALD
Clerk of the Board of Supervisors

By: C.M. CHRISTENSEN
Deputy Clerk
(SEAL)

APPROVED AS TO FORM AND LEGAL EFFECT:

WARREN R. JENSEN
County Counsel

By: /s/Timothy J. McNulty
Deputy County Counsel

Dated: 10/20/2010

L:\UTILITY\NOV10\BOS\Designate Dir as Auth Rep to File App for CA DWR Grants RSL.doc.jp.taw

STATE OF CALIFORNIA, }
County of San Luis Obispo, } ss.

I, JULIE L. RODEWALD, County Clerk and ex-officio Clerk of the Board of Supervisors, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors, as the same appears spread upon their minute book.

WITNESS my hand and the seal of said Board of Supervisors, affixed this 12TH day of November, 2010.

JULIE L. RODEWALD
County Clerk and Ex-Officio Clerk of the Board of Supervisors

By CMChristensen
Deputy Clerk.

EXHIBIT AA

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 2. No net increase of invasive species populations after Year 2015.	Update invasive species map every three years following adoption of the WMP
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 (Flossi 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.

EXHIBIT BB

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
<p>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.</p>		<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 	<p>Significant.</p>

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
		<p>protocol;</p> <ul style="list-style-type: none"> 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. <p>c. The MMP will be implemented after initial vegetation and sediment removal activities.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>	

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
		<p>activities shall be checked by biological monitor(s) to ensure a dry work environment and minimize adverse effects to aquatic species and habitats.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>BR/mm-11 During implementation of the WMP, no pets shall be allowed on the construction site.</p> <p>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.</p> <p>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</p>	

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
		<p>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.</p> <p>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.</p>	
<p>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.</p>	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.
<p>BR Impact 3 Construction of the Alternative 3a and/or 3c levee raise would temporarily impact to jurisdictional areas, resulting in a significant impact.</p>	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.
<p>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.</p>	Short-term	Implement BR/mm-1 through 14 as applicable to the UPRR component of the project.	Class III Less Than Significant.
<p>BR Impact 5 Implementation of the WMP could result in take of federally listed marsh sandwort, Gambel's watercress, or other sensitive plant species.</p>	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.	
<p>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.</p>	Long-term	<p>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.</p> <p>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.</p>	Class III Less Than Significant.
<p>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.</p>	Long-term	<p>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.</p> <p>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.</p> <p>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</p>	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
		<p>training program. All construction personnel conducting in-stream work shall participate in the training program conducted by a qualified biologist.</p> <p>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.</p> <p>BR/mm-21 During construction, non-native fish and other aquatic species shall be permanently removed from Arroyo Grande Creek when captured.</p> <p>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.</p> <p>BR/mm-23 During construction, the biological monitor shall</p>	

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

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Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		<p>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.</p>	
<p>BR Impact 8 Vegetation and sediment management activities have the potential to directly and/or indirectly impact the federally listed California red-legged frog.</p>	<p>Long-term</p>	<p>Implement BR/mm-3 through 14, 22, and 23.</p> <p>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.</p> <p>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.</p> <p>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,</p>	<p>Class III Less Than Significant.</p>

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Description of Impact	Short/ Long-term	Mitigation Measure Summary	Residual Impact
		<p>provided that a qualified person is on hand to answer any questions.</p> <p>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.</p> <p>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.</p> <p>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.</p>	
<p>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,</p>	<p>Long-term</p>	<p>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</p>	<p>Class III Less Than Significant.</p>

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(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 CNDDDB 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	<p>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.</p> <p>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.</p> <p>BR/mm-33 Prior to construction, the District shall coordinate</p>	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
		<p>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.</p> <p>BR/mm-34 Vegetation removal in potential nesting habitats shall be monitored and documented by the biological monitor(s) regardless of time of year.</p>	
<p>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.</p>	Long-term	Implement BR/mm-3, 14, and 22 through 29.	Class III Less Than Significant.
<p>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.</p>	Short-term	<p>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.</p> <p>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</p>	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
		<p>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.</p> <p>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).</p> <p>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.</p> <p>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.</p> <p>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</p>	

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(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: <ol style="list-style-type: none"> 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			
<p>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.</p>	Long-term	<p>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.</p> <p>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.</p>	Class III Less Than Significant.
<p>GS Impact 2 Foundation and/or embankment seepage may result in localized destabilization of the levees.</p>	Long-term	<p>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.</p>	Class III Less Than Significant.
<p>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.</p>	Long-term	<p>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.</p> <p>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</p>	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
		<p>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.</p> <p>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.</p> <p>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.</p>	
HAZARDS AND HAZARDOUS MATERIALS			
<p>HAZ Impact 1 The construction of Alternative 3c may require the relocation of potentially explosive liquid natural gas storage tanks.</p>	Short-term	<p>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.</p>	Class III Less Than Significant.
<p>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.</p>	Short-term	<p>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.</p>	Class III Less Than Significant.

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(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.

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			
<p>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.</p>	<p>Short-term</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>	<p>Class III Less Than Significant.</p>

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
		<p>agricultural land that are not part of the permanent floodway easement.</p> <p>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.</p>	
<p>AGR Impact 2 Raising the UPRR bridge would result in the temporary disturbance of approximately 1.5 acres of prime soils.</p>	<p>Short-term</p>	<p>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.</p>	<p>Class III Less Than Significant.</p>
<p>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.</p>	<p>Short-term</p>	<p>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.</p>	<p>Class III Less Than Significant.</p>

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
<p>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.</p>	<p>Long-term</p>	<p>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.</p>	<p>Class III Less Than Significant</p>
<p>AIR QUALITY</p>			
<p>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.</p>	<p>Short-term</p>	<p>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:</p> <ul style="list-style-type: none"> 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, 	<p>Class III Less Than Significant.</p>

EXHIBIT D

The background of the cover is a photograph of a large, curling ocean wave. The wave is a vibrant blue-green color, with white foam at the crest. In the upper left corner, a sandy beach is visible with some dark rocks. The overall scene is bright and clear, suggesting a sunny day at the beach.

San Luis Obispo County

*Integrated Regional Water
Management Plan*

San Luis Region Integrated Regional Water Management Plan

A Strategic Plan for Sustainable Water Resources to Meet Human and Environmental Needs in San Luis Obispo County

**Adopted
December 2005**

**Amended
July 2007**

**Regional Agency
San Luis Obispo County
Flood Control and Water Conservation District**





SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

County Government Center, Room 207 • San Luis Obispo, CA 93408 • (805)781-5252

July 26, 2007

Members of the San Luis Obispo County Region
Integrated Regional Water Management Planning

Subject: IRWM Plan Update

Dear Members of the San Luis Obispo County Region:

Upon direction of Resolution No. 2005-403 of the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District, the governing body of the regional agency authorized to develop, and that has responsibility for implementation of, the Integrated Regional Water Management Plan (Plan) for the San Luis Obispo County Region have implemented the first year tasks identified in the five-year schedule, originally adopted on December 6, 2005.

Plan Year	Fiscal Year	IRWM Plan Update Activities
#1	2006-07	Review the plan's goals, objectives, strategies, and priorities with stakeholders. Amend Plan.
#2	07-08	No later than January 1, 2008, complete the four (4) plan components that are described in the region's Planning Grant proposal.
#3	08-09	Prepare a status report on plan activities and an interim scorecard. Identify alternative strategies that may enhance implementation efforts.
#4	09-10	Evaluate the results of Plan efforts; prepare the scorecard and compare to baseline developed in Plan Year #1.
#5	2010-11	Update the Plan, its goals and objectives, refine integration strategies, rank new priorities, and consider other changes

Proposed amendments to the Plan were presented at a public workshop on May 23, 2007. Comments received were then incorporated as additional amendments. On July 18, 2007, the Water Resources Advisory Committee, which includes 29 members representing elected officials of all seven cities, other local agencies including the region's community services districts, private water purveyors, agriculture and environmental stakeholders, unanimously approved a motion supporting the updated Plan and the projects being considered for the San Luis Obispo County Region Proposition 50 IRWM implementation grant application (See Section F, Page 4).

On behalf of the District, I would also like to recognize the efforts of Courtney Howard P.E., who led our efforts.

Sincerely,


NOEL KING

Director of Public Works

- Meet Drinking Water Standards
- Groundwater Recharge with High Quality Water

Cambria Community Services District Water System Improvements

The Cambria CSD will be modifying their well system to mitigate contamination in their groundwater supply and meet drinking water standards, and upgrading their piping and storage facilities improve the reliability of their water supply to customers. This will allow Cambria CSD to continue delivering water that meets drinking water standards during an emergency. The need for these projects was established in Cambria's Water Master Plan.

In addition to improving water supply reliability, the Cambria CSD Water System Improvements helps meet the following IRWMP objectives:

- Protect and Improve Source Water Quality
- Meet Drinking Water Standards

D1.4 Flood Management

Flood management reduces risks and damages to life and property due to flooding. The San Luis Obispo region is committed to a flood management approach that considers the opportunities for the protection and enhancement of natural resources. The following four programs demonstrate the region's commitment to this approach.

Flood Control Zone 1/1A Waterway Management Program

Flood Control Zone 1/1A is centered on Arroyo Grande Creek and includes communities from Arroyo Grande to Oceano. The Zone 1/1A Waterway Management Program is a comprehensive set of actions designed to increase the capacity of the leveed lower three miles of Arroyo Grande Creek while simultaneously enhancing water quality and sensitive species habitat within the managed channel. Actions include raising the height of the existing levees, managing in-channel vegetation to enhance habitat, reducing sediment deposition within the channel, implementing specific sediment removal projects, and raising the Union Pacific Railroad Bridge to accommodate higher water levels.

The Program was cooperatively developed by the community, the Coastal San Luis Resource Conservation District, and the San Luis Obispo County Flood Control and Water Conservation District and is described in detail in the Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study completed in January 2006. Initial and on-going funding for the Program is provided by the landowners within Flood Control Districts 1 and 1A through additional property tax assessments approved July 18, 2006.

The County of San Luis Obispo Public Works Department has initiated the environmental review required to obtain the necessary federal and state permits necessary to implement the full Program. This process is anticipated to take approximately three years. However, the high flood risk of the current condition highlights the need to take immediate action on specific elements of the overall Program. The Alternatives Study estimated that the lower three miles of Arroyo Grande Creek would overtop during a 5-year storm, leaving residential neighborhoods to the north and farmlands

to the south with only minimal flood protection. In order to sustain water quality and sensitive species habitat within the managed channel and increase the flood protection to the surrounding neighborhoods while the Program is being permitted, it is necessary to implement several capital improvements. The priority capital improvements are:

- Return north and south levees to design elevation to increase flood protection for residential neighborhoods and farmlands.
- Replace old, in-operable flap gates (check valves), where high flows cause backwater and flooding into the adjacent residential neighborhoods and farmlands.
- Install gates on levee tops to limit access to prevent erosion damage by unauthorized vehicles and reduce illegal dumping of landscaping waste and other debris that can cause flow blockages in the channel which increase the risk of high flows overtopping the levees.
- Conduct bank stabilization at erosion damaged sites identified in the Alternatives Study or during the annual channel inspection.
- Install stream gages at key locations within lower Arroyo Grande Creek to obtain stream data that can be used to update/calibrate the hydrologic model for the watershed that was developed by Swanson Hydrology and Geomorphology Consultants for the Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study. New steam gages will provide additional stream data to better evaluate flood impacts in lower Arroyo Grande Creek.

