Santa Barbara County
Flood Control and Water Conservation District

Final Updated Debris Basin Maintenance and Management Plan

September 2022

TABLE OF CONTENTS

FIGURES

PHOTOGRAPHS

1.0 Introduction

The Santa Barbara County Flood Control and Water Conservation District (District) prepared Debris Basin Maintenance Plans in 1996 and 2003 that describe maintenance of the District's 17 debris basins along the south coast of Santa Barbara County. In 2016 the District completed a consultation process with the Army Corps of Engineers (ACOE) and the National Marine Fisheries Service (NMFS) for the Southern California Distinct Population Segment for steelhead (*O. mykiss*). The resulting Biological Opinion requires the District to "implement a flood control maintenance plan that requires establishing and preserving essential processes that maintain features of critical habitat for endangered steelhead within the action area."

The Biological Opinion requires the District to remove fish passage obstacles or modify five debris basins (Referred to as Group 1 Basins[1]) within the ensuing 10-year period (2016-2026) associated with the ACOE Standard Individual Permit that regulates the District's Debris Basin Maintenance and Management.

The District's routine maintenance program is described in the 2001 Programmatic Environmental Impact Report for the Updated Routine Maintenance Program (PEIR). Following the 2016 consultation and ACOE Standard Individual Permit, the District prepared an updated document (the 2017 Updated Debris Basin Maintenance and Removal Plan DBMRP) as an Addendum to the PEIR to incorporate designs and plans to modify five debris basins as required in the Biological Opinion. The 2017 DBMRP served as the environmental review and public disclosure document for routine maintenance and basin modifications.

In the aftermath of the Thomas Fire in late 2017 early 2018, followed by the devastating debris flow on Jan 9, 2018, the District looked to continue large debris capture in certain basins that would be in line with the requirements of NMFS and also reduce the fine grain sediment capture that increased District costs and caused disposal issues. The District, NMFS, and ACOE have worked closely to find solutions that will comply with the requirements of the Biological Opinion and will allow the District to continue to fulfill public safety and flood-protection objectives.

The 2017 iteration of the DBMRP included Rattlesnake Debris Basin in Group 1. Following the disaster events of 2017/2018, the District discussed with NMFS and agreed to prioritize Romero Debris Basin in Group 1, as this site was damaged in the Jan 9, 2018 debris flow. Rattlesnake Debris Basin was moved to Group 2 as this site was not burned or affected by the debris flow and is part of the Mission Creek watershed.

In 2021, the District prepared the 2021 Updated Debris Basin Maintenance and Management Plan (DBMMP) to describe changes and developments for the Group 1 and Group 2 debris

[1] The Biological Opinion distinguishes between 2 categories of fish-passage projects: "Removal" and "Modification". For the sake of simplicity in this DBMMP, the single term "modification" is used to describe the debris basin projects.

basins and updates from 2017 to 2020. The 2021 DBMMP was adopted by the District Board of Directors in 2021.

This current document (the 2022 Updated DBMMP) represents an update to the PEIR Addendum to include more detailed design revisions for San Ysdiro Debris Basin and Cold Springs Debris Basin, which are scheduled for modification in 2023. The 2022 Updated DBMMP provides more specific detail on the project proposals at these sites; all of the impacts and mitigation measures fall within the scope of the previously adopted PEIR and Addenda.

Group 1 Debris Basins: Scheduled for modification within the 10 years of the Standard Individual Permit (2016-2026)

- Maria Ygnacio, Main Branch; completed 2019
- Maria Ygnacio, East Branch; completed 2019
- Romero, underway 2022
- San Ysidro, scheduled 2023
- Cold Springs, scheduled 2023

Group 2 Debris Basins: Basins that are maintained but are not scheduled for modification within the 10-year period of the Standard Individual Permit.

- Arroyo Paredon
- San Roque
- Mission
- San Antonio
- Rattlesnake

In addition to the Group 1 and Group 2 basins, the District maintains 7 additional debris basins along the south coast of Santa Barbara County.

Debris Basins that are not included in Group 1 or Group 2 are as follows:

- Franklin
- Gobernador
- Montecito
- Santa Monica
- Toro, East
- Toro, Lower West
- Toro, Upper West

All 17 of these debris basins are located in the foothills of the Santa Ynez Mountains upstream of the more developed urban areas. Routine maintenance has occurred under a 1996 and 2003 Debris Basin Maintenance Plan, and more recently under the 2017 DBMRP. Routine maintenance, as described below, allows retention of high quality habitat within each of the basins between desilting events. Routine maintenance typically occurs between the months of August and November during the driest months of the year to avoid the rainy season and breeding seasons for birds and other wildlife. Figures 1.1 and 1.2 show the location of the 17 debris basins.

Map Source: County of Santa Barbara

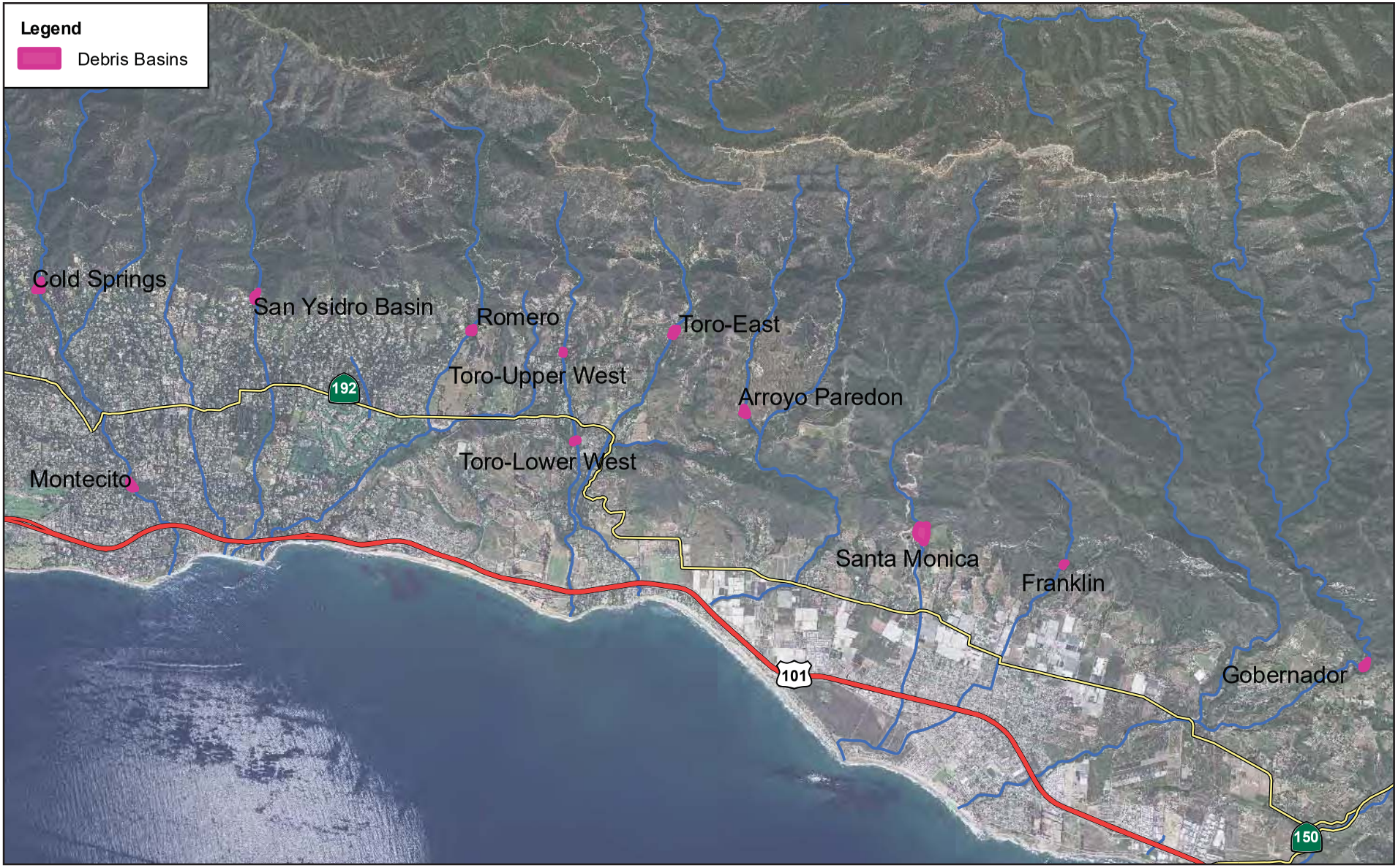


FIGURE 1.1
Debris Basin Overview – East

M:\JOBS5\8687\env\graphics\DebrisBasin\fig1.1.ai 03/28/17 ccn

Map Source: County of Santa Barbara

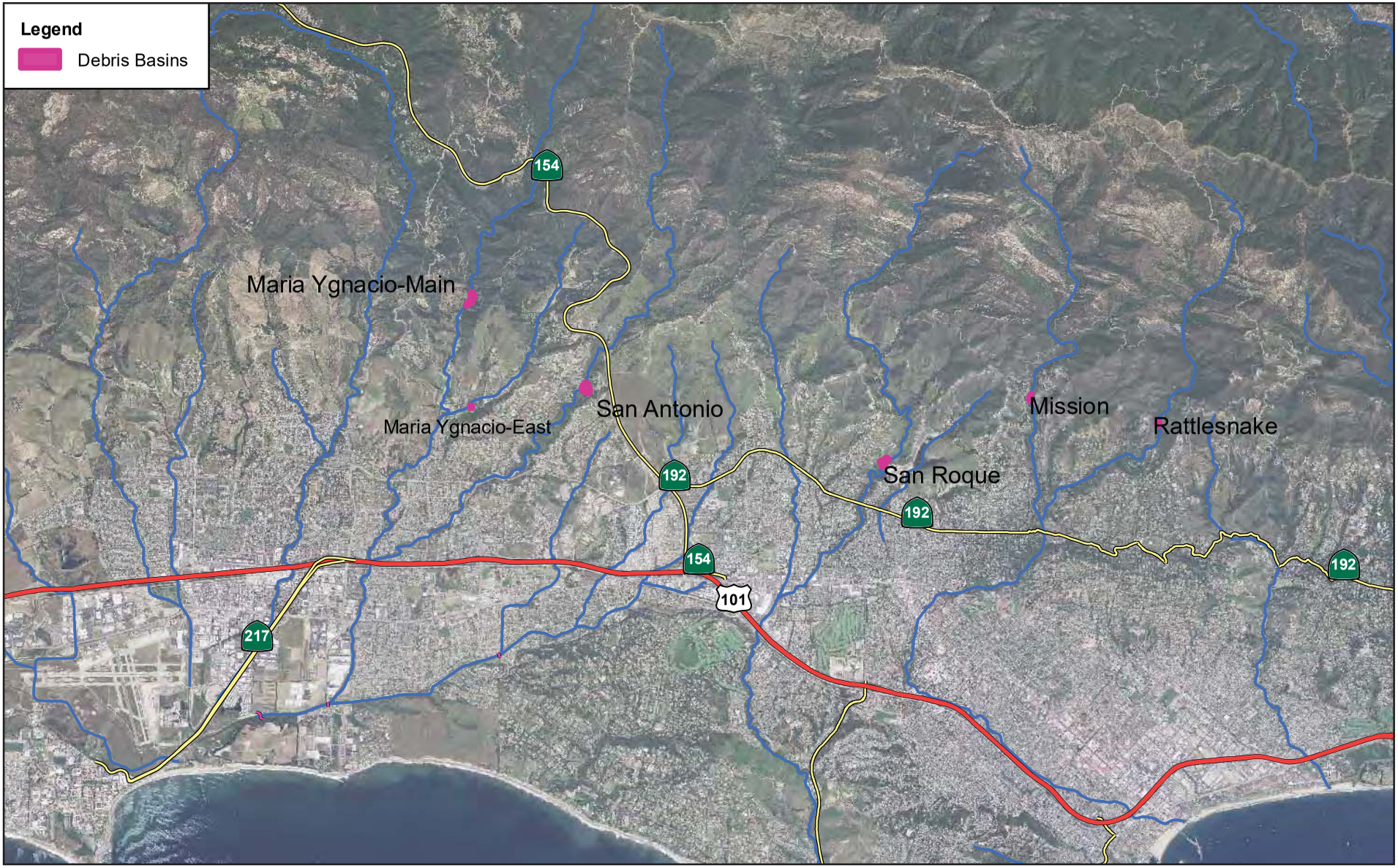


FIGURE 1.2
Debris Basin Overview – West

M:\JOBS5\8687\env\graphics\DebrisBasin\fig1.2.ai 03/28/17 ccn

2.0 Debris Basin Maintenance

In light of the schedule for modification of the Group 1 basins within the 10-year period of the Standard Individual Permit (2016-2026), these basins' routine maintenance will be designed differently than the other 12 basins as described below.

2.1 Maintenance Approach for Group 1 Basins

The Group 1 debris basins are identified in the BO as the 5 debris basins that will be modified in the 10-year lifespan of the Army Corps Standard Individual Permit. Group 1 includes Maria Ygnacio Main Branch Basin, Maria Ygnacio East Branch Debris Basin, Cold Spring Debris Basin, Romero Debris Basin, and San Ysidro Debris Basin. The debris-basin modification projects at two of the sites were completed in 2019; therefore an interim maintenance approach is not necessary at Maria Ygnacio Main Branch and East Branch Basins.

The interim maintenance approach for the remaining three Group 1 basins (Cold Springs, Romero, and San Ysidro) is to encourage sediment movement through the debris basins during low and moderate events by maintaining a 15-foot-wide pilot channel, clear outlet structure, and other specific vegetation clear areas. The interim maintenance approach for each of the remaining Group 1 Debris Basin is described in each basin's Addendum.

2.1.1 Proposed Schedule for Group 1 Debris Basin Projects

Debris Basin	Schedule
Maria Ygnacio, Main Branch	2019
Maria Ygnacio, East Branch	2019
Romero	2021
Cold Springs	2023
San Ysidro	2023

2.2 Maintenance Approach for Non-Group 1 Basins

Group 2 basins are identified in the NMFS Biological Opinion as basins that the District will provide preliminary modification plans to NMFS in 2022. These basins are not required to be removed or modified within the 10-year period of the Standard Individual Permit, however the District can pursue projects on these basins if desired. There are no current plans for projects for Group 2 basins before 2026.

Of the remaining seven Other Basins, two have already been configured to be fish passable and the remaining five basins are not on steelhead streams and there are no plans for modification.

Group 2 Basins

- Arroyo Paredon
- Mission
- Romero
- San Antonio
- San Roque

Other Basins

- Franklin (non-steelhead habitat)
- Gobernador (previously modified for fish passage)
- Montecito (fish passage incorporated into original design)
- Santa Monica (non-steelhead habitat)
- Toro, East (non-steelhead habitat)
- Toro, Upper West (non-steelhead habitat)
- Toro, Lower West (non-steelhead habitat)

2.2.1 Routine Maintenance

Routine maintenance includes keeping the outlet works and other specific areas clear of obstructive vegetation in order to minimize plugging. Maintenance of the outlet works will ensure that the basins pass all low and moderate flows so that the basins don't incrementally fill in, reducing their effectiveness when they are needed. A 15-foot-wide pilot channel will be created using heavy equipment and maintained in each basin. The pilot channel will extend from the upstream end of the basin to the outlet structure where it will increase in width to 30 feet. Material dislodged during the pilot channel establishment will be windrowed along the sides to help contain the flows within the pilot channel. Pilot channel establishment and the windrowed material will affect an area approximately 30 feet wide except immediately upstream of the outlet structure where the pilot channel and windrowed material will affect an area approximately 45 feet wide. The pilot channel will be maintained using hand tools unless flows eliminate the channel and it must be reestablished using equipment. The dam face and a 10-foot swath adjacent to the toe of the dam will be kept clear of vegetation. Vegetation management will be done with hand tools and occasional herbicide to the maximum extent feasible. Maintaining these clear areas within the basins reduces the amount of rodent activity on the dam embankment and provides for efficient sediment transport through the basins, again to discourage incremental filling. Maintaining a specific area in each basin will allow the area outside the maintenance areas to remain colonized with native vegetation between complete desilting events.

Routine maintenance may also include minor repairs to the grouted rock dam embankments and outlet pipe that occasionally experience erosion and need to be fixed in order to protect the structure from further erosion or failure. This type of maintenance has rarely occurred over the history of this maintenance program. Minor repairs could include addition of concrete or rock to fill in erosion holes, repair or replacement of a damaged outlet pipe, repair of damaged rocks/concrete from debris impacts on the dam embankment, and maintenance/repairs to access roads. Repairs to dam embankments will not enlarge the structure.

Prior to the 1996 commencement of the Debris Basin Maintenance Program, all vegetation within each debris basin was removed on an annual basis. Since 1996, the program allows habitat to develop within the basins while ensuring that they function properly when needed. Although the basic maintenance strategies are the same for all basins, specific actions are described for each basin in Sections 4, 5, and 6 below. After heavy rains, the basins will be inspected and organic debris, that could plug the outlet works, will be removed. It is the District's intent to conduct routine maintenance of the pilot channels, outlet works, and dam face on an annual basis although it will periodically be necessary to conduct long-term maintenance which requires the removal of debris and sediment from the basins.

2.2.2 Long-term Maintenance

Complete debris and sediment removal from the basins will be necessary immediately after they fill if it is early in the rainy season or during the fall maintenance season if a spring inspection identifies an unacceptable amount of debris and sediment in the basin. The acceptable volume of debris and sediment that remains after the rainy season will differ from basin to basin due to different sized facilities, but when a basin's effectiveness is reduced by approximately 25 percent, it will be cleaned out. Long-term maintenance will also take place after a significant fire in the watershed and all vegetation and debris will be removed in anticipation of expected increased post-fire storm runoff. A desilted basin is quickly recolonized with native vegetation. Photos 2-1 and 2-2 show San Roque Basin immediately after desilting and 6 months later with native vegetation throughout the basin floor.

2.2.3 Revegetation and Woody Debris Source

Many of the debris basins develop healthy riparian vegetation between maintenance events. The development of these habitats is an anticipated benefit of the maintenance described above. In addition to providing high quality habitat, the native vegetation in these basins can provide an excellent source for the District's biotechnical bank stabilization and revegetation projects as well as source material for woody debris habitat enhancement projects. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. can provide material necessary to implement habitat improvement and revegetation projects while still allowing the habitat to persist in the basins. Furthermore, selective removal and thinning will help reduce the potential for the outlet works becoming plugged if basin vegetation is uprooted during high flows.

PHOTOGRAPH 2-1
San Roque Creek 2005 Desilting

PHOTOGRAPH 2-2
Growth 6 Months after the 2005 Desilting

3.0 Environmental Review

Basin maintenance is described in the Updated Program EIR for Santa Barbara County Flood Control Routine Maintenance Activities (01-EIR-01), the Long-term Disposition of the Maria Ygnacio Creek Debris Basins Environmental Impact Report (92-EIR-2) and the Montecito Creek Debris Basin EIR (99-EIR-001). This plan contains detailed project descriptions for each basin in the form of addenda to the Program EIR. These addenda fulfill CEQA requirements and will serve as the project descriptions for any necessary permits. The proposed debris basin modifications and restoration of the creek channels, does not introduce any impacts not already analyzed in the EIRs listed above.

The impact analyses and mitigation measures are based on the routine and long-term maintenance activities and the projects described in Sections 4, 5 and 6. The District will continue to allow native vegetation to colonize basins between maintenance events and after the watersheds recover following emergency events. The District will attempt to control invasive non-native plants within each basin. The Non-Group 1 basins will not be actively revegetated by the District as these facilities have consistently and quickly been recolonized with native vegetation whenever they have been maintained. Group 1 Basin projects may include native plant restoration of the incidentally disturbed areas where appropriate, but the basins themselves will not be re-planted.

In light of the fact that the channels through each basin will be maintained as a continuation of the natural creek, impacts have been analyzed consisted with the impact analyses for creek maintenance as covered in the PEIR. Mitigation measures will be applied to offset those impacts as appropriate. The worst-case scenario of the basins being full of vegetation and requiring long-term maintenance, i.e., after a fire in the watershed, was used in the impact analysis. The impacts and mitigation measures are very similar for all of the basins because the environmental and physical factors are the same for each of the basins. The impacts and mitigation measures are fully described in Section 7 and apply to each basin project description, as appropriate.

4.0 Group 1 Basins

As described in Section 1, the Biological Opinion that the District received from NMFS and the ACOE requires the District to remove fish passage barriers and re-establish sediment delivery at five Debris Basins (Referred to as Group 1 Basins) within the ensuing 10-year period (2016-2026) associated with the ACOE Standard Individual Permit that regulates the District's Debris Basin maintenance and modification. Modification of the five debris basins would avoid the likelihood of jeopardizing the continued existence of steelhead or destroying or adversely modifying critical habitat.

The B.O. requires the modification of at least three of these five basins within the first 5 years of the District's 10-year Standard Individual Permit (SIP). The two remaining debris basins shall be completed no later than the end of the work window in year 10 of the SIP. The SIP was signed in May 2016 and expires in 2026.

The District has applied "Hydraulic" methodologies as well as "Stream Simulation" Methodologies to develop the designs for the five projects sites, per guidance from NMFS.

Hydraulic methods include strategies from FHWA's Hydraulic Engineering Circulars for evaluating scour (HEC-18), rock-slope sizing (HEC-23), Bureau of Reclamation's *Rock Ramp Design Guidelines* (2007), Washington Dept. of Fish and Wildlife's *Fish Passage Manual* (2003), and *California Department of Fish and Game's Salmonid Stream Habitat Restoration Manual* (2002), in conjunction with standard engineering practices.

The Stream Simulation Method includes several processes and procedures, including hydrogeomorphic analysis, to inform the approach for removing barriers and restoring the stream channel at the project site. A central theme of the Stream-Simulation method is to mimic the pre-disturbed condition and/or the adjacent natural channel such that the completed project presents equivalent fish-passability to steelhead trout as the adjacent natural channel. The resulting project reach would not result in an unforeseen fish-passage barrier, as the project mimics creek characteristics that would not exceed the typical physical limitations of adjacent stream channel.

The two Maria Ygnacio Basins were modified in 2019 following plans approved by NMFS. Romero Basin Modification is underway in 2022 following plans approved by NMFS. The tworemaining Group 1 debris basins (San Ysidro, and Cold Springs) are under development following extensive coordination with NMFS. The District has provided 95 construction plans for Cold Springs and 30% plans San Ysidro Debris Basins to NMFS for their review and approval. The Cold Springs Basin Modification consists of a "step pool" approach and San Ysidro Basin Modification consists of a "stream-simulation" approach.

The District does not anticipate any significant effects upstream or downstream of the debris basins as a result of the modification projects. The District considered bed mobility and sediment transport as part of the project designs. The project sites will behave differently than the current existing condition because the projects are intended to restore natural sediment transport. The existing debris basin dams occasionally trap sediment and debris,

while the post-project condition will allow more sediment to move through the project reach under low and moderate flows.

No adverse effects are expected upstream as a result of the projects. The potential for headcutting and/or erosion upstream is minimized. Sediment transport downstream would re-introduce a natural source of bedload material; this effect would be localized and would constitute improvement and restoration to downstream habitat quality for steelhead trout by retaining natural sediment (including spawning gravel) in the stream system. The stream reaches immediately downstream of the debris basin sites are eroded and down-cut as a result of sediment-deprivation and more recently, the 2018 Debris Flow. The downstream reaches have the capacity to capture and transport the sediment under low and moderate flows.

Essential habitat functions for steelhead trout would be installed as part of the District's designs. The proposed projects will create and maintain channel roughness within the project areas of each site. The restored channels will include sediment of mixed sizes. The District's design and plans minimize the extent of vegetation removal and sediment disturbance whenever feasible. Some amount of vegetation removal and sediment manipulation is required to access the site and achieve the required slope and fish-passage objectives during project construction. Disturbance will be temporary. Vegetation removal within the basins during modification of the basins and restoration of the stream corridor would not be any more than what occurs during a complete desilting event as already described in the DBMMP.

Approach to the Designs

Stream Simulation Approach to Channel Restoration

The Stream Simulation Method is an approach of designing and restoring a channel segment to simulate its pre-disturbed condition and/or adjacent natural channel such that it presents no more of a challenge to movement of organisms (including steelhead trout) as the natural channel. This method was developed by the Washington Department of Fish and Wildlife (Bates et al. 2003) and expanded by the USDA (2008). This method is intended to be dynamic and incorporates the natural fluvial processes including the mobilization of bed material through the reach. Individual debris basin design details are included in each Basin's Addendum in Sections 4, 5, and 6.

The following procedures are used with guidance from Part XII of the DFW publication, "California Salmonid Stream Habitat Restoration Manual," (2009) and the USDA Stream Simulation publication (August, 2008).

a. Determine Project Alignment and Profile: A longitudinal survey of the channel is performed and plotted in Excel. Stable features upstream and downstream of the basin are chosen for profile endpoints, while ignoring points that represent anomalies and scour pools. The range of potential vertical streambed adjustment (VAP) is established, holding the highest and lowest likely elevations to which it is expected the streambed may vary over time.

b. Identify Reference Reach and Develop Stream Simulation Reach Longitudinal Slopes: A nearby reference reach is identified in the vicinity of the basin and the longitudinal slope is determined and Longitudinal Geomorphic Characteristics (Pool length, pool depth, drop height, step feature length and pool to pool spacing) are identified.

c. Channel Hydraulics: The report, "Regional Curves for Bankfull Channel Dimensions – Selected South Coast Streams" (URS Corporation, May, 2002) is used to provide guidance for determining the bankfull discharge through the reference reach. The chart entitled, "Bankfull Discharge vs. Drainage Area" is used to find the regional bankfull discharge (Qbf-regeional) in cfs. Using the Hydraflow Express extension in AutoCAD V. 10.3, an assumed Manning's roughness "n" value, variations of the representative cross-sectional dimensions are analyzed until the modeled Q = Qbf-regional.

d. Streambed Material (SBM) Grain Size Distribution: Using the Wolman Pebble Count Procedure, pebble counts are performed on the reference reach for two distinct areas: (1) the wetted channel (bankfull channel) and (2) the adjacent dry overbank areas if present. Data from the count is plotted on cumulative frequency distribution log10 graphs. The graphs are then converted to particle size distribution gradations showing the particle "percent passing" D95, D84, D50 and various standard U.S. sieve sizes. The pebble count grain size distribution is verified and adjusted by methods described in the following paragraphs. Given Qbf-regional and channel dimensions, D50 derived from the pebble count is checked against various methods for calculating D50. These values are compared, and the highest D50 is chosen for use in the design SBM gradation as it will become entrained at higher flows than the smaller D50 sizes. The following methods are used to develop the grain size distribution:

e. Determine Bed Mobility: The simulated reach is evaluated to determine which particle size ranges remain stable and which become entrained. Per the USDA Stream Simulation publication (August, 2008). Either the Shield's Modified Critical Shear Stress equation or the Bathurst critical entrainment flow equation is used, depending upon which equation's limiting constraints are most suitably matched to the reference channel characteristics. Note that this evaluation is not mandatory for restoration projects where the restored reach mimics the reference reach (i.e. restoration is not occurring within a culvert crossing), but is a useful tool for checking particle stability. In the event that the channel characteristics do not meet the constraints of either method, since D84 is an index for bed mobility, the SBM D84 is verified to be the same as or larger than the reference reach D84.

f. Material Arrangement: Part XII of the DFW publication, "California Salmonid Stream Habitat Restoration Manual," (2009) is used as guidelines to design the simulated streambed, keystone rock, structure rocks, boulder clusters, footer rocks, and bankline rock sizes and placement.

Hydraulic Approach to Channel Restoration

The design goals taken into consideration for the proposed improvements are summarized below:

- Hydraulic modeling to be analyzed using pre- and post-burn hydrology
- All structural elements of the Project to remain stable during a 100-year storm event
- Debris walls not to be overtopped during a 50-year pre-burn storm event.
- Safe maintenance access down into the debris basin.
- Reduction of long-term maintenance requirements by providing a more natural sediment transport condition through the proposed outlet structure.
- Mitigation of channel scour downstream of the basin through a combination of rock slope protection (RSP) and engineered streambed material (ESM)
- Use reference reach conditions to inform the proposed design elements.

For Romero Debris Basin, , NMFS required a roughened rock-ramp design during the NMFS coordination calls on March 25, April 29, and May 27, 2020. This approach utilizes some aspects of stream-simulation but also relies on hydraulic/engineering parameters. The references and guidelines used to develop these project elements are listed below:

- A rock ramp design downstream of the outlet structure consists of a constant slope
- A reference reach has been reviewed for comparison to the proposed roughened ramp.
- Scour analysis: Federal Highway Administration's (FHWA) Hydraulic Engineering Circular No. 18 (HEC-18), "Evaluating Scour at Bridges" (Fifth Edition) (2012).
- RSP sizing: FHWA's Hydraulic Engineering Circular No. 23 (HEC-23), "Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance" (Third Edition) (2009)
- ESM sizing for the roughened ramp: Washington Department of Fish Wildlife's Design of Road Culvert for Fish Passage Manual (2003) and United States Department of the Interior Bureau of Reclamation's Rock Ramp Design Guidelines (2007)
- The peak design flows for the Project were based on the hydrologic model and report that was developed for the Federal Emergency Management Agency (FEMA) by STARR II, dated April 2018. The study included an analysis of the 100-year storm event for preborn and post-burn. The models were extended by WRECO to include additional storm events.

Stream Channel Features

The configuration and design of stream features (i.e., pools, riffles, boulder clusters, forcing-features, and LWD/KWD features) is based on several guidance factors from the RPA, including the stream-simulation method, hydrogeomorphic analyses, and evaluation of reference reaches.

The RPA requires a minimum of five Large Woody Debris/Key Woody Debris (LWD/KWD) features to be installed in each of the Group 1 debris-basin watersheds. The District has determined that the debris-basin areas may be appropriate locations for some woody debris

features to be installed. Inclusion of LWD/KWD features will be determined in the final stages of project design.

The District's design places the LWD features at outside bends, based on input and review from the contracted stream-simulation engineer (Mike Love). Section 2 C(1) of the RPA states that "The District shall describe the process for developing engineered design drawings that include the retention of one or more engineers/specialist with a documented record of designing fish-passage projects." The spacing of the LWD features is based on the project length, average bankfull channel width, pool geometry and spacing (as determined by topographical survey, reference reach surveys, and hydrogeomorphic analyses). The relationship of LWD spacing to channel width determines the frequency of LWD features per channel-width.

Cold Springs Debris Basin and San Ysidro Debris Basin are the remaining Group 1 Basins that are scheduled to be modified. The proposed changes at Cold Springs Basin include a weir outlet structure located near the face of the existing dam embankment, and drop structures and pools incorporated into the downstream improvements. The proposed modification at San Ysidro Basin consists of a stream-simulation channel, rock-slope protection, debris rack, and open outlet structure. Below is a summary of the design goals that will apply to Cold Springs and San Ysidro Debris Basins:

- Fish passage criteria will be referenced from the *Anadromous Salmonid Passage Facility Design Manual, July 2011*.
- Low-flow fish passage has been analyzed using 3 cfs and 6 cfs flow rates.
- High-flow fish passage has been analyzed using the 2-year and 50% of the 2-year storm event flows under pre-burn conditions.
- Stream-simulation designs will follow guidance from Part XII of the DFW publication, "California Salmonid Stream Habitat Restoration Manual," (2009) and the USDA Stream Simulation publication (August, 2008).
- For larger storm events, the design goal is that the debris walls should not be overtopped during a 50-year storm event.
- All constructed elements will remain stable during a 100-year storm event.
- Larger storm events will be analyzed using pre- and post-burn hydrology.
- Reduce long-term maintenance requirements by providing a more natural sediment transport condition through the proposed weir outlet structure

4.1 Cold Springs Creek Debris Basin 2022 Addendum to the Program EIR for Santa Barbara County Flood Control and Water Conservation District

4.1.1 Location

The Cold Springs Creek Debris Basin is located on Cold Springs Creek just west of 1013 E. Mountain Drive.

4.1.2 History

Cold Springs Creek Debris Basin is an engineered facility that was built in 1964 by the U.S. Army Corps of Engineers after the Coyote Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005. In anticipation of increased post-fire debris and sediment flows, the basin was desilted after the 2008 Tea Fire.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Cold Springs Debris Basin was burned. All vegetation was removed from the basin in December 2017/early January 2018 in response to the Thomas Fire and anticipated increase runoff/debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities. The basin embankment was severely damaged by the debris flow with a large portion of the embankment eroded away and the outlet pipe broken. The dam embankment was repaired in 2018 as an emergency temporary repair until the modification can be completed.

As part of emergency watershed response, Cold Spring debris basin was desilted following the January 9, 2018 debris flow, and several times through the winters of 2019 and 2020. The watershed continues to shed large amounts of sediment as the watershed recovers.

Following the debris flow, the District noted that the Gobernador Debris Basin (previously modified for fish passage with a slotted dam configuration) performed well. The District identified a similar approach to modifying the Group 1 debris basins in the Montecito area.

Cold Springs Debris Basin is a Group 1 basin and is scheduled to be modified in 2023.

4.1.3 Setting

The Cold Springs Basin is located in the foothills of the Santa Ynez Mountains. Its watershed is approximately 3.8 square miles that is capable of producing 3,906-cfs during a 100-year return period, pre-burn precipitation event. The basin is surrounded by dense to sparse chaparral community, coast live oak, riparian vegetation, grasslands through communities that are in a state of recovery after the Thomas Fire and 1/9 Debris Flow.

Following the damage sustained in the January 9, 2018 debris flow, the District designed an expansion to the Cold Springs Debris Basin, which involved further excavating the property into the uplands to the west of the existing debris basin site. Construction of the expansion project was completed in September 2020 and did not involve any changes to the dam embankment; the expansion project only widened the west side of the basin to enlarge the area of the basin. The basin expansion project is a separate project that has been analyzed under a Mitigated Negative Declaration. The expansion does not affect fish-passage and is compatible with the basin modification project. The expanded basin was considered in the hydrologic and hydraulic analysis for the basin modification. The proposed modification project in this DBMMP is compatible with the basin expansion.

4.1.4 Wildlife Survey

The site was assessed by the District Biologist on October 10, 2016. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2019. The plant list included below includes all plant species documented at the site before the 1-9-18 debris flow. Current conditions have much less vegetation and fewer species present due to the recent fire and disturbance.

A biological field assessment was performed on April 30, 2020. Due to the 2018 Thomas Fire, subsequent debris flow, and recent sediment cleanouts, there is no vegetation growing on the basin floor and very little vegetation growing on the banks of the basin. Streambed material within the basin is comprised of sand, gravel, and cobble. The creek channel up and downstream of the basin is very unstable and shows signs of scour and erosion. Large eucalyptus trees, coast live oak, and sycamore surround the debris basin.

Vegetation surrounding the basin consists mostly of nonnative black mustard, tree tobacco, and castor bean. Native species observed on the upper banks of the basin include lupine and arroyo willow. The recent basin expansion removed vegetation on the west bank of the basin and created a new west bank. The expanded basin banks were restored with native vegetation following the expansion project. Species planted include: coast live oak, western sycamore, laurel sumac, arroyo willow, and toyon. The eastern banks of the basin will be revegetated after the modification project is complete.

The creek through the basin had flowing water with an average depth of approximately 3-4", in a shallow riffle. No pools or other deep water habitat was present, and no emergent vegetation was present. The area is unlikely to support any special status species in the current state. No nesting birds were detected near the basin due to a lack of riparian vegetation in or around the basin. The large trees surrounding the basin may provide habitat for birds and other wildlife. A nest survey was performed and no nesting activity was observed in trees around the basin.

The project area shows marked disturbance. The canyon adjacent to the debris basin is surrounded by a grove of large eucalyptus trees, which are partially burned. The debris basin and the adjoining creek channel shows signs of recent scour and erosion.

4.1.5 Routine Maintenance Prior to Basin Modification

The Cold Springs Basin is scheduled to be modified in 2023.

Routine maintenance includes keeping the outlet works and other specific areas clear of obstructive vegetation in order to minimize plugging. Maintenance of the outlet works will ensure that all low and moderate flows can pass through the basin without incremental fill-in. With the modification scheduled for 2023, and the watershed still recovering from the fire and debris flow, sediment will not be allowed to accumulate in the basin. Vegetation upstream is still recovering and downstream properties are susceptible to debris damage and flooding. The post-fire maintenance approach is to continue to encourage small sediment movement through the debris basin by maintaining a 15-ft wide pilot channel through the basin and keeping the outlet works and other specific areas clear of obstructive vegetation.

If sediment accumulates rapidly within the basin and the outlet structure cannot be kept open, the sediment will need to be mechanically removed. This maintenance approach encourages small sediment to remain in the system, as feasible, but protects public safety and infrastructure in the event that the basin outlet becomes plugged and filled with sediment.

During the interim period leading up to the debris basin modification, if desilting is required, the District may stockpile sediment on the adjacent property, or at existing offsite storage yards, for re-use in the modification project. The modification project will involve replacing streambed material, cobbles, and boulders as stream features. The District will retain and reuse excavated material of the appropriate sizes whenever feasible.

4.1.6 Project Description for Basin Modification

Cold Springs Creek Debris Basin is located along Cold Springs Creek approximately 2.5 miles upstream of the Pacific Ocean. The dam structure consists of a 16-foot-high earthen fill spillway capped with grouted rock, a rock apron, grouted rock embankments, cutoff walls and a 48-inch reinforced concrete low flow pipe.

This work is being performed to allow fish passage for Southern California steelhead and restore sediment transport through the system.

This site is notable for a deeply incised channel downstream of the debris basin. The scoured channel, steep topography, and limited access along Mountain Drive present constraints to the project design. The proposed project entails a modification of the grouted dam structure which will be notched down and the culvert will be removed, similar to the Gobernador Debris Basin modification, which performed well in 2018.

The modification will include a partial removal of the existing dam embankment and the construction of a new outlet structure with improvements to connect to the downstream channel. The improvements to the downstream channel are limited by the extents of the County property.

4.1.7 Design Approach

The District contracted an engineering consultant with experience in fish-passage designs (WRECO) to perform a hydraulic analysis and to design the modification. WRECO is the same firm that designed the Gobernador Debris Basin modification, which performed well in the 1/9 Debris Flow.

The goal of the Project is to improve the performance of the debris basin by refining the outlet structure design and connection to the downstream channel. The design focuses on establishing a more natural sediment conveyance through the system while capturing large debris during larger storm events and during burned watershed conditions.

The development of the improvements requires hydrologic and hydraulic modeling of the site location. WRECO produced a Hydrology and Hydraulics Report (2019) which describes the methods and analysis used to support the proposed modification.

The proposed improvements consist of removing a portion of the existing grouted rock riprap embankment and culvert and replacing it with an open outlet structure that will be located near the face of the existing embankment. A channel with rock weir drop structures and pools will be constructed as downstream improvements to span the difference in elevation between the embankment and the limits of the downstream channel improvements. The sizing of the pools is based on guidance and calculations provided in *NMFS's Anadromous Salmonid Passage Facility Design Manual Section 4.5.3.5.*

In addition to the modifications at the dam embankment, the creek channel through the floor of the basin will be configured as a pilot channel, equivalent to the District's standard debris basin maintenance practices.

WRECO analyzed several alternatives using combinations of varying rock heights, channel configurations, slopes, and weirs in order to meet NMFS fish passage objectives. WRECO's analysis included watershed modeling, hydrogeomorphic analyses, topographic survey and longitudinal profile, vertical adjustment potential, and evaluation of stream geometry. It was determined a drop structure alternative most closely met the fish passage criteria and would be the preferred design moving forward.

The design footprint for the Cold Spring Debris Basin Modification is approximately 495 linear feet and 0.5 acres.

4.1.8 Temporary Impacts and Restoration

The proposed project would require temporary disturbance of approximately 0.5 acre for access, grading, partial dam removal, constructing the new outlet structure, streambed reconfiguration, channel construction, and removal of the embedded concrete culvert. The barrier removal and channel restoration project has been designed to minimize the removal of vegetation and sediment while obtaining the fish-passage objectives and the channel-stability objectives of the stream-simulation method.

Construction impacts would be temporary. Following construction, the disturbed areas suitable for replanting within the riparian corridor would be revegetated with native riparian species, including willow, alder, sycamore, oaks, and understory shrubs and herbaceous species. Bio-engineering techniques will be developed and implemented to retain native riparian vegetation then feasible and as part of channel reconstruction. Container plants and cuttings would be used for the trees and shrub species. The basin floor would naturally recolonize with riparian species, which would persist in between maintenance events.

4.1.9 Routine Maintenance After Basin Modification

After the basin modification project is complete, the District would continue annual assessments and maintenance, as necessary, to manage the functionality of the facility. It is anticipated, based on observations at the similar Gobernador Debris Basin, that sediment removal and disturbance would be minimal and infrequent. Long-term maintenance would still involve vegetation management, pilot channeling and sediment removal as necessary, but would be reduced compared to the current conditions. As an example, after Gobernador Debris Basin was modified in 2008, basin maintenance was minimal and included infrequent pilot channeling, vegetation trimming, and spot-spray to control weeds at the facility. No desilting or large scale vegetation clearing was necessary until the aftermath of the unprecedented Thomas Fire and the subsequent 1/9 Debris Flow.

4.1.9.1 Pilot Channels

A pilot channel will be maintained through the entire basin, from the outlet structure upstream to the upper end of the basin, through the use of heavy equipment or hand tools. The proposed low flow pilot channel is approximately 0.75-ft deep with a 3-ft bottom width and 2:1 side slopes for a total pilot channel width of approximately 15 ft, and is likely to be mobile and variable by design. If winter flows damage the pilot channel, then the pilot channel would be maintained in the following dry season. Vegetation will be allowed to colonize the windrowed material as well as rest of the basin floor. The pilot channel will be maintained clear of obstructive vegetation (woody vegetation and thick stands of cattails or bulrush) using hand tools and herbicide to allow flows and sediment to reach the outlet structure; however, low growing herbaceous vegetation will be left within the pilot channel.

NMFS and CDFW have indicated their preference for a pilot channel within the basins, as the pilot channel encourages gravel transport and allows a wider/deeper wetted corridor; compared to a series of thin braided channels that can develop if a pilot channel is not maintained.

Maintenance of the pilot channel and toe of dam will disturb up to approximately 6,500 square feet while allowing approximately 30,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

4.1.9.2 Outlet Works

The proposed improvements include removing a portion of the existing embankment and low-flow pipe and replacing it with an outlet structure similar to the one installed at the Gobernador Debris Basin.

The outlet structure will be kept clear of sediment and obstructive vegetation in order to convey sediment transport through the basin. Depending upon the time of year, if heavy rains produce enough run off to plug the outlet structure, but do not fill the basin with sediment, the District may try to expose the outlet using an excavator to encourage passage of sediments and flows so the basin does not accumulate large amounts of standing water that could place pressure on the outlet structures for an extended period.

The modification project involves concrete wingwalls and structures at the outlet. Maintenance would also include minor facility repairs such as concrete repairs, filling/replacing damaged components, replacing HDPE panels, fencing, gates, and other tasks to keep the facility in good condition.

If boulders or cobbles are scoured away from the outlet works, maintenance may be performed to replace such material to protect the structural integrity of the outlet works, rock ramp, and transitional areas. Replacing lost boulders may involve temporary excavation to key-in partially buried boulders. All maintenance would be confined to the existing project footprint consistent with the existing CEQA analysis.

4.1.9.3 Dam Embankment

In conjunction with the maintenance of a pilot channel, as feasible, the dam face and a 10-ft swath adjacent to the toe of the dam will be kept clear of vegetation. This will be done using hand tools to the maximum extent feasible and occasional use of herbicide. Maintaining these clear areas reduces the amount of rodent activity on the dam embankment, allows the District to inspect the dam face and provides for efficient sediment transport through the basin, again to reduce incremental filling. The basin area outside of the pilot channel will be left to colonize with native riparian vegetation.

4.1.9.4 Desilting

Proposed improvements will likely reduce regular maintenance and desilting requirements within the debris basin. Based on observation at the Gobernador Basin since its modification

in 2008, the modified debris basins will pass most fine sediment, such as cobbles and smaller material, through the notch during typical rain events.

The District would continue to inspect the site throughout the rainy season to determine when desilting may be warranted. Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed. Triggers for desilting would include a fire in the watershed and/or when the basin effectiveness appears reduced by 25% or more.

When desilting is triggered, the District would excavate the material and vegetation, as described in the PEIR and this Plan. Desilting methods and protective conditions would be equivalent to methods previously described and analyzed.

When desilting is required to clear the outlet structure and/or to remove accumulations from the basin itself, the District will consider selective re-use of some material as suitable spawning gravel for steelhead. If suitable sediments are desilted (typically cobbles, gravel, and coarse sandy material), the District may place windrows of this material along the sides of the channel, downstream of the basin outlet. The material would be placed outside of any standing water but along the edges of creek, spread over as a thin layer and/or strategically placed as low berms (~3 ft high) along the edge of the channel. This strategy allows spawning gravels to remain in the watershed to be gradually carried downstream by future rain events.

