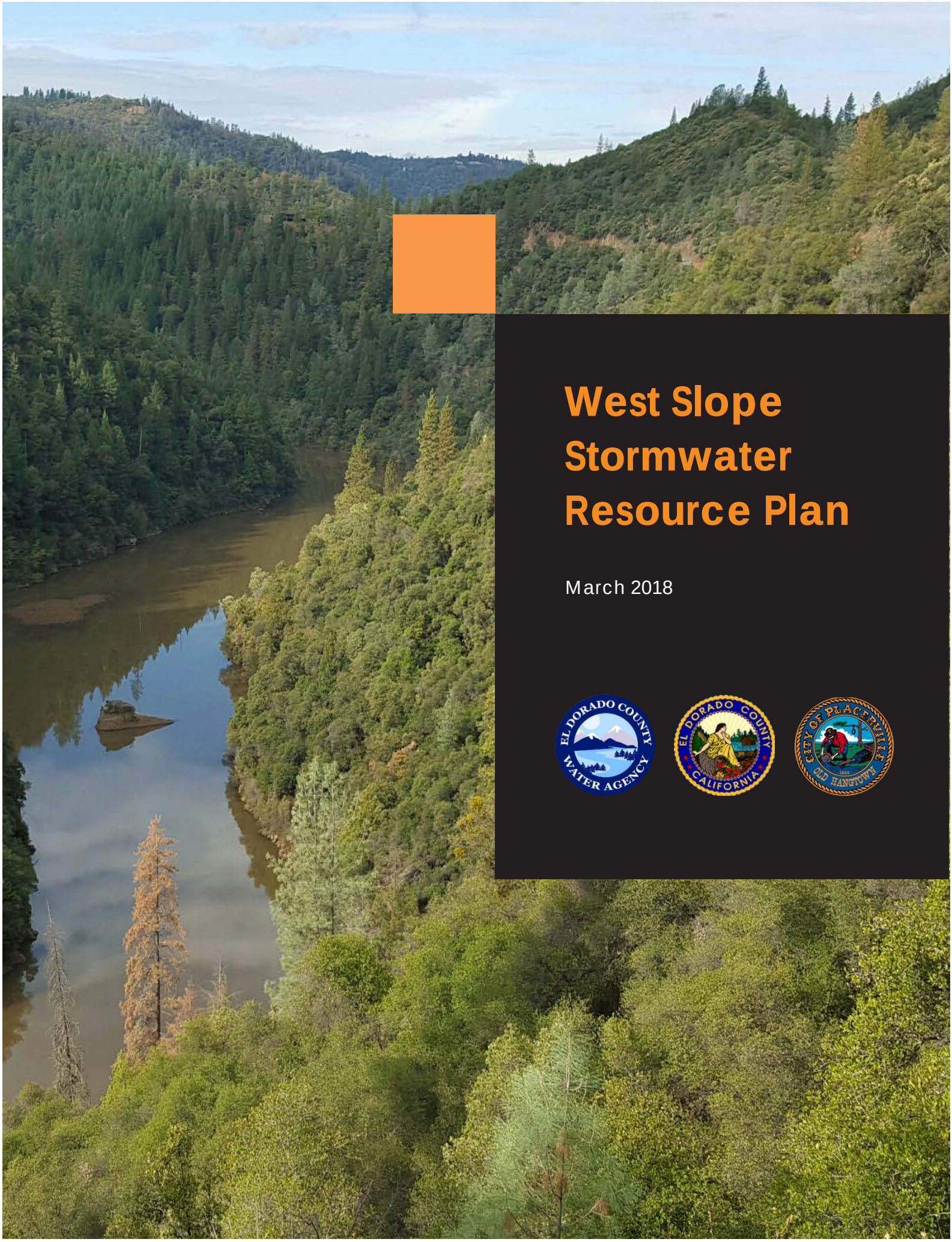

West Slope Stormwater Resource Plan

March 2018

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Abbreviations

AB	Assembly Bill
AC	Alpine County
Act	1959 El Dorado County Water Agency Act
AF	Acre-Feet
AF/yr	Acre-Feet per Year
Agency	El Dorado County Water Agency
BMP	Best Management Practice
CABY	Cosumnes American Bear Yuba
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CDS	Community Development Services
CGP	Construction General Permit
CNPS	California Native Plant Society
County	County of El Dorado
CVP	Central Valley Project
CWA	Federal Clean Water Act
DWQ	Division of Water Quality
DWR	California Department of Water Resources

E.coli	Escherichia coli
EID	El Dorado Irrigation District
FEMA	Federal Emergency Management Agency
GAMA	Groundwater Ambient Monitoring and Assessment
GDPUD	Georgetown Divide Public Utility District
GFCSD	Grizzly Flats Community Service District
HUC	Hydrologic unit code
IGP	Industrial General Permit
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
ISWEBE Plan	Inland Surface Waters, Enclosed Bays, and Estuaries
LID	Low impact development
MS4	Municipal Separate Storm Sewer
NGO	Non-Governmental Organization
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
Placerville	City of Placerville
Proposition 1	Water Quality, Supply, and Infrastructure Improvement Act of 2014
RACI	Responsible, Accountable, Consulted, Informed
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SB 790	Stormwater Resource Planning Act of 2009
SGMA	Sustainable Groundwater Management Act of 2014
State	State of California

State Water Board	California State Water Resources Control Board
SWMP	Stormwater Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRP	Stormwater Resource Plan
West Slope SWRP	West Slope Stormwater Resource Plan
SWRP Guidelines	State Water Board's Stormwater Resource Plan Guidelines (December 2015)
SWRP Partners	El Dorado County Water Agency, County of El Dorado, and the City of Placerville
TMDL	Total Maximum Daily Load
UO	University of Oregon
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Department of Agriculture, Forest Service
USGS	U.S. Geological Survey
Water Code	California Water Code
Watershed Plan	El Dorado Irrigation District's South Fork American River Watershed Plan
WDR	Waste Discharge Requirement
WWTF	Waste Water treatment facility
WWTP	Waste Water Treatment Plant

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1.0 INTRODUCTION

This comprehensive West Slope Stormwater Resource Plan (West Slope SWRP) outlines the approach for watershed resource planning and stormwater runoff management. It incorporates prioritized actions, affordability considerations, and the nexus with other related resource planning and implementation efforts to support efficient and responsible implementation. The El Dorado County Water Agency (Agency) led the development of the West Slope SWRP with close collaboration from the County of El Dorado (County) and the City of Placerville (Placerville) (collectively, SWRP Partners).

The West Slope SWRP is tailored to address the unique conditions of the western portion of El Dorado County, a mostly rural agricultural area in the foothills where management of stormwater resources continues to be very different from that in an urban setting on flat land. Figure 1-1 shows the West Slope in relation to El Dorado County. The West Slope consists of dispersed urban, rural, and agricultural areas, and about half of the area lies within the Eldorado National Forest (refer to Section 2 for more details).

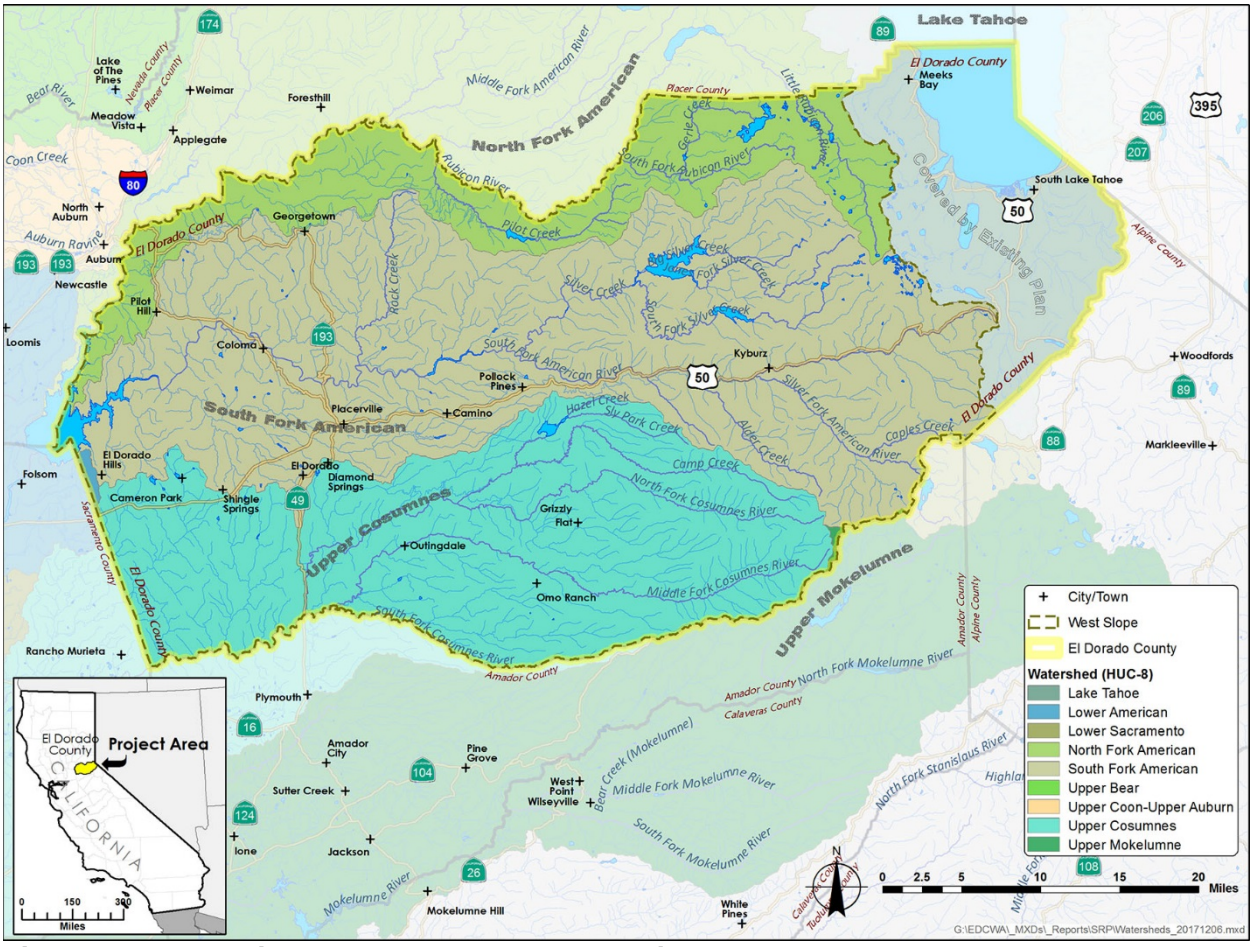

Figure 1-1. West Slope Stormwater Resource Plan Area

To adequately address stormwater resource planning in this diverse and large foothill setting, the West Slope SWRP covers three main components:

1. Surface Water Storage
2. Watershed Management
3. Stormwater Management

The West Slope SWRP is intended to serve as a foundation for efforts outlined in existing local Stormwater Management Plans (SWMP) and is not intended to replace existing plans or plans that are under development. The West Slope SWRP meets the standards and requirements of the California Water Code (Water Code) section 10560 et. seq., and will be updated as new goals, projects, and needs arise on the West Slope (see Section 5 for more details).

1.1 BACKGROUND

The 1959 El Dorado County Water Agency Act (Act) gives the Agency the authority to provide water for all beneficial uses in El Dorado County including power development and flood control. In particular, Section 13 of the Act states the following:

> *Sec. 13. The agency shall have the power to control the flood and stormwaters of the agency and the flood and stormwaters of streams that have their sources outside of the agency, which streams and floodwaters flow into the agency, and to conserve such waters for beneficial and useful purposes of said agency by spreading, storing, retaining and causing to percolate into the soil within or without said agency, or to save or conserve in any manner all or any of such waters and protect from damage from such flood or stormwaters the watercourses, watersheds, public highways, life and property in said agency, and the watercourses outside of the agency of streams flowing into the agency.*

The County, the Agency's collaborating partner, also is responsible for stormwater and floodwater management. The County must comply with regulatory and non-regulatory requirements that include but are not limited to Phase I and Phase II Municipal Separate Storm Sewer (MS4) Permits, National Pollutant Discharge Elimination System (NPDES) Permits, Total Maximum Daily Loads (TMDL), Trash Policy, Biological Objectives, and the Toxicity Policy. The County also addresses climate resiliency and flood risk mitigation.

Placerville, another SWRP Partner, is responsible for stormwater and floodwater management. Similar to the County, it must comply with regulatory and non-regulatory requirements.

1.2 STORMWATER RESOURCE PLANNING

Several terms are important in the context of stormwater resource planning. ***Dry weather runoff*** means "…surface waterflow and waterflow in storm drains, flood control channels, or other means of runoff conveyance produced by nonstormwater resulting from irrigation, residential, commercial, and industrial activities" (Water Code Section 10561.5). ***Stormwater*** refers to "…temporary surface water runoff and

drainage generated by immediately preceding storms. This definition shall be interpreted consistent with the definition of 'stormwater' in Section 122.26 of Title 40 of the Code of Federal Regulations" that is applicable to the State of California's (State) NPDES programs (Water Code Section 10561.5).

Stormwater management is currently changing in California due to the increased awareness of stormwater-related environmental challenges as well as the potential for stormwater to be part of the long-term solution to California's water conflict and scarcity. While early regulatory efforts focused on controlling pollutants and implementing best management practices (BMP), current regulatory decisions also emphasize holistic strategies that will result in multi-benefit projects and programs while concurrently managing pollution.

The *Stormwater Resource Planning Act of 2009* (or Senate Bill (SB) 790) required a watershed approach to actively incorporate stormwater management as a resource. With the focus on stormwater as a resource, newer low impact development (LID) and green infrastructure techniques are now capitalizing on opportunities to capture stormwater runoff for local landscaping needs, agricultural uses, and groundwater recharge. Stormwater management is also being incorporated to existing efforts such as Integrated Regional Water Management Plans (IRWMP).

In 2014, SB 985 amended the Stormwater Resource Planning Act, thereby also amending Water Code sections 10561, 10562, 10563, 10573, and adding sections 10561.5 and 10565. SB 985 incentivized and promoted stormwater resource planning efforts that include both wet and dry weather flow management and outlined the requirements for a SWRP.

In particular, Water Code Section 10562(b) outlines the basic requirements for a SWRP.

> *A stormwater resource plan shall:*
>
> *(1) Be developed on a watershed basis.*
>
> *(2) Identify and prioritize stormwater and dry weather runoff capture projects for implementation in a quantitative manner, using a metrics-based and integrated evaluation and analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and other community benefits within the watershed.*
>
> *(3) Provide for multiple benefit project design to maximize water supply, water quality, and environmental and other community benefits.*
>
> *(4) Provide for community participation in plan development and implementation.*
>
> *(5) Be consistent with, and assist in, compliance with total maximum daily load (TMDL) implementation plans and applicable NPDES permits.*
>
> *(6) Be consistent with all applicable waste discharge permits.*
>
> *(7) Upon development, be submitted to any applicable integrated regional water management group. Upon receipt, the integrated regional water management group shall incorporate the stormwater resource plan into its integrated regional water management plan.*

(8) Prioritize the use of lands or easements in public ownership for stormwater and dry weather runoff projects.

In accordance with Water Code Section 10565, the California State Water Resources Control Board (State Water Board) was required to establish guidance for the development of SWRPs. The State Water Board's Stormwater Resource Plan Guidelines (December 2015) (termed SWRP Guidelines) were developed to provide guidance on contents and procedures to public agencies seeking to develop a SWRP that complies with Water Code sections 10560 et seq. (as amended by SB 985, Stats. 2014, ch. 555, § 5) described above.

SB 985 also stipulated that a SWRP (or its equivalent) is required to be eligible for stormwater implementation grants funded from voter-approved bonds after January 1, 2014 (Water Code Section 10563, subdivision (c)(1)). The SWRP also needs to be incorporated into the appropriate IRWMP. For example, a SWRP is required by agencies to obtain funding from the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1. Assembly Bill (AB) 1471), which authorized $200 million in grants for multi-benefit stormwater management projects.

Integrating stormwater management with basic aspects of aquatic resource protection and overall water management (e.g., flood control, water supply, habitat conservation) can be accomplished through a watershed approach. Therefore, in order for individual stormwater and dry weather runoff capture projects to be eligible for funding, a SWRP (or equivalent) needs to be watershed-based and must comply with the relevant Water Code provisions enacted by SB 985. Alternatively, existing planning documents and local ordinances may be used in lieu of a SWRP as long as they, in combination, satisfy the legislative requirements. These may include: watershed management plans, integrated resource plans, urban water management plans, green infrastructure plans, water quality improvement plans, salt and nutrient management plans, TMDL implementation plans, or similar plans that incorporate stormwater and dry weather runoff capture and use as a component of the watershed goals and objectives. Additional supplemental information may also include local or regional plans and ordinances (see the Stormwater Resource Plan Checklist and Self-Certification in Appendix A).

1.3 GUIDING PRINCIPLES FOR PLAN DEVELOPMENT

The SWRP Partners implemented a collaborative approach to develop the West Slope SWRP consistent with legislative requirements and regional needs. In a workshop on July 11, 2017, the SWRP Partners collectively established the following guiding principles to support efficient and effective development and implementation of the West Slope SWRP:

1. Align the planning and implementation of countywide integrated management and stewardship for water, land, and related resources. This includes consistency and coordination with existing planning efforts and future project implementation.

2. Develop multi-objective projects and administrative actions that provide direct benefits to El Dorado County and its residents. In addition to facilitating opportunities for regional and statewide benefits and conforming to the principles of integrated water resources management. Investments and

outcomes should consider: 1) Social Equity, 2) Economic Efficiency, and 3) Ecological Sustainability.

3. Incorporate proactive public outreach and stakeholder engagement during the development of the West Slope SWRP, especially during project prioritization. Existing venues for public outreach should be leveraged to maximize efficiency.

4. Use the available talents and expertise of different government entities in a collaborative and cooperative manner to maximize efficiency.

5. Maximize the use of available data, plans, information, and references.

6. Aim to develop a complete and acceptable document expeditiously, with some areas of detail to be supplemented during subsequent (as needed and/or with periodic) updates.

7. Establish component-specific or topic-specific groups or subgroups for discussion and content development, as needed.

1.4 RELEVANT EFFORTS

This West Slope SWRP incorporates previous and ongoing regional and watershed planning efforts led by various entities throughout El Dorado County. Existing plans known by the SWRP Partners and related to stormwater management on the West Slope are listed below in order of published date:

- *American River Basin Integrated Regional Water Management Plan (Anticipated 2018)*
- *American River Basin Stormwater Resource Plan (Anticipated summer 2018)*
- *El Dorado County Multi-Jurisdictional Hazard Mitigation Plan (Anticipated 2018)*
- *El Dorado County Sustainable Agritourism Mobility Study (2016)*
- *Western Slope Roadway Capital Improvement Program and Traffic Impact Mitigation Fee Program for the County of El Dorado (2016)*
- *Cosumnes American Bear Yuba Integrated Regional Water Management Plan (Updated 2014)*
- *South Fork American River Watershed Plan (2009)*
- *Placerville Stormwater Management Plan (2005)*
- *Western El Dorado County Stormwater Management Plan (2004)*
- *County of El Dorado Drainage Manual (1995)*

The following subsections summarize these existing plans.

1.4.1 American River Basin Integrated Regional Water Management Plan

The *American River Basin IRWMP* was developed in 2006 and updated in 2013. Another update to the *American River Basin IRWMP* is anticipated in July 2018. The plan is a comprehensive document that encourages regional strategies for integrated water resources management. Integrated water resources management has been accomplished through partnerships that promote the development of priorities used to implement projects and programs. A small portion on the West Slope is in the *American River Basin IRWMP* area, and projects in the West Slope SWRP are likely to benefit downstream users, namely in the American River Basin. More information on the *American River Basin IRWMP* is available at *http://rwah2o.org/programs/integrated-regional-water-management/american-river-basin-irwmp-2013-update/*.

1.4.2 American River Basin Stormwater Resource Plan

The SWRP for the American River Basin is under development with a draft anticipated in the summer of 2018. The boundaries for this plan include the watersheds in the existing American River Basin IRWMP region. Both the *American River Basin SWRP* and this West Slope SWRP contain a portion of the South Fork American Watershed and Upper Cosumnes Watershed (discussed in more detail in Section 2). In other words, the plans overlap in the El Dorado Hills area. *The American River Basin SWRP* is currently not available online as it is under development.

1.4.3 El Dorado County Multi-Jurisdictional Hazard Mitigation Plan

The 2017 *El Dorado County Multi-Jurisdictional Hazard Mitigation Plan* is under development as an update to the 2004 plan. This plan is intended to protect the citizens of El Dorado County and their property from hazards. The plan serves the jurisdictions of El Dorado County, City of Placerville, City of South Lake Tahoe, El Dorado Irrigation District (EID), and Sacramento Municipal Utility District. The primary hazard identified in this plan related to stormwater is flooding. Urban development generally increases the amount of impervious surfaces and leads to increases in the flow rate and volume of water in the drainage channels during and after a storm event. When flows exceed the capacity of drainage channels constructed to convey water, flooding can occur. Hazards associated with localized flooding include the overtopping of roadways, inundation of areas near the drainage channels, and structural damage. It is anticipated that some of the occasional flood events may be reduced through the implementation of the West Slope SWRP projects. A 2017 plan is under development and is anticipated to be approved by the Federal Emergency Management Agency (FEMA) in 2018. A copy of the *2004 Hazard Mitigation Plan* is available at *https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794 /17565/CA_017_ElDora do_2004.pdf?sequence=1&isAllowed=y*.

1.4.4 El Dorado County Sustainable Agritourism Mobility Study

The *El Dorado County Sustainable Agritourism Mobility Study* is an existing study that identifies mobility challenges and the causes of traffic congestion found in El Dorado County that relate to agritourism. The study identifies solutions that are low-cost and high-impact to existing infrastructure that will continue to support agritourism in El Dorado County. Given the solutions present in the study, stormwater and dry weather runoff capture projects will be incorporated into the proposed solutions discussed in the *El Dorado*

County Sustainable Agritourism Mobility Study as an effort driven by the West Slope SWRP. More information on this study is available at *http://www.edctc.org/3/AgritourismStudy.html.*

1.4.5 Western Slope Roadway Capital Improvement Program and Traffic Impact Mitigation Fee Program for El Dorado County

The *Western Slope Roadway Capital Improvement Program* and *Traffic Impact Mitigation Fee Program* for El Dorado County is a Program Environmental Impact Report for the updated *Western Slope Roadway Capital Improvement Program* and the *Traffic Impact Mitigation Fee Program* for El Dorado County. The *Capital Improvement Program* is a planning tool that is updated periodically, that outlines the plans for implementing a list of capital improvement projects in El Dorado County. The funding sources of each project are identified in the *Capital Improvement Program*. The *Traffic Impact Mitigation Fee Program* is designed to help fund projects related to widening roadways, new roadway construction, and roadway intersection improvements, including adjacent pedestrian and bicycle facilities. As projects covered in the *Capital Improvement Program* will be in the West Slope area, there is an opportunity to incorporate stormwater and dry weather runoff capture components into each project that is not yet completed in order to support stormwater management efforts. More information is available at *https://www.edcgov.us/government/longrangeplanning/DOT/tim/documents/CIP-TIM-Final-EIR-Sept-2016.pdf*.

1.4.6 Cosumnes American Bear Yuba Integrated Regional Water Management Plan

The *Cosumnes American Bear Yuba (CABY) Integrated Regional Water Management (IRWM)* region was developed in 2009, following the completion of the 2007 *CABY IRWMP*. The 2007 plan was updated in 2014 and is compliant with Proposition 84 Guidelines. The 2014 *CABY IRWMP* defines current water resources and environmental conditions, documents key issues and challenges, identifies management goals and objectives, evaluates alternative water management strategies, identifies opportunities for cooperative actions, provides an implementation plan for priority projects, and establishes an ongoing planning framework. The projects identified in the West Slope SWRP will be incorporated into the *CABY IRWMP* (See Section 5.2). More information on the 2014 *CABY IRWM* effort, the 2014 *CABY IRWMP*, and the plan to update for consistency with 2016 IRWM Planning Standards is available at *http://cabyregion.org/caby-plan/*.

1.4.7 South Fork American River Watershed Plan

Finalized in February 2009, the EID *South Fork American River Watershed Plan (Watershed Plan)* links localized, single-issue mandatory plans that guide water resources management in select parts of the watershed and fill in the gaps of management throughout the rest of the watershed. The *Watershed Plan* describes the current watershed resources, including geology and soils, hydrology and water resources, biological resources, and social and cultural characteristics. It also describes the single-issue mandatory plans that have been developed in the watershed, the goals of each plan for watershed management, and how each goal relates to the *Watershed Plan*. Water resources issues discussed in the *Watershed Plan* include water quality, water supply, environment and habitat, social and cultural, flooding, catastrophic wildfire, and air quality. The *Watershed Plan* identifies 11 goals and 31 objectives for the South Fork

American River Watershed and provides an assessment regarding the existing mandatory plans ability to meet them. The *Watershed Plan* also includes a list of proposed projects that include education outreach, monitoring, and best practices for land use and construction. The West Slope SWRP includes the South Fork American River Watershed, which covers a large portion in the West Slope area. This plan is considered in the development of the West Slope SWRP to account for the ongoing watershed management efforts that are likely to contribute to the integrated watershed management and stormwater management efforts outlined in the West Slope SWRP. More information on the *South Fork American River Watershed Plan* is available at *http://cabyregion.org /?mdocs-file=962.*

1.4.8 Placerville Stormwater Management Plan

Placerville is located in the Sierra Nevada foothills east of Sacramento and has its own SWMP. Urban runoff from areas located within the city limits is primarily discharged to Hangtown Creek. Hangtown Creek is a tributary to Weber Creek and the South Fork American River. The 2005 *Placerville SWMP* contains a list of BMPs that primarily involve the establishment of adequate legal authority, education of the public and city employees, drainage system mapping, and the evaluation and revision of the existing city procedures and design standards. Ultimately, implementation of the *Placerville SWMP* will result in additional city and private capital and operating costs for the management of urban runoff to protect the quality of water in Hangtown Creek. Stormwater and dry weather runoff capture projects proposed in the West Slope SWRP to occur in Placerville will need to comply with the *Placerville SWMP*. More information is available at *https://www.cityofplacerville.org/storm-drains*.

1.4.9 Western El Dorado County Stormwater Management Plan

The 2004 *Western El Dorado County SWMP* outlines a program to reduce the discharge of pollutants associated with the stormwater drainage systems serving on the West Slope. The *SWMP* identifies how the County complies with the provisions of the NPDES permit under Water Quality Order No. 2003-0005-DWQ proposed by the State Water Board, now replaced by Water Quality Order No. 2013-0001-DWQ. The *SWMP* discusses the County's methods for project planning, design, and construction and outlines operation and maintenance procedures for County-owned facilities. The *Western El Dorado County SWMP* only addresses the water quality component of the integrated management of stormwater resources approach envisioned for a *SWMP*. The *SWMP's* proposed stormwater management program includes public education and outreach, public involvement and participation, illicit discharge detection and elimination, construction site runoff control, post construction runoff control, and pollution prevention/good housekeeping. The *SWMP* also describes the County's monitoring, program evaluation, and reporting program, which includes collecting information on problem pollutants, monitoring the performance of stormwater controls in addressing these pollutants, and annually reporting progress and updates to the Regional Water Quality Control Board (RWQCB). Stormwater and dry weather runoff capture projects proposed to occur on the West Slope will need to abide by the *Western El Dorado County SWMP*. More information on the *2004 Western El Dorado County SWMP* is available at *https://www.edcgov.us/Government/longrangeplanning/StormWaterManagement/documents /swmp%20(1).pdf.*

1.4.10 County of El Dorado Drainage Manual

In 1995, the County Department of Transportation developed a manual that outlines the procedures necessary to provide uniform methodology for conducting the analysis and design of drainage facilities. The Drainage Manual provides general drainage guidelines regarding hydrology, surface drainage design, hydraulic design of closed conduits, stormwater storage design, hydraulic design of open channels, and hydraulic design of culverts. All drainage improvement projects proposed on the West Slope SWRP will need to comply with the *County of El Dorado Drainage Manual*. More information is available at *https://www.edcgov.us/government/dot/manuals/documents/DrainageManual.pdf.*

1.5 CONSISTENCY WITH APPLICABLE LAW, REGULATIONS, AND PERMIT CONDITIONS

In addition to complying with the SWRP Guidelines, the West Slope SWRP will also support efforts to comply with other applicable laws, regulations, and permit conditions. The West Slope SWRP is compliant with the following, but not limited by, regulatory requirements and permit conditions:

- The State Water Board Trash Policy, which includes Amendments to the Water Quality Control Plan for Ocean Waters of California adopted by the State Water Board to control trash and Part 1 of the Trash Provision of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE Plan) (State Water Board 2017a).
- California Health and Safety Code for pests and mosquito abatement to help reduce public health threats and diseases that may be caused by vectors.

Additional permits and approvals may be needed from the following, but not limited to, agencies before implementing stormwater projects included in in the West Slope SWRP:

- El Dorado County Community Development Services
- El Dorado County Air Quality Management District
- Applicable Community Service Districts
- El Dorado County and Georgetown Divide Resources Conservation Districts
- Central Valley RWQCB
- State Water Board
- California Department of Fish and Wildlife
- U.S. Army Corps of Engineers (USACE)

1.6 DOCUMENT ORGANIZATION

To adequately address the unique setting of the West Slope, the West Slope SWRP includes three main components to properly cover the nature of stormwater in El Dorado County: Surface Water Storage, Watershed Management, and the more conventional component of Stormwater Management. These three components and the associated project identification, benefit evaluation, and project prioritization are the focus of this document.

The West Slope SWRP is organized as follows, consistent with the SWRP Guidelines:

- **Section 1: Introduction –** Provides background information, guiding principles, relevant efforts, and consistency with applicable laws.
- **Section 2: Description of Watershed –** Provides a description of the watersheds and planning areas addressed in the West Slope SWRP.
- **Section 3: Organization, Coordination, Collaboration –** Identifies the local agencies, non-governmental organizations (NGO), and State and Federal agencies that play important roles in developing and implementing the West Slope SWRP.
- **Section 4: Quantitative Methods for Identification and Prioritization of Stormwater and Dry-Weather Runoff Capture Projects** – Describes the methodology for identifying and prioritizing the multi-benefit stormwater projects, and the subsequent results.
- **Section 5: Plan Implementation Strategy and Scheduling of Projects** – Describes how the West Slope SWRP will be implemented and adapted.
- **Section 6: Education, Outreach, and Public Participation –** Describes the public outreach performed through the development of the West Slope SWRP and outlines the future public outreach plan for long-term participation in plan implementation.
- **Section 7: References –** Lists references used to prepare the West Slope SWRP.
- **Appendix A: Stormwater Resource Plan Checklist and Self-Certification:** Contains the checklist and self-certification of compliance for the West Slope SWRP. Demonstrates that the West Slope SWRP is compliant with the Water Code requirements and State Water Board guidance for Stormwater Resource Plans.
- **Appendix B: Project Description Forms:** Contains the project description forms for each of the multi-beneficial use projects submitted for the West Slope SWRP.
- **Appendix C: Project Evaluation and Prioritization Method:** Contains an overview of the project evaluation metrics and scoring, in addition to background on how project benefits were weighted for the evaluation of projects.

- **Appendix D: Quantitative Analysis and Project Evaluation Summary Sheets:** Contains a description of the quantitative analysis completed for the submitted projects for the West Slope SWRP. Additionally, it also includes the evaluation results for each project.
- **Appendix E: Project Evaluation Summary Table:** Contains a summary table of the evaluation outcomes obtained for each submitted project for the West Slope SWRP.

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2.0 DESCRIPTION OF WATERSHED

This section provides an overview of the geographic scope, background on the watersheds, the various water resources, and the water quality compliance found in the area.

El Dorado County is located in Northern California, north east of Sacramento County and covers 1,708 square miles with an estimated population of 185,625 (U.S. Census Bureau 2010). The western portion of El Dorado County, referred to as the West Slope, is the focus of the West Slope SWRP and covers the portion of El Dorado County west of the Sierra Nevada Continental Divide and excludes the Lake Tahoe watershed (see Figure 2-1). The only incorporated city in the West Slope area is Placerville, with the remainder of the population living mostly in towns and community service districts (see Figure 2-2). The major political boundaries on the West Slope are the multiple water service providers and the Eldorado National Forest, which covers about half of the West Slope in the areas of high elevation (Figure 2-3).