The Zone 1/1A Waterway Management Program helps meet numerous IRWMP objectives, as identified below:

- Protect and Improve Source Water Quality
- Development and Implementation of TMDLs
- Implement NPDES Phase 2 Stormwater Programs
- Support NPS Plan and Conditional Ag Waiver
- Protect Ecologically Sensitive Lands
- Implement Fish Friendly Projects
- Manage Public Lands Access to Promote Stewardship
- Reduce Invasive Plants and Promote Native Plants
- Distinguish Root Cause of Flooding
- Integrate Ecosystem, Drainage, Recharge in Dev.
- Minimize Risk of Dam/Levee Failure
- Develop Financial Programs for Flood Projects
- Public Outreach, Education and Advocacy

Flood Control Zone 9 Waterway Management Program

Flood Control Zone 9 centers on the San Luis Creek watershed and includes the communities from San Luis Obispo to Avila Beach. The Waterway Management Program is a comprehensive set of actions designed to provide flood protection while simultaneously enhancing water quality and sensitive species habitat. These actions include:

- Mid-Higuera Bypass Channel and Terrace: Construction of a terrace along the creek located above the flow line, and a bypass channel away from the creek to convey larger storms. The

construction would extend from the Marsh Street Bridge to the Madonna Road Bridge, a distance of approximately 1300 feet. The project also includes a vegetation management program focusing on increasing upper shade canopy to allow reduction of lower canopy that interferes with flood waters. The construction reduces debris resulting from out of channel flow and management will reduce invasives to improve habitat and channel stability.

- Los Osos Valley Road (LOVR) Bypass and Culvert Replacements: Construction of a bypass channel on San Luis Obispo Creek above and below LOVR to increase local capacity and reduce high water and flooding of property and State Highway 101. The bypass would be approximately 1300 feet long. Additionally, construction of two new culverts for Prefumo Creek above the confluence with San Luis Obispo Creek. The project also includes a vegetation management program focusing on increasing upper shade canopy to allow reduction of lower canopy that interferes with flood waters. The construction reduces debris resulting from out of channel flow and management will reduce invasives to improve habitat and channel stability.
- Elks Lane Bypass: Construction of a bypass channel on San Luis Obispo Creek from north of Elks Lane to below Prado Rd to increase flood capacity and reduce high water and flooding of property. The bypass would be approximately 3600 feet long. Additionally, construction of low levees at confluence of the new channel and San Luis Obispo Creek. Cuesta Park Detention Enhancement Elevate the State Highway 101 shoulder approximately 16 feet to increase damming capacity of the highway. The construction would take place on San Luis Obispo Creek north of the City limits and would infrequently inundate the Fox Hollow area.
- Stenner Creek Bridge Replacements: Replacement of two bridges on Stenner Creek to pass design storms and prevent storm water from spilling out into residential and commercial areas, crossing State Highway 1.
- Stormdrain Hydro Cleaner Purchase: Purchase of a stormdrain hydro cleaner to provide regular cleaning of storm drains and inlets to remove silt and garbage from the drainage system prior to it being carried into streams during rainy weather.
- Steelhead Passage Improvements: Development of a plan for upper San Luis Obispo creek and constructing corrective improvements to the channel will allow for fish passage and use of the improvements constructed by the City approximately 5 years ago when an upstream dam was removed and step pools constructed.

The Zone 9 Waterway Management Program helps meet numerous IRWMP objectives, as identified below:

- Protect and Improve Source Water Quality
- Development and Implementation of TMDLs
- Implement NPDES Phase 2 Stormwater Programs
- Support NPS Plan and Conditional Ag Waiver
- Protect Ecologically Sensitive Lands
- Implement Fish Friendly Projects
- Manage Public Lands Access to Promote Stewardship
- Reduce Invasive Plants and Promote Native Plants
- Distinguish Root Cause of Flooding
- Integrate Ecosystem, Drainage, Recharge in Dev.
- Minimize Risk of Dam/Levee Failure

- Develop Financial Programs for Flood Projects
- Public Outreach, Education and Advocacy

Federal Flood Insurance Program Compliance Study

The District will conduct a study to review how the region conforms to the Federal National Flood Insurance Program. The study will determine the root cause of flooding problems, develop requirements for adequate creek setbacks, prohibit development in areas of known slope instability or high landslide risk, and restrict development in flood-prone and poorly drained areas.

The Federal Flood Insurance Program Compliance Study will help meet the following IRWMP objectives:

- Distinguish Root Cause of Flooding
- Develop Financial Programs for Flood Projects
- Minimize Risk of Dam/Levee Failure
- Public Outreach, Education and Advocacy

Flood Management Plan

Flood control issues and concerns vary throughout San Luis Obispo County, though many of the constraints and challenges have common threads. Whether the specific flood control challenge relates to levees, such as they do on a grander scale in other regions of the State, or whether they result from antiquated subdivisions that predate current planning and development standards, the San Luis Obispo County Flood Control and Water Conservation District will be developing a model on how to approach these important water resource issues, including steps on how to integrate solutions for multiple benefits and community acceptance. The primary focus of the Flood Management Plan is to identify several of the most significant constraints and propose methods to address the challenges. The ability to fund flood control projects and maintenance costs significantly declined with the passage of Proposition 218 by State voters. Thus, solicitation of stakeholder involvement in this process (especially benefiting property owners who will be responsible to pay for the improvements) is a key element of the work effort, and it is intended that the primary audience for the Plan will be the stakeholders, rather than technical professionals or government officials.

The Flood Management Plan will help meet the following IRWMP objectives:

- Protect and Improve Source Water Quality
- Development and Implementation of TMDLs
- Implement NPDES Phase 2 Stormwater Programs
- Support NPS Plan and Conditional Ag Waiver
- Implement Fish Friendly Projects
- Reduce Invasive Plants and Promote Native Plants
- Conserve Natural Resources
- Protect Groundwater from Point and Non-Point Pollution
- Groundwater Recharge with High Quality Water
- Distinguish Root Cause of Flooding
- Integrate Ecosystem, Drainage, Recharge into Development

- Develop Financial Programs
- Minimize Risk of Dam/Levee Failure
- Public Outreach, Education and Advocacy

D1.5 Groundwater Management

San Luis Obispo County obtains nearly 80 percent of its water from groundwater supplies and protection of this resource is critical to the sustainability of the region. The following five projects help protect and improve the utilization of this critical resource.

Nipomo Community Services District Salt Management Program

The Nipomo CSD will be identifying strategies for managing water supplies to reduce salt input and identifying sources of salt in their wastewater collection system while implementing a pre-treatment program for non-residential dischargers, a retrofit rebate program to encourage voluntary replacement of residential regenerative water softeners with canister systems, a public education program to encourage voluntary mitigation measures and a program to monitor results. This project is intended to decrease the level of salt discharge from the Nipomo CSD's Southland Wastewater Treatment Facility into Nipomo Groundwater Basin and Nipomo Creek, thereby complying with waste discharge requirements, improving source water quality, supporting the implementation of TMDLs, improving the watershed ecosystem and managing the groundwater basin through monitoring efforts, pollution reduction, public outreach, recharge water quality improvement and conflict resolution efforts. These benefits are consistent with many of the IRWMP objectives, as listed below:

- Comply with new Waste Discharge Requirements
- Protect and Improve Source Water Quality
- Development and Implementation of TMDLs
- Support NPS Plan and Conditional Ag Waiver
- Protect Ecologically Sensitive Lands
- Implement Fish Friendly Projects
- Monitor the Region's Groundwater Basins
- Protect Groundwater from Point and Non-Point Pollution
- Groundwater Public Outreach and Education
- Groundwater Conflict Resolution
- Groundwater Recharge with High Quality Water
- Integrate Ecosystem, Drainage, Recharge into Development

Los Osos CSD Water System Improvements

The Los Osos CSD will be implementing the following water system improvement projects, as identified in their Groundwater Management Plan and Water System Master Plan, to manage their groundwater supply cooperatively with other water purveyors relying on the same groundwater basin, and increase water supply reliability and quality:

- Booster Pump Station Upgrade/South Bay Well Upgrade/ Hydro-Pneumatic Zone Expansion: The project design incorporates three (3) components: Boosted Zone Expansion

EXHIBIT H

**BEFORE THE BOARD OF SUPERVISORS OF THE
FLOOD CONTROL AND WATER CONSERVATION DISTRICT**

Tues day April 1, 2003

PRESENT: Harry L. Ovitt, Shirley Bianchi, Peg Pinard, K.H. "Katcho" Achadjian,
and Chairperson Michael P. Ryan

ABSENT: None

RESOLUTION NO. 2003-105

**RESOLUTION TO RELINQUISH THE ARROYO GRANDE AND
LOS BERROS DIVERSION FLOOD CONTROL CHANNELS AND
APPURTENANT STRUCTURES TO THE STATE OF CALIFORNIA**

The following resolution is hereby offered and read:

WHEREAS, in 1945 the State of California by legislative enactment created the San Luis Obispo County Flood Control and Water Conservation District ("District") (West Publishing Company, Water Code Appendix section 49-1, et seq., Deering's California Water Code, uncodified acts, Act 7205); and

WHEREAS, on November 22, 1955 the State of California and the District entered into a Watershed Work Plan Agreement with the United States Department of Agriculture Soil Conservation Service to develop a flood control project for the Arroyo Grande Creek Watershed; and

WHEREAS, the District plan of improvement for flood protection on Arroyo Grande Creek and tributaries was adopted and authorized by the State of California substantially in accordance with the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress, 68 Stat., 566); and

WHEREAS, the District undertook, in the Watershed Protection Operation and Maintenance Agreement dated May 15, 1959, responsibility for the operation and maintenance of the works of improvement referred to therein as the Arroyo Grande and Los Berros Diversion Flood Control Channels and Appurtenant Structures (hereinafter collectively referred to as "the Structures"); and

WHEREAS, the District formed Zone 1 to maintain and operate that portion of the Structures known as the Arroyo Grande Creek Levee, and formed Zone 1A to maintain and operate that portion of the Structures known as the Los Berros Creek Diversion Channel; and

B.R.
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WHEREAS, the District has made a good faith effort to perform its operation and maintenance duties; and

WHEREAS, on March 5, 2001, after a major storm event, the waters of Arroyo Grande Creek and its tributaries overtopped and breached the south levee on Arroyo Grande Creek resulting in extensive flooding. Ensuing litigation has been filed against the County of San Luis Obispo and the District seeking cumulatively millions of dollars; and