NMFS and CDFW have indicated their preference to keep spawning gravels in the watershed to replace material that has been scoured away. Staging material downstream of the basin has an additional benefit for the District to save hauling costs and conserving offsite stockpile locations; staging sediment downstream can also replace eroded material from the channel itself. Any downstream gravel staging would be limited to quantities that would not impair downstream flood protection objectives or instream habitat.

4.1.9.5 Debris Rack

Management of the debris basin after modification would need to consider the possibility of future wildfires. If a fire occurs in the watershed upstream of the debris basin site, the District would consider installing a temporary debris rack. A debris rack facilitates capture of boulders and particularly woody debris that may be discharged following a wildfire.

The debris rack would be located within the debris basin footprint along the creek channel. The debris rack installation would involve minor excavation within the bottom of the basin to install a buried footing; the rack is constructed of a series of large metal pipes which are welded together. The installation process involves similar equipment used for desilting. A temporary dewatering bypass would be implemented as needed, if flowing water is present in the channel. Excavation methods, dewatering, and protective conditions would be equivalent to methods previously described and analyzed in the PEIR.

The debris rack would be left in place for 3 to 5 years while the watershed recovers, after which the rack would be removed. Removal would occur in the dry season when little to no

water remains in the channel. A temporary clear water bypass or diversion would be installed as needed. The debris rack would be cut with a torch to remove the metal structure, and the buried footing would be excavated and/or cracked apart in place to facilitate removal. The footing would then be backfilled and the channel conditions restored to a pilot channel as described above.

Installation and removal of the debris rack would involve equivalent methods, impacts, and mitigation measures as previously described and analyzed in the PEIR.

Photograph 4.1-1:
Cold Springs Creek Debris Basin

Photograph 4.1-2:
Cold Springs Creek Debris Basin

Map Source: County of Santa Barbara

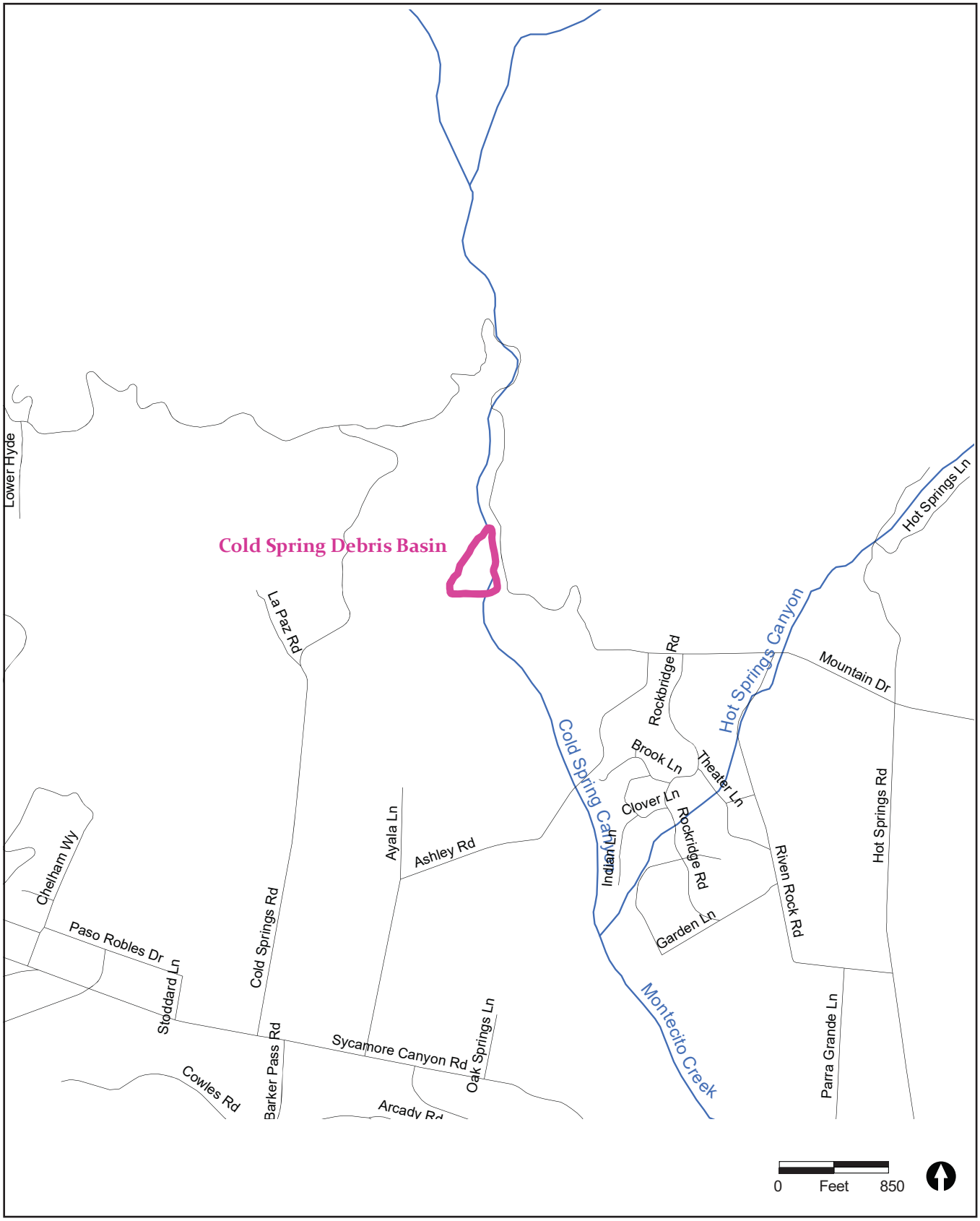


FIGURE 4.1-1
Cold Springs Creek Debris Basin Map

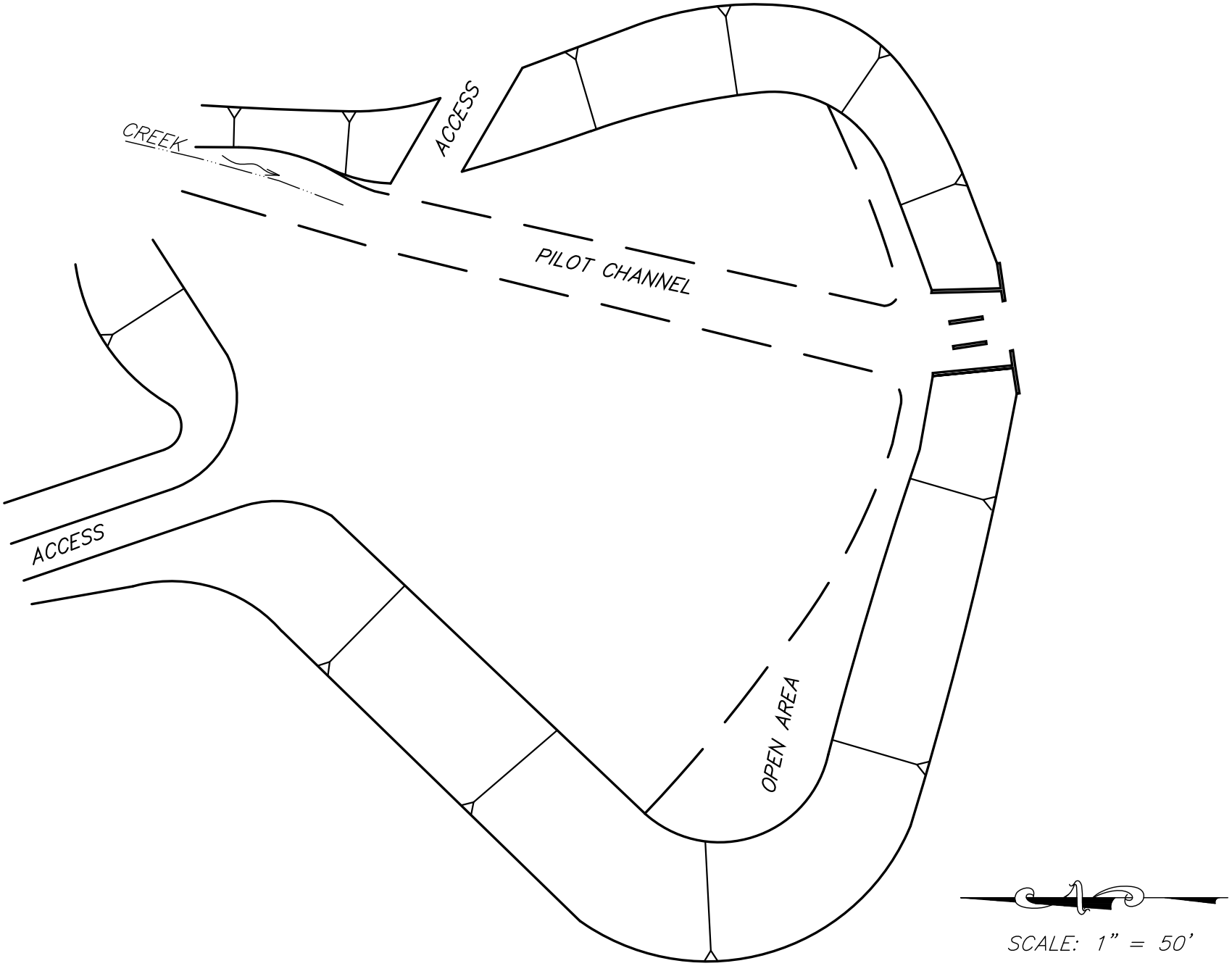
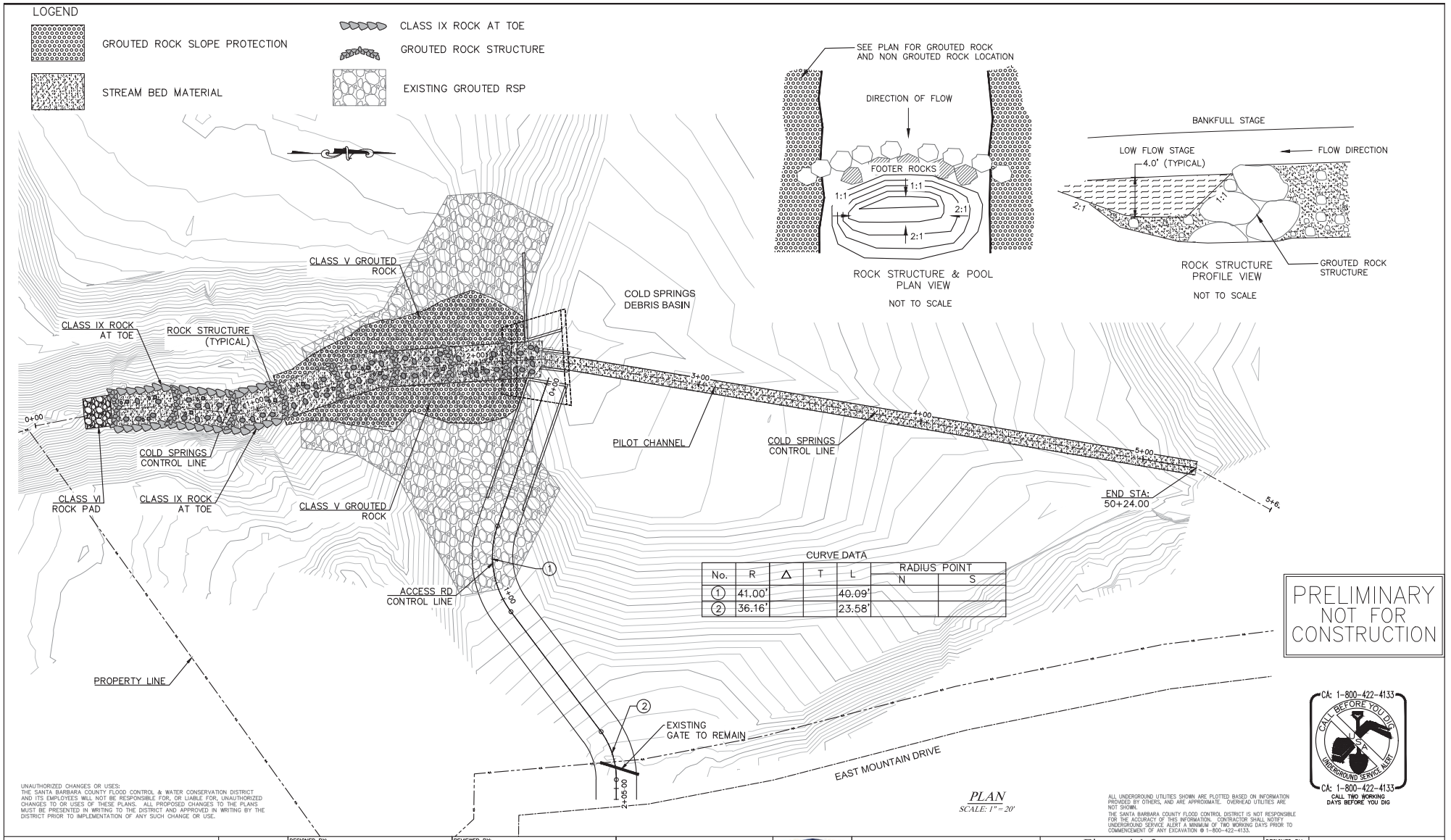


Figure 4.1–2 Cold Springs Debris Basin



PLAN
SCALE: 1" = 20'

UNAUTHORIZED CHANGES OR USES:
THE SANTA BARBARA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT AND ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL PROPOSED CHANGES TO THE PLANS MUST BE PRESENTED IN WRITING TO THE DISTRICT AND APPROVED IN WRITING BY THE DISTRICT PRIOR TO IMPLEMENTATION OF ANY SUCH CHANGE OR USE.

ALL UNDERGROUND UTILITIES SHOWN ARE PLOTTED BASED ON INFORMATION PROVIDED BY OTHERS, AND ARE APPROXIMATE. OVERHEAD UTILITIES ARE NOT SHOWN.
THE SANTA BARBARA COUNTY FLOOD CONTROL DISTRICT IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT A MINIMUM OF TWO WORKING DAYS PRIOR TO COMMENCEMENT OF ANY EXCAVATION @ 1-800-422-4133.

REVISIONS			
NO.	DESCRIPTION	DATE	APR

DESIGNED BY:	
WRECO DATE	
REVIEWED BY:	
FLOOD CONTROL ENGINEERING MANAGER DATE	
REVIEWED BY	
FLOOD CONTROL DEPUTY DIRECTOR DATE	

REVIEWED BY:	
COUNTY SURVEYOR DATE	
REVIEWED BY	
MAINTENANCE SUPERINTENDENT DATE	
REVIEWED BY	
ENVIRONMENTAL SERVICES MANAGER DATE	

SANTA BARBARA COUNTY
FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
130 E. VICTORIA STREET
SANTA BARBARA, CA 93101
(805) 568-3440

COLD SPRINGS DEBRIS
BASIN IMPROVEMENT PROJECT
AREA OF MONTECITO
SANTA BARBARA COUNTY, CALIFORNIA

Figure 4.1-3
LAYOUT PLAN

DESIGNED BY:	RKP
DRAWN BY:	MD
CHECKED BY:	HBL

O-XXXX

SHEET 3 OF 9

Filename: Cold Springs DB Plans.DWG

Cold Springs Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
APIACEAE		
Conium maculatum	Poison hemlock	I
APOCYNACEAE		
Vinca major	Periwinkle	I
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Gnaphalium bicolor	Bicolored everlasting	N
Isocoma menziesii	Coast golden bush	N
Lactuca serriola	Prickly lettuce	I
Picris echioides	Ox tongue	I
Venegasia carpesioides	Canyon sunflower	N
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild raddish	I
CHENOPODIACEAE		
Chenopodium ambrosioides	Mexican tea	I
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
MALVACEAE		
Malva nicaeensis	Mallow	I
Malva parvifolia	Cheeseweed	I
MYRTACEAE		
Eucalyptus sp.	Eucalyptus	I
PLATAGINACEAE		
Plantago major	Common plantain	I
Plantago lanceolata	Plantain	I
PLANTANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus mollis	Soft chess	I
Lolium multiflorum	Italian ryegrass	I
Lolium miliacea	Rice grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I

Cold Springs Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Malosma laurina	Laurel sumac	N
Rubus ursinus	California blackberry	N
RHAMNACEAE		
Ceanothus spinosus	Greenback ceanothus	N
Ceanothus cuneatus	Buckbrush	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha latifolia	Broad-leaved cattail	N
*N = Native; I = Introduced		

4.2 Romero Creek Debris Basin 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

4.2.1 Location

The Romero Creek Debris Basin is located on Romero Creek just east of 975 Romero Canyon Road in Montecito.

4.2.2 History

Romero Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005. A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Romero Debris Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

The embankment sustained only minor damage during the January 2018 storm event, however the debris basin was completely overwhelmed by the immense debris flow which led to the debris flow escaping the basin and overtopping the embankment.

As part of emergency watershed response, Romero debris basin was desilted following the January 9, 2018 debris flow, and several times through the 2019 and 2020 seasons. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

Following the debris flow, the District noted that the Gobernador Debris Basin (previously modified for fish passage with a slotted dam configuration) performed well. The District identified a similar approach to modifying this Group 1 debris basins in the Montecito area.

Romero Debris Basin was initially categorized as a Group 2 basin. Following the Thomas Fire and debris flow, the District and NMFS agreed to re-prioritize Romero Debris Basin; thus this site was re-assigned to Group 1 and Rattlesnake Debris Basin (which was not burned or affected by the Thomas Fire) was re-assigned to Group 2.

4.2.3 Setting

Romero Creek originates in the foothills of the Santa Ynez Mountains and drains a 1,303-acre watershed capable of producing 3400 cfs during a 100-year return period precipitation event.

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through winter 2019/2020. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow. The surface substrate consists of silty sand, gravel, and cobbles with large rocks at the upstream end of the basin.

The basin is surrounded by dense to sparse chaparral community brush lands, oak, riparian vegetation, grasslands, and through communities. The Thomas Fire resulted in low to moderate burn severity with small amounts of high burn severity throughout the whole watershed. Resprouting and recolonizing species have begun to emerge in the foothills, but fire and debris flow damage is still prevalent.

A small tributary enters the basin from the east and Romero Creek flows into the basin from the north. The dam is located at the south end of the basin. To the south of the dam, Romero Creek enters a cement lined channel with a series of grouted rock structures, eroded scour pools, and large drops.

4.2.4 Wildlife Survey

A biological field assessment was performed on April 20, 2020. Current conditions have much less vegetation and fewer species present due to the recent fire and disturbance. The canyon surrounding the debris basin is fringed by a grove of large eucalyptus trees, which are partially burned. The debris basin and the adjoining creek channel shows signs of recent scour and erosion. Most of the debris basin itself is bare streambed material, comprised mostly of sand, gravel, and cobble. Little to no vegetation is present in the floor of the basin.

Vegetation along the slopes of the dam is mostly ruderal species and species that follow disturbance, including non-natives such as black mustard, tree tobacco, oxalis, prickly lettuce, ripgut brome. Some native species such as poison oak, bush lupine, and willow sprouts are present on the southern basin slope and adjacent to the access road. The canyon beyond the debris basin has many mature coast live oak trees.

The creek through the basin held flowing water up to 3 inches deep, in a shallow riffle. No pools or other deep water habitat was present, and no emergent vegetation was present. The area is unlikely to support any special-status species in the current state; however further upstream, the creek is more natural with pools and riffle sequences. No nesting birds were detected, and none are likely due to lack of riparian vegetation in and around the basin. The taller, mature eucalyptus trees and mature coast live oak trees beyond the perimeter of the basin may provide habitat for birds and other wildlife; however none was observed in the survey. Baja California tree frogs have been detected previously at the site. Western fence lizards were detected on the basin embankment. The plant list included below includes all plant species documented at the site **before** the 1/9/18 debris flow.

4.2.5 Routine Maintenance Prior to Basin Modification

The Romero Creek Basin is scheduled to be modified in 2022.

Routine maintenance includes keeping the outlet works and other specific areas clear of obstructive vegetation in order to minimize plugging. Maintenance of the outlet works will ensure that all low and moderate flows can pass through the basin without incremental fill-in. With the modification scheduled for 2021 and the watershed still recovering from the fire and debris flow, sediment will not be allowed to accumulate in the basin. Vegetation upstream is still recovering and downstream properties are susceptible to debris damage and flooding. The post-fire maintenance approach is to continue to encourage small sediment movement through the debris basin by maintaining a 15-ft wide pilot channel through the basin and keeping the outlet works and other specific areas clear of obstructive vegetation.

If sediment accumulates rapidly within the basin and the outlet structure cannot be kept open, the sediment will need to be mechanically removed. This maintenance approach encourages small sediment to remain in the system, as feasible, but protects public safety and infrastructure in the event that the basin outlet becomes plugged and filled with sediment.

During the interim period leading up to the debris basin modification, if desilting is required, the District may stockpile sediment on the adjacent property, or at existing offsite storage yards, for re-use in the modification project. The modification project will involve replacing streambed material, cobbles, and boulders as stream features. The District will retain and reuse excavated material of the appropriate sizes whenever feasible.

4.2.6 Project Description for Basin Modification

The Romero Creek Basin consists of a 20-ft high earthen fill embankment capped with grouted rock, over a 48-inch reinforced concrete low flow pipe.

The proposed project entails an improved outlet structure and downstream channel improvements. These modifications will improve the functionality of the facility, allow fish passage for Southern California steelhead, and restore sediment in the system.

The District contracted an engineering consultant with experience in fish-passage designs to perform a hydraulic analysis and to design the modification. WRECO is the same firm that designed the Gobernador Debris Basin modification, which performed well in the 1/9 Debris Flow.

The overall goal is to improve the performance of the debris basin by refining the outlet structure design and connection to the downstream channel. The design focuses on establishing a more natural sediment conveyance through the system while capturing large debris during larger storm events and during burned watershed conditions. The improvements to the downstream channel are limited by the extents of the County property and by the current steep channel slopes throughout the reach.

4.2.7 Design Approach

The development of the improvements requires hydrologic and hydraulic modeling of the site location. WRECO produced a Hydrology and Hydraulics Report (2020) which describes the methods and analysis used to support the proposed modification.

The proposed improvements consist of removing the existing low-flow culvert and a portion of the existing dam structure and replacing it with an open outlet structure. A channel will be constructed through the outlet structure, consisting of a roughened rock-ramp. The modification includes concrete elements at the outlet structure and along the edges of the existing grouted dam embankment to protect the dam structure, while the surface of the streambed will be composed of loose-rock features in the streambed, consistent with NMFS's recommendation for ungrouted roughness features.

In addition to the modifications at the dam embankment, the creek channel through the floor of the basin will be configured as a pilot channel, equivalent to the District's standard debris basin maintenance practices.

WRECO analyzed several alternatives using combinations of varying rock heights, channel configurations, slopes, and weirs in order to meet NMFS fish passage objectives. WRECO's analysis included watershed modeling, hydrogeomorphic analyses, topographic survey and longitudinal profile, vertical adjustment potential, and evaluation of stream geometry. NMFS stated the roughened-rock ramp approach is the only modification design concept that would approved during coordination calls on March 25, April 29, and May 27, 2020. WRECO has produced a Basis of Design Memo to support the design required by NMFS.

The design footprint of the Romero Debris Basin Modification is approximately 275 linear feet and 0.65 acres.

4.2.8 Temporary Impacts and Restoration

The proposed project would require temporary disturbance of approximately 0.65 acre for access, grading, partial dam removal, constructing the new outlet structure, streambed reconfiguration, channel construction, and removal of the embedded concrete culvert. The barrier removal and channel restoration project has been designed to minimize the removal of vegetation and sediment while obtaining the fish-passage objectives and the channel-stability objectives of the stream-simulation method.

The access road is located on the west side of the basin and is undergoing improvements from Romero Canyon Road to the top of the existing dam. The road is improving existing access into the basin, is not being constructed within the stream channel, and will not negatively impact habitat or steelhead. Proposed improvements to the access road from the top of the existing dam to the bottom of the debris basin include a minimum width of 14 ft and thickness of 12 inches concrete with #4 reinforcing bar at an 18-inch spacing from center to center. The road will be crossing an existing side channel where Class IV RSP is proposed to protect the access road and prevent erosion. The road will not be decommissioned, but will remain available for future maintenance needs. Native plant restoration will occur on disturbed slopes.

Construction impacts would be temporary. Following construction, the disturbed areas would be revegetated with native riparian species, including willow, alder, sycamore, oaks, and understory shrubs and herbaceous species. Bio-engineering techniques will be developed and implemented to retain native riparian vegetation then feasible and as part of channel reconstruction. Container plants and cuttings would be used for the trees and shrub species.

The basin floor would naturally recolonize with riparian species, which would persist in between maintenance events.

4.2.9 Routine Maintenance After Basin Modification

After the basin modification project is performed, the District would continue annual assessments and maintenance, as necessary, to manage the functionality of the facility. It is anticipated, based on observations at the similar Gobernador Debris Basin, that sediment removal and disturbance would be minimal and infrequent. Long-term maintenance would still involve vegetation management, pilot channeling and sediment removal as necessary, but would be reduced compared to the current conditions. As an example, after Gobernador Debris Basin was modified in 2008, basin maintenance was minimal and included infrequent pilot channeling, vegetation trimming, and spot-spray to control weeds at the facility. No desilting or large scale vegetation clearing was necessary until the aftermath of the unprecedented Thomas Fire and the subsequent 1/9 Debris Flow.

4.2.9.1 Pilot Channels

A pilot channel will be maintained through the entire basin, from the outlet structure upstream to the upper end of the basin, through the use of heavy equipment or hand tools. The proposed low flow pilot channel is approximately 0.75-ft deep with a 3-ft bottom width and 2:1 side slopes, for a total channel width of approximately 15 ft' and is likely to be mobile and variable by design. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide.

If winter flows damage the pilot channel, then the pilot channel would be maintained in the following dry season. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually. Equipment will be used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin.

Vegetation will be allowed to colonize the windrowed material as well as rest of the basin floor. The pilot channel will be maintained clear of obstructive vegetation (woody vegetation and thick stands of cattails or bulrush) using hand tools and herbicide to allow flows and sediment to reach the outlet structure; however, low growing herbaceous vegetation will be left within the pilot channel.

NMFS and CDFW have indicated their preference for a pilot channel within the basins, as the pilot channel encourages gravel transport and allows a wider/deeper wetted corridor; compared to a series of thin braided channels that can develop if a pilot channel is not maintained.

Maintenance of the pilot channel and the open outlet structure will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Maintenance of the pilot channel and toe of dam will disturb up to approximately 2,600 square feet while allowing approximately 24,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

4.2.9.2 Outlet Works

The proposed improvements include removing a portion of the existing grouted rock embankment and low-flow pipe and replacing it with an outlet structure similar to the one installed at the Gobernador Debris Basin.

The outlet structure will be kept clear of sediment and obstructive vegetation in order to convey sediment transport through the basin. Depending upon the time of year, if heavy rains produce enough run off to plug the outlet structure, but do not fill the basin with sediment, the District may try to expose the outlet using an excavator to encourage passage of sediments and flows so the basin does not accumulate large amounts of standing water that could place pressure on the outlet structures for an extended period.

The modification project involves concrete wingwalls and structures at the outlet. Maintenance would also include minor facility repairs such as concrete repairs, filling/replacing damaged components, replacing HDPE panels, fencing, gates, and other tasks to keep the facility in good condition.

The District will provide maintenance along the length of the roughened rock ramp, when justified to protect the dam embankment structure, the associated cut-off walls, concrete outlet structure, and footings that form the modified structure where the dam embankment currently exists. If displaced rocks lead to erosion that would threaten the integrity of the dam embankment, grouted side-slopes, or the outlet structure, rocks would be replaced as needed to fix the erosion and protect the dam embankment structure and outlet.

The Romero Debris Basin Modification and rock-ramp is based on a stream-simulation methodology. The project is not a hydraulic fish-passage design. The maintenance triggers are not based on hydraulic parameters (such as water depth, jump height, velocity, etc). Instead, the maintenance triggers are bases on protection of the structural elements of the project. Maintenance performed to protect the structural elements of the project will be adequate to also maintain the fish-passability of the site according to the intent of the stream simulation methodology. All maintenance would be confined to the existing project footprint consistent with the existing CEQA analysis.

4.2.9.3 Dam Embankment

In conjunction with the maintenance of a pilot channel, as feasible, the dam face and a 10-ft swath adjacent to the toe of the dam will be kept clear of vegetation. This will be done using hand tools to the maximum extent feasible and occasional use of herbicide. Maintaining these clear areas reduces the amount of rodent activity on the dam embankment, allows the District to inspect the dam face and provides for efficient sediment transport through the basin, again to reduce incremental filling. The basin area outside of the pilot channel will be left to colonize with native riparian vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

4.2.9.4 Desilting

Proposed improvements will likely reduce regular maintenance and desilting requirements within the debris basin. Based on observation at the Gobernador Basin since its modification in 2008, the modified debris basins will pass most fine sediment, such as cobbles and smaller material, through the notch during typical rain events.

The District would continue to inspect the site throughout the rainy season to determine when desilting may be warranted. Complete debris/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed. Triggers for desilting would include a fire in the watershed and/or when the basin effectiveness appears reduced by 25% or more.

When desilting is triggered, the District would excavate the material and vegetation, as described in the PEIR and this Plan. Desilting methods and protective conditions would be equivalent to methods previously described and analyzed.

When desilting is required to clear the outlet structure and/or to remove accumulations from the basin itself, the District will consider selective re-use of some material as suitable spawning gravel for steelhead. If suitable sediments are desilted (typically cobbles, gravel, and coarse sandy material), the District may place windrows of this material on or along the sides of the roughened rock-ramp, downstream of the basin outlet. The material would be placed outside of any standing water but along the edges of creek, spread over the rock ramp as a thin layer and/or strategically placed as low berms (~3 ft high) along the edge of the channel. This strategy allows spawning gravels to remain in the watershed to be gradually carried downstream by future rain events. NMFS and CDFW have indicated their preference to keep spawning gravels in the watershed to replace material that has been scoured away. Staging material downstream of the basin has an additional benefit for the District to save hauling costs and conserving offsite stockpile locations; staging sediment downstream can also replace eroded material from the rock ramp itself. Any downstream gravel staging would be limited to quantities that would not impair downstream habitat or flood protection objectives.

4.2.9.5 Debris Rack

Management of the debris basin after modification would need to consider the possibility of future wildfires. If a fire occurs in the watershed upstream of the debris basin site, the District would consider installing a temporary debris rack. A debris rack facilitates capture of boulders and particularly woody debris that may be discharged following a wildfire.

The debris rack would be located within the debris basin footprint along the creek channel. The debris rack installation would involve minor excavation within the bottom of the basin to install a buried footing; the rack is constructed of a series of large metal pipes which are welded together. The installation process involves similar equipment used for desilting. A temporary dewatering bypass would be implemented as needed, if flowing water is present in the channel. Excavation methods, dewatering, and protective conditions would be equivalent to methods previously described and analyzed in the PEIR.

The debris rack would be left in place for 3 to 5 years while the watershed recovers, after which the rack would be removed. Removal would occur in the dry season when little to no water remains in the channel. A temporary clear water bypass or diversion would be installed as needed. The debris rack would be cut with a torch to remove the metal structure, and the buried footing would be excavated and/or cracked apart in place to facilitate removal. The footing would then be backfilled and the channel conditions restored to a pilot channel as described above.

Installation and removal of the debris rack would involve equivalent methods, impacts, and mitigation measures as previously described and analyzed in the PEIR.

Photograph 4.2.1: Romero Debris Basin

Photograph 4.2.2: Romero Debris Basin – Looking downstream

Map Source: County of Santa Barbara

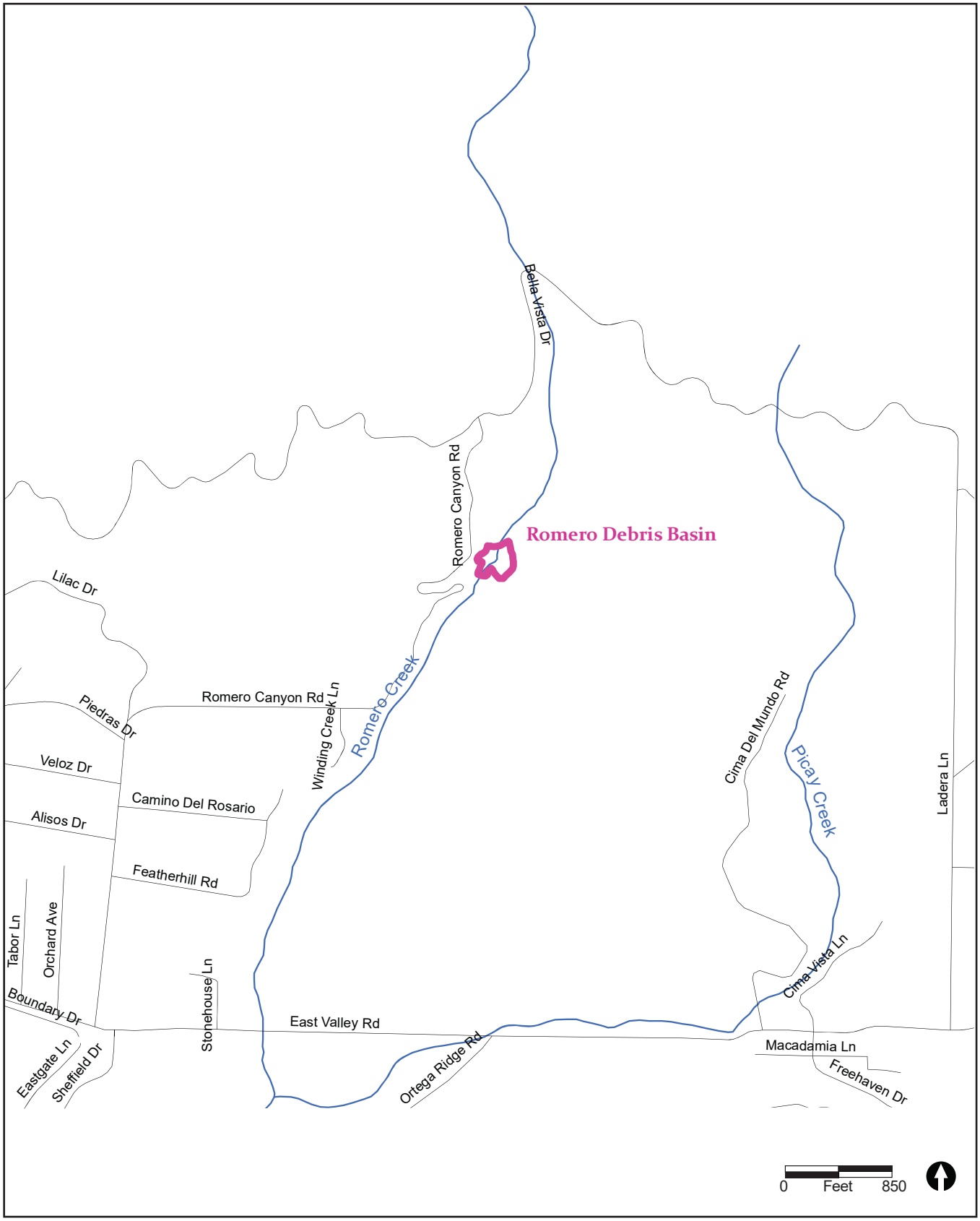


FIGURE 4.2-1
Romero Creek Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.6-1.ai 04/11/17 ccn

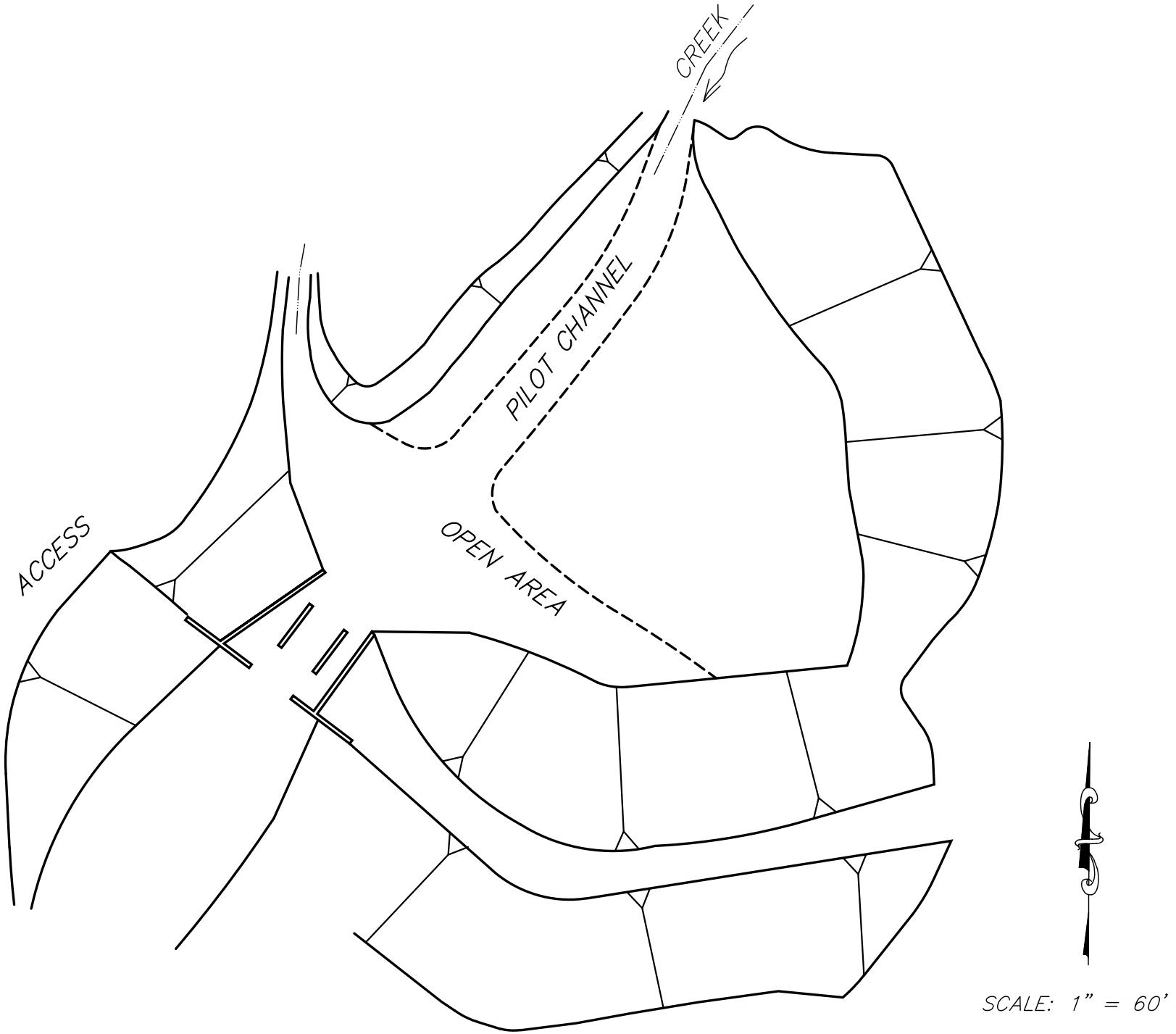
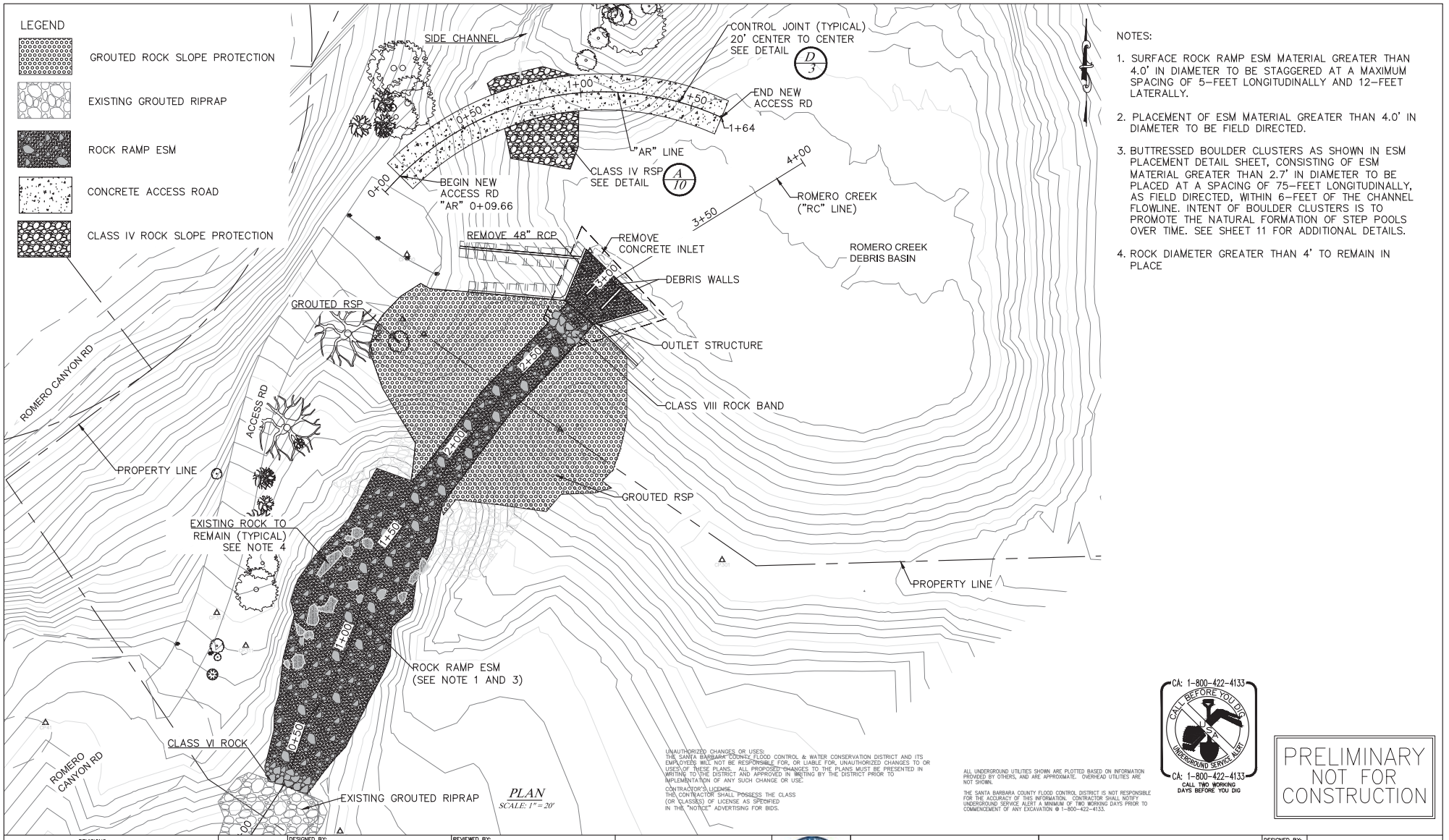


Figure 4.2–2 Romero Debris Basin



NOTES:

1. SURFACE ROCK RAMP ESM MATERIAL GREATER THAN 4.0' IN DIAMETER TO BE STAGGERED AT A MAXIMUM SPACING OF 5–FEET LONGITUDINALLY AND 12–FEET LATERALLY.
2. PLACEMENT OF ESM MATERIAL GREATER THAN 4.0' IN DIAMETER TO BE FIELD DIRECTED.
3. BUTTRESSED BOULDER CLUSTERS AS SHOWN IN ESM PLACEMENT DETAIL SHEET, CONSISTING OF ESM MATERIAL GREATER THAN 2.7' IN DIAMETER TO BE PLACED AT A SPACING OF 75–FEET LONGITUDINALLY, AS FIELD DIRECTED, WITHIN 6–FEET OF THE CHANNEL FLOWLINE. INTENT OF BOULDER CLUSTERS IS TO PROMOTE THE NATURAL FORMATION OF STEP POOLS OVER TIME. SEE SHEET 11 FOR ADDITIONAL DETAILS.
4. ROCK DIAMETER GREATER THAN 4' TO REMAIN IN PLACE

PRELIMINARY
NOT FOR
CONSTRUCTION

REVISIONS			
NO.	DESCRIPTION	DATE	APR

DESIGNED BY:		REVIEWED BY:	
WRECO	DATE	COUNTY SURVEYOR	DATE
REVIEWED BY:		REVIEWED BY	
FLOOD CONTROL ENGINEERING MANAGER	DATE	MAINTENANCE SUPERINTENDENT	DATE
REVIEWED BY		REVIEWED BY	
FLOOD CONTROL DEPUTY DIRECTOR	DATE	ENVIRONMENTAL SERVICES MANAGER	DATE

SANTA BARBARA COUNTY
FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
130 E. VICTORIA STREET
SANTA BARBARA, CA 93101
(805) 568-3440

ROMERO CREEK DEBRIS
BASIN IMPROVEMENTS PROJECT
AREA OF MONTECITO
SANTA BARBARA COUNTY, CALIFORNIA

Figure 4.2-3 LAYOUT PLAN

DESIGNED BY:	AY
DRAWN BY:	MD
CHECKED BY:	HBL

O-xxxx

SHEET 5 OF 19

Filename: ROMERO Base.dwg

Romero Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
APIACEAE		
Conium maculatum	Poison hemlock	I
ARALIACEAE		
Ageratina adenpohora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Gnaphalium luteo-album	Cud weed everlasting	I
Picris echioides	Ox tongue	I
Xanthium strumarium	Cocklebur	I
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
Rorippa nastunium-aquaticum	Watercress	I
CYPERACEAE		
Cyperus alternifolius	African umbrella sedge	I
Eragrostis sp.	Sedge	N
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
PLATAGINACEAE		
Plantago lanceolata	Plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Cortadena jubata	Pampas grass	I
Lolium multiflorum	Italian ryegrass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Rumex crispus	Curly dock	I
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
Salix laevigata	Red willow	N

Romero Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
SCROPHULARIACEAE		
Mimulus cardinalis	Scarlet monkeyflower	N
SOLANACEAE		
Nicotiana glauca	Tree tobacco	I
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

4.3 San Ysidro Creek Debris Basin 2022 Addendum to the Program EIR for Santa Barbara County Flood Control and Water Conservation District

4.3.1 Location

The San Ysidro Creek Debris Basin is located on San Ysidro Creek at the end of West Park Lane in Montecito.