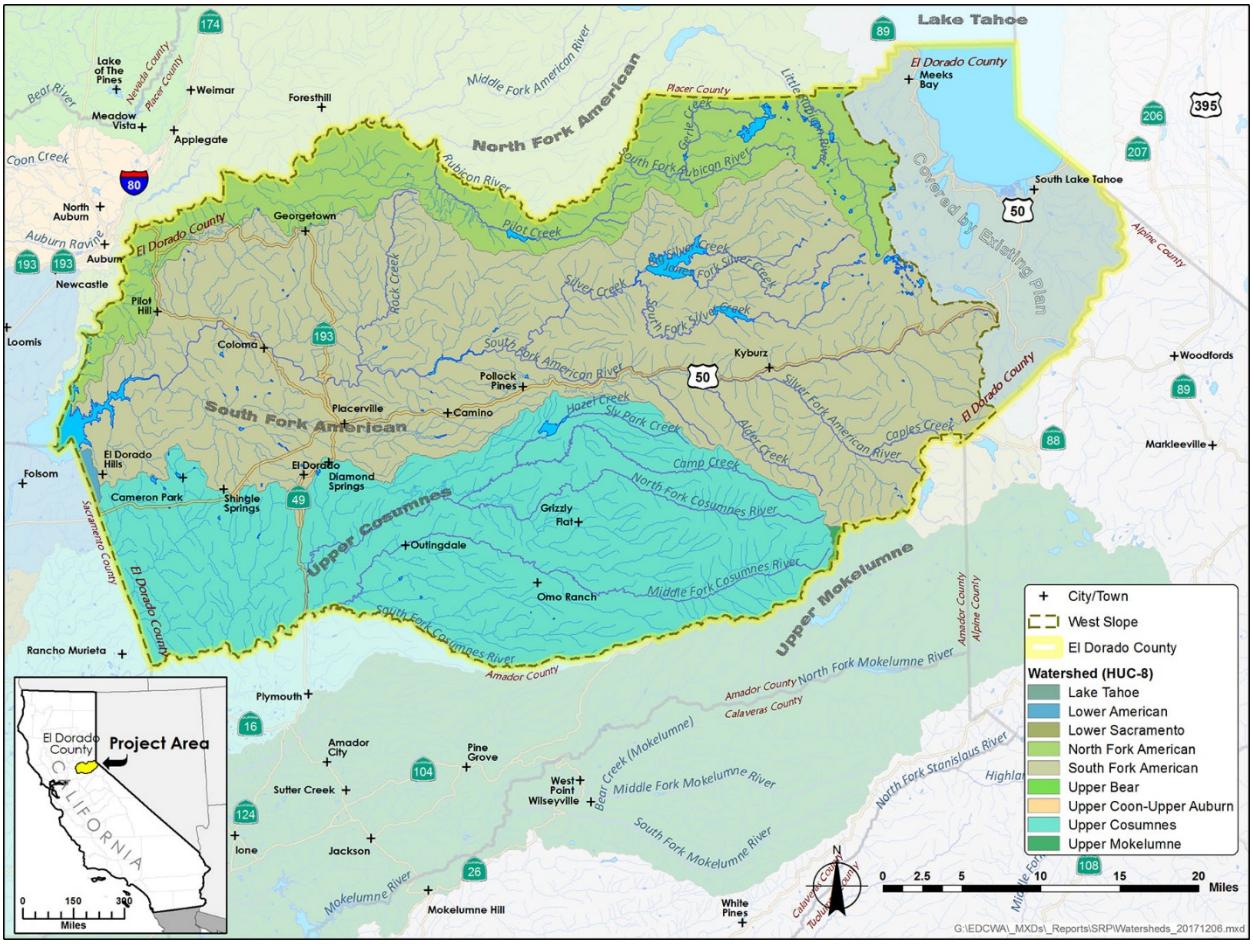
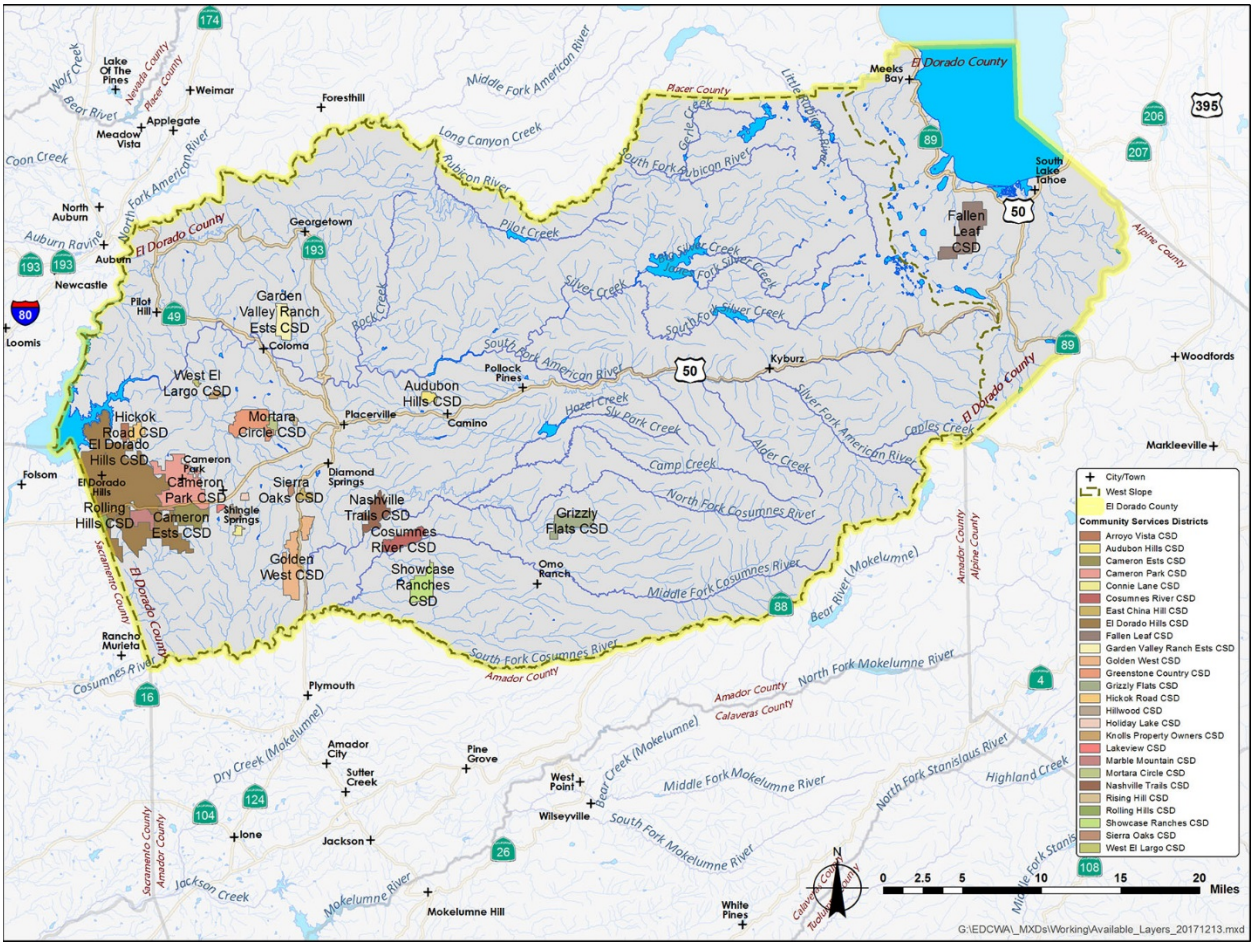
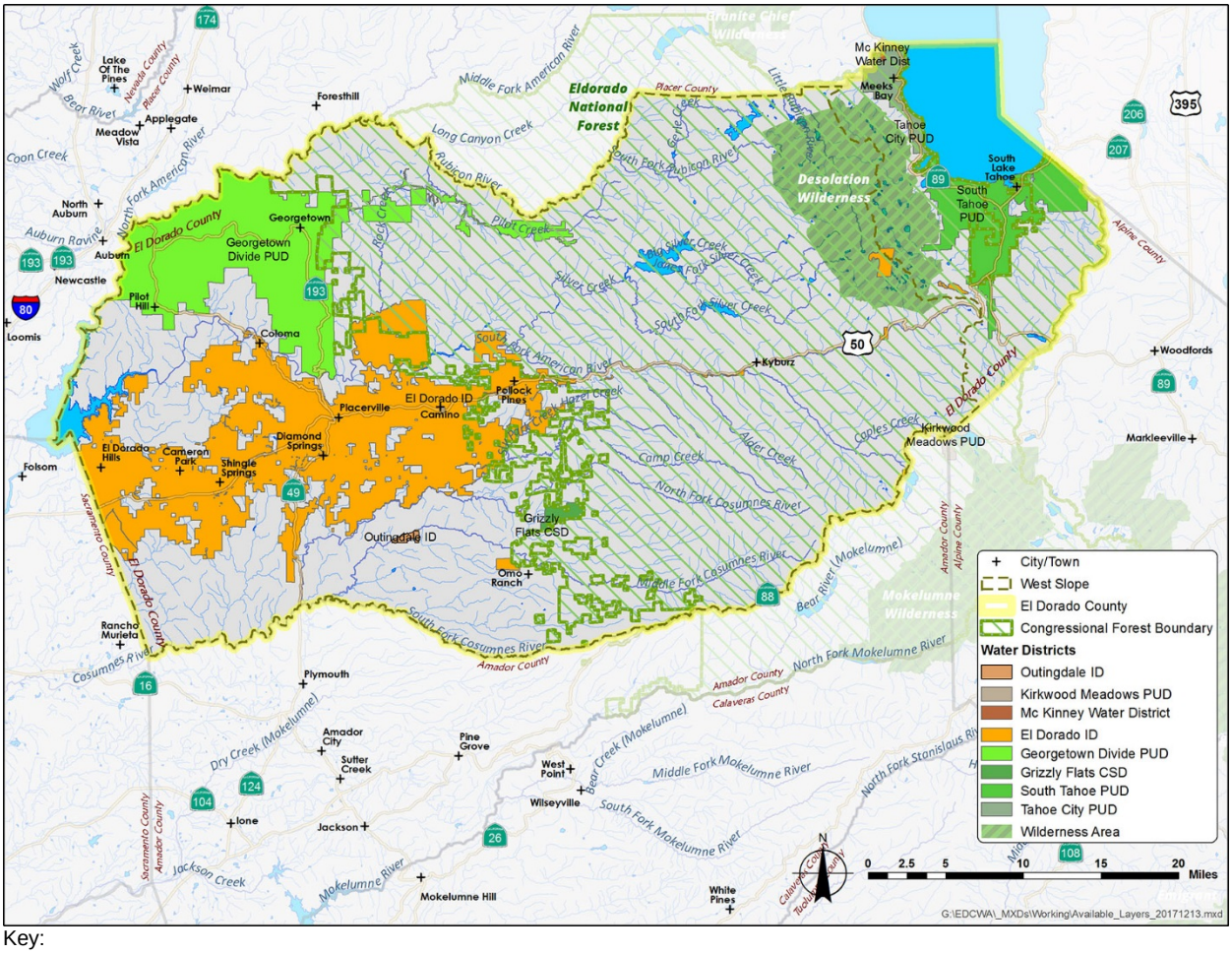


Figure 2-1. West Slope Stormwater Resource Plan Area



Key:
CSD = Community Service District

Figure 2-2. Cities, Towns, and Community Service Districts in El Dorado County



Key:
ID = Irrigation District
PUD = Public Utility District
CSD = Community Service District

Figure 2-3. Political Boundaries in El Dorado County

2.1 GUIDANCE FROM STATE WATER BOARD ON GEOGRAPHIC SCOPE

The SWRP Guidelines defines a watershed as the region draining into a river, river system, or other body of water above a particular point. The SWRP Guidelines also references the U.S. Geological Survey's (USGS) and CalWater 2.2's definitions and classifications of watersheds. According to the USGS, watersheds are classified into 6 different levels based off the average area in square miles: Region, Subregion, Basin, Subbasin, Watershed, and Subwatershed (State Water Board 2015). According to CalWater 2.2, a dataset, it provides a standard nested watershed delineation scheme using the State Water Resources Control Board numbering scheme. In the CalWater 2.2 dataset, the hierarchy of watershed designations consists of six levels of increasing specificity: Hydrologic Region, Hydrologic Unit, Hydrologic Area, Hydrologic Sub-Area, Super Planning Watershed, and Planning Watershed. The primary purpose of the CalWater 2.2 dataset is to provide a unified reference for watershed delineation with the assignment of a single, unique code to a specific watershed polygon. Additionally, under CalWater 2.2's definition of a

"Planning Watershed," the smallest size a watershed may be is 5 square miles. In general, the boundary of each watershed area identified in a SWRP should not be based on political boundaries, county lines, or any other non-watershed boundary. However, as necessary, political boundaries may be used to describe smaller watersheds, flat areas that encompass multiple small watershed, or watersheds without distinct boundaries.

The SWRP Guidelines allows agencies to define the extent of study boundaries to vary in size as long as they are inclusive of an entire watershed. In addition, the SWRP Guidelines provides the following conditions for the local agency's consideration:

- The scale of the watershed selected should allow for quantitative analysis of stormwater and dry weather runoff patterns.
- The watershed should be the largest practicable to allow for comprehensive and integrated stormwater management, and if practical, across multiple jurisdictional boundaries.
- Plans should include multiple projects within the watershed to achieve watershed-based stormwater management objectives, and should not be developed on a scale for the sole purpose of funding a single project.
- In general, watersheds smaller than the CalWater 2.2 "Planning Watershed" size should not be used (smaller than 5 square miles in size) unless to address watershed-specific conditions or regulatory requirements.
- Plans based on the IRWM group watershed boundary are preferred.

2.2 WATERSHEDS IN THE WEST SLOPE

The United States is divided and sub-divided into successively smaller hydrologic units which are arranged within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Hydrologic unit code (HUC) 8 maps the subbasin level, analogous to medium-sized river basins (about 2,200 nationwide). There are five portions of USGS HUC-8 watersheds in the West Slope area (see Figure 2-1 above):

- Lower American Watershed
- North Fork American Watershed
- South Fork American Watershed
- Upper Cosumnes Watershed
- Upper Mokelumne Watershed

Of these five watersheds, only the South Fork American River Watershed and the Upper Cosumnes River Watershed are included in the West Slope SWRP for reasons described below. Both the Lower American and Upper Mokelumne watersheds have less than 5 square miles on the West Slope. According to

CalWater 2.2's definition of a Planning Watershed, these two watersheds are smaller than the allowable size and therefore were not included in the West Slope SWRP. The American River Basin SWRP that is under development will include the Lower American Watershed. The Upper Mokelumne Watershed is covered by the Mokelumne/Amador/Calaveras IRWMP (RMC 2013).

The North Fork American River Watershed (HUC 18020128) is largely located in Placer County, with only a small portion running along the northern edge of El Dorado County. Major water bodies in this watershed that are located the North Fork American River Watershed are Stumpy Meadows Reservoir and the Oxbow Reservoir which borders the northern end of El Dorado County. This watershed drains into Folsom Lake. There are no cities, towns, or community service districts in this portion of the watershed in El Dorado County. Because this watershed is mostly in Placer County, any stormwater resources planning associated with this watershed would need to occur in collaboration with an entity in Placer County either for the whole watershed, a sub-watershed that is located within El Dorado County (such as the Rubicon River Watershed), or other watershed considered by the Agency. Stormwater resources planning for this watershed is therefore not included in the West Slope SWRP.

The South Fork American River Watershed (HUC 18020129) is located almost entirely in El Dorado County and covers about half of the West Slope area. The South Fork American River Watershed includes major water bodies such as the South Fork American River, Folsom Lake which is located at the confluence of the South Fork American Watershed and the North Fork American Watershed, Union Valley Reservoir, and Ice House Reservoir. The watershed covers a portion of the Eldorado National Forest and includes Placerville and the major corridor, Highway 50, which runs through this watershed.

The upper half of the Upper Cosumnes River Watershed (HUC 18040013) is located in El Dorado County. Major water bodies in El Dorado County include the Cosumnes River (including the North Fork, Middle Fork, and South Fork) and Jenkinson Creek. In El Dorado County, this watershed mostly covers agricultural and forest lands, but also contains portions of the unincorporated areas of El Dorado Hills and Cameron Park.

2.3 PLANNING AREAS FOR STORMWATER MANAGEMENT COMPONENT

As discussed above, to adequately address stormwater resource planning in this diverse and large foothill setting, the West Slope SWRP covers three main components: Surface Water Storage, Watershed Management, and Stormwater Management. For the Surface Water Storage and Watershed Management components, the entire portion of the South Fork American River and Upper Cosumnes River watersheds located within the West Slope was considered. No sub-watersheds were delineated for these components as managing these two components typically spans large areas; requires multiple local, State, and/or Federal partners; and affects the entire watershed and downstream watersheds.

For the stormwater management component, these projects tend to be smaller, led by an individual local agency, and apply BMPs. To efficiently integrate into existing stormwater management practices and address varying land uses in the West Slope area, eight planning areas were developed (Figure 2-4). The planning areas for the stormwater management component are all located in the South Fork American and

Upper Cosumnes watersheds. The planning areas were developed to capture the urban and agricultural settings found in the West Slope area in order to differentiate between the extensive geographic areas consisting of non-uniform land use, diverse hydrologic and soil conditions, a variety of water quality concerns, and flooding concerns that exist. The forested area of the eastern section of the West Slope area was not incorporated into the planning areas as the projects in forested areas fall into the other two components (Surface Water Storage or Watershed Management). Table 2-1 presents an overview the planning areas for the stormwater management component.

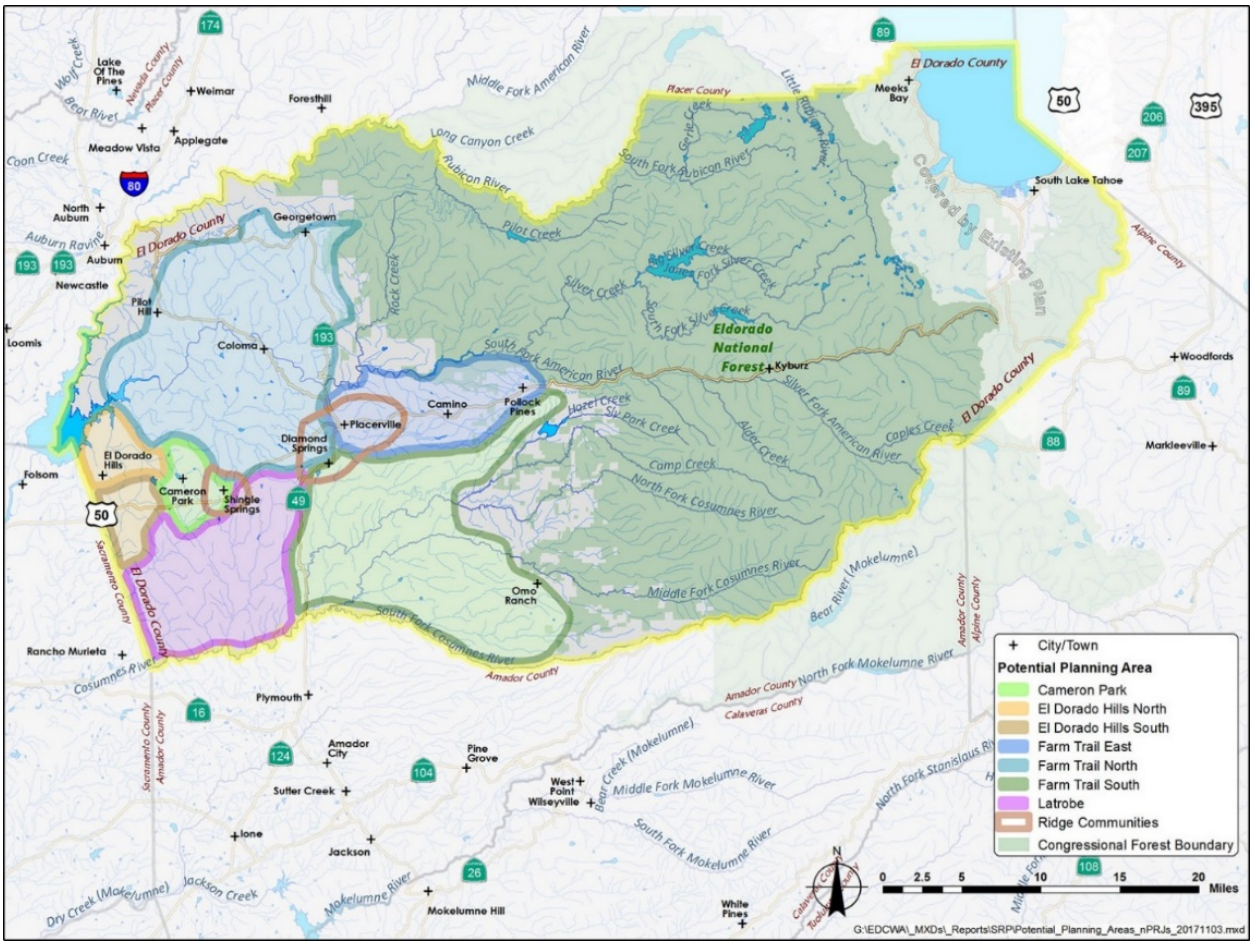


Figure 2-4. Planning Areas for Stormwater Management Component

Table 2-1. Summary of Planning Areas for Stormwater Management Component

Planning Areas	El Dorado Hills		Cameron Park	Ridge Communities (Placerville, Diamond Springs, Shingle Springs)	Farm Trail			Latrobe
	North	South			East (Apple Hills)	North (Coloma)	South (Pleasant Valley)	
South Fork American Watershed	x	-	-	x	x	x	-	-
Upper Consumes Watershed	-	x	x	x	-	-	x	x
Primary Land Use	Urban	Urban	Urban/Rural	Urban/Rural	Agricultural/ Rural	Agricultural/ Rural	Agricultural/ Rural	Rural/ Agricultural
Incorporated Area with a Separate SWMP	-	-	-	Yes, Placerville	-	-	-	
Discharging into Impacted Water Body	Yes	Yes	Yes	-	Yes	Yes	-	Yes
Containing Wastewater Treatment Plant and the Associated Discharge Locations	-	Yes, El Dorado Hills	Yes, Cameron Park	Yes, Hangtown Creek	-	-	-	Yes, Deer Creek
Local Flooding Risks and/or Known Hotspots	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
Soil Erosion Concerns with Steep Slopes	-	-	Yes, but less	Yes	Yes	Yes	Yes	Yes but less
Containing Moderate and High Draining Soil for water Percolation	-	-	Yes	Yes, Diamond Springs	Yes	Yes, mostly Highway 49 to Diamond Springs Corridor	Yes	-
Containing Relative Large Areas with a Ground Surface Slope Less than 10 Percent	Yes	Yes	Yes	Yes, mostly Diamond Springs and Shingle Springs	Some	Some	Some	Yes

2.3.1 El Dorado Hills (North and South) Planning Areas

Both stormwater management planning areas are located on the Western Side of El Dorado County. El Dorado Hills is an unincorporated census-designated place located about 20 miles east of the City of Sacramento with a population of 42,108 (U.S. Census Bureau 2010). El Dorado Hills has one of the highest median household incomes in El Dorado County with an average of $120,000 between 2011 and 2015. Between 2000 and 2010, the land area has more than doubled to about 49 square miles. El Dorado Hills is bisected by Highway 50 and lies in two watersheds. The North section of El Dorado Hills is the portion north of Highway 50, is classified as mainly residential, and is at risk from occasional flood events. The South section of El Dorado Hills is the portion south of Highway 50. This area includes residential neighborhoods and the 885-acre El Dorado Hills Business Park and the El Dorado Hills Town Center area. Both north and south areas of El Dorado Hills discharge into local impacted water bodies.

2.3.2 Cameron Park Planning Area

Cameron Park is an unincorporated census-designated place located just east of El Dorado Hills with a population of 18,228 (U.S. Census Bureau 2010). Cameron Park is an urban and rural community covering an area of about 11 square miles, and it is at risk from occasional flood events. Stormwater management efforts are encouraged in this area to remediate problems with soil erosion, discharges to an impacted water body, and flood events. The Cameron Park planning area is centered on the community of Cameron Park.

2.3.3 Ridge Communities Planning Area

The Ridge Communities is found at two locations, where one location is near Shingle Springs and the other location is near Placerville. This planning area includes Placerville, Diamond Springs, and Shingle Springs, and it covers both urban and rural residential communities. This area experiences local flooding risks and soil erosion problems. This area has a topographic setting that drains to two separate watersheds. It is likely that the management actions identified for this area will be combined with other downstream areas.

2.3.4 Farm Trail East Planning Area

The Farm Trail East area is located around the community of Camino, where it extends from Placerville to Pollock Pines. More notably, it is an agritourism area containing Apple Hill, a tourist area characterized as having an urban and rural setting.

2.3.5 Farm Trail North Planning Area

The Farm Trail North area is located in the area of Coloma, northwest of Placerville. This area includes agricultural and rural areas that discharge into local impacted water bodies.

2.3.6 Farm Trail South Stormwater Management Planning Area

The Farm Trail South area is found in the portion of Pleasant Valley which is characterized as agricultural and rural. The area is bounded on the west by Highway 49, Highway 50 on the north, El Dorado County

boundary on the south, and portions of the Eldorado National Forest on the east. This area contains high value crops with over a dozen wineries.

2.3.7 Latrobe Stormwater Management Planning Area

Latrobe is a rural and agricultural area bounded on the west and south by El Dorado County boundary and Highway 49 on the east. This area is prone to flood events and experiences soil erosion that discharges into local impacted water bodies. While this area does have some stormwater problems, they are addressed but not prioritized when compared to the other agricultural planning areas that contain high value crops and support agritourism.

2.4 DISADVANTAGED COMMUNITIES AND ECONOMICALLY DISTRESSED AREAS

The California Department of Water Resources (DWR) has identified communities as underserved and/or disproportionate if they have been affected by land and water use planning efforts that have resulted in concerns about environmental justice. In El Dorado County, economically disadvantaged communities (DAC), California Native American Tribes, and Hispanic/Latino communities are found to experience poor access to clean drinking water, adverse impacts related to wastewater, cultural barriers, or economic challenges.

As described in the *2016 Integrated Regional Water Management Grant Program Guidelines, Appendix E*, a DAC is a community that has an annual median household income that is 80% less than the annual statewide value. In referencing data obtained from the American Community Survey, for the 2010-2014 time period, 80% of the statewide median household incomes is $49,191 (DWR 2016). Based on the 2010 census, only two West Slope communities fit the criteria for a DAC: Grizzly Flats and Kirkwood (note, only a small portion of Kirkwood is in El Dorado County). These communities were considered when developing multi-benefit stormwater projects for the West Slope SWRP.

DACs face specific challenges as a result of their economic status, but may face other challenges that will differ if they are located in an urban or rural location setting. As defined in the CABY IRWMP, a “Rural DAC” has the following characteristics: not incorporated, has its own water management structures, is not contiguous to other communities, has a population of under 500 people, and has a water system with no intertie with any other water system. In an urban setting, a DAC is incorporated, the water is managed by an internal department and staff, it may share a boundary and/or infrastructure interties with an adjacent jurisdiction, and it has less than 3,000 individual connections (CABY 2014). The CABY IRWMP engages these disadvantaged and vulnerable communities, and works to address environmental injustice needs.

2.5 SURFACE WATER RESOURCES IMPAIRMENTS AND BENEFICIAL USES

El Dorado County has vast surface water resources. Surface water on the West Slope is under the jurisdiction of the Central Valley RWQCB. The RWQCBs are responsible for regulating pollution and water quality objectives to assure that water bodies continue to provide beneficial uses. The Central Valley

RWQCB oversees both the South Fork American and Upper Cosumnes watersheds. The West Slope SWRP outlines the beneficial uses and impairments to both watersheds. Figure 2-5 illustrates the 303 (d) listed impaired water bodies found in El Dorado County. The Clean Water Act is responsible for overseeing the amount of pollution that enters the nation's waterways. The state and regional water boards conduct biennial assessments to determine which bodies of water exceed water quality criteria and standards. This process is set out in California's Clean Water Act Section 303 (d) Listing Policy of how the state will comply with Section 303(d) of the Federal Clean Water Act.

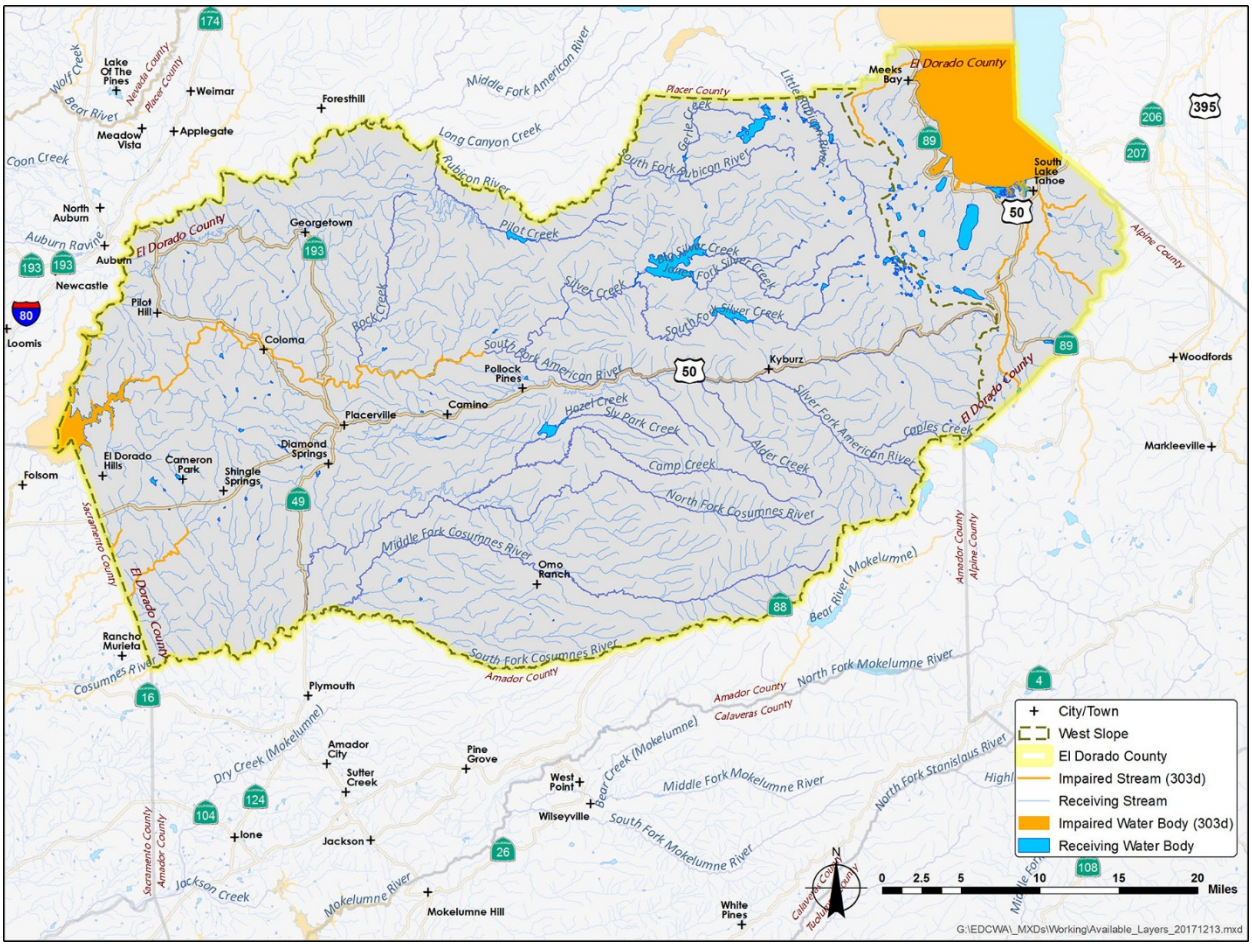


Figure 2-5. Clean Water Act Section 303 (d) Listed Impaired Water Bodies and Streams found El Dorado County

2.5.1 Surface Waters of the South Fork American Watershed

The South Fork American Watershed supports a series of beneficial uses such as municipal and domestic water supplies; irrigation; power; contact and noncontact recreation; canoeing and rafting; warm freshwater habitats; spawning of salmon and steelhead in cold water habitats; and wildlife habitat (Central Valley RWQCB 2016). Impairments of these beneficial uses exist in three water bodies in the South Fork American Watershed within El Dorado County, as listed in Table 2-2 (USEPA 2017a). Mercury is the water quality priority based on the TMDL and water body pollutant combinations on the Federal Clean Water Act (CWA)

Section 303(d) list. Given that some water bodies have been identified as impaired, the state of California will need to develop TMDLs. However, there is often a lag between the listing and an approved TMDL for the affected water body.

Table 2-2. Clean Water Act Section 303(d) Listed Water Bodies and Pollutants in the South Fork American Watershed in El Dorado County

Water Bodies	303(d) Listing
American River, South Fork	Mercury
Folsom Lake	Mercury
Slab Creek Reservoir	Mercury

The El Dorado Hills North planning area drains into Folsom Lake which is classified as an impaired water body. The Farm Trail North planning area drains into the impaired South Fork American River. The Farm Trail East planning area drains into the impaired South Fork American River and Slab Creek Reservoir. A mercury TMDL for Folsom Lake is expected to be completed by 2019, whereas one for the South Fork American River and Slab Creek Reservoir is expected to be completed by 2021. However, there are no existing mercury TMDLs for the South Fork American Watershed.

2.5.2 Surface Waters of the Upper Cosumnes Watershed

Water bodies in the Upper Cosumnes Watershed support a series of beneficial uses that includes municipal and domestic water supplies; irrigation; stock watering; contact and noncontact recreation; canoeing and rafting; warm freshwater habitats for migration and spawning of striped bass, sturgeon, and shad; cold water habitats for migration and spawning of salmon and steelhead; and wildlife habitat (Central Valley RWQCB 2016). Impairments of these beneficial uses exist in six water bodies in the Upper Cosumnes Watershed for the pollutants listed in Table 2-3. Four of the listed water bodies are found within or bordering El Dorado County (USEPA 2017b). Water quality priorities for this watershed include aluminum, manganese**,** Escherichia coli (E. Coli), invasive exotic species, sediment toxicity, and iron, and are based on TMDLs and water body pollutant combinations on the CWA Section 303(d) list.

Table 2-3. Clean Water Act Section 303(d) Listed Water Bodies and Pollutants in the Upper Cosumnes Watershed in El Dorado County

Water Body	Clean Water Act 303(d) Listing
Carson Creek	Aluminum, Manganese
Cosumnes River, Lower	E. Coli, Invasive Exotic Species, Sediment Toxicity
Cosumnes River, Upper	Invasive Exotic Species
Deer Creek	Iron

The impaired water body of Carson Creek is located in the El Dorado Hills South planning area. The Latrobe planning area encompasses the Deer Creek impaired water body and is bordered on the southern end by the Upper and Lower Cosumnes River that are also impaired. The Farm Trail South planning area is bordered on the southern end by the impaired Upper Cosumnes River. However, no TMDLs currently exist for the pollutants listed in Table 2-3. A TMDL is expected to be available for aluminum, invasive exotic

species, and iron by 2019. A TMDL for manganese, E. Coli, and sediment toxicity is expected to be available by 2021.

2.6 GROUNDWATER RESOURCES

As shown in Figure 2-6, there are no groundwater basins on the West Slope. However, *Bulletin 118* does identify the Tahoe South Subbasin of the Tahoe Valley Groundwater Basin in El Dorado County (DWR 2004). In response to the Sustainable Groundwater Management Act of 2014 (SGMA), DWR revised Bulletin 118 to provide updated information on the presence of groundwater aquifers, groundwater management and future recommendations (DWR 2017).