WHEREAS, the passage of Proposition 13 in June of 1978, the passage of Proposition 62 in November 1986 and the passage of Proposition 218 in November of 1996, have significantly restricted the District's ability to raise revenue for the operation and maintenance of the Structures and needed improvements to the Structures; and

WHEREAS, the passage of Proposition 13 gave the State of California control of the distribution of the local property tax collected in each county; and

WHEREAS, in 1979 the State of California adopted Assembly Bill 8 which, among other things, provided each taxing entity with a share of the local property tax and established a Special District Augmentation Fund in each County controlled by the Board of Supervisors and distributed annually among the various special districts in the County; and

WHEREAS, the Special District Augmentation Fund provided the Board of Supervisors with the authority to distribute funds among local special districts and the ability to balance the resources and responsibilities of the various special districts; and

WHEREAS, for many years the District received a distribution of funds from the Special District Augmentation Fund to augment the financial resources otherwise available to the District; and

WHEREAS, in 1992-93 the State of California established an Educational Revenue Augmentation Fund ("ERAF") and financed the ERAF by confiscating the property tax funds allocated to local taxing entities pursuant to the concepts, formulas and procedures established by Assembly Bill 8 of 1979; and

WHEREAS, in 1993-94 the State of California increased the County's payment to the ERAF by requiring a massive increase in the County General Fund property tax revenues required to be deposited in the ERAF and by abolishing the Special District Augmentation Fund and diverting the revenues that would have otherwise been placed in the Special District Augmentation Fund into the ERAF; and

WHEREAS, for the 11-year period commencing in 1992-93 and ending in 2002-03 the County General Fund and Special Districts governed by the Board of Supervisors have deposited a total of \$179,798,614 in local property tax funds into the State's ERAF; and

WHEREAS, the funds placed in the State's ERAF were needed for local programs and services including the operations of the flood control programs of the District, including but not limited to the Arroyo Grande Levee System; and

WHEREAS, the Natural Resources Conservation Service regularly inspects the Structures alongside local maintenance staff; and

WHEREAS, the last Natural Resources Conservation Service inspection was on October 7, 2002, and at that time the Service identified several minor corrective actions required, all of which have been addressed by local maintenance staff within existing regulatory restraints; and

WHEREAS, the resources of the District are inadequate to continue to properly maintain the Structures, to finance necessary upgrades and improvements to the Structures or to maintain or operate the Structures; and

WHEREAS, the State Water Code, beginning with section 12878.1, permits the formation of maintenance areas by the State Department of Water Resources whenever ". . . the governing body of a local agency obligated to operate and maintain any such unit by resolution duly adopted and filed in the department declares that it no longer desires to operate and maintain such unit."

THEREFORE, BE IT RESOLVED that since the District and its Flood Control Zones 1 and 1A face a bleak financial future, the District Board of Supervisors desires to relinquish to the State of California responsibility for all aspects of the ownership, control and maintenance of the Structures.

BE IT FURTHER RESOLVED that the District requests, pursuant to Water Code section 12878, et seq., that the State, immediately form a maintenance area which includes Structures and take over possession and control of all improvements and necessary upgrades or improvements associated with the Structures by the end of this fiscal year. The District Board of Supervisors no longer desires to own, operate or maintain the Structures.

BE IT FURTHER RESOLVED that the only way for local assessees to receive adequate ongoing flood protection is to relinquish all aspects of the Structures to the State of California through its Department of Water Resources.

Upon motion of Director Achadjian, seconded by Director

Ovitt

, and on the following roll call vote, to wit:

AYES: Supervisors Achadjian, Ovitt, Bianchi, Pinard, Chairperson Ryan

NOES: None

ABSENT: None

ABSTAINING: None

the foregoing resolution is hereby adopted.



Chair of the Board of Supervisors of the
San Luis Obispo Flood Control and
Water Conservation District

ATTEST:

Julie L. Rodewald

County Clerk-Recorder

BY: Cheri Aguero Deputy Clerk

APPROVED AS TO FORM AND LEGAL EFFECT:

JAMES B. LINDHOLM, JR.

County Counsel

By: Jac A. Crawford

Jac A. Crawford
Assistant County Counsel

Dated: 3/27/03

STATE OF CALIFORNIA,)
) ss.
County of San Luis Obispo,)

I, Julie L. Rodewald, County Clerk, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors of the San Luis Obispo Flood Control and Water Conservation District, as the same appears spread upon their minute book.

WITNESS my hand and the seal of said Board of Supervisors affixed this 2 day of April, 2003.

(SEAL)

Julie L. Rodewald
County Clerk-Recorder

By *Cheri Cupress*
Deputy Clerk.

6509NEW2.wpd:kt

B-12
9/10

EXHIBIT I

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

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11	Photo of UPRR Bridge during the 2001 flood	35

Appendices

Appendix A	Historical Summary of lower Arroyo Grande Creek
Appendix B	Preliminary Engineering Design Plans

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 leveed 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. It is the hope of the District that this program is viewed as self-mitigating and the document is a useful tool that will allow regulatory agencies to issue multi-year permits for the efficient implementation of the program components.

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:

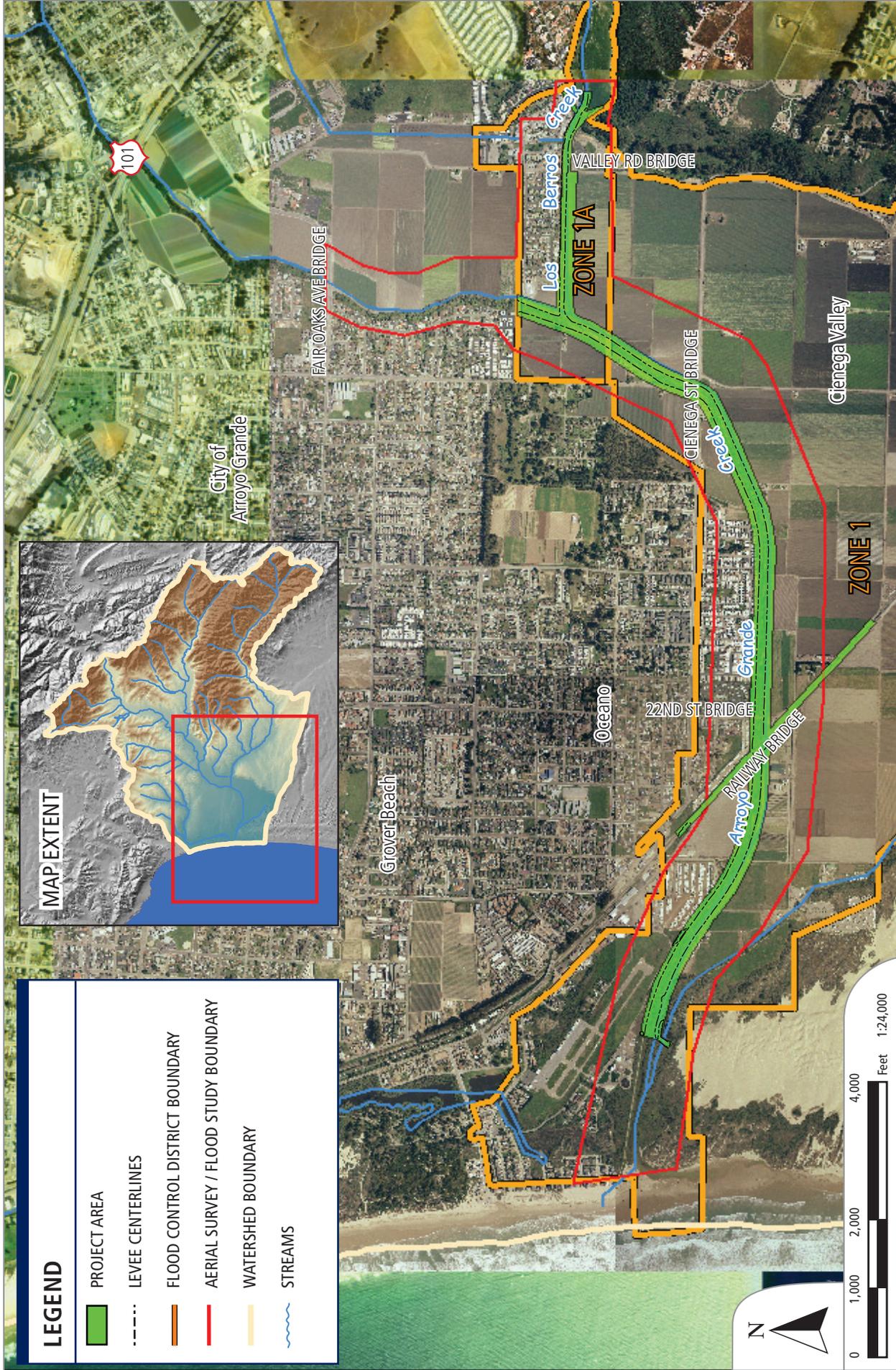


FIGURE 1: General location map for the project and study areas on Arroyo Grande Creek. The hydrology and sediment loads are dominated by tributaries such as Los Berros

- **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.
- **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.)



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.

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 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 through 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 Airport, 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