4.3.2 History

San Ysidro Creek Debris Basin is an engineered facility that was built in 1964 by the U. S. Army Corps of Engineers after the Coyote Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994 the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the San Ysidro Debris Basin was burned. All vegetation was removed from the basin in December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

The debris flow resulted in severe damage to the embankment and the outlet pipe, which was reconstructed in place as an interim precaution against any new debris flow events that might occur before final plans for improvements and construction are completed. Severe downcutting of the downstream channel was also observed along with loss of most bank and streambed vegetation.

As part of emergency watershed response, San Ysidro debris basin was desilted following the January 9, 2018 debris flow, and several times through the 2019 and 2020 winter seasons. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

Following the debris flow, the District noted that the Gobernador Debris Basin (previously modified for fish passage with a slotted dam configuration) performed well. The District identified a similar approach to modifying this Group 1 debris basins in the Montecito area.

San Ysidro Debris Basin is a Group 1 basin and is tentatively scheduled to be modified in 2023.

4.3.3 Setting

San Ysidro Creek originates in the foothills of the Santa Ynez Mountains and drains a 2,621-acre watershed capable of producing 3500-cfs during a 100-year return period precipitation event.

Vegetation was removed from the basin in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through winter 2019/2020. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

The basin is surrounded by a canyon with remnant eucalyptus trees that partially burned in the Thomas Fire. The upper watershed was a well-developed riparian corridor with intermixed chaparral; however, the area is currently in a state of recovery after the fire in 2017/2018 and the 1/9/18 Debris Flow. Most of the upper watershed was completely burned. Resprouting and recolonizing species have begun to emerge in the foothills, but fire and debris flow damage are still prevalent.

This site is constrained by an active water main line that crosses the creek approximately 70 feet downstream of the debris basin outlet pipe. The water line is owned and operated by the Montecito Water District (MWD) and was damaged in the 1/9/18 debris flow. MWD has replaced the water line with a new buried line along the same alignment. The new line is encased in concrete at an approximate depth of 5 ft below existing grade.

4.3.4 Wildlife Survey

A biological field assessment was performed on August 1, 2022. Due to the 2018 Thomas Fire, subsequent debris flow, and recent sediment cleanouts, there is no vegetation within the basin floor and very little vegetation growing on the banks. Streambed material within the basin is comprised of sand, gravel, cobble, boulders, and areas of exposed bedrock. The creek channel up and downstream of the basin is very unstable and shows signs of scour and erosion with many areas of exposed bedrock. The debris basin is surrounded by large eucalyptus trees, which are partially burned.

Vegetation surrounding the basin was dominated by nonnative eucalyptus. Native species observed on the upper banks of the basin include, canyon sunflower, deerweed, laurel sumac, mugwort, poison oak, mulefat, coast live oak and toyon.

The creek through the basin had flowing water with an average depth of approximately 2-3”, in a shallow riffle. No pools or other deep-water habitat was present, and no emergent vegetation was present. The area is unlikely to support any special status species in the current state. No nesting birds were detected near the basin due to a lack of riparian vegetation in or around the basin. The large eucalyptus trees surrounding the basin may provide habitat for birds and other wildlife. A nest survey was performed and no nesting activity was observed in trees around the basin.

Wildlife observations include: Bewick's wren, northern mockingbird, orange-crowned warbler, Anna’s hummingbird, California towhee, California scrub jay, black phoebe, and

house finch, two-striped garter snake and Baja California treefrogs. Western fence lizards were detected on the basin embankment. The site is designated critical habitat for steelhead trout. Raccoon tracks and domestic dog tracks are common, as well as evidence of frequent human traffic from the trailhead.

4.3.5 Routine Maintenance Prior to Basin Modification

San Ysidro Basin is scheduled to be modified in 2023.

With the modification scheduled for 2023 and the watershed still recovering from the fire and debris flow, standard management practice does not allow sediment to accumulate in the basin. Vegetation upstream is still recovering and downstream properties are susceptible to debris damage and flooding. The post-fire maintenance approach is to continue to encourage small sediment movement through the debris basin by maintaining a 15-ft wide pilot channel through the basin and keeping the outlet works and other specific areas clear of obstructive vegetation.

If sediment accumulates rapidly within the basin and the outlet structure cannot be kept open, the sediment will need to be mechanically removed. This maintenance approach encourages small sediment to remain in the system, as feasible, but protects public safety and infrastructure in the event that the basin outlet becomes plugged and filled with sediment. Maintenance of the outlet works will ensure that the basin passes low and moderate flows so that the basin doesn't incrementally fill-in.

During the interim period leading up to the debris basin modification, if desilting is required, the District may stockpile sediment on the adjacent property, or at existing offsite storage yards, for re-use in the modification project. The modification project will involve replacing streambed material, cobbles, and boulders as stream features. The District will retain and reuse excavated material of the appropriate sizes whenever feasible.

4.3.6 Project Description for Basin Modification

The San Ysidro Creek Debris Basin consists of a 12 to 16-foot high earthen fill dam embankment capped with grouted rock covering a 48-inch corrugated metal low flow pipe.

The Debris Basin is proposed for modification to improve the functionality of the facility, to allow fish passage for Southern California steelhead, and to restore sediment transport in the system. The proposed project entails a modification as the central portion of the grouted dam structure will be excavated and the culvert will be removed. The creek channel through the project reach will be reconstructed using the Stream Simulation Method and a debris rack will be installed within the basin for improved debris control.

4.3.7 Design Approach

The District contracted an engineering consultant with experience in fish-passage designs, (WRECO), to perform a hydraulic analysis and to design the modification. WRECO is the same firm that designed the Gobernador Debris Basin modification, which performed well in the 1/9/18 debris flow.

The overall goal of the Project is to improve the performance of the debris basin by refining the outlet structure design and connection to the downstream channel. The design focuses on establishing a more natural sediment conveyance through the system while capturing large debris during larger storm events and during burned watershed conditions.

WRECO produced a Hydrology and Hydraulics Report (2019) which describes the methods and analysis used to model the watershed and hydraulics of the burned and unburned site conditions.

The proposed improvements consist of removing a portion of the existing grouted rock riprap embankment and culvert and replacing it with an open channel through the existing embankment. A stream-simulation channel will be constructed to span the difference in elevation between the embankment and the limits of the downstream channel improvements. Rock-slope protection will be grouted on the sides of the channel and along the remaining portions of the existing embankment.

In addition to the modifications at the dam embankment, the creek channel through the floor of the basin will also be configured using the stream simulation method, to facilitate fish passage and sediment transport while maintaining the functionality of the basin.

WRECO analyzed several alternatives using combinations of varying rock heights, channel configurations, slopes, and weirs in order to meet NMFS fish passage objectives. The stream simulation method was chosen as the superior alternative due to overall project objectives and site constraints.

Montecito Water District owns and maintains a 14-inch waterline that crosses San Ysidro Creek approximately 70 feet downstream of the San Ysidro Debris Basin outlet pipe. The water line was damaged in the 1/9/18 debris flow and has since been replaced by MWD. The water line is currently encased in concrete slurry below the creek grade. The District's modification project is compatible with the new MWD line.

The design footprint of the San Ysidro Debris Basin Modification is approximately 170 linear feet and 0.25 acres for the embankment modification and downstream improvements; along with another 300 linear ft and 0.15 acres for the upstream pilot channel.

4.3.8 Temporary Impacts and Restoration

The proposed project would require temporary disturbance of approximately 0.45 acre for access, grading, partial dam removal, constructing the new outlet channel, streambed reconfiguration, channel construction, and removal of the embedded corrugated metal culvert. The barrier removal and channel restoration project has been designed to minimize the removal of vegetation and sediment while obtaining the fish-passage objectives and the channel-stability objectives of the stream-simulation method.

Construction impacts would be minor and temporary. Following construction, the disturbed areas that are suitable for replanting would be revegetated with native riparian species, including willow, alder, sycamore, oaks, and understory shrubs and herbaceous species. Bio-

engineering techniques will be developed and implemented to retain native riparian vegetation when feasible and as part of channel reconstruction. Container plants and/or cuttings and root wads would be used for the trees and shrub species. The basin floor and restored channel would naturally recolonize with riparian species, which would persist in between maintenance events.

4.3.9 Routine Maintenance After Basin Modification

After the basin modification project is performed, the District would continue annual assessments and maintenance, as necessary, to manage the functionality of the facility. It is anticipated, based on observations at the similar Gobernador Debris Basin, that sediment removal and disturbance would be minimal and infrequent. Long-term maintenance would still involve vegetation management within the basin, pilot channeling and sediment removal as necessary, but would be reduced compared to the current conditions. As an example, after Gobernador Debris Basin was modified in 2008, basin maintenance was minimal and included infrequent pilot channeling, vegetation trimming, and spot-spray to control weeds at the facility. No desilting or large-scale vegetation clearing was necessary until the aftermath of the unprecedented Thomas Fire and the subsequent 1/9 Debris Flow.

4.3.9.1 Pilot Channels

A pilot channel will be maintained as a restored stream channel through the entire basin, from the outlet structure upstream to the upper end of the basin, through the use of heavy equipment or hand tools as needed, following the District's standard routine maintenance practices. The proposed low flow pilot channel is approximately 3-5 ft deep with an 8-ft low flow width and 20-ft total width and 2:1 side slopes and is likely to be mobile and variable by design.

If winter flows damage the pilot channel, then the pilot channel would be maintained in the following dry season. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually. Equipment will be used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin.

Vegetation will be allowed to colonize the windrowed material as well as rest of the basin floor. The pilot channel will be maintained clear of obstructive vegetation (woody vegetation and thick stands of cattails or bulrush) using hand tools and herbicide to allow flows and sediment to reach the outlet structure; however, low growing herbaceous vegetation will be left within the pilot channel.

NMFS and CDFW have indicated their preference for pilot channel within the basins, as the pilot channel encourages gravel transport and allows a wider/deeper wetted corridor; compared to a series of thin braided channels that can develop if a pilot channel is not maintained.

Maintenance of the pilot channel and the open outlet structure will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

It is anticipated that the basin modification will reduce the frequency and need for maintenance of the pilot channel and basin. If needed, maintenance of the pilot channel and toe of dam may disturb up to approximately 9,000 square feet while allowing approximately 21,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

4.3.9.2 Outlet Channel

The proposed improvements include removing a portion of the existing embankment and low-flow pipe and replacing it with a stream-simulation channel, debris rack, and grouted rock-slope protection on the upper banks.

The outlet opening and debris rack will be kept clear of sediment and obstructive vegetation in order to convey sediment through the basin. Depending upon the time of year, if heavy rains produce enough run off to plug the outlet or debris rack, , but do not fill the basin with sediment, the District may try to expose the outlet using an excavator to encourage passage of sediments and flows so the basin does not accumulate large amounts of standing water that could place pressure on the outlet structures for an extended period.

The modification project involves concrete wingwalls and grouted rock-slope protection at the outlet. Maintenance would also include minor facility repairs such as concrete repairs, filling/replacing damaged components, replacing HDPE panels, fencing, gates, and other tasks to keep the facility in good condition.

If boulders or cobbles are scoured away from the outlet works, maintenance may be performed to replace such material to protect the structural integrity of the outlet works, debris rack, and transitional areas. Replacing lost boulders may involve temporary excavation to key-in partially buried boulders. All maintenance would be confined to the existing project footprint consistent with the existing CEQA analysis.

4.3.9.3 Dam Embankment

In conjunction with the maintenance of a pilot channel, as feasible, the dam face and a 10-ft swath adjacent to the toe of the dam will be kept clear of vegetation. This will be done using hand tools to the maximum extent feasible and occasional use of herbicide. Maintaining these clear areas reduces the amount of rodent activity on the dam embankment, allows the District to inspect the dam face and provides for efficient sediment transport through the basin, again to reduce incremental filling. The basin area outside of the pilot channel will be left to colonize with native riparian vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

4.3.9.4 Desilting

Proposed improvements will likely reduce regular maintenance and desilting requirements within the debris basin. Based on observation at the Gobernador Basin since its modification in 2008, the modified debris basins will pass most fine sediment, such as cobbles and smaller material, through the notch during typical rain events.

The District would continue to inspect the site throughout the rainy season to determine when desilting may be warranted. Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce significantly more debris by comparison with a non-burned watershed. Triggers for desilting would include a fire in the watershed and/or when the basin effectiveness appears reduced by 25% or more.

When desilting is triggered, the District would excavate the material and vegetation, as described in the PEIR, and the Plan Desilting methods and protective conditions would be equivalent to methods previously described and analyzed.

When desilting is required to clear the outlet structure and/or to remove accumulations from the basin itself, the District will consider selective re-use of some material as suitable spawning gravel for steelhead. If suitable sediments are desilted (typically cobbles, gravel, and coarse sandy material), the District may place windrows of this material along the sides of the channel, and/or downstream of the basin outlet. The material would be placed outside of any standing water but along the edges of creek, spread over the channel as a thin layer and/or strategically placed as low berms (~3 ft high) along the edge of the channel. This strategy allows spawning gravels to remain in the watershed to be gradually carried downstream by future rain events. NMFS and CDFW have indicated their preference to keep spawning gravels in the watershed to replace material that has been scoured away. Staging material downstream of the basin has an additional benefit for the District to save hauling costs and conserving offsite stockpile locations; staging sediment downstream can also replace eroded material downstream. Any downstream gravel staging would be limited to quantities that would not impair downstream habitat and flood protection objectives.

4.3.9.5 Debris Rack

The debris rack would be located within the debris basin footprint along the creek channel, upstream of the outlet walls. The debris rack installation would involve minor excavation within the bottom of the basin to prepare the site and anchor the pipes into the subsurface sediment and bedrock. The rack is constructed of a series of large metal pipes which are welded together. The installation process involves similar equipment used for desilting. A temporary dewatering bypass would be implemented as needed, if flowing water is present in the channel. Excavation methods, dewatering, and protective conditions would be equivalent to methods previously described and analyzed in the PEIR.

Installation of the debris rack would involve equivalent methods, impacts, and mitigation measures as previously described and analyzed in the PEIR.

Photograph 4.3-1: San Ysidro Creek Debris Basin

Photograph 4.3-2: San Ysidro Creek Debris Basin and MWA Water Line Repair

Map Source: County of Santa Barbara

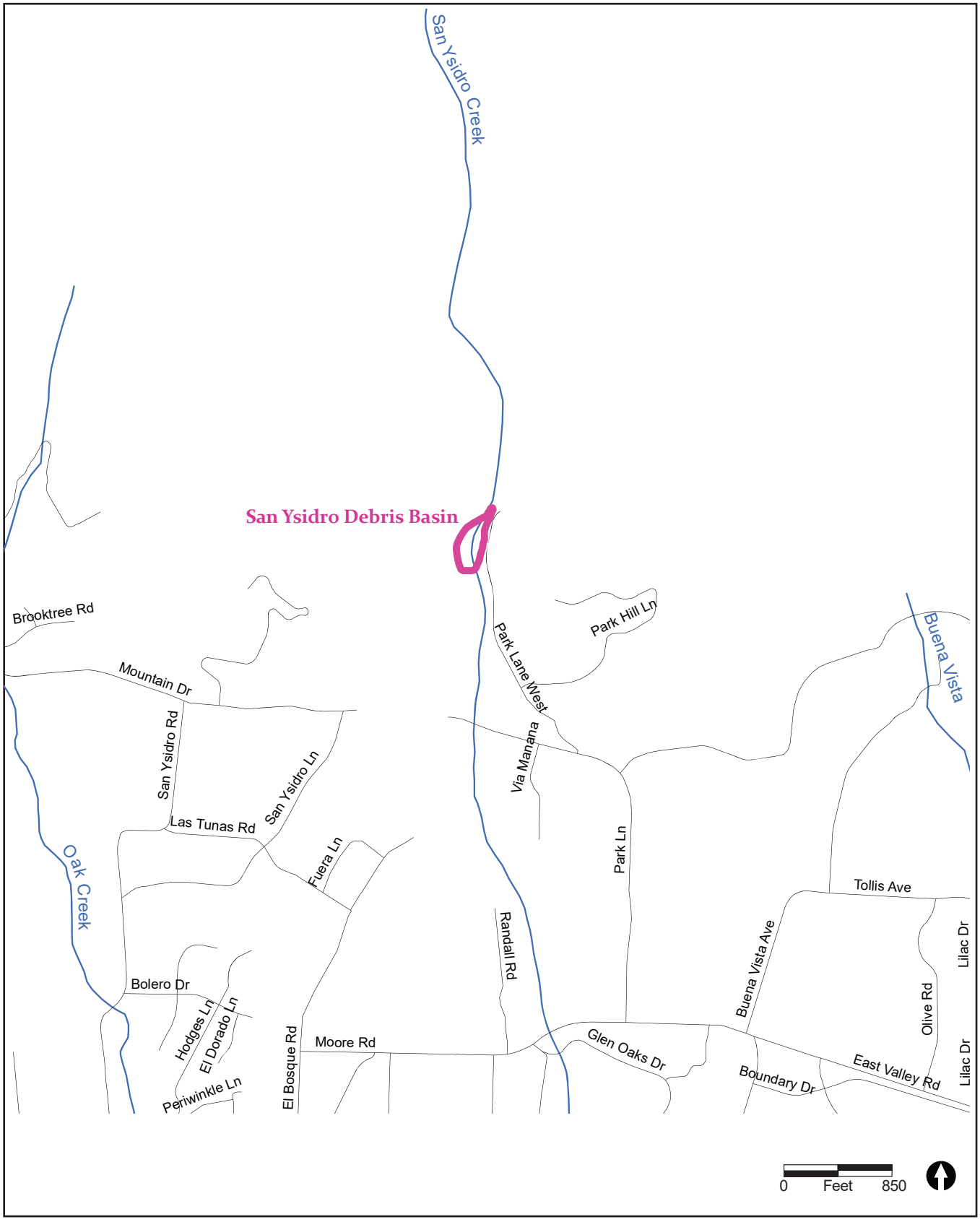


FIGURE 4.3-1
San Ysidro Creek Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig4.5-1.ai 03/28/17 ccn

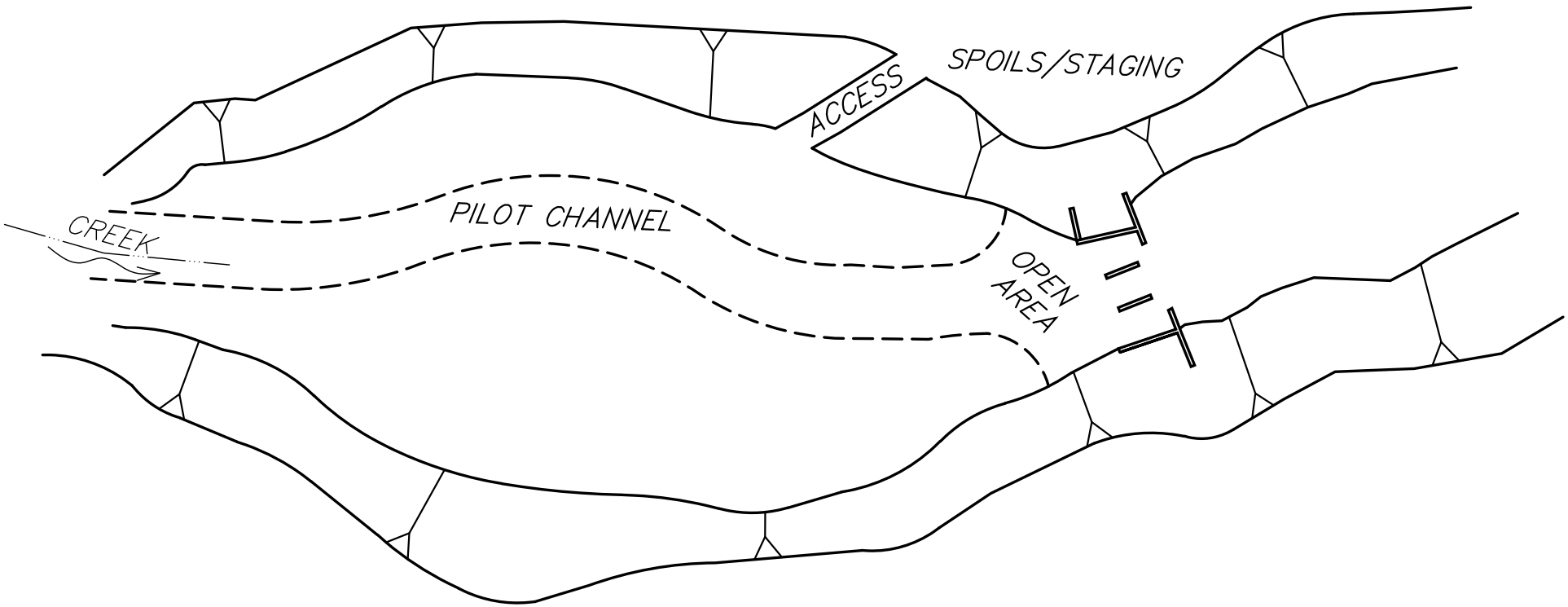


Figure 4.3–2 San Ysidro Debris Basin

LEGEND

GROUTED ROCK SLOPE PROTECTION

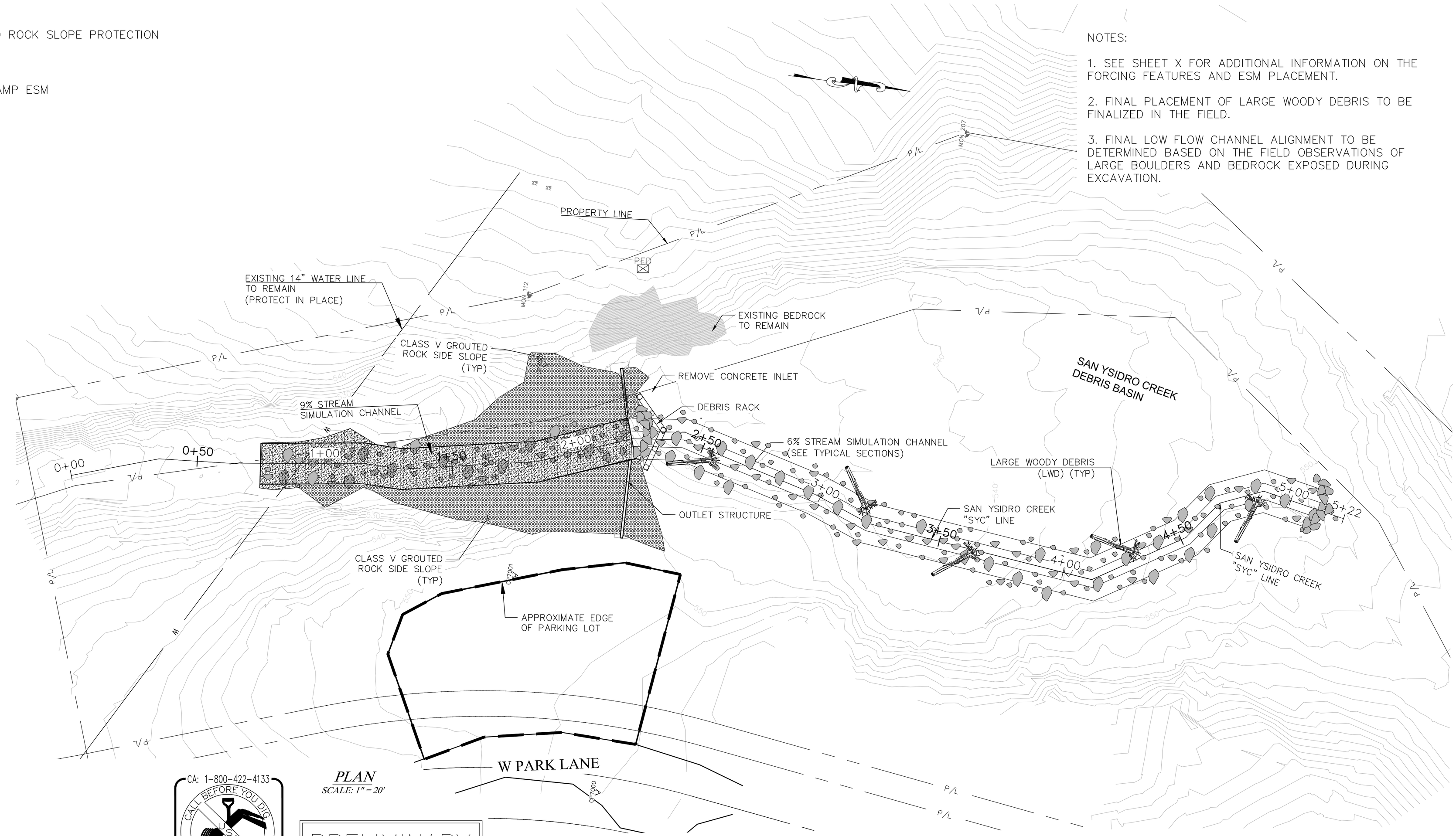
ROCK RAMP ESM

NOTES:

1. SEE SHEET X FOR ADDITIONAL INFORMATION ON THE FORCING FEATURES AND ESM PLACEMENT.

2. FINAL PLACEMENT OF LARGE WOODY DEBRIS TO BE FINALIZED IN THE FIELD.

3. FINAL LOW FLOW CHANNEL ALIGNMENT TO BE DETERMINED BASED ON THE FIELD OBSERVATIONS OF LARGE BOULDERS AND BEDROCK EXPOSED DURING EXCAVATION.



PLAN
SCALE: 1" = 20'

CA: 1-800-422-4133
CALL BEFORE YOU DIG
USA
UNDERGROUND SERVICE ALERT
CA: 1-800-422-4133
CALL TWO WORKING
DAYS BEFORE YOU DIG

PRELIMINARY
NOT FOR
CONSTRUCTION

REVISIONS			
NO.	DESCRIPTION	DATE	APR
1	30% SUBMITTAL	09/21/22	RP

DESIGNED BY:		REVIEWED BY:	
WRECO	DATE	COUNTY SURVEYOR	DATE
REVIEWED BY:		REVIEWED BY	
FLOOD CONTROL ENGINEERING MANAGER	DATE	MAINTENANCE SUPERINTENDENT	DATE
REVIEWED BY		REVIEWED BY	
FLOOD CONTROL DEPUTY DIRECTOR	DATE	ENVIRONMENTAL SERVICES MANAGER	DATE

SANTA BARBARA COUNTY
FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
130 E. VICTORIA STREET
SANTA BARBARA, CA 93101
(805) 568-3440

SAN YSIDRO DEBRIS
BASIN IMPROVEMENTS PROJECT

AREA OF MONTECITO
SANTA BARBARA COUNTY, CALIFORNIA

LAYOUT PLAN

DESIGNED BY:	LB
DRAWN BY:	MD
CHECKED BY:	HBL

O-xxxx

SHEET X OF X

Filename: San Ysidro DB Plans.DWG

San Ysidro Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
Malosma laurina	Laurel sumac	N
APIACEAE		
Conium maculatum	Poison Hemlock	I
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Baccharis salicifolia	Mule fat	N
Picris echioides	Ox tongue	I
Xanthium strumarium	Cocklebur	I
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
Rorippa nasturtium-aquaticum	Watercress	I
CAPRIFOLIACEAE		
Sambucus mexicana	Elderberry	N
CYPERACEAE		
Cyperus eragrostis	Tall umbrella sedge	N
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
LAMIACEAE		
Mentha sp.	Mint	I
MYRTACEAE		
Eucalyptus sp.	Eucalyptus	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Cortadena jubata	Pampas grass	I
Lolium multiflorum	Italian ryegrass	I
Polypogon monspeliensis	Rabbitsfoot grass	I

San Ysidro Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
RANUNCULACEAE		
Clematis ligusticifolia	Creek clematis	N
RHAMNACEAE		
Ceanothus spinosus	Greenbark ceanothus	N
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Nicotiana glauca	Tree tobacco	I
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Broad-leaved cattail	N
*N = Native; I = Introduced		

4.4 Maria Ygnacio Creek, East Branch Debris Basin 2022 Addendum to the Program EIR for Santa Barbara County Flood Control and Water Conservation District

4.4.1 Location

The Maria Ygnacio Creek, East Branch Debris Basin is located on the east branch of Maria Ygnacio Creek approximately 1,000 feet north of Via Regina.

4.4.2 History

The Maria Ygnacio Creek, East Branch Debris Basin is an engineered facility that was built in 1990 by the U. S. Department of Agriculture, Soil Conservation Service and the Santa Barbara County Flood Control District after the Painted Cave Fire burned a large percentage of the watershed. The basin was constructed in a fallow field immediately adjacent to the east branch of Maria Ygnacio Creek and the creek was re-routed through the basin.

An EIR was finalized in 1992 that analyzed the long-term disposition of the two Maria Ygnacio Debris Basins to be implemented after the watershed had recovered from the effects of the fire (approximately 5 years post-fire). As a result of the EIR the proposed long-term disposition of the Maria Ygnacio, East Branch Debris Basin consisted of allowing the basin to partially fill, re-grading the banks to lessen the slope, replanting the basin slopes, and surrounding areas impacted by construction of the basin, with native riparian species, and providing routine maintenance.

The basin was maintained on an annual basis since construction. Desilting projects occurred in 1991, 1992, 1995, and 1998. Heavy rains in January 1995 filled the basin with sediment and the basin was desilted in January of that year. The basin partially filled again in March 1995 and that material was graded within the basin to create 6:1 side slopes. The basin was desilted again following the El Nino rains in 1998 but the 6:1 slopes were retained as well as the restoration plants that were planted mainly along the upper slopes surrounding the basin. Vegetation that had colonized the bottom portion of the slopes was removed in 2009, after the Jesusita Fire, in anticipation of increased flows/debris, however no sediment was removed and the restoration plants that occur along the upper slopes was not removed. The vegetation since recovered throughout the basin floor.

The East Branch Debris Basin was modified in 2019 as part of the District's Group 1 debris basin modification effort (see below). Later in 2019, the Cave Fire burned part of the upper watershed above the project location. A temporary debris rack was installed within the reconfigured creek corridor as part of the emergency watershed response.

4.4.3 Setting

The east branch of Maria Ygnacio Creek originates in the foothills of the Santa Ynez Mountains above suburban Goleta, CA. The watershed is comprised of 1,122 acres capable of producing 1600 cfs during a 100-year precipitation event. The surrounding land uses near

the basin and within the watershed are blend of National Forest land, cattle ranches, citrus and avocado orchards, and rural home properties.

The East Branch Debris Basin was constructed as an off-channel basin; the original basin was excavated to the east of the creek channel and the creek was diverted into the basin. The modification project that was performed in 2019 involved re-routing the creek back into its original channel and excavating the portion of the dam embankment that was blocking the channel. The creek banks were planted extensively with native riparian species.

The off-channel basin remains onsite and adjacent to the restored creek. The project was designed so that very high flows that break out of the creek channel would be diverted into the basin.

The creek channel upstream of the basin is largely degraded, with construction rubble, ranch road crossings, washouts, and predominantly weedy vegetation. The property immediately upstream of the basin has a large barn, staging areas, outbuildings, and fences associated with agriculture and storage. Downstream of the basin, the riparian habitat is moderate to high quality, with a mixed age riparian canopy. Approximately 1300 feet downstream from the dam, the east branch joins the main stem of Maria Ygnacio Creek.

4.4.4 Wildlife Survey

The site was assessed by the District Biologist in spring 2019 and extensively throughout the fish-passage project in 2019. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2017.

The basin provides a blend of habitat types. The main creek corridor upstream and downstream of the site is mature willow riparian habitat. Dominant plant species include arroyo willow, sandbar willow, and mule fat with sporadic cottonwood and sycamore trees. The perimeter of the basin itself has been extensively revegetated with riparian and coastal sage species, such as lemonadeberry, sugarbush, coyote bush, toyon, and coast live oak. The floor of the basin was desilted in 2009. Most of the vegetation was brushed in 2018 in advance of the fish-passage project to provide access and stockpile areas to replace excavated sediment.

The side-slopes of the basis were not disturbed and retain mature vegetation. The floor of the basin was re-filled with sediment from the project and is rapidly re-colonizing.

The creek channel typically goes dry during the summer months. The area provides suitable habitat for Baja California treefrog when water is present. California roach and mosquitofish have also been observed at this site. The basin site is upstream of the critical habitat for steelhead trout; this species has been detected in this watershed and a single juvenile steelhead trout was detected at the downstream end of the basin in 2019. An adult red-legged frog was also detected downstream of the basin. Raccoon, opossum, coyote, and domestic dog tracks are common in the area. The habitat is suitable for a variety of riparian birds with a mix of cover types. Birds detected in the area include common yellowthroat, acorn

woodpecker, black phoebe, song sparrow, American crow, horned owl, California towhee, Bewick's wren, California scrub jay, linnet, mourning dove, and turkey vulture.

4.4.5 Basin Modification Completed 2019

The Maria Ygnacio East Branch Basin was modified in 2019. The project was previously described in the 2017 DBMRP. Project components at this facility included:

- Removal of part of the grouted-rock dam
- Re-routing the creek channel back into its original course
- Excavation of sediment to divert flow into the original channel
- Grading stream banks
- Installation of boulders features, streambed material, and LWD structures
- Native plant installation along banks

The project entails re-routing of the creek around the basin and back into the pre-existing channel and away from the riprap dam. The project was completed in fall 2019 and maintenance of the native plant restoration is ongoing, and expected to continue for 3 to 5 years.

Shortly after the project was completed, the Cave Fire erupted in the upstream watershed. As part of emergency response efforts, the District installed a temporary debris rack within the restored creek channel. The debris rack involves a buried footing covered in natural streambed material and a series of large vertical steel pipes. The debris rack is meant to capture boulders and debris that may be carrier downstream after the wildfire. The rack allows flowing water to continue through the creek channel and does not present a barrier to fish and wildlife. The rack is expected to remain in place for 3-5 years while the watershed recovers.

4.4.6 Routine Maintenance After Basin Modification

Maria Ygnacio East Branch Basin was modified in 2019. As such, potential maintenance is expected to be minimal. Maria Ygnacio, East Branch Basin typically accumulates little to no sediment except during very large storm events. The upstream end of the project area features a bypass berm that was designed to retain flows in the original channel, except in the case of an extreme event, in which case excess flows and/or debris may overtop the berm and collect in the former basin footprint.

If the region were to experience a heavy rainfall and runoff season (such as after a wildfire) and the bypass berm were to overtop, routine maintenance may be necessary to repair the berm, restore creek flow in the original channel, and remove excess sediment from the former basin bypass. Such maintenance is not expected except in an extreme event.

Other minor maintenance of the restored creek channel may involve minor sediment grading to repair pockets of erosion that could appear while the native plants are still becoming established. Ongoing restoration maintenance, such as watering, weeding, mowing, trimming trees, and irrigation repairs are expected to continue for 3 to 5 years.

Following a fire or major flood event, the debris rack may collect boulders and other debris. If this occurs, the District would remove the debris with a crane or excavator to restore the normal function of the creek. A designated (unpaved) access lane and staging area for this purpose was incorporated into the design, using the existing access road adjacent to the basin.

In conjunction with the maintenance of a restored creek channel, the remaining offline dam and a 10-foot swath adjacent to the toe of the dam will be kept clear of vegetation. This will be done using hand tools to the maximum extent feasible and occasional use of herbicide. Maintaining these clear areas reduces the amount of rodent activity on the dam embankment and allows the District to inspect the dam face.

4.4.7 Temporary Impacts and Restoration

The dam modification project temporarily disturbed approximately 0.96 acres. The barrier removal and channel restoration project was designed to minimize the removal of vegetation and sediment while obtaining the fish-passage objectives and the channel-stability objectives of the stream-simulation method.

Disturbed areas along the creek channel were revegetated with native riparian species, including willow, alder, sycamore, oaks, and understory shrubs and herbaceous species. The former basin area has been allowed and encouraged to re-populate naturally and is expected to continue to re-vegetate through a series of seral stages.

Photograph 4.4-1: Maria Ygnacio Creek, East Branch Debris Basin Upstream

Photograph 4.4-2: Maria Ygnacio Creek, East Branch Debris Basin Aerial, prior to modification

Photograph 4.4-3: Maria Ygnacio Creek, East Branch Modification

Photograph 4.4-4: Maria Ygnacio Creek, East Branch Modification, Post-Project

Map Source: County of Santa Barbara

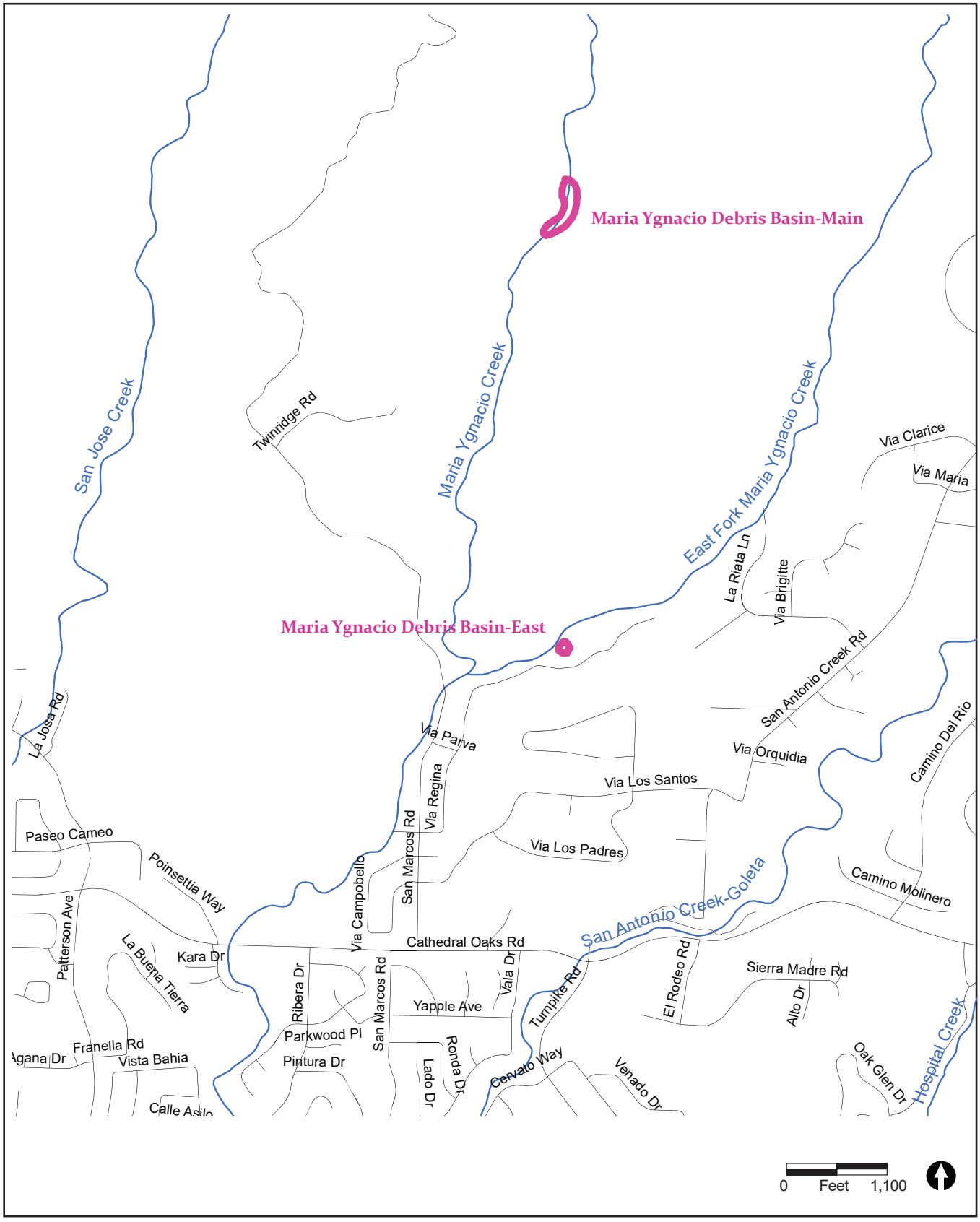


FIGURE 4.4-1

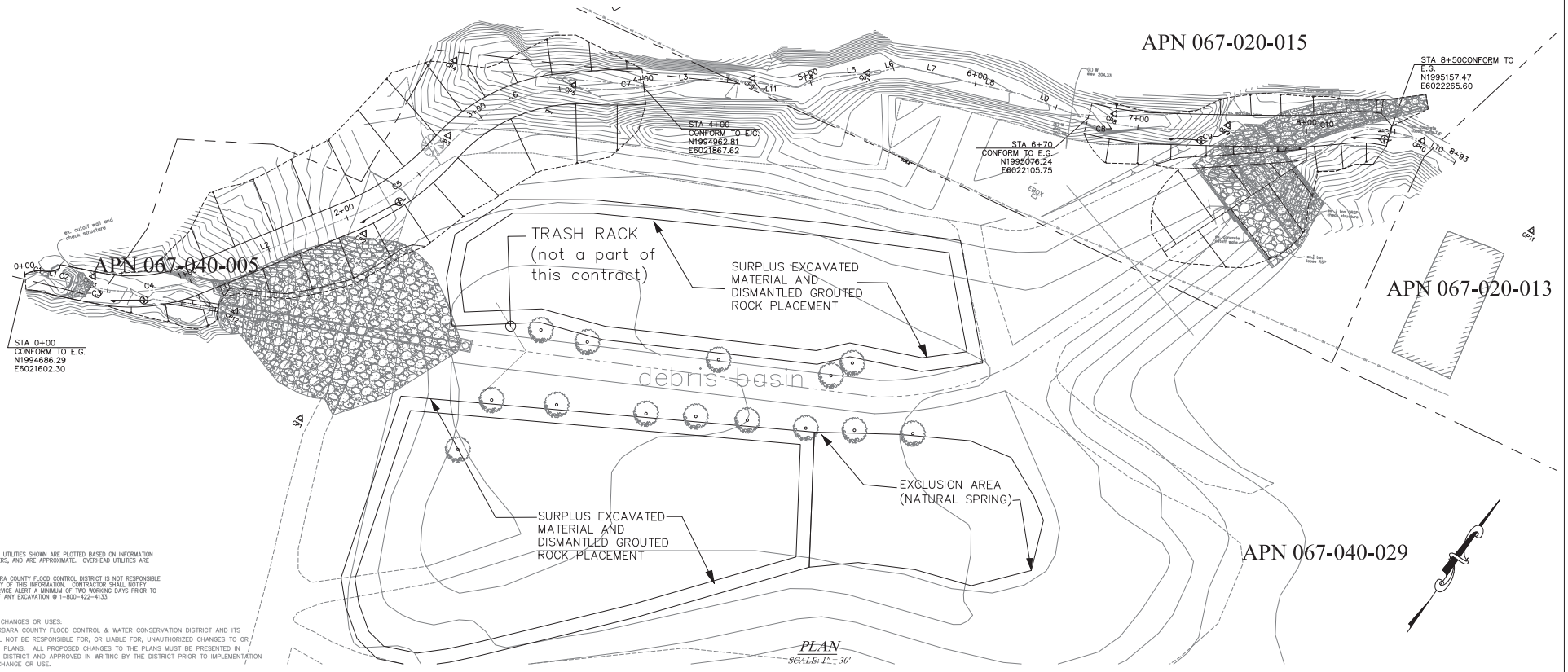
Maria Ygnacio Creek, East Branch Debris Basin Map

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L1	4.231	N76° 55' 56.52"E	(6021615.0834,1994691.4875)	(6021619.2043,1994692.4440)
L2	99.952	N38° 36' 26.81"E	(6021688.9049,1994730.0165)	(6021751.2733,1994808.1232)
L3	34.775	N52° 36' 49.01"E	(6021872.9910,1994966.7792)	(6021900.6218,1994987.8942)
L4	17.072	N40° 58' 34.44"E	(6021946.7862,1995007.5256)	(6021957.9812,1995020.4148)
L5	32.663	N54° 51' 55.88"E	(6021957.9812,1995020.4148)	(6021984.6933,1995039.2124)
L6	13.858	N44° 33' 08.03"E	(6021984.6933,1995039.2124)	(6021994.4159,1995049.0881)
L7	34.953	N74° 28' 58.75"E	(6021994.4159,1995049.0881)	(6022028.0946,1995058.4388)
L8	36.432	N73° 34' 32.54"E	(6022028.0946,1995058.4388)	(6022063.0395,1995068.7398)
L9	30.131	N80° 59' 23.10"E	(6022063.0395,1995068.7398)	(6022092.7985,1995073.4586)
L10	26.562	S89° 37' 44.82"E	(6022281.4005,1995159.8804)	(6022307.9623,1995159.7085)

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C1	34.583	13.890	N67° 52' 34.09"E	(6021602.3023,1994686.2914)	(6021615.0834,1994691.4875)
C2	438.110	10.262	N72° 12' 07.77"E	(6021619.2043,1994692.4440)	(6021628.9750,1994695.5806)
C3	367.203	23.223	N71° 35' 53.36"E	(6021628.9750,1994695.5806)	(6021651.0064,1994702.9103)
C4	104.696	46.988	N54° 25' 35.47"E	(6021651.0064,1994702.9103)	(6021688.9049,1994730.0165)
C5	154.565	74.165	N25° 31' 24.21"E	(6021751.2733,1994808.1232)	(6021782.9238,1994874.4102)
C6	106.228	99.478	N39° 25' 57.84"E	(6021782.9238,1994874.4102)	(6021843.8258,1994948.4671)
C7	181.564	34.489	N57° 52' 34.78"E	(6021843.8258,1994948.4671)	(6021872.9910,1994966.7792)
C8	183.067	49.956	N72° 08' 53.87"E	(6022092.7985,1995073.4586)	(6022140.2019,1995088.7254)
C9	2476.536	93.350	N61° 39' 17.07"E	(6022140.2019,1995088.7254)	(6022222.3549,1995133.0439)
C10	566.412	24.860	N55° 41' 33.63"E	(6022222.3549,1995133.0439)	(6022242.8883,1995147.0547)
C11	73.695	41.123	N71° 34' 50.68"E	(6022242.8883,1995147.0547)	(6022281.4005,1995159.8804)

CONTROL POINT TABLE

CONTROL POINT#	NORTHING	EASTING	ELEVATION	DESCRIPTION	RECORD
CP1	1994692.132	6021786.376	200.604	SET 1/2" PIPE WITH MAG NAIL	S942_SC8351
CP2	1994806.042	6021765.553	200.701	SET 1/2" PIPE WITH MAG NAIL	S942_SC8351
CP3	1994881.122	6021780.627	201.619	SET 1/2" PIPE WITH MAG NAIL	S942_SC8351
CP4	1994921.732	6021761.967	195.253	SET SPIKE AND CHASER	SC8351
CP5	1994943.594	6021830.638	187.779	SET SPIKE AND CHASER	SC8351
CP6	1994999.215	6021921.215	191.691	SET SPIKE AND CHASER	SC8351
CP7	1995035.476	6021978.893	192.034	SET SPIKE AND CHASER	SC8351
CP8	1995086.199	6022118.297	198.019	SET SPIKE AND CHASER	SC8351
CP9	1995113.196	6022180.032	206.952	SET SPIKE AND CHASER	SC8351
CP10	1995161.807	6022285.076	201.662	SET SPIKE AND CHASER	SC8351
CP11	1995147.082	6022367.483	202.537	SET SPIKE AND CHASER	SC8351
CP12	1994728.318	6021721.909	180.202	SET MAG NAIL	SC8351
CP13	1994705.244	6021638.184	172.692	SET SPIKE AND CHASER	SC8351



ALL UNDERGROUND UTILITIES SHOWN ARE PLOTTED BASED ON INFORMATION PROVIDED BY OTHERS, AND ARE APPROXIMATE. OVERHEAD UTILITIES ARE NOT SHOWN.