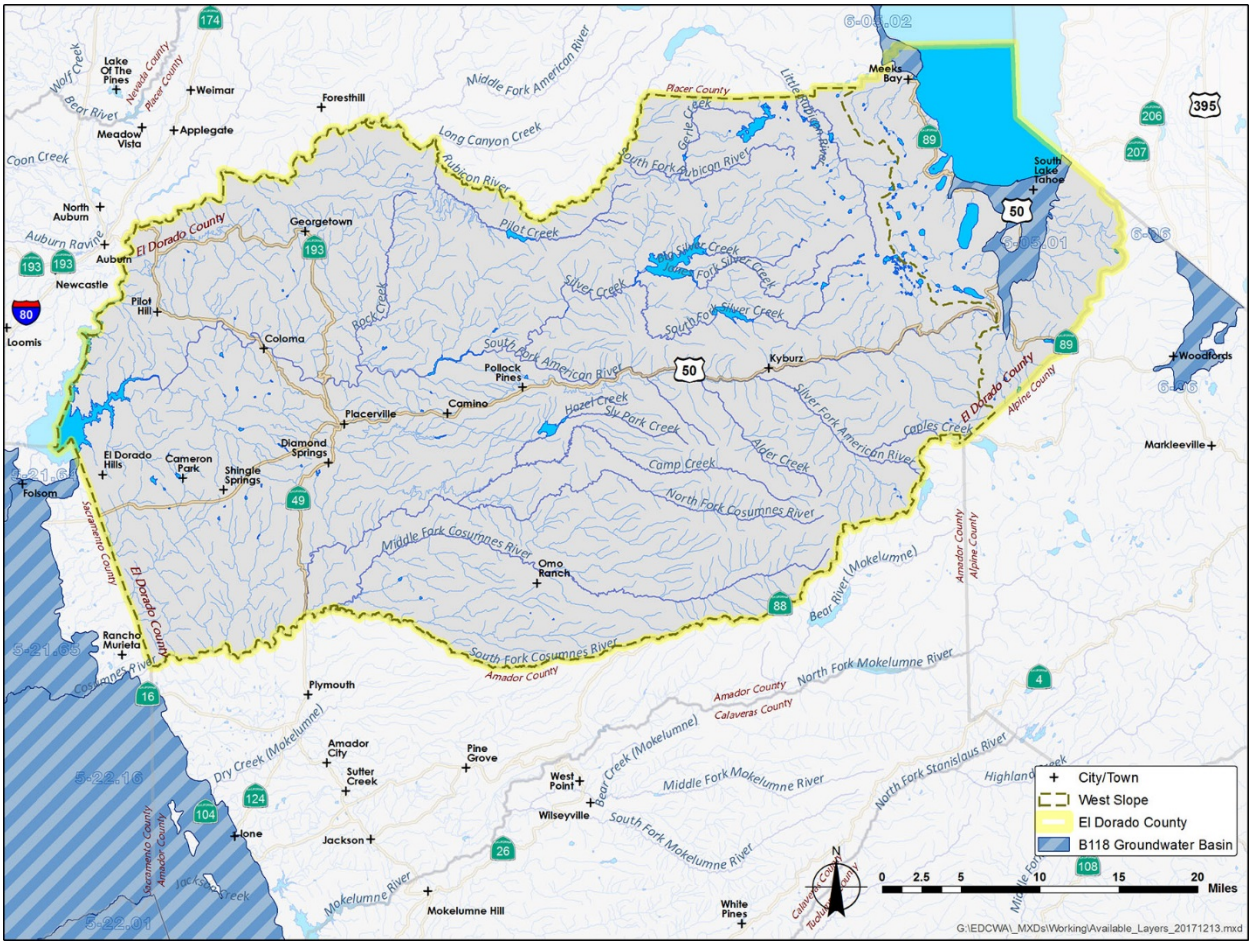
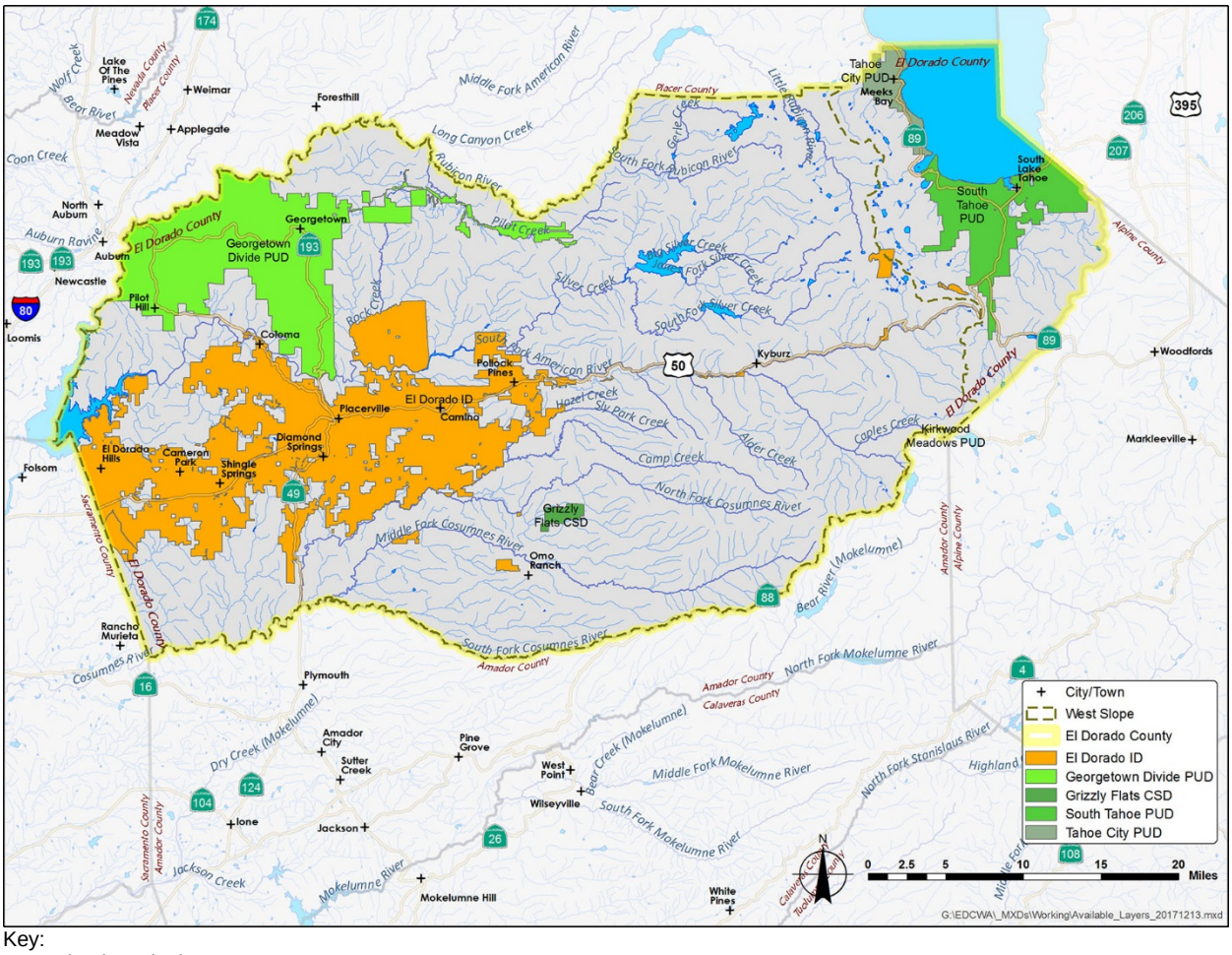


Figure 2-6. Groundwater Basins in El Dorado County, as Identified in Bulletin 118

2.7 WATER SUPPLIES

There are three main entities that supply water on the West Slope area: EID, Georgetown Divide Public Utility District (GDPUD), and Grizzly Flats Community Service District (GFCSD) (Figure 2-7). From 2012 to 2017, California experienced a severe drought that strained local water supplies. El Dorado County's water supplies depend on the snowpack in Sierra Nevada. California's variable climate, hydrology, projected population increase, and the occurrence of drought is expected to increase the water demands in El Dorado County. Therefore, securing El Dorado County's water supplies is of great importance in both the planning areas and headwaters.



Key:
ID = Irrigation District
PUD = Public Utility District
CSD = Community Service District

Figure 2-7. Water Purveyors in El Dorado County

2.7.1 El Dorado Irrigation District

EID is the main water supplier on the West Slope area, serving nearly 110,000 residents most of whom are located along the Highway 50 corridor from El Dorado Hills to Pollock Pines/Sly Park. Figure 2-7 shows the

EID service area boundary in El Dorado County. EID provides water supplies to meet municipal, industrial, and agricultural water demands, in addition to generating recycled water. EID has a Central Valley Project (CVP) water service contract; CVP is owned and operated by the U.S. Department of the Interior, Bureau of Reclamation. EID has appropriative water rights, including pre-1914 water rights to obtain water from the North and Middle Forks of the Cosumnes River, Clear Creek, Squaw Hollow Creek, Park Creek, Camp Creek, Slab Creek, Weber Creek, and the South Fork American River (EID 2013). In 1999, Pacific Gas & Electric Company transferred its power generation and consumptive use water rights to EID to divert water from the South Fork American River, its tributaries, and Echo Lake (EID 2013).

EID's service area is split between the South Fork American Watershed and the Upper Cosumnes Watershed, serving two different regions and separate drainage areas in El Dorado County. EID has shifted from providing water for agriculture to providing water for municipal, industrial and commercial uses in three service areas: El Dorado Hills Region, Western Region, and the Eastern Region (EID 2013). Potable water supplies are obtained through diversion points located at Sly Park Dam and Jenkinson Lake, El Dorado Hydroelectric Federal Energy Regulatory Commission Project 184 at Forebay Reservoir, and from Folsom Lake (EID 2013). Water obtained from Sly Park Dam and Jenkinson Lake is treated at Reservoir A Water Treatment Plant. Water from El Dorado Hydroelectric Federal Energy Regulatory Commission Project 184 at Forebay Reservoir is treated at Reservoir 1 Water Treatment Plant. El Dorado Hills Water Treatment Plant treats water diverted from Folsom Reservoir. EID's Strawberry and Outingdale satellite systems obtain water from the South Fork American River and from the Middle Fork Cosumnes River, respectively (EID 2013). Irrigation water provided by EID is diverted into the Crawford Ditch from the North Fork Cosumnes River (EID 2013). EID generates recycled water for the communities of El Dorado Hills and Cameron Park from two of the four wastewater treatment plants (WWTP) it operates: El Dorado Hills WWTP and the Deer Creek WWTP.

Combined, the water treatment systems have over 1,200 miles of pipeline, 27 miles of ditches, five treatment plants, 34 storage reservoirs with a combined capacity of over 100 million gallons, and 38 pump stations (EID 2016). Portions of the district with open ditch canals are affected by organic loading. However, EID's raw water quality and treatment processes could be impacted by stormwater, especially in Reservoir 1 (EID 2013).

2.7.2 Georgetown Divide Public Utility District

Formed in 1946, GDPUD provides water supplies in both the South Fork and North Fork American watersheds, in between the Middle and South Forks of the American River (GDPUD 2017). GDPUD has several pre-1914 water rights and four post-1914 appropriative water rights to obtain water from Pilot Creek, Mutton Canyon, Bacon Canyon, Deep Canyon, unnamed tributaries to Pilot Creek, Otter Creek, and Onion Creek (El Dorado LAFCO 2012). GDPUD's main water supply is from the Stumpy Meadows Reservoir which is a 20,000 acre-feet (AF) impoundment located on Pilot Creek (GDPUD 2017). Stumpy Meadows Reservoir is owned and operated by GDPUD. Water captured in the reservoir is transported through pipes and open ditch canals to Walton Lake Water Treatment Plant and distributed to the communities of Georgetown, Garden Valley, Kelsey, and Greenwood. Additionally, water from the Stumpy Meadows Reservoir is also transferred to the Auburn Lake Trails Water Treatment Plant where it is then distributed

to the communities of Auburn Lake Trails, Cool, and Pilot Hill (El Dorado LAFCO 2012). Overall, GDPUD serves rural residential communities, open space areas, and agricultural communities.

2.7.3 Grizzly Flats Community Service District

The GFCSD is located in the foothills of the Sierra Nevada, in the Upper Cosumnes Watershed. It was formed in 1987 by the County Board of Supervisors (GFCSD 2017). GFCSD has a pre-1914 water right to divert from North Canyon Creek and Big Canyon Creek in the North Fork Cosumnes River Basin (El Dorado LAFCO 2014). In addition, GFCSD holds Permits 20357 and 20358 from the State Water Board to divert water. Under Permit 20357, water can be diverted from an unnamed tributary to Steely Fork Cosumnes River (El Dorado LAFCO 2014). Under Permit 20358, water can be diverted from the North Canyon Creek and Big Canyon Creek (El Dorado LAFCO 2014); this is GFCSD's main water supply. Water obtained from these sources is transferred from the diversion points through Eagle Ditch to the raw water storage reservoir for eventual treatment at the District's water treatment facility. Once the water is treated, it is distributed through a gravity-driven system for domestic use. GFCSD also provides untreated water for fire protection. As the district relies on one raw water reservoir for its water supply, in dry years GFCSD can be vulnerable to deficiencies in its water supply (El Dorado LAFCO 2014).

2.7.4 Water Supplies and Demands

Table 2-4 shows water supplies from the three main water purveyors and the West Slope area demands they are used to meet. The West Slope area has a total firm annual yield supply of 81,484 AF. In 2012, a total of 58,489 AF of water was delivered; 43,391 AF for urban water use and 15,098 AF for agricultural water use. To meet expected urban and agricultural demands at projected 2030 and build-out conditions, additional water supplies would need to be acquired. Therefore, securing additional water supplies for the future is crucial.

Table 2-4. West Slope Area Water Supplies and Demands, considering State Mandated Urban Conservation and Firm Yield Supplies

		Urban (AF/yr)			Agricultural (AF/yr)			Total Demand (AF/yr)			Additional Water Supply Needed (AF/yr)	
	Firm Yield Supply	2012	2030	Build-Out	2012	2030	Build-Out	2012	2030	Build-Out	2030	Build-Out
EID	69,100	40,237	51,403	79,316	7,977	9,515	19,218	48,214	60,919	98,534	-	29,434
GDPUD	12,200	3,001	4,120	9,581	7,121	7,621	10,349	10,122	11,741	19,930	-	7,730
GFCSD Total	184	153	187	313	--	--	--	153	187	313	3	129
Other El Dorado County Areas	-	-	-	12,336	-	-	17,476	-	-	29,812	-	20,560
West Slope Total	**-**	**-**	**-**	***101,546***	**-**	**-**	***47,043***	**-**	**-**	***148,590***	***3***	***57,854***

Source: 2014. El Dorado County Water Agency. 2014 West Slope Update: Water Resources Development and Management Plan, pg xix
Notes:
- Water supplies and demands only include information for water purveyors located in the West Slope area of El Dorado County, and do not consider the residents that use own private wells to meet water demands.
- 25% of Other El Dorado County Areas urban demands and 100% of agricultural demands are included in the "Additional Water Supply Need."
- 2012 agricultural demands do not include demand supplied from ground water or riparian sources.
Key:
AF/yr = acre-feet per year
EID = El Dorado Irrigation District
GDPUD = Georgetown Divide Public Utility District
GFCSD = Grizzly Flats Community Service District

2.7.5 Groundwater Supplies

Although there are no groundwater basins on the West Slope as discussed in Section 2.6, some communities depend on shallow groundwater for their water supplies. According to the to the census data taken in 1990, El Dorado County had more than 11,650 domestic wells that served approximately 32,000 people (State Water Board and GAMA 2005). In the time frame from 1998 to 2000 an additional 1,067 domestic wells were built in El Dorado County (State Water Board and GAMA 2005).

2.8 WASTEWATER AND STORMWATER

Two solid waste collection facilities, six WWTPs, and several wastewater septic tanks are located in El Dorado County, as shown in Figure 2-8. The solid waste collection facilities (orange circular markers) are located in Diamond Springs and the City of South Lake Tahoe. Five of the WWTPs are located in the West Slope area and one is in City of South Lake Tahoe (all green circular markers); these include: El Dorado Hills Wastewater Treatment Plant (WWTP); Rancho Ponderosa Wastewater Treatment Facility (WWTF); Deer Creek WWTP; Hangtown Creek WWTP; Camino Heights WWTP; El Dorado Disposal Material Recovery Facility; South Lake Tahoe WWTP; and South Lake Tahoe Refuse/Transfer Station Materials Recovery Facility. The small yellow squares represent septic facilities in El Dorado County. Currently, not all septic facilities shown may be in operation.

Figure 2-9 shows the receiving waters into which wastewater or treated effluent is discharged. Figure 2-10 shows the mapped storm drain outfalls found throughout the 2010 census boundary for El Dorado Hills, Cameron Park, Shingle Springs, and the areas surrounding Placerville (up to the Smith Flat area). These outfalls are located in most of the populated areas in the West Slope area, and the locations assist the County with illicit discharge detection and elimination which is needed to meet County ordinances and MS4 NPDES permit requirements.

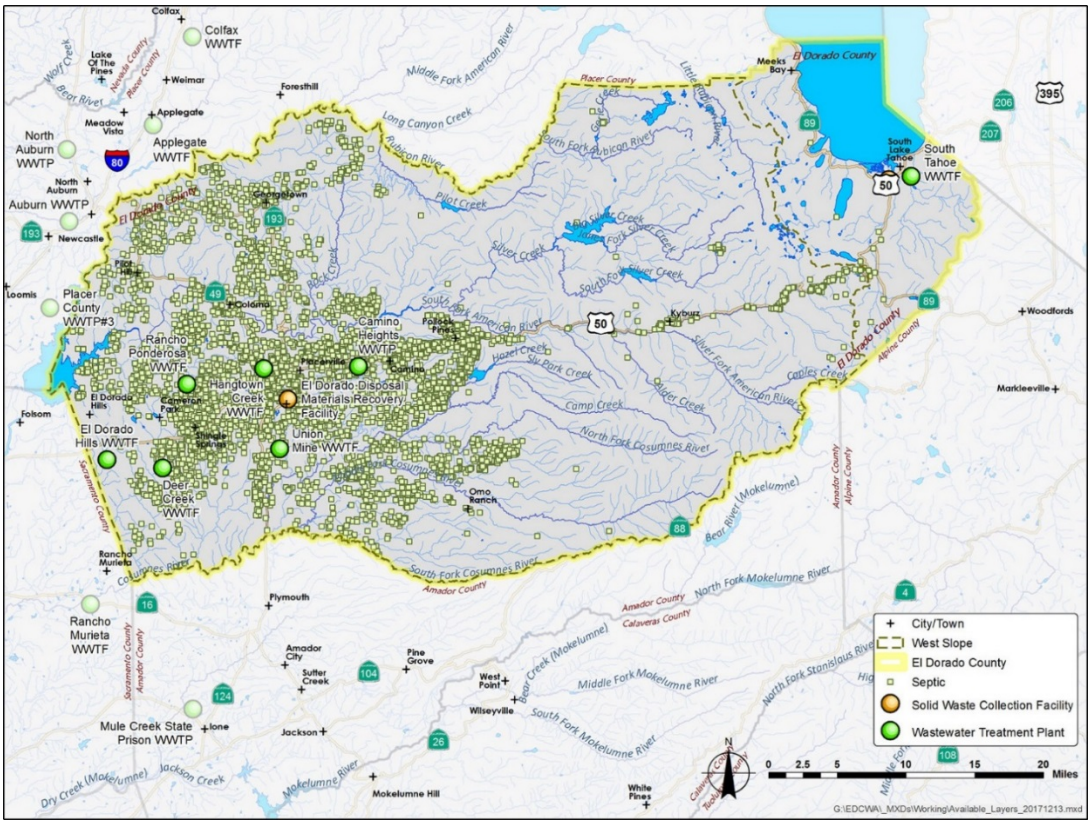


Figure 2-8. Solid Waste Collection Facilities, Wastewater Treatment Plants, and Wastewater Septic Tanks Located in El Dorado County

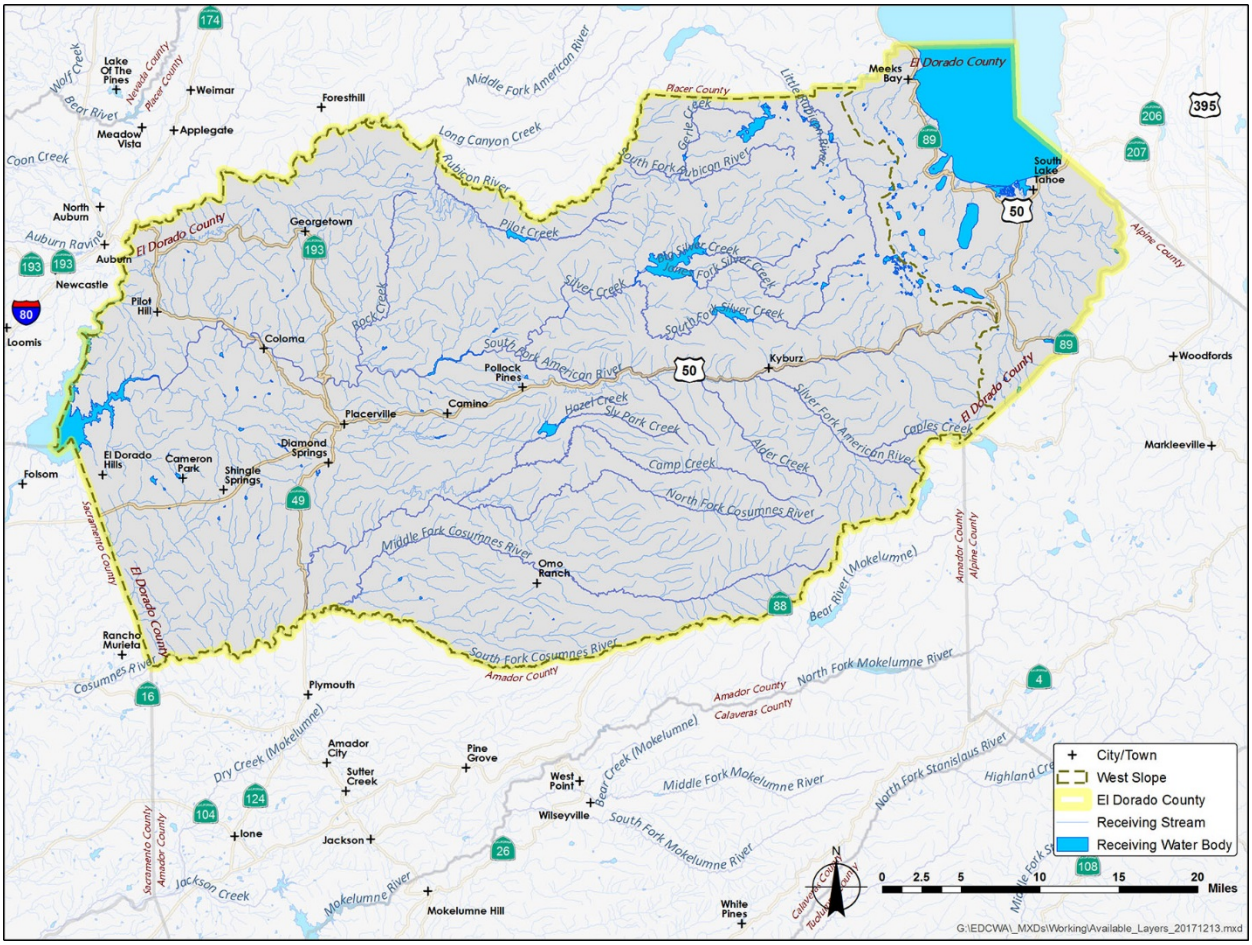


Figure 2-9. Receiving Waters in El Dorado County

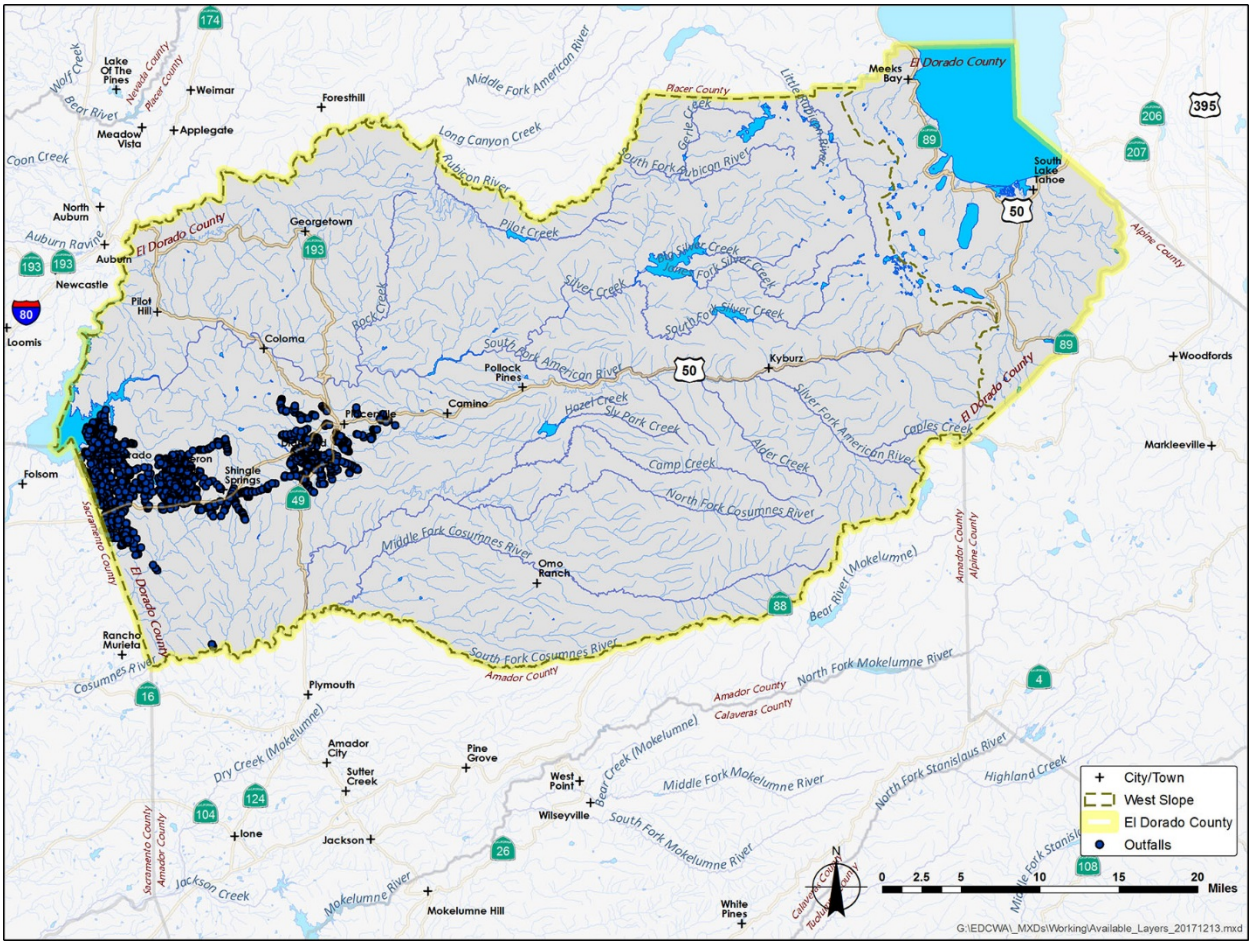


Figure 2-10. Storm Drain Outfalls Found Throughout 2010 Census Boundary for El Dorado Hills, Cameron Park, Shingle Springs, and Areas Surrounding City of Placerville (up to Smith Flat Area)

2.9 LAND USE

Figure 2-11 shows the various land uses in the West Slope area. The western side of the West Slope is covered by a combination of agricultural, public facilities, commercial, industrial, residential, tourist, and open space divisions. The eastern side of the West Slope area is mainly comprised of the Eldorado National Forest, a natural resource area.

The majority of the land use is natural resources use. Agricultural land in El Dorado County makes up approximately 58,000 acres for cultivation of apple orchards, vineyards, hay and pasture fields, nurseries, deciduous trees (fruits and nuts), Christmas Trees, pear orchards, and minor crops (County and AC 2016). The West Slope area also contains land under the Williamson Act. The Williamson Act is a law that provides property tax relief to owners of farmland and open-space land in exchange for a rolling term ten-year agreement that the land will not be developed or otherwise converted to another use. Contracts renew automatically every year unless the nonrenewal process is initiated. The Williamson Act states that a board or council by resolution shall adopt rules governing the administration of agricultural preserves. The rules

of each agricultural preserve specify the uses allowed. Generally, any commercial agricultural use will be permitted within any agricultural preserve. In addition, local governments may identify compatible uses permitted with a use permit. As of 2016, there are about 34,000 acres of Williamson Act Lands in El Dorado County (Figure 2-12).

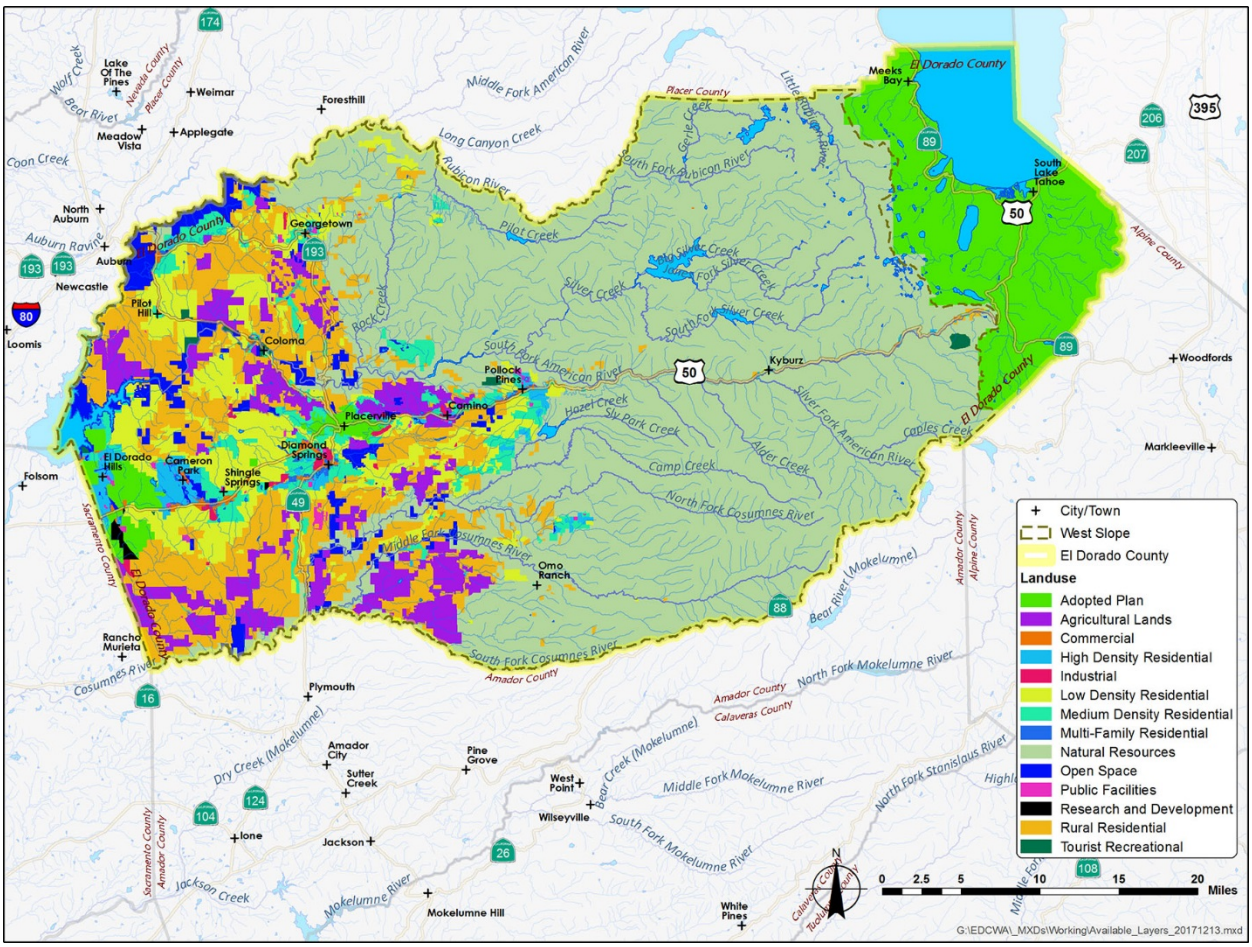


Figure 2-11. Land Use in the West Slope Area

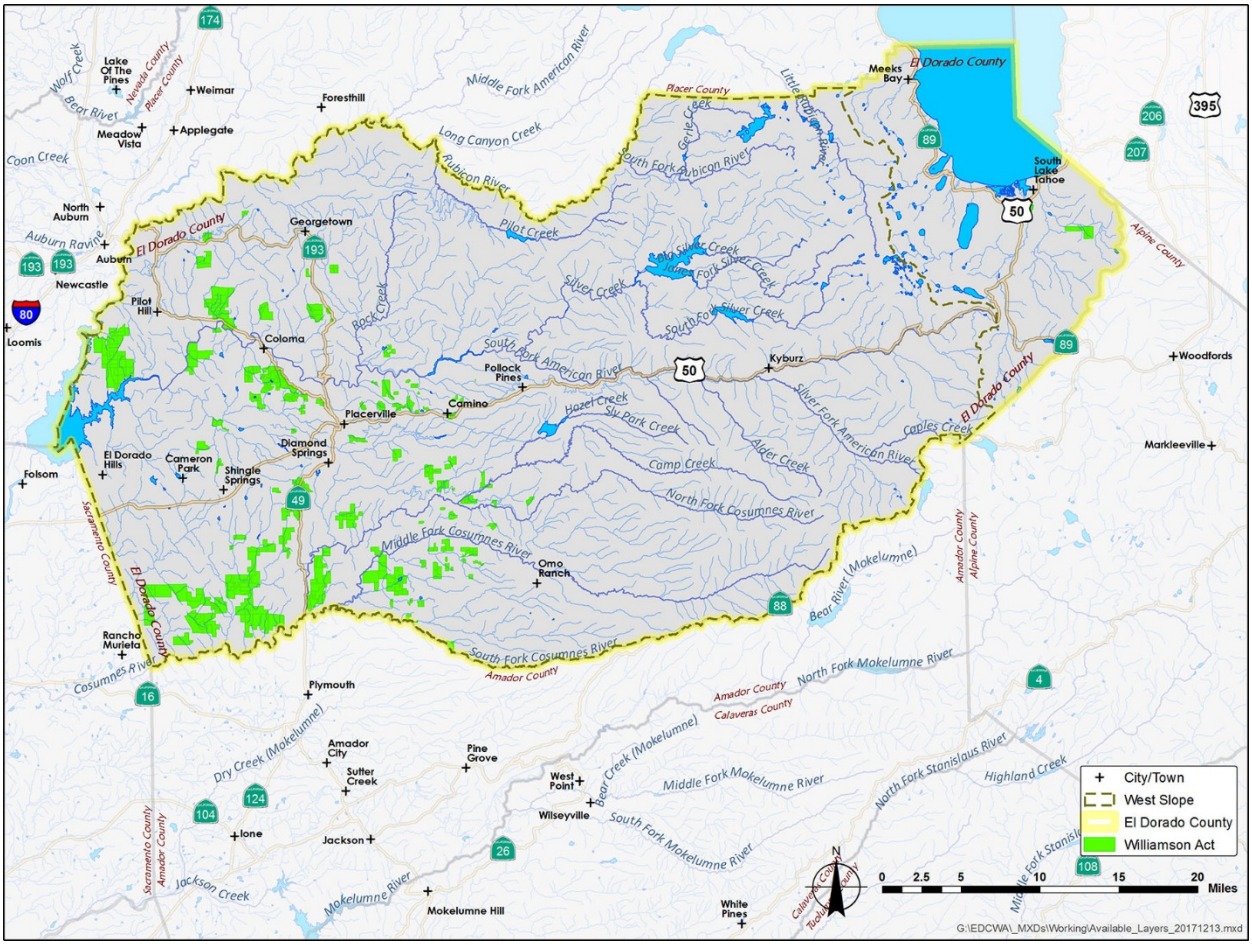


Figure 2-12. Williamson Act Lands in El Dorado County

2.10 NATIVE HABITATS

Diverse native habitats are found throughout El Dorado County. Grasslands in the region have vernal pools with the presence of spring-flowering annuals, whereas the lower foothills contain gabbro and serpentine soils that support endemic plants. Streams and rivers in El Dorado County are surrounded by riparian woodlands, shrubs, and herbs (CNPS 2017).The topography of the area results in high plant diversity, with plant assemblage adapted to its unique altitude and precipitation. The following summarizes unique habitats in each of the watersheds addressed by the West Slope SWRP.