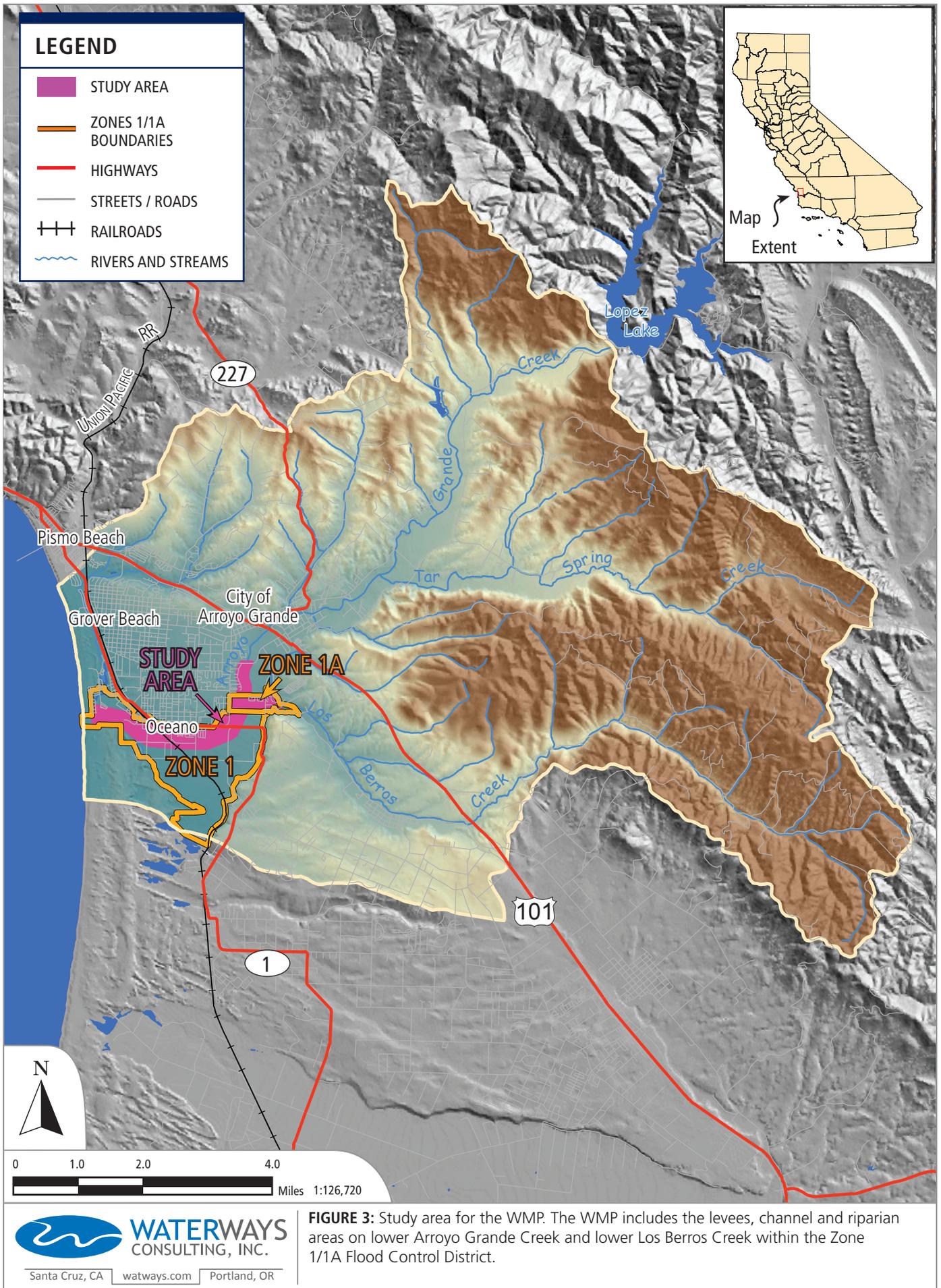




FIGURE 4: Lagoon and flapgate locations.

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 (CNDDDB) 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.

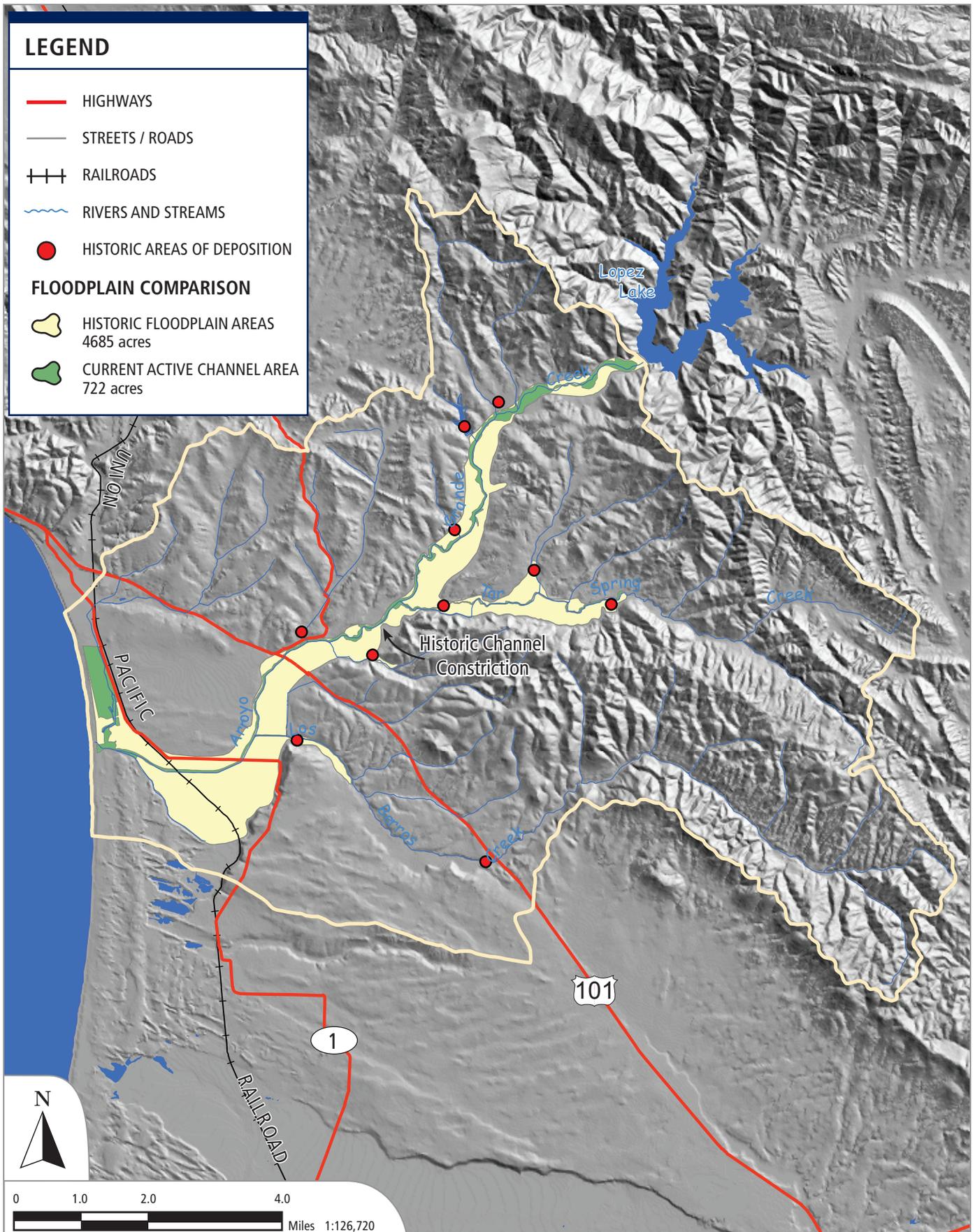


FIGURE 5: Historic versus existing active channel areas on Arroyo Grande Creek and tributary channels downstream of Lopez Reservoir. Mapped surfaces represent areas of active deposition and storage of sediment delivered from the upper watershed. Loss of potential sediment storage in the lower valley 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 ≤ 4.5 parts per thousand (Jennings and Hayes 1994). They are generally found on

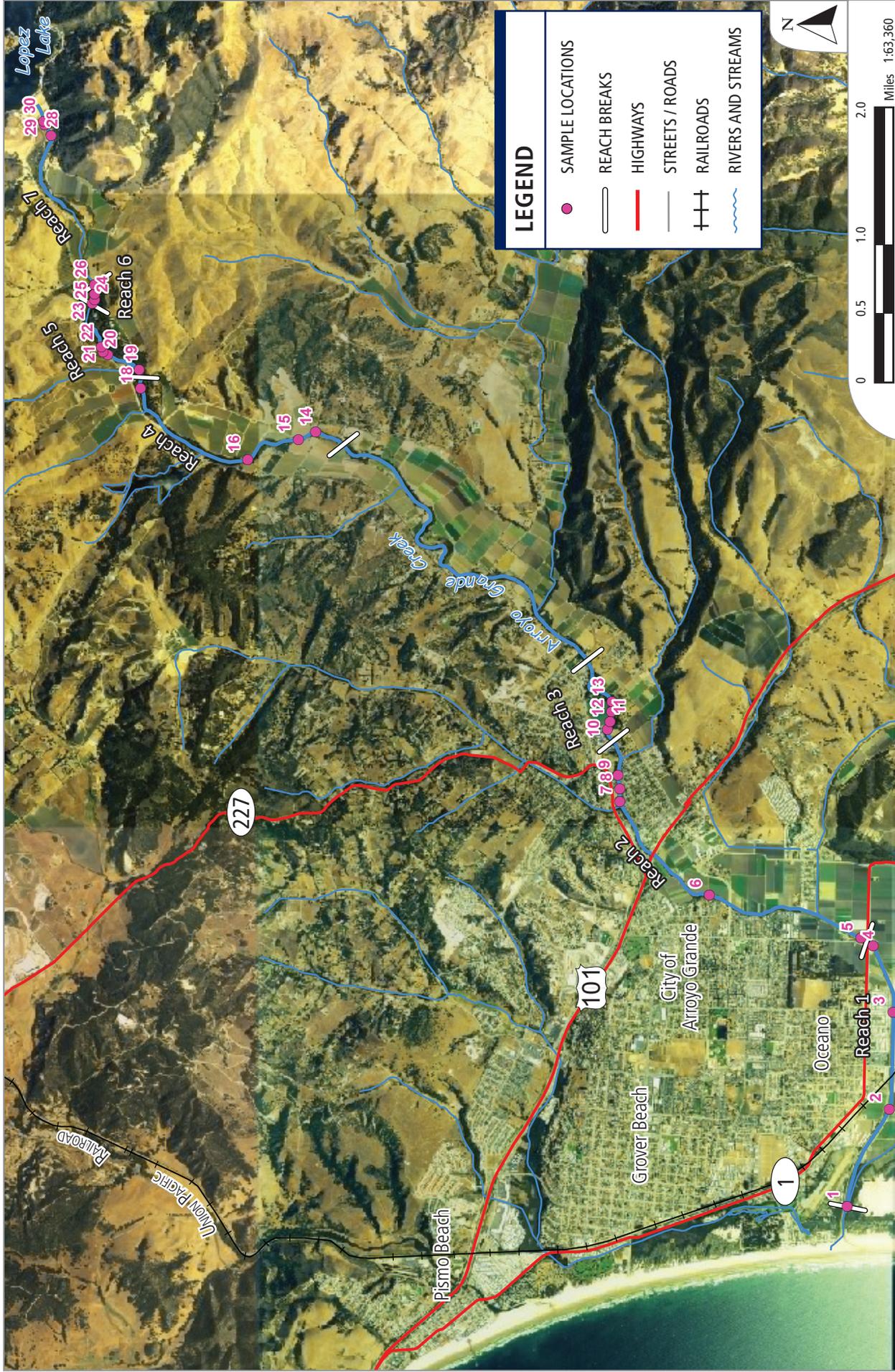


FIGURE 6: Map indicating sample locations for the 2006 relative fish abundance study and geomorphic reaches along Arroyo Grande Creek.

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
2	4		2
	5		0
	6		0
	7		21
	8	6	14
	9		15
3	10		28
	11		7
	12		12
	13	8	22
	14	3	20
4	15		6
	16		16
	18		3
	19		1
5	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.