THE SANTA BARBARA COUNTY FLOOD CONTROL DISTRICT IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT A MINIMUM OF TWO WORKING DAYS PRIOR TO COMMENCEMENT OF ANY EXCAVATION @ 1-800-422-4133.

UNAUTHORIZED CHANGES OR USES:
THE SANTA BARBARA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT AND ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL PROPOSED CHANGES TO THE PLANS MUST BE PRESENTED IN WRITING TO THE DISTRICT AND APPROVED IN WRITING BY THE DISTRICT PRIOR TO IMPLEMENTATION OF ANY SUCH CHANGE OR USE.

REVISIONS			
NO.	DESCRIPTION	DATE	APR

REGISTERED PROFESSIONAL ENGINEER — KAREN M. SULLIVAN — No. C 68139 — Exp. 06/30/20 — CIVIL — STATE OF CALIFORNIA

DESIGNED BY: FLOOD CONTROL DESIGN ENGINEER — DATE: 02/20/2019

SANTA BARBARA COUNTY
FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
130 E. VICTORIA STREET
SANTA BARBARA, CA 93101
(805) 568-3440

MARIA YGNACIO EAST BRANCH
DEBRIS BASIN MODIFICATION
AREA OF GOLETA
SANTA BARBARA COUNTY, CALIFORNIA

Figure 4.4-2
HORIZONTAL CONTROL PLAN

DESIGNED BY: KS
DRAWN BY: SB/JT
CHECKED BY: JF

O-1129

SHEET 3 OF 9

Filename: Maria Ygnacio East Plans.dwg

Maria Ygnacio Creek, East Branch Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Malosma laurelina	Laurel sumac	N
Toxicodendron diversilobum	Poison oak	N
Rhus integrifolia	Lemonadeberry	N
Rhus ovate	Sugar bush	N
APIACEAE		
Apium graveolens	Wild celery	I
Conium maculatum	Poison hemlock	I
APOCYNACEAE		
Vinca major	Periwinkle	I
ASTERACEAE		
Ambrosia psilostachya var. *californica*	Western ragweed	N
Amaranthus albus	Tumbleweed	I
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Baccharis salicifolia	Mule fat	N
Carduus pyenocephalus	Italian thistle	I
Gnaphalium bicolor	Bicolored everlasting	N
Gnaphalium luteo-album	Cudweed everlasting	I
Isocoma menziesii	Coast golden bush	N
Lactuca serriola	Prickly lettuce	I
Picris echioides	Ox tongue	I
Venegasia carpesioides	Canyon sunflower	N
Xanthium strumarium	Cocklebur	N
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
Rorippa Nasturtium-aquaticum	Watercress	I
CAPRIFOLIACEAE		
Sambucus mexicana	Elderberry	N
CHENOPODIACEAE		
Chenopodium ambrosioides	Mexican tea	I
Chenopodium berlanclieri	Berlander's goosefoot	N
Chenopodium murale	Nettle-leaved goosefoot	I
CYPERACEAE		
Cyperus esculentus	Sedge	I
Cyperus eragrostis	Tall umbrella sedge	N
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
M*elilotus alba*	White sweetclover	I

Maria Ygnacio Creek, East Branch Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
FAGACEAE		
Quercus agrifolia	Coast live oak	N
GROSSULARIACEAE		
Ribes amarum	Gooseberry	N
HYDROPHYLLACEAE		
Phacelia viscida	Sticky phacelia	N
Phacelia ramosissima	Branching phacelia	I
LAMIACEAE		
Mentha sp.	Mint	I
LAURACEAE		
Umbellularia californica	California Bay	N
PLATAGINACEAE		
Plantago major	Common plantain	I
Plantago lanceolata	Plantain	I
PLANT ANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Elymus condensatus	Giant rye	I
Hordeum murinum	Foxtail	I
Lolium mitiacea	Rice grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
RANUNCULACEAE		
Clematis ligusticifolia	Creek clematis	N
RHAMNACEAE		
Rhamnus californica	Coffeeberry	N
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rosa californica	California rose	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
Salix laevigata	Red willow	N
SCROPHULARIACEAE		
Scrophularia californca	California figwort	N
Veronica anagallis-aquatica	Water speedwell	I
SOLANACEAE		
Datura wrightii	Jimsonweed	N
Nicotiana glauca	Tree tobacco	I
Solanum douglasii	Douglas nightshade	N
Solanum xanti	Nightshade	N

Maria Ygnacio Creek, East Branch Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
TYPACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

4.5 Maria Ygnacio Creek, Main Branch Debris Basin 2022 Addendum to the Program EIR for Santa Barbara County Flood Control and Water Conservation District

4.5.1 Location

The Maria Ygnacio Creek, Main Branch Debris Basin is a Group 1 Basin located on the main branch of Maria Ygnacio Creek approximately 3,000 feet north of Old San Marcos Road. This basin was modified in 2019.

4.5.2 History

The Maria Ygnacio Creek, Main Branch Debris Basin is an engineered facility that was built in 1990 by the U.S. Department of Agriculture Soil Conservation Service and the Santa Barbara County Flood Control and Water Conservation District after the Painted Cave Fire burned a large percentage of the watershed in June 1990.

An EIR was finalized in 1992 that analyzed the long-term disposition of the two Maria Ygnacio Debris Basins to be implemented after the watershed had recovered from the effects of the fire (approximately 5 years post-fire). As a result of the EIR, the proposed long-term disposition of the Maria Ygnacio Creek, Main Branch Debris Basin consisted of allowing the basin to partially fill, re-grading the banks to lessen the slopes, replanting the basin slopes with native riparian species, and providing routine maintenance.

The basin has been maintained on an annual basis since construction. Major desilting projects occurred in 1991, 1992, 1995, 1998 and 2005. Heavy rains caused runoff in January 1995 which filled the debris basin with sediment and it was desilted in late January and February. The basin partially filled again after the March 10, 1995 storm and that material was graded within the basin to create the less steep side slopes. Native riparian restoration began at the basin in 1996 and the basin bank restoration was not removed during any subsequent desilting events.

The Main Branch Debris Basin was modified in 2019 as part of the District's Group 1 debris basin modification effort (see below). Later in 2019, the Cave Fire burned part of the upper watershed above the project location. A temporary debris rack was installed as part of the emergency watershed response.

4.5.3 Setting

The main branch of Maria Ygnacio Creek originates in the foothills of the Santa Ynez Mountains and drains a 2,617-acre watershed capable of producing 3,400 cfs during a 100-year precipitation event. Surrounding land use is rural, including citrus and avocado orchards, ranches, cattle grazing, rural homes, and National Forest land upstream.

A dirt road leads to the Debris Basin site from the south. The road involves several low-water crossings along the creek. A concrete Arizona crossing directly downstream of the basin was

removed as part of the dam-removal project and a loose-rock access crossing was integrated into the restored creek channel.

The adjacent riparian corridor is mature and well-developed with high-quality habitat when wetted. The creek often goes completely dry in summer months. The site is currently grazed during winter months and cattle activity is evident throughout.

The riparian corridor was extensively planted with native riparian species following the basin modification project. A barbed wire fence was installed to exclude cattle from the basin while the native habitat restoration becomes established.

4.5.4 Wildlife Survey

The site was assessed by the District Biologist in spring 2019 and extensively throughout the fish-passage project in 2019. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2017.

Dominant plant species include arroyo willow, sandbar willow, and mule fat with sporadic larger cottonwood and sycamore trees are present at the edges of the basin. The site is regularly grazed by cattle, resulting in a sparse understory and compacted soils in the basin.

The creek channel provides suitable habitat for Baja California treefrog and steelhead trout when water is present. California roach, mosquitofish, and threespine stickleback have also been observed in this watershed. Dozens of resident and juvenile steelhead trout were detected in the project area in 2019. Red-legged frogs were also detected in the project area and downstream. Southwestern pond turtles were noted in some pools where suitable water depth was available.

Raccoon, opossum and domestic dog tracks are common in the area. The habitat is suitable for a variety of riparian birds with a mix of cover types. Birds detected in the area include mallard, Bewick's wren, orange-crowned warbler, song sparrow, California towhee, common yellowthroat, California quail, Anna’s hummingbird, acorn woodpecker and red-tailed hawk.

4.5.5 Basin Modification Completed 2019

The Maria Ygnacio Main Branch Basin was modified in 2019. The project was previously described in the 2017 DBMRP. Project components at this facility included:

- Removal of the grouted-rock dam
- Removal of the upstream basin check-structure
- Removal of a concrete Arizona crossing
- Grading and fill within the basin to create a constant slope
- Re-creating a natural channel using stream-simulation methods
- Installing a loose-rock access crossing
- Installation of boulders features, streambed material, and LWD structures
- Native plant installation along banks

. The project was completed in fall 2019 and maintenance of the native plant restoration is ongoing, and expected to continue for 3 to 5 years.

Shortly after the basin modification project was completed, the Cave Fire erupted in the upstream watershed. As part of emergency response efforts, the District installed a temporary debris rack within the restored creek channel. The debris rack involves a buried footing covered in natural streambed material and a series of large vertical steel pipes. The debris rack is meant to capture boulders and debris that may be carrier downstream after the wildfire. The rack allows flowing water to continue through the creek channel and does not present a barrier to fish and wildlife. The rack will remain in place for 3-5 years while the watershed recovers.

4.5.6 Routine Maintenance After Basin Modification

Maria Ygnacio Main Branch Basin was modified in 2019. As such, potential maintenance is expected to be minimal. Minor maintenance of the restored creek channel may involve minor sediment grading to repair pockets of erosion that could appear while the native plants are still becoming established.

Ongoing restoration maintenance, such as watering, weeding, mowing, trimming trees, fence repairs, and irrigation repairs are expected to continue for 3 to 5 years. The loose-rock access crossing may require occasional grooming to return the surface to the as-designed condition, which allows flowing water over the streambed material in a manner that does not present a barrier to fish and wildlife.

Following a fire or major flood event, the debris rack may collect boulders and other debris. If this occurs, the District would remove the debris with a crane or excavator to restore the normal function of the creek. A designated (unpaved) access lane and staging area for this purpose was incorporated into the design, using the existing access road adjacent to the basin.

4.5.7 Temporary Impacts and Restoration

The proposed project required temporary disturbance of approximately 1.04 acres for access, grading, streambed reconfiguration, channel construction, cut and fill of restored banks, and removal of the dam, summer crossing, and inlet structures. The barrier removal and channel restoration project was designed to minimize the removal of vegetation and sediment while obtaining the fish-passage objectives and the channel-stability objectives of the stream-simulation method.

Following demolition of the barrier structures and restoration of the creek channel, the disturbed areas were revegetated with native riparian species, including willow, alder, sycamore, oaks, and understory shrubs and herbaceous species.

Photograph 4.5-1: Maria Ygnacio Creek, Main Branch Debris Basin Inlet Structure; Pre-project

Photograph 4.5-2: Maria Ygnacio Creek, Main Branch Debris Basin Looking Upstream; Pre-project

Photograph 4.5-3: Maria Ygnacio Creek, Modification

Photograph 4.5-3: Maria Ygnacio Creek Temporary Debris Rack

Map Source: County of Santa Barbara

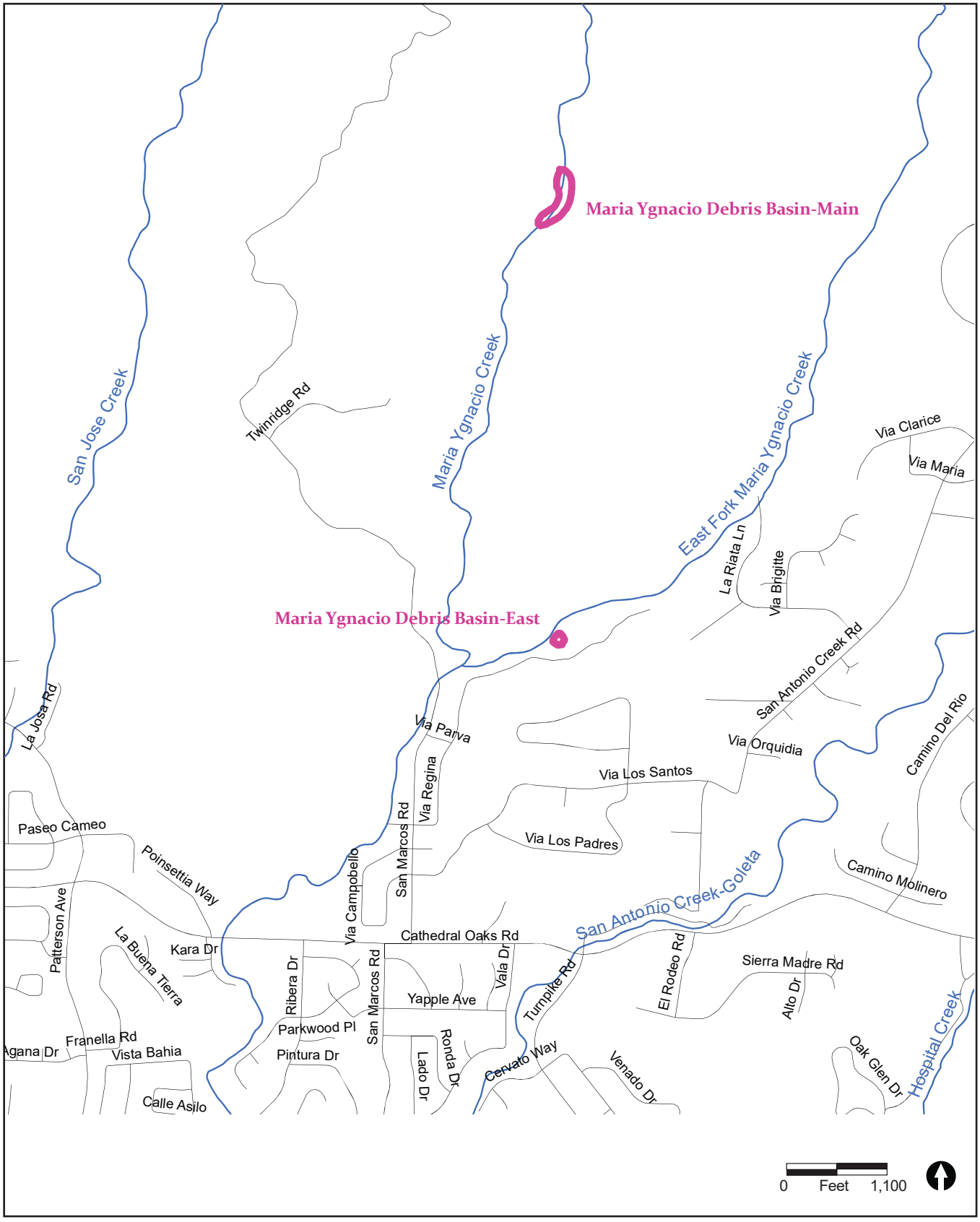


FIGURE 4.5-1

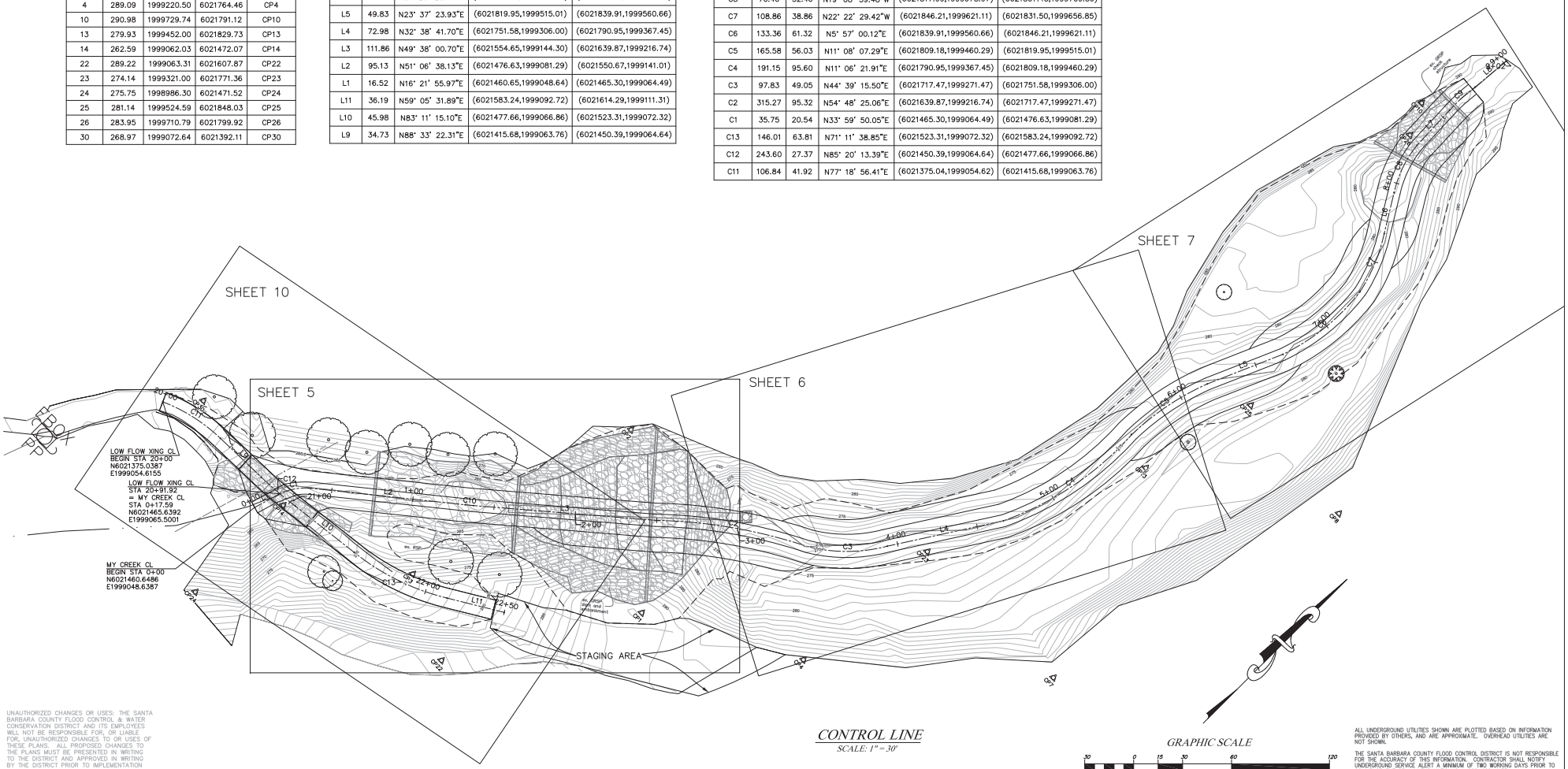
Maria Ygnacio Creek, Main Branch Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig4.3-1.ai 03/28/17 ccn

Point Table				
Point #	Elevation	Northing	Easting	Description
1	292.23	1999170.75	6021674.07	CP1
2	291.47	1999245.44	6021590.08	CP2
3	275.27	1999088.34	6021558.00	CP3
4	289.09	1999220.50	6021764.46	CP4
10	290.98	1999729.74	6021791.12	CP10
13	279.93	1999452.00	6021829.73	CP13
14	262.59	1999062.03	6021472.07	CP14
22	289.22	1999063.31	6021607.87	CP22
23	274.14	1999321.00	6021771.36	CP23
24	275.75	1998986.30	6021471.52	CP24
25	281.14	1999524.59	6021848.03	CP25
26	283.95	1999710.79	6021799.92	CP26
30	268.97	1999072.64	6021392.11	CP30

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L8	24.92	N5° 23' 21.41"E	(6021807.38,1999759.80)	(6021809.72,1999784.61)
L7	29.37	N2° 07' 03.73"W	(6021807.43,1999709.36)	(6021806.35,1999738.71)
L6	25.92	N31° 25' 28.17"W	(6021831.50,1999656.85)	(6021817.99,1999678.97)
L5	49.83	N23° 37' 23.93"E	(6021819.95,1999515.01)	(6021839.91,1999560.66)
L4	72.98	N32° 38' 41.70"E	(6021751.58,1999306.00)	(6021790.95,1999367.45)
L3	111.86	N49° 38' 00.70"E	(6021554.65,1999144.30)	(6021639.87,1999216.74)
L2	95.13	N51° 06' 38.13"E	(6021476.63,1999081.29)	(6021550.67,1999141.01)
L1	16.52	N16° 21' 55.97"E	(6021460.65,1999048.64)	(6021465.30,1999064.49)
L11	36.19	N59° 05' 31.89"E	(6021583.24,1999092.72)	(6021614.29,1999111.31)
L10	45.98	N83° 11' 15.10"E	(6021477.66,1999066.86)	(6021523.31,1999072.32)
L9	34.73	N88° 33' 22.31"E	(6021415.68,1999063.76)	(6021450.39,1999064.64)

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C10	200.00	5.16	N50° 22' 19.42"E	(6021550.67,1999141.01)	(6021554.65,1999144.30)
C9	116.35	21.15	N2° 47' 43.74"E	(6021806.35,1999738.71)	(6021807.38,1999759.80)
C8	70.46	32.46	N19° 08' 59.48"W	(6021817.99,1999678.97)	(6021807.43,1999709.36)
C7	108.86	38.86	N22° 22' 29.42"W	(6021846.21,1999621.11)	(6021831.50,1999656.85)
C6	133.36	61.32	N5° 57' 00.12"E	(6021839.91,1999560.66)	(6021846.21,1999621.11)
C5	165.58	56.03	N11° 08' 07.29"E	(6021809.18,1999460.29)	(6021819.95,1999515.01)
C4	191.15	95.60	N11° 06' 21.91"E	(6021790.95,1999367.45)	(6021809.18,1999460.29)
C3	97.83	49.05	N44° 39' 15.50"E	(6021717.47,1999271.47)	(6021751.58,1999306.00)
C2	315.27	95.32	N54° 48' 25.06"E	(6021639.87,1999216.74)	(6021717.47,1999271.47)
C1	35.75	20.54	N33° 59' 50.05"E	(6021465.30,1999064.49)	(6021476.63,1999081.29)
C13	146.01	63.81	N71° 11' 38.85"E	(6021523.31,1999072.32)	(6021583.24,1999092.72)
C12	243.60	27.37	N85° 20' 13.39"E	(6021450.39,1999064.64)	(6021477.66,1999066.86)
C11	106.84	41.92	N77° 18' 56.41"E	(6021375.04,1999054.62)	(6021415.68,1999063.76)



CONTROL LINE
SCALE: 1" = 30'

GRAPHIC SCALE
30 0 15 30 60 120

UNAUTHORIZED CHANGES OR USES: THE SANTA BARBARA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT AND ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL PROPOSED CHANGES TO THE PLANS MUST BE PRESENTED IN WRITING TO THE DISTRICT AND APPROVED IN WRITING BY THE DISTRICT PRIOR TO IMPLEMENTATION OF ANY SUCH CHANGE OR USE.

ALL UNDERGROUND UTILITIES SHOWN ARE PLOTTED BASED ON INFORMATION PROVIDED BY OTHERS, AND ARE APPROXIMATE. OVERHEAD UTILITIES ARE NOT SHOWN.

THE SANTA BARBARA COUNTY FLOOD CONTROL DISTRICT IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT A MINIMUM OF TWO WORKING DAYS PRIOR TO COMMENCEMENT OF ANY EXCAVATION @ 1-800-422-4133.

REVISIONS			
NO.	DESCRIPTION	DATE	APR

REGISTERED PROFESSIONAL ENGINEER KAREN M. SULLIVAN No. C 69639 Exp 09/30/2020 CIVIL STATE OF CALIFORNIA

DESIGNED BY: [signature] 09/21/2018
FLOOD CONTROL DESIGN ENGINEER DATE

SANTA BARBARA COUNTY
FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
130 E. VICTORIA STREET
SANTA BARBARA, CA 93101
(805) 568-3440

MARIA YGNACIO CREEK
MAIN BRANCH DEBRIS
BASIN MODIFICATION
SANTA BARBARA COUNTY, CALIFORNIA

Figure 4.5-2
HORIZONTAL CONTROL

DESIGNED BY:	KS
DRAWN BY:	SB/JT
CHECKED BY:	JF

O-1127

SHEET 4 OF 11

Filename: MARIA YGNACIO PLANS5.DWG

Maria Ygnacio Creek, Main Branch Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Malosma laurina	Laurel sumac	N
Toxicodendron diversilobum	Poison oak	N
Rhus integrifolia	Lemonadeberry	N
Rhus ovata	Sugar bush	N
APIACEAE		
Apium graveolens	Wild celery	I
Conium macujatum	Poison hemlock	I
APOCYNACEAE		
Vinca major	Periwinkle	I
ASTERACEAE		
Ambrosia psilostachya var. *california*	Western ragweed	N
Amaranthus albus	Tumbleweed	I
Artemesia californica	California Sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Baccharis salicifolia	Mule fat	N
Carduus pyenocephalus	Italian thistle	I
Gnapbalium bicolor	Bicolored everlasting	N
Gnaphalium luteo-album	Cudweed everlasting	I
Isocoma menziesii	Coast golden bush	N
Lactuca serriola	Prickly lettuce	I
Picris ecbioides	Ox tongue	I
Venegasia carpesioides	Canyon sunflower	N
Xanthium strumarium	Cocklebur	I
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
Rorippa Nasturtium-aquaticum	Watercress	I
CAPRIFOLIACEAE		
Sambucus mexicana	Elderberry	N
CHENOPODIACEAE		
Chenopodium ambrosioides	Mexican Tea	I
Chenopodium berlanclieri	Berlander' s goosefoot	N
Chenopodium murale	Nettle-leaved goosefoot	I
CYPERACEAE		
Cyperus esculentus	Sedge	I
Cyperus eragrostis	Tall umbrella sedge	N
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I

Maria Ygnacio Creek, Main Branch Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
FAGACEAE		
Quercus agrifolia	Coast live oak	N
GROSSULARJACEAE		
Ribes amarum	Gooseberry	N
HYDROPHYLLACEAE		
Phacelia viscida	Sticky phacelia	N
Phacelia ramosissima	Branching phacelia	I
LAMIACEAE		
Mentha sp.	Mint	I
LAURACEAE		
Umbellularia califomica	California bay	N
PLATAGINACEAE		
Plantago major	Common plantain	I
Plantago lanceolata	Plantain	I
PLANT ANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Elymus condensatus	Giant rye	N
Hordeum murinum	Foxtail	I
Lolium miliacea	Rice grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
RANUNCULACEAE		
Clematis liguslicifolia	Creek clematis	N
RHAMNACEAE		
Rhamnus califomica	Coffee berry	N
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rosa californica	California rose	N
Rubus ursinus	California blackberry	N
SALACACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
Salix laevigata	Red willow	N
SCROPHULARIACEAE		
Scrophularia californica	California figwort	N
Veronica anagallis-aquatica	Water speedwell	I
SOLANACEAE		
Datura wrightii	Jimsonweed	N
Nicotiana glauca	Tree tobacco	I
Solanum douglasii	Douglas nightshade	N
Solanum xanti	Nightshade	N

Maria Ygnacio Creek, Main Branch Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

5.0 Group 2 Basins

The District maintains 12 other basins in addition to the Group 1 Basins. These basins are further divided into Group 2 Basins and Other Basins. Group 2 debris basins are a set of 5 basins also identified in the NMFS Biological Opinion.

Group 2 Debris Basins

- Arroyo Paredon
- Mission
- Rattlesnake
- San Antonio
- San Roque

The modification of Group 2 basins is not required by the NMFS within the 10-year period of the Standard Individual Permit, however, as a condition of the Biological Opinion, the District is required to provide the ACOE and NMFS with preliminary 30 percent design plans in 2022 for the possible modification of these basins to potentially be used at an undefined time in the future. If the District wants to pursue grant funds for the modification of these basins, NMFS would support a project, however the long-term disposition of these basins will most likely be addressed after 2026. If modification of any Group 2 basins becomes feasible, the District will update the DBMMP to reflect these new projects.

Maintenance of the Group 2 basins will follow the maintenance program described in Section 2.2 and within each Basin Addendum below.

5.1 Arroyo Paredon Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

5.1.1 Location

The Arroyo Paredon Creek Debris Basin is located on Arroyo Paredon Creek approximately 1,000 feet upstream of the confluence with Oil Canyon Creek.

5.1.2 History

Arroyo Paredon Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994 the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Arroyo Paredon Debris Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, Arroyo Paredon debris basin was desilted following the January 9, 2018 debris flow and again later in 2018. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

5.1.3 Setting

Arroyo Paredon Creek originates in the foothills of the Santa Ynez Mountains and drains an 833-acre watershed capable of producing 1650 cfs during a 100-year return period precipitation event.

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

Agriculture runoff and a small tributary enter the basin at the north end while the main creek enters at the northeast. There are avocado orchards to the north and west of the basin. A road is located to the east of the basin with chaparral beyond. A riparian corridor exists to the northeast of the basin. The dam is located at the southwest end of the basin.

5.1.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on October 11, 2016. When wetted, the basin provides suitable habitat for amphibians and riparian birds and other wildlife, including several bird species (see below). The basin often goes completely dry during the summer months and drought periods, excluding amphibians and other aquatic species.

The Arroyo Paredon Debris Basin site is at the upstream terminus of the designated critical habitat for southern steelhead trout. This species has not been detected at the site during field surveys, but has been detected downstream in Arroyo Paredon Creek. The creek reaches surrounding the Debris Basin often go dry for several months per year, excluding southern steelhead trout from occupying the site. Southern steelhead trout may occur in the area when sufficient water depth and water quality conditions exist. No other special-status species are known to occur at Arroyo Paredon Debris Basin.

5.1.5 Project Description

The Arroyo Paredon Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance would include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

5.1.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 6700 square feet and will allow for approximately 20,500 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin buy non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools

only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The 48-inch outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap.

5.1.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. This will be necessary after the basin effectiveness is reduced by approximately 25% or more. Complete debris/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from the road that services the orchard and extends beyond the access to Toro Canyon Park as shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

5.1.8 Revegetation Source

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through winter 2019/2020. The Basin was also desilted in the fall of 2020. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

As the watershed recovers, some native vegetation is allowed to colonize the basin, particularly around the edges and beyond the pilot channel. Basin vegetation, especially immature willow sprouts, may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

5.1.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by

approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 5.1-1: Arroyo Paredon Creek Debris Basin

Map Source: County of Santa Barbara

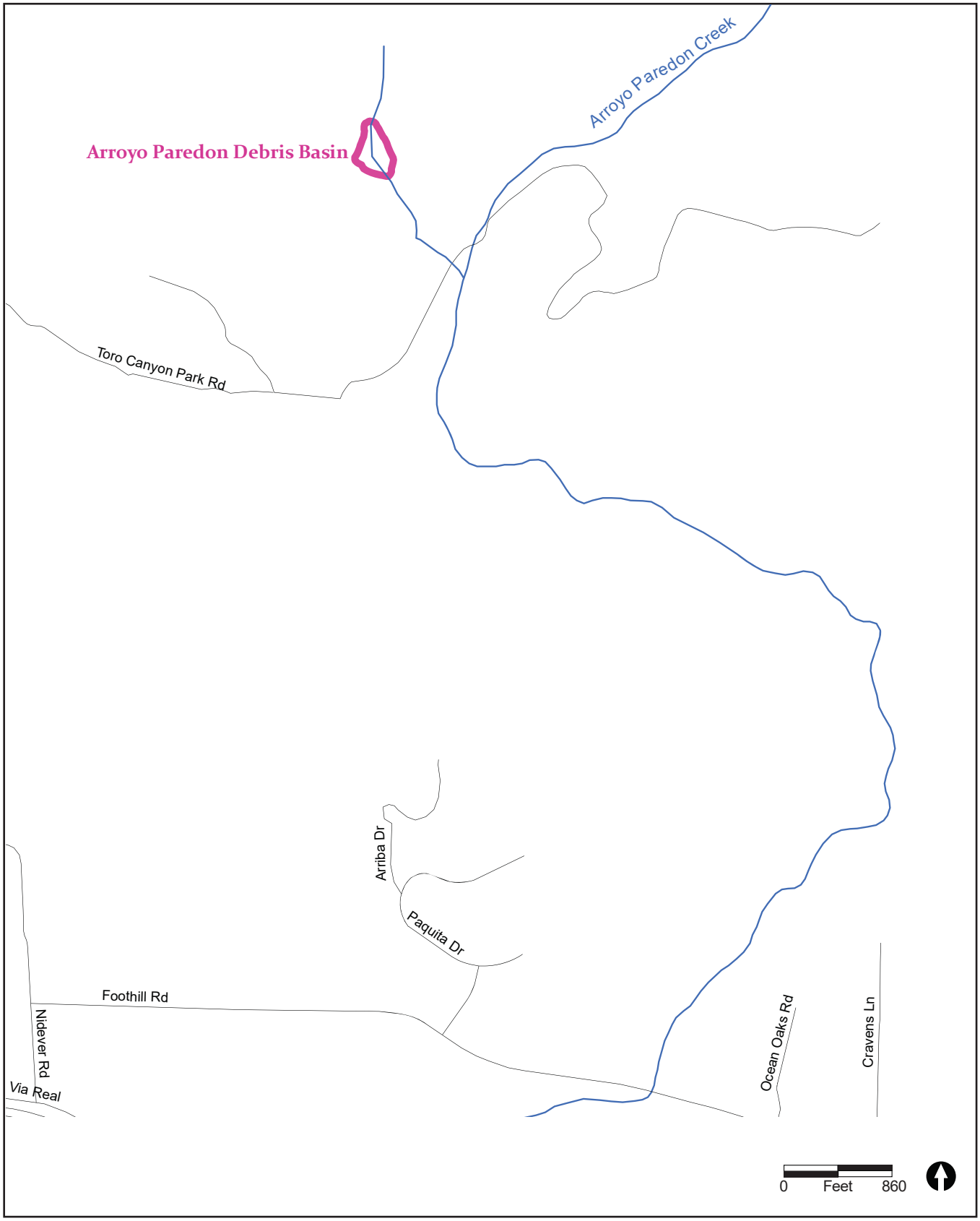


FIGURE 5.1-1
Arroyo Paredon Creek Debris Basin Map

Map Source: County of Santa Barbara

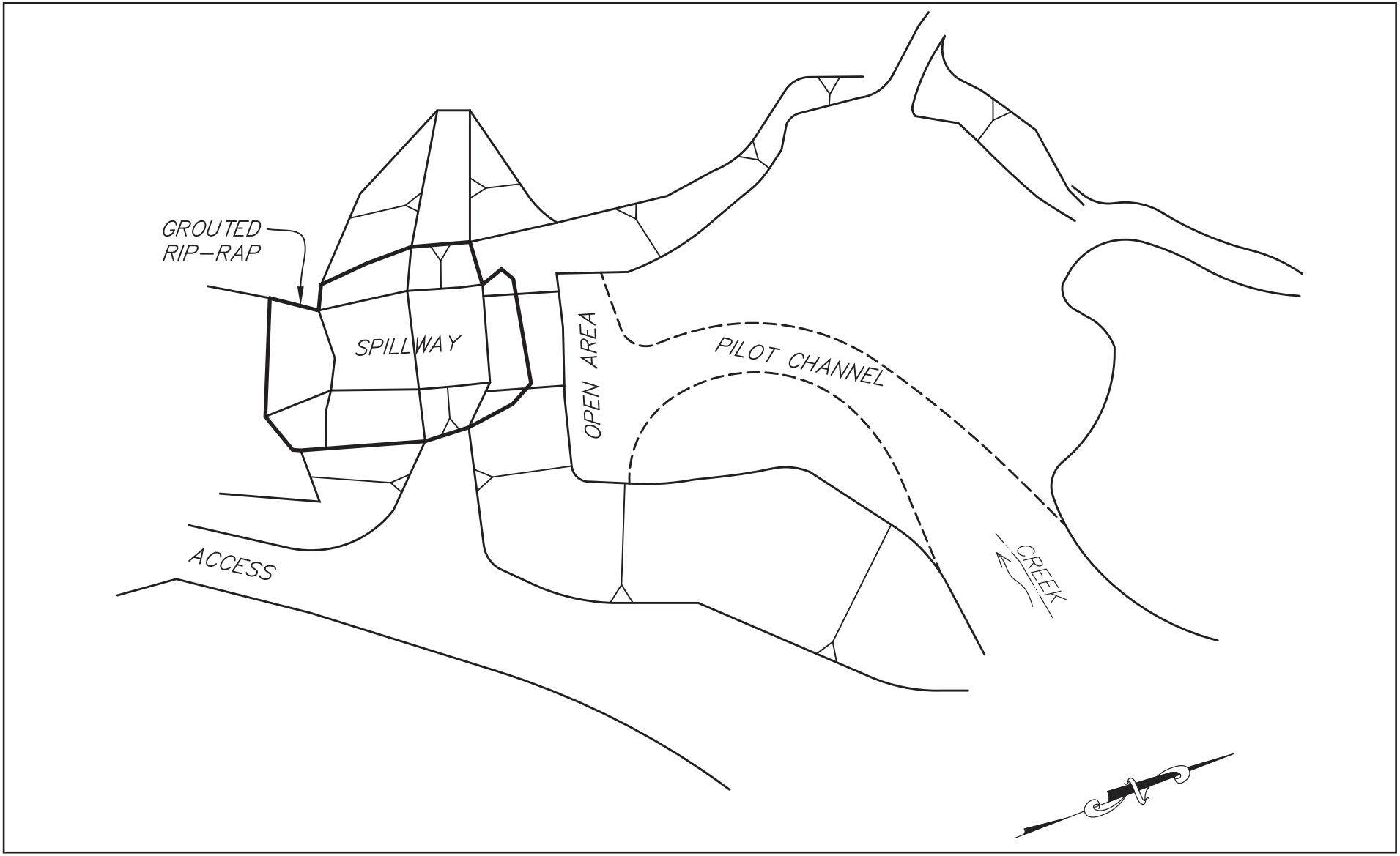


FIGURE 5.1-2
Arroyo Paredon Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.1-2.ai 03/28/17 ccn

Arroyo Paredon Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicoclendron diversilobum	Poison oak	N
Schinus molle	Pepper tree	I
Schinus terebinthifolius	Pepper tree	I
APIACEAE		
Conium maculatum	Poison hemlock	I
ARALlACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Ambrosia psilostachya var. californica	Western ragweed	N
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Picris echioides	Ox tongue	I
BRASSICACEAE		
B*rassica nigra*	Black mustard	I
EQUISETACEAE		
E*quisetum telmateia* var. *braunii*	Giant horsetail	N
EUPHORBJACEAE		
Ricinus communis	Castor Bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
MALVACEAE		
Malva parvifolia	Cheeseweed	I
PLANT ANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Lolium multiflorum	Italian ryegrass	I
Lolium miliacea	Rice grass	
P*olypogon monspeliensis*	Rabbitsfoot grass	I
POLYGONACEAE		
Rumex crispus	Curly dock	I
ROSACEAE		
Malosma laurina	Laurel sumac	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
Solanum xanti	Nightshade	N
TYPACEAE		
Typha latifolia	Broad-leaved cattail	N
*N = Native; I = Introduced		

5.2 Mission Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

5.2.1 Location

The Mission Creek Debris Basin is located on Mission Creek approximately 2,000 feet upstream of the Botanic Gardens off of Mission Canyon Road.

5.2.2 History

Mission Creek Debris Basin is an engineered facility that was built in 1964 by the U.S. Army Corps of Engineers after the Coyote Fire burned a large percentage of the watershed. The basin has been maintained on an annual basis after construction until 1987. Between 1987 and 1995 the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005. The basin was also desilted in 2009 to prepare for winter storms after the Jesusita Fire burned most of the watershed above the basin.

5.2.3 Setting

Mission Creek originates in the foothills of the Santa Ynez Mountains and drains a 7,589-acre watershed capable of producing between 5,800 and 7,500 cfs during a 100-year return period precipitation event. Heavy rains caused runoff in January 1995 which filled Mission Creek Debris Basin with debris and it was desilted in late January and February. Another large storm on March 10, 1995 filled the basin again and the cleanout was repeated. The basin was cleaned again following the El Nino rains in 1998 and 2005. In 2009 following the Jesusita Fire that burned most of the Mission Creek watershed, the basin was approximately 15 percent full, but completely cleaned out in preparation for large amounts of sediment to fill the basin during winter storms. Since 2009, the only work done within the basin has been maintenance of the pilot channel. As a result, vegetation has colonized the basin floor.

The basin is surrounded by chaparral and oak trees with the dam located at the south end. A small plateau is located to the east of the dam and serves as a temporary stockpile site during desilting operations. A well-developed riparian corridor exists to the north and south of the basin. Access is from Mission Canyon Road through a private driveway over which the District has an easement.

5.2.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on January 18, 2017. Vegetation types in the basin and adjacent property includes willow riparian forest, coast live oak woodland, and California sagebrush scrub. California sycamore woodland occurs upstream of the debris basin site. Within the basin, the habitat is a mosaic of cattail marsh, weedy disturbed areas, mixed chaparral, and mixed age willow thickets.