2.10.1 Eldorado National Forest

Eldorado National Forest overlies the North Fork American Watershed, South Fork American Watershed, and Upper Cosumnes Watershed, covering about half of El Dorado County (Figure 2-3). This forest is located in the Sierra Nevada and hosts various vegetative types such as woodland, chaparral, mixed conifer, true fir, and subalpine (USDA 2017a). Commercial trees found in this forest further include: white fir, red fir, ponderosa pine, Jeffery pine, sugar pine, Douglas fir, and incense cedar (USDA 2017a).

2.10.2 Desolation Wilderness

The Desolation Wilderness is located on the North Fork American and South Fork American Watersheds, west of Lake Tahoe (Figure 2-3). This forest is 63,960 acres of valleys and lakes, sub-alpine and alpine forest, and granite peaks. This forest is managed jointly by Eldorado National Forest and the Lake Tahoe Basin Management Unit (USDA 2017b).

2.11 WATERSHED PROCESSES

El Dorado County has significant forest lands covering the headwater areas in high elevations where seasonal runoff from rainfall and snowmelt occur. Most of the precipitation in El Dorado County occurs from November to April. Precipitation, climate, and snowfall patterns differ throughout El Dorado County depending on elevation.

The amount of snowfall varies throughout El Dorado County. Placerville, located at a low elevation, occasionally receives 3 to 6 inches of snow during the winter. At a higher elevation, the community of Camino receives large quantities of snowfall. The areas closer to the Sierra Nevada experience the greatest amount of snowfall at higher frequency year round (El Dorado Weather 2017).

Areas at lower elevation experience much less rainfall than the areas found at higher elevation. On average per year, El Dorado Hills receives 25 inches of rain, Cameron Park 30 inches of rain, Shingle Springs 35 inches of rain, and Placerville approximately 39 inches of rain (El Dorado Weather 2017). The community of Camino, at a higher elevation, receives on average per year about 45 inches of rain (El Dorado Weather 2017). On the Western side of Sierra Nevada, 80 to 100 inches of rain occurs per year on average, whereas the Eastern side of the Sierra Nevada receives much less rainfall as a result of a rain shadow effect (El Dorado Weather 2017). When wind and moist air is uplifted towards the top of the mountainous terrain, it condenses and precipitates before it moves on to the other side of the mountain. Once the wind and air reach the other side, little moisture is left which creates an environment with little rainfall.

The amount of precipitation that ponds on the land surface and infiltrates to contribute to groundwater, or runs off the land surface as overland flow to surface water, depends on the land-surface slope. When all other factors are the same, precipitation infiltrates into the subsurface in areas characterized by low slope; precipitation runs off the land surface in areas characterized by high slope. Figure 2-13 shows locations in El Dorado County where the slope is less than 10°.

The Natural Resources Conservation Service's (NRCS) Hydrologic Soil Groups A, B, C, and D are found throughout El Dorado County (Figure 2-14). These Hydrologic Soil Groups, along with land use, management practices, and hydrologic conditions, determine a soil's associated runoff curve number which is used to estimate direct runoff from rainfall. The following describes the four soil types.

- Group A—Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10 percent clay and more than 90 percent sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam, or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments.

- Group B—Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments.

- Group C—Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20 percent and 40 percent clay and less than 50 percent sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures and may be placed in this group if they are well aggregated, or contain low bulk density, or contain greater than 35 percent rock fragments.

- Group D—Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clay textures.

Given the hydrology, soils, and land-surface slopes found throughout El Dorado County, some West Slope areas are susceptible to flood events that impact not only the welfare of the communities but also the water quality of local water supplies. Historically, Cameron Park has had drainage problems in which occasional flooding occurs, due to development being in an area at low elevation and surrounded by areas at high elevation. This means that runoff is generated and discharged into the local creeks and tributaries. High flow in the local water bodies contributes to occasional flooding. Flooding is exacerbated if culverts are undersized or blocked with debris and sediment. As an example, the Town of El Dorado has also experiences occasional flooding near Slate Creek, when there is an excess amount of runoff. Similarly, the Sly Park Portal Subdivision found in the community of Pollock Pines has experienced occasional flooding events. Figure 2-15 depicts some of the flood prone or “hotspot” areas found in El Dorado County in addition to locations that may have undersized culverts. These areas were identified by the County’s Department of Transportation staff and were based on their best knowledge of the area.

Cameron Park and with other communities are also found in close proximity to bodies of water that can be affected by the 500-year floodplain defined by FEMA (shown in Figure 2-16). The 500-year floodplain is also known as the National Flood Insurance Program floodplain. A 500-year flood has a 0.2 percent annual chance of occurring and is designated as a Moderate Flood Hazard Area. These areas are not in any immediate danger from flooding caused by overflowing rivers or hard rains, but are still at risk of flooding. In El Dorado County, there is fragmented mapping of the 500-year floodplain, and what is mapped closely follows some of the local rivers and streams. The floodplain information presented in Figure 2-16 is from the Standard Digital Flood Insurance Rate Map Database, obtained in August of 2017.

Urbanization and agriculture are the greatest threats to natural watershed processes in the West Slope. Under natural conditions, watershed processes would involve periodic overflows of rivers into natural flood basins. Forests allow rainfall to percolate into the ground and slowly drain to rivers and streams. There are various sources of watershed land use distributed throughout the West Slope, as shown in Figure 2-11. The West Slope contains a combination of agricultural, public facilities, commercial, industrial, residential, tourist, and open space divisions. Increasing levels of impervious cover create higher surface runoff

volumes, which flood waterbodies instead of draining gradually to local streams and rivers. Higher runoff also increases sedimentation in rivers which creates passage barriers in the water, adsorb toxic metals and other contaminants, and limits infiltration. Beneficial uses of local watershed are impaired by debris that accumulate from surface water runoff that contaminates waterbodies and negatively impacts ecosystem life. Creek bank erosion caused by increased volume of urban runoff generate additional impacts to aquatic habitat and lead to downstream erosion problems. Urbanization also impairs water quality, as surface runoff carries pollutants such as pesticides, pet waste, trash, and other elements into local waterbodies. Also, agricultural practices require large quantities of water which puts pressure on local water resources in the West Slope.

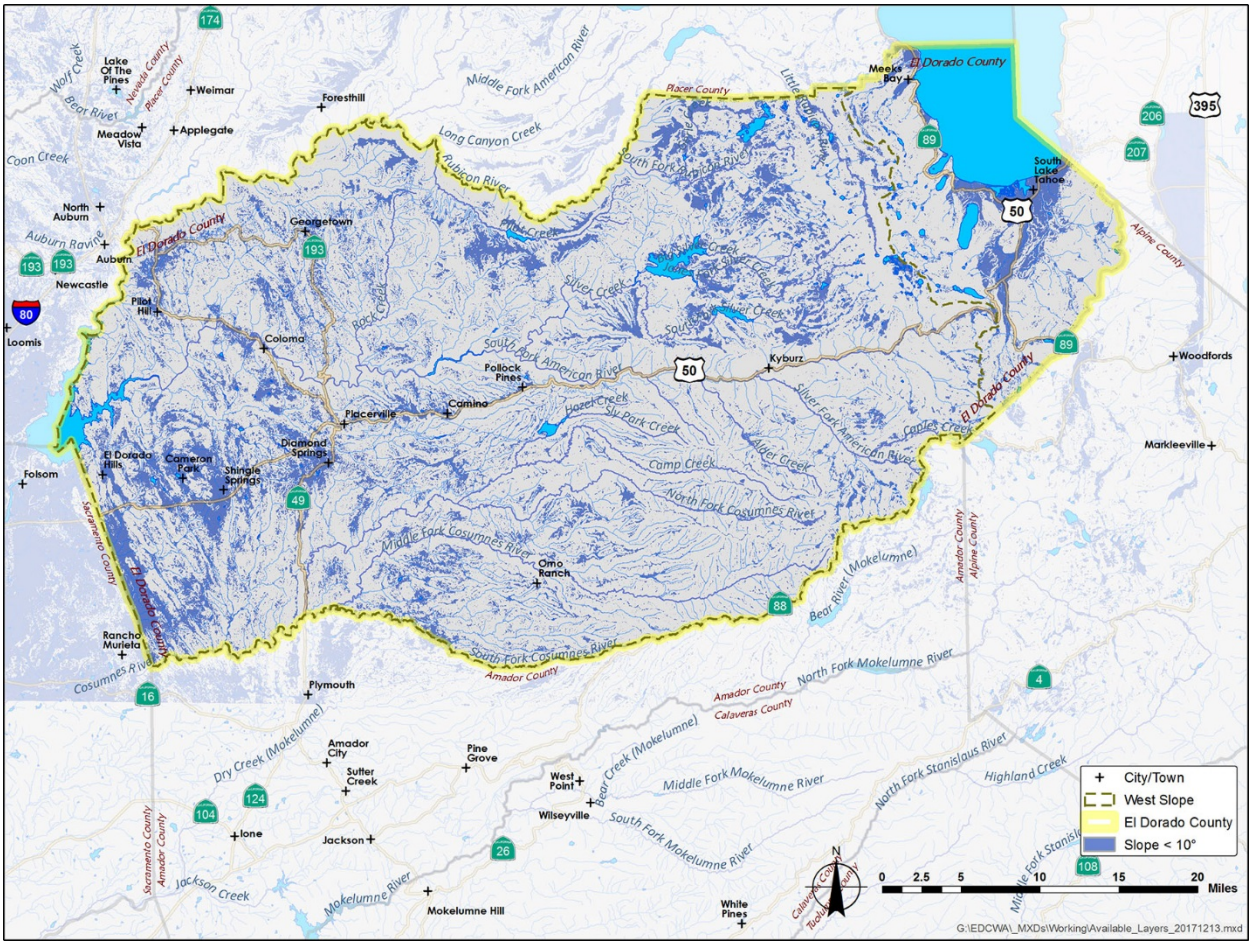


Figure 2-13. Areas in El Dorado County with a Surface Slope of Less Than 10˚

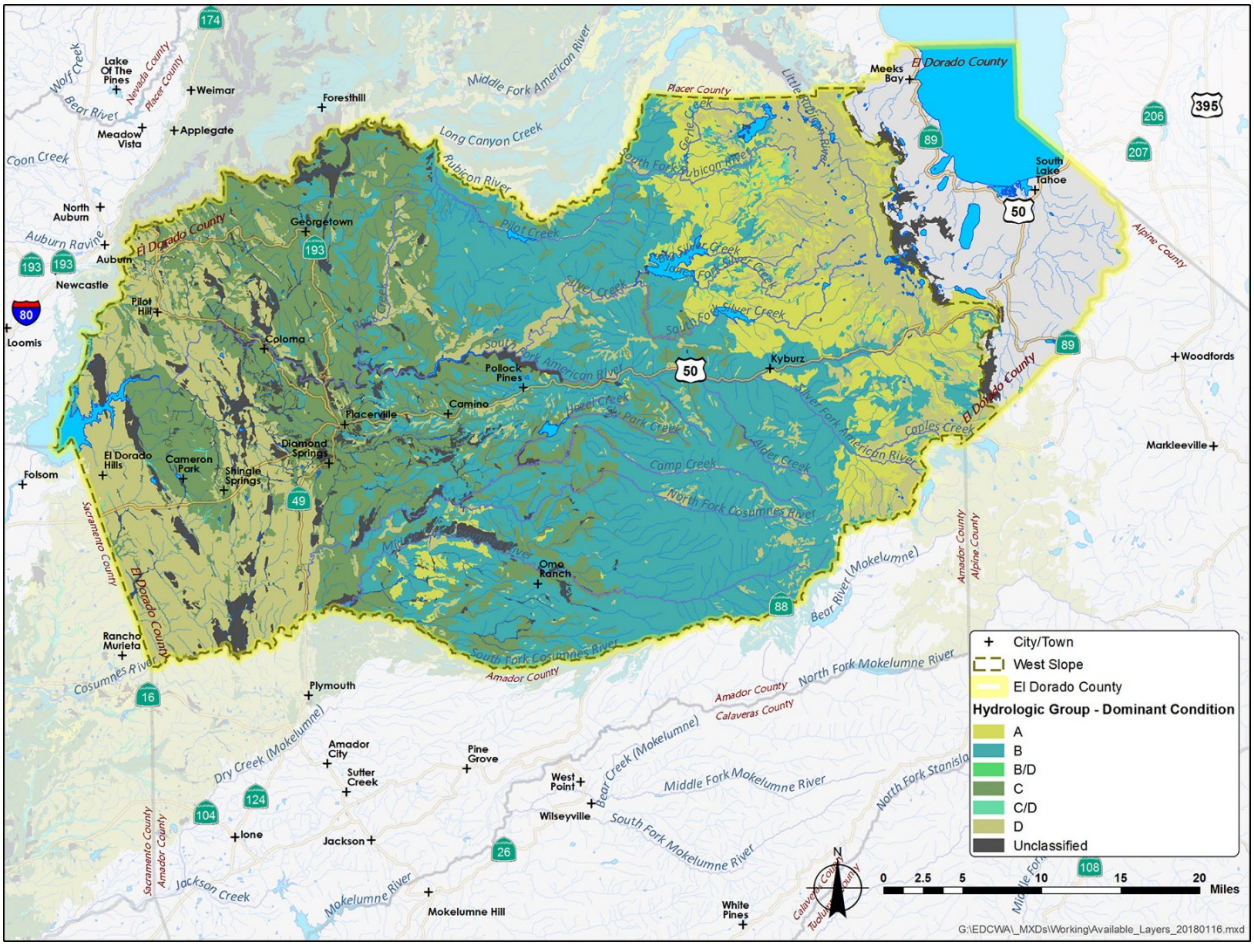


Figure 2-14. Natural Resource Conservation Service Hydrologic Soil Groups A, B, C, and D in El Dorado County

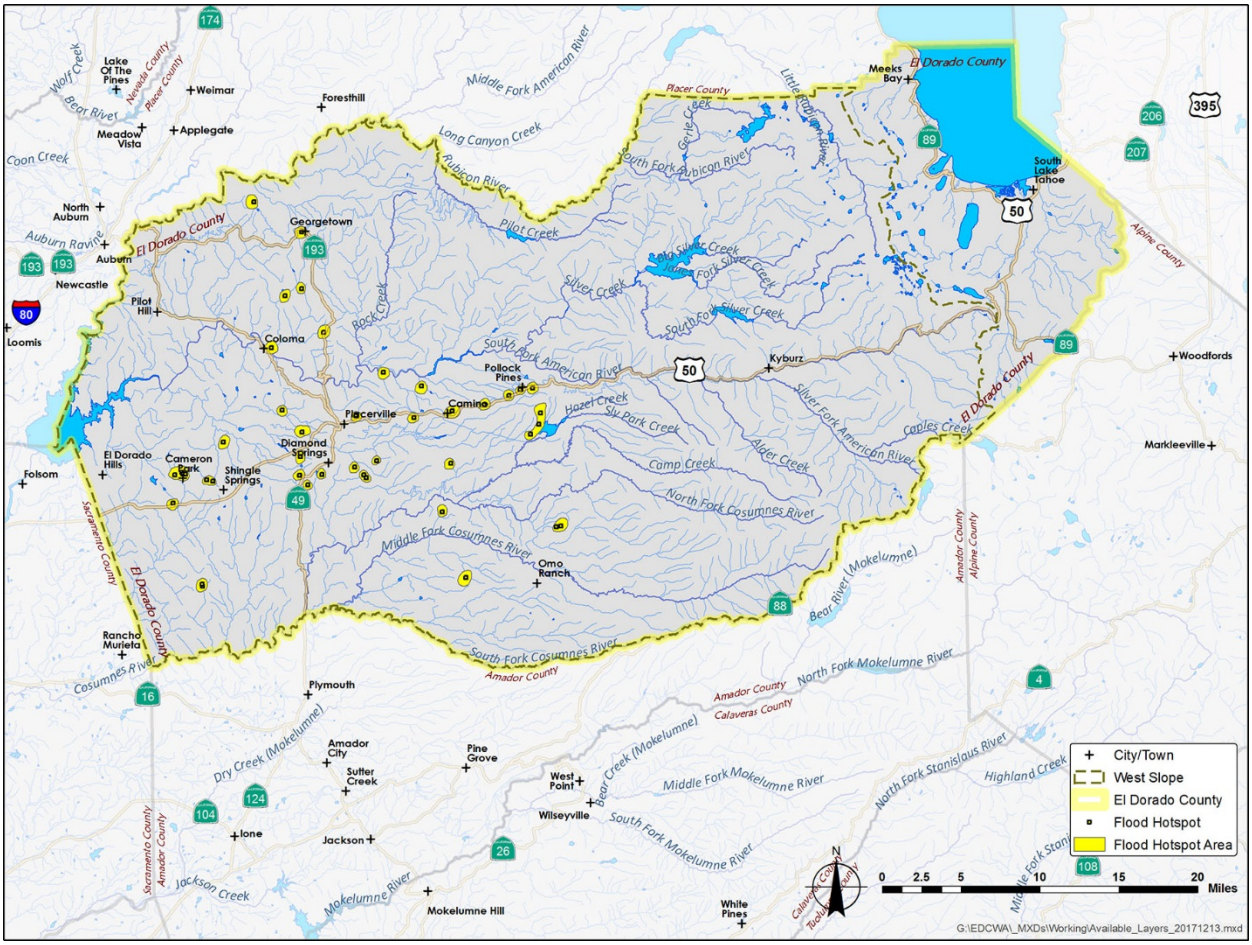
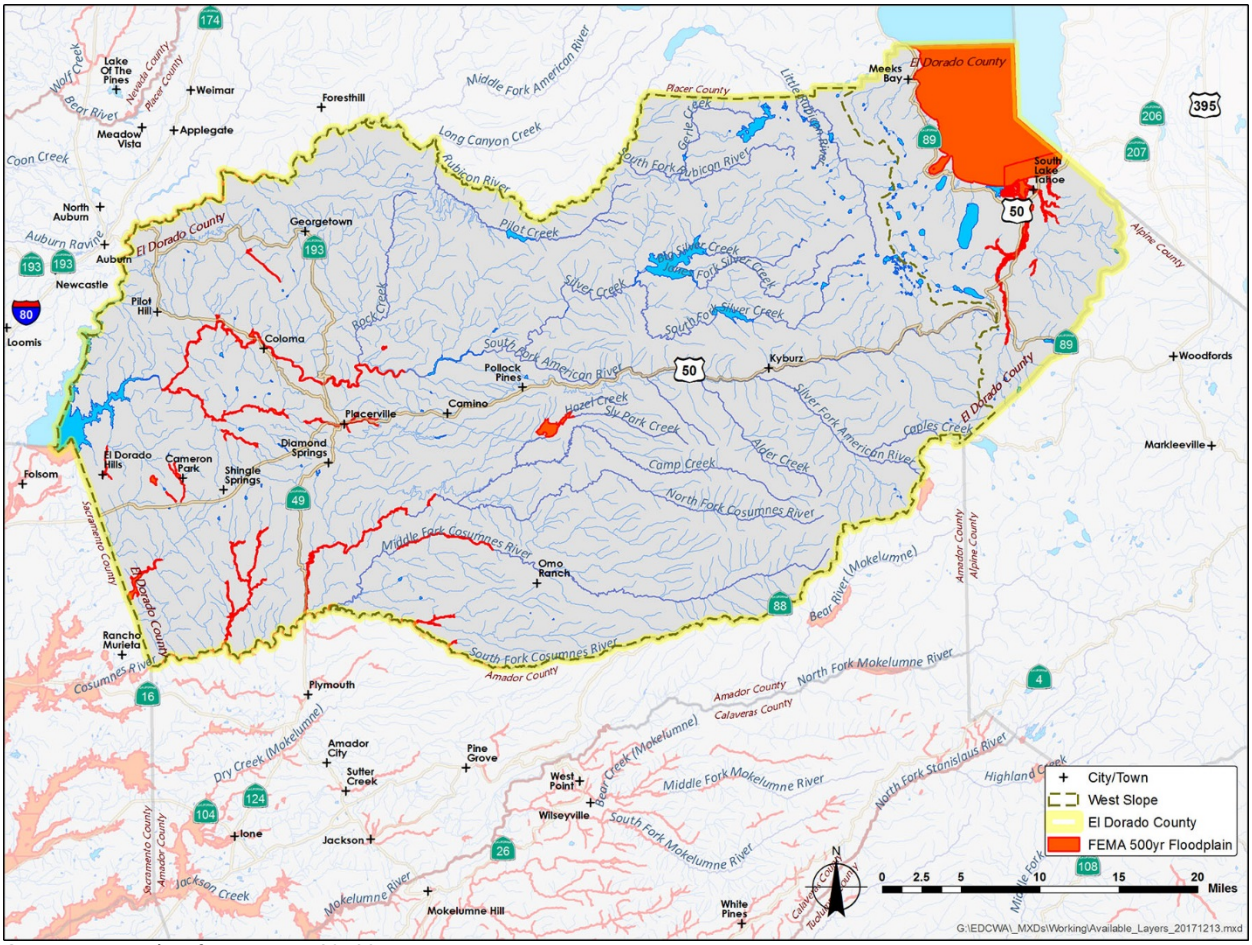


Figure 2-15. Observed Flood Prone Areas in El Dorado County



Source: FEMA data from August 29, 2017.
Key:
FEMA = Federal Emergency Management Agency

Figure 2-16. Federal Emergency Management Agency 500-year Floodplain

2.12 WATER QUALITY COMPLIANCE

Impairments to beneficial uses of surface waters found in the West Slope area were described in Section 2.5. The following sections discuss the sources that contribute to the pollution of stormwater and dry weather runoff that relate to those identified impairments. In addition, the TMDLs and NPDES compliance requirements in the West Slope area are discussed.

2.12.1 Contributors to Pollution Runoff

According to the Central Valley RWQCB, mercury is a constituent of concern since it impairs eight water bodies in the American River Watershed. This became evident after fish were observed to have high levels of methyl-mercury. The Central Valley RWQCB is developing TMDLs for the mercury found in the American River Watershed (described in Section 2.5). The TMDLs will ultimately specify the amount of mercury acceptable in the American River Watershed that are not anticipated to compromise the integrity of regional water supplies. The TMDLs will also specify the amount by which mercury contributing sources will have to

be reduced. In order to implement these TMDLs, the State Water Board must amend the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. In November 2010, the Central Valley RWQCB staff held meetings and worked with stakeholders to create a regulatory program that will reduce sources of inorganic mercury and methyl-mercury.

Inorganic mercury and methyl-mercury in the North Fork American Watershed have been attributed to tunnels and hydraulic mines from historical gold mining activities, discharges from municipalities, runoff from agriculture and the urban sector, and deposition from the air (Central Valley RWQCB 2010). Similarly, methyl-mercury from bacteria has been found in wetlands, lakes, streambeds, rivers, reservoir sediments, wastewater, urban runoff, and agricultural drainage. Historically, mercury was used in mines from the Coastal Range of California to aid in gold mining activities during the late 1800s. Since mercury was transported, some of it was lost and is now found in several of the rivers and streams in the West Slope area (Central Valley RWQCB 2010). Therefore, reducing the amounts of erosion and contaminated sediment that reach water bodies is extremely important to reducing the levels of mercury. In addition, limiting release of mercury from current sources into water bodies and the atmosphere will also decrease the levels of mercury present. Activities that control the creation of methyl-mercury may involve cleaning mines, reducing pollution from dredge tailings, preventing the discharge of contaminated sediment, stabilizing stream banks, aerating reservoirs to reduce methyl-mercury levels, managing contaminated sediment found in reservoirs, reducing discharges from urban areas, and reducing discharges from managed wetlands.

Urban development contributes to non-point source pollution surface runoff to local waterbodies. Impervious surfaces carry polluted stormwater to drains and local waterbodies during storm events rather than allowing for natural water percolation to soils. Activities that can control and reduce urban non-point source pollution include: LID or green infrastructure techniques that reduce the volume of urban runoff through infiltration basins, bio-retention systems, constructed wetlands; reducing or removing impervious surfaces and increasing vegetated land cover to allow for natural water drainage; require new construction and redevelopment to comply with erosion and sediment control requirements; and utilize preventative management strategies such as street sweeping and vactor trucks to reduce the amount of trash and debris to improve the quality of urban runoff.

Fires increase susceptibility of watersheds to erosion and can impair water supplies. Storms following fires are known to impact local water bodies, as burn areas are prone to greater rates of erosion, increasing the downstream accumulation of sediment in streams, rivers and reservoirs. The potential impacts from past, current and futures fires on the quantity and quality of runoff are considerable and may greatly impact water used for domestic, agricultural, and ecological water supplies. Post-fire management activities may involve removal of debris and dead trees from affected lands to reduce sources of pollution in runoff; and soil and slope stabilization through re-seeding native plants, replanting trees and shrubs to reduce flood risks.

2.12.2 TMDL and NPDES Compliance

Under CWA Section 402, construction sites that are a minimum of one acre, as well as municipal, industrial, and commercial facilities that discharge stormwater and/or wastewater to waters of the United States must obtain a permit from the NPDES program. A permit for such sites is required to assure that the effluent being discharged to water bodies is not deteriorating water quality. The goal of the NPDES program is to

control the discharge of pollutants into water bodies, which includes discharge from polluted stormwater runoff, point source pollution, and nonpoint source pollution.

The West Slope area is currently not subject to Areas of Special Biological Significance or TMDL monitoring and none of the pollutants listed in the CWA Section 303(d) List for the West Slope (see Section 2.5) identified urban runoff as the source, therefore, 303(d) monitoring for the Phase II MS4 Permit is not required. Instead, the County must develop a program to implement the Phase II MS4 permit requirements and demonstrate compliance through an annual report submittal. Although there is room for program expansion and enhancements to improve the County's stormwater program, the County is currently in compliance with its Phase II MS4 Permit on the West Slope.

The West Slope SWRP will support efforts to implement applicable NPDES permits, waste discharge requirements (WDR), Areas of Special Biological Significance Compliance Plans (State Water Board Resolution 2012-0012), and/or conditional waivers issued by the State Water Board and/or RWQCBs (Water Code Section 10562, subds. (b)(5) & (6)). A municipal NPDES permit currently exists to address the stormwater/urban water runoff discharges found in El Dorado County, Placer County, and the City of South Lake Tahoe within the Lake Tahoe Hydrologic Unit (Lahontan RWQCB 2017). The Monitoring and Reporting Program includes provisions for the implementation of TMDLs, if applicable, which prescribe requirements and schedules for permittees to manage discharges that may cause or contribute to violations of water quality standards. For the West Slope area, construction activities are subject to the Stormwater Program Guidelines outlined by the State Water Board under the 2009-0009 Division of Water Quality (DWQ) Construction General Permit (State Water Board 2017b), local ordinances, and the West Slope SWMP.

Additionally, the County is subject to the West Slope Phase II MS4 NPDES Permit which is overseen by the Central Valley RWQCB (EDCWA 2017a). The West Slope MS4 NPDES Permit went into effect on July 1, 2013 for a term of five years, aiming to improve the water quality of the surface water resources located in urban areas of high priority (EDCWA 2017a).

In the spring of 2015, the County Board of Supervisors adopted Chapter 8.79, Stormwater Quality Ordinance No. 5022, replacing Ordinance No. 4992. The new ordinance applies to the Lake Tahoe Basin and the unincorporated region of the West Slope area in which it is meant to provide legal authority to protect the safety, health, and welfare of the communities covered. The ordinance also seeks to protect the water quality of water bodies found in El Dorado County by reducing polluted stormwater runoff and by limiting non-storm drainage in storm drainage systems. Under the new ordinance, the use of BMPs is encouraged to reduce the impact of polluted stormwater runoff from, but not limited to, development of new and upgraded residential, commercial, industrial and public infrastructure.

2.13 PROJECT-SPECIFIC REGULATORY CHALLENGES AND INTEGRATED BENEFITS

Projects are to be implemented for a multitude of reasons. Occasionally, motivation for a project is regulatory in nature while at other times a project is built to benefit a population. It is necessary to

understand the context of watershed processes before recommending projects for implementation. The necessity of project implementation for each of the three components is described below:

- **Surface Water Storage:** Water supply in California is becoming increasingly unreliable. Historic drought has been followed by historic rainfall. Surface water storage projects have the ability to dampen the effect of increasingly variable hydrology. Planning and construction challenges of implementing a surface water storage project include land acquisition, public opinion, water rights issues, and a large capital cost, however the additional water supply often warrants consideration of implementing a project.

- **Watershed Management:** The forest structure and species composition of the Eldorado National Forest within the El Dorado County has changed over the last century largely due to human activity. Historically low to moderate intensity fires were a frequent occurrence in forested areas. With the onset of more human activities, such as agricultural practices and fire suppression, forests began to develop higher tree density and more fuel loads making it more susceptible to severe fires. Additionally, large areas of forest have been dying due to prolonged drought conditions and bark beetle outbreaks which provides more fuel for future fire outbreaks. Severe wildfires have been shown to increase stormwater runoff and sediment generation, thus affecting stormwater resources, especially when downstream receiving waters are impaired (SCCWRP 2014).

- **Stormwater Management:** Stormwater has become heavily regulated in the last 20 years. Many of the new regulations are subject to revisions or further development, and it can be difficult to navigate the laws, permits, and policies that define the current regulatory environment. In addition, the State's climate has become increasingly unpredictable. Flood risk mitigation, climate change, and other safety programs as they relate protection of health and property, are discussed as drivers for project implementation.

The following sections discuss the various motivations surrounding why multi-benefit projects should be implemented throughout the West Slope SWRP. The sections that follow discuss how the implementation of such multi-benefit projects promote integrated water management benefits.

2.13.1 Integrated Water Management Planning

Stormwater management is currently going through a change in California due to the increased awareness of stormwater-related environmental challenges, and opportunities to be part of long-term solutions to water conflict and scarcity statewide. While early regulatory efforts focused on controlling pollutants and implementing BMPs, current regulatory decisions also emphasize holistic strategies that will result in multiple community benefits while concurrently managing pollution. With the focus on stormwater as a resource, newer low impact development and green infrastructure techniques are now capitalizing on opportunities to capture stormwater runoff and use it for local landscape and agricultural irrigation, and groundwater recharge. Allowing stormwater to infiltrate into the ground and contribute to river flows are additional ways to promote integrated water management. Figure 2-17 presents some of the key benefits to using this holistic integrated water management approach.

SB 985 amended then-existing legislative requirements for stormwater resource planning to incentivize and promote stormwater resource planning efforts that include both wet and dry weather flow management as well as outline the requirements for a stormwater resource plan. The SWRP Partners have elected to take this definition one step further and incorporate surface water storage and watershed management into the West Slope SWRP. Potential benefits of this approach are discussed below.

Over the past decade, the subject of climate change has continued to be a topic of much discussion in the water community statewide due to the potential implications of changes in hydrologic conditions, the considerable uncertainty about how to identify specific impacts to a given region, and the feasibility of strategies to mitigate any such effects. Despite the inherent uncertainty in projecting water supply conditions several decades into the future, it has become increasingly clear that water resource planning can no longer solely rely on calculated estimates of average or "normal" weather conditions from the past century.

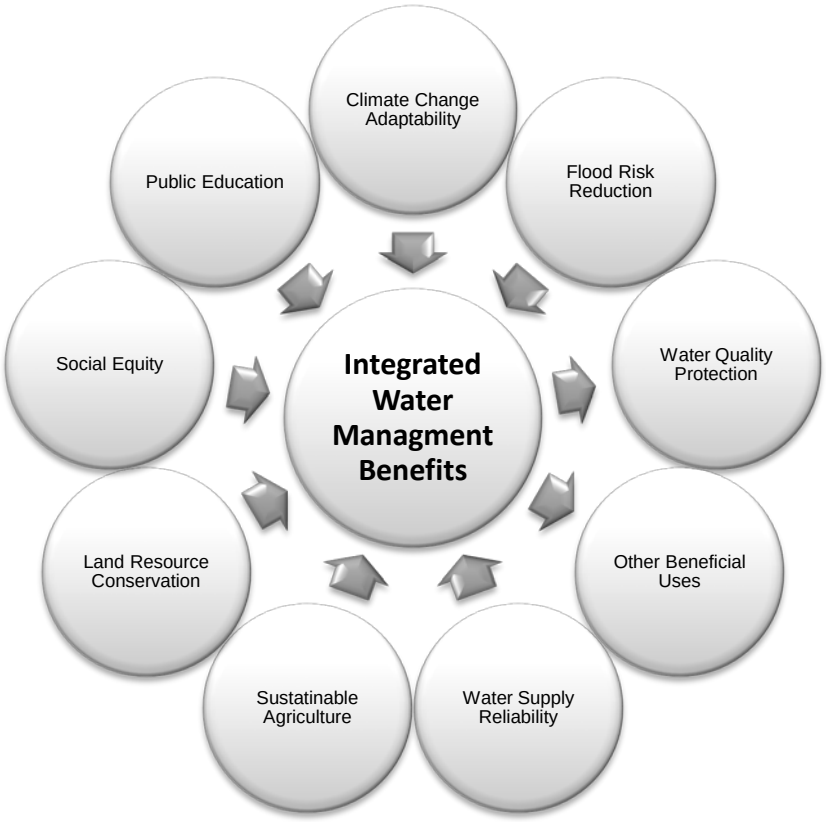


Figure 2-17. Relevant Benefits of Holistic Integrated Water Management Approach

2.13.1.1 Climate Change Adaptability

Given the long range nature of this West Slope SWRP, it is prudent to consider projects that help assure the water resource management systems that serve the West Slope are more resilient to extreme weather

conditions and can provide sufficient water to serve anticipated land uses. Development of the *2014 CABY IRWMP* has provided, and likely will continue to provide, many benefits to the West Slope area through the identification and implementation of strategies and multipurpose projects that can make the region more resilient to climate extremes. However, the CABY region shares many similar attributes, including geologic conditions that provide only limited opportunities for groundwater storage. As a result, the West Slope area and the Mountain Counties (Alpine, Amador, Calaveras, El Dorado, Madera, Mariposa, Nevada, Placer, Plumas, Sierra, Tuolumne and Yuba Counties) have little opportunity to improve water supply reliability via conjunctive use programs directly in their regions, although several IRWM regions in the Sacramento River Valley have significant groundwater storage opportunities. To expand the benefits of IRWM planning, it may be necessary to seek inter-regional solutions that reach outside of the existing IRWM planning boundaries to enhance supply reliability. Further, although it is clear that the *2014 CABY IRWMP* provides many useful examples of multi-benefit approaches to water supply enhancements, the Agency has the continuing obligation to conduct long range water supply planning for El Dorado County as envisioned by its legislative Act.