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



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



November 1999



August 2002



December 2009



April 1999



August 2002



12/28/2009

December 2009

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 [DBH]) 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" DBH 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" DBH will be cut to within 6" of the ground. Trimming the trees on the banks in this manner will encourage growth

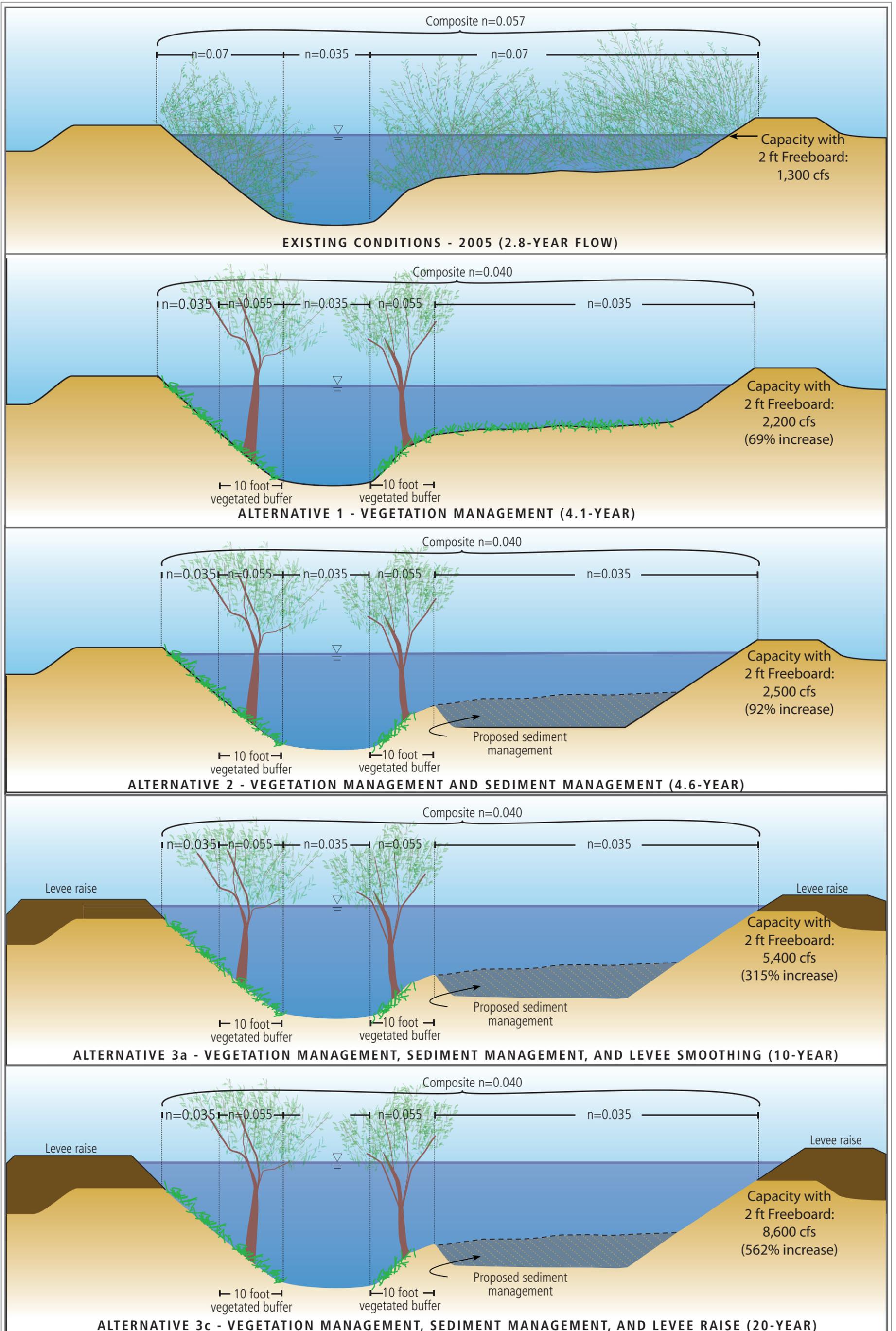


FIGURE 8: Conceptual cross-section view.

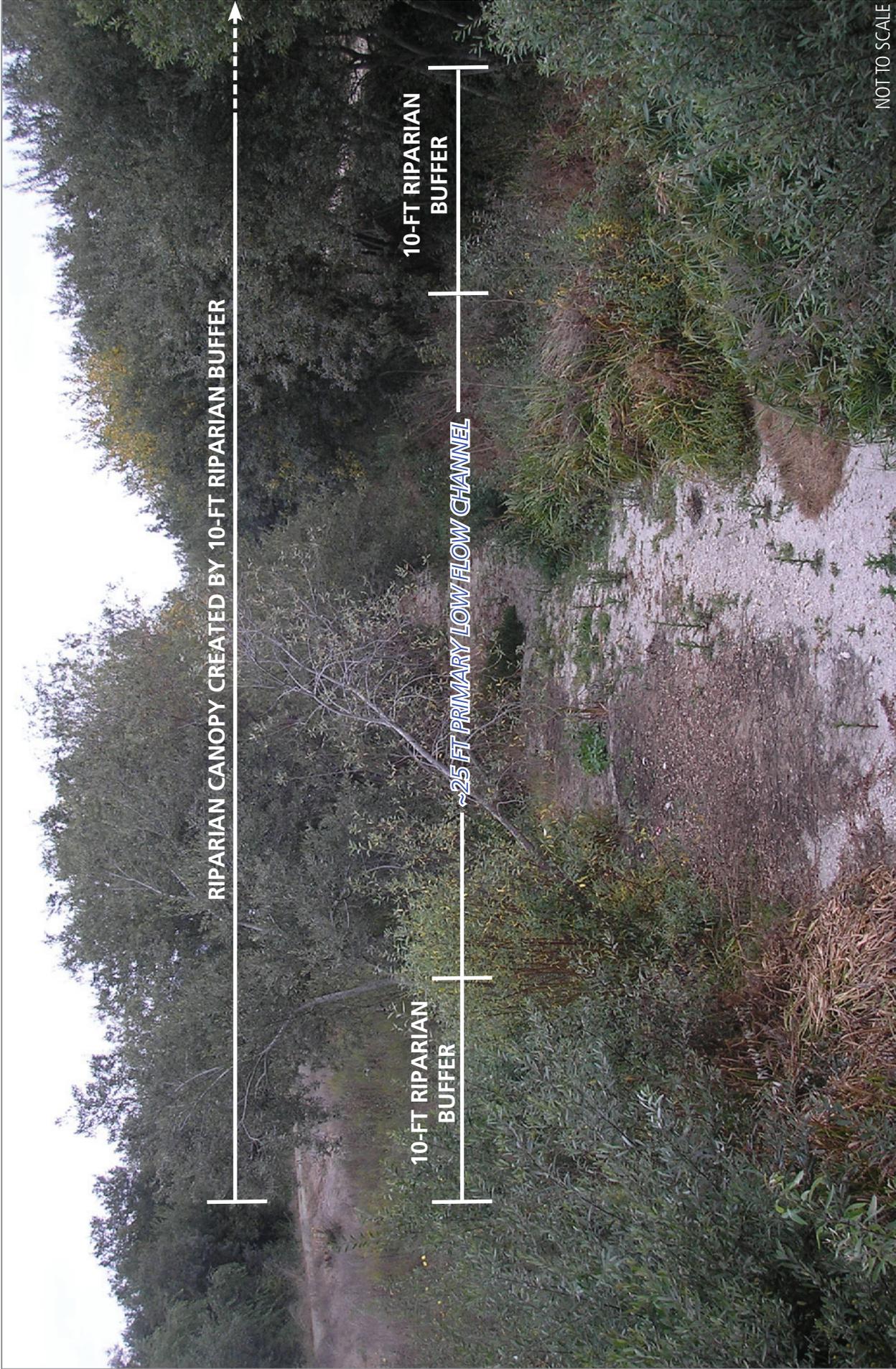


FIGURE 9: Typical view of vegetation maintenance activities.

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.

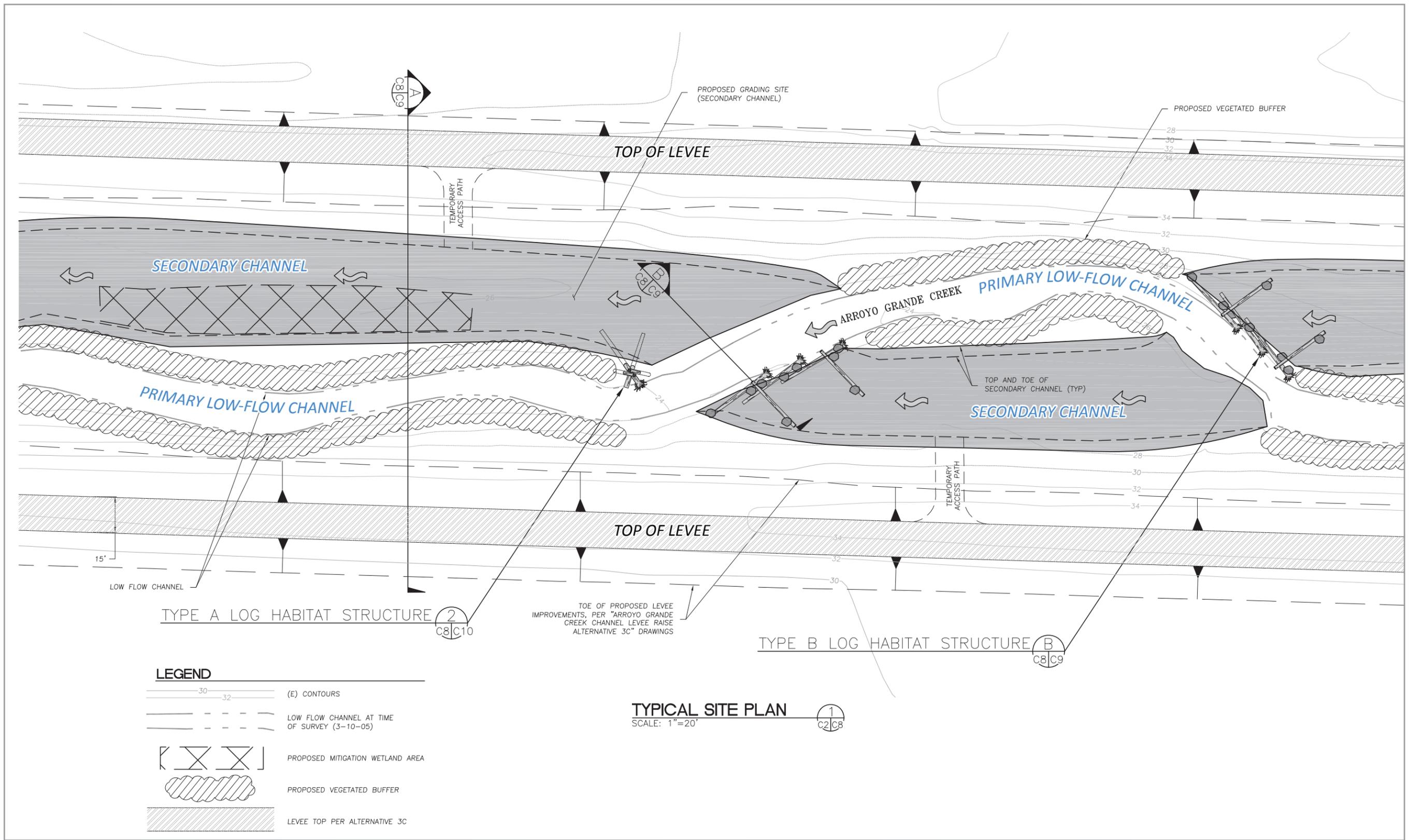
To enhance geomorphic function, improve flood conveyance, and "set" the flood control channel to an initial condition that will enhance sediment transport, a two step process has been proposed for sediment management within the project area. The two step process consists of an initial phase of sediment 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 lunger 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



LEGEND

- (E) CONTOURS
- LOW FLOW CHANNEL AT TIME OF SURVEY (3-10-05)
- PROPOSED MITIGATION WETLAND AREA
- PROPOSED VEGETATED BUFFER
- LEVEE TOP PER ALTERNATIVE 3C

TYPICAL SITE PLAN

SCALE: 1"=20'

FIGURE 10
Conceptual sediment and vegetation management plans for the Arroyo Grande Creek Channel.