The basin often goes completely dry during the summer months and drought periods, excluding amphibians and other aquatic species. When water is present, the habitat can support Baja California tree frogs, coast garter snake, mosquitofish, and steelhead/rainbow trout. Bird species observed in the vicinity in 2016-17 include mourning dove, acorn woodpecker, American crow, spotted towhee, black phoebe, northern flicker, song sparrow, and California quail. Migratory birds may nest in or near riparian vegetation at the basin site and within the riparian corridor.

5.2.5 Project Description

The Mission Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

5.2.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 10,500 square feet and will allow for approximately 18,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The 48-inch outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap.

5.2.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. This will be necessary after the basin's effectiveness is reduced by 25 percent. Complete sediment/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from Mission Canyon Road as shown on the attached map. Some debris may be stockpiled immediately east of the dam in the open area adjacent to the access if necessary or hauled to an appropriate disposal site if one is available.

5.2.8 Revegetation Source

This debris basin has not developed a dense riparian forest. Nevertheless, dense riparian vegetation may colonize the basin over time. If this occurs, the vegetation may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

5.2.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 5.2-1: Mission Creek Debris Basin

Map Source: County of Santa Barbara

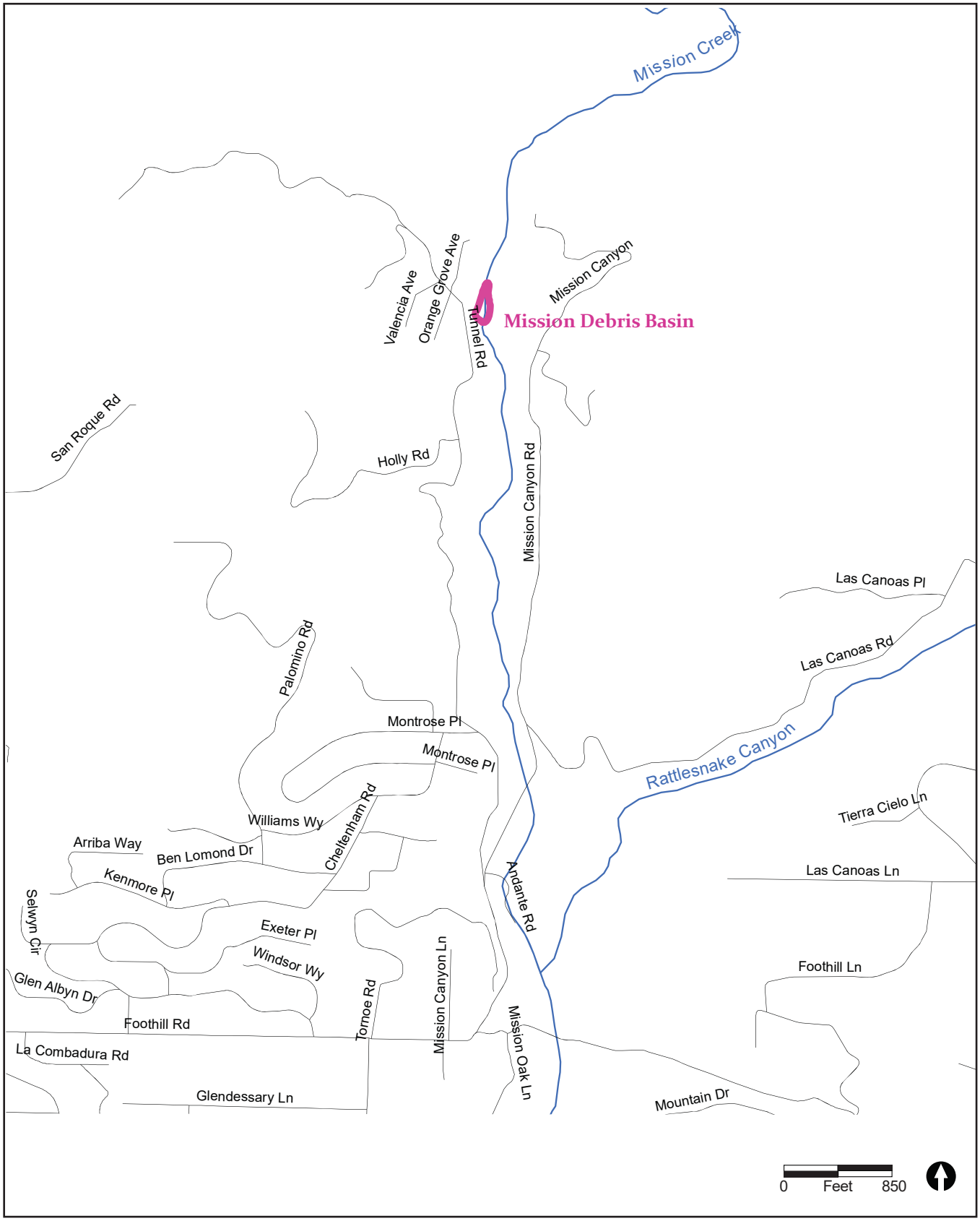


FIGURE 5.2-1
Mission Creek Debris Basin Map

Map Source: County of Santa Barbara

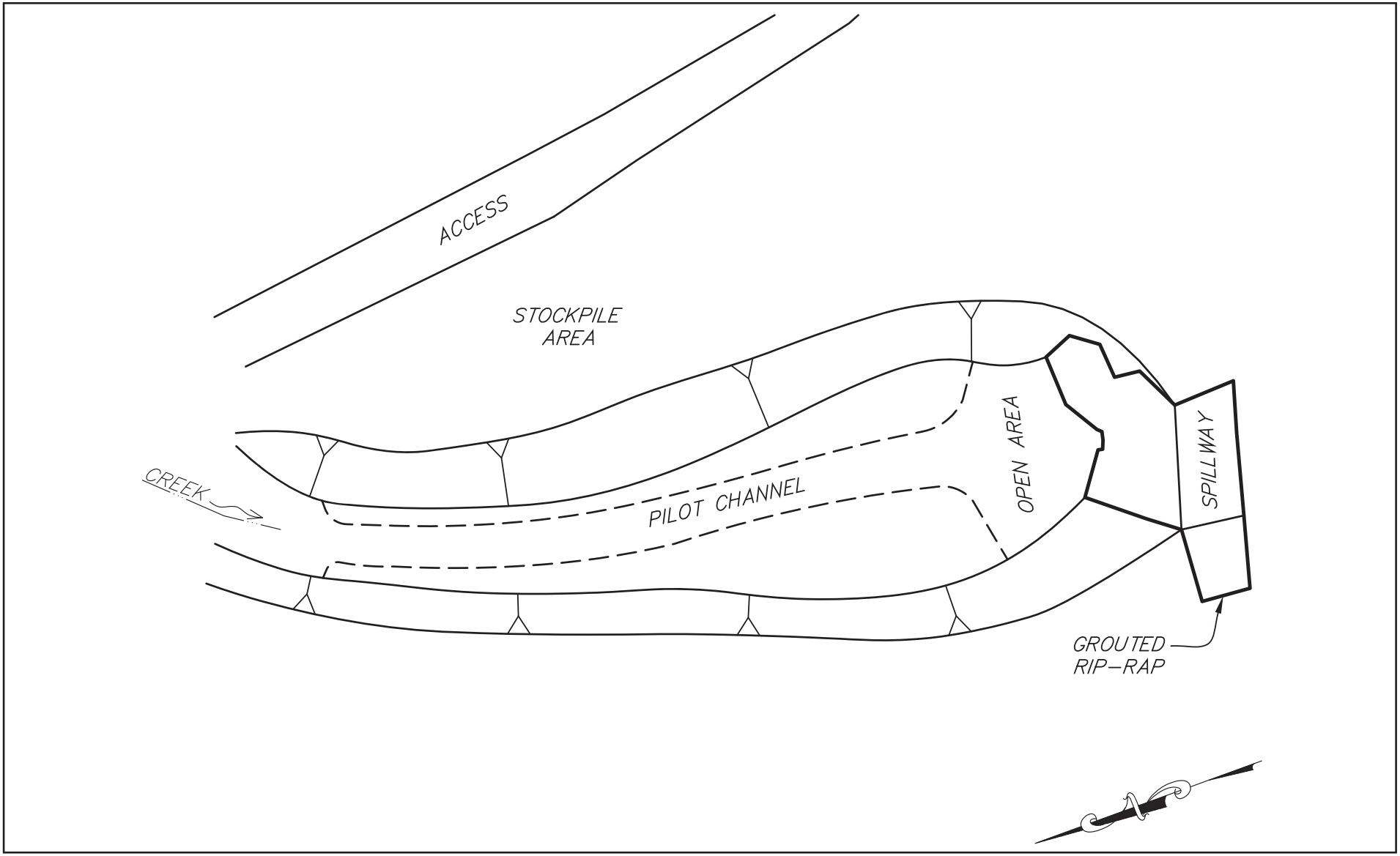


FIGURE 5.2-2
Mission Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.4-2.ai 04/11/17 ccn

Mission Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
Malosma laurina	Laurel sumac	N
APIACEAE		
Conium maculatum	Poison hemlock	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Picris echioides	Ox tongue	I
Xanthium strumarium	Cocklebur	N
BRASSICACEAE		
Raphanus sativus	Wild radish	I
Rorippa nasturtium-aquaticum	Watercress	I
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
MALVACEAE		
Malva parvifolia	Cheeseweed	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Hordeum murinum	Foxtail	I
Lolium miliacea	Rice grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathi folium	Willow smartweed	I
Rumex crispus	Curly dock	I
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
SCROPHULARIACEAE		
Scrophularia californica	California figwort	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
Solanum xanti	Nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

5.3 Rattlesnake Creek Debris Basin 2022 Addendum to the Program EIR for Santa Barbara County Flood Control and Water Conservation District

5.3.1 Location

The Rattlesnake Creek Debris Basin is located on Rattlesnake Creek approximately 800 feet upstream of Las Canoas Road and 600 feet east of St. Mary's Seminary.

5.3.2 History

Rattlesnake Creek Debris Basin is an engineered facility that was built in 1964 by the U.S. Army Corps of Engineers after the Coyote Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005. The basin was also desilted after the 2008 Tea Fire and 2009 Jesusita Fire in anticipation of increased post fire debris and sediment flows.

Rattlesnake Debris basin was initially assigned to Group 1; however, following the Thomas Fire and debris flow on January 9, 2018, the District and NMFS agreed to prioritize Romero Basin as Group 1. Thus, Rattlesnake was re-assigned to Group 2.

5.3.3 Setting

Rattlesnake Creek originates in the foothills of the Santa Ynez Mountains and drains a 2,202-acre watershed capable of producing 3,700 cfs during a 100-year return period precipitation event. Since the basin was last desilted in 2009, riparian vegetation has colonized the basin with alders and willows growing along both sides of the basin and small patches of cattails, willow herb and several other weedy species within the basin floor. Hiking trails pass through the basin as this corridor is a popular recreation area. The basin is surrounded by chaparral and oak trees with the dam located at the south end. A well-developed riparian corridor exists to the north and south of the basin. There is an open field to the southwest of the basin where spoils have been stockpiled in the past. Access is from Las Canoas Road approximately 0.5 mile east of the entrance to St. Mary's Seminary.

5.3.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on January 26, 2017. Vegetation types in the basin and adjacent property includes willow riparian forest, coast live oak woodland, and California sagebrush scrub. Upstream and downstream of the debris basin site, the riparian corridor is composed of mature coast live oak canopy and willow riparian forest. Cottonwood and sycamore trees are common. The basin contains arroyo willow, sandbar willow, cottonwood, and sycamore trees approximately 8 years old, following the last desilting event in 2009.

The basin often goes completely dry during the summer months and drought periods, excluding amphibians and other aquatic species. When water is present, the habitat can support Baja California treefrogs, coast garter snake, mosquitofish, and steelhead/rainbow trout.

Bird species detected in the vicinity include black phoebe, California towhee, California scrub jay, red-tailed hawk, and other migratory birds. The area is associated with a popular hiking trail; human activity and dog tracks are common.

5.3.6 Project Description

Rattlesnake Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

5.3.7 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 6700 square feet and will allow for approximately 20,500 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin buy non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap.

5.3.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. This will be necessary after the basin's effectiveness is reduced by approximately 25 percent. Complete sediment/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from the road that services the orchard and extends beyond the access to Toro Canyon Park as shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

5.3.8 Revegetation Source

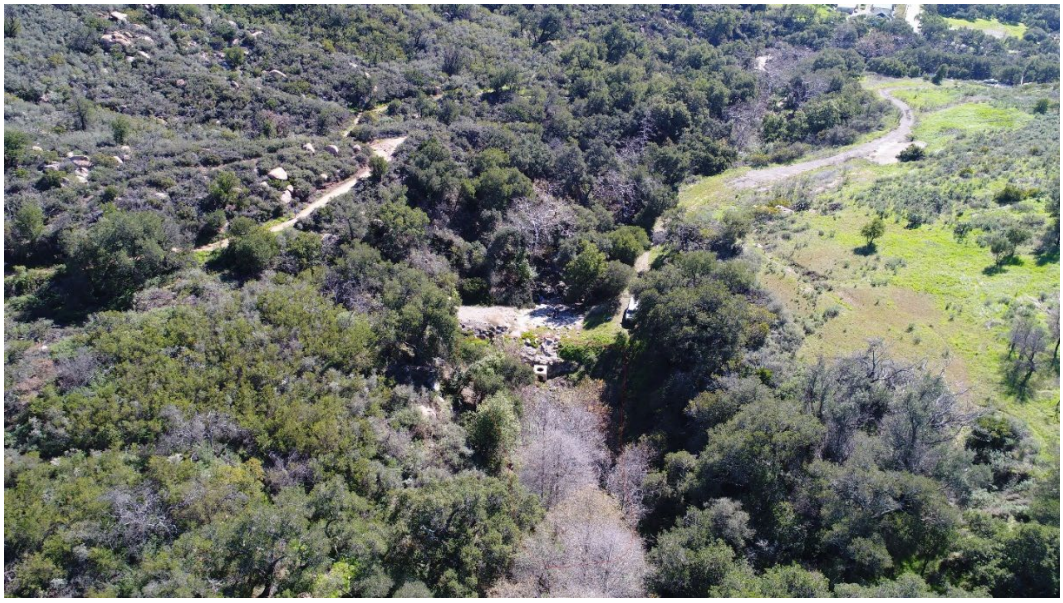
This debris basin has developed a dense riparian forest. The vegetation may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

5.3.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 5.3-1: Rattlesnake Creek Debris Basin



Photograph 5.3-2: Rattlesnake Creek Debris Basin

Map Source: County of Santa Barbara

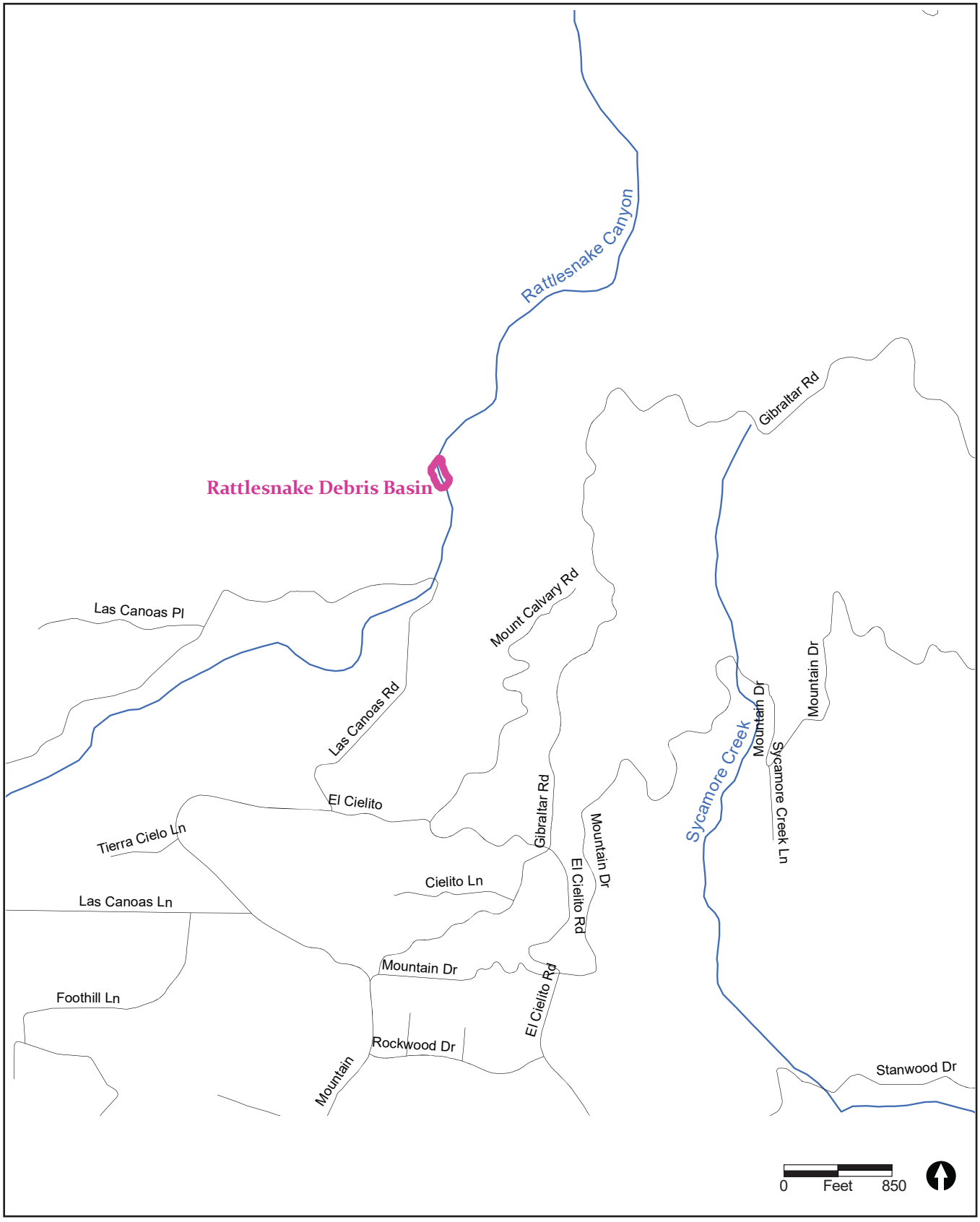


FIGURE 5.3-1
Rattlesnake Creek Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig4.4-1.ai 03/28/17 ccn

Map Source: County of Santa Barbara

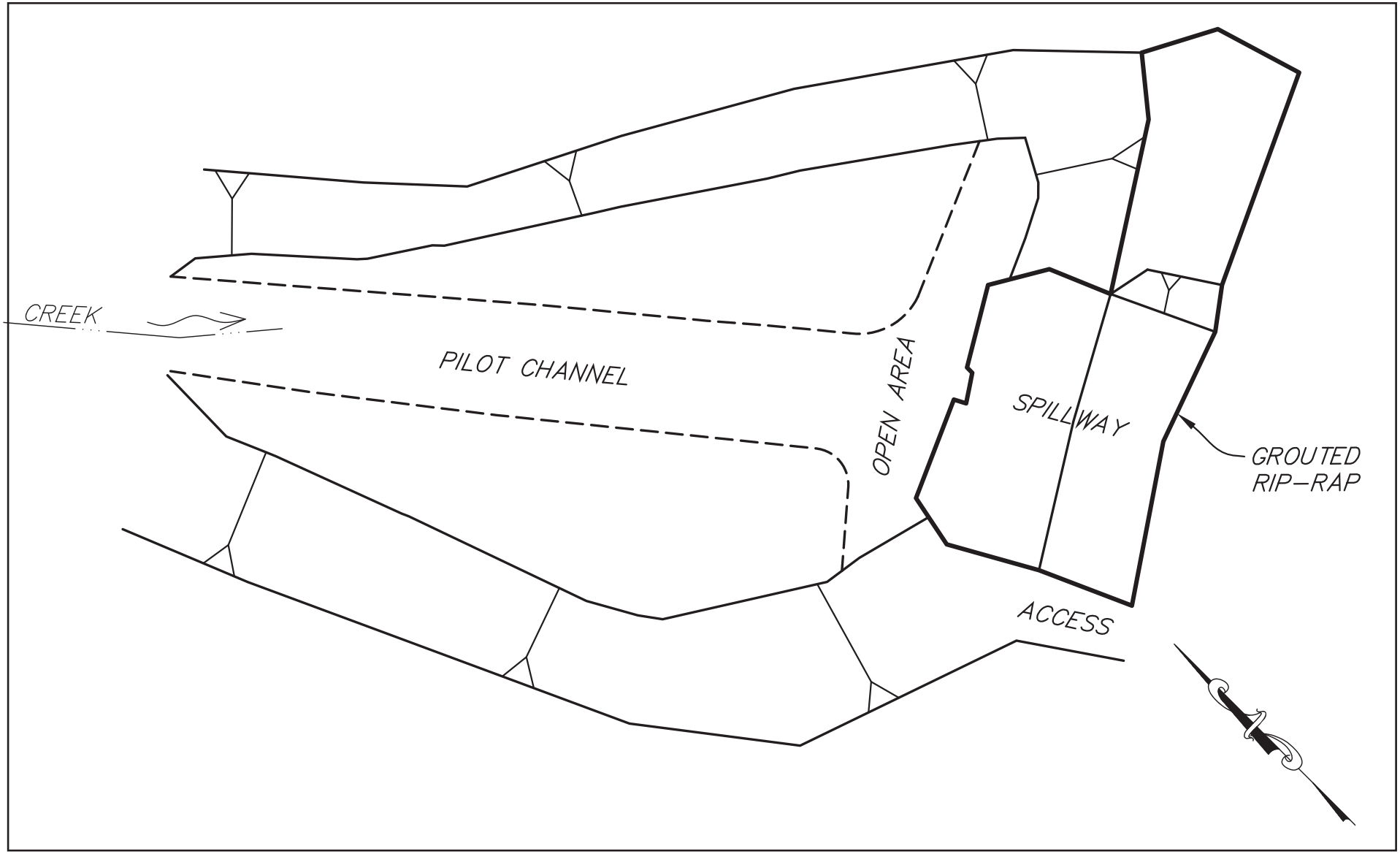


FIGURE 5.3-2
Rattlesnake Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig4.4-3.ai 03/28/17 ccn

Rattlesnake Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDlACEAE		
Toxicodendron diversilobum	Poison oak	N
Malosma laurina	Laurel sumac	N
APlACEAE		
Conium maculatum	Poison hemlock	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Baccharis pilularis	Coyote bush	N
Picris echioides	Ox tongue	I
Sylibum marianum	Milk thistle	I
Xanthium strumarium	Cocklebur	I
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
Rorippa Nasturtium-aquaticum	Watercress	I
CHENOPODIACEAE		
Chenopodium ambrosioides	Mexican tea	I
Chenopodium murale	Nettle-leaved goosefoot	I
CYPERACEAE		
Cyperus alternifolius	African umbrella sedge	I
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
MALVACEAE		
Malva parvifolia	Cheeseweed	I
PLATAGINACEAE		
Plantago lanceolata	Plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Hordeum murinum	Foxtail	I
Lolium miliacea	Rice grass	I
Penniserum clandestinum	Kikuyu grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Polygonum punctatum	Dotted water smartweed	N

Rattlesnake Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
Rumex crispus	Curly dock	I
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
TYPACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

5.4 San Antonio Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

5.4.1 Location

The San Antonio Creek Debris Basin is located on San Antonio Creek approximately 2,000 feet upstream of Tuckers Grove County Park.

5.4.2 History

San Antonio Creek Debris Basin is an engineered facility that was built in 1964 by the U.S. Army Corps of Engineers after the Coyote Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1006. Major desilting projects occurred in 1969, 1978, 1983, 1990, twice in 1995, 2002, 2019, and 2020.

Heavy rains caused runoff in January 1995 which filled San Antonio Debris Basin with sediment and it was desilted in late January and February. Another large storm on March 10, 1995 filled the basin again and the cleanout was repeated. The basin was cleaned again in 2002 following the major rains of 1998. Very high rainfall in 2005 resulted in the basin filling with sediment; the site was desilted in 2005 as well.

The Jesusita Fire in 2009 burned 42 percent of the watershed upstream of San Antonio Basin. As part of emergency response and flood preparation, the District performed over-excavation of this site in the fall season following the fire. While the overall footprint of the debris basin was unchanged, the District excavated the floor of the basin to an additional 3-foot depth during the sensitive period while the watershed recovered.

The San Antonio Creek watershed continued to shed sediment during the next 2 seasons. The District desilted a pilot channel through the basin in fall 2010; and after a series of rain events, the basin filled with sediment again and the District desilted the site under emergency permits. The basin gradually filled with sediment over the following several months and another excavation of 1500 cubic yards was performed in fall 2011.

Annual maintenance in 2011 through 2016 has involved period spot-spray of weeds and growth along the dam embankment, brushing of the 15-foot pilot channel, and weed-whacking a 10-foot band along the toe of the embankment to keep the outlet culvert from becoming obstructed.

The late fall 2019 Cave Fire burned much of the watershed above San Antonio Creek Debris Basin. In November 2019, the basin was desilted and prepared for the upcoming winter with a burned watershed. The basin receiving an influx of fine-grained sediments after each rain event and plugged the outlet works multiple times and was desilted in December 2019 and again in March 2020.

In response to the Cave Fire, the District constructed a debris rack downstream of the basin in Tucker's Grove Park to catch any large material. In order to help facilitate fine-grained sediment transport and prevent unnecessary sediment removal from the creek system, the District cut a notch in the concrete dam structure of San Antonio Debris Basin in November 2020. The bottom of the notch elevation will be at the top of the inlet cube structure and the dimensions will be 15' at the bottom and 30' at the top with 1:1 side slopes. The notch will be grouted to protect the integrity of the dam structure.

5.4.3 Setting

San Antonio Creek originates in the foothills of the Santa Ynez Mountains and drains a 3,230-acre watershed capable of producing 3,700 cfs during a 100-year return period precipitation event. The substrate consists of sand soil and cobbles.

The dam is located at the southwest end of the basin with chaparral and oaks to the northeast and west. There is also low density residential area to the west. A well-developed riparian corridor exists upstream and downstream of the basin along the riparian corridor of San Antonio Creek.

As a result of the Cave Fire and subsequent desilting events, the basin remains clear of vegetation while the watershed recovers.

5.4.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on October 5, 2016. When wetted, the basin provides suitable habitat for amphibians and riparian birds and other wildlife. Typical observations include Baja California treefrog, California treefrog, mosquitofish, California roach, western fence lizard, coyote, domestic dog and cat tracks, deer, western cottontail, and many bird species (see below). The basin often goes completely dry during the summer months and drought periods, excluding fish and many amphibians.

A single red-legged frog (RLF) adult was discovered in the pool immediately downstream of the debris basin culvert during a wildlife survey in 2011. RLF had not been recorded at this site before. No RLF were detected in the basin itself, where water depth was only a few inches not likely to support RLF in the dry season, but in the wet season it would be possible for RLF to move between the basin and the creek habitat downstream/upstream.

San Antonio Creek, and the Debris Basin site, are designated critical habitat for southern steelhead trout. This species has not been detected at the site during field surveys, but may occur in the area when sufficient water depth and water quality conditions exist. No other special-status species are known to occur at San Antonio Debris Basin.

5.4.5 Project Description

San Antonio Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete desilting after the basin fills and/or after a significant fire in the watershed.

5.4.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure.

The pilot channel will be maintained by removing obstructive vegetation with chainsaws, weed whackers, and loppers. Spot-spray of herbicide will be applied as necessary to prevent the regrowth of obstructive vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam and the culvert/outlet structure itself. The dam face will also be brushed and spot-sprayed to remove vegetation. Maintenance of the pilot channel and toe of dam will disturb approximately 20,500 square feet while allowing approximately 1.7 acres of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The outlet pipe and the concrete spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and concrete spillway when they are cracked or chipped by pouring more concrete. The outlet pipe may have a multi-opening structure installed in the future to reduce the frequency of plugging with debris.

5.4.7 Long-term Maintenance

Long-term maintenance will consist of complete desilting of the basin. This will be necessary after the basin effectiveness is reduced by 25 percent. Complete sediment/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from San Antonio Creek Road as shown on the attached map. Debris may be stockpiled immediately west of the basin in the large open field if necessary or hauled to an appropriate disposal site if one is available.

5.4.8 Revegetation Source

Riparian vegetation cyclically colonizes the basin over time. The vegetation may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while maintaining habitat that develops between long-term maintenance episodes. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds. Furthermore, selective removal and thinning will help reduce the potential for the outlet works becoming plugged when basin vegetation is uprooted during high flows.

5.4.9 Engineering Analysis

Maintenance of the pilot channel and the culvert opening will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that may be generated from heavy rains and high flows. Complete sediment/vegetation removal will be conducted if the basin’s effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted alter there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a nonburned watershed.

Photograph 5.4-1: San Antonio Creek Debris Basin

Photograph 5.4-2: San Antonio Creek Debris Basin

Map Source: County of Santa Barbara

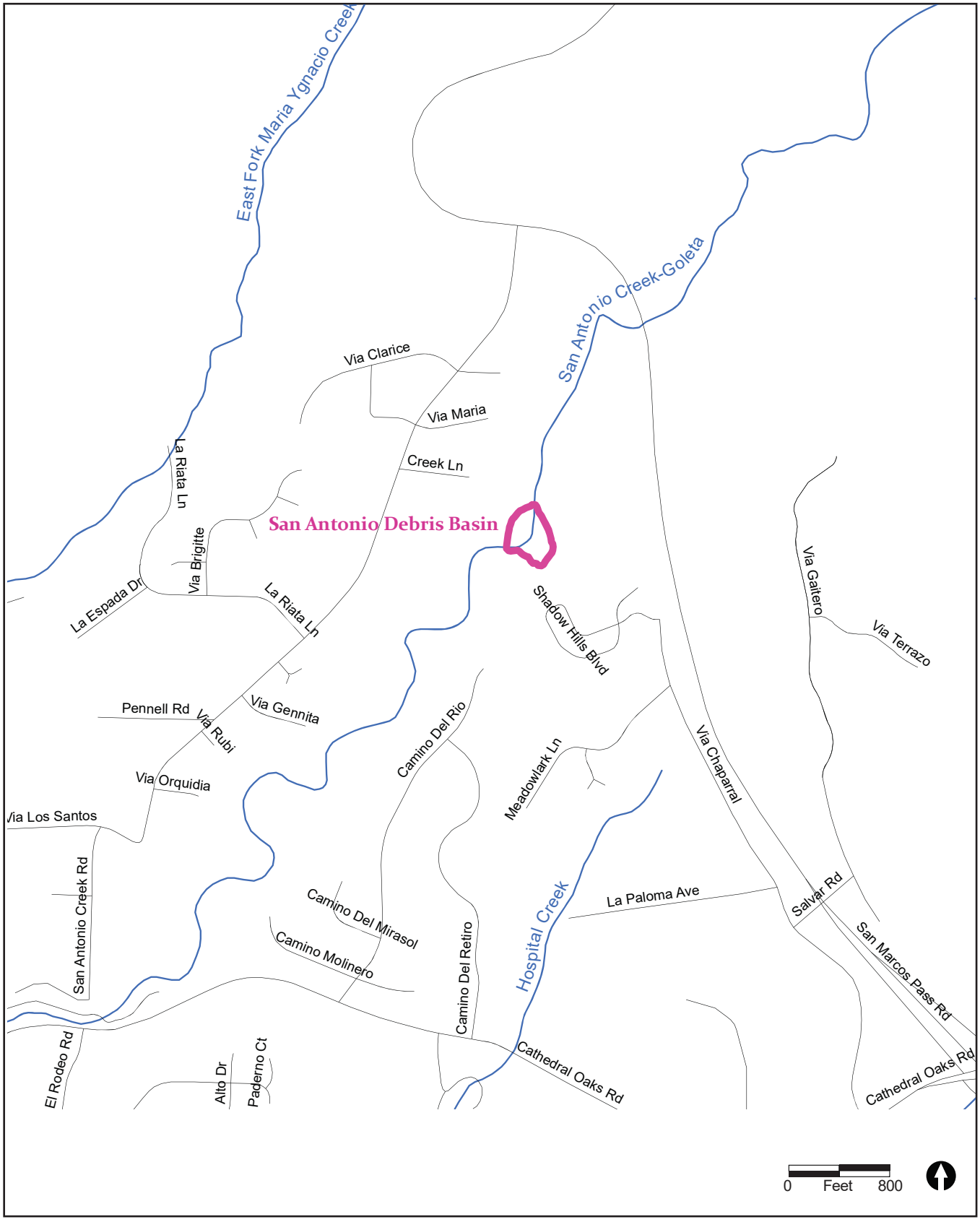


FIGURE 5.4-1
San Antonio Creek Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.7-1.ai 04/11/17 ccn

Map Source: County of Santa Barbara

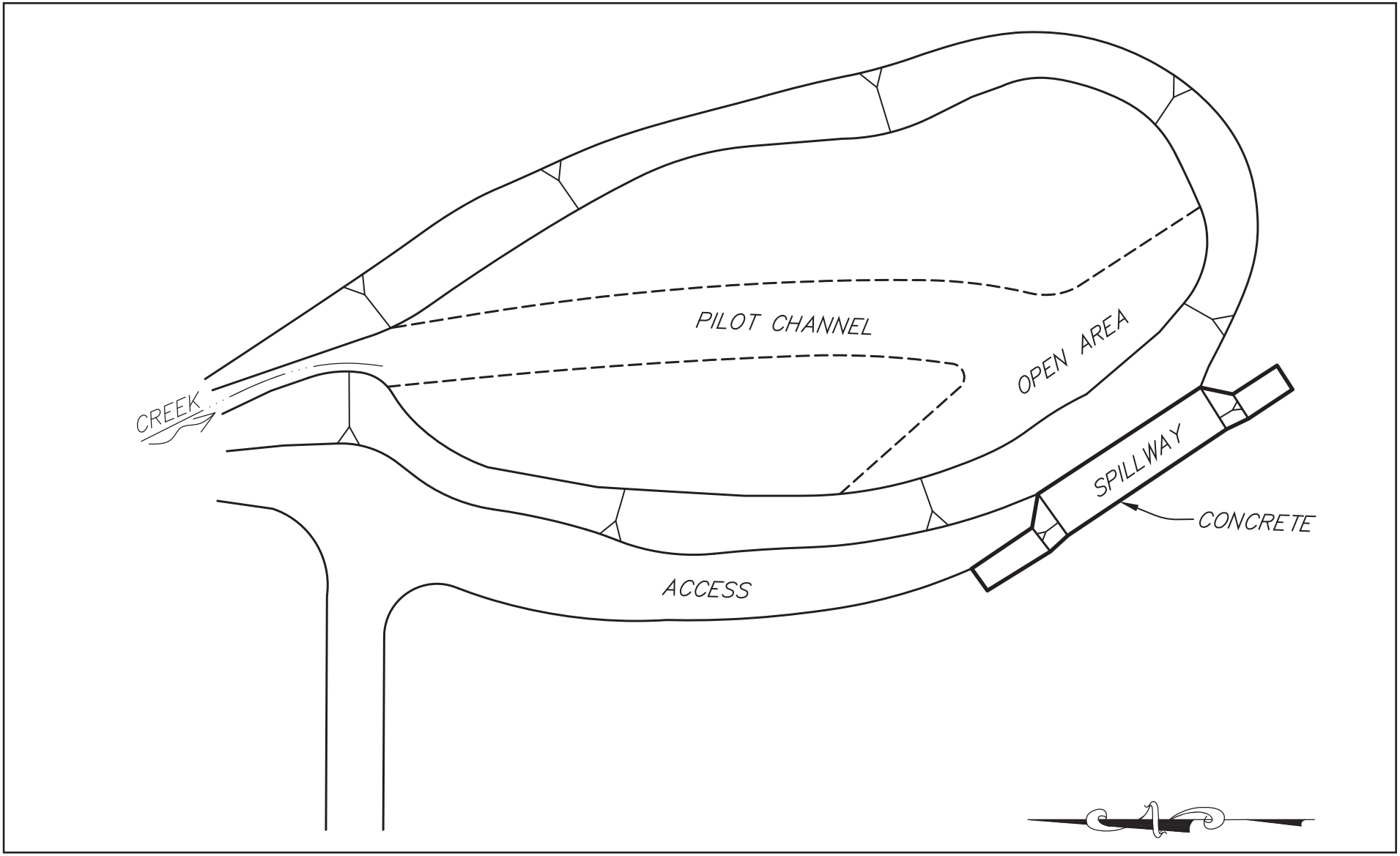


FIGURE 5.4-2
San Antonio Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.7-2.ai 04/11/17 ccn

San Antonio Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
APIACEAE		
Conium maculatum	Poison hemlock	I
ASTERACEAE		
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Picris echioides	Ox tongue	I
Xanthium strumarium	Cocklebur	I
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
PLATANACEAE		
Platanus racemosa	California sycamore	N
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
*N = Native; I = Introduced		

5.5 San Roque Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

5.5.1 Location

The San Roque Creek Debris Basin is located on San Roque Creek approximately 2,000 feet north of Foothill Road.

5.5.2 History

San Roque Creek Debris Basin is an engineered facility that was built in 1964 by the U.S. Army Corps of Engineers after the Coyote Fire burned a large percentage of the watershed.

The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, and once in 1998. Very high rainfall in 2005 resulted in the basin filling with sediment; the site was desilted in 2005 as well.

The Jesusita Fire in 2009 burned 78 percent of the watershed upstream of San Roque Basin. As part of emergency response and flood preparation, the District performed over-excavation of this site in the fall season following the fire. While the overall footprint of the debris basin was unchanged, the District excavated the floor of the basin to an additional 3-foot depth during the sensitive period while the watershed recovered. The basin filled with sediment over the course of the two years following the fire. The District excavated sediment to the original depth in fall 2011.

Annual maintenance in 2011 through 2016 has involved period spot-spray of weeds and growth along the dam embankment, brushing of the 15-foot pilot channel, and weed-whacking a 10-foot band along the toe of the embankment to keep the outlet culvert from becoming obstructed. The basin was desilted in summer 2018 as the basin had gradually accumulated material since 2011.

The Cave Fire broke out in late fall 2019, threatening the watershed above San Roque Debris Basin. The basin was cleared and desilted in late November 2019 as the fire was still burning, in anticipation of upcoming rains over a burned watershed. The fire was contained and only a small portion of San Roque watershed was eventually burned. The basin was inspected throughout winter 2019/2020 but no further accumulation occurred and desilting was not required.

5.5.3 Setting

San Roque Creek originates in the foothills of the Santa Ynez Mountains and drains a 3,032-acre watershed capable of producing 4300 cfs during a 100-year return period precipitation event. The substrate consists of sand, silty sand and cobbles.

The dam is located at the south end of the basin with an avocado orchard to the west. A well-developed riparian corridor exists to the north of the basin with chaparral habitat intermixed with oaks to the east. A popular trail traverses the edge of the basin and continues up and down the riparian corridor. The basin was desilted in late 2019 and vegetation has begun to recolonize the basin floor.

5.5.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on October 5, 2016. When wetted, the basin provides suitable habitat for amphibians and riparian birds and other wildlife. Typical observations include Baja California treefrog, California treefrog, mosquitofish, California roach, western fence lizard, coyote, domestic dog and cat tracks, raccoon, and many bird species (see below). The basin often goes completely dry during the summer months and drought periods, excluding fish and many amphibians.

San Roque Creek, and the Debris Basin site, are designated critical habitat for southern steelhead trout. This species has not been detected at the site during field surveys, but may occur in the area when sufficient water depth and water quality conditions exist. No other special-status species are known to occur at San Roque Debris Basin.

5.5.5 Project Description

San Roque Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete desilting after the basin fills with sediment and/or after a significant fire in the watershed.

5.5.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure

The pilot channel will be maintained by removing obstructive vegetation with chainsaws, weed whackers, and loppers. Spot-spray of herbicide will be applied as necessary to prevent the regrowth of obstructive vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam and the culvert/outlet structure itself. The dam face will also be brushed and spot-sprayed to remove vegetation. Maintenance of the pilot channel and toe of dam will disturb approximately 20,500 square feet while allowing approximately 1.7 acres of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed. The outlet pipe and the concrete spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and concrete spillway when they are cracked or chipped by pouring more concrete. The outlet pipe may have a multi-opening structure installed in the future to reduce the frequency of plugging with debris.

5.5.7 Long-term Maintenance

Long-term maintenance will consist of complete desilting of the basin. This will be necessary after the basin's effectiveness is reduced by approximately 25 percent. Complete sediment/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from San Roque Road or Ontare Road, as shown on the attached map. Debris may be stockpiled immediately west of the basin in the large open field if necessary or hauled to an appropriate disposal site if one is available.

5.5.8 Revegetation Source

Riparian vegetation cyclically colonizes the basin over time. The vegetation may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while maintaining habitat that develops between long-term maintenance episodes. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds. Furthermore, selective removal and thinning will help reduce the potential for the outlet works becoming plugged when basin vegetation is uprooted during high flows.