As noted earlier, hydrologic conditions may change in the future which may create adverse impacts to water supply reliability on the West Slope over the long term. The combination of rising temperatures, a smaller snowpack, and more frequent and potentially longer droughts could reduce the availability of both surface water and groundwater supplies, as more water runs off or evaporates and less infiltrates into the ground. Reduced infiltration could reduce the reliability of groundwater wells drilled in fractured rock, which are common in the West Slope area. These possible changes in future hydrologic conditions may contribute to (1) an increase in water demands, (2) changes in runoff patterns, (3) reduced availability of both surface and groundwater supplies, and (4) an increased frequency of drought conditions on the West Slope of El Dorado County and throughout the state of California. Potential shifts in future hydrologic conditions will require major adjustments in the conservation and management of water supplies in what could become a more extreme mix of wetter and drier water years.

Current water delivery systems will likely be impacted by the loss of natural snowpack storage and the resultant changes in runoff timing. The need to preserve flood storage space in multipurpose reservoirs could limit the availability of storage for water supply purposes, as variable weather patterns may complicate reservoir management. In some years, such as in 2014 with challenges by the U.S Department of the Interior, Bureau of Reclamation (Reclamation) to provide full contract deliveries to EID, the result is and will continue to be insufficient storage to meet projected dry year demands. If groundwater wells become less reliable, the West Slope area would become even more dependent on surface storage.

The concept that future weather conditions could be more extreme must be tempered with the knowledge that even over the past century "normal" years were rare: variability in weather has always been the norm. Although planning for an average year will always be part of the task, more serious extremes must also be addressed to identify available options.

2.13.1.2 Flood Risk Reduction

DWR and USACE developed *California's Flood Future: Recommendations for Managing the State's Flood Risk* which contains the first comprehensive look at flooding throughout the State and presents recommendations to improve flood management in California (DWR and USACE 2013). Research used to

develop this document included soliciting information from local, State, and Federal agencies. More than 140 public agencies responsible for flood management provided information used to describe problems facing flood management and develop recommended solutions.

Flooding varies according to the complexities and diversity of the physical features of the landscape, weather, climate, and human manipulations of the land (e.g., regional demographic differences, in part due to historical settlement patterns, land use regulations, and economic drivers). In addition, flood warning times vary across the State, with longer lead times for slow-rise flooding and often little to no lead time for flash flooding.

Flooding can affect California at different times of the year and in different forms from stormwater flooding in urban areas to alluvial fan flooding at the base of hillsides. Rivers and streams flood in different ways from fast-moving flash floods in Southern California to slow-rise deep flooding in the Central Valley.

2.13.1.3 Water Supply Reliability

The quantity, quality, and availability of water resources are vital to natural processes and human activities in a watershed or region. Wise and prudent planning combined with management of surface and available groundwater resources is fundamental to providing a substantial economic base for the residents of the region. Understanding the magnitude of future water demands, and any potential changes to existing water demands, allows managers to make informed recommendations and decisions that will meet and manage water demands into the future. How growth is accommodated and land use planning decisions are made by cities and counties have important implications on future water use (CABY 2014).

2.13.1.4 Water Quality Protection

Water is used in a variety of ways and as such, the quality of water is an important aspect for managing and developing local water resources. Water quality is directly linked to the ecological, social, and economic health of the community. Poor water quality impacts the health of local aquatic species, increases human health concerns from drinking and exposure, and high concentrations of pollutants result in increased plant stress and negative impacts on crop production. Understanding the causes of diminished water quality and developing approaches to identify and mitigate these activities allow current and future planned developments and projects to take a proactive approach to mitigate impacts to the health of local water bodies. In an effort to address causes and concerns of water quality, as discussed in Section 2.12, the implementation of the West Slope SWRP will work to identify and reduce sources of pollution and comply with applicable TMDLs and NPDES permits.

2.13.1.5 Sustainable Agriculture

Food and agriculture are the largest consumers of water in the West Slope. Roughly half of water used for agricultural irrigation is consumed as a result of evaporation, incorporation into crops and transpiration from crops. The other half recharges groundwater or surface flows or is lost in unproductive evaporation. Sustainable agricultural practices include rotating crops, planting cover crops, applying pest management practices, integrating livestock with crops and practices agroforestry practices. Sustainable agriculture

means producing food without compromising future generations' ability to do the same. Protecting the environment, public, and animal welfare is an important aspect to achieving sustainable agriculture.

2.13.1.6 Land Resource Conservation

As natural land is being converted to developed land on the West Slope, there is a growing concern over the amount and quality of the natural land that remains. Some people are concerned that all of the natural land is being destroyed, and in recent years, there has been an increasing push to protect natural land.

Land conservation is the process of protecting natural land and returning developed land to its natural state. Some land has only had minor disturbances while other land has been completely destroyed, so a variety of techniques are needed to carry out land conservation. Some of the most common techniques include preservation, restoration, remediation, and mitigation.

2.13.1.7 Social Equity

Water plays a vital role in many aspects of everyday life both directly (e.g., human consumption of water) and indirectly (e.g., improving natural systems). As such, there are a multitude of ways that water can impact the welfare of people and advance social equity. Projects to be implemented through the development of the West Slope SWRP will aim to promote equal social welfare.

2.13.1.8 Public Education

An important purpose of environmental education is to teach people about pollution in order to protect the environment. Those involved in environmental education often teach individuals and groups pertinent information about subjects, such as biology, geology, meteorology, and hydrology, in order to better analyze the various sides of an issue through critical thinking. Educators use a wide variety of materials and methods to investigate the environment in the context of economics, politics, popular culture, and social equity as well as natural systems and processes to better educate the public. The West Slope SWRP will support this existing effort in the West Slope area by supporting public demonstrations projects and programs that the public may learn from. Such programs and demonstration projects will cover topics on pollution control as well as the mitigation and prevention of environmental issues found in communities.

Environmental education can help:

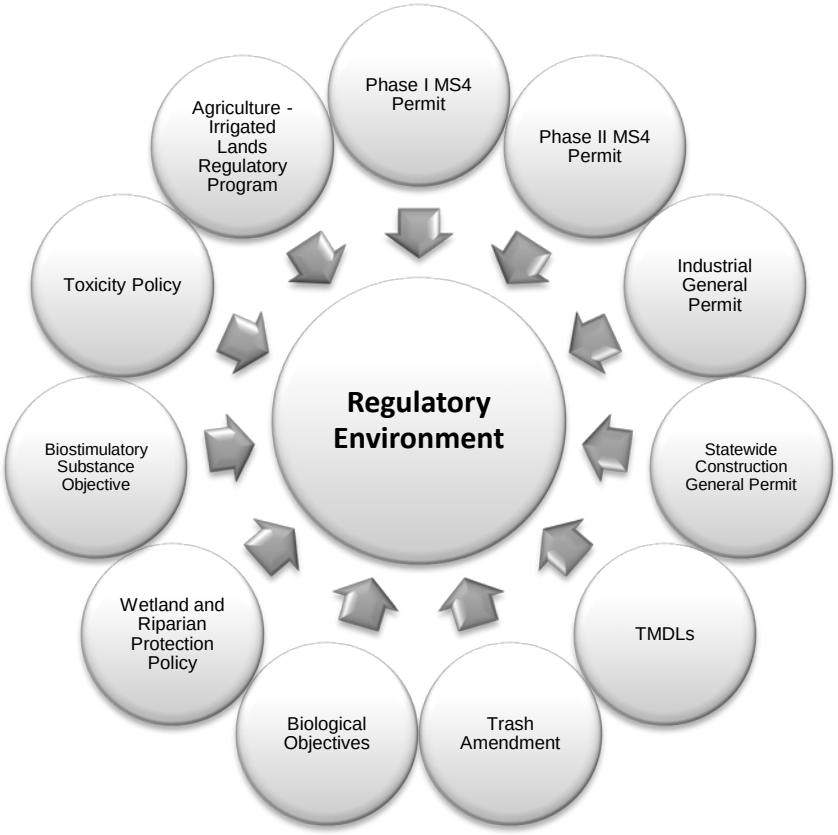
- Protect human health
- Promote sustainable development (environmental protection and pollution prevention in conjunction with economic development)
- Create interest in a wide variety of jobs in various environmental fields
- Enhance learning in all areas of education Reinforce the desire to protect natural resources for future generations

2.13.1.9 Other Beneficial Uses

Integrated water management also provides opportunities to progress other beneficial uses. For example, situated in the Sierra Nevada, the West Slope area offers a wide range of water-based tourism, sport, leisure, and recreational opportunities. These recreational opportunities and public spaces provide educational and stewardship opportunities which allow communities and visitors to connect with their local water resources.

2.13.2 Regulatory Environment and Drivers

The SWRP Partners have the authority and obligation to comply with regulatory conditions. Some of these requirements are outlined in Figure 2-18 and described below.



Key:
MS4 = Municipal Separate Storm Sewer
TMDL = Total Maximum Daily Load

Figure 2-18. Typical Regulations and Drivers

2.13.2.1 Phases I and II MS4 Permits

While early regulatory efforts historically focused on controlling pollutants and implementing BMPs, current regulatory decisions also emphasize holistic strategies that will result in multiple benefits while concurrently managing pollution. With the focus on stormwater as a resource, newer LID and green infrastructure

techniques are now capitalizing on opportunities to capture stormwater runoff for local landscape needs, agricultural uses, and groundwater recharge.

MS4 Permits are the vehicle by which actions are taken to address the issues described above. These permits have evolved to:

- Create a new, watershed-focused process for compliance involving SWMPs and/or implementation of NPDES Permit requirements.
- Encourage use of green infrastructure, LID, and multi-benefit regional projects.
- Place a new focus on stormwater as water supply with water quality compliance achieved through infiltration.
- Include in SWMPs BMPs, multi-benefit regional projects to retain stormwater runoff, and a detailed analysis (known as a Reasonable Assurance Analysis) to illustrate how projects would comply with TMDL limits.
- Achieve compliance through a combination of structural and non-structural control measures (e.g., retention basins, street sweeping, catch basins, etc.).

As discussed in Section 2.12.2, the County is currently in compliance with its Phase II MS4 Permit on the West Slope and implementation of the West Slope SWRP will support efforts to comply with applicable NPDES permits, WDRs, Areas of Special Biological Significance Compliance Plans (State Water Board Resolution 2012-0012), and/or conditional waivers issued by the State Water Board and/or RWQCBs (Water Code Section 10562, subds. (b)(5) & (6)).

2.13.2.2 Industrial General Permit

The Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ (Industrial General Permit or IGP) implements the federally required stormwater regulations in California for stormwater associated with industrial activities discharging to waters of the United States (State Water Board 2014). The IGP regulates discharges associated with 10 federally-defined categories of industrial activities. The IGP requires the implementation of BMPs, a site-specific Storm Water Pollution Prevention Plan (SWPPP), and monitoring plan. The IGP also includes criteria for demonstrating no exposure of industrial activities or materials to stormwater, and no discharges to waters of the United States.

There are currently 42 active industrial sites with IGP coverage in the West Slope area. Compliance with the IGP presents a number of challenges and issues for industrial facilities. These include, but are not limited to, the following:

- Meeting Numeric Action Levels
- Mandates to incorporate Advanced BMPs (structural treatment controls) at facilities that are in Level 2 status

- Incorporation of TMDLs into the IGP during the Spring of 2017, which will cause additional monitoring and advanced BMP implementation
- Notices of intent to sue are being issued by NGOs in counties throughout California

2.13.2.3 Statewide Construction General Permit

Dischargers with projects that either disturb one or more acres of soil, or that disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ (CGP) for the West Slope (State Water Board 2009). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development of a SWPPP by a certified Qualified SWPPP Developer.

CGP compliance presents a number of challenges and issues for construction sites including, but not limited to, the following:

- Meeting Numeric Action Levels
- Performing inspections and monitoring
- Demonstrating the site can submit a notice of termination
- Preparing annual reports
- Addressing notice of violations and cleanup and abatement orders
- Addressing citizen law suits

2.13.2.4 TMDLs

CWA Section 303(d) requires that the states make a list of waters that are not attaining standards after technology-based limits are put into place. For waters on this list (and where the USEPA administrator deems they are appropriate), states are to develop TMDLs. As discussed in Section 2.5, the West Slope area contains water bodies in the South Fork American and Upper Cosumnes Watersheds that do not meet water quality standards. As such, TMDLs are under development for the affected water bodies.

2.13.2.5 Trash Amendment

In April 2015, the State Water Board adopted Water Quality Control Plan amendments to implement trash control policies (Resolution 2015-0019). The amendments require the policy to be implemented through applicable NPDES permits and other regulatory mechanisms.

The Trash Policy prohibits the discharge of trash into State waters. Implementing full capture devices or full trash capture equivalency is deemed to be compliant. Monitoring and assessment of trash in California waters is required, and the State Water Board is leading efforts to identify and develop acceptable methods to measure ambient trash conditions. Dischargers may select one of two options:

- **Option 1, Full Capture:** Install, operate, and maintain full capture systems in storm drains that capture trash ≥ 5mm from one or more of the priority land uses/facility/site.
- **Option 2, Full Capture System Equivalency:** Implement a plan with a combination of full capture systems, other treatment controls, institutional controls, and/or multi-benefit projects with same performance results of Option 1 with the MS4 jurisdiction/significant trash generating areas/facility/site.

State Water Board staff developing guidance for NPDES permittees on how to implement the new Trash Policy.

2.13.2.6 Biological Objectives

Biological objectives (or biological criteria) are expressions of desired biological conditions that are adopted into a state's water quality standards. They are derived from bioassessment data and may be expressed as either narrative statements or numeric limits (or both). Many states have adopted biological objectives (USEPA 2002).

The State Water Board is proposing to develop a statewide policy for biological objectives to improve protection of aquatic life beneficial uses in perennial wadeable streams. The biological objectives will be implemented via a statewide policy. On approval by the USEPA, the objectives will have the same regulatory authority as existing chemical, physical, and toxicological water quality objectives. The State Water Board will develop the implementation program that describes how biological objectives will be incorporated into permits and other regulatory actions, such as assessing attainment of aquatic life beneficial uses for CWA Section 303(d) listing.

The biological objectives will incorporate consideration of uncontrollable anthropogenic impacts. In areas where degradation is due to uncontrollable factors, the reference conditions may reflect "best attainable" conditions.

The State Water Board will work to ensure that the Biological Objectives Policy will be well coordinated with other related policies such as the Wetland and Riparian Protection Policy, the Biostimulatory Substances Objective, the Toxicity Policy, and the Division of Water Rights efforts to develop instream flow criteria.

2.13.2.7 Wetland and Riparian Protection Policy

The State Water Board is proposing Procedures for Discharges of Dredged or Fill Material to Waters of the State, for inclusion in the ISWEBE Plan. The proposed procedures consist of three major elements: 1) a statewide wetland area definition, 2) wetland delineation procedures, and 3) procedures for the regulation of dredged or fill discharges to waters of the state (State Water Board 2017e).

The State Water Board has developed the proposed procedures to address several important issues. First, the State Water Board deems there is need to strengthen protection of waters of the state that are no longer protected under the CWA due to U.S. Supreme Court decisions, as the RWQCBs have historically relied on CWA protections in dredged or fill discharge permitting practices. Second, there is inconsistency across the RWQCBs in requirements for discharges of dredged or fill material into waters of the state, including wetlands. There is no single accepted definition of wetlands at the state level, and the RWQCBs may have different requirements and levels of analysis with regard to the issuance of water quality certifications. Finally, current regulations are not adequate to prevent losses in the quantity and quality of wetlands in California, where there have been especially profound historical losses of wetlands.

2.13.2.8 Biostimulatory Substances Objective

The State Water Board is proposing to adopt a statewide water quality objective for biostimulatory substances along with a program of implementation as part of the Biostimulatory Substances Amendment to the ISWEBE Plan. The Biostimulatory Substances Amendment could include: 1) a statewide numeric objective or a statewide narrative objective (with a numeric translator), and 2) various regulatory control options for point and nonpoint sources.

It is anticipated that a comprehensive program to implement the water quality objective for biostimulatory substances would be established in three phases as three amendments to the ISWEBE Plan. Each phase would reflect implementation unique to three different water body types. If the Biostimulatory Substances Amendment establishes a numeric water quality objective, rather than a narrative water quality objective, then potentially each subsequent phase would also establish a new numeric water quality objective. The latter depends on whether the numeric water quality objective is developed from factors unique to the different types of waterbodies. The Biostimulatory Substances Amendment would be the first phase, applicable to wadeable streams. The second phase would focus on lakes and the third phase will focus on estuaries, enclosed bays, and non-wadeable rivers (State Water Board 2017c).

The Biostimulatory Substances Amendment would also include a water quality control policy to establish and implement biological condition assessment methods, scoring tools, and targets aimed at protecting the biological integrity in wadeable streams (State Water Board 2017d).

2.13.2.9 Toxicity Policy

Toxicity testing is an essential component of an integrated approach to water quality-based toxics control. Aquatic toxicity tests (toxicity tests) utilize aquatic organisms to examine the adverse chronic or acute effects of a given discharge. The results from these tests are used to detect aggregate toxic effects of known pollutants, and provide meaningful data when specific pollutants may not be known.

Previously, the RWQCBs developed toxicity provisions in their respective Regional Water Quality Control Plans, while the ISWEBE Plan established minimum testing requirements (State Water Board 2017f). As a result, toxicity requirements varied widely among the Regional Water Quality Basin Plans and permits. The proposed Policy for Toxicity Assessment and Control is intended to improve regulatory consistency through the adoption of statewide numeric objectives for chronic and acute toxicity. In addition, this policy will

establish a uniform approach to toxicity monitoring, analysis, and remediation measures that fulfill the requirements of State Water Board Resolution No. 2005-0019.

2.13.2.10 Agriculture – Irrigated Lands Regulatory Program

California agriculture is extremely diverse, spans a wide array of growing conditions from northern to southern California, and includes more than 400 commodities. The State produces nearly half of all U.S.-grown fruits, nuts, and vegetables. Across the nation, U.S. consumers regularly purchase crops produced in California. Many of the products are exported to markets worldwide.

Water discharges from agricultural operations in California include irrigation runoff, flows from tile drains, and stormwater runoff. These discharges can affect water quality by transporting pollutants, including pesticides, sediment, nutrients, salts (including selenium and boron), pathogens, and heavy metals, from cultivated fields into surface waters. Many surface water bodies are impaired because of pollutants from agricultural sources. Groundwater bodies have suffered pesticide, nitrate, and salt contamination.

To prevent agricultural discharges from impairing the waters that receive these discharges, the Irrigated Lands Regulatory Program regulates discharges from irrigated agricultural lands (State Water Board 2017e). This is done by issuing WDRs or conditional waivers of WDRs to growers (State Water Board 2013) that contain conditions requiring water quality monitoring of receiving waters and corrective actions when impairments are found. Approximately 6 million acres of agricultural land and 40,000 growers are enrolled in the Irrigated Lands Regulatory Program.

3.0 ORGANIZATION, COORDINATION, AND COLLABORATION

This section identifies the local agencies, NGOs, and State and Federal agencies that play important roles in managing stormwater resources in the West Slope area and that were solicited for potential projects. Entities that provided projects for inclusion in the West Slope SWRP are noted below, and their projects are included in Section 4. Refer to Section 5 for additional details on the identified entities' roles and responsibilities in developing the West Slope SWRP and in plan implementation. Refer to Section 6 for information on how the public and community were engaged in the development of the West Slope SWRP and the plan for continual engagement during the West Slope SWRP implementation.

3.1 LOCAL AGENCIES

The West Slope SWRP was developed in close collaboration with the local agencies that benefit from projects that use stormwater as a resource. Three agencies, termed "SWRP Partners," led development of the West Slope SWRP while multiple other local agencies were contacted to participate in the plan. A brief description of the SWRP Partners and other local agencies is below.

3.1.1 Partner Agencies

Development of the West Slope SWRP was led by the Agency in close collaboration with the County and Placerville.

3.1.1.1 El Dorado County Water Agency

The Agency's mission is to "ensure that the [El Dorado County] has adequate water for today and in the future (EDCWA 2017b)." The Agency represents the long-term interest of their community, purveyors, and residents. The 1959 Act provides the Agency the authority for providing adequate water for all beneficial uses in El Dorado County, power development, and flood control. In particular, Section 13 of the Act provides the following:

> *Sec. 13. The agency shall have the power to control the flood and storm waters of the agency and the flood and storm waters of streams that have their sources outside of the agency, which streams and floodwaters flow into the agency, and to conserve such waters for beneficial and useful purposes of said agency by spreading, storing, retaining and causing to percolate into the soil within or without said agency, or to save or conserve in any manner all or any of such waters and protect from damage from such flood or storm waters the watercourses, watersheds, public highways, life and property in said agency, and he watercourses outside of the agency of streams flowing into the agency.*

Phone Number: (530) 621-5392
Address: 4330 Golden Center Drive, Suite C Placerville, CA 95667

3.1.1.2 County of El Dorado

The County is another of the SWRP Partners, and it played a key role in developing and contributing projects to the West Slope SWRP. The County's Community Development Services (CDS) Long Range Planning Division will assist the Agency with implementing and updating the West Slope SWRP. The CDS's mission is "to deliver effective public service that coordinates development in [El Dorado County] with the goals of ensuring public safety, maintaining environmental sensitivity, and improving economic prosperity (County 2017)." One of these public services is stormwater management. The County has provided the service of stormwater management in the context of the CWA and its NPDES permits to help reduce the discharge of pollutants associated with the stormwater drainage systems in the West Slope area.

The Environmental Management Department is also part of the CDS and contributed projects for inclusion in the West Slope SWRP. Its mission is "to protect, preserve, and enhance the public health, safety, and environment through a balanced program of environmental monitoring and enforcement, innovative leadership, community education, customer service, and emergency response for the citizens of and the visitors to [El Dorado County] (County 2017)." This division has provided multi-benefit stormwater projects through environmental management.

Phone Number, Long Range Planning, Placerville Office: (530) 621-4650
Phone Number, Environmental Management Department, Placerville Office: (530) 621-5300
Address: 2850 Fairlane Court, Building "C" Placerville, CA 95667

3.1.1.3 City of Placerville

Placerville is the seat of government for El Dorado County and is the only incorporated city in the West Slope area. Placerville's Public Works Division manages the maintenance and operations of its streets; parking lots; and sewer, water, and storm drain systems. Regarding stormwater resource planning, Placerville provided projects focusing on managing urban runoff pollution discharge into Hangtown Creek.

Phone Number, Public Works (530) 642-5232
Address: 549 Main Street, Placerville, CA 95667

3.1.2 Other Local Agencies

The following describes other local agencies in the West Slope area and their contributions to this plan, as applicable.

3.1.2.1 El Dorado County and Georgetown Divide Resource Conservation Districts

The El Dorado County and Georgetown Divide Resource Conservation Districts are local, independent, non-enforcement, non-regulatory districts that are self-governed. They advise and assist individual landowners and public agencies in planning and implementing conservation practices for the protection,

restoration, or development of land, water, and related natural resources. These resource conservation districts provided potential projects for inclusion in the West Slope SWRP.

Phone Number: (530) 295-5630
Address: 100 Forni Road, Suite A, Placerville, CA 95667

3.1.2.2 Retail Water Purveyors

In the West Slope area, there are three main retail water purveyors: GDPUD, GFCSD, and EID. Refer to Section 2.7 for more information on these districts. EID provided two potential projects for inclusion in the West Slope SWRP.

3.2 NON-GOVERNMENTAL ORGANIZATIONS

NGOs and State conservancies were contacted to provide essential assistance and insight during development of the West Slope SWRP. These entities are active in conservancy and protection of natural resources areas that overlap with the West Slope area.

3.2.1.1 Cosumnes, American, Bear, Yuba Integrated Regional Water Management

The CABY region spans four watersheds, two of which are in the West Slope area (Cosumnes and American). Water from these watersheds flow into the Sacramento River. Water quality is considered an essential issue to CABY stakeholders, and BMPs and activities are performed to maintain its high water quality. The *2014 CABY IRWMP* describes resource management strategies to address long-term water supply needs, protection of water quality, and enhancement of environmental and habitat resources.

E-mail: cabyirwmp@gmail.com

3.2.1.2 American River Basin Integrated Regional Water Management

A small portion of the West Slope area (generally the El Dorado Hills area) has been incorporated in the American River Basin IRWM region, which is located west of the El Dorado County line. Led by Regional Water Authority, the *American River Basin IRWMP* was last updated in 2013, and it captures the regional vision in developing integrated water management practice and planned actions for implementation (RWA 2013). Waters in this region drain to the Sacramento River where water quality is affected by agricultural runoff, acid mine drainage, stormwater, municipal and industrial wastewater discharges, water releases from dams, diversions, and urban runoff.

Phone Number, Regional Water Authority: (916) 967-7692
Address: 5620 Birdcage Street, Suite 180, Citrus Heights, CA 95610

3.2.1.3 American River Conservancy

The American River Conservancy is an entity that protects habitats, the environment, fisheries, and recreational lands that are found in the Upper American River and Cosumnes River Watersheds. Stormwater resource planning provides opportunities to improve conditions in these watershed.

Phone Number: (530) 621-1224
Address: 348 Highway 49, Coloma, CA 95613

3.3 STATE AND FEDERAL AGENCIES

In addition to local agencies, NGOs, and a state conservancy, several State and Federal agencies were also contacted during West Slope SWRP development.

3.3.1.1 California Department of Transportation

California Department of Transportation's (Caltrans) mission statement is to "provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability (Caltrans 2017)." Caltrans manages several California highways, including Highway 50. Highway 50 is a major corridor through El Dorado County and a significant source of stormwater pollution. Highway projects with adequate stormwater considerations provide opportunities to improve stormwater quality and other benefits, and were included in the West Slope SWRP.

Phone Number, District 3: (530) 741-4572
Address, Headquarters: California Department of Transportation, 1120 N Street, Sacramento, CA 95814

3.3.1.2 U.S. Department of Agriculture, Forest Service

The U.S. Department of Agriculture, Forest Service (USFS) manages the Eldorado National Forest. The USFS mission is to "sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations (USFS 2017a)." The average acre on the Eldorado National Forest receives about 56 inches of precipitation annually with an average annual runoff around 29 inches (USFS 2017b). After a series of storms hit in early 2017, extensive damage occurred to roads, trails, infrastructure, and ecosystems in the Eldorado National Forest. The USFS provided several projects for inclusion in the West Slope SWRP.

Phone Number, Laurence Crabtree, Forest Supervisor: (530) 622-5061
Address: 100 Forni Road, Placerville, CA 95667

4.0 QUANTITATIVE METHODS FOR IDENTIFICATION AND PRIORITIZATION OF STORMWATER AND DRY WEATHER RUNOFF CAPTURE PROJECTS

When stormwater is considered as a resource, rather than a hazard, it is important to consider management actions and formulate projects that provide multi-benefits to improve the efficiency of investments and address the interconnection among different objectives in resource management. With the heightened awareness of needs for integrated water management for long-term sustainability, multi-benefit management actions and projects are often required or preferred by State and Federal grants and funding opportunities. The purpose of this section is to summarize the process of identifying and evaluating projects for integrated multi-beneficial uses from managing stormwater as a resource, and the results of the evaluation.

4.1 WEST SLOPE STORMWATER RESOURCE PLAN SCOPE AND COMPONENTS

As previously mentioned, the West Slope is the headwaters of California's hydrologic and water supply systems and contains diverse land uses and challenging terrains as part of the Sierra Nevada. To adequately address this unique setting, the West Slope SWRP includes three main components to properly cover the nature of stormwater in El Dorado County: Surface Water Storage, Watershed Management, and the more conventional component of Stormwater Management.

The following provides brief descriptions of the types of projects identified for the three West Slope SWRP components:

1. **Surface Water Storage** projects consist of reservoir creation and reservoir upgrade projects that provide multi- benefits which include hydroelectricity production, downstream water supply, irrigation, flood management, recreation, and greater operational flexibility on both the regional and statewide scales. This component is important for the foothill area because there are no significant groundwater resources or storage available. While it is recognized that these projects could be more involved and significant in nature, they are an important part of the consideration for stormwater resource management.

2. **Watershed Management** projects consist of proposed implementation of land use and water management practices that protect and improve the quality of water and other natural resources in the West Slope area. These projects include development of long-term water quality monitoring programs, creek restoration, post-fire restoration, anaerobic digestion system, biomass facility for energy generation, and composting plants. This component is critical for upper watersheds and headwaters because the presence of large forest lands and the consequent water quality impacts from a forest fire can be significant and long-lasting.

3. **Stormwater Management** projects are more in line with conventional stormwater projects in both their scale and that they are very relevant in areas where urban, rural, and agricultural activities occur. The identified projects were split into structural and non-structural groupings:

    - Structural - projects aim to reduce the amount surface runoff generated from storm events and/or provide treatment, in turn reducing the amount of nonpoint source pollution in local water bodies. These projects include: road, sewer, and water improvements; culvert replacements; park and ride improvements; road improvements; new facilities for point-source pollution control and using rain harvesting; street sweeping and vactor trucks for reducing sediment load; and LID projects for stormwater management.

    - Non-Structural - projects aim to integrate preventative measures into planning and design phases of projects and also incorporate those measures into post-construction stormwater management programs. These projects include: public demonstration of LID, green infrastructure, and stormwater projects; public education campaigns; data management program; watershed and pollutant studies; and development of LID and BMP manuals related to stormwater management and water quality.

The projects in these three components are being developed to meet the needs in the West Slope area and comply with the SWRP Guidelines. The following sections discuss the project development approach used in the West Slope SWRP which served as the basis for the recommended project prioritization.

4.2 PROJECT DEVELOPMENT APPROACH

As discussed in Section 1, the SWRP Partners adopted a collaborative approach to develop the West Slope SWRP consistent with legislative requirements and regional needs. As such, projects were developed through identification, evaluation, and prioritization in alignment with the guiding principles presented in Section 1.3.

The steps for developing projects included the following activities:

1. **Project Identification**: Open project solicitation where project proponents identified projects and developed project details. Project proponents submitted project information to the Agency for inclusion in the West Slope SWRP. Only projects that were multi-benefit were moved forward for evaluation.

2. **Project Evaluation**: The identified projects were evaluated to assess contributions to multi-benefits. Structural projects were evaluated both qualitatively and quantitatively, whereas non-structural projects were only qualitatively evaluated.

3. **Project Prioritization**: Evaluated projects were ranked using multi-benefit metric scoring. Separate rankings were developed for the three components, with the stormwater management rankings being further separated into structural and non-structural projects.

These project development steps were used for all identified projects in the West Slope SWRP. The process for identification, evaluation, and prioritization is shown in Figure 4-1 and described in more detail below.

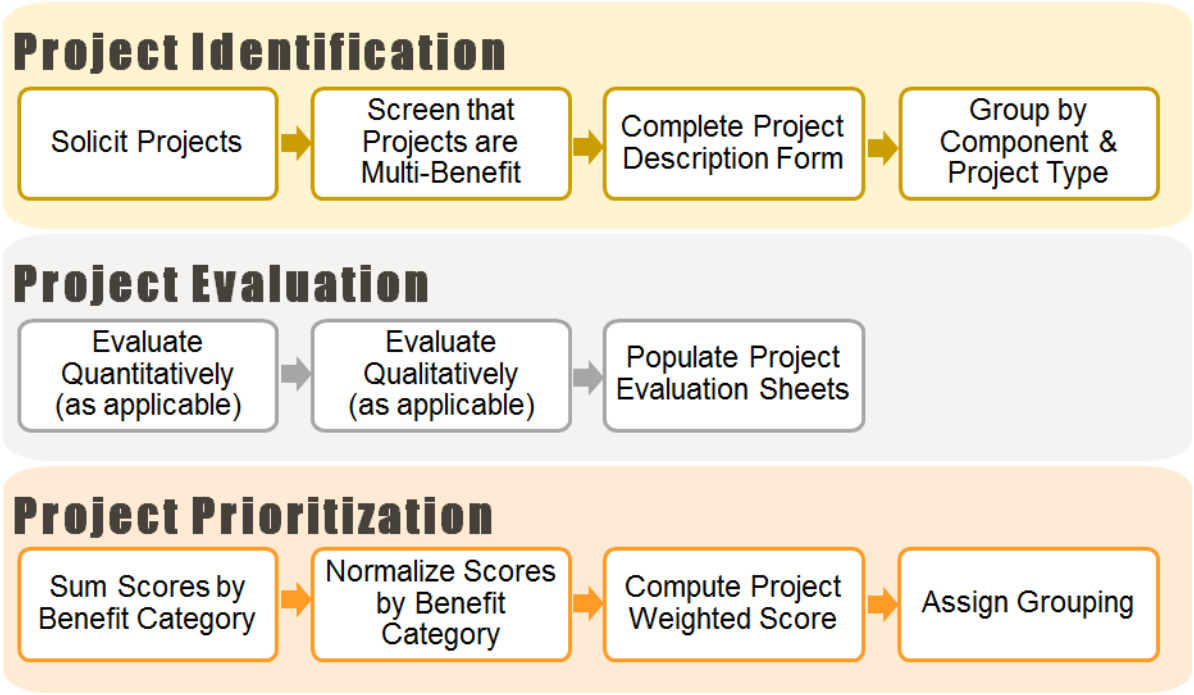


Figure 4-1. Project Development and Evaluation Approach

4.2.1 Project Identification

The SWRP Partners recognized the importance of receiving input from entities that have been working on stormwater and related resource management issues for relevancy, efficiency and applicability. As presented in Section 3, a wide range of local agencies, NGOs, and State and Federal agencies were identified that could have roles in the West Slope SWRP development. These entities were contacted with requests for multi-benefit surface water storage, watershed, and stormwater projects that could be implemented in the West Slope area. The following provides a summary of identified projects, including general features and emphases of each entity that provided input during the process. Appendix B includes specific details for each identified project.

4.2.1.1 Summary of Identified Projects

The identified projects were assigned a project type to aid in evaluation and comparison in addition to the wider component grouping. Table 4-1 summarizes all identified projects by component and project type. It provides a preliminary cost range and general description of projects by project type. The majority of projects are under the watershed and stormwater management components. Figure 4-2 presents the locations of all the identified projects. The locations of projects by Surface Water Storage, Watershed Management, and Stormwater Management component in El Dorado County are presented in Figures 4-3 to 4-5 respectively. As described in Section 2, given the distinct differences, approaches, and goals in managing stormwater in the West Slope, the Stormwater Management component projects were identified by planning area. Table 4-2 shows the project types within each Stormwater Management component planning area.