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 2. No net increase of invasive species populations after Year 2015.	Update invasive species map every three years following adoption of the WMP
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 (Flossi 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° 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 through 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/IA, 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 Airport, 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 SLOFCWCD 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 SLOFCWCD 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 SLOFCWCD 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 SLOFCWCD, 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

**CONCEPTUAL
NOT FOR CONSTRUCTION**

**PREPARED AT THE
REQUEST OF:
SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND
WATER CONSERVATION
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
0 1"

C1
1 OF 10

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 PERMITTING 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.

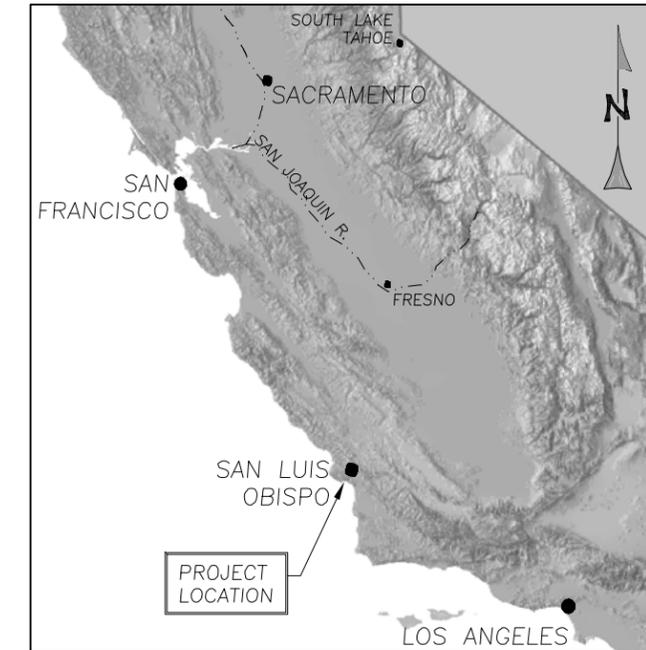
SECTION AND DETAIL CONVENTION

SECTION OR DETAIL IDENTIFICATION
(NUMBER OR LETTER)



REFERENCE SHEET FROM WHICH
DETAIL OR SECTION IS TAKEN.

REFERENCE SHEET ON WHICH
SECTION OR DETAIL IS SHOWN.



REGIONAL MAP
N.T.S.



VICINITY MAP
N.T.S.

SHEET INDEX

C1	COVER SHEET	C6	SITE PLAN 4 OF 5
C2	PROJECT AREA OVERVIEW	C7	SITE PLAN 5 OF 5
C3	SITE PLAN 1 OF 5	C8	TYPICAL SITE PLAN
C4	SITE PLAN 2 OF 5	C9	TYPICAL SECTIONS
C5	SITE PLAN 3 OF 5	C10	DETAILS

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.

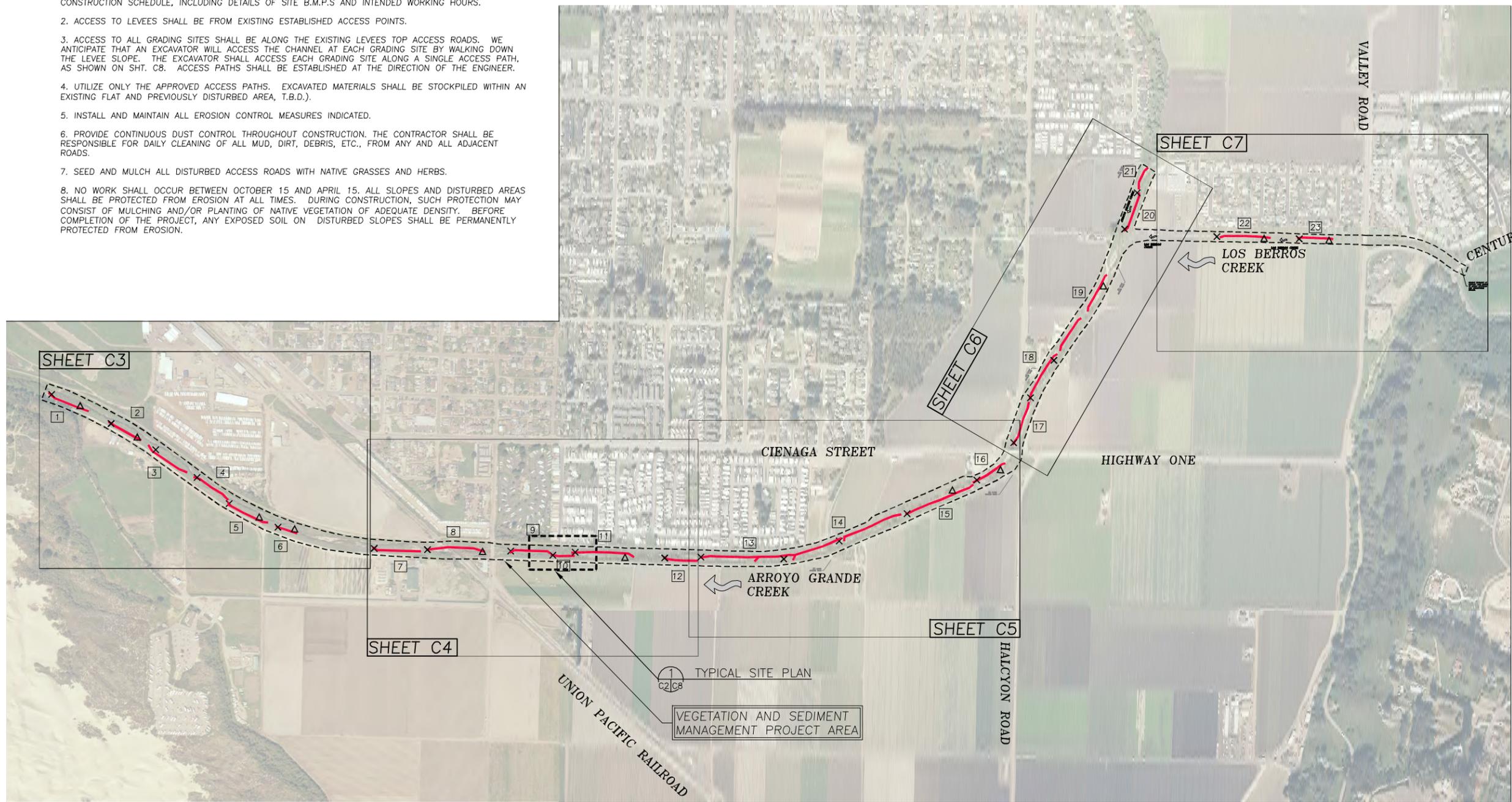
19) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

20) NO CONSTRUCTION SHALL BE STARTED WITHOUT PLANS APPROVED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS. THE DEPARTMENT 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.

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)

CONCEPTUAL
NOT FOR CONSTRUCTION

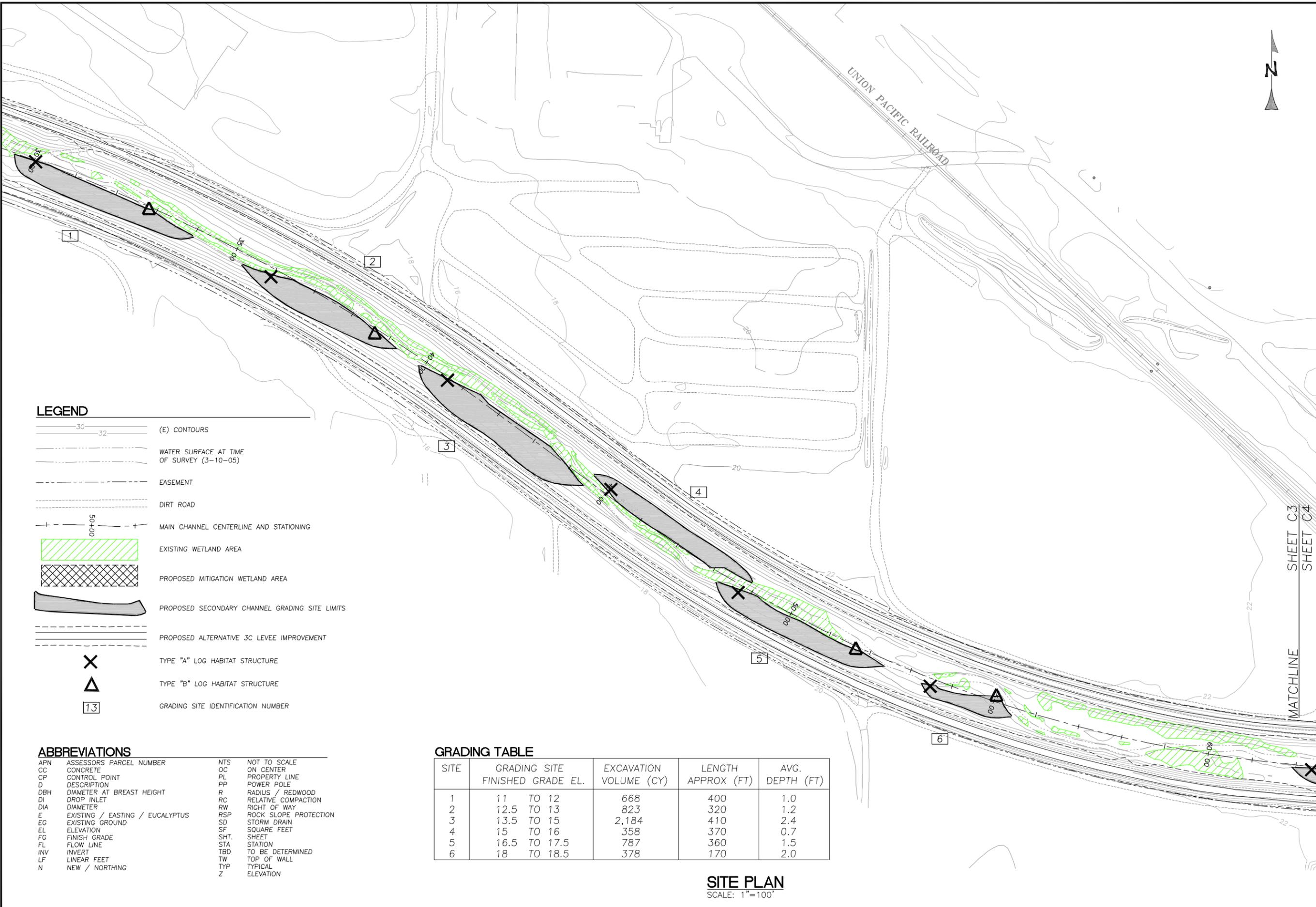
PREPARED AT THE REQUEST OF:
SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