5.5.9 Engineering Analysis

Maintenance of the pilot channel and the culvert opening will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that may be generated from heavy rains and high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted alter there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 5.5-1: San Roque Creek Debris Basin

Photograph 5.5-2: San Roque Creek Debris Basin

Map Source: County of Santa Barbara

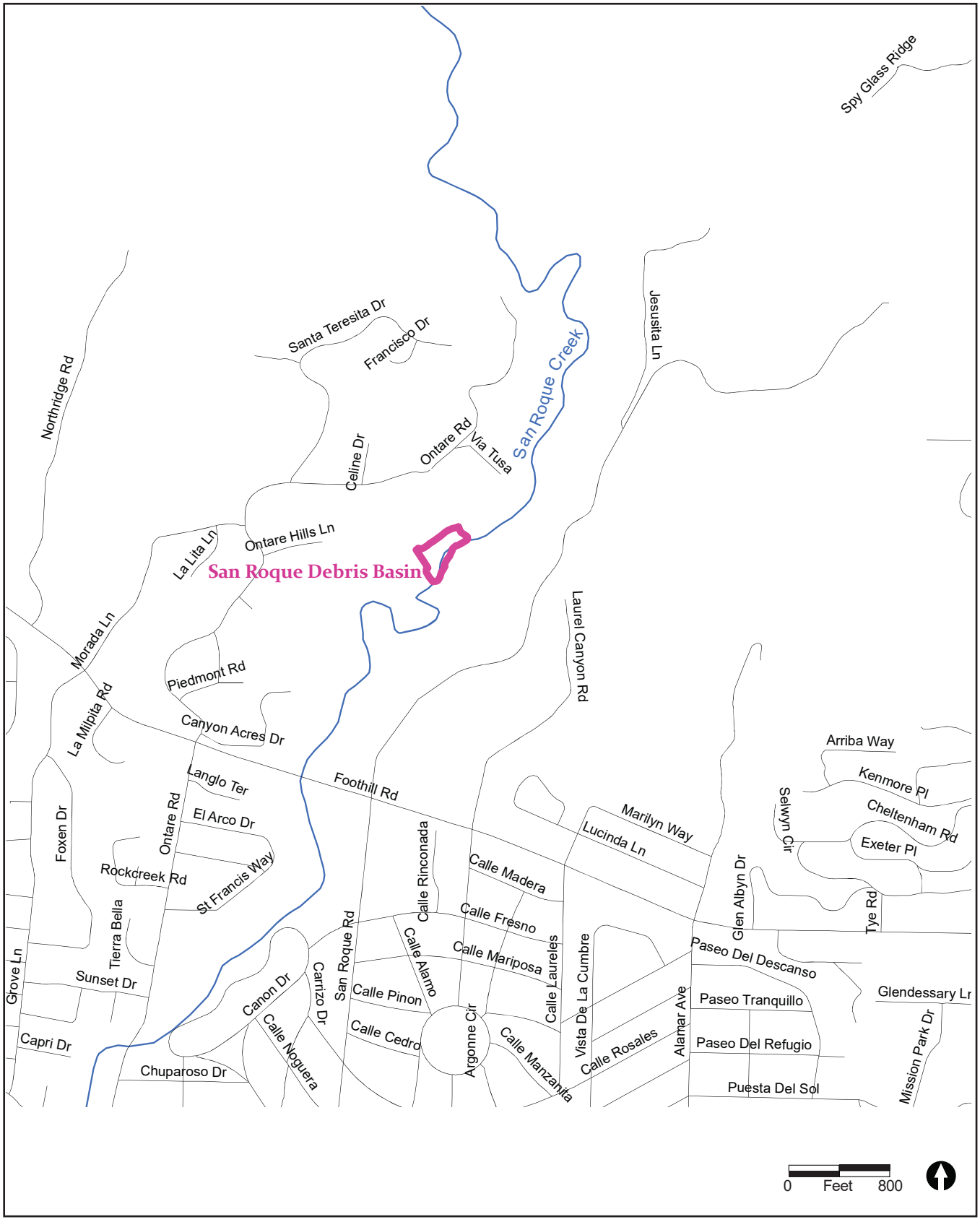


FIGURE 5.5-1
San Roque Creek Debris Basin Map

Map Source: County of Santa Barbara

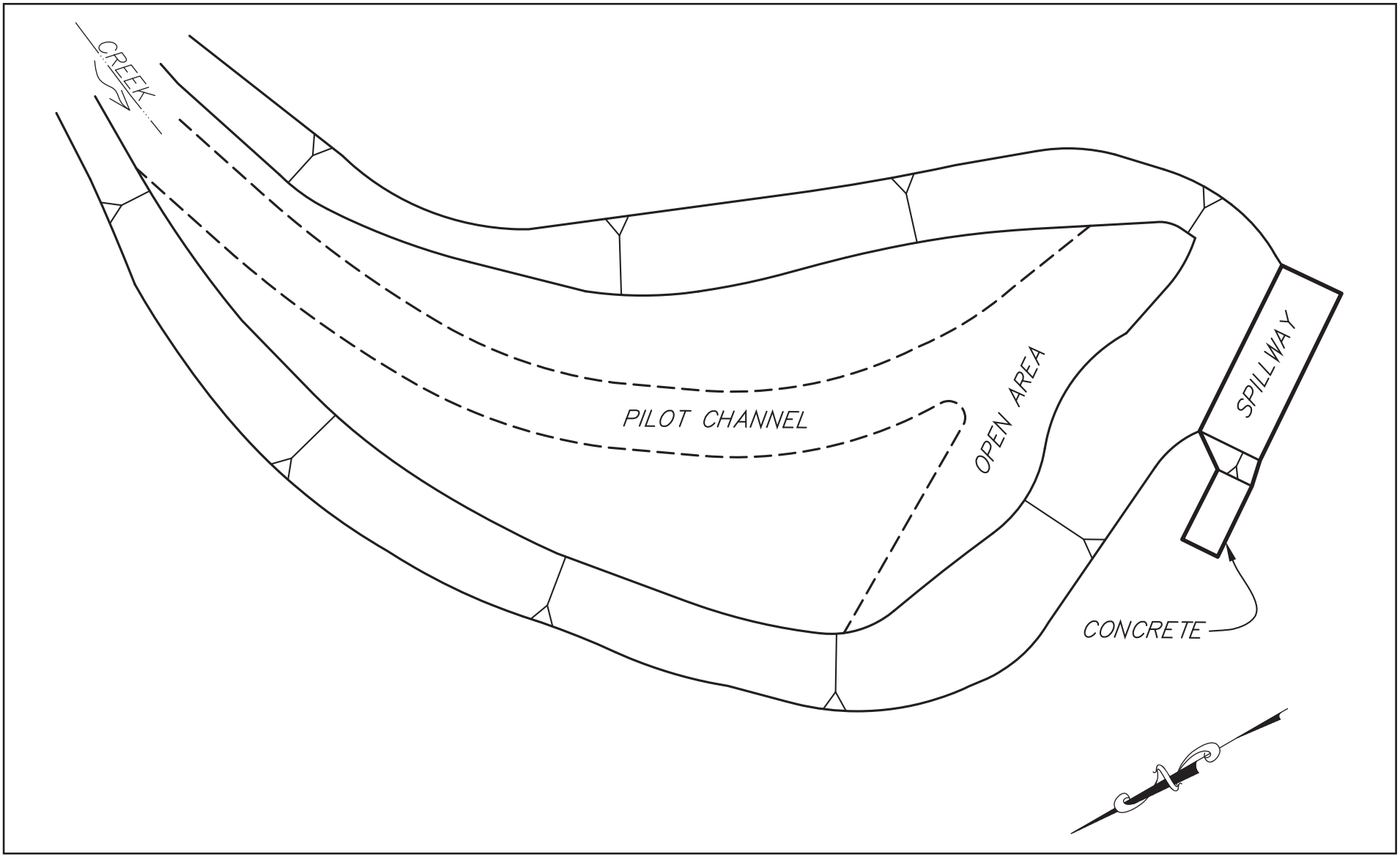


FIGURE 5.5-2
San Roque Creek Debris Basin Figure

San Roque Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
APIACEAE		
Conium maculatum	Poison hemlock	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Baccharis salicifolia	Mule fat	N
Gnaphalium luteo-album	Cud weed everlasting	I
Lactuca serriola	Prickly lettuce	I
Picris echioides	Ox tongue	I
Sylibum marianum	Milk thistle	I
Xanthium strumarium	Cocklebur	I
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
LAMIACEAE		
Mentha sp.	Mint	I
MALVACEAE		
Malva parvifolia	Cheeseweed	I
PLATAGINACEAE		
Plantago lanceolata	Plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Lolium multiflorum	Italian ryegrass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Polygonum punctatum	Dotted water smartweed	N
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N

San Roque Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

6.0 Other Basins

The District maintains 12 other basins in addition to the Group 1 Basins. These basins are further divided into Group 2 Basins and Other Basins. The "Other Basins" are seven additional debris basins that are not proposed for fish-passage modifications. Two of the Other Basins, Gobernador Basin and Montecito Basin, already accommodate fish passage. The remaining five Other Basins are not constructed within designated critical habitat for steelhead trout and are not considered steelhead streams.

Other Basins

- Franklin
- Gobernador
- Montecito
- Santa Monica
- Toro, East
- Toro, Upper West
- Toro Lower West

The District performs operations and maintenance of the Other Basins as described in the PEIR and DBMMP. An updated background and routine maintenance descriptions is provided in each Addenda below.

6.1 Franklin Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.1.1 Location

The Franklin Creek Debris Basin is located on the main branch of Franklin Creek Approximately 4,800 feet north of Casitas Pass Road in Carpinteria.

6.1.2 History

Franklin Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed.. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, and 2005.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Franklin Debris Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, Franklin debris basin was desilted following the January 9, 2018 debris flow and during summer 2018 and summer 2019. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

6.1.3 Setting

The main branch of Franklin Creek originates in the foothills of the Santa Ynez Mountains and drains a 523-acre watershed capable of producing 1050 cfs during a 100-year return period precipitation event.

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed from late 2017 through 2019. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow. The substrate consists of silty sand with cobbles at the upstream end of the basin.

There is chaparral and oaks surrounding the basin. The access road runs along the east side of the creek south of the dam. A poorly developed riparian corridor exists to the south of the basin although north of the basin the riparian corridor is well developed and continues to recover after the Thomas Fire. The dam is located to the south.

6.1.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on October 11, 2016. While many other streams in the region have gone completely dry during drought months, Franklin Debris Basin retained a trickle of flow through the basin site. When wetted, the basin provides suitable habitat for amphibians and riparian birds and other wildlife, including several bird species (see below). Common wildlife species at the site include raccoon, opossum, western fence lizard, domestic dog and cat. Several bear tracks and trails were observed at the site in 2016, indicating frequent visitation to the trickle of water in the basin by bears and likely other wildlife species.

Franklin Debris Basin is not designated critical habitat for southern steelhead trout. This species has not been detected at the site during field surveys and dispersal is unlikely due to extensive concrete modification and barriers in Franklin Channel throughout the City of Carpinteria. No other special-status species are known to occur at Franklin Debris Basin. Red legged frogs have been observed in nearby watersheds at Santa Monica Debris Basin; however no indication of this species has been detected at Franklin Debris Basin.

6.1.5 Project Description

The Franklin Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

6.1.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 4700 square feet and will allow for approximately 6200 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools

only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The 48-inch outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap. The outlet pipe has had a multi-opening structure installed to reduce the frequency of plugging with debris.

6.1.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from Casitas Pass Road as shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

6.1.8 Revegetation Source

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through 2019. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

As the watershed recovers, some native vegetation is allowed to colonize the basin, particularly around the edges and beyond the pilot channel. Basin vegetation, especially immature willow sprouts, may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.1.9 Engineering Analysis

Maintenance of the pilot channel and the culvert opening will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that may be generated from heavy rains and high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to

ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted alter there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.1-1: Franklin Creek Debris Basin

Photograph 6.1-2: Franklin Creek Debris Basin

Map Source: County of Santa Barbara

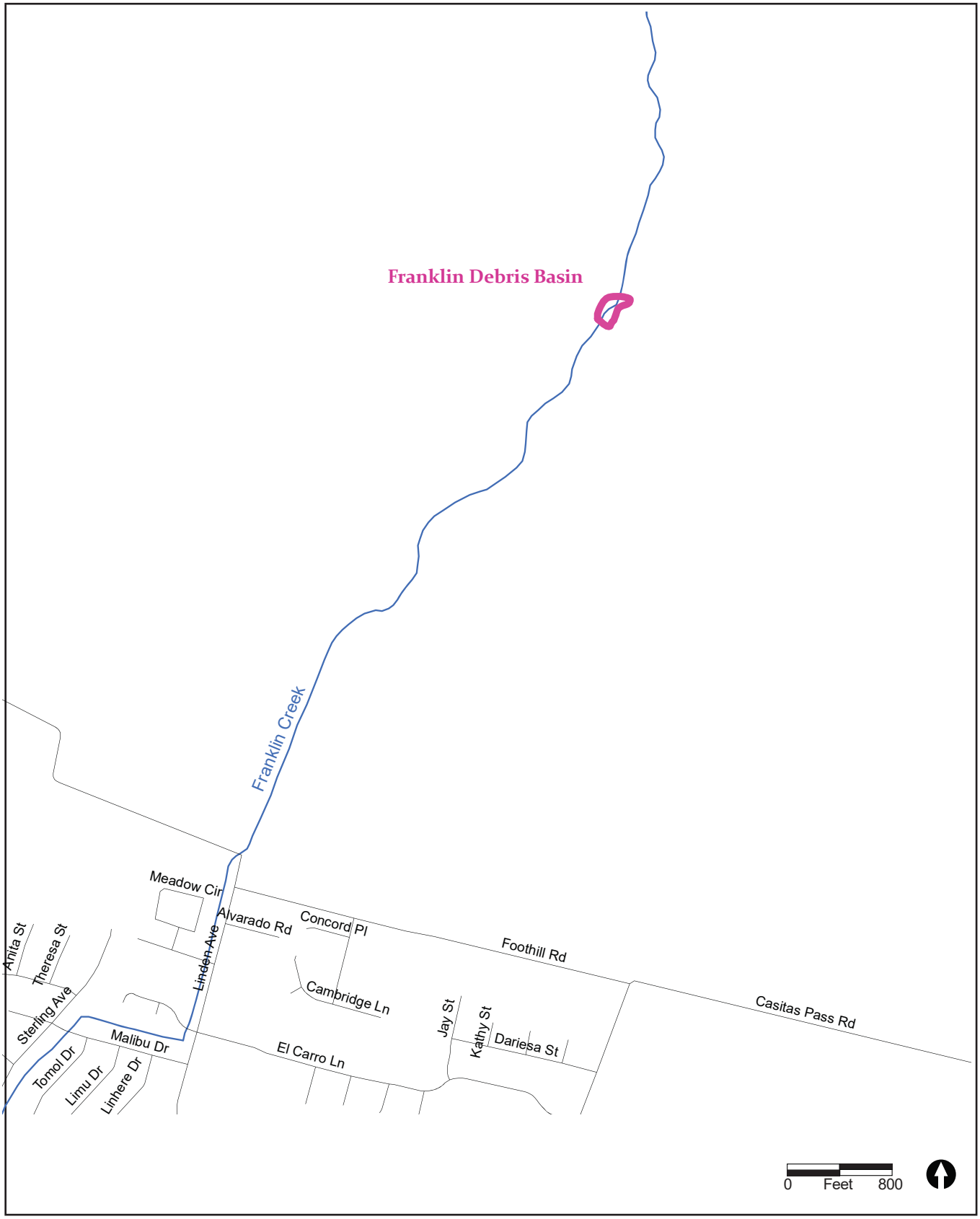


FIGURE 6.1-1
Franklin Creek Debris Basin Map

Map Source: County of Santa Barbara

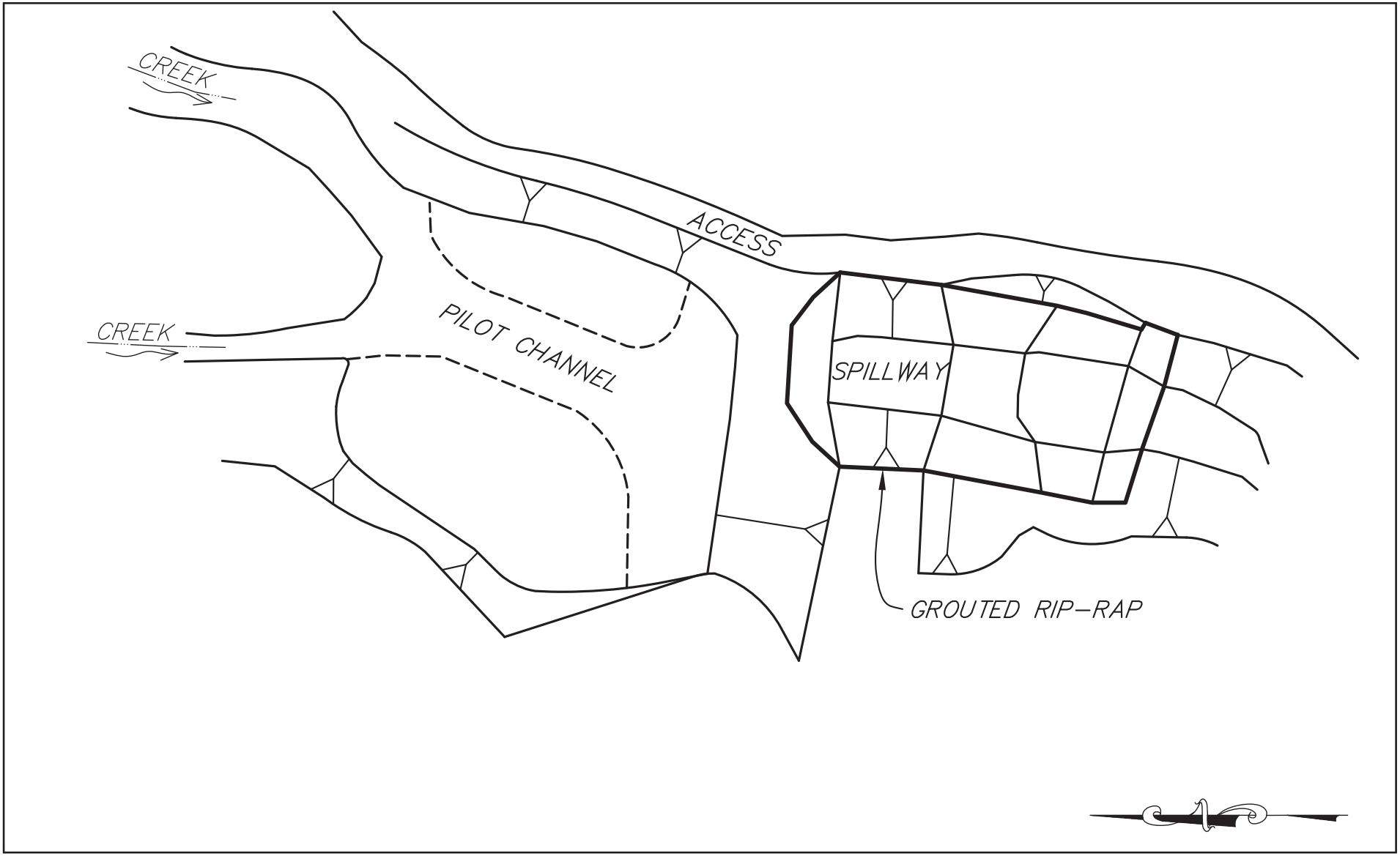


FIGURE 6.1-2
Franklin Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.2-2.ai 04/11/17 ccn

Franklin Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia douglasiana	Mugwort	N
Gnaphalium bicolor	Bicolored everlasting	N
Venegasia carpesioides	Canyon sunflower	N
Xanthium strumarium	Cocklebur	I
BETULACEAE		
Alnus rhombifolia	White alder	N
CAPRIFOLIACEAE		
Sambucus Mexicana	Elderberry	N
EQUISETACEAE		
Equisetum telmateia var. braunii	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
HYDROPHYLLACEA		
Phacelia ramosissima	Branching phacelia	I
PLATAGINACEAE		
Plantago major	Common plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus mollis	Soft chess	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
ROSACEAE		
Rubus ursinus	California blackberry	N
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
Salix lucida	Yellow willow	N
SCROPHULARIACEAE		
Scrophularia californica	California figwort	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

6.2 Gobernador Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.2.1 Location

The Gobernador Creek Debris Basin is located on Gobernador Creek approximately 1,000 feet north of 7000 Gobernador Canyon Road.

6.2.2 History

Gobernador Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996 Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, 2005,and 2018.

In 2008, the District modified the Gobernador Debris Basin dam with the goal of providing adequate conditions for fish passage while maintaining the flood-protection functionality of the site. The design of the project consisted of cutting down through the dam embankment, removing the culvert, and constructing an open channel. A formed concrete inlet structure serves to trap large debris but allow water, silt, sand and gravel to pass into the constructed channel downstream. A steel gate was constructed just downstream of the concrete inlet structure that can be closed, if needed. Gate closure scenarios may involve a wildfire in the watershed or anticipated large storm event, otherwise the gates will remain open. The constructed channel has an overall gradient of about 5 percent over a length of about 150 feet, similar to conditions directly upstream and downstream of the project site. Three pools were constructed to provide resting areas for migrating fish. The intervening roughened channel segments include embedded boulder structures to maintain channel grade, bed material of a specified grain-size distribution, and surface boulder clusters to provide velocity shadows. Through natural sorting of material, the intervening channel segment has formed into a shifting mosaic of shallow pools and riffles, in addition to the three major constructed pools.

During the first few years after construction, the concrete apron at the most downstream pool showed signs of scour, creating what may have become an increased jump height for steelhead in the future. The scoured area was not severe, but was identified as a potential area of concern during the District's monitoring.

The downstream concrete sill was modified in 2014 to remedy this potential problem. The edge of the concrete sill was chipped away with jackhammers to reduce the length. Several medium-sized boulders were placed adjacent and on top of the remaining sill and grouted into place as roughening features. The incipient soured hole downstream of the apron was temporarily excavated, and several large boulders were placed in the pit as a loose-rock structure.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Gobernador Debris Basin was burned. All vegetation was removed from

the basin in late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

The modified outlet structure at Gobernador Debris Basin performed extremely well in the debris flow, despite extensive sediment transport in the region. Large boulders collected in the basin as designed, but the outlet structure remained open and did not plug, and smaller fine sediment was able to pass through the structure. Some minor damage occurred to boulders in the constructed step-pools downstream of the outlet, but the structural integrity of the facility itself was undamaged. The damaged step-pools were reconstructed with un-grouted rock in November 2020.

As part of emergency watershed response, Gobernador debris basin was desilted following the January 9, 2018 debris flow, and again later in 2018. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

6.2.3 Setting

Gobernador Creek originates in the foothills of the Santa Ynez Mountains and drains a 5,086-acre watershed capable of producing 4900 cfs during a 100-year return period precipitation event.

The substrate consists of mostly cobble with some larger rocks at the upstream end.

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through 2018. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

Gobernador Debris Basin lies in a canyon with a steep hillside to the east of the site. Chaparral, oak trees, and avocado orchards line the canyon to the south. To the north of the site, a well-developed riparian corridor was established, but burned in the Thomas Fire. The vegetation upstream remains in a state of recovery.

6.2.4 Wildlife Survey

The site was assessed by the District Biologist on December 12, 2016. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2020.

Dominant plant species around the basin include arroyo willow, cottonwood, and sycamore. Coast range newts are frequently observed in the creek channel through the basin. When the basin has retained flowing water during the wet season, Baja California treefrogs and steelhead trout (resident /juvenile individuals) have been observed in the basin and the associated pools. Ocean-run migrating steelhead have not been detected at the site. Raccoons, opossum, and bear tracks have also been observed at the site. Birds observed or identified by call heard included: Bewick's wren, northern mockingbird, white crowned sparrow, orange-crowned warbler, Anna’s

hummingbird, song sparrow, black phoebe, California towhee, California scrub jay, acorn woodpecker, common yellowthroat and California quail.

6.2.5 Project Description

The Gobernador Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after there is a significant fire in the watershed and the gates need to be closed for a period of time and sediment accumulates within the basin.

6.2.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the through the modified channel. The pilot channel in Gobernador is the defined creek channel itself. Since the basin is not maintained in the same manner as the other intact basins, there is a defined creek bed within the basin, with mature vegetation throughout the rest of the basin.

Maintenance in the basin is very similar to the District's routine creek maintenance, in that vegetation growing within the 15-foot-wide creek bed is brushed and spot-sprayed to maintain channel conveyance. All bank vegetation is left in place and only branches projecting into the active channel are limbed. The purpose of the maintenance program is to retain a pilot channel through the main basin, so that flowing water from upstream reaches the appropriate opening at the basin spillway without excessive obstructions. The pilot channel preserves the functionality of the basin and allows water and sediment to move downstream through the watershed. Tree-trimming and brushing prevents debris snags from forming in the basin and potentially blocking sediment transport at the spillway.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam and outlet structure itself. The dam face will also be brushed and spot-sprayed to remove vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

Maintenance of the pilot channel and toe of dam will disturb up to approximately 3,900 square feet while allowing approximately 35,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

6.2.7 Long-term Maintenance

In addition to the bi-annual monitoring inspections, the District Maintenance Superintendent inspects the area annually to determine maintenance needs. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows.. A wildfire upstream or extreme weather forecasts may change any of the maintenance triggers and cause the District to close the gates.

6.2.8 Revegetation Source

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through 2018. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

As the watershed recovers, some native vegetation is allowed to colonize the basin, particularly around the edges and beyond the pilot channel. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the inlet structure becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.2.9 Engineering Analysis

Maintenance of the pilot channel will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.2-1: Gobernador Creek Debris Basin

Photograph 6.2-2: Gobernador Creek Debris Basin

Map Source: County of Santa Barbara

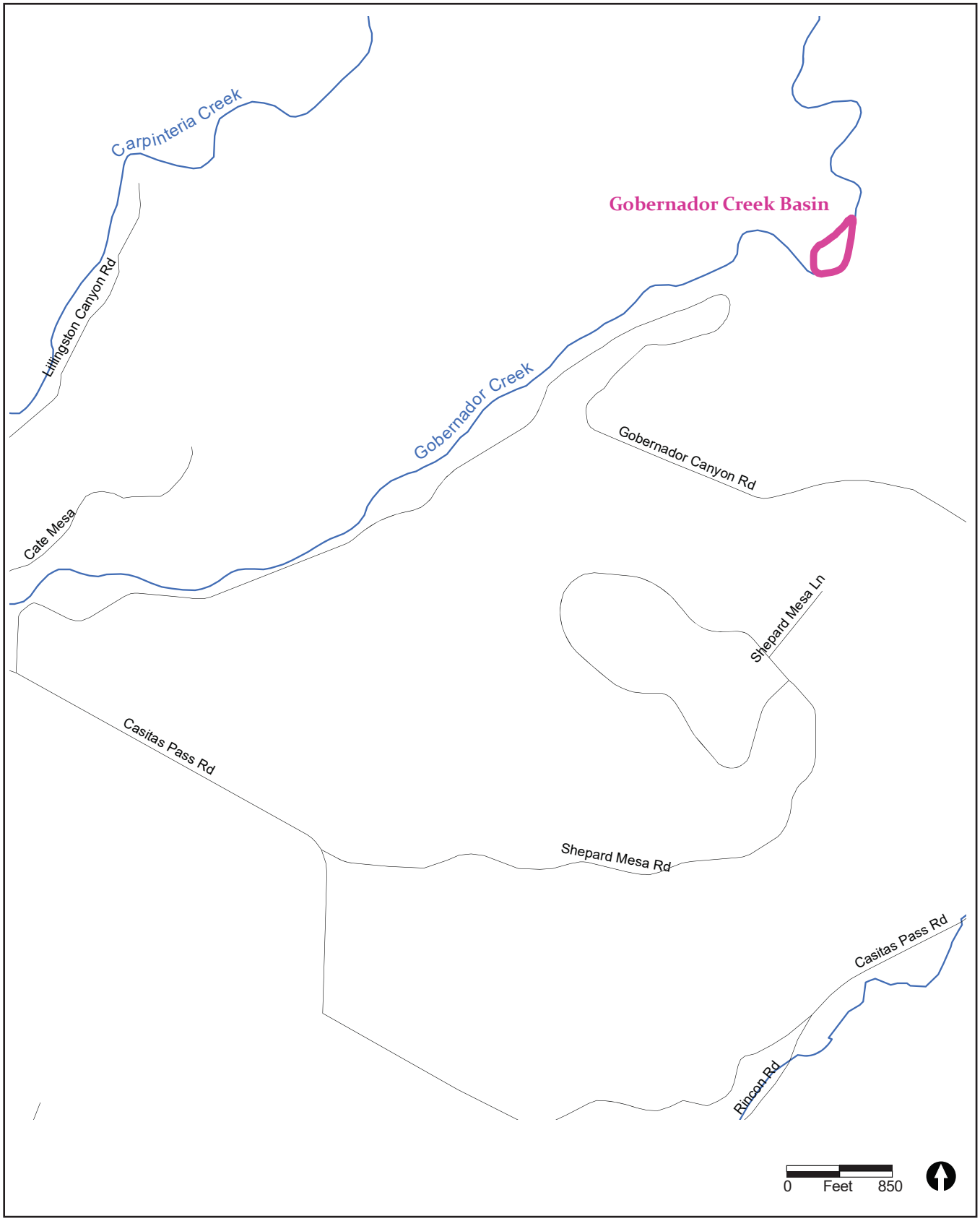


FIGURE 6.2-1
Gobernador Creek Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.3-1.ai 04/11/17 ccn

Map Source: County of Santa Barbara

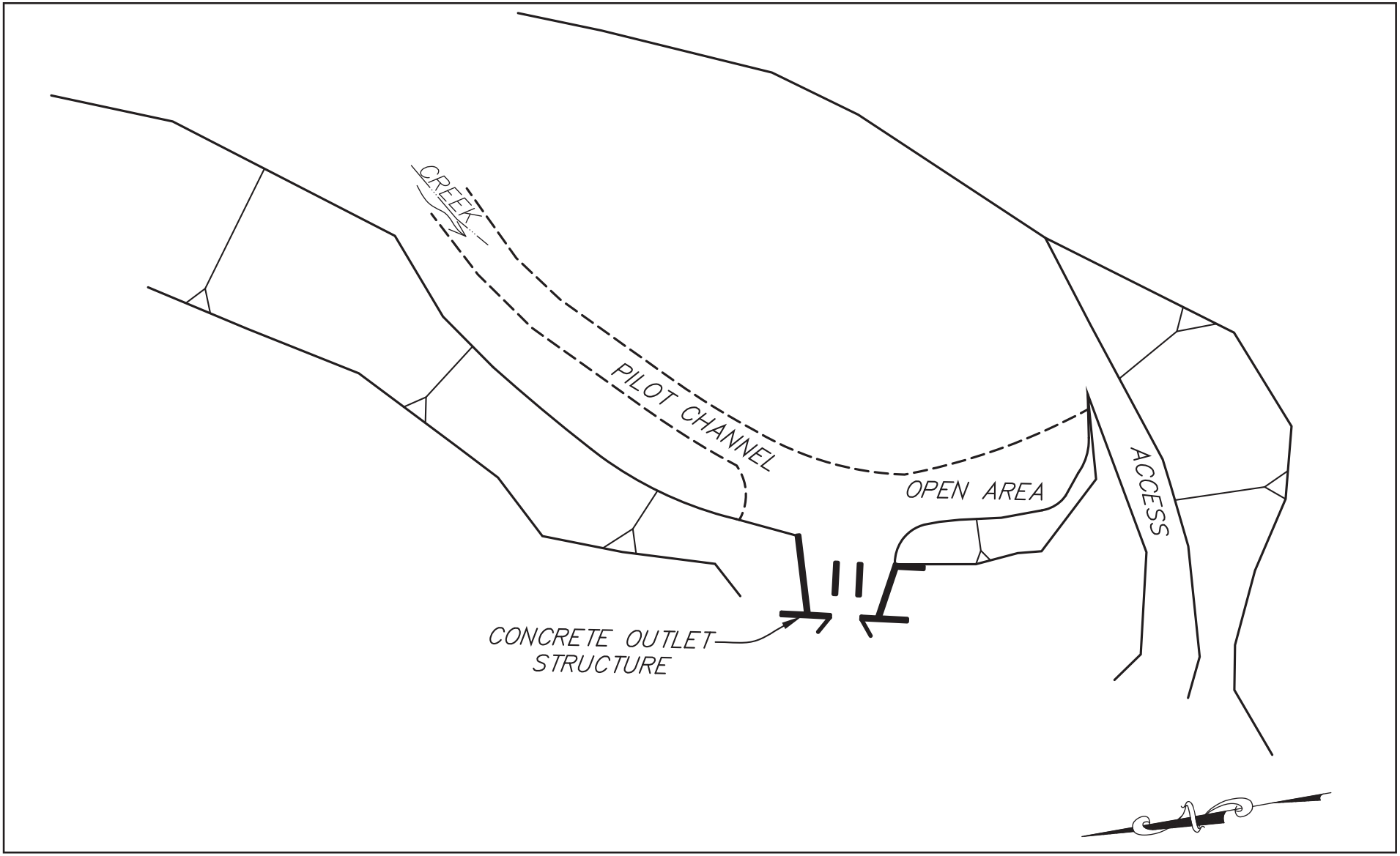


FIGURE 6.2-2
Gobernador Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.3-2.ai 04/11/17 ccn

Gobernador Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
APIACEAE		
Conium maculatum	Poison hemlock	I
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Gnaphalium bicolor	Bicolored everlasting	N
Picris echioides	Ox tongue	I
Xanthium strumarium	Cocklebur	I
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild raddish	I
Rorippa Nasturtium-aquaticum	Watercress	I
CHENOPODIACEAE		
Chenopodium ambrosioides	Mexican tea	I
Chenopodium murale	Nettle-leaved goosefoot	I
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	Coast live oak	N
LAMIACEAE		
Mentha sp.	Mint	I
LAURACEAE		
Umbellularia californica	California bay	N
MALVACEAE		
Malva nicaeensis	Mallow	I
Malva parvifolia	Cheeseweed	I
PLATAGINACEAE		
Plantago major	Common plantain	I
Plantago lanceolata	Plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Hordeum murinum	Foxtail	I
Lolium multiflorum	Italian ryegrass	I
Lolium miliacea	Rice grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I

Gobernador Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
POLYGONACEAE		
Polygonum arenastrum	Common knotweed	I
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Nicotiana glauca	Tree tobacco	I
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Broad-leaved cattail	N
*N = Native; I = Introduced		

6.3 Montecito Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.3.1 Location

The Montecito Creek Debris Basin is located on Montecito Creek just east of Olive Mill Road and south of the Casa Dorinda retirement facility.

6.3.2 History

Montecito Creek Debris Basin is an engineered facility that was completed in 2002 by the Santa Barbara County Flood Control District after repeated flooding due to sedimentation in 1995 and 1998. The Debris Basin project includes a fishway along the east side of the basin, designed and implemented in consultation with NMFS, to allow for fish passage.

The upstream end of the basin involves the fishway merging back into the existing privately owned concrete channel. This transitional area was further modified for improved sediment transport and fish passage in 2011 by constructing a slot and weir structure along the floor of the concrete.

The main basin was excavated completely after the major storm season in 2005. Past maintenance at Montecito Basin has also involved periodic sediment removal from the transitional area and the fishway, minor concrete sealing and drain repairs, and annual maintenance of a pilot channel through the main basin.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Much of the upper watershed of Montecito Creek the Franklin Debris Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, Montecito Debris Basin was desilted following the January 9, 2018 debris flow, and several times through the 2018/19 and 2019/2020 seasons. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

6.3.3 Setting

Construction of the Montecito Creek Debris Basin was completed in September 2002. Once construction was complete, the District began restoration along the basin slopes and overbank areas surrounding the basins. Coast live oak trees that had been boxed and removed from the site prior to construction were returned and planted along the slopes. Box sizes ranged from 24

inches up to 96 inches. Other species planted at the site include willows, sycamore, toyon, elderberry, California sage, California rose, blackberry, and mugwort.

Restoration at the basin has been successful, although some of the vegetation was damaged in the January 9, 2018 debris flow. Vegetation is recovering along the west side of the basin, which provides riparian habitat as well as screening from Olive Mill Road. The other sides of the basin are surrounded by wooded low density residential areas and Casa Dorinda Retirement Home.

Because steelhead trout are known to inhabit Montecito Creek, construction of the debris basin incorporated a fishway along the east bank of the facility. This fishway consists of resting pools at the upstream and downstream end of the basin and a concrete lined channel with baffles inserted at intervals to slow water velocities through the fishway to allow steelhead to navigate both upstream and downstream.

6.3.4 Wildlife Survey

Several previous wildlife surveys, as well as field notes and observation records have been compiled. A follow-up wildlife survey was performed by the District Biologist on October 10, 2016. The site is directly adjacent to a busy roadway within light-density residential development, which limits wildlife activity somewhat, although riparian bird activity is typically high within the riparian corridor. Other wildlife consists of urban-tolerant species such as raccoon, opossum, and western fence lizard. Montecito Creek is designated critical habitat for steelhead trout and several resident/juvenile individuals have been detected in the fishway pools over the past several years (ocean-running adult fish have not been observed at the site).

The basin floor generally remains wet from seepage, although the site may go dry during drought years. The upland areas surrounding the basin are populated with a mixed stand of oak trees, laurel sumac, willow trees, and other riparian trees and shrubs. The bottom of the basin remains cleared of vegetation for 3 to 5 years while the upstream watershed is recovering from fire and debris-flow damage.

6.3.5 Project Description

The Montecito Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

6.3.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a D-5 dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide (see Figure 1.1 in Section 1.0, Introduction).

The pilot channel through the main basin will be maintained with a combination of weed-whacking, chainsaws and loppers, spot spray, and/or equipment operating in the channel. Pilot

channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

Maintenance at this site includes management within the fishway and associated inlet and outlet pools, such as removing accumulated sediment, re-sealing concrete seams as needed, graffiti removal, and concrete pothole repair. The modification in 2011 was designed to reduce sediment input into the fishway and reduce the need for ongoing maintenance; however sediment management may be needed in some cases.

Maintenance at this site may also include repairs for weep holes, drain pipes, and concrete aprons and block walls. Furthermore, the existing at grade check structures located immediately downstream of the fishway may have to be repaired. Repair includes filling scour holes that develop that compromise the check structures or the channel walls

Maintenance of the pilot channel and the open area will disturb approximately 10,000 square feet and will allow for approximately 27,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin but non-native vegetation will be eradicated when feasible. When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

6.3.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from Olive Mill Road and the adjacent gravel roadway leading to the downstream end of the basin. Debris will be hauled to an appropriate disposal site after desilting.

6.3.5 Revegetation Source

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through winter 2019/2020. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

As the watershed recovers, some native vegetation is allowed to colonize the basin, particularly around the edges and beyond the pilot channel. Basin vegetation, especially immature willow sprouts, may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plans. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc.

will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet works becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.3.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.3-1: Montecito Creek Debris Basin

Photograph 6.3-2: Montecito Creek Debris Basin

Map Source: County of Santa Barbara

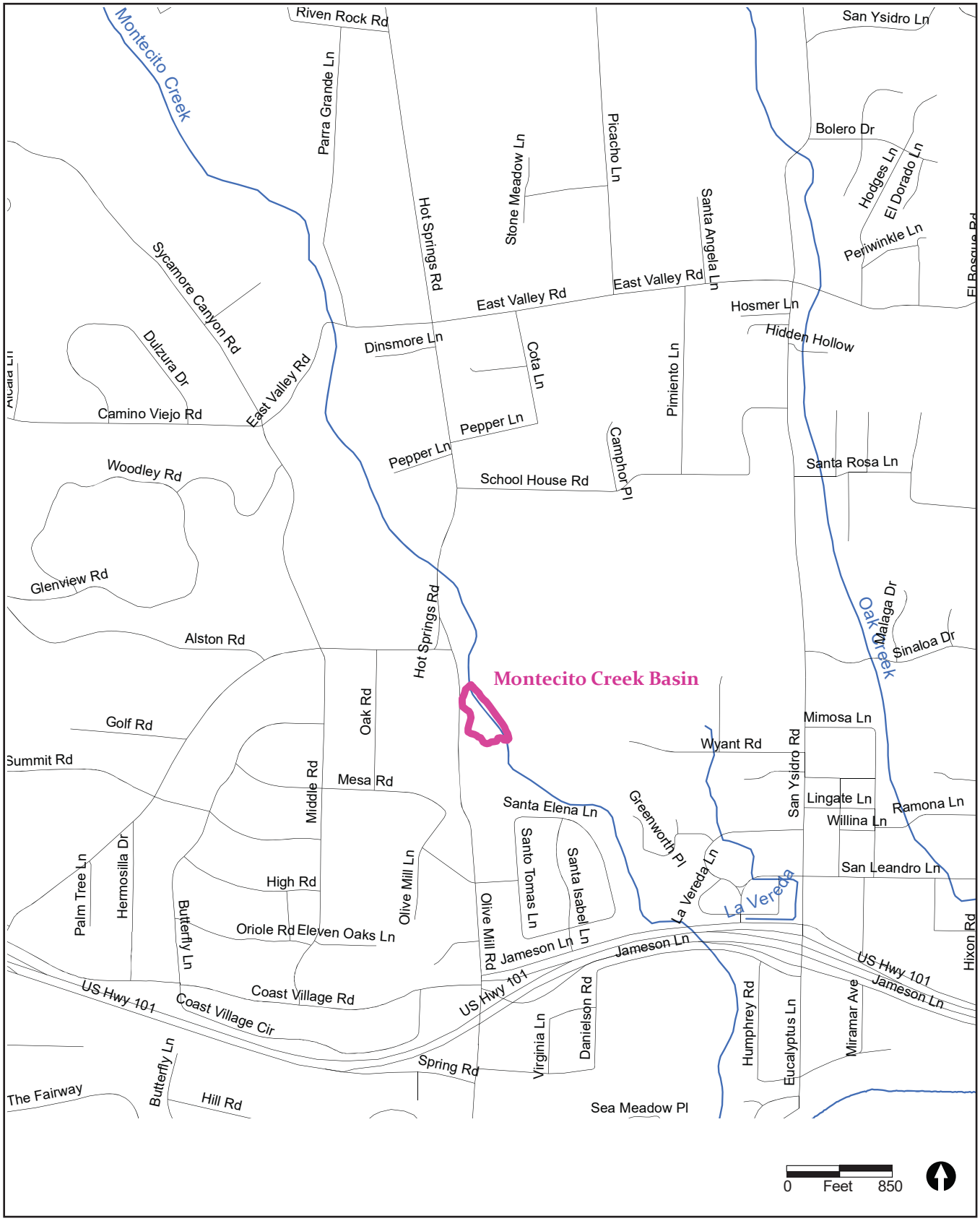


FIGURE 6.3-1
Montecito Creek Debris Basin Map

Map Source: County of Santa Barbara

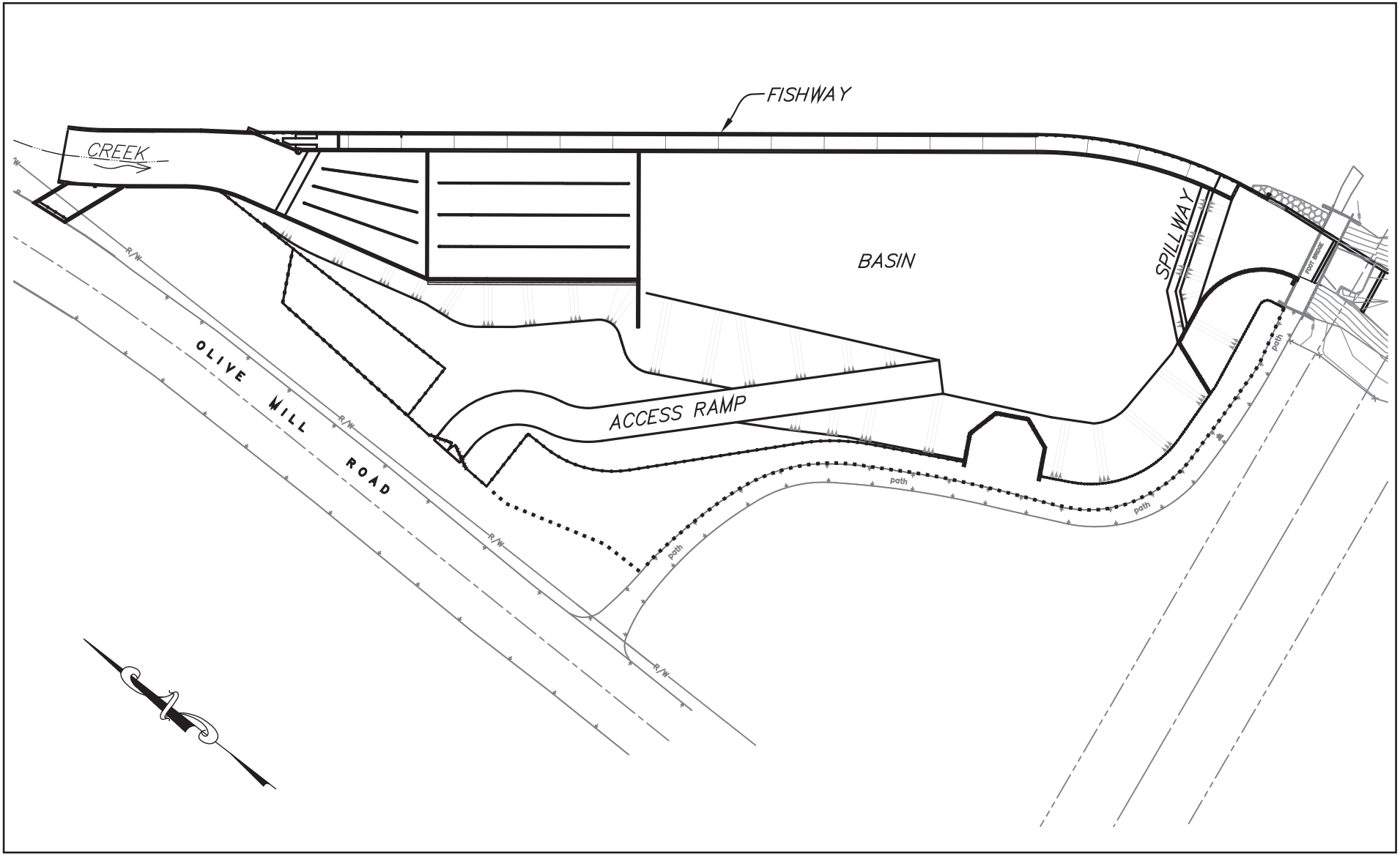


FIGURE 6.3-2
Montecito Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.5-2.ai 04/11/17 ccn

Montecito Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Malosma laurina	Laurel sumac	N
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Baccharis salicifolia	Mule fat	N
Venegasia carpesioides	Canyon sunflower	N
BETULACEAE		
Alnus rhombifolia	White alder	N
CAPRIFOLIACEAE		
Sambucus mexicana	Elderberry	N
FAGACEAE		
Quercus agrifolia	Coast live oak	N
GROSSULARICEAE		
Ribes amarum	Gooseberry	N
LAURACEAE		
Umbellularia californica	California bay	N
PLATAGINACEAE		
Plantago major	Common plantain	I
Plantago lanceolata	Plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Elymus condensatus	Giant rye	I
Lolium miliacea	Rice grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
RANUNCULACEAE		
Clematis ligusticifolia	Creek clematis	N
ROSACEAE		
Heteromeles arbutifolia	Toyon	N
Rosa californica	California rose	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
Solanum xanti	Nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

6.4 Santa Monica Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.4.1 Location

The Santa Monica Creek Debris Basin is located on Santa Monica Creek approximately 3,500 feet upstream of Foothill Road in Carpinteria.

6.4.2 History

Santa Monica Creek Debris Basin is an engineered facility that was built in 1977 by the U.S.D.A. Soil Conservation Service as an element of the Carpinteria Valley Watershed Project the basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994 the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, 2005, and 2018. Two of the towers within the basin that allow water to continue to flow downstream as the basin fills were repaired in 2006 due to being damaged in storm flows.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Basin was burned. Vegetation in the basin and around the drainage tower and pilot channel was brushed following the fire. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, Santa Monica debris basin was desilted following the January 9, 2018 debris flow and through summer 2018. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

The District is currently developing a series of repairs and improvements to the Santa Monica debris basin. The project components include: repair of the inlet towers, removal of one inlet tower and replacement with a new inlet tower that will be cited to be easier to reach and clean with a crane when the basin is full; modification of the access pad replacement of the emergency spillway bridge; installation of a deck bridge, manhole, access road, and plunge pool bypass pipe. This project is considered under a separate Notice of Exemption for existing facilities. These projects are proposed for implementation in 2021.