Table 4-1. Identified Projects by West Slope Stormwater Resource Plan Component and Project Type

Surface Water Storage West Slope SWRP Component			
Project Type	**Projects**	**Preliminary Cost ($M)[1]**	**Description**
Reservoir Creation	1	$909	New reservoirs support regional water supply reliability, decrease flood risk, improve river water temperatures, and provide community benefits.
Reservoir Upgrade	1	$10	Reservoir upgrades support regional water supply reliability, decrease flood risk, improve river water temperatures, and provide community benefits.
Watershed Management West Slope SWRP Component			
Post-Fire Restoration	2	$2.5-3	Post-fire restoration improves the environmental health of local watersheds through removal of dead trees, thereby reducing carbon emissions and pollutants into local water bodies.
Renewable Energy	5	$60-65	New biomass and compost facilities provide community benefits by creating local energy generation and reducing the amount of waste in landfills.
Forest Management	21	$75-85	Forest management practices improve the environmental health of local watersheds through control of noxious weeds, and reduce the risk of wildfires through preventative actions (e.g., creating fuel breaks, reducing fire fuel, tree thinning, timber sales).
Water Quality Management	4	No costs available	These practices identify existing problems or potential future issues, then support decision making related to pollution prevention and management strategies that improve the health of the environment.
Creek Restoration	3	$2-2.5	Creek restoration (e.g., sediment load removal, culvert cleanout, bank stabilization, and invasive weed removal) improves the environmental health of local water bodies and aims to restore the natural state of the river system in support of water quality and flood management.

Table 4-1. Identified Projects by West Slope Stormwater Resource Plan Component and Project Type (continued)

Stormwater Management West Slope SWRP Component			
Project Type	**Projects**	**Preliminary Cost ($M)[1]**	**Description**
Structural			
Water Capture[2]	8	$40-90	Water capture systems (e.g., retention and detention ponds) collect stormwater runoff and divert flows for infiltration and retention to improve water quality by reducing runoff into local water bodies, enhance the community, and facilitate habitat restoration.
Water Quality Improvement	10	$25-30	Water quality improvements (e.g., facility maintenance and updates to roadway, sewer, and water infrastructure) directly improve the health of the local watershed.
Non-Point Source Pollution Control	8	$5-20	Non-point source pollution control management (e.g., street sweeper and vactor truck programs, enclosing facilities with known sources of pollution) help reduce pollution sources into local water bodies and directly improve water quality.
Flood Damage Reduction	16	$50-70	Drainage improvements (replacement and addition of culverts and sewers) reduce the amount of stormwater runoff and decrease the occurrence and risk of flooding.
Non-Structural			
Outreach Project[2]	5	$0.5-0.75	Outreach projects allow for community engagement related to stormwater management, littering, contamination, hydrology, watershed management, and may indirectly affect local ecosystem health.
Management Programs	6	$4-6	Management of local watersheds water quality and environmental health are affected by road and drainage system data management in the West Slope area; best management practice manuals and internal protocols to manage stormwater projects; and development of urban, rural, and agricultural pollution generation studies.

Summary		
West Slope SWRP Component		**Number of Projects**
Surface Water Storage		2
Watershed Management		35
Stormwater Management	Structural	42
	Non-Structural	11
TOTAL		**90**

Notes:
[1] Preliminary cost estimates do not include operations and maintenance cost. Costs are subject to change as many projects are currently in the conceptual stage.
[2] Project 327 under the Stormwater Management SWRP Component is classified as a Water Capture and an Outreach Project. Cost esimates are only included under Outreach Project.
Key:
BMP = Best Management Practice
LID = Low Impact Development
M = million
SWRP = Stormwater Resource Plan

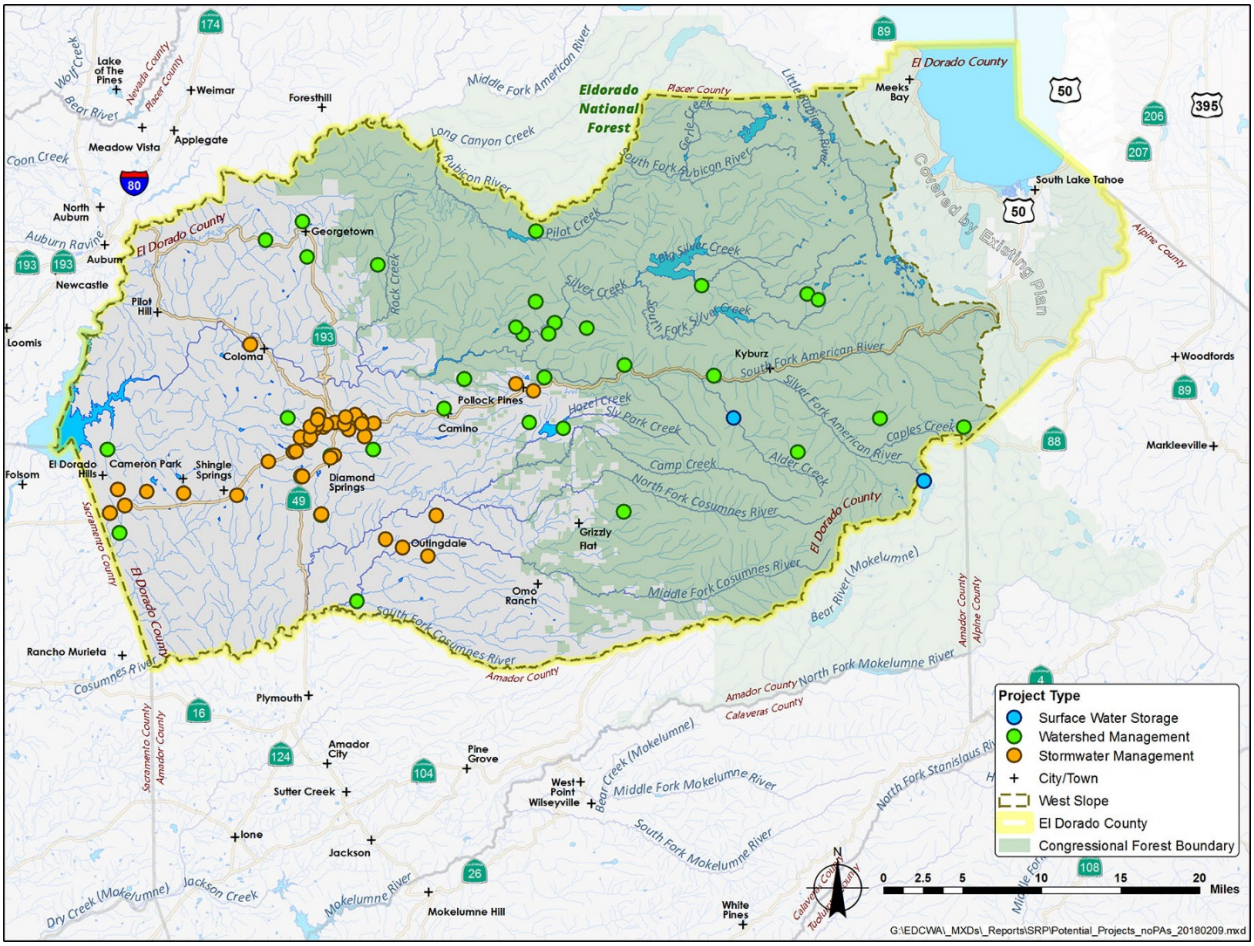


Figure 4-2. Project Locations

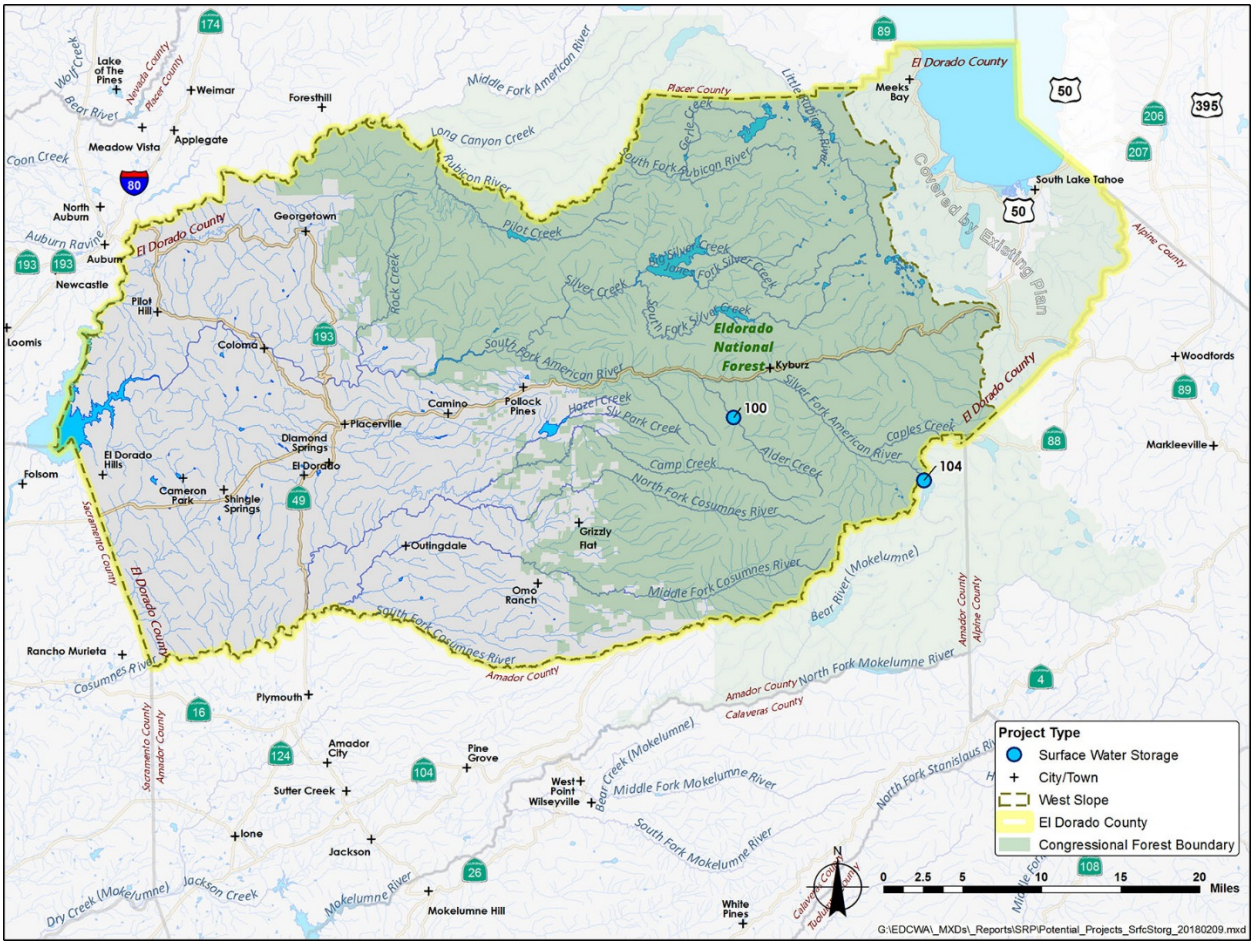


Figure 4-3. Surface Water Storage Project Locations

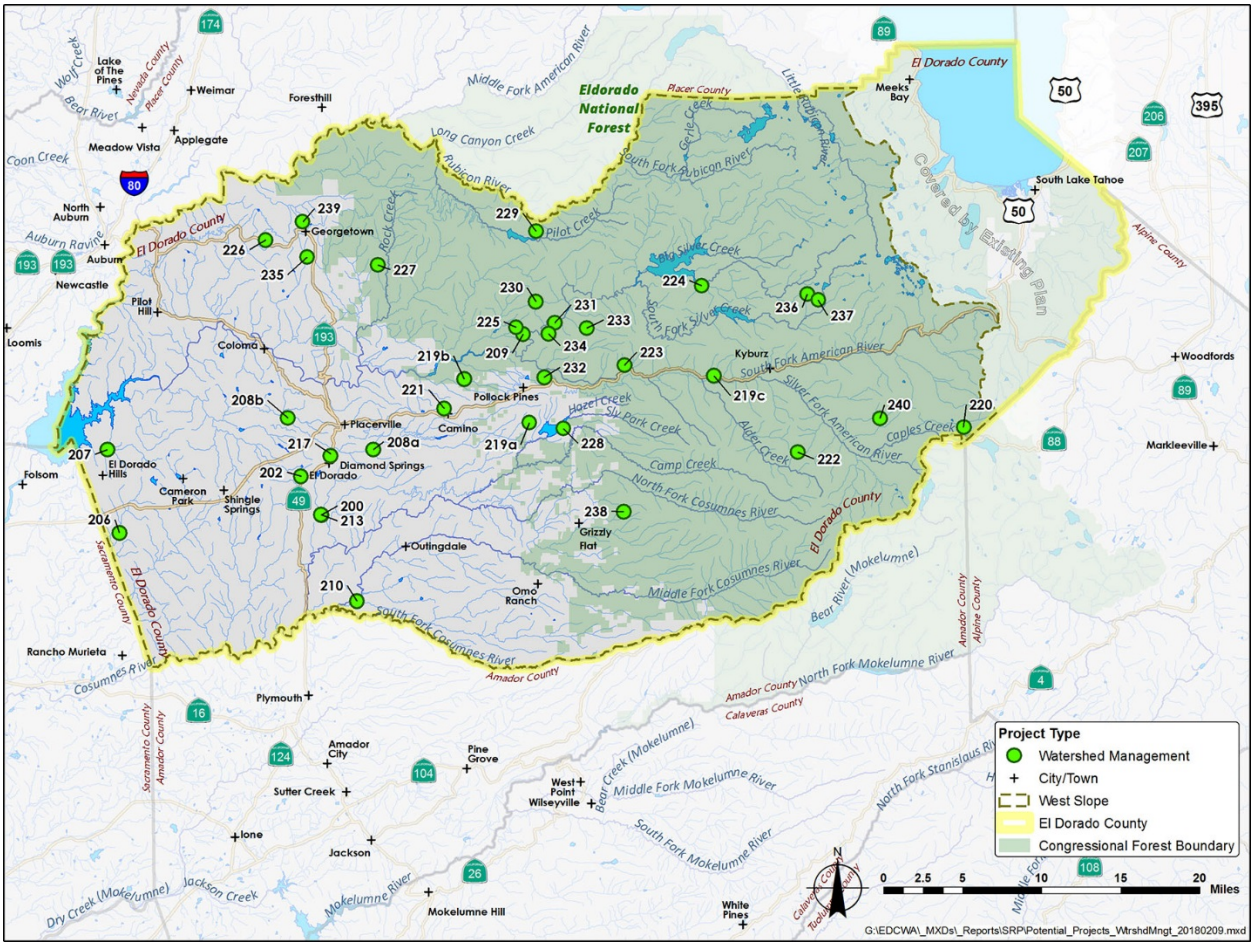


Figure 4-4. Watershed Management Project Locations

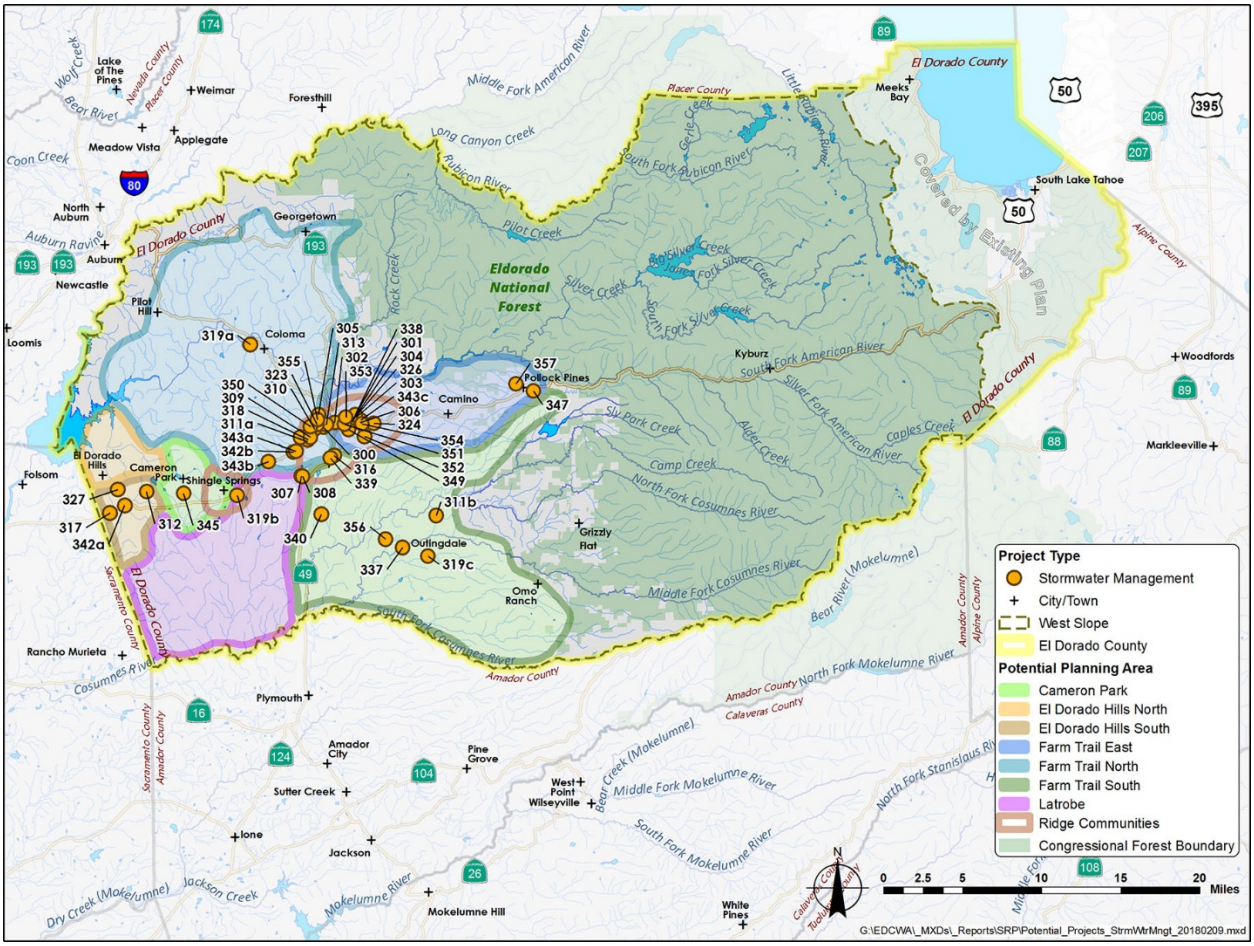


Figure 4-5. Stormwater Management Project Locations by Planning Area

Table 4-2. Stormwater Management Component Projects by Planning Areas

Planning Area	Stormwater Management Project Types[2]						
	Structural				Non-Structural		Total Projects
	Water Capture	Water Quality Improvement	Non-Point Source Pollution Control	Flood Damage Reduction	Outreach Project	Management Programs	
Cameron Park	-	-	-	1	-	-	1
El Dorado Hills North	-	-	-	-	-	-	0
El Dorado Hills South	1	-	1	-	1	-	3
Farm Trail North	-	-	-	-	-	-	0
Farm Trail East	1	-	-	1	-	-	2
Farm Trail South	1	1	-	-	-	1	3
Latrobe	-	-	-	-	-	-	0
Ridge Communities	4	8	3	10	-	-	25
Other[1]	1	1	4	4	4	5	19

Notes:
[1] Other refers to projects that would be implemented countywide or cover more than one planning area.
[2] Project 327 under the Stormwater Management SWRP Component is classified as a Water Capture and an Outreach Project.

4.2.1.2 Description of Identified Projects by Entity

The entities described in Section 3 were contacted to identify projects categorized under the three components. Table 4-3 shows the number of projects identified by each entity. Combined, the SWRP Partners contributed about one third of the total projects identified. The following discussion summarizes the types of projects identified by each entity. Entities are discussed in alphabetical order.

Table 4-3. Projects Identified by Entity

West Slope SWRP Component		Project Type	Projects Identified by Entity							
			American River Conservancy	Caltrans	City of Placerville	El Dorado County	El Dorado County & GDRCD	El Dorado County Water Agency	El Dorado Irrigation District	USFS
Surface Water Storage		Reservoir Creation	-	-	-	-	-	1	-	-
		Reservoir Upgrade	-	-	-	-	-	-	1	-
Watershed Management		Post-Fire Restoration	-	-	-	-	2	-	-	-
		Renewable Energy	-	-	-	4	-	1	-	-
		Forest Management	-	-	-	-	-	-	-	21
		Water Quality Management	1	-	-	3	-	-	-	-
		Creek Restoration	-	-	-	3	-	-	-	-
Stormwater Management	Structural	Water Capture	-	-	2	6	-	-	-	-
		Water Quality Improvement	-	-	8	2	-	-	-	-
		Non-Point Source Pollution Control	-	-	-	8	-	-	-	-
		Flood Damage Reduction	-	2	8	5	-	-	1	-
	Non-Structural	Outreach Project	-	-	-	4	1	-	-	-
		Management Programs	1	-	-	5	-	-	-	-
Total Number of Identified Projects by Entity			*2*	*2*	*18*	*40*	*3*	*2*	*2*	*21*
Total Number of Project Identified			**90**							

Key:
Caltrans = California Department of Transportation
El Dorado County & GDRCD = El Dorado County & Georgetown Divide Resource Conservation District
SWRP = Stormwater Resource Plan
USFS = U.S. Department of Agriculture, Forest Service

American River Conservancy. Projects identified by the American River Conservancy included a water quality monitoring project and a stormwater management study. These projects could ultimately help improve the water quality conditions of the local water supplies, reduce nonpoint source pollution, enhance and protect the local environment and habitats, and provide employment opportunities, in addition to creating opportunities for the public to learn about the watershed, water quality monitoring, and water quality improvements.

California Department of Transportation. Projects provided by Caltrans are located along the major highways in El Dorado County. These projects included urban roadway improvement projects on Highway 50 that will improve road conditions, the environment, and local habitats.

City of Placerville. Placerville identified a list of projects for the West Slope SWRP that included urban roadway improvement, sanitary sewer improvement, and flood control. These projects could provide a series of benefits that include improving the local conditions of the environment and habitats, providing employment opportunities, reducing flood risk, and increasing the treatment and infiltration of runoff.

County of El Dorado. County projects came from the CDS Long Range Planning Division and the Environmental Management Department. The County's Long Range Planning Division identified the majority of the stormwater management projects incorporated in the West Slope SWRP. The projects included flood control, MS4 compliance, water quality monitoring, stream restoration, erosion control, urban roadway projects, drainage improvement, remediation, public education programs, campaigns, and the development of manuals for BMPs. The Environmental Management Department identified projects related to waste management and a retention pond to help reduce nonpoint source pollution, reduce flood risk, and enhance local environmental and habitat conditions.

Several of the projects identified were conceptual but have high potential to incorporate LID principles to treat, capture, and infiltrate stormwater runoff. Several of the projects that were identified would also help improve local environmental and habitat conditions, reduce nonpoint source pollution, decrease flood risk, and have potential to provide employment opportunities and countywide educational opportunities related to stormwater management, watershed management, water quality, and pollution control.

El Dorado County and Georgetown Divide Resource Conservation Districts. Projects identified by the El Dorado County and Georgetown Divide Resource Conservation Districts included public education, watershed restoration, and reforestation projects. These projects could provide a series of benefits by creating opportunities for the public to learn about stormwater management practices, BMPs, and LID approaches. The watershed restoration and reforestation projects could help reduce nonpoint source pollution, improve water quality conditions, enhance the local environment and habits, and reduce greenhouse gas emissions.

El Dorado County Water Agency. Projects identified by the Agency included the development of a new reservoir and construction of a biomass facility. The reservoir project will augment water storage and increase the West Slope's water supply reliability. The biomass facility project will protect and enhance the local environment by reducing nonpoint source pollution and greenhouse gas emissions. These project could also provide long-term employment opportunities and public educational opportunities.

El Dorado Irrigation District. Projects identified by EID include a dam replacement and stormwater improvements to existing stormwater conveyance infrastructure. The dam replacement project will support water supply reliability for the West Slope area. The improvements to the stormwater conveyance structure will reestablish natural drainage patterns and prevent localized flooding. These projects will improve the local environmental conditions and reduce flood risks.

U.S. Department of Agriculture, Forest Service. The USFS provided watershed management projects that included post-fire restoration, forest fuel reduction, tree removal, tree thinning, and timber sales. These projects could improve forest health, the environment and local habitats.

4.2.1.3 Project Description Forms

Details of the identified projects were organized into project description forms. Project description forms explain the project goals and objectives, the need for the project and problem to be addressed, potential pitfalls and challenges, approaches and execution methods, resource estimates, people and entities involved, and other relevant information needed to explain the project and the amount of work planned for implementation. Project description forms are quick fact sheets that can be incorporated into future documents such as: environmental review documents, Water Quality Control Plans, applicable water quality control policies, water rights, IRWMPs, capital improvement projects, and monitoring plans. These forms contain quantitative data where available. Appendix B is a compilation of the project description forms for each project in the West Slope SWRP. These forms served as the basis for project evaluation.

4.2.2 Project Evaluation

Identified projects were then evaluated using both quantitative and qualitative metrics to inform which projects could provide the greatest benefit within each component. Information from project description forms was used to evaluate the project based on the benefit categories, criteria, and metrics outlined in section 4.2.2.1 and discussed further in Appendix C. The evaluation result for each project can be found in Appendix D.

4.2.2.1 Benefit Categories, Criteria, and Metrics

The West Slope SWRP used a metric-based approach to maximize water supply, water quality, flood management, environmental, and community benefits in the watersheds to be consistent with the SWRP Guidelines (Water Code section 10560 et). In addition to these benefit categories, two benefit categories (Project Cost and Implementation Complexity) were developed to help in project evaluation. These two additional benefit categories assess project funding opportunities and how likely a project is to achieve its potential benefits once implemented, respectively. The SWRP Guidelines Table 4 also identified main and additional benefits that should be considered when evaluating projects. Each project and program should address at least two or more main benefits (shown in bold in Table 4-3 below) and as many feasible additional benefits. The West Slope SWRP used these benefits (termed “criteria” in this document) and also developed several additional criteria to aid in project evaluation. The new criteria were added under the Environmental and Community benefit categories. Table 4-4 shows the benefit categories and criteria used for the West Slope SWRP that provided a consistent framework to evaluate and compare projects.

Table 4-4. West Slope Stormwater Resource Plan Benefit Categories and Criteria

Benefit Category	Criteria
Water Quality	**Increased Filtration and/or Treatment of Runoff**
	Nonpoint Source Pollution Control
	Reestablished Natural Water Drainage and Treatment
Water Supply	**Water Supply Reliability**
	Water Conservation
	Conjunctive Use
Flood Management	**Decreased Flood Risk By Reducing Runoff Rate and/or Volume**
	Reduced Sanitary Sewer Overflows
Environmental	**Environmental and Habitat Protection and Improvement**
	Increased Urban Green Space
	Reestablishment of the Natural Hydrograph
	Improved Air Quality*
	Ecological Improvement*
	Energy Footprint
	Water Temperature Improvements
Community	**Public Education**
	Community Involvement
	Environmental Justice*
	Recreational Benefit
	Employment Opportunities Provided
Project Cost*	Project Funding Mechanism*
	Eligibility for External Funding*
	Constructability*
Implementation Complexity*	Institutional Complexity*
	Regulatory & Permitting Compliance*
	Public Acceptance*
	Right of Way*

Notes:
Criteria in **bold** represent the main benefits identified by the State Water Resources Control Board's Stormwater Resource Plan Guidelines (Guidelines) (2015). Projects must address at least two or more of these main benefits.
* Benefit categories and criteria added beyond those identified in the Guidelines.

Each criterion listed in Table 4-3 was assigned a metric to allow for qualitative or quantitative measurement. The metrics ranged from a low score of zero (no benefit or not applicable) up to a high score of 3 (highest benefit). Examples of both a qualitative and quantitative metric and scoring are shown in Table 4-5. Appendix C includes the complete metrics and scoring descriptions.

Table 4-5. Metric Examples

Benefit Category	Criteria	Metric	Assessment Value	Scoring
Water Quality	Increased filtration and/or treatment of runoff	Volume of Treated Water (quantitative)	High Volume (> 400 AF/year)	3
			Moderate Volume (200 – 400 AF/year)	2
			Low Volume (< 200 AF/year)	1
			Not Applicable	0
Environmental	Increased Urban Green Space	Creation and/or Reduction of Green Space (qualitative)	Creates Green Space at Multiple Locations	3
			Creates Green Space at One Location	2
			Improves Existing Green Space	1
			Not Applicable	0

Key:
AF/yr = acre-feet per year

Projects were then evaluated using quantitative and qualitative metrics using the abovementioned metrics and information in the project descriptions forms (Appendix B). The methodology and analysis for quantitative evaluation of projects is summarized below. Additional details can be found in Appendix D.

4.2.2.2 Quantitative Analysis

This section discusses the methodology for the quantitative analysis. Table 4-6 is a shortened version of Table C.1 in Appendix C and only lists the quantitative metrics used. The range of assessment values for the Water Quality and Flood Management benefit category metrics were determined through quantitative analysis of a project's ability to capture and infiltrate stormwater runoff. Stormwater runoff volume was calculated using a project's proposed area of extent, soil type by area, slope of soil, and land use. The range of assessment values for the Environmental benefit category were determined using a project's proposed area of extent and ability to increase the health of the local watershed. See Appendix D for more details on development of the quantitative assessment values.

Table 4-6 Project Evaluation Metrics and Scoring – Quantitative Analysis

Benefit Category	Criteria	Metric	Assessment Value	Scoring
Water Quality 	Increased filtration and/or treatment of runoff	Volume of Treated Water (AF/year)	High Volume (>400 AF/year)	3
			Moderate Volume (200-400 AF/year)	2
			Low Volume (<200 AF/year)	1
			Not Applicable	0
	Reestablished natural water drainage and treatment	Volume of runoff reduced and/or treated (AF/year)	High Volume (>400 AF/year)	3
			Moderate Volume (200-400 AF/year)	2
			Low Volume (<200 AF/year)	1
			Not Applicable	0
Flood Management 	Decreased flood risk by reducing runoff rate and/or volume	Volume of runoff reduced (AF/year)	High Reduction (>400 AF/year)	3
			Moderate Reduction (200-400 AF/year)	2
			Limited or No Reduction (<200 AF/year)	1
			Not Applicable	0
Environmental 	Environmental and habitat protection and improvement	Acres of habitat/ecosystem improved (varies)	High Improvement (>15,000 feet or > 4,000 acres)	3
			Moderate Improvement (2000-15,000 feet or 900-4,000 acres)	2
			Low Improvement (<2000 feet or <900 acres)	1
			Not Applicable	0
	Ecological Improvement*	Degree of potential benefit or damage to ecosystems/flora/ fauna (varies)	High Improvement (>15,000 feet or > 4,000 acres)	3
			Moderate Improvement (2000-15,000 feet or 900-4,000 acres)	2
			Low Improvement (<2000 feet or <900 acres)	1
			Not Applicable	0

Note:
*Benefit categories and criteria added beyond the suggested State Water Board's Stormwater Resources Plan Guidelines Table 4
Units:
Key:
AF/yr = acre-feet per year

Only the above criteria in the benefit categories were quantitatively analyzed. All other criteria (see Table 4-4) were qualitatively assessed either due to the conceptual nature and lack of quantifiable project data, or the qualitative nature of the criteria itself (e.g., availability of funding mechanisms is not a quantifiable criterion). If projects were too conceptual in nature, best engineering judgment was used to assign a quantitative value based on similar quantifiable projects. Also, non-structural projects were not quantitatively assessed, as most project benefits would be indirect. Table 4-7 lists which quantitatively metric was used for applicable project types.

Table 4-7. Quantitative Criteria and Metrics Applied by Project Type

Benefit Category	Criteria	Metric (unit)	Quantitative Value Applied to Metric by Project Type									
			Surface Water Storage Component		Watershed Management Component				Stormwater Management Component			
			Reservoir Creation	Reservoir Upgrade	Post-Fire Restoration	Forest Management	Water Quality Management	Creek Restoration	Water Capture	Water Quality Improvement	Non-Point Source Pollution Control	Flood Damage Reduction
Water Quality	Increased filtration and/or treatment of runoff	Volume of Treated Water (AF/year)	-	-	-	-	-	X	X	X	X	X
	Reestablished natural water drainage and treatment	Volume of runoff reduced and/or treated (AF/year)	-	-	-	-	-	X	X	X	X	X
Flood Management	Decreased flood risk by reducing runoff rate and/or volume	Volume of runoff reduced (AF/year)	X	X	-	-	-	X	X	X	-	X
Environmental	Environmental and habitat protection and improvement	Acres of habitat/ecosystem improved (varies)	X	X	X	X	X	X	X	-	X	X
	Ecological Improvement	Degree of potential benefit or damage to ecosystems/ flora/fauna (varies)	X	X	X	X	X	X	X	-	X	X

Key:
- = not applicable, or only qualitative values used
AF/year = acre-feet per year
X = Quantitative value applied to metric

Surface Water Storage component project types that were quantitatively analyzed were: Reservoir Creation and Reservoir Upgrade project types. Metrics for the Reservoir Creation and Reservoir Upgrade project types were based on the size (acre-feet) of the proposed reservoir or reservoir that would receive the proposed upgrades. The larger the storage volume, the larger the assumed potential to provide: 1) measurable benefits to existing flood control operations for protection of the Sacramento region, and 2) aquatic habitat enhancement and improve habitat quality to upper and lower reaches of the South Fork American River in the West Slope area.

Watershed Management component project types that were quantitatively analyzed were: Creek Restoration, Post-Fire Restoration, Forest Management and Water Quality Management project types. These project types were quantitatively analyzed based on the project area of extent (acres or linear feet). The larger the project area of extent, the greater potential ability to protect and improve the quality of water or other natural resources in the West Slope.

Stormwater Management component project types that were quantitatively analyzed were: Water Capture, Water Quality Improvement, Non-Point Source Pollution Control, and Flood Damage Reduction. Water Capture project type was analyzed based on the computed volume of water captured (acre-feet/year). It included structural projects that reduce the amount of surface runoff generated from storm events and in turn reduce the amount of nonpoint source pollution in local water bodies. All other listed project types were analyzed based on project area of extent (acres or linear feet). These project types were quantitatively analyzed for their ability to protect and improve the quality of water or other natural resources in the West Slope.

4.2.3 Project Prioritization

Once each project was evaluated using the methods outlined above, the projects in each component were prioritized following the steps outlined below. Additional details are located in Appendix E.

1. **Sum Scores in Each Benefit Category:** Scores ranged from 0 to 3 and are found on the project evaluation summary sheets (Appendix D).

2. **Compute Normalized Benefit Category Score:** The summed score was normalized to a scale of 0 to 3, with 0 being the lowest score and 3 being the highest score. This allowed for comparison amongst benefit categories that were measured using different criteria.

3. **Compute Project Weighted Score:** The project weighted score was the sum of each benefit category score multiplied by its respective benefit category weight (shown in Table 4-10 and described below).