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"



- 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
 - GRADING SITE IDENTIFICATION NUMBER

ABBREVIATIONS

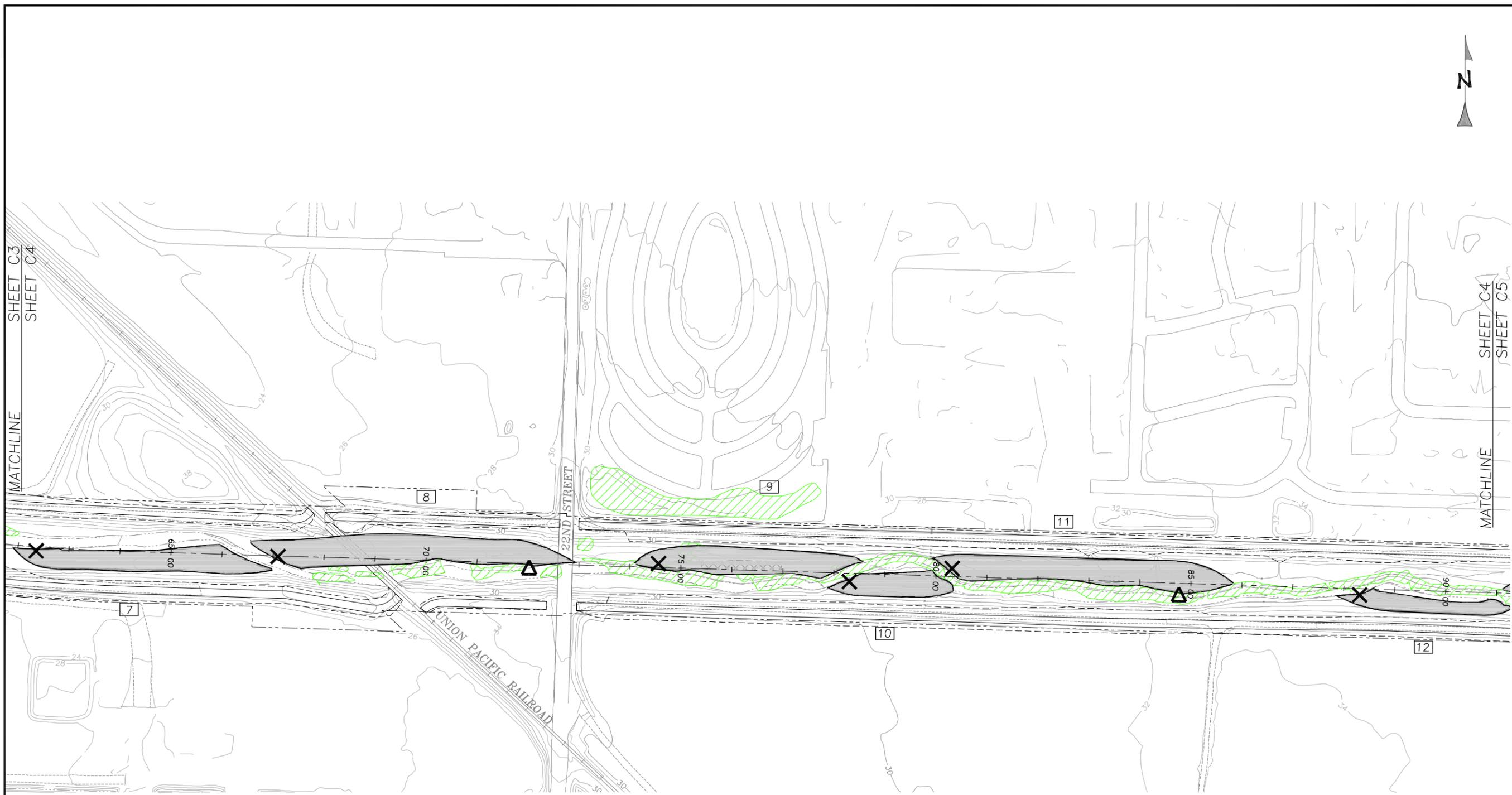
APN	ASSESSORS PARCEL NUMBER	NTS	NOT TO SCALE
CC	CONCRETE	OC	ON CENTER
CP	CONTROL POINT	PL	PROPERTY LINE
D	DESCRIPTION	PP	POWER POLE
DBH	DIAMETER AT BREAST HEIGHT	R	RADIUS / REDWOOD
DI	DROP INLET	RC	RELATIVE COMPACTION
DIA	DIAMETER	RW	RIGHT OF WAY
E	EXISTING / EASTING / EUCALYPTUS	RSP	ROCK SLOPE PROTECTION
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'

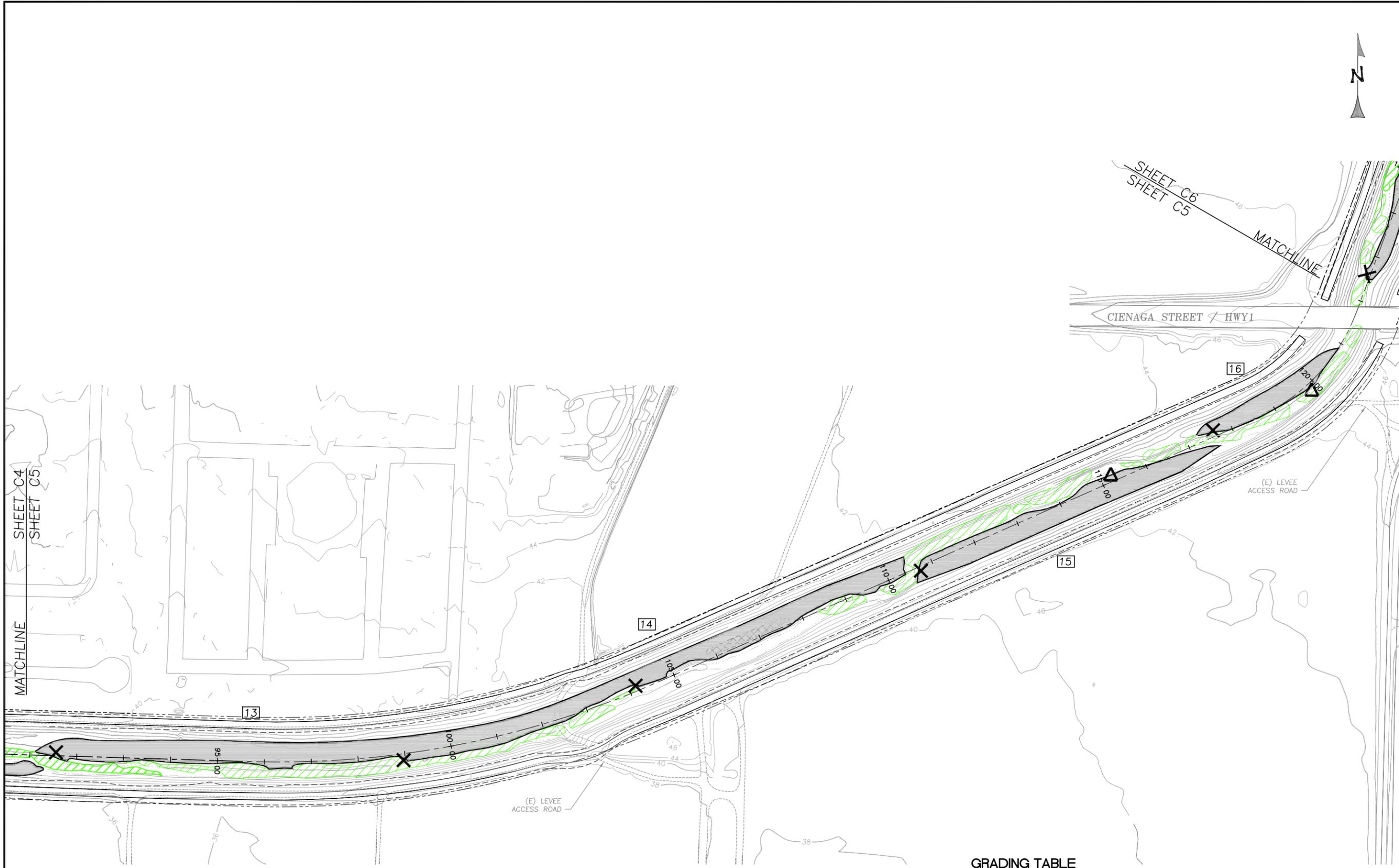
MATCHLINE
 SHEET C3
 SHEET C4



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



SITE PLAN
SCALE: 1"=100'