6.4.3 Setting

Santa Monica Creek originates in the foothills of the Santa Ynez Mountains and drains a 2,337-acre watershed capable of producing 4500 cfs during a 100-year return period precipitation event. Heavy rains caused runoff in January 1995 which filled Santa Monica Creek Debris Basin with debris and it was desilted in late January and February. Another large storm on March 10, 1995 filled the basin again and the cleanout was repeated. The basin was cleaned again following the El Nino rains in 1998. The basin was completely filled in 2005 and desilted.

The Santa Monica Creek Debris Basin is a very large debris basin with a two tiered dam face. The dam is over 60 feet high on the upstream and approximately 150 feet high on the downstream side. The dam is covered with large rip-rap with concrete spillway located on the east side of the basin.

The spillway is approximately 1,600 feet long and discharges into a plunge pool. The plunge pool is approximately 300 feet long, 150 feet wide and 30 feet deep when clean. The plunge pool also acts as a sediment catch basin and is desilted as needed. The plunge pool was last desilted in October of 2012 as it was 70 percent full of sediment and debris. The spillway enters at the north end of the pool onto grouted rip-rap and the plunge pool discharges directly into a concrete channel to the south.

Santa Monica enters the basin over a grouted rip-rap inlet at the northwest corner. Most flows pass through the basin to one of the three concrete outlet towers. The towers are located at the west side of the basin and are at different elevations. The towers have four screened openings and discharge into a drainage swale adjacent to the spillway. The water discharged through the outlet towers enters the plunge pool immediately east of the spillway.

Santa Monica Creek Debris Basin is located in a relatively step section of the creek in an area dominated by chaparral habitat. There is an orchard to the east, west and south with a well-developed riparian corridor to the northwest. The main access is located off Foothill Road immediately west of Santa Monica Creek and runs along the west side of the concrete channel, plunge pool, and spillway up to the basin. There is access across the top of the dam and the basin can be entered from access ramps at both the east and west sides of the basin.

6.4.4 Wildlife Survey

The site was assessed by the District Biologist on October 19, 2016. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2016.

The following species have been detected at the debris basin site: red-tailed hawk, American crow, California scrub jay, black phoebe, common yellowthroat, northern mocking bird, California towhee, Baja California tree frog (juveniles and adults), western fence lizard, as well as bear and canine tracks.

During 2002, southwestern pond turtles were observed at the plunge pool but have not been detected subsequently. The District Biologist detected an adult RLF at the upstream end of the Santa Monica plunge pool and in the upstream channel is 2011 and 2012. A few larger tadpoles in the plunge pool were likely RLF but positive identification could not be made without capture. Based on the sightings in 2011 and 2012, the District assumes that RLF may be present in low numbers at the plunge pool during wet conditions. However, since the RLF sightings, the plunge pool, debris basin, and adjacent channels have gone dry for many months at a time, limiting the ability of aquatic animals to persist at the site.

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through early 2019. The basin and plunge pool remain cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

6.4.5 Project Description

The Santa Monica Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance would include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

6.4.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structures. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the plot channel and the open area will disturb approximately 27,000 square feet and will allow for approximately 48,000 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin buy non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The outlet towers, spillway, and dam will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet towers and spillway when they are cracked or chipped by pouring more concrete. The dam is maintained by spraying weeds and replacing rip-rap.

The plunge pool will be desilted on an as-needed basis. All flows are routed through the plunge pool and it is constantly filling with sediment. The plunge pool functions as a sediment trap and

thus keeps a large quantity of sediment from filling the Carpinteria Salt Marsh. The sediment is usually deposited at the farm field to the east. The plunge pool was last desilted in 2018.

6.4.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will also be conducted if there is a significant fire in the watershed. Long-term debris basin maintenance will typically be accompanied by plunge pool desilting. Access will be taken from Foothill Road as described above and shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

6.4.8 Revegetation Source

Riparian vegetation cyclically colonizes the basin over time. In addition to providing high quality habitat, the native vegetation in this basin can provide an excellent source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet works to become plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.4.9 Engineering Analysis

Maintenance requirements for Santa Monica Creek Debris Basin are established by the Division of Safety of Dams. Since the dam is over 25-foot-high, an inspection is done annually. The maintenance proposed in this plan is consistent with the Division of Safety of Dams requirements.

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.4-1: Santa Monica Creek Debris Basin Plunge Pool Below Basin

Photograph 6.4-2: Santa Monica Creek Debris Basin

Map Source: County of Santa Barbara

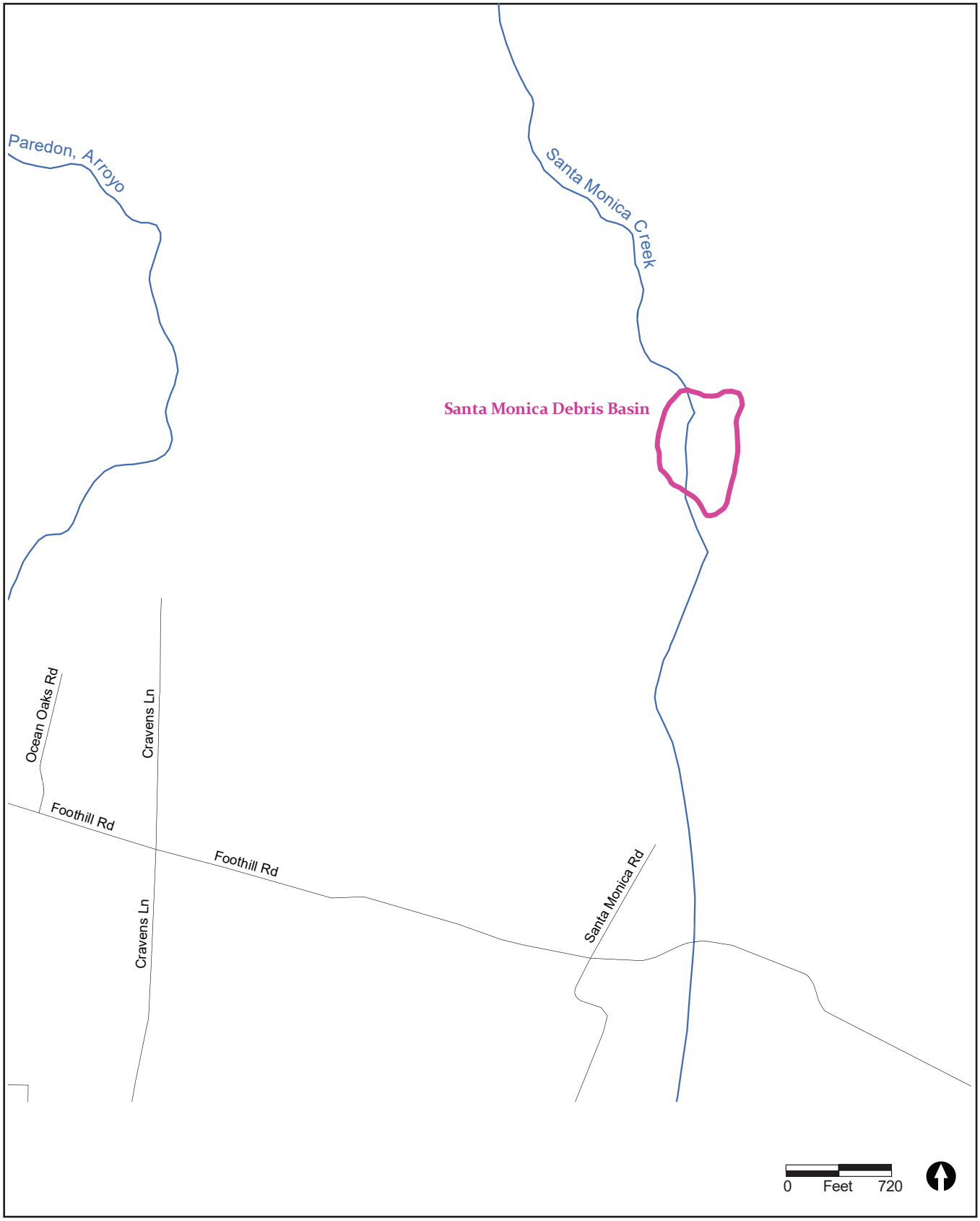


FIGURE 6.4-1
Santa Monica Creek Debris Basin Map

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.9-1.ai 03/29/17 ccn

Map Source: County of Santa Barbara

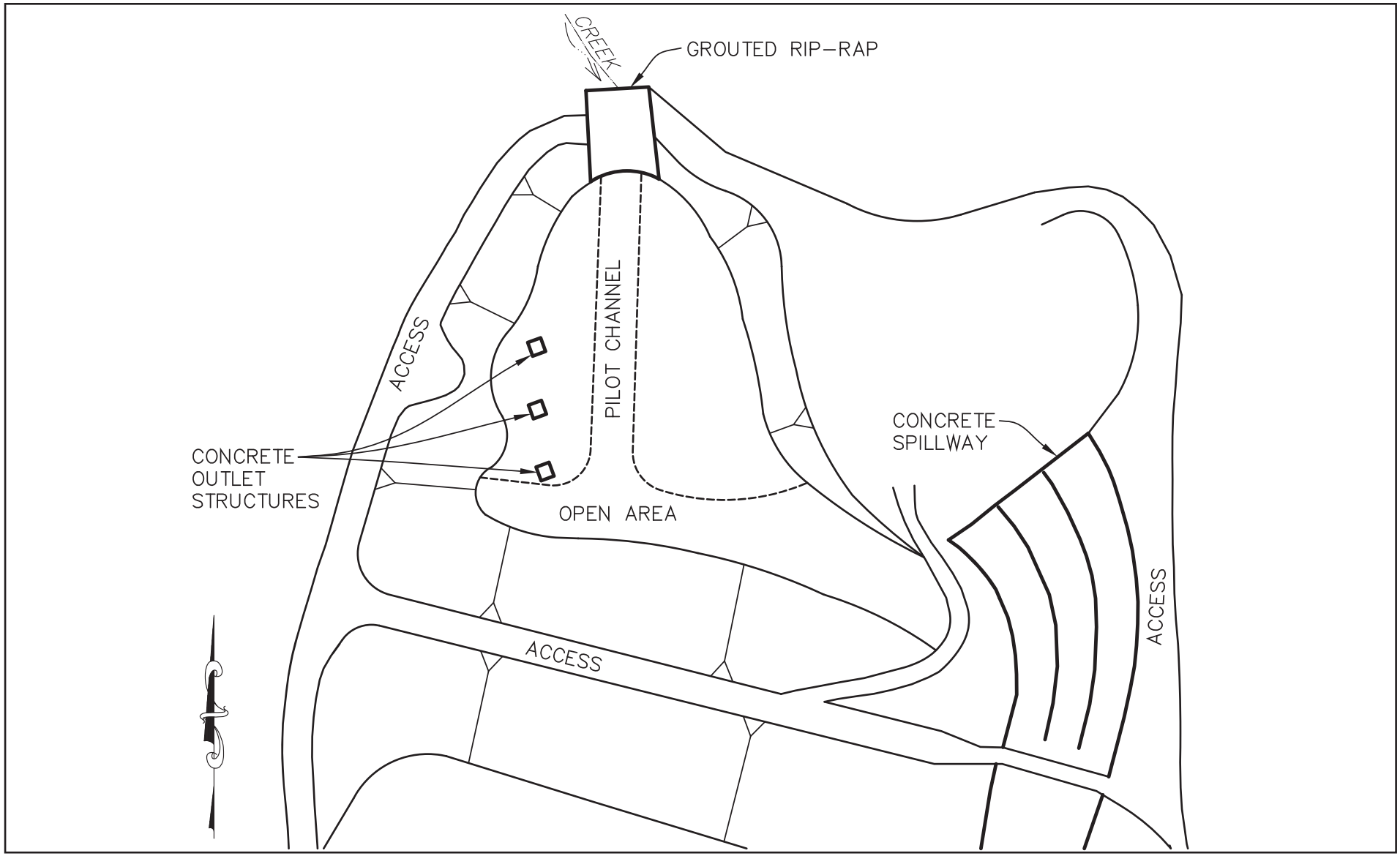


FIGURE 6.4-2
Santa Monica Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.9-2.ai 03/28/17 ccn

Santa Monica Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
Schinus molle	Pepper tree	I
APIACEAE		
Conium maculatum	Poison hemlock	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Isocoma veneta	Coast golden bush	N
Picris echioides	Ox tongue	I
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
Rorippa nasturtium-aquaticum	Watercress	I
EQUISETACEAE		
Equisetum telmateia var. braunii	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
LAMIACEAE		
Mentha sp.	Mint	I
LAURACEAE		
Umbellularia californica	California bay	N
PLATAGINACEAE		
Plantago lanceolata	Plantain	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Hordeum murinum	Foxtail	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
Rumex crispus	Curly dock	I
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

6.5 East Toro Canyon Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.5.1 Location

The East Toro Canyon Creek Debris Basin is located on East Toro Canyon Creek approximately 5,000 feet northeast of East Valley Road.

6.5.2 History

East Toro Canyon Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994, the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, 2005, and 2018.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, East Toro Canyon debris basin was desilted following the January 9, 2018 and later in 2018. The dam embankment was repaired after damage to the grouted rocks during the debris flow. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

6.5.3 Setting

East Toro Canyon Creek originates in the foothills of the Santa Ynez Mountains and drains an 869-acre watershed capable of producing 2600 cfs during a 100-year return period precipitation event. Heavy rains caused runoff in January 1995 which filled East Toro Canyon Creek Debris Basin with debris and it was desilted in late January and February. Another large storm on March 10, 1995 filled the basin again and the cleanout was repeated. The basin was cleaned again following the El Nino rains in 1998 and the debris flow in 2018. The substrate consists of silty sand and cobbles with large rocks at the upstream end of the basin.

There is chaparral and oaks to the north, east and south of the basin. A riparian corridor exists to the northeast of the basin and downstream of the dam. The dam is located to the south and Toro Canyon Road is located to the west of the basin.

6.5.4 Wildlife Survey

The site was assessed by the District Biologist on October 17, 2016. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2020.

This basin is high in the watershed and generally goes completely dry for several months of the year. During drought periods, the site may be dry for the entire year. The following wildlife species have been detected on site: spotted towhee, song sparrow, California scrub jay and American crow.

The habitat at the basin is comprises of a blend of willow riparian scrub species and coastal chaparral species such as bigpod ceanothus and laurel sumac. The basin is not considered critical habitat for steelhead trout and no special-status fish species have been detected at the site.

6.5.5 Project Description

The East Toro Canyon Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

6.5.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 9,100 square feet and will allow for approximately 19,500 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin buy non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-

establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The 48-inch outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap.

6.5.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. . Complete debris/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from Casitas Pass Road as shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

6.5.8 Revegetation Source

Vegetation was removed in response to the Thomas Fire and frequent sediment removal has been performed since late 2017 through 2018. The basin remains cleared of vegetation for 3 to 5 years while the watershed recovers from the fire and debris flow.

As the watershed recovers, some native vegetation is allowed to colonize the basin, particularly around the edges and beyond the pilot channel. Basin vegetation, especially immature willow sprouts, may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.5.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.5-1: East Toro Canyon Creek Debris Basin

Map Source: County of Santa Barbara

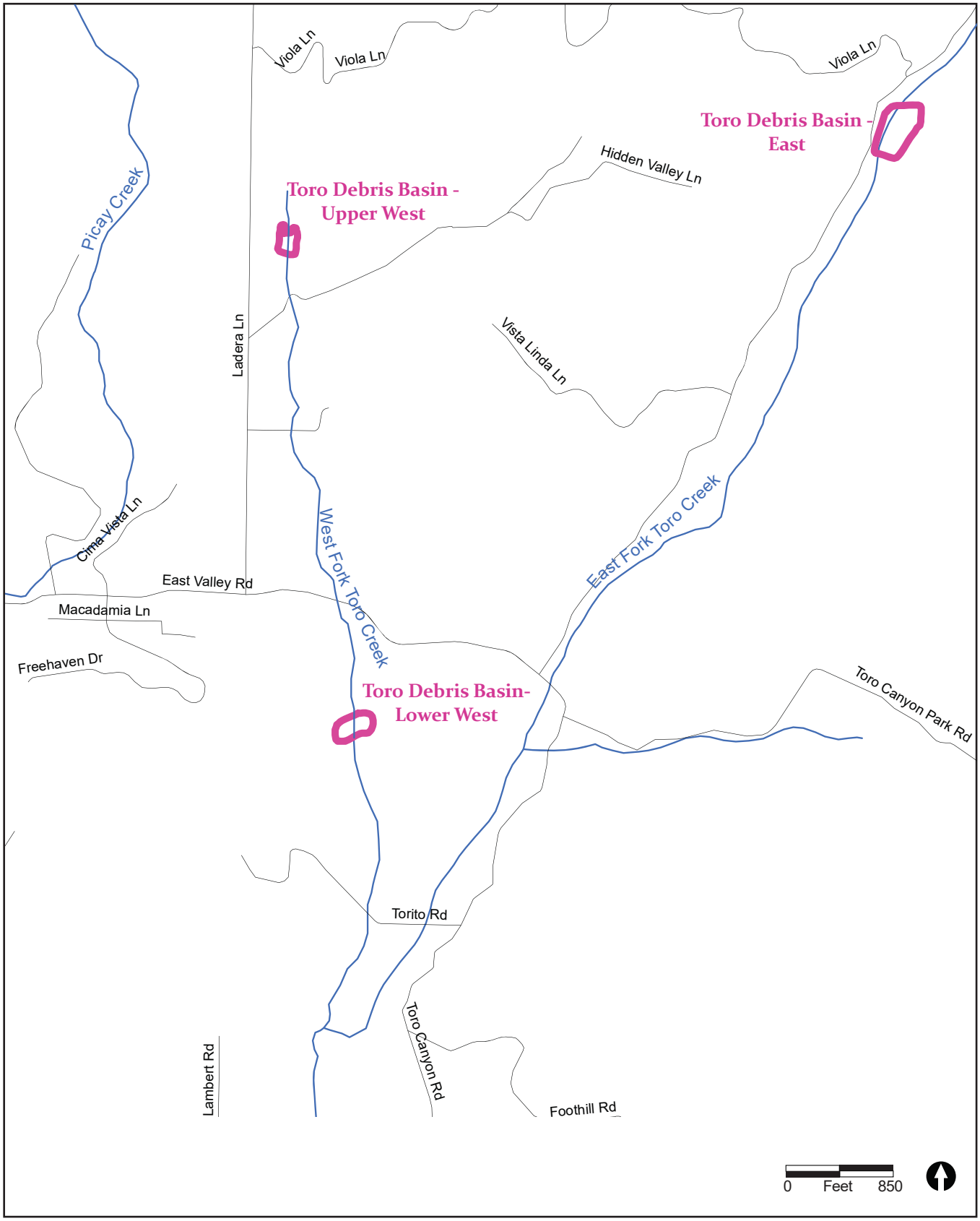


FIGURE 6.5-1
East Toro Canyon Creek Debris Basin Map

Map Source: County of Santa Barbara

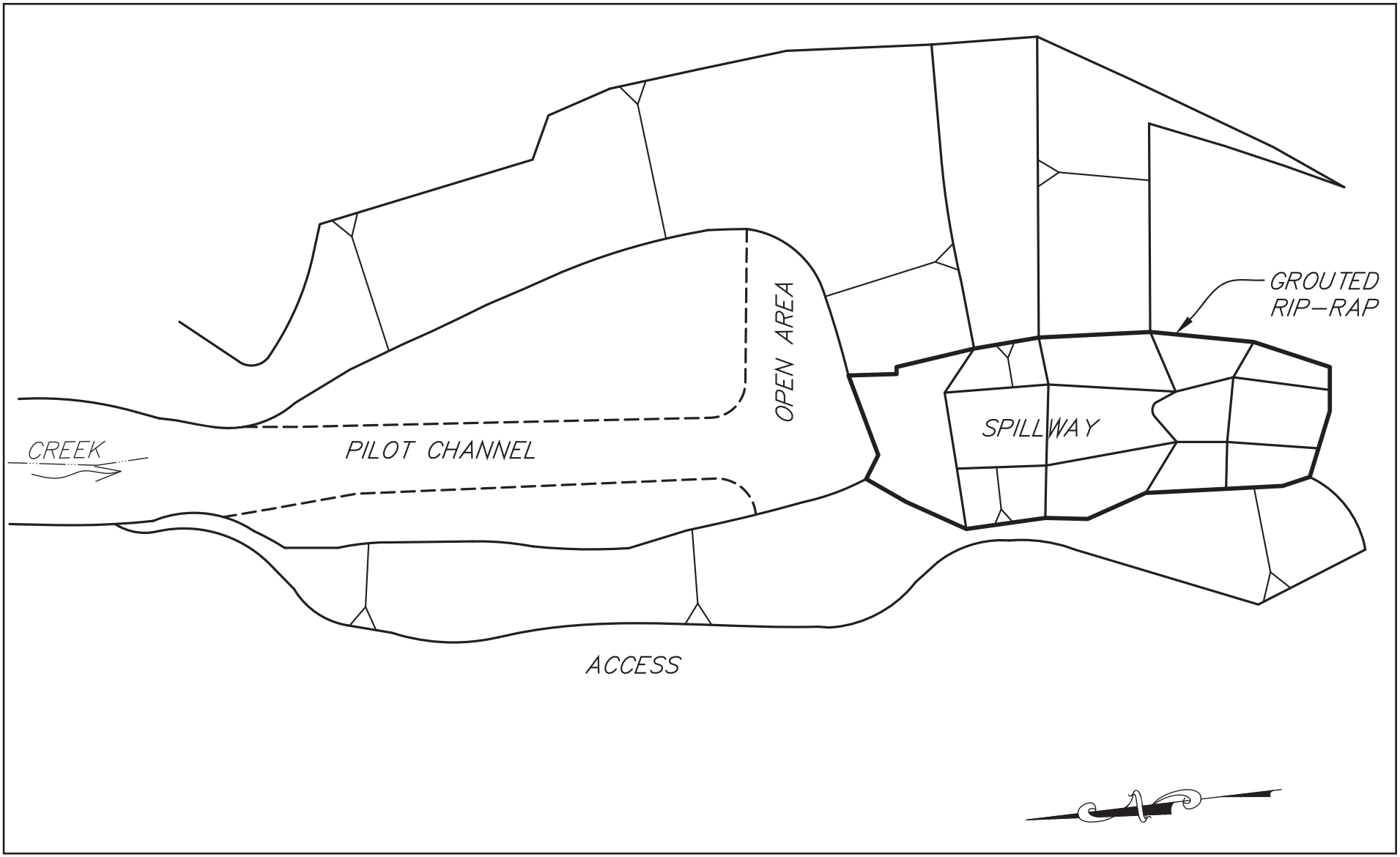


FIGURE 6.5-2

East Toro Canyon Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.10-2.ai 03/29/17 ccn

East Toro Canyon Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
Malosma laurina	Laurel sumac	N
APIACEAE		
Conium maculatum	Poison hemlock	I
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Xanthium strumarium	Cocklebur	I
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	California sycamore	N
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Lolium multiflorum	Italian ryegrass	I
Pennisetum clandestinum	Kikuyu grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Rumex crispus	Curly dock	I
ROACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Populus balsamifera	Black cottonwood	N
Salix lasiolepis	Arroyo willow	N
SCROPHULARIACEAE		
Scrophularia californica	California figwort	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

6.6 Lower West Toro Canyon Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.6.1 Location

The Lower West Toro Canyon Creek Debris Basin is located on West Toro Canyon Creek approximately 800 feet south of East Valley Road in Montecito.

6.6.2 History

Lower West Toro Canyon Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed.. The basin has been maintained on an as-needed basis since 1994. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, 2005, and 2018.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, Lower West Toro Canyon debris basin was desilted following the January 9, 2018 debris flow and later in summer 2018. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

6.6.3 Setting

West Toro Canyon Creek originates in the foothills of the Santa Ynez Mountains and drains a 986-acre watershed capable of producing 2400 cfs during a 100-year return period precipitation event.

The substrate consists of silty sand and cobbles with large rocks at the upstream end of the basin. There is chaparral and oaks to the north, east and west of the basin. A riparian corridor exists to the northeast of the basin. The dam and a very large embankment are located to the south.

6.6.4 Wildlife Survey

The site was assessed by the District Biologist on November 15, 2016. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2016.

The basin provides good wildlife habitat with a mix of cover types with willow riparian scrub species and chaparral species. The habitat includes willow riparian shrub species and several invasive weeds such as castor bean, pride-of-Madeira, and acacia species. The center channel is

mostly bare cobble and gravel, but the adjacent sides of the basin are well-populated with riparian cover.

Animal tracks observed in the basin included white-tailed deer, raccoon and canine. Birds observed or identified by call heard included: Bewick's wren, orange-crowned warbler, Anna's hummingbird, California towhee, California scrub jay, acorn woodpecker, and common yellowthroat.

The basis was completely dry during the assessment. Remnants of cattails near the dam face indicate that water has been present in the recent past but has since gone dry. The site generally goes dry during summer months and may be completely dry all year during periods of drought. When water is present at the basin, waterfowl and amphibians such as Baja California treefrog may be present. The basin is not considered critical habitat for steelhead trout and no special-status fish species have been detected at the site.

6.6.5 Project Description

The Lower West Toro Canyon Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

6.6.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 9,100 square feet and will allow for approximately 19,500 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin buy non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to reestablish the pilot channel and sediment will be windrowed along the sides to help re-

establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The 48-inch outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap.

6.6.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from Casitas Pass Road as shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

6.6.8 Revegetation Source

This debris basin has not developed a dense riparian forest and vegetation is beginning to recolonize the basin after the 2018 desilting.. Nevertheless, dense riparian vegetation may colonize the basin over time. If this occurs, the vegetation may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.6.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. . Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.6-1: Lower West Toro Canyon Creek Debris Basin

Photograph 6.6-2: Lower West Toro Canyon Creek Debris Basin

Map Source: County of Santa Barbara

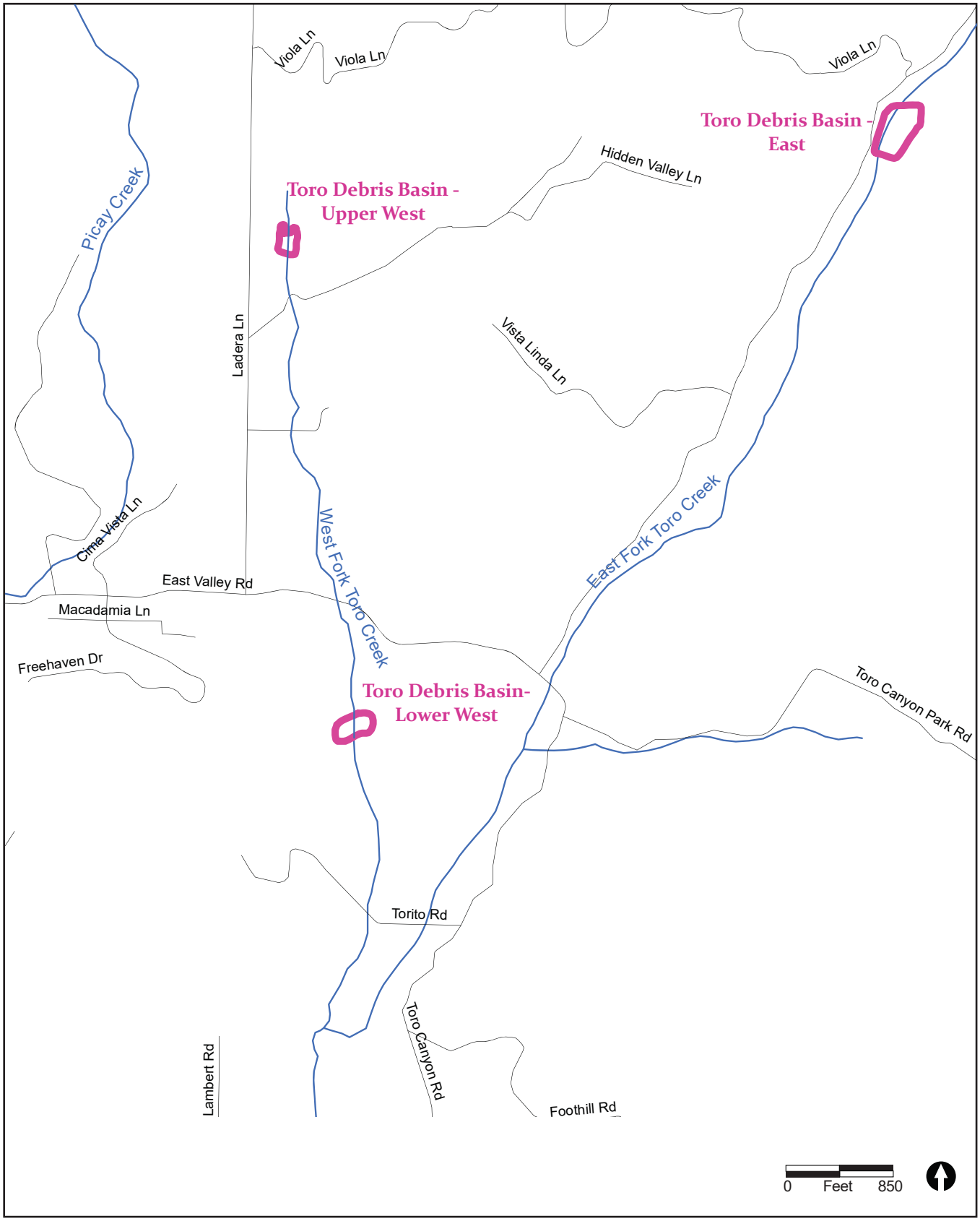


FIGURE 6.6-1
Lower West Toro Canyon Creek Debris Basin Map

Map Source: County of Santa Barbara

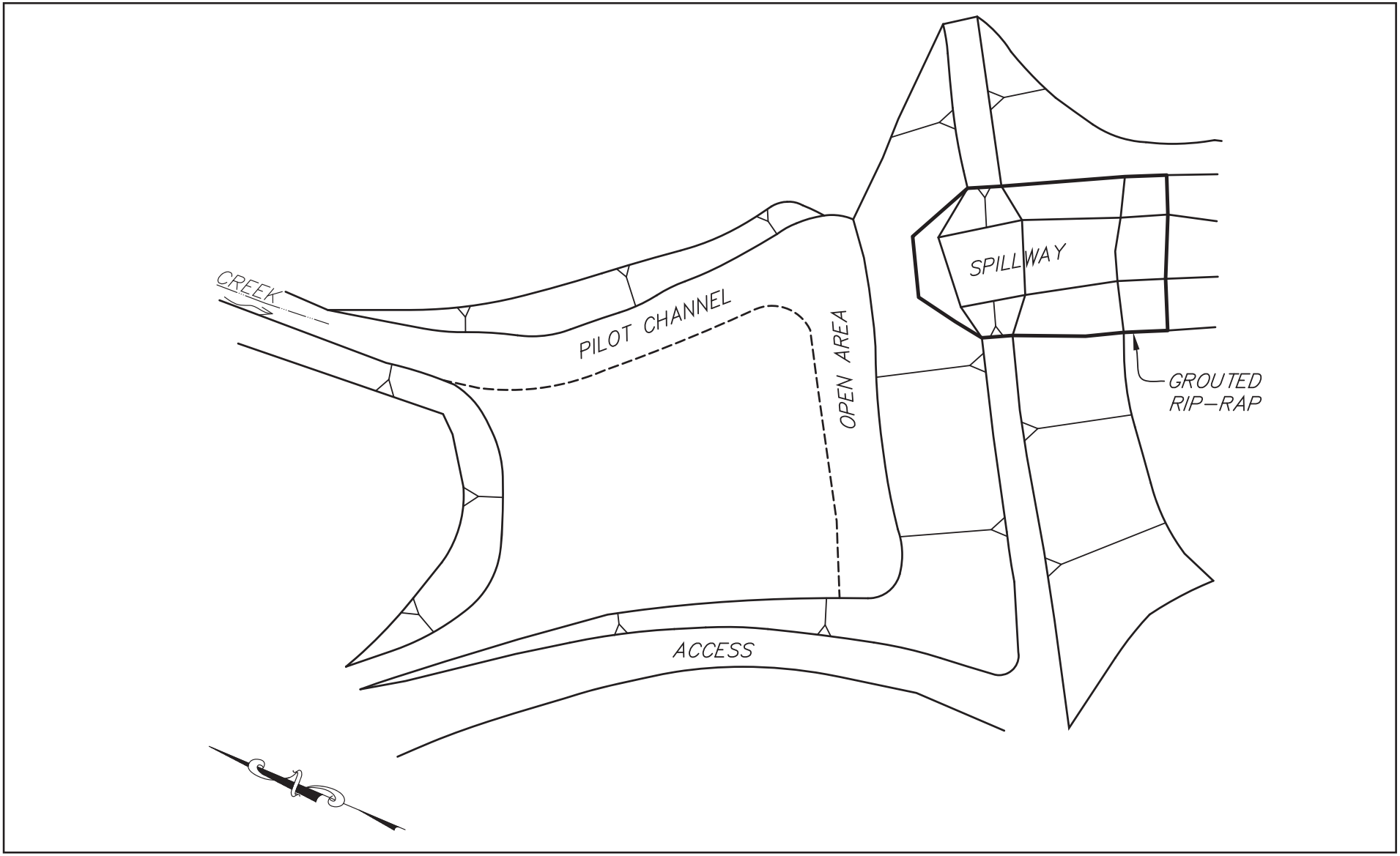


FIGURE 6.6-2
Lower West Toro Canyon Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.11-2.ai 03/29/17 ccn

Lower West Toro Canyon Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
ANACARDIACEAE		
Toxicodendron diversilobum	Poison oak	N
Malosma laurina	Laurel sumac	N
APIACEAE		
Conium maculatum	Poison hemlock	I
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Baccharis salicifolia	Mule fat	N
Gnaphalium luteo-album	Cudweed everlasting	I
Lactuca serriola	Prickly lettuce	I
Senecio mikanioides	German ivy	I
Venegasia carpesioides	Canyon sunflower	N
BETULACEAE		
Alnus rhombifolia	White alder	N
BRASSICACEAE		
Brassica nigra	Black mustard	I
Raphanus sativus	Wild radish	I
CYPERACEAE		
Cyperus alternifolius	African umbrella sage	I
Cyperus eragrostis	Tall umbrella sage	N
EQUISETACEAE		
Equisetum telmateia var. *braunii*	Giant horsetail	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FABACEAE		
Melilotus alba	White sweetclover	I
FAGACEAE		
Quercus agrifolia	California sycamore	N
LAMIACEAE		
Mentha sp.	Mint	I
LAURACEAE		
Umbellularia californica	California Bay	N
MALVACEAE		
Malva parvifolia	Cheeseweed	I
MYRTACEAE		
Eucalyptus sp.	Eucalyptus	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
PLATAGINACEAE		
Plantago lanceolata	Plantain	I
POACEAE		

Lower West Toro Canyon Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Pennisetum clandestinum	Kikuyu grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Polygonum lapathifolium	Willow smartweed	I
ROACEAE		
Heteromeles arbutifolia	Toyon	N
Rubus ursinus	California blackberry	N
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
Salix laevigata	Red willow	N
SCROPHULARIACEAE		
Scrophularia californica	California figwort	N
SOLANACEAE		
Solanum douglasii	Douglas nightshade	N
TYPHACEAE		
Typha sp.	Cattail	N
*N = Native; I = Introduced		

6.7 Upper West Toro Canyon Creek Debris Basin Maintenance 2022 Addendum to the Program EIR for Santa Barbara County Flood Control Routine Maintenance

6.7.1 Location

The Upper West Toro Canyon Creek Debris Basin is located on West Toro Canyon Creek approximately 500 feet north of Hidden Valley Lane in Montecito.

6.7.2 History

Upper West Toro Canyon Creek Debris Basin is an engineered facility that was built in 1971 by the U.S. Army Corps of Engineers after the Romero Fire burned a large percentage of the watershed. The basin was maintained on an annual basis after construction until 1987. Between 1987 and 1994 the basin was maintained on an as-needed basis. The basin has been maintained under the current program since 1996. Major desilting projects occurred in 1969, 1978, 1983, twice in 1995, 1998, 2005, and 2018.

A major wildfire (the Thomas Fire) erupted in late 2017 and early 2018. Nearly the entire watershed above the Basin was burned. All vegetation was removed from the basin in early late December 2017/early January 2018 in response to the Thomas Fires and anticipated increase runoff /debris potential due to the burned watershed. Within days after the fire, a major storm system directly over the mountains of Montecito and Carpinteria produced a devastating and deadly debris flow on January 9, 2018. The region experienced major damage to the community, including debris basins and flood control facilities.

As part of emergency watershed response, Upper West Toro Canyon debris basin was desilted following the January 9, 2018 debris flow and later in summer 2018. The watershed continues to shed large amounts of sediment as the watershed continues to recover.

6.7.3 Setting

West Toro Canyon Creek originates in the foothills of the Santa Ynez Mountains and drains a 986-acre watershed capable of producing 2,400 cfs during a 100-year return period precipitation event. Heavy rains caused runoff in January 1995 which filled Upper West Toro Canyon Creek Debris Basin with debris and it was desilted in late January and February. Another large storm on March 10, 1995 filled the basin again and the cleanout was repeated. The basin was cleaned again following the El Nino rains in 1998, 2005, and after the debris flow in 2018. The substrate consists of silty sand and cobbles with large rocks.

There are chaparral and eucalyptus trees to the north and east. A well-developed riparian corridor exists further north of the basin. The dam is located to the south with a poorly developed riparian corridor and very large rocks downstream of the dam. There is a low-density residential development to the west of the basin with some chaparral.

6.7.4 Wildlife Survey

The site was assessed by the District Biologist on November 15, 2016. Results were compared with previously conducted wildlife surveys in 2003 and observations from several years of maintenance inspections through 2016. This basin is surrounded by chaparral species, bishop pine, laurel sumac, and does not contain a developed riparian habitat. Some willow saplings and ceanothus species are present in the basin, but the canopy is limited in height and density. Non-native species such as fan palm, pride-of-Madeira, cape ivy, and acacia trees are interspersed throughout the area.

The basin typically goes dry for several months during the summer, limiting suitability for aquatic species. Wildlife observed at the site include western fence lizard, song sparrow, California scrub jay, and California towhee. No sensitive species were observed during the survey. The basin is not considered critical habitat for steelhead trout and no special-status fish species have been detected at the site.

6.7.5 Project Description

The Upper West Toro Canyon Creek Debris Basin will be maintained on a routine basis to ensure that it will be able to function properly when there are high flows. Long-term maintenance will include complete sediment removal after the basin fills or after there is a significant fire in the watershed.

6.7.6 Routine Maintenance

Routine maintenance consists of maintaining a 15-foot-wide pilot channel from the upstream end of the basin to the outlet works. The pilot channel will be established with a dozer or loader and the excess material will be windrowed along the sides of the pilot channel affecting a total area approximately 30 feet wide. The pilot channel will be widened to 30 feet beginning 30 feet upstream of the outlet structure. The pilot channel will be maintained by removing obstructive vegetation with chainsaws and loppers. Herbicide will be applied as necessary to prevent the regrowth of vegetation. Pilot channel shaping with a dozer will be conducted on an as needed basis and obstructive vegetation removal will be conducted annually.

An open area in front of the dam face will also be maintained by removing obstructive vegetation on an as needed basis. The open area in front of the dam face will extend approximately 10 feet from the toe of the dam into the basin except at the outlet structure where it will be incorporated into the pilot channel. The dam face will also be kept free of vegetation. Maintenance of the pilot channel and the open area will disturb approximately 9100 square feet and will allow for approximately 19,500 square feet of the basin to be colonized by native vegetation. No revegetation by the District will be conducted in the basin by non-native vegetation will be eradicated when feasible.

When only light maintenance is needed to maintain the pilot channel, the District crew brushes and removes vegetation and limbs from the floor of the pilot channel using hand tools only. Such maintenance may occur every year. If the pilot channel is more significantly damaged or degraded, then heavy equipment such as a small dozer or bobcat is used to

reestablish the pilot channel and sediment will be windrowed along the sides to help re-establish a central channel within the basin. Pilot channel maintenance with heavy equipment it typically performed every 2-4 years, but may be more frequent after a fire in the watershed.

The 48-inch outlet pipe and the grouted rip-rap spillway will be maintained on an as-needed basis. Typically, maintenance consists of repairing the RCP outlet pipe and spillway when they are cracked or chipped by pouring more concrete and adding rip-rap.

6.7.7 Long-term Maintenance

Long-term maintenance will consist of complete sediment removal from the basin. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete debris/vegetation removal will also be conducted if there is a significant fire in the watershed. Access will be taken from Casitas Pass Road as shown on the attached map. Debris will be hauled to an appropriate disposal site after desilting.

6.7.8 Revegetation Source

This debris basin has not developed a dense riparian forest and vegetation is beginning to colonize the basin after the 2018 desilting. Nevertheless, dense riparian vegetation may colonize the basin over time. If this occurs, the vegetation may be used as a source for the District's biotechnical bank stabilization and revegetation projects described in the Annual Routine Maintenance Plan. Selective removal and thinning of species such as willow, cottonwood, sycamore, blackberry, etc. will provide the material necessary to implement biotechnical bank stabilization and revegetation projects while still allowing the habitat that develops between long-term maintenance episodes to persist. Furthermore, selective removal and thinning will help reduce the potential for the outlet pipe becoming plugged when basin vegetation is uprooted during high flows. Plant material collected from the basins will be used for biotechnical bank stabilization and revegetation projects within nearby watersheds.

6.7.9 Engineering Analysis

Maintenance of the pilot channel and the open area will ensure that the basin will pass low to moderate flows as well as providing for efficient sediment transport to minimize incremental filling of the basin. This will reduce the frequency of long-term maintenance.

Long-term maintenance is necessary to ensure that the basin will trap a significant amount of debris that can be generated from heavy rains that produce high flows. Complete sediment/vegetation removal will be conducted if the basin's effectiveness is reduced by approximately 25 percent to ensure maximum efficiency in case of high flows. Complete sediment/vegetation removal will also be conducted after there is a significant fire in the watershed. This is necessary because a burned watershed can produce as much as 20 times the amount of debris by comparison with a non-burned watershed.