4. **Assign Grouping:** After the weighted score was calculated, the projects were assigned an A, B, or C grouping in one of the three components. Projects in the “A” group were those receiving a score in the top third for a given component, “B” group projects were the middle third scores, and “C” group projects were the bottom third scores. “A” group projects typically have the potential to provide the most benefits and address more benefit categories, than “C” group projects.

4.2.3.1 Benefit Category Weights

Benefit category weights were developed to help identify projects that best meet the priorities and goals of each of the SWRP Partners. Benefit category weights were developed using a paired comparison analysis during one of the public workshops to determine the relative importance of each benefit category used in the West Slope SWRP. The paired comparison analysis done, is a decision-making method used to identify the relative importance of each possible benefit category by pairing it against all other benefit categories. This method informs which benefit category is the most important based on the participant’s compared results. The distribution of the weighted scores of the benefit categories was analyzed and it was decided during the group workshop that the average value of the participant’s weighted value would most accurately represented each benefit category. Table 4-8 shows the results of the paired comparison analysis and corresponding weights assigned to each benefit category. The full paired comparison analysis is described in Appendix C.2.

Table 4-8. Benefit Category Weights

Benefit Category	Weights
Water Quality	15%
Water Supply	23%
Flood Management	11%
Environmental	14%
Community	10%
Project Cost	18%
Implementation Complexity	9%
TOTAL	**100%**

4.3 EVALUATION OUTCOMES

As described above, the projects were grouped by component and project type to aid in the evaluation and prioritization process. Table 4-9 through 4-12 summarizes the results of project evaluations by project type within the three components and shows the project proponent, overall benefit category score, weighted score, and assigned grouping. As discussed above, projects assigned to Group A displayed the highest potential for providing the most benefits and address more benefit categories, Slope SWRP. Group B projects would have moderate potential, and Group C projects would have less potential.

Table 4-9. Project Prioritization Results for Surface Water Storage Component

Surface Water Storage Component											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Reservoir Creation											
100	Alder Reservoir	Agency	A	0.0	1.5	1.8	2.4	3.0	2.6	2.4	**1.87**
Reservoir Upgrade											
104	Silver Lake Dam Remediation	EID	C	0.0	1.5	1.4	1.9	2.9	2.6	2.4	**1.74**

Key:
Agency = El Dorado County Water Agency
EID = El Dorado Irrigation District

Table 4-10. Project Prioritization Results for Watershed Management Component

Watershed Management Component											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Post-Fire Restoration											
209	King Fire Watershed Restoration & Reforestation Project	El Dorado County & GDRCD	B	1.5	0.0	0.0	1.6	1.9	2.2	2.4	**1.25**
210	Sand Fire Watershed Restoration & Reforestation Project	El Dorado County & GDRCD	B	1.5	0.0	0.0	1.4	1.9	2.2	2.4	**1.22**
Renewable Energy											
200	Biomass Plant-Union Mine	Agency	A	1.0	1.5	0.0	1.2	2.6	2.2	2.0	**1.50**
221	Camino Biomass Facility	County	A	1.0	1.5	0.0	1.2	2.6	2.2	2.0	**1.50**
213	Anaerobic Digestion System at Union Mine WWTP	County	B	1.0	0.0	0.0	1.2	2.4	2.2	2.3	**1.16**
214	In-Vessel Composting System at Union Mine Landfill or MRF	County	C	1.0	0.0	0.0	0.0	2.4	2.2	2.3	**0.99**
215	Compost Facility within El Dorado County	County	C	1.0	0.0	0.0	0.0	2.4	2.2	2.3	**0.99**
Forest Management											
220	Caples Watershed Improvement	USFS	A	1.5	0.0	0.0	1.7	2.1	2.6	2.3	**1.35**
219	Fire Adaptive along Highway 50-Fuels Reduction	USFS	A	1.5	0.0	0.0	1.3	2.4	2.6	2.3	**1.32**
231	Pompeii Fire Salvage Stewardship	USFS	A	1.5	0.0	0.0	1.3	2.1	2.6	2.6	**1.32**
232	Quidazoic Fire Salvage Stewardship	USFS	A	1.5	0.0	0.0	1.3	2.1	2.6	2.6	**1.32**
234	King Fire Pile Burning	USFS	A	1.5	0.0	0.0	1.3	2.1	2.6	2.6	**1.32**

Table 4-10. Project Prioritization Results for Watershed Management Component (continued)

Watershed Management Component											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Forest Management (continued)											
229	Cesar Fire Salvage Stewardship	USFS	A	1.5	0.0	0.0	1.3	1.7	2.6	2.6	**1.28**
236	John Don't Fuels Reduction	USFS	A	1.5	0.0	0.0	1.5	2.1	2.2	2.3	**1.25**
226	Western Georgetown Fuel Reduction Integrated Resource Timber Contract-Timber Sale	USFS	B	1.5	0.0	0.0	1.3	2.1	2.2	2.1	**1.21**
227	Georgetown Divide Fuelbreak	USFS	B	1.5	0.0	0.0	1.5	1.7	2.2	2.1	**1.20**
228	Jenkinson Lake Fuels Reduction	USFS	B	1.5	0.0	0.0	1.3	1.7	2.2	2.3	**1.18**
235	Tobacco Gulch Integrated Resource Timber Contract-Timber Sale & Thinning Project	USFS	B	0.0	0.0	0.0	1.5	2.1	2.6	2.3	**1.10**
230	2-Chaix Fire Thinning	USFS	B	0.0	0.0	0.0	1.3	2.1	2.6	2.6	**1.10**
223	Two-fer Integrated Resource Timber Contract-Timber Sale	USFS	B	0.0	0.0	0.0	1.5	2.1	2.2	2.1	**1.01**
233	Fred's Noxious Weed Treatment-Vegetation Management	USFS	C	0.0	0.0	0.0	1.1	2.1	2.2	2.6	**1.00**
224	Reservoir Thinning Integrated Resource Timber Contract	USFS	C	0.0	0.0	0.0	1.3	2.1	2.2	2.1	**0.99**
225	Quintette Integrated Resource Timber Contract – Supplemental Information Report-Timber Sale	USFS	C	0.0	0.0	0.0	1.3	2.1	2.2	2.1	**0.99**

Table 4-10. Project Prioritization Results for Watershed Management Component (continued)

Watershed Management Component											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Forest Management (continued)											
238	Trestle Integrated Resource Timber Contract-Timber Sale	USFS	C	0.0	0.0	0.0	1.3	1.7	2.2	2.6	**0.98**
237	O'leary Cow Integrated Resource Service Contract/ Integrated Resource Timber Contract-Timber Sale & Thinning Project	USFS	C	0.0	0.0	0.0	1.1	2.1	2.2	2.3	**0.97**
239	Georgetown Insect Salvage Timber Sale	USFS	C	0.0	0.0	0.0	1.1	1.9	2.2	2.6	**0.97**
222	General Sherman Integrated Resource Timber Contract-Timber Sale	USFS	C	0.0	0.0	0.0	1.3	1.7	2.2	2.1	**0.94**
240	Middle Creek Integrated Resource Timber Contract-Timber Sale & Fuels Reduction Project	USFS	C	0.0	0.0	0.0	1.1	1.7	2.2	2.3	**0.93**
Water Quality Management											
217	Residual Lime Remediation near El Dorado Trail	County	B	1.5	0.0	0.0	1.1	2.6	2.2	2.3	**1.24**
202	Slate Creek Monitoring Project	County	B	0.0	0.0	0.0	1.5	2.1	2.2	2.4	**1.04**
212	Cosumnes River Water Quality Monitoring Program	American River Conservancy	C	0.0	0.0	0.0	0.0	2.7	2.2	2.7	**0.91**
218	Countywide Water Quality Monitoring	County	C	0.0	0.0	0.0	0.0	2.3	2.2	2.6	**0.86**

Table 4-10. Project Prioritization Results for Watershed Management Component (continued)

Watershed Management Component											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Creek Restoration											
208	Weber Creek Restoration	County	A	3.0	0.0	1.8	1.7	2.4	2.2	1.7	**1.68**
206	Carson Creek Restoration	County	A	3.0	0.0	1.8	1.7	2.0	2.2	2.0	**1.66**
207	New York Creek Restoration	County	A	3.0	0.0	1.8	1.5	2.0	2.2	2.1	**1.65**

Key:
Agency= El Dorado County Water Agency
County = County of El Dorado
El Dorado County & GDRCD= El Dorado County & Georgetown Divide Resource Conservation District
MRF= Material Recovery Facility
USFS. = U.S. Department of Agriculture, Forest Service
WWTP= Wastewater Treatment Plant

Table 4-11. Project Prioritization Results for Stormwater Management Component – Structural

Stormwater Management Component - Structural											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Water Capture											
319	Countywide Park BMP Retrofit Improvements	County	A	3.0	0.0	2.6	1.4	2.7	2.2	2.6	**1.83**
310	Fairgrounds Water Quality Improvements	County	A	2.3	2.0	1.4	1.1	2.7	2.2	2.4	**1.99**
347	Sly Park Portal Subdivision Flood Management Project	County	A	3.0	0.0	3.0	1.3	2.1	2.2	2.3	**1.78**
302	Canal Street LID Projects	Placerville	A	2.8	0.0	2.2	1.2	1.9	2.2	2.6	**1.64**
338	Stormwater Detention Basin-Hangtown Creek Flood Damage Reduction Project	Placerville	A	2.5	0.0	1.8	1.2	2.1	2.2	2.3	**1.56**
308	Town of El Dorado Green Street Project	County	A	1.8	0.0	1.4	1.7	2.4	2.6	2.1	**1.56**
317	South East Connector-Expressway LID Projects	County	B	2.8	0.0	1.8	0.0	2.0	2.2	2.3	**1.41**
340	Union Mine Landfill Retention Ponds	County	B	1.5	0.0	1.8	0.0	1.7	2.2	2.4	**1.21**
Water Quality Improvements											
316	Diamond Springs Parkway-Roadway and Drainage Improvement Project	County	A	2.3	0.0	1.4	1.0	2.4	2.6	2.3	**1.55**
356	Sand Ridge Road Paving	County	B	3.0	0.0	0.0	1.5	1.4	2.2	2.3	**1.40**
300	Urban Roadway Improvement Project - Western Placerville Interchange	Placerville	B	1.8	0.0	0.0	0.0	2.6	2.6	2.4	**1.21**
304	Mosquito Road Sewer Main Replacement	Placerville	B	1.5	0.0	1.0	0.0	1.9	2.2	2.9	**1.17**
306	Urban Roadway Improvement Project - Martin Lane, Grind & Overlay Project	Placerville	C	1.8	0.0	0.0	0.0	1.9	2.2	2.9	**1.10**
305	Urban Roadway Improvement Project - Woodridge Court, Grind & Overlay Project	Placerville	C	1.5	0.0	1.0	0.0	1.9	2.2	2.7	**1.16**

Table 4-11. Project Prioritization Results for Stormwater Management Component – Structural (continued)

Stormwater Management Component - Structural											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Water Quality Improvements (continued)											
303	Urban Roadway Improvement Project - Mosquito Road Stabilization, Grind & Overlay Project	Placerville	C	1.8	0.0	0.0	0.0	1.9	2.2	2.7	**1.09**
301	Placerville Station II-Park and Ride Facility Improvements	Placerville	C	0.0	0.0	0.0	0.0	2.1	2.6	2.4	**0.90**
326	Sewer Relocation-Clay to Locust	Placerville	C	0.0	0.0	1.0	0.0	2.0	2.2	2.4	**0.92**
323	Urban Roadway Improvement Project-Ray Lawyer Drive, Grind & Overlay Project	Placerville	C	0.0	0.0	0.0	0.0	1.9	2.2	2.9	**0.84**
Non-Point Source Pollution Control											
309	Headington Yard Wash Rack	County	A	1.8	2.0	1.0	1.1	2.0	2.2	2.9	**1.84**
312	Future Bass Lake Maintenance Station	County	A	2.3	2.0	0.0	1.1	1.9	2.2	2.6	**1.76**
339	Facility Upgrades for the El Dorado Disposal MRF	County	B	1.3	1.8	0.0	1.0	1.7	2.2	2.6	**1.53**
311	Maintenance Material Storage Buildings at Missouri Flat Rd and Somerset Sand Mine	County	B	1.3	2.0	0.0	1.0	1.3	2.2	2.6	**1.54**
314	Street Sweeping Program	County	B	1.0	0.0	0.0	1.5	2.0	2.2	2.7	**1.20**
313	Forni Road Slope Stabilization	County	C	1.8	0.0	0.0	0.0	1.9	2.2	2.3	**1.05**
329	Trash Policy - TMDL Implementation	County	C	1.0	0.0	0.0	0.0	2.9	2.2	2.3	**1.04**
315	Vactor Truck Program	County	C	1.0	0.0	0.0	0.0	2.0	2.2	2.7	**0.99**
Flood Damage Reduction											
345	Cameron Park Drainage Improvements	County	A	3.0	0.0	2.2	1.4	1.9	2.2	2.4	**1.69**
348	Fish and Wildlife Routine Maintenance Agreement	County	A	2.3	0.0	1.8	1.8	2.6	2.2	2.3	**1.65**

Table 4-11. Project Prioritization Results for Stormwater Management Component – Structural (continued)

Stormwater Management Component - Structural											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Flood Damage Reduction (continued)											
346	Priority County Culvert Replacements	County	A	2.3	0.0	1.8	1.2	2.4	2.2	2.6	**1.57**
357	Upper Main Ditch Stormwater Improvements	EID	A	2.0	0.0	1.8	1.4	2.3	2.2	2.6	**1.55**
307	Town of El Dorado Drainage Improvements	County	A	2.0	0.0	1.0	1.8	2.3	2.6	2.1	**1.55**
343	Culvert Rehabilitation along Highway 50 near the City of Placerville	Caltrans	B	2.3	0.0	1.8	1.2	1.9	2.2	2.4	**1.50**
318	Headington Yard to Weber Creek Conveyance	County	B	2.3	0.0	1.4	1.5	1.4	2.2	2.9	**1.50**
342	Culvert Rehabilitation along Highway 50 near Cameron Park and Shingle Springs	Caltrans	B	2.3	0.0	1.8	1.2	1.4	2.2	2.4	**1.46**
349	Cedar Ravine Road Drainage Improvement	Placerville	B	1.5	0.0	1.8	1.1	1.4	2.2	2.6	**1.35**
324	Airport Road/Broadway Culvert Storm Drain Improvement	Placerville	B	1.5	0.0	1.0	1.0	1.7	2.2	2.9	**1.30**
350	Debby Lane/Green Valley Road Culvert Improvement	Placerville	B	1.3	0.0	1.4	1.1	1.4	2.2	2.6	**1.27**
351	Full Capture Storm Drain Inlet Replacements in Placerville	Placerville	C	1.5	0.0	1.4	0.0	1.4	2.2	2.4	**1.14**
352	Lions Park Drainage Improvement	Placerville	C	0.0	0.0	1.4	1.0	1.4	2.2	2.6	**1.06**
353	Pleasant Street Storm Drain Improvement	Placerville	C	0.0	0.0	1.4	1.0	1.4	2.2	2.6	**1.06**
354	Wiltse Road Storm Drain Improvement	Placerville	C	0.0	0.0	1.4	1.0	1.4	2.2	2.6	**1.06**
355	Pierroz Road at Hangtown Creek, Drainage Improvement	Placerville	C	0.0	0.0	1.4	1.0	1.4	2.2	2.6	**1.06**

Key:
BMP = Best Management Practices
Caltrans = California Department of Transportation
County = County of El Dorado
EID = El Dorado Irrigation District
LID = Low Impact Development
MRF = Material Recovery Facility
Placerville = City of Placerville
TMDL = Total Maximum Daily Load

Table 4-12. Project Prioritization Results for Stormwater Management Component – Non-Structural

Stormwater Management Component – Non-Structural											
Project Information			Results	Overall Benefit Category Score							
Project ID	Project Name	Project Proponent	Grouping	Water Quality	Water Supply	Flood Management	Environmental	Community	Project Cost	Implementation Complexity	**Weighted Score**
Outreach Project											
320	BMP Countywide Demonstration Projects	County	A	1.5	1.8	0.0	1.4	2.7	2.2	2.9	**1.75**
327	El Dorado Hills Library Water Conservation Project	El Dorado County & GDRCD	A	1.5	1.3	0.0	1.3	2.7	2.2	2.6	**1.59**
333	Splash in the Class - Outreach Program	County	A	1.0	1.0	0.0	0.0	2.3	2.2	3.0	**1.27**
328	Our Water Our World - Outreach Program	County	B	1.0	0.0	0.0	0.0	2.3	2.2	2.6	**1.01**
330	Countywide Water Quality Awareness Campaign	County	B	1.0	0.0	0.0	0.0	2.3	2.2	2.3	**0.98**
Management Programs											
331	Countywide Stormwater Asset Management Program	County	A	1.0	0.0	0.0	0.0	2.4	2.2	2.4	**1.01**
336	West Slope BMP Manual	County	C	1.0	0.0	0.0	0.0	2.1	2.2	2.3	**0.97**
341	BMP for Agricultural Erosion and Sediment Control Manual	County	C	1.0	0.0	0.0	0.0	2.1	2.2	2.3	**0.97**
334	County Water Quality Standards Improvement Project	County	C	1.0	0.0	0.0	0.0	1.7	2.2	2.7	**0.96**
335	West Slope Watershed and Pollutant Generation Study	County	C	0.0	0.0	0.0	0.0	2.1	2.2	2.4	**0.83**
337	Outingdale Stormwater Management Study/Pre-Design	American River Conservancy	C	0.0	0.0	0.0	0.0	2.1	2.2	2.3	**0.82**

Note: Project ID 327 is evaluated under two project types: Water Capture and Outreach Project
Key:
BMP = Best Management Practices
County = County of El Dorado
El Dorado County & GDRCD = El Dorado County & Georgetown Divide Resource Conservation District

5.0 PLAN IMPLEMENTATION STRATEGY AND SCHEDULING OF PROJECTS

West Slope SWRP development relied on a complex web of interconnected entities. Coordination amongst entities will continually be needed to identify project constraints, funding sources, required permits, land acquisition requirements, operations and maintenance needs, resource needs, and applicable regulations in order to successfully implement these multi-benefit projects. This section describes the funding sources, regulations, and policies to give a holistic view of the current regulatory landscape. Also, the ongoing monitoring and revision efforts as well as roles and responsibilities necessary for successful implementation of the West Slope SWRP are described.

5.1 RESOURCES FOR PLAN IMPLEMENTATION

Project planning, approval, and financing are all barriers to project implementation. Implementation of projects identified in the West Slope SWRP will require cooperation and collaboration of multiple entities to identify and address challenges throughout the entire project lifecycle. Each of the three West Slope SWRP components has intricacies and unique resources result in distinct challenges.

Lack of funding is often the most significant barrier to plan implementation. The current funding situation as well as a strategy for addressing lack of funding are described in the following subsections. There are many local, State, and Federal funding vehicles for water, green infrastructure (USEPA 2014), grey water, groundwater, reuse, wastewater, and stormwater that are available to the project proponents.

Leveraging State and Federal financial and technical assistance cannot be complete without local financial support. The majority of State and Federal assistance programs require local cost share. The sections below provide the foundational information and collaborative forum among governments in El Dorado County for budgetary recommendations to streamline the implementation and policy considerations for long-term sustainable water management.

5.1.1 Statement of Funding Adequacy

West Slope SWRP includes research on various grant opportunities, loan opportunities, technical assistance, and emergency assistance in an effort to be proactive in implementing projects, as many funding sources are transient. Funding sources for projects are determined by the project proponent on a case-by-case basis, and current funding allocations and needs are identified in the project description forms in Appendix B. Due to the conceptual nature of many of the projects, some projects have currently unidentified funding sources, as many require annual appropriation and approval, and the opportunities for potential State and Federal assistance vary. Project proponents will update project information and funding sources when available. Project proponents will coordinate with local, State, and Federal officials to determine the most appropriate funding for each project. In addition, resources for administration and implementation needs will continue to be incorporated in each SWRP Partners' annual budgets for staffing and materials associated with stormwater and watershed activities.

5.1.2 Potential Funding Opportunities

The availability of funding for surface water storage, watershed management, and stormwater management projects are split into the following three categories:

- Local funding that can be procured from local sources. Local funding sources are presented in Table 5-1.
- State funding sources including grants, loans, and technical assistance. Tables 5-2 through 5-5 present applicable State funding sources.
- Federal funding sources including emergency relief, and economic and agricultural development. Tables 5-6 through 5-10 present applicable funding sources.

The West Slope SWRP only includes multi-benefit projects. As such, this has led to many of the projects being eligible for multiple funding opportunities. This section of the document identifies potentially applicable funding sources; however, these tables represent only a snapshot-in-time of available funding opportunities.

5.1.2.1 Local Government Funding Opportunities

Table 5-1 identifies and compares various local government funding sources that may be used to support larger programs or finance individual projects. Information contained in this section should be used as a guide and tailored to specific project needs. Some funding sources may be more applicable to capital projects while others are meant to sustain program development including operations and maintenance.

Table 5-1. Potential Local Funding Sources for Project Implementation

Funding Source	Description	Advantages	Disadvantages
Taxes/ General Funds	Funds raised through taxes such as, property, income, and sales that are paid into a general fund.	• Consistent from year-to-year • Utilizes an existing funding system	• Competition for funds • Tax-exempt properties do not contribute • System is not equitable (does not fully reflect contribution of stormwater runoff)
Fees	Funds raised through charges for services such as inspections and permits. Funds raised through developer impact fees are one-time charges linked with new development.	• Specific permit and inspection fees allow for more direct allocation of costs for services provided • Addresses potential stormwater impacts related to new construction	• Funding not available for larger projects, system-wide improvements, or operations and maintenance • Developer impact fees may be an unreliable source when development slows (due to market downturns/contractions) • Requires administrative framework to assess and manage
Stormwater Utility	A stormwater utility generates its revenue through user fees and the revenues from the stormwater charges will go into a separate fund that might be used only for stormwater services.	• Dedicated funding source • Directly related to stormwater impacts • Sustainable, stable revenue • Shared cost • Improved watershed stewardship • Addresses existing stormwater issues	• Proposition 218 (1996) and Proposition 218 Omnibus Implementation Act (1997) block funding stormwater programs in California; gave special status to water, wastewater, and refuse utilities; stormwater not recognized as a utility, nor as a source of water; Senate Bill 231 signed by the Governor in 2017 could become a dedicated sources of revenue for stormwater funding • Feasibility study required for implementation, fee structure, and administration of utility • Approval by vote of the local legislative body • Perception by the public of a “tax on rain”

Table 5-1. Potential Local Funding Sources for Project Implementation (continued)

Funding Type	Description	Advantages	Disadvantages
Bonds	Bonds are not a true revenue source, but are a means of borrowing money. "Green" bonds are a new source of funding dedicated to environmentally friendly projects, including clean water projects.	• Existing sources available for stormwater-related funding • Can support construction-ready projects • Can provide steady funding stream over the period of the bond	• One-time source of funds • Requires individual approval for each issuance • Requires full repayment • Possible interest charges • Requires dedicated repayment revenue stream • May require design-level documents to be prepared in advance • Likely requires voter approval • Can have high transaction costs relative to requested amount • May require significant administrative preparation to issue
Public-Private Partnerships	Contractual agreement between a public agency and a private sector entity that allows for the private sector participation in the financing, planning, design, construction, and maintenance of stormwater facilities.	• Can reduce costs to government • Significantly leverages public funding and government resources • Ensures adequate, dedicated funding • Improved operations and maintenance • Shared risk	• Perceived loss of public control • Assumption that private financing is more expensive and belief that contract negotiations are difficult
Cooperative Implementation Agreements	Collaboration between Agencies to share financial resources to implement region-scale best management practice (BMP) implementation.	• Applied statewide • Objective compliance measure • Greatest water quality benefit per dollar spent • Flexibility in implementation	• Limited funding • Project competition – some projects will not achieve prioritization

Table 5-1. Potential Local Funding Sources for Project Implementation (continued)

Funding Type	Description	Advantages	Disadvantages
Credit Trading Program	System of tradable runoff credits that would create economic incentives for individual property owners to build small BMPs distributed throughout a watershed.	• Incentive to increase construction of BMPs in the watershed, parcel owners can trade responsibility for runoff detention, much like emissions allowances in the air quality trading market • Alternative to onsite BMP implementation where found to be infeasible	• Complex system needs to be established • Different types of credits may need to be established (water quality, hydromodification, etc.) • Credit value may need to account for BMP operations and maintenance, rehabilitation, and replacement into perpetuity
Enhanced Infrastructure Financing Districts (EIFD)	EIFDs are separate government entities, formed through a Joint Powers Authority consisting of cooperating cities, counties, and special districts. EIFDs allow for regional cooperation on infrastructure investment and economic development.	• Two recent laws (Senate Bill 628 in 2014; Assembly Bill 313 in 2015) allow cities, counties, and special districts to form EIFDs and issue tax increment financing bonds under specific circumstances. • Economic development and job creation tool • Voter approval is not required to form an EIFD	• 55 percent voter approval to authorize bonds • Each participant must agree to the amount of tax increment that they will contribute.

Key:
EIFD = Enhanced Infrastructure Financing District
BMP = Best Management Practice

5.1.2.2 State Funding Opportunities

The following are potential State funding opportunities for project implementation:

- State Water Resources Control Board Funding Sources

  The State Water Board and nine RWQCBs, collectively known as the California Water Boards, are dedicated to a single vision: abundant clean water for human uses and environmental protection to sustain California's future. Under the Federal CWA and the State's pioneering Porter-Cologne Water Quality Control Act, the RWQCBs have regulatory responsibility for protecting the water quality of nearly 1.6 million acres of lakes, 1.3 million acres of bays and estuaries, 211,000 miles of rivers and streams, and about 1,100 miles of exquisite California coastline. Table 5-2 presents applicable funding sources from the State Water Board.

- Proposition 1 Funding Sources

  The single largest potential funding opportunity for the West Slope is Proposition 1, which was approved by California voters on November 4, 2014, and authorized $7.545 billion in general obligation bonds. Proposition 1 funds investments as part of a statewide comprehensive effort to provide opportunities relating the planning, design, and implementation of water conservation, recycling, groundwater cleanup, storage and other water related projects and programs. A significant portion of these bond funds are being distributed through grant and loan opportunities administered by various State agencies including DWR, the State Water Board, and the California Water Commission. These agencies are tasked with overseeing competitive application processes, and developing guidelines for soliciting and evaluating project proposals. Approximately 30 different Proposition 1 grant and loan administration efforts are planned or underway across the State - all on individual timelines. Relevant funding sources for the West Slope SWRP projects are in Proposition 1 Chapters 5 through 11. Table 5-3 summarizes the key areas for funding identified in Proposition 1.

- California Department of Forestry and Fire Protection Funding Sources

  California Department of Forestry and Fire Protection (CAL FIRE) offers several grant opportunities available through three programs: Greenhouse Gas Reduction Funds, State Responsibility Area Fire Prevention Fund and Volunteer Fire Assistance. Table 5-4 summarizes the key areas for funding identified in the CAL FIRE grant program.

- Miscellaneous State Funding Sources

  A variety of other funding sources existing from the California Department of Housing and Community Development, Caltrans, California Infrastructure and Economic Development Bank, Rural Community Assistance Corporation, and Sierra Institute. Miscellaneous State funding sources are presented in Table 5-5.

Table 5-2. State Water Board Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
California Environmental Protection Agency – State Water Board	Drinking Water State Revolving Fund Program	This program assists public water systems in financing the cost of drinking water infrastructure projects needed to achieve or maintain compliance with Safe Drinking Water Act requirements.	Loan	Surface Water Storage
	Proposition 84 Funding for Public Water Systems	This program provides funding for emergency clean water grants (Public Resources Code Section 75021), small community infrastructure improvements for chemical and nitrate contaminants (Public Resources Code Section75022), or grants to prevent or reduce contamination of groundwater that serves as a source of drinking water (Public Resources Code Section 75025).	Grant	Watershed Management
	Clean Water State Revolving Fund Program (CWSRF)	CWSRF program offers low cost financing for a wide variety of water quality projects. The program has significant financial assets, and is capable of financing projects from <$1 million to >$100 million.	Loan	Watershed Management, Stormwater Management
	Water Recycling Funding Program	Promotes the beneficial use of treated municipal wastewater (water recycling) in order to augment fresh water supplies in California by providing technical and financial assistance to agencies and other stakeholders in support of water recycling projects and research.	Loan/ Technical Assistance	Watershed Management
	Stormwater Grant Program	Prop 1 (Assembly Bill 1471, Rendon) authorized $7.545 billion in general obligation bonds for water projects including surface and groundwater storage, ecosystem and watershed protection and restoration, and drinking water protection. The State Water Board will administer Proposition 1 funds for five programs. Of the $7.545 billion, Proposition 1 (Section 79747) provides $200 million in grant funds for multi-benefit stormwater management projects.	Grant	Surface Water Storage, Watershed Management, Stormwater Management

Table 5-2. State Water Board Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
California Environmental Protection Agency – State Water Board	Water or Energy Audit Financial Assistance	The purpose of the Water or Energy Audit is to encourage public agencies to take an independent look into their current practices, identify potentially inefficient water or energy use and follow up with a well thought out plan to improve consumption of these valuable resources. The agency is encouraged to study water and energy in the audit, but may focus on one or the other. All audits must be related to projects, facilities, or activities that are otherwise eligible for CWSRF funding. Agencies may hire consultants to perform the audit, or perform the work with their own staff.	Technical Assistance	Watershed Management

Key:
CWSRF = Clean Water State Revolving Fund

Table 5-3. Proposition 1 Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
California Proposition 1(2014)	Chapter 5 – Drinking Water Quality ($520M).	To improve access to clean drinking water for disadvantaged communities ($260M) and help small communities pay for wastewater treatment ($260M).	Grant	Surface Water Storage, Watershed Management
	Chapter 6 – Watershed Protection and Restoration ($1.5B).	To protect and restore watersheds and other habitat throughout the state.	Grant	Watershed Management
	Chapter 7 – Regional Water Management ($810M).	$510M for allocations to specific regions throughout the state through the Integrated Regional Water Management program, $200M for projects and plans to manage runoff from storms in urban areas, and $100M for water conservation projects and programs.	Grant	Surface Water Storage, Watershed Management, Stormwater Management
	Chapter 8 – Water Storage ($2.7B).	Funds will go to “public benefits” of projects only. Projects must be in regions connected to the Bay-Delta watershed	Grant	Surface Water Storage
	Chapter 9 – Water Recycling and Desalination ($725M).	$100M for contaminant and salt removal projects, and $625M for water recycling, dedicated distribution infrastructure, pilot projects for new potable reuse and other salt removal technology, and multi-benefit recycled water projects that improve water quality, and technical grant writing assistance for disadvantaged communities.	Grant	Surface Water Storage, Watershed Management
	Chapter 10 – Groundwater Sustainability ($900M).	For groundwater protection and cleanup programs, and development and implementation of groundwater sustainability plans.	Grant	Watershed Management
	Chapter 11 – Flood Protection ($395M).	$295M to improve levees or respond to flood emergencies specifically in the Delta and $100M for flood control projects anywhere in the state.	Grant	Stormwater Management

Key:
B = Billion
M= Million

Table 5-4. California Department of Forestry and Fire Protection Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
California Department of Forestry and Fire Protection (CAL FIRE)	State Responsibility Area Fire Prevention Fund and Tree Mortality Grant Program	This program has $15.75 million available for projects that focus on supporting local efforts to remove dead and dying trees that pose a threat to public health and safety and for projects that reduce the wildfire threat to habitable structures within State Responsibility Areas.	Grant	Watershed Management
	Forest Health Greenhouse Gas Reduction Fund (GGRF) Grants	The Forest Health GGRF Grant Program will use funds provided by the Greenhouse Gas Reduction Fund for California Climate Investments administered by CAL FIRE. Through the Forest Health GGRF Grant Program, CAL FIRE funds and implements projects to proactively restore forest health in order to reduce greenhouse gases, to protect upper watersheds where the state's water supply originates, to promote the long-term storage of carbon in forest trees and soils, minimize the loss of forest carbon from large, intense wildfires, and to further the goals of the California Global Warming Solutions Act of 2006 (Assembly Bill 32, Health and Safety Code Section 38500 et seq.).	Grant	Watershed Management
	Urban Forest Expansion and Improvement	Urban tree planting and planting of urban vegetation to reduce greenhouse gas (GHG) emissions, tree and plant establishment care, and planting site preparation. In addition to tree planting, a project may also involve lightly engineered planting sites (e.g. bioswales, etc.) and acquisition of small, vacant parcels to be improved for purposes consistent with the California Urban Forestry Act.	Grant	Watershed Management
	Urban Forest Management Activities	For local governments (cities, counties, districts). Improving long-term management of urban forests to reduce GHG emissions and improve urban forest performance over time. Projects may involve the establishment or updating of a jurisdiction-wide tree inventory, urban forest mapping and analysis, and/or long-term management plan. May include policy integration and ordinance development.	Grant	Watershed Management

Table 5-4. California Department of Forestry and Fire Protection Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
	Urban Wood and Biomass Utilization	Creation, development, and implementation of projects to better utilize trees and/or other vegetation from urban forests to reduce GHG emissions. The trees that are utilized must not have been removed solely for the purpose of utilization; there must be another valid management objective behind the removal of the trees. Projects that will use urban woody biomass for its highest and best use, thus diverting it from the urban waste stream.	Grant	Watershed Management

Key:
CAL FIRE = California Department of Forestry and Fire Protection
GGRF = Greenhouse Gas Reduction Fund
GHG = Greenhouse Gas

Table 5-5. Miscellaneous State Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
California Department of Housing and Community Development	Community Development Block Grant	This agency partners with rural cities and counties to improve the lives of their low- and moderate-income residents through the creation and expansion of community and economic development opportunities in support of livable communities.	Loan	Watershed Management, Stormwater management
California Department of Transportation	Cooperative Implementation Agreements	Cooperative Implementation Agreements between the Department and other responsible parties to conduct work to comply with a Total Maximum Daily Load (TMDL), and a Cooperative Implementation Grant Program funded by the Department and administered by the State Water Board. The grant program will be used to fund capital projects in impaired watersheds in which the Department has been assigned a Waste Load Allocation or otherwise has responsibility for implementation of the TMDL. Cooperative implementation will satisfy some or all of the Department's obligations under a TMDL, whether or not discharges from the Department's right of way are controlled or treated (Kontaxis 2017).	Grant	Watershed Management, Stormwater management
California Infrastructure and Economic Development Bank	Infrastructure State Revolving Fund Program	The Infrastructure State Revolving Fund Program provides financing to public agencies and non-profit corporations sponsored by public agencies for a wide variety of infrastructure and economic development projects (excluding housing).	Loan	Surface Water Storage, Watershed Management, Stormwater management
Rural Community Assistance Corporation (RCAC)	Environmental Infrastructure Loans	This program helps create, improve or expand the supply of safe drinking water, waste disposal systems and other facilities that serve communities in the rural West. RCAC loan programs provide the early funds small rural communities need to determine feasibility and pay pre-development costs prior to receiving state and federal program funding. RCAC also may provide interim construction financing, as well as intermediate and long-term loans for system improvements.	Loan	Surface Water Storage, Watershed Management, Stormwater management

Table 5-5. Miscellaneous State Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
Sierra Institute (non-profit, non-public organization)	Disadvantaged Community Involvement Program	The program will conduct needs assessments of communities throughout the region to determine specific challenges in each community, project priorities and the tools necessary to build capacity. The grant runs for three years, and includes support for technical assistance training and workshops, capacity building and other activities as identified by the communities themselves during the needs assessments and targeted outreach	Grant/Technical Assistance	Surface Water Storage, Watershed Management, Stormwater management

Key:
TMDL = Total Maximum Daily Load
RCAC = Rural Community Assistance Corporation

5.1.2.3 Federal Funding Assistance

- U.S. Army Corps of Engineers Funding Sources

  The USACE is responsible for planning, designing, building, and operating locks and dams. Other civil engineering projects include flood control, beach nourishment, and dredging for waterway navigation, design and construction of flood protection systems through various federal mandates, environmental regulation, and ecosystem restoration. Applicable funding sources from the USACE are presented in Table 5-6.

- U.S. Department of Agriculture Funding Sources: The following are several funding sources from the U.S. Department of Agriculture (USDA) (Table 5-7):

  - **USDA Rural Development** is committed to helping improve the economy and quality of life in all of rural America by providing financial programs to support essential public facilities and services as water and sewer systems, housing, health clinics, emergency service facilities and electric and telephone service. USDA Rural Development promotes economic development by providing loans to businesses through banks and community-managed lending pools, while also assisting communities to participate in community empowerment programs.

  - **USDA Natural Resources and Environment** ensures the health of the land through sustainable management and works to prevent damage to natural resources and the environment, restore the resource base, and promote good land management.

  - **USDA Farm Production and Conservation** is the USDA's focal point for the nation's farmers and ranchers and other stewards of private agricultural lands and non-industrial private forest lands. Farm Production and Conservation agencies implement programs designed to mitigate

the significant risks of farming through crop insurance services, conservation programs and technical assistance, and commodity, lending, and disaster programs.

- U.S. Environmental Protection Agency Funding Sources

  Nearly half of the USEPA's budget goes into grants to state environmental programs, non-profits, educational institutions, and others. These funds are used to implement a wide variety of projects, from scientific studies that help make decisions to community cleanups. Overall, grants help the USEPA achieve its mission of protect human health and the environment. Funding sources from the USEPA are presented in Table 5-8.

- Federal Emergency Management Agency Funding Sources

  FEMA's mission is to support U.S. citizens and be the first responders to ensure that citizens and agencies work together to build, sustain and improve capability to prepare for, protect against, respond to, recover from and mitigate all hazards. FEMA funding sources are presented in Table 5-9.

- Miscellaneous Federal Funding Sources

  A variety of other funding sources are presented in Table 5-10, including the U.S. Departments of Commerce, Housing and Urban Development, Interior, Transportation, and Economic Development Administration.

Table 5-6. U.S. Army Corps of Engineers Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Army Corps of Engineers (USACE)	Aquatic Ecosystem Restoration Continuing Authorities Program (CAP Section 206)	Work under this authority may carry out aquatic ecosystem restoration projects that will improve the quality of the environment, are in the public interest, and are cost-effective. Additional information about this program: http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section206.pdf	Design and Construction Assistance	Watershed Management, Stormwater Management
	Project Modifications for Improvement of the Environment (CAP Section 1135)	Work under this authority provides for modifications in the structures and operations of water resources projects constructed by the USACE to improve the quality of the environment. Additionally, the USACE may undertake restoration projects at locations where an existing USACE project has contributed to the degradation. Additional program information: http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/1135.pdf	Design and Construction Assistance	Stormwater Management
	Small Flood Damage Reduction Projects (CAP Section 205)	Work under this authority provides for local protection from flooding by the construction or improvement of structural flood damage reduction features such as levees, channels, and dams. Non-structural alternatives are also considered and may include measures such as installation of flood warning systems, raising and/or flood proofing of structures, and relocation of flood prone facilities. Additional information about this program: http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section205.pdf	Design and Construction Assistance	Surface Water Storage, Stormwater Management
	Snagging and Clearing for Flood Control (CAP Section 208)	Work under this authority provides for local protection from flooding by channel clearing and excavation, with limited embankment construction by use of materials from the clearing operation only. Additional information about this program: http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section208.pdf	Design and Construction Assistance	Watershed Management, Stormwater Management

Key:
CAP = Continuing Authorities Program
USACE = U.S. Army Corp of Engineers

Table 5-7. U.S. Department of Agriculture Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Department of Agriculture (USDA)	Conservation Reserve Program (CRP)	This voluntary program provides agricultural landowners with annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat.	Cost Share	Watershed Management, Stormwater Management
	Agricultural Management Assistance	This program provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations.	Cost Share	Watershed Management, Stormwater Management
	Emergency Watershed Protection	This program helps protect lives and property threatened by natural disasters such as floods, hurricanes, tornadoes, droughts, and wildfires. The program provides funding for such work as clearing debris from clogged waterways, restoring vegetation, and stabilizing river banks.	Grant	Watershed Management, Stormwater Management
	Conservation Reserve Enhancement Program	This voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water.	Grant	Surface Water Storage, Watershed Management, Stormwater Management

Table 5-7. U.S. Department of Agriculture Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS)	Agricultural Easement Conservation Program	This program provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Wetlands Reserve Easements component, the NRCS helps to restore, protect and enhance enrolled wetlands.	Grant/Technical Assistance	Watershed Management, Stormwater management
	Regional Conservation Partnership Program	This program provides an opportunity for partners to scope a five year project in partnership with NRCS to enhance and accelerate conservation efforts, innovation and locally-driven solutions. Partnering organizations design, promote, implement, and evaluate the project outcomes in partnership with NRCS programs.	Technical Assistance	Watershed Management, Stormwater management
	Watershed and Flood Prevention Operations Program	This program works to prevent erosion, floodwater, and sediment damage; to further the conservation, development, utilization, and disposal of water; and to further the conservation and proper utilization of land in authorized watersheds.	Grant/Technical Assistance	Watershed Management, Stormwater management

Table 5-7. U.S. Department of Agriculture Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Department of Agriculture (USDA) – Rural Development	Special Evaluation Assistance for Rural Communities and Households	This program helps very small, financially distressed rural communities with predevelopment feasibility studies, design assistance, and technical assistance on proposed water and waste disposal projects.	Technical Assistance	Watershed Management
	Water & Waste Disposal Loan & Grant Program	Program provides funding to rural areas and towns with fewer than 10,000 people for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and stormwater drainage to households and businesses in eligible rural areas.	Loan/Grant	Watershed Management
	Water and Waste Disposal Guaranteed Loan Program	This program helps private lenders provide affordable financing to qualified borrowers to improve access to clean, reliable water and waste disposal systems for households and businesses in rural areas. This is achieved through bolstering existing private credit structure through the guarantee of quality loans. Guarantees up to 90% available to eligible lenders.	Loan	Watershed Management
	Water & Waste Disposal Loan Guarantees	The program helps private lenders provide affordable financing to qualified borrowers to improve access to clean, reliable water and waste disposal systems for households and businesses in rural areas.	Loan	Watershed Management
	Water & Waste Disposal Revolving Loan Funds	This program assists communities with water and wastewater systems. Qualified private non-profit organizations will receive grant funds to establish a lending program for eligible entities. This grant program is to serve a rural area with a population not in excess of 10,000.	Grant	Watershed Management

Table 5-7. U.S. Department of Agriculture Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
USDA – Rural Development	Water & Waste Disposal Predevelopment Planning Grants	This program assists low-income communities with initial planning and development of an application for USDA Rural Development Water and Waste Disposal direct loan/grant and loan guarantee programs.	Loan/Grant	Watershed Management
	Emergency Community Water Assistance Grants	This grant program is designed to assist rural communities that have experienced a significant decline in quantity or quality of drinking water due to an emergency, or in which such decline is considered imminent, to obtain or maintain adequate quantities of water that meets the standards set by the Safe Drinking Water Act.	Grant	Watershed Management, Stormwater Management
	Water & Waste Disposal Grants to Alleviate Health Risks on Tribal Lands and Colonias	This program provides access to safe reliable drinking water and waste disposal facilities and services to low-income communities that face significant health risks.	Grant	Watershed Management

Key:
CRP = Conservation Reserve Program
NRCS = Natural Resources Conservation Service
USDA = U.S. Department of Agriculture

Table 5-8. U.S. Environmental Protection Agency Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Environmental Protection Agency (USEPA)	Source Reduction Assistance Grant Program	This program awards support pollution prevention through source reduction and resource conservation work. As authorized under the statutory authorities for this grant program, proposals must carry out project activities using one or more of the following methods of surveys, studies, research, investigation, experimentation, education, training and/or demonstrations.	Grant	Watershed Management, Stormwater Management
	Environmental Workforce Development and Job Training Grants	Funds are available for Environmental Workforce Development and Job Training programs that recruit, train, and place local, unemployed and under-employed residents with the skills needed to secure full-time employment in the environmental field. Wastewater treatment training is eligible, such as wastewater treatment facility operations (treatment, collection, storage, and disposal) training, decentralized wastewater treatment systems maintenance, or other related wastewater management topics.	Grant	Surface Water Storage, Watershed Management, Stormwater Management
	Clean Water State Revolving Fund	This program provides a permanent source of low-cost financing for a wide range of water quality infrastructure projects. These projects include municipal wastewater treatment and collection, nonpoint source pollution controls, decentralized wastewater treatment systems, green infrastructure, water efficiency, and estuary management.	Loan	Surface Water Storage, Watershed Management, Stormwater Management

Table 5-8. U.S. Environmental Protection Agency Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
USEPA	Urban Waters Small Grants	This program has an emphasis on engaging communities with environmental justice concerns. The objective of the Urban Waters Small Grants is to fund projects that will foster a comprehensive understanding of local urban water issues, identify and address these issues at the local level, and educate and empower the community. In particular, the Urban Waters Small Grants seek to help restore and protect urban water quality and revitalize adjacent neighborhoods by engaging communities in activities that increase their connection to, understanding of, and stewardship of local urban waterways.	Grant	Watershed Management, Stormwater Management
	Wetlands Program Development Grants	These grants Wetland Program Development Grants are intended to encourage comprehensive wetlands program development by promoting the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution.	Grant	Watershed Management, Stormwater Management
	Water Infrastructure Finance and Innovation Act (WIFIA)	The WIFIA program was created in 2014 and provides direct loans and loan guarantees to cover up to 49% of eligible costs for drinking water and wastewater infrastructure projects of regional or national significance. WIFIA was designed to offer credit assistance with flexible terms in order to attract private participation, encourage new revenue streams for infrastructure investment, and allow public agencies to get more projects done with fewer local dollars. WIFIA lends at the Treasury rate for a comparable maturity currently below 3 percent for a 30-year loan. Further, WIFIA will look to the project with a long term repayment horizon rather than focusing on immediate returns.	Loan	Surface Water Storage, Watershed Management, Stormwater Management

Table 5-8. U.S. Environmental Protection Agency Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
USEPA	Nonpoint Source Implementation Grants (319 Program)	Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.	Grant	Watershed Management, Stormwater Management
	Drinking Water State Revolving Fund	This program is a federal-state partnership to help ensure safe drinking water. Created by the 1996 Amendments to the Safe Drinking Water Act the program provides financial support to water systems and to state safe water programs.	Loan	Watershed Management, Stormwater Management

Key:
USEPA = U.S. Environmental Protection Agency
WIFIA = Water Infrastructure Finance and Innovation Act

Table 5-9. Federal Emergency Management Agency Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Federal Emergency Management Agency (FEMA)	FEMA Public Assistance Program	This program provides grants to state, tribal and local governments, and certain types of private nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies.	Grant	Surface Water Storage, Watershed Management, Stormwater Management
		Through the program, FEMA provides supplemental federal disaster grant assistance for debris removal, life-saving emergency protective measures, and the repair, replacement, or restoration of disaster-damaged publicly owned facilities, and the facilities of certain private non-profit organizations. This program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.	Grant	Surface Water Storage, Watershed Management, Stormwater Management
	Pre-Disaster Mitigation Program	This program is designed to assist States, U.S. Territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters.	Grant/Technical Assistance	Surface Water Storage, Watershed Management, Stormwater Management

Table 5-9. Federal Emergency Management Agency Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
FEMA	Flood Mitigation Assistance Program (FMA)	This program is authorized by Section 1366 of the National Flood Insurance Act of 1968, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FMA provides funding to States, Territories, federally-recognized tribes and local communities for projects and planning that reduces or eliminates long-term risk of flood damage to structures insured under the NFIP. FMA funding is also available for management costs.	Grant/Technical Assistance	Surface Water Storage, Watershed Management, Stormwater Management
	Hazard Mitigation Grant Program	This program is to help communities implement hazard mitigation measures following a Presidential major disaster declaration. Hazard mitigation is any action taken to reduce or eliminate long term risk to people and property from natural hazards. Mitigation planning is a key process used to breaking the cycle of disaster damage, reconstruction, and repeated damage.	Grant	Surface Water Storage, Watershed Management, Stormwater Management

Key:
FEMA = Federal Emergency Management Agency
FMA = Flood Mitigation Assistance
NFIP = National Flood Insurance Program

Table 5-10. Miscellaneous Federal Funding Sources for Project Implementation

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Department of Commerce Economic Development Administration	Investments for Public Works and Economic Adjustment Assistance Programs	Empowers distressed communities to revitalize, expand, and upgrade their physical infrastructure, and generate or retain long-term, private sector jobs and investment.	Technical Assistance	Surface Water Storage, Watershed Management, Stormwater Management
U.S. Department of Housing and Urban Development (HUD)	Community Development Block Grant Disaster Recovery Program	HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. Example of eligible activities include buying, constructing, or rehabilitating public facilities such as water, sewer and drainage systems.	Grant	Surface Water Storage, Watershed Management, Stormwater Management
	Community Development Block Grant	This program is a flexible program that provides communities with resources to address a wide range of unique community development needs.	Grant	Surface Water Storage, Watershed Management, Stormwater Management
U.S. Department of the Interior, Bureau of Reclamation (Reclamation)	Drought Response Program	Reclamation's Drought Response Program supports a proactive approach to drought. It will provide assistance to water users for drought contingency planning, including consideration of climate change information and to take actions that will build long-term resiliency to drought.	Technical Assistance	Surface Water Storage, Watershed Management, Stormwater Management
	Title XVI Water Reclamation & Reuse Program	Though this program, Reclamation identifies and investigates opportunities to reclaim and reuse wastewaters and naturally impaired ground and surface water in the 17 Western States and Hawaii. Title XVI includes funding for feasibility studies and research, and the construction of water recycling projects on a project specific basis, in partnership with local governmental entities.	Technical Assistance	Surface Water Storage, Watershed Management, Stormwater Management
	Cooperative Watershed Management Program	Through this program, Reclamation provides financial assistance to locally led watershed groups to encourage diverse stakeholders to form local solutions to water management needs. Starting in 2017, Reclamation will provide cost-shared financial assistance to watershed groups to implement watershed management projects (Phase II). Proposals are currently due January 31, 2018.	Grant	Surface Water Storage, Watershed Management, Stormwater Management

Table 5-10. Miscellaneous Federal Funding Sources for Project Implementation (continued)

Funding Agency/Source	Program Name	Description	Type of Assistance	Applicable Component
U.S. Department of Transportation	Transportation Investment	This program provides assistance for capital projects related to highways, bridges, public transportation, rail, ports, and intermodal projects. A primary selection criterion specifically mentions addressing environmental sustainability including avoiding adverse environmental impacts to water quality, providing environmental benefits such as ground water recharge in areas of water scarcity, and stormwater mitigation, including green infrastructure.	Grant	Watershed Management, Stormwater Management
U.S. Economic Development Administration	Planning Program and Local Technical Assistance Program	Through its Planning Program and Local Technical Assistance Program, this administration assists eligible recipients in developing economic development plans and studies designed to build capacity and guide the economic prosperity and resiliency of an area or region.	Technical Assistance	Surface Water Storage, Watershed Management, Stormwater Management

Key:
HUD = Housing and Urban Development
Reclamation = Bureau of Reclamation

5.2 INCORPORATION INTO AN INTEGRATED REGIONAL WATER MANAGEMENT PLAN

Projects identified in this plan are being submitted for project screening, review, and inclusion in the CABY IRWMP. At this time, while a portion of the projects also lie within the American River Basin IRWMP, for consistency, all projects will only be incorporated into the CABY IRWMP. The SWRP Partners will continue to coordinate with the CABY IRWMP Coordinating Committee as many of the West Slope goals correlate to the CABY IRWMP. Future projects added to the West Slope SWRP will continue to be incorporated into the CABY IRWMP.

5.3 WEST SLOPE STORMWATER RESOURCE PLAN IMPLEMENTATION

Successful implementation of the West Slope SWRP depends on clearly defined roles and responsibilities of the SWRP Partners, project-specific implementing entities, stakeholders, interested parties, elected officials, and the public. Responsibilities of key entities are described in this section.

5.3.1 SWRP Partners

The primary purpose of the SWRP Partners will be to provide oversight of the West Slope SWRP and make related decisions, resolve any issues presented by the participating entities, provide guidance and direction

on next steps and recommended actions (as appropriate), and engage with stakeholders and interested parties. The SWRP Partners will continue to consist of the following:

1. **Agency**, will be the lead agency responsible for administration, monitoring, and reporting of the West Slope SWRP. The Agency will also be responsible for the surface water and headwater components.

2. **County**, will be the responsible for administration, monitoring, and reporting of the stormwater management components (NPDES-related activities, planning, and engineering for flood control improvements; other related stormwater management and flood control capital components; etc.).

3. **Placerville**, will be the responsible for administration, monitoring, and reporting of the West Slope SWRP elements in its service boundaries to the Agency. This includes administration, monitoring, and reporting of the stormwater management (NPDES-related activities, planning, and engineering for flood control improvements; related stormwater management and flood control capital components; etc.).

SWRP Partner representatives will continue to be management-level officials with authority to commit their respective entities to a course of action.

The focus of each role listed above differs in order to best manage each of the three components (surface water storage, watershed management, and stormwater management). As discussed in Section 1, the West Slope SWRP is tailored to address the unique conditions of El Dorado County which is a mostly rural agricultural setting in the foothills where management of stormwater resources is very different from that of an urban area on flat land. To optimize managing stormwater as a resource, this West Slope SWRP covers three components in which each will be overseen by a different SWRP Partner. Although each SWRP Partner will oversee different components of the West Slope SWRP, close coordination will continue to occur to promote successful plan implementation.

5.3.2 Project-Specific Implementing Entities

The project-specific implementing entities are those responsible for project implementation and any associated activities. It could be one of three SWRP Partners, several of the SWRP Partners, or another entity. The SWRP Partners will continue to engage with these other entities on the West Slope. Participation will not be mandatory, and each entity will make its own decisions on project implementation and any associated activities. Partnerships may be formed to support funding and implementation. An example of a project requiring partnership is the Southeast Connector Project. The South East Connector Project proposes to build a 34 mile east-west roadway that will connect U.S. Highway 50 in El Dorado County to Interstate 5 in Sacramento County. The roadway segment that is to be constructed in El Dorado County will require the collaborative effort between several entities to assure that the project implements BMPs, establishes low impact development controls, and incorporates treatment measures.

5.3.3 Stakeholders and Interested Parties

Stakeholders and interested parties will be actively engaged in updating and implementing the West Slope SWRP. Potential stakeholders and interested parties include local ratepayers, developers, locally regulated

commercial and industrial stakeholders, and nonprofit organizations. They will continue to be provided with updates on West Slope SWRP progress and opportunities to comment by the SWRP Partners. Some West Slope SWRP meetings will continue to be open for stakeholder and interested parties involvement, and the Agency will continue to post information and materials on its website as well as email notifications as needed. Participation will continue to be voluntary and open to any entity or individual expressing interest.

5.3.4 Elected Officials and Public

Elected officials (e.g., city council, board of supervisors) and the public, including disadvantaged and climate vulnerable communities, will be informed of updates on West Slope SWRP progress. Some West Slope SWRP meetings will continue to be open for public involvement, and the Agency will continue to post information and materials on its website as well as email notifications as needed. Participation will continue to be voluntary and open to any entity or individual expressing interest.

5.4 ONGOING REVIEW, UPDATES, AND ADAPTIVE MANAGEMENT

The SWRP Partners expect that the West Slope SWRP implementation will involve regular monitoring and evaluation efforts to keep tabs on project implementation progress and to use available information to guide future changes in the West Slope SWRP. The SWRP Partners also expect that monitoring and evaluating activities would occur throughout each year of implementation, with the project list reviewed up to three times a year and project description forms updated as needed by project proponents. The evaluation of the need for a comprehensive update of the West Slope SWRP will occur every 5 years or sooner if significant changes occur with the projects and budget, or if regulatory compliance needs change. Initiation and completion of implementation and update activities will be contingent on the availability of sufficient funding.

5.4.1 Activities, Process, and Schedule

The anticipated activities, process, and schedule for implementing, monitoring, evaluating, and updating the West Slope SWRP are presented in Table 5-11 in the form of a RACI chart. The categories for this chart are as follows:

- **Responsible:** Entity who performs an activity or does the work.
- **Accountable:** Entity who is ultimately accountable and has Yes/No/Veto.
- **Consulted:** Entity that needs to provide feedback and contribute to the activity.
- **Informed:** Entity that needs to know of the decision or action.

Table 5-11. Anticipated West Slope Stormwater Resource Plan Implementation and Update Activities

Activity	Frequency	RACI Matrix[1]					
		El Dorado County Water Agency	County of El Dorado	City of Placerville	Project-Specific Implementing Entity	Stakeholders and Interested Parties	Elected Officials and Public
Tracking West Slope SWRP Progress. The SWRP Partners will review any changes/progress, determine the need for new/revised actions, and update the status of existing actions and add new actions. An accomplishment summary will be provided every December/January to track changes/progress.	Annually (or as needed)	R, A[2]	R,A[2]	A	I	C	I
Project Prioritization and Budgetary Considerations. The SWRP Partners will meet up to three times a year to: (1) discuss evolving needs in the region, any triggers (as described above), and issues to be addressed with the West Slope SWRP; (2) identify funding needs and sources for the following year's activities; and (3) develop a plan to pursue identified funds.	Up to three times a year	R,A[2]	R,A[2]	R,A	C	I	I
Project Development, Approval, and Implementation. Development and initiation of projects will be the responsibility of the project proponent(s), meaning the individual entity or group of entities**.**	As needed	C	C	C	R, A	C	I
West Slope SWRP Update Need Evaluation. Every 5 years (in years ending with 8 and 2), the SWRP Partners will assess the need for and prepare an updated West Slope SWRP.	Every 5 years (or as necessary)	R, A	A	A	C	C	I

Table 5-11. Anticipated West Slope Stormwater Resource Plan Implementation and Update Activities (continued)

Activity	Frequency	RACI Matrix[1]					
		El Dorado County Water Agency	County of El Dorado	City of Placerville	Project-Specific Implementing Entity	Stakeholders and Interested Parties	Elected Officials and Public
Communication and Outreach. The SWRP Partners and project proponents will do the following:							
• ***West Slope SWRP.*** This effort will include website updates and email communications to keep interested stakeholders informed of meetings, new materials, and other information related to the West Slope SWRP and its implementation.	As needed	R, A	A	A	C	I	I
• ***Projects.*** Each individual agency will be responsible for apprising its ratepayers and the public of any actions initiated and related progress/results.	As needed	C	C	C	R, A	C	I
Coordination with Other Regional/Statewide Ongoing Efforts. Coordination and information sharing with other ongoing efforts will be beneficial to both the West Slope SWRP and other efforts (e.g., Cosumnes, American, Bear, and Yuba Integrated Regional Water Management, individual water agency plans, other regional planning efforts). It is anticipated that this will occur on an as-needed basis.	As needed	R	A	A	I	I	I

Notes:
[1] RACI responsibility matrix. R = Responsible; A = Accountable; C = Consulted; I = Informed
[2] Agency will continue to be Responsible for the surface water storage and watershed management components. County will continue to be responsible for the stormwater component.
Key:
SWRP = Stormwater Resource Plan

5.4.2 Triggers to Reassess the West Slope Stormwater Resource Plan

Although the SWRP Partners intend to regularly revisit the West Slope SWRP and its performance and assess the need for an update every 5 years, there may be events or occurrences that have substantial effects on stormwater management and trigger an update of the West Slope SWRP (or a portion thereof) outside of that cycle. These triggers may include, but are not limited to:

- **State and Federal regulations or requirements** often change as well as new ones go into effect.
- **Unanticipated changes** resulting from natural disasters, infrastructure failures, or other events may require reassessment of projects.

5.5 PROCEDURE TO TRACK STATUS OF THE WEST SLOPE STORMWATER RESOURCE PLAN

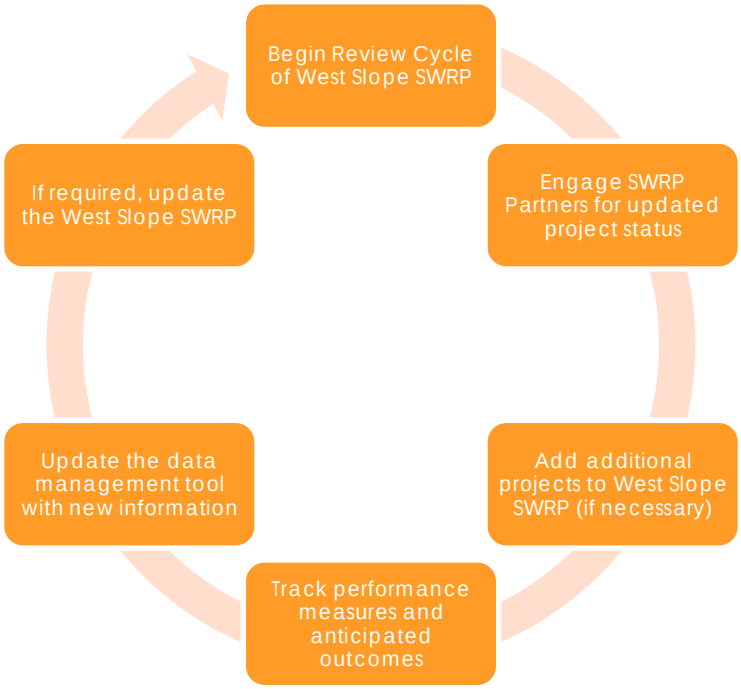
All projects in the West Slope SWRP are currently in the planning phase of their project lifecycles. The stages of development are identified in the project planning sheet are identified below:

- Conceptual Development
- Planning
- Pre-Design
- Design
- Construction
- Commissioning
- Operations and Maintenance

When a project is in one of the last three stages listed, the amount of funding for which it is eligible becomes limited. The project proponent should evaluate all sources, amounts, timing, and requirements as they are vary depending on the lifecycle stage of a project.

The West Slope SWRP identifies three components: Surface Water Storage, Watershed Management, and Stormwater Management. Stormwater Management was further separated into structural and non-structural projects to aid in comparison and prioritization, as described in Section 4. Implementing projects within each of these components has unique challenges. The West Slope SWRP encourages collaboration amongst entities to most efficiently and effectively implement projects and maximize benefits to the West Slope. It also encourages grouping of projects into larger projects or programs to meet more of the benefit categories, increase eligibility for funding, and increase efficiency of implementation.

Tracking the status of the West Slope SWRP will occur in a cyclic pattern up to three times a year. The cyclic revision patterns of the West Slope SWRP are presented in Figure 5-1 below.



Key:
SWRP= Stormwater Resource Plan

Figure 5-1. Iterative West Slope Stormwater Resource Plan Amendment Process

5.5.1 Timelines for All Active or Planned Project Components

Project proponents have provided preliminary implementation schedules for the projects included in Appendix B. A master project schedule is presented in Figure 5-4. The intent of the master project schedule is to provide an opportunity to discuss the scheduling of projects. The implementation schedule will continue to be contingent upon receiving funding for the projects listed.

Project	Project Name	Start	End
	Start Year: 2015		
212	Cosumnes River Water Quality Monitoring Program	2015	2031
233	Fred's Noxious Weed Treatment-Vegetation Management	2015	2020
234	King Fire Pile Burning	2015	2019
	Start Year: 2017		
209	King Fire Watershed Restoration & Reforestation Project	2017	2020
210	Sand Fire Watershed Restoration & Reforestation Project	2017	2020
300	Urban Roadway Improvement Project - Western Placerville Interchange	2017	2019
301	Placerville Station II-Park and Ride Facility Improvements	2017	2019
303	Urban Roadway Improvement Poject - Mosquito Road Stabilization, Grind & Overlay Project	2017	2019
304	Mosquito Road Sewer Main Replacement	2017	2019
305	Urban Roadway Improvement Project - Woodridge Court, Grind & Overlay Project	2017	2019
306	Urban Roadway Improvement Project - Martin Lane, Grind & Overlay Project	2017	2019
323	Urban Roadway Improvement Project-Ray Lawyer Drive, Grind & Overlay Project	2017	2019
326	Sewer Relocation-Clay to Locust	2017	2019
	Start Year: 2018		
229	Cesar Fire Salvage Stewardship	2018	2021
230	2-Chaix Fire Thinning	2018	2021
231	Pompeii Fire Salvage Stewardship	2018	2021
232	Quidazoic Fire Salvage Stewardship	2018	2021
302	Canal Street LID Projects	2018	2020
309	Headington Yard Wash Rack	2018	2021
317	South East Connector-Expressway LID Projects	2018	2021
328	Our Water Our World - Outreach Program	2018	2031
329	Trash Amendments TMDL Implementation	2018	2031
333	Splash in the Class - Outreach Program	2018	2031
	Start Year: 2019		
222	General Sherman Integrated Resource Timber Contract-Timber Sale	2019	2025
235	Tobacco Gulch Integrated Resource Timber Contract-Timber Sale & Thinning Project	2019	2025
236	John Don't Fuels Reduction	2019	2025
237	O'leary Cow Integrated Resource Service Contract/ Integrated Resource Timber Contract-Timber Sale & Thinning Project	2019	2025
238	Trestle Integrated Resource Timber Contract-Timber Sale	2019	2025

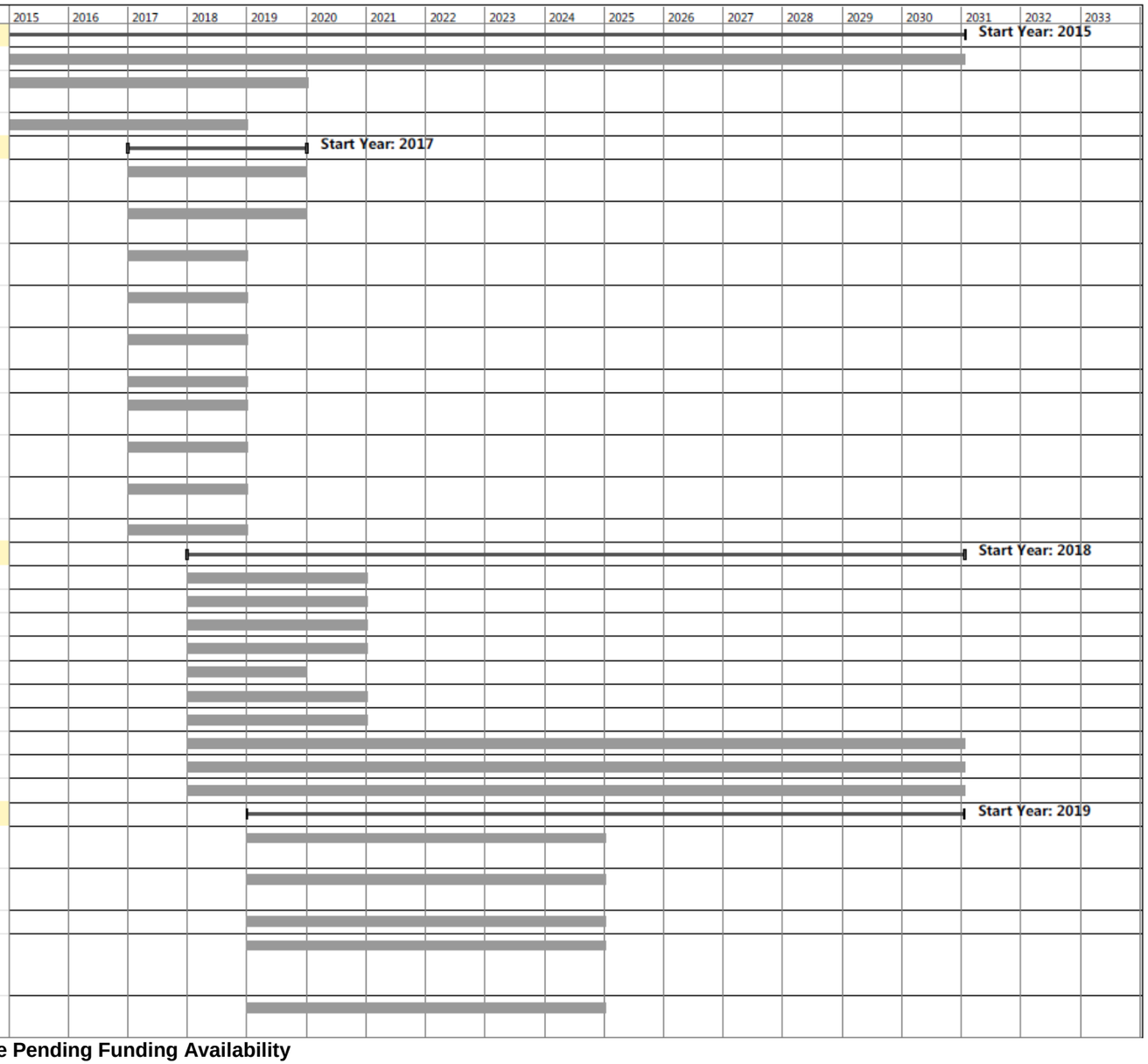


Figure 5-2. West Slope SWRP Project Implementation Schedule Pending Funding Availability

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Project	Project Name	Start	End
239	Georgetown Insect Salvage Timber Sale	2019	2025
240	Middle Creek Integrated Resource Timber Contract-Timber Sale & Fuels Reduction Project	2019	2025
308	Town of El Dorado Green Street Project	2019	2022
310	Fairgrounds Water Quality Improvements	2019	2020
311	Maintenance Material Storage Buildings at Missouri Flat Rd and Somerset Sand Mine	2019	2020
312	Future Bass Lake Maintenance Station	2019	2020
313	Forni Road Slope Stabilization	2019	2021
314	Street Sweeping Program	2019	2020
315	Vactor Truck Program	2019	2020
316	Diamond Springs Parkway-Roadway and Drainage Improvement Project	2019	2023
318	Headington