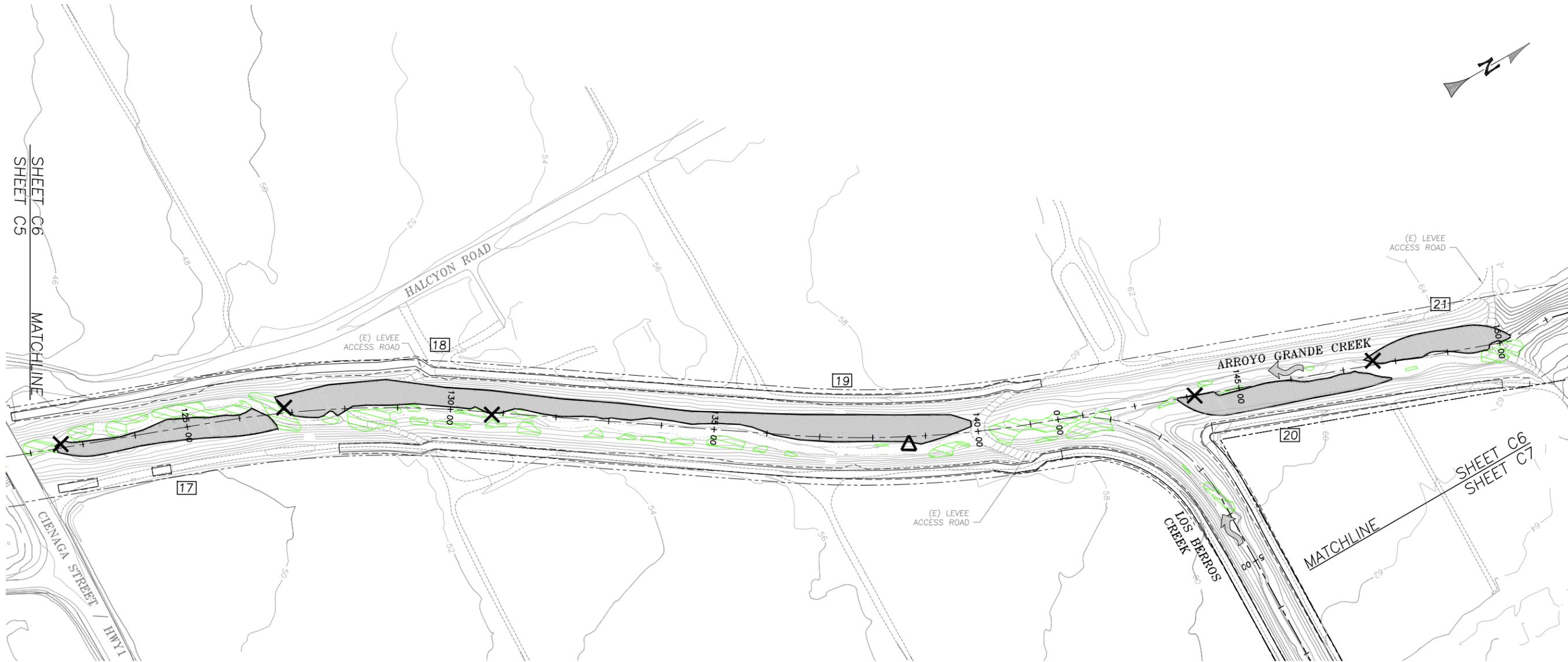
GRADING TABLE

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

DESIGNED BY: B.M.S.
 DRAWN BY: B.M.S.
 CHECKED BY: M.W.W.
 DATE: 9/21/09
 JOB NO.: 08-707

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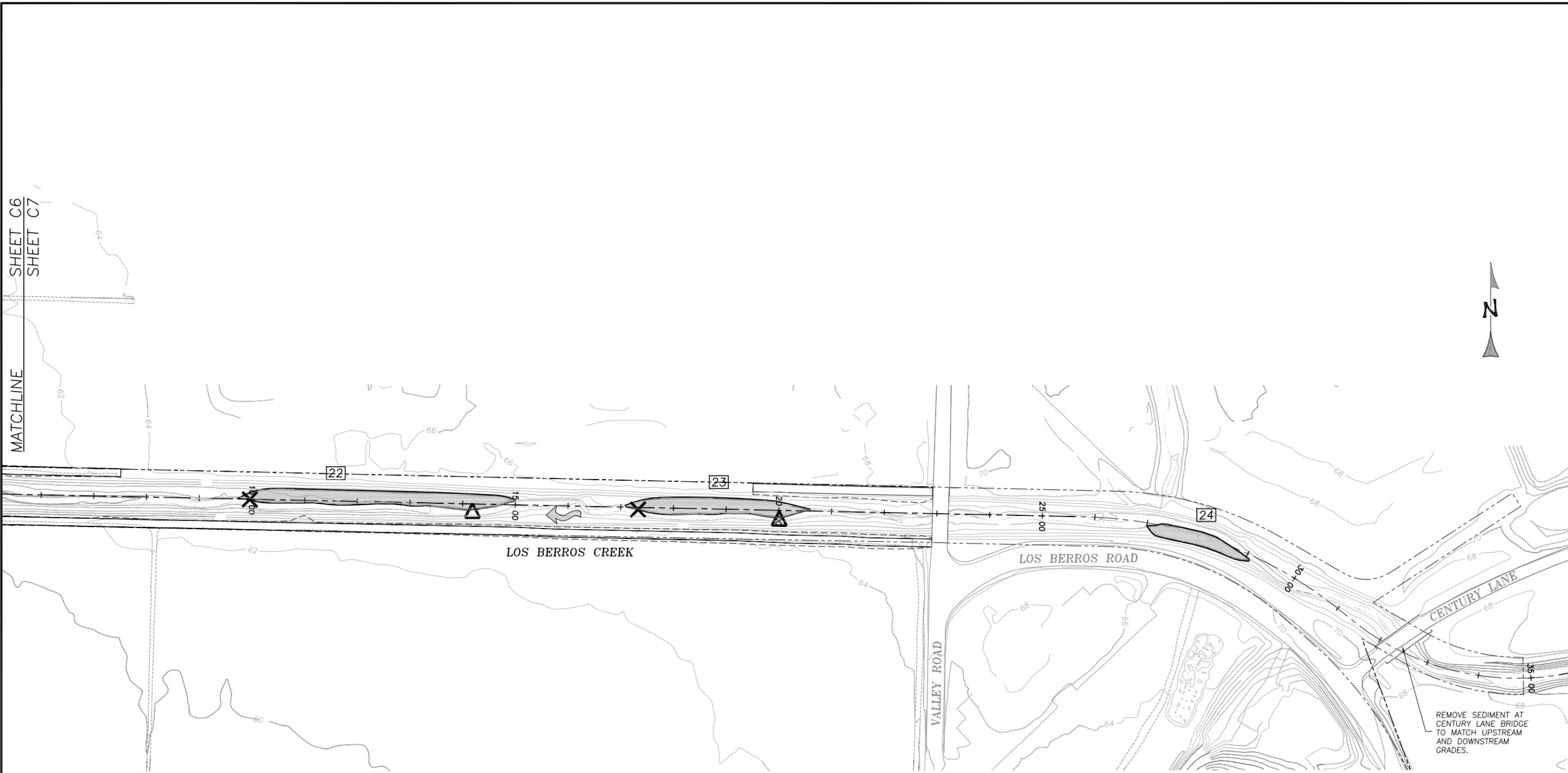
0 1" 5 OF 10



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



SITE PLAN
SCALE: 1"=100'

REMOVE SEDIMENT AT CENTURY LANE BRIDGE TO MATCH UPSTREAM AND DOWNSTREAM GRADES.

MATCHLINE
SHEET C6
SHEET C7

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

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"

C7
7 OF 10

**CONCEPTUAL
NOT FOR CONSTRUCTION**

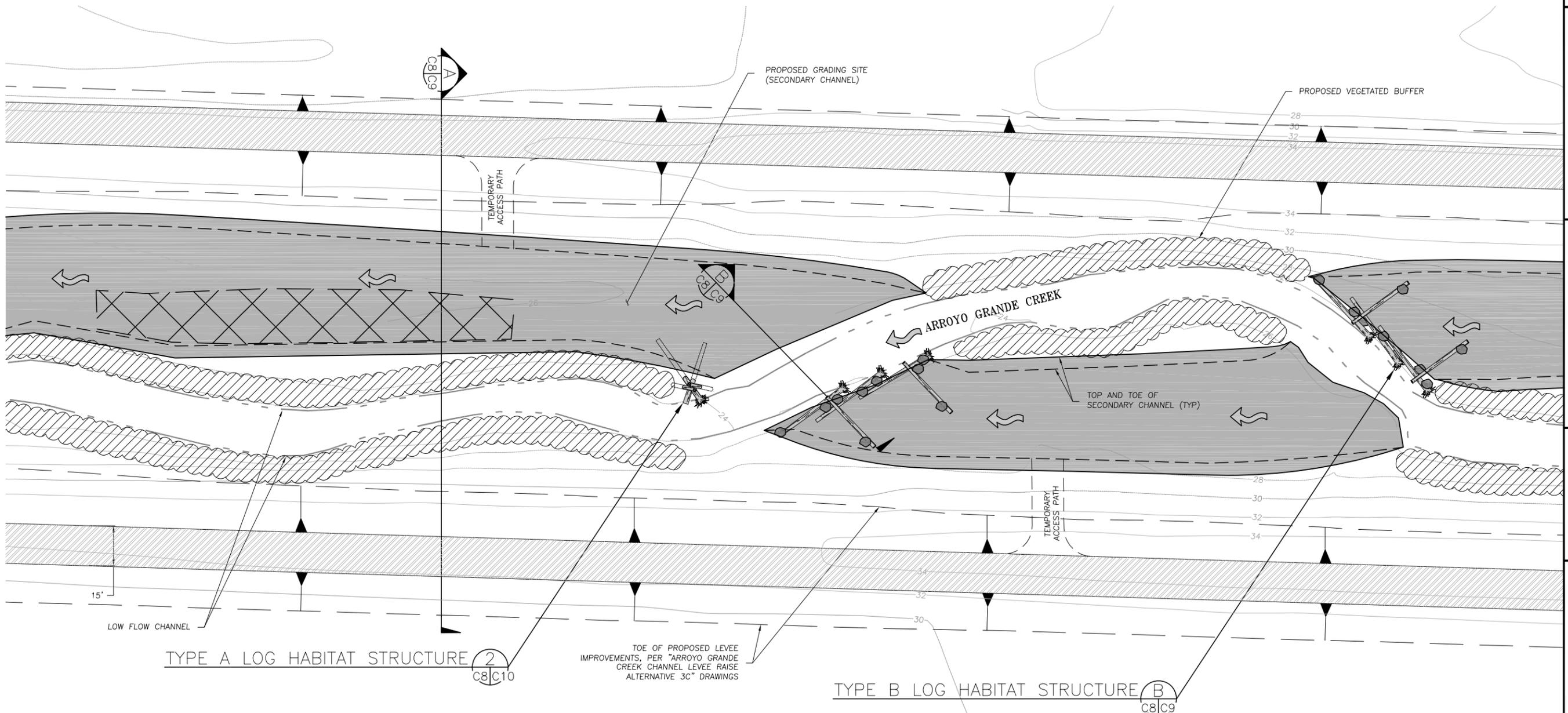
PREPARED AT THE
REQUEST OF:
SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND
WATER CONSERVATION
DISTRICT

TYPICAL SITE
PLAN

ARROYO GRANDE CREEK
CHANNEL SEDIMENT
AND VEGETATION
MANAGEMENT PLAN
CONCEPTUAL PLANS

DESIGNED BY: B.M.S.
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BAR IS ONE INCH ON
ORIGINAL DRAWING.
ADJUST SCALES FOR
REDUCED PLOTS



LEGEND

- (E) CONTOURS
- LOW FLOW CHANNEL AT TIME OF SURVEY (3-10-05)
- PROPOSED MITIGATION WETLAND AREA
- PROPOSED VEGETATED BUFFER
- LEVEE TOP PER ALTERNATIVE 3C

TYPICAL SITE PLAN
SCALE: 1"=20'

1
C2|C8

TYPE A LOG HABITAT STRUCTURE 2
C8|C10

TYPE B LOG HABITAT STRUCTURE B
C8|C9

TOE OF PROPOSED LEVEE IMPROVEMENTS, PER "ARROYO GRANDE CREEK CHANNEL LEVEE RAISE ALTERNATIVE 3C" DRAWINGS

15'

LOW FLOW CHANNEL

PROPOSED GRADING SITE (SECONDARY CHANNEL)

PROPOSED VEGETATED BUFFER

ARROYO GRANDE CREEK

TOP AND TOE OF SECONDARY CHANNEL (TYP)

TEMPORARY ACCESS PATH

TEMPORARY ACCESS PATH

A
C8|C9

B
C8|C9

28
30
32
34

34
32
30

28
30
32
34

34
32
30

2
C8|C10

B
C8|C9