Photograph 6.7-1: Upper West Toro Canyon Creek Debris Basin

Map Source: County of Santa Barbara

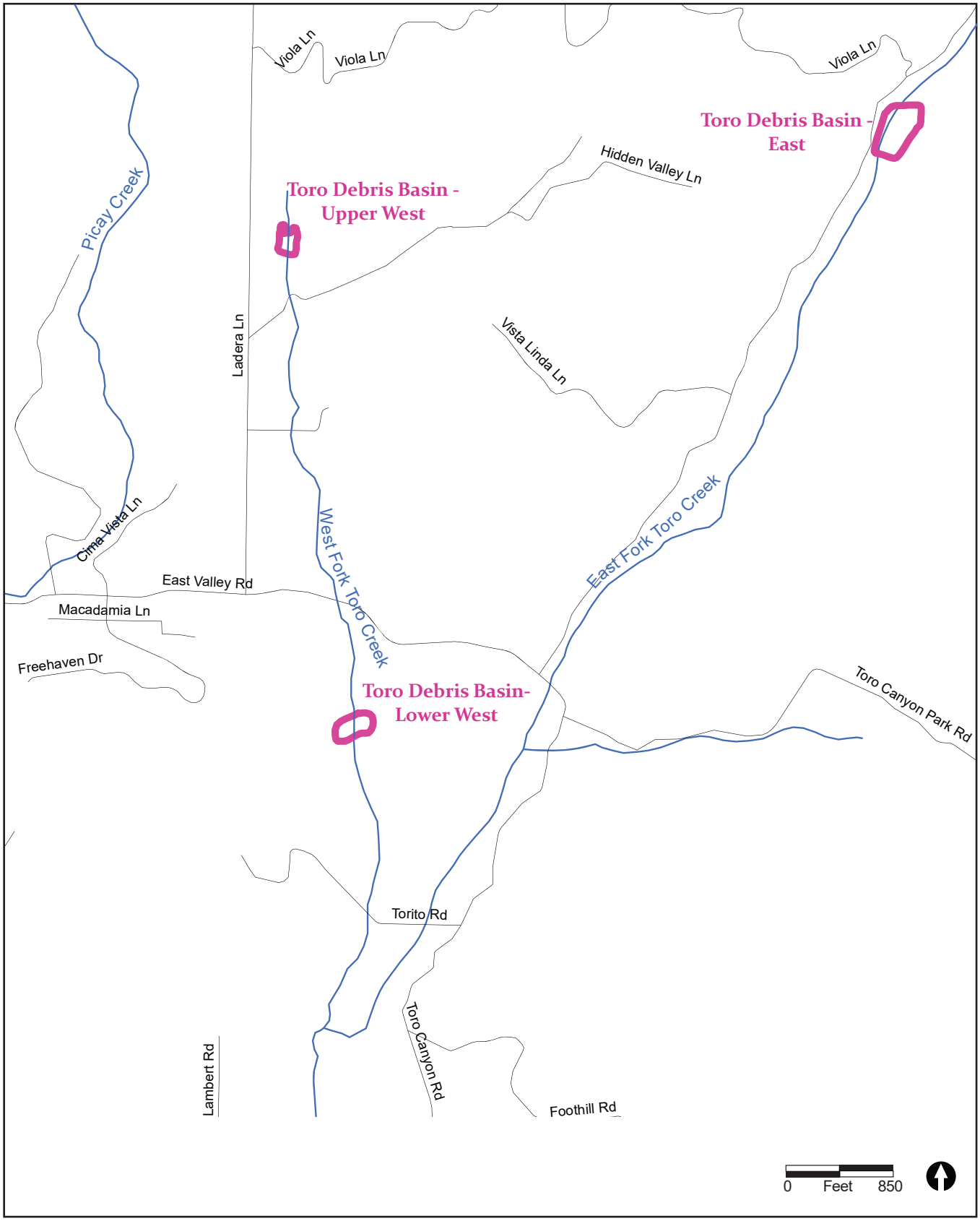


FIGURE 6.7-1
Upper West Toro Canyon Creek Debris Basin Map

Map Source: County of Santa Barbara

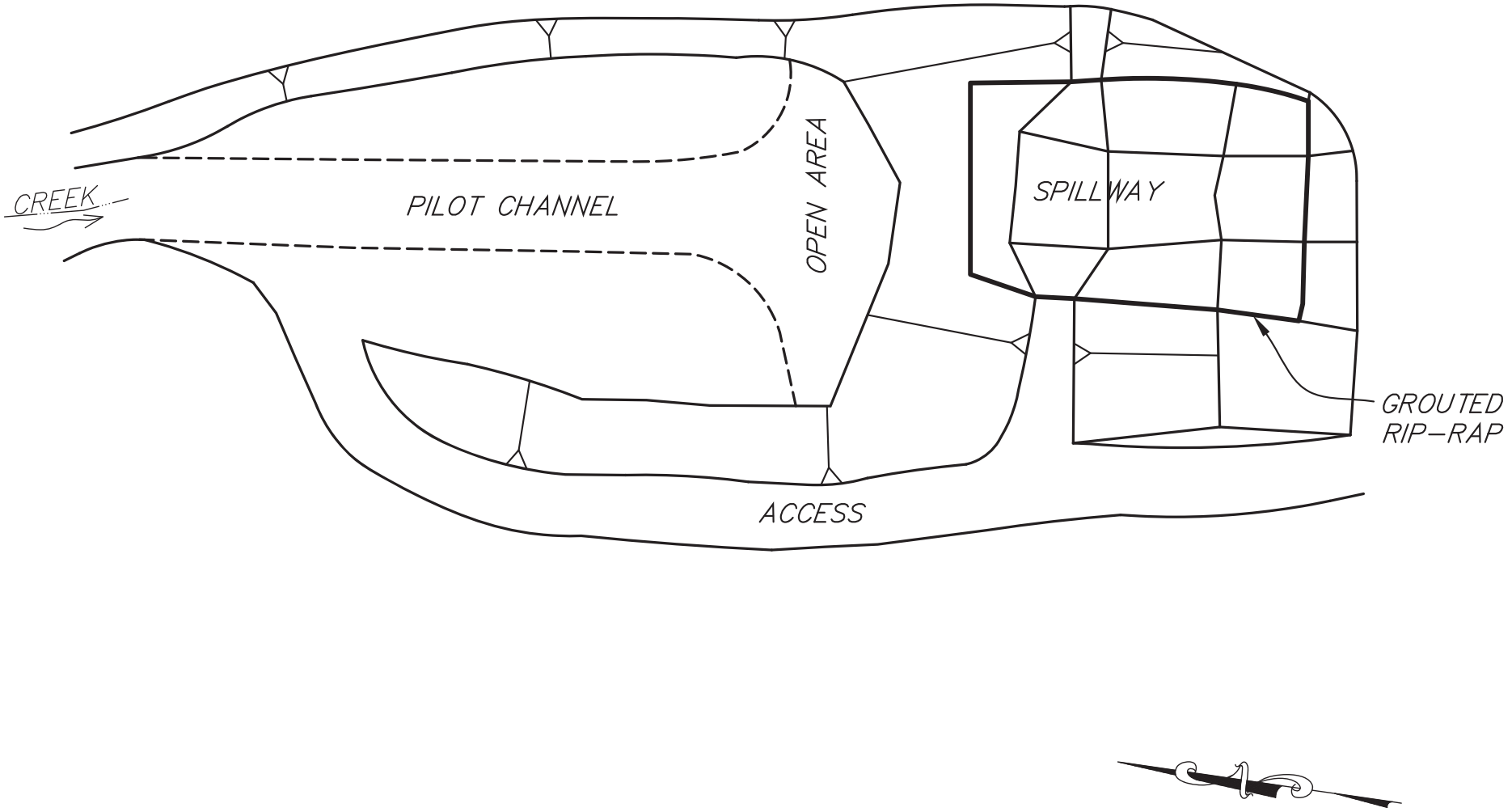


FIGURE 6.7-2

Upper West Toro Canyon Creek Debris Basin Figure

M:\JOBS5\8687\env\graphics\DebrisBasin\fig5.12-2.ai 03/29/17 ccn

Upper West Toro Canyon Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
APIACEAE		
Conium maculatum	Poison hemlock	I
ARALIACEAE		
Ageratina adenophora	Ironweed	I
ASTERACEAE		
Artemesia californica	California sagebrush	N
Artemesia douglasiana	Mugwort	N
Baccharis pilularis	Coyote bush	N
Gnaphalium luteo-album	Cudweed everlasting	I
Picris echioides	Ox tongue	I
Xanthium strumarium	Cocklebur	I
BRASSICACEAE		
Brassica nigra	Black mustard	I
CAPRIFOLIACEAE		
Sambucus mexicana	Elderberry	N
CHENOPODIACEAE		
Chenopodium ambrosioides	Mexican tea	I
CYPERACEAE		
Cyperus alternifolius	African umbrella sage	I
Cyperus eragrostis	Tall umbrella sage	N
EUPHORBIACEAE		
Ricinus communis	Castor bean	I
FAGACEAE		
Quercus agrifolia	California sycamore	N
MALVACEAE		
Malva nicaeensis	Mallow	I
Malva parvifolia	Cheeseweed	I
MYRTACEAE		
Eucalyptus sp.	Eucalyptus	I
PLATANACEAE		
Platanus racemosa	California sycamore	N
POACEAE		
Avena fatua	Wild oat	I
Bromus diandrus	Ripgut grass	I
Bromus mollis	Soft chess	I
Hordeum murinum	Foxtail	I
Pennisetum clandestinum	Kikuyu grass	I
Polypogon monspeliensis	Rabbitsfoot grass	I
POLYGONACEAE		
Rumex crispus	Curly dock	I
ROACEAE		
Heteromeles arbutifolia	Toyon	N
Malosma laurina	Sumac	N
Rubus ursinus	California blackberry	N

Upper West Toro Canyon Creek Debris Basin Vascular Plant List		
Scientific Name	Common Name	Origin*
SALICACEAE		
Salix lasiolepis	Arroyo willow	N
SOLANACEAE		
Solanum xanti	Nightshade	N
*N = Native; I = Introduced		

7.0 Impacts and Mitigation Measures

The analysis of impacts and mitigation measures is based on the routine and long-term maintenance activities and the modification and restoration project components described in each basin Addendum above.

Impacts have been analyzed consistentwith the impact analyses for debris basins maintenance and creek maintenance as described in the Updated PEIR (2001). Table 1 summarizes the relevant impacts for the debris basin maintenance and modification projects. Mitigation measures will be applied to offset those impacts. The analysis of impacts and mitigation measures is based on the routine and long-term maintenance activities and the debris basin modification and restoration project components.

A worst-case scenario was used in the impact analysis, consisting of the basins completely vegetated and requiring complete desilting (ie. after a fire in the watershed). The impacts and mitigation measures are very similar for all of the basins because the environmental and physical factors are similar for each of the basins.

7.1 Impacts

Impacts identified for this project have been taken directly from the Updated Program EIR for Santa Barbara County Routine Maintenance Activities (01-EIR-01) (PEIR). Only the impacts that apply to these projects are included. Some of the impacts listed below are considered Class I (unavoidable significant) under the worst-case scenario assumptions of the PEIR. However, routine maintenance and debris basin modification will not result in what would be considered Class I impacts. Long-term maintenance could result in Class I impacts if a significant amount of vegetation is present. This would only be the case if the basin is colonized by native vegetation and there is a fire in the watershed necessitating complete debris/vegetation removal in preparation for expected increased runoff or if the basin's effectiveness is reduced by 25 percent and/or if the basin has been colonized by native vegetation. Complete sediment removal after the basin has filled as a result of severe flooding would typically result in limited impacts as all the biological resources will be buried under debris.

Class I Impacts: The PEIR includes both the Annual Creeks Maintenance and Debris Basin Maintenance Programs. The PEIR identified four significant, immitigable impacts (Class I). These impacts would generally not be significant at individual locations. However, they may be cumulatively significant for all affected sites over time throughout the County. Mitigation measures to reduce the magnitude of these impacts are also indicated.

Class II Impacts: The routine maintenance and removal of basins would result in numerous significant, but mitigable impacts. Mitigation measures that would reduce the impacts to a less than significant level are included in Table 1 below.

Class III Impacts: While by definition Class III Impacts are less than significant and therefore do not require mitigation, mitigation measures are recommended to minimize adverse impacts.

7.2 Mitigation Measures

Mitigation measures identified for this project have also been taken directly from the PEIR. Only the mitigation measures that apply to the identified impacts are included. No mitigation measures involving revegetation after routine or long-term maintenance are included because routine maintenance will disturb very few plants within the pilot channel and in front of the dam embankment, and vegetation removed from the basin due to periodic desilting of the basin (whether it be in response to a fire in the watershed, the basin incrementally accumulating sediment, or after severe flooding) will be limited to the basin floor where vegetation has been allowed to become established where there previously was none when this Debris Basin Maintenance Program began.

Table 1 below lists the impacts and associated mitigation measures identified in the Program EIR for each issue area impacted by this project, which includes both Debris Basin maintenance and modification. In a few cases, impacts and mitigation measures apply to a debris basin modification project but not to the routine maintenance project. Section 7.3 lists the full text of impacts and mitigation measures in alphabetical order for easy reference.

TABLE 1. Summary of Class I, Class II, and Class III Impacts Debris Basin Maintenance and Modification	
Resource Area Impacts	**Mitigation Measure**
Class I	Residual Impact: This impact would generally not be significant at individual maintenance locations. However, it may be cumulatively significant for all affected sites over time
Water Quality, EIR Section 5.2	
WQ-A Potentially Reduce the Amount of Natural Bio filtering	H-1 Maintenance Need Analysis B-2 Minimize Vegetation Removal from Channel Bottom W-3 Reseeding Channel Bottom Areas
Wetlands, Riparian Habitat, and Rare Plants, EIR Section 5.3	
WRR-A Reduce Amount of Quality of Channel Bottom Habitat	B-2 Minimize Vegetation Removal from Channel Bottom B-3 Construction Monitoring During Vegetation Removal
Fish, Aquatic Species, and Wildlife, EIR Section 5.4	
FAW-A Displace Wildlife Due to Vegetation Removal in Channel Bottom	B-2 Minimize Vegetation Removal from Channel Bottom B-3 Construction Monitoring During Vegetation Removal
FAW-B Adverse Effects of Maintenance on Aquatic Habitat	H-1 Maintenance Need Analysis B-2 Minimize Vegetation Removal from Channel Bottoms
Class II	**Residual Impact:** Less Than Significant
Water Resources-Hydrology and Hydraulics, EIR Section 5.1	
H-D Effect of Equipment on Channel Bed	H-1 Maintenance Need Analysis B-7 Post Maintenance Channel Bed Treatment
Water Quality, EIR Section 5.2	
WQ-B Potentially Adverse Herbicide Concentrations	W-2 Responsible Herbicide Application W-6 Public Education Regarding Creek Water Quality W-7 Reporting Water Quality Incidents
WQ-C Accidental Spills and Leaks	W-4 Prevent Accidental Spills and Leaks
Wetlands, Riparian Habitat, and Rare Plants, EIR Section 5.3	
WRR-D Temporary Habitat Disturbance	B-4 Restore Temporarily Disturbed Areas
WRR-E Displace Sensitive Plants	B-3 Construction Monitoring During Maintenance Activities (NOTE not officially assigned to this impact) B-5 Pre-construction Biological Surveys and Avoidance Measures B-6 Construction Monitoring for Sensitive Species
Fish, Aquatic Species, and Wildlife, EIR Section 5.4	
FAW-E Displace or Remove Sensitive Fish and Wildlife	B-5 Pre-construction Biological Surveys and Avoidance Measures B-6 Construction Monitoring for Sensitive Species
FAW-F Fish and Wildlife Exposure to Herbicide	W-2 Responsible Herbicide Application
Air Quality, EIR Section 5.5	
AQ-A Equipment Emissions	A-1 Reduce Emissions
AQ-B Fugitive Dust Emissions	A-2 Reduce Fugitive Dust
Noise, EIR Section 5.6	
N-A Maintenance Equipment Noise	N-1 Minimize Noise
Cultural Resources, EIR Section 5.7	
C-A Disturb Cultural Resources	C-1 Unexpected Archeological Finds C-2 Archeological Surveys
Recreation, EIR Section 5.8	
R-A Potentially Adverse Herbicide Concentrations	W-2 Responsible Herbicide Application
R-B Impacts of Reduced Sediment Supply to Beaches	R-2 Disposal of Sediments at Beaches

TABLE 1. Summary of Class I, Class II, and Class III Impacts Debris Basin Maintenance and Modification	
Resource Area Impacts	**Mitigation Measure**
Class III Impacts	**Residual Impact:** Less Than Significant
Water Resources-Hydrology and Hydraulics, EIR Section 5.1	
H-E Impact of Removing Channel Obstructions (Excessive Desilting)	H-1 Maintenance Need Analysis H-2 Extent of Desilting H-3 Post Desilting Restoration W-3 Reseeding Channel Bottom Areas
H-F Altered Channel Sinuosity and Slope	H-4 Pilot Channel Construction
H-I Impacts of Reduced Sediments	H-1 Maintenance Need Analysis
Water Quality, EIR Section 5.2	
WQ-D Temporary Sedimentation and Turbidity	W-1 Reduce Sedimentation
WQ-E Increase Water Temperatures	B-2 Minimize Vegetation Removal from Channel Bottom
Wetlands, Riparian Habitat, and Rare Plants, EIR Section 5.3	
WRR-F Facilitate Weed Colonization	B-4 Restore Temporarily Disturbed Areas[1] W-3 Maintain Bio filtering by Reseeding Channel Bottom Areas
Fish, Aquatic Species, and Wildlife, EIR Section 5.4	
FAW-H Increased Water Temperatures in Aquatic Habitats	B-2 Minimize Vegetation Removal from Channel Bottom
FAW-I Effects of Sediments and Turbidity on Aquatic Organisms	W-1 Reduce Sedimentation
FAW-J Impact of Accidental Released on Aquatic Organisms	W-4 Prevent Accidental Spills and Leaks
Recreation, EIR Section 5.8	
R-C Temporary Disruption of Trail and Park Use	R-1 Minimize Impacts to Trail and Park Users
R-D Reduced Beach Sand Supply	R-2 Disposal of Sediments at Beaches
Visual Resources, EIR Section 5.9	
V-B Visual Impacts at Basins	B-4 Restore Temporarily Disturbed Areas[2]
Public Health, EIR Section 5.10	
PH-A Excessive Herbicide Release and Exposure	W-2 Responsible Herbicide Application

[1]Mitigation Measure B-4, as it relates to Impact WRR-F is assigned to the reduce impacts associated with Debris Basin modification rather than Basin Maintenance because modification projects will include the modification of dam embankments and restoration of the creek corridor that will benefit from native plant restoration to ensure weeds do not colonize the newly formed creek banks.

[2]Mitigation Measure B-4 is not officially assigned to this Class III Visual Resources Impact in the PEIR because routine maintenance and recolonization of native vegetation at the debris basins would not result in impacts requiring mitigation, however, the debris basin modification projects will modify the dam embankments and the creek channel will be reconfigured through the embankment.. This could result in short term visual impacts at some of the basins located near roads or trails that will be reduced with native plant restoration of the disturbed areas.

7.3 Alphabetical Listing of Impacts and Mitigation Measures

A

Impacts

AQ or A = Air Quality

AQ-A. Equipment Emissions. Temporary emissions of reactive organic compounds (ROC), particulate matter, and NOx associated with gasoline and diesel-powered heavy- duty maintenance equipment, as well as employee vehicles and trucks transporting excavated materials to and from maintenance sites. (Class II Impact)

AQ-B. Fugitive Dust Emissions. Temporary emissions of fugitive dust (particulate matter) due to earth moving activities during maintenance, including channel shaping, desilting, bank stabilization by placing fill or grading banks, bank protection construction or repair, pilot channel construction, and access ramp construction. (Class II Impact)

Mitigation Measures

A-1 – Reduce Emissions. Implement the following Santa Barbara County APCD- approved measures for each piece of heavy-duty diesel construction equipment to minimize NO_X emissions: (1) The engine size of construction equipment shall be the minimum practical size; (2) Heavy-duty diesel-powered construction equipment manufactured after 1996 (with federally mandated clean diesel engines) should be utilized wherever feasible; (3) The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest number is operating at any one time; (4) Construction equipment operating onsite shall be equipped with two to four degree engine timing retard or precombustion chamber engines; (5) Catalytic converters shall be installed on gasoline- powered equipment, if feasible; (6) Diesel catalytic converters shall be installed, if available; and (7) Diesel powered equipment should be replaced by electrical equipment, whenever feasible.

A-2 – Reduce Fugitive Dust. Implement the following Santa Barbara County APCD- approved measures to minimize fugitive dust emissions: (1) After clearing, grading, earth moving or excavation is complete, the disturbed area must be treated with watering, or revegetating, or by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur; (2) During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this shall include wetting down such areas in the late morning and after work is completed for the day. Increased watering frequency shall be required whenever the wind speed exceeds 15 mph. Reclaimed water shall be used whenever possible; (3) Minimize the amount of disturbed area and reduce on site vehicle speeds to 15 miles per hour or less; (4) Gravel pads should be installed at all access points to prevent tracking of mud onto public roads; (5) If importation, exportation, and stockpiling of fill material is involved, soil stockpiled for more than two

days shall be covered, kept moist, or treated with soil binders to prevent dust generation; (6) Trucks transporting fill material to and from the site shall be tarped; and (6) Dust control requirements shall be shown on all grading plans.

B

Mitigation Measures

B-2 – Minimize Vegetation Removal from Channel Bottom. The District shall minimize vegetation removal from the channel bottom to the least amount necessary to achieve the specific maintenance objectives for the reach (i.e., removing obstructive vegetation or silt-trapping vegetation). Brushing and herbicide application for vegetation control on the channel bottom shall be conducted in a non-continuous, mosaic-like manner, to the extent feasible, allowing small patches of in-channel native vegetation to persist.

B-3 - Construction Monitoring During Maintenance Activities. The District Biologist shall monitor maintenance activities daily to ensure that the appropriate methods and limits are used. Results of the monitoring shall be documented in the annual post-maintenance report. These activities include brushing, herbicide application, channel shaping, desilting, bank stabilization by placing fill or grading banks, bank protection construction or repair, grade stabilizer construction or repair, pilot channel construction, and access ramp construction.

B-4 - Restore Temporarily Disturbed Areas. The District shall restore channel banks containing riparian or wetland vegetation that are temporarily disturbed by maintenance or construction activities associated with the following: channel shaping, placement of bank protection, ramp construction, and repair or construction of bank protection and grade stabilizers. Restoration objectives, methods, plant species, maintenance, and monitoring shall follow the guidelines in the updated restoration plan described in the Program EIR. The restoration of channel bed habitats shall only occur if it would not conflict with the maintenance needs in the affected reach.

B-5 – Pre-Construction Biological Surveys and Avoidance Measures. A District biologist shall inspect all maintenance areas in creeks and basins during the annual spring field assessments (April and May) to determine if any sensitive plants, fish, or wildlife species are present, or habitats for these species are present. If the species are present, the District shall modify maintenance activities to avoid removal or substantial disturbance of the key habitat areas or features. Avoidance and impact minimization measures shall be described in the Annual Plan for each maintenance project. If a rare plant could be affected, the District shall relocate the plant by cultivation or seeding methods to a suitable nearby site. If a sensitive fish or wildlife species will be present at a maintenance site during the work period, the District shall schedule the work to avoid the species, if possible. If avoidance is not feasible, the District shall attempt to relocate the species or population with approval from the California Department of Fish and Game, US Fish and Wildlife Service or National Marine Fisheries Service, as appropriate. This measure applies to all currently known sensitive species that occur in maintained drainages and basins, as well as species that are determined to be sensitive in the future. Endangered species experts with handling permits shall be

consulted during relocation efforts to provide additional assurances that relocation is effective. Such consultation shall include assistance in field efforts, as warranted.

B-6 – Construction Monitoring for Sensitive Species. The District Biologist shall monitor, on a daily basis, earth and vegetation disturbing maintenance activities located at and adjacent to locations where sensitive species are known to occur. The need for monitoring and the areas to be monitored shall be determined during the annual field assessment in the spring. The objective of the monitoring is to ensure that key habitat features or species locations are avoided.

B-7 – Post Maintenance Channel Bed Treatment. The District shall roughen the channel bed after channel desilting maintenance to create microtopography that will encourage re-establishment of aquatic habitats over time. Pools and riffles shall be recreated in the work area if they were removed during maintenance, to the extent feasible. Modifications of the creek bed shall be consistent with geomorphological considerations identified through mitigation measure H-1.

C

Impacts

CR and C = Cultural Resources

CR-A. Disturb Cultural Resources. There is a remote potential for certain earth- disturbing maintenance activities to disturb buried prehistoric and historic archeological sites and isolated artifacts. This impact would occur only on undisturbed upland sites outside watercourse channels and basins due to incidental excavation grading banks for stabilization, installing or repairing bank protection, and constructing access ramps. (Class II Impact).

Mitigation Measures

C-1 – Unexpected Archeological Finds. If cultural materials are unexpectedly uncovered during maintenance activities, the District shall immediately consult with a qualified archeologist who shall inspect the material and coordinate with the District to halt or redirect earth-disturbing maintenance work until the significance of the material is determined, and the location is cleared for further work.

C–2 – Archeological Surveys. The District shall conduct an archeological field investigation in maintenance areas that may be disturbed by excavation activities associated with routine maintenance when such work occurs in upland areas outside watercourses and basins that: (1) appear to represent undisturbed ground not subject to previous excavations or significant grading; and (2) contain known significant archeological sites. The investigation shall be conducted by a qualified cultural resource specialist.

F

Impacts

FAW = Fish Aquatic Species and Wildlife

FAW-A. Displace Wildlife due to Vegetation Removal in the Channel Bottom. Removal and/or thinning of vegetation from channel bottom due to brushing, herbicide application, desilting, and channel shaping cause a temporary reduction in vigor and/or cover of successional riparian habitats and emergent wetlands. This same impact could occur due to clearing pilot channels and outlet works in debris basins, as well as removing sediments from basins. These actions could reduce foraging and loafing habitat for certain riparian and wetland dependent bird species. It can also reduce habitat heterogeneity for reptiles and small mammals, and degrade aquatic habitats by removing protective cover and increasing temperatures. While the long-term functions and values of the habitat temporarily disturbed by maintenance would be replaced through the District's updated habitat restoration program, there will be a temporal impact to wildlife that cannot be fully mitigated. (Class I Impact)

FAW-B. Adverse Effects of Maintenance on Aquatic Habitat. Channel shaping, bank stabilization by placing fill or grading banks, sandbar removal, excessive removal and/or thinning of in-channel vegetation, and pilot channel construction could reduce vegetation cover, pools and gravel beds, organic input from overhanging vegetation supporting aquatic productivity, and instream cover and debris providing micro-habitat. In addition, fish and aquatic organisms could be directly displaced. These impacts are temporary and reversible. (Class I Impact)

FAW-E. Displace or Remove Sensitive Fish and Wildlife. Disturbance of channel banks and bed from heavy equipment during channel shaping, placement of bank protection, channel shaping, desilting operations, ramp construction, and repair of bank protection and grade stabilizers could remove and displace sensitive fish and wildlife species, depending upon location and time of year. This same impact could occur due to clearing pilot channels and outlet works in debris basins, as well as removing sediments from basins. Species that could be directly affected include the southern steelhead trout, arroyo chub, southwestern pond turtle, two-striped garter snake, San Diego horned lizard, California red-legged frog, silvery legless lizard, and tri-colored blackbird. Species that could be indirectly affected due to habitat modification include southwestern willow flycatcher, least Bell's vireo, yellow warbler, yellow breasted chat, purple martin, warbling vireo, Wilson's warbler, Swainson's thrush, blue grosbeak. (Class II Impact)

FAW-F. Fish and Wildlife Exposure to Herbicide The analyses presented in Section 5.2.3 indicated that the application of herbicides to control emerging vegetation on the channel bed is not expected to introduce substantial amounts of herbicide to the water in the drainage where fish, aquatic organisms, and humans could be exposed, because of reasons: (1) no herbicide is directly applied to open water; (2) overspray is minimized by precise spraying by trained field crews; (3) most spraying occurs in the fall when flows are absent in drainages; (4) glyphosate is strongly absorbed by soil particles and not easily mobilized once it has contact with soils or wet sediments; and (5) residual herbicide in soils or sediments are subject

to microbial degradation. However, there is a potential, albeit very remote, that adverse herbicide concentrations may be temporarily present in aquatic areas immediately after spraying due to excessive or poor application. (Class II Impact)

FAW-H. Increased Water Temperatures in Aquatic Habitats. Brushing and spraying cause the removal of vegetation in the channel bed which could increase the temperature of water present due to greater solar radiation. The higher temperatures could adversely affect the quality of aquatic habitats in the channel bottom, if present. (Class III Impact)

FAW-I. Effects of Sediments and Turbidity on Aquatic Organisms. The following activities could cause a temporary increase in sediment and turbidity levels: brushing, mowing, and spraying channel bed vegetation; channel shaping, desilting, bank stabilization by placing fill or grading banks, pilot channel construction, equipment movement on the channel bed, and pilot channel clearing in basins. The higher levels could adversely affect fish and aquatic organisms present in any aquatic habitats. (Class III Impact)

FAW-J. Impact of Accidental Releases on Aquatic Organisms. There is a very low potential for the accidental discharge of fuel, oil, and herbicides to a channel or debris basin during routine maintenance. Such spills may affect fish and aquatic organisms, if present. (Class III Impact)

H

Impacts

H = Hydrology

H-D. Effect of Equipment on Channel Bed. For large maintenance projects, the movement of equipment in the channel bed can disrupt any armored layer on the channel bed and loosen sediments. It may also reduce the channel topographic diversity, which imparts a certain resistance to flow, thereby increasing flow velocities and sediment transport capacity. (Class II Impact)

H-E. Impact of Removing Channel Obstructions (Excessive Desilting). Excessive desilting could result in lowering the channel bed below its previous invert elevation, which could contribute to oversteepened banks that are prone to failure. This impact is expected to occur very infrequently, if at all, and would only have localized hydraulic impacts. (Class III Impact)

H-F. Altered Channel Sinuosity and Slope. Creation of a straight pilot channel could theoretically reduce sinuosity, increase channel slope, and cause channel bed degradation. This impact is expected to occur very infrequently, if at all, and would only have localized hydraulic impacts. (Class III Impact)

H-I. Impacts of Reduced Sediments. Periodic removal of the sediments from the basins contributes to the reduction in overall sediment supply to the downstream reaches of the drainages. Reduced sediment supply can result in channel degradation over time. (Class III Impact)

Mitigation Measures

H-1 – Maintenance Need Analysis. The District shall evaluate relevant hydraulic factors when determining the need, type, and extent of channel maintenance for non-exempt watercourses where natural geomorphic processes are largely intact. Key factors that shall be included in the evaluation include: (1) hydraulic benefits of maintaining the bankfull channel (if present) dimensions, natural sinuosity, and natural channel bed roughness; and (2) potential adverse hydraulic effects of excessive brushing, channel shaping, equipment activity in the channel, and bank hardening. Hydraulic principles of creating and maintaining channel stability and sediment transport equilibrium shall be applied, if applicable. The analyses and determinations relevant to this issue shall be documented in the Annual Plan. Clear maintenance objectives with attainable benefits for the protection of life, property, and habitat shall be established for each project and presented in the Annual Plan. A primary objective of this measure is to minimize maintenance activities to the extent feasible, consistent with District's program objectives.

H-2 – Extent of Desilting. The depth of channel desilting shall not cause bank undercutting or channel headcutting. The District shall make a field determination of the maximum depth of desilting based on channel capacity objectives, an evaluation of channel invert elevation and slope through the project reach, and a consideration of the maximum allowable bank length and slope that would cause bank instability. To the extent feasible, banks and bank vegetation shall not be disturbed or reconstructed during desilting to avoid destabilizing the banks.

H-3 – Post Desilting Restoration. After desilting, the District shall restore the channel geometry at the desilting site to a more natural state, as feasible, based on the channel shape, dimension, and slope upstream and downstream of the project site. The channel geometry shall be designed to enhance post-maintenance sediment transport through the desilted reach. If banks are disturbed during desilting, they should be set at a slope that matches existing undisturbed banks and stabilized, to the extent feasible and taking into account available right of way.

H-4 – Pilot Channel Construction. If it is necessary to construct a pilot channel or substantially modify an existing low flow channel, the District shall attempt to maintain the low flow channel length, width, slope, substrate, and sinuosity that are characteristic of the project reach, as determined by field observations of undisturbed low flow channels upstream and downstream of the project reach.

N

Impacts

N = Noise

N-A. Maintenance Equipment Noise. Maintenance activities that require the use of heavy equipment, such as channel shaping and desilting, could temporarily increase the ambient indoor and outdoor noise levels for noise-sensitive receptors located in close proximity to the

watercourse where maintenance work is conducted. This impact would be limited to weekdays between 8 AM and 5 PM, with a limited duration of several days at any one location. Increased ambient noise levels could cause a nuisance to noise sensitive receptors, such as residences, schools, nursing homes, and day care centers. (Class II Impact)

Mitigation Measures

N-1 – Minimize Noise. Routine maintenance work shall be limited to weekdays and the hours of 7:30 AM and 4:30 PM. Equipment and haul trucks shall be equipped with functioning and properly maintained muffler systems, including intake silencers where necessary. Additional reductions in noise emissions shall be provided, as feasible, by performing noisy operations, such as chipping and loading spoils into dump trucks on the banks, as far away as practicable from sensitive receptors.

P

PH = Public Health and Safety

PH-A. Excessive Herbicide Release and Exposure. Excessive application of herbicide to vegetation on the bottom of a channel or debris basin, including substantial application to the bed itself and open water, could result in increased concentrations in downstream water, which could affect the public. Excessive application of herbicide to vegetation could also adversely affect hikers using the watercourse as a trail or for recreation. This situation would arise from poor application methods or procedures, and is expected to occur rarely, if at all. (Class III Impact)

R

Impacts

R = Recreation

R-A. Potentially Adverse Herbicide Concentrations. The application of herbicides to control emerging vegetation on the channel bed is not expected to introduce substantial amounts of herbicide to the water in the drainage where fish, aquatic organisms, and humans could be exposed. However, there is a potential for localized elevated concentrations of glyphosate in drainages due to excessive application of herbicides or poor application methods that result in overspray which would degrade water quality, and affect recreational users along creeks. This impact would be localized and temporary. (Class II Impact)

R-B. Impacts of Reduced Sediment Supply to Beaches. Periodic removal of the sediments from the basins contributes to the reduction in overall sediment supply to local beaches. (Class II Impact)

R-C. Temporary Disruption of Trail and Park Use. Maintenance activities near a public trail may disrupt the use of the trail for a short period of time, and/or disrupt the use of the creek for informal recreation. (Class III Impact)

R-D. Reduced Beach Sand Supply. The periodic removal of sediments from debris basins contributes to the cumulative loss of beach sand supply. (Class III Impact)

Mitigation Measures

R–1 – Minimize Impacts to Trail and Park Users. To the extent feasible, the District shall provide temporary detours for hikers using public trails that must be closed for maintenance work. All work areas shall be marked by signs, and by flagging if necessary to protect the public from hazardous conditions. The District shall notify appropriate County and City parks departments prior to initiating maintenance work in public parks. The work area shall be visibly marked, and measures taken to prevent public entry. If feasible, work shall be restricted to off-peak park hours.

R-2 – Disposal of Sediments at Beaches. Sediments removed from debris basins or creeks on the South Coast during long-term maintenance of the basins and during routine maintenance of creeks, respectively, shall be disposed at local beaches to the extent feasible. Only suitably sized sediments shall be disposed at the beaches, as permitted by applicable regulatory agencies.

V

Impacts

V = Visual

V-B. Visual Impacts in Basins. The grading of a pilot channel in the middle of a debris basin would reduce the amount of vegetation in the basin. The removal of vegetation and accumulated sediment from debris basins will periodically reduce the amount of riparian vegetation in the basin. These impacts would be minor because they are temporary and affect a very small area; the basin (i.e., visual setting) is a man-made feature; and public access to the basin and/or nearby public viewing locations is generally prohibited. (Class III Impact).

W

Impacts

WQ and W = Water Quality

WQ-A. Potentially Reduce the Amount of Natural Biofiltering. Removal and/or thinning of vegetation from channel bottom due to brushing, herbicide application, desilting, and channel shaping cause a temporary reduction in vigor and/or cover of successional riparian habitats and emergent wetlands. This same impact could occur due to clearing pilot channels and outlet works in debris basins, as well as removing sediments from basins. It could potentially reduce the bio-filtration effects (if any) of emergent wetlands present along the wetted channel and debris basin bottom. As such, maintenance activities could contribute to an overall decrease in water quality. (Class I Impact)

WQ-B. Potentially Adverse Herbicide Concentrations. The application of herbicides to control emerging vegetation on the channel bed is not expected to introduce substantial amounts of herbicide to the water in the drainage where fish, aquatic organisms, and humans could be exposed because of the following reasons: (1) no herbicide is directly applied to open water; (2) overspray is minimized by precise spraying by trained field crews; (3) most spraying occurs in the fall when flows are absent in drainages; (4) glyphosate is strongly absorbed by soil particles and not easily mobilized once it has contact with soils or wet sediments; and (5) residual herbicide in soils or sediments are subject to microbial degradation. However, there is a potential for localized elevated concentrations of glyphosate in drainages due to excessive application of herbicides or poor application methods that result in overspray which would degrade water quality. While this impact would be localized and temporary, it is considered a significant, but mitigable cumulative impact because of the wide use of herbicides throughout the county. (Class II Impact)

WQ-C. Accidental Spills and Leaks. Accidental leakage or spill of fuel and/or oil from heavy equipment working within or directly adjacent to the watercourse or in a debris basin can cause discharge of pollutants to the creek, which would degrade water quality. This impact is anticipated to be highly localized because most accidental spills are limited in quantity (e.g., less than 50 gallons) and would occur in the dry season when flows are absent. Potential accidental spills of herbicides from applicators. (Class II Impact)

WQ-D. Temporary Sedimentation and Turbidity. Channel shaping, desilting, bank stabilization by placing fill or grading banks, bank protection construction or repair, pilot channel construction, access ramp construction, and excessive removal and/or thinning of in-channel vegetation could cause localized increases in suspended sediments and turbidity which could temporarily degrade water quality. This impact would also occur due to debris basin desilting and to a lesser degree, to pilot channel and outlet works clearing. (Class III Impact)

WQ-E. Increase Water Temperatures. Brushing and spraying remove of vegetation from the channel bed which could reduce shade and increase water temperatures. The magnitude of the impact is low because most of the vegetation affected under the program does not occur in standing water nor provide critical shading. The District does not remove bank vegetation, which provides most of the shade along creeks, as part of the program. (Class III Impact)

WRR = Wetland, Riparian Habitat and Rare Plants

WRR-A. Reduce Amount and Quality of Channel Bottom Habitat. Removal and/or thinning of vegetation from channel bottom due to brushing, herbicide application, desilting, and channel shaping cause a temporary reduction in vigor and/or cover of successional riparian habitats and emergent wetlands. This same impact could occur due to clearing pilot channels and outlet works in debris basins, as well as removing sediments from basins. Although the functions and values of the habitat temporarily disturbed by maintenance would be replaced through the District's habitat restoration program, there is a potentially adverse cumulative effect of annual habitat disturbances throughout the County. (Class I Impact)

WRR-C. Access Ramp Habitat Impacts. Construction or maintenance of access ramps could temporarily reduce the amount of riparian habitat. (Class II Impact)

WRR-D. Temporary Habitat Disturbance. Disturbance of channel banks and bed from heavy equipment during channel shaping, placement of bank protection, desilting operations, ramp construction, and repair of bank protection and grade stabilizers could temporarily remove wetland, riparian and aquatic habitats in work areas. (Class II Impact)

WRR-E. Displace Sensitive Plants. Disturbance of channel banks and bed from heavy equipment during channel shaping, placement of bank protection, channel shaping, desilting operations, ramp construction, and repair of bank protection and grade stabilizers could remove regionally rare plant species This same impact could occur due to clearing pilot channels and outlet works in debris basins, as well as removing sediments from basins. This impact is expected to occur infrequently because so few sensitive plants occur in the areas maintained. (Class II Impact)

WRR-F. Facilitate Weed Colonization. Disturbance of channel banks and bed from heavy equipment during channel shaping, placement of bank protection, desilting operations, ramp construction, and repair of bank protection and grade stabilizers could facilitate colonization of disturbed areas by non-native invasive weeds. This same impact could occur due to clearing pilot channels and outlet works in debris basins, as well as removing sediments from basins. (Class III Impact)

Mitigation Measures

W-1 – Reduce Sedimentation. The District shall minimize the amount of surface disturbance and vegetation removal to the extent feasible during all maintenance activities in order to reduce the area of disturbed soils that could be eroded during winter runoff. No stockpiles or dewatering operations shall be established in the channel bed or basin bottom. All fill shall be compacted to reduce erosion. All disturbed banks and terraces above the low flow channel shall be seeded with appropriate riparian grasses and herbs and/or planted with willows, mule fat, or other woody plant species. The objectives of the seeding and/or planting are to stabilize these areas and reduce erosion. The selection of species to be used and the density of seeding or planting shall balance the need for maintaining channel capacity while meeting these objectives. If work must occur in a wetted channel that has continuous flow downstream of the work site, the District shall either temporarily divert streamflow around the work site, or provide temporary sediment containment downstream of the site. In addition, the District shall check silt fencing, diversions, and settling ponds twice a day.

W-2 – Responsible Herbicide Application. To the extent feasible, the primary herbicide application each year shall occur during the months of August through November, when stream flows are minimal. In some instances, a follow-up application will be made in the spring to reduce the frequency of maintenance. Herbicides shall be applied by hand- held sprayers rather than from truck mounted sprayers to the extent feasible. The dilution and application of herbicides shall be conducted in strict accordance with all label recommendations, including all restrictions related to public health, worker safety, and the protection of aquatic organisms. Herbicides shall not be applied when winds at the application

site exceed 5 miles per hour, within 12 hours of a forecasted rain event, or when vegetation surfaces are covered with water from recent rainfall or dew. Herbicides shall be applied carefully to plant surfaces in minimal effective amounts, minimizing drift to non-target plants and overspray onto the ground or to open water. Signs shall be placed to warn the public if herbicides are applied within 50 feet of any public recreation location, such as a trail, picnic spot, or other site of regular human activity. The signs shall remain for 48 hours after the application of the herbicide. The District shall also notify residences and businesses located adjacent to drainages to be treated with herbicides. Notification shall occur by mail within 7 days of the planned maintenance work.

W-3 – Maintain Biofiltering by Reseeding Channel Bottom Areas. To the extent feasible and consistent with the maintenance objectives, the District shall avoid removal of emergent herbaceous wetland vegetation on the channel bottom that is rooted in or adjacent to the low flow channel or a pond. This same type of vegetation shall be protected, to the extent feasible, during the removal of taller obstructive woody vegetation on the channel bottom. In addition, the District shall re-seed desilted channel areas that formerly contained emergent vegetation, provided that suitable native seeds from plants that provide biofiltration are available and that the new vegetation will not significantly affect channel conveyance or significantly increase the need for future maintenance. Seeding shall occur after the major winter runoff has occurred and stream flows have receded to prevent loss of seeds.

W-4 - Prevent Accidental Spills and Leaks. The mixing and dispensing of herbicides and equipment fueling or maintenance shall not occur within a channel or a basin. Spill containment and clean-up procedures for herbicides and vehicle fuels and oils shall be developed by the District. All field personnel shall be trained and all field vehicles shall be equipped with appropriate materials.

W-5 – Water Quality Monitoring During Herbicide Application for Large Projects. The District shall monitor concentrations of glyphosate downstream of large maintenance projects that involve herbicide application. Large projects are defined as projects that involve continuous or near-continuous herbicide application along reaches of more than 250 feet where there is flowing water along the entire reach. Water samples shall be collected from the flowing water at the following locations: Site A - above the work site, representing the ambient water quality conditions; Site B - immediately downstream of the work site; and Site C - approximately 200 feet downstream of the work site. Samples shall be collected using the following protocol: (1) Prior to herbicide application – samples at Site A, and Sites B and C if there is a storm drain outlet or similar feature within the maintenance reach that may contribute off-site flow and possible herbicides to the water samples; (2) 24 and 96 hours after herbicide application – samples at Sites A, B, and C. If glyphosate concentrations exceed 15 mg/l in the 24-hour sample or 10 mg/l in the 96-hour sample, the District shall modify the spray program at all remaining maintenance sites to be sprayed. Modification may include reducing the rate of herbicide application and/or using hand removal techniques. The District shall continue to apply herbicides only if the glyphosate concentrations are consistently below the 24- and 96-hour thresholds. If the 24- and/or 96-hour thresholds are exceeded five times during the maintenance year, regardless of location, the District shall cease application of

herbicides in aquatic situations until the program can be modified to reduce concentrations to the acceptable range.

W-6 – Public Education Regarding Creek Water Quality. The District shall prepare information brochures for residents located along maintained drainages that explain: (1) how the District applies herbicides in a responsible manner, and provides guidelines on how landowners can use herbicides for residential and commercial uses in a similarly responsible manner to minimize water quality impacts to the creeks; and (2) how landowners can reduce pollution to the creek from their activities by employing best management practices for landscape fertilization; disposal of hoūsehold paints, hazardous materials and petroleum products; management of trash and landscaping debris; and handling of pet wastes. The brochure shall be prepared in coordination with Project Clean Water and mailed to affected areas on a 3-year rotating basis. It shall include the Project Clean Water phone numbers for technical assistance and for reporting illegal dumping. The brochure shall also include information on how landowners can make their land available for habitat restoration under the routine maintenance program.

W-7 – Reporting Water Quality Incidents. The District shall train its maintenance crews to identify and report incidents or materials observed in the creeks during routine maintenance work that could cause significant water quality impacts, including illegal dumping of trash, pet waste, and green waste; homeless encampments; and drain outlets with evidence of poor water quality. The staff shall contact appropriate authorities in the County or affected municipalities.

8.0 California Environmental Quality Act (CEQA) Findings

8.1 Consideration of the Addenda and Full Disclosure

The Board of Directors has considered the Addenda in the Debris Basin Maintenance and Management Plan (DBMMP) prepared by the Santa Barbara County Flood Control District, together with the previously certified Program EIR (01-EIR-01) prepared for the Santa Barbara County Flood Control's Updated Routine Maintenance Program. The Addenda reflect the independent judgment of the Board of Directors and have been completed in compliance with CEQA. The Addenda, together with the prior PEIR are adequate for this proposal. On the basis of the whole record, including the Addenda, the previously certified CEQA document, and any public comments received, the Board of Directors finds that the projects described in the DBMMP will not create any new significant effects or a substantial increase in the severity of previously identified significant effects on the environment. Therefore, since there are no substantial changes proposed in the project which will require major revisions to the Updated Routine Maintenance PEIR, no substantial changes have occurred with respect to the circumstances under which the project is undertaken, and there is no new information of substantial importance, no subsequent environmental review shall be prepared according to CEQA Guidelines Sections 15162 and 15168 (c)(2).

8.2 Location of Documents

The documents and other materials which constitute the record of proceedings upon which this decision is based are in the custody of the Santa Barbara County Flood Control District located at 130 E. Victoria Street, Suite 200, Santa Barbara, CA 93101.

8.3 Environmental Reporting and Monitoring Program

Public Resources Code Section 21081.6 and CEQA Guidelines Section 15091(d) require the District to adopt a reporting and monitoring program for the project and conditions of the project adopted to mitigate or avoid significant effects on the environment. The approved project descriptions, mitigation measures, with their corresponding permit monitoring requirements, are hereby adopted as the reporting and monitoring program for these projects. The District will provide the monitoring and reporting to ensure compliance during project implementation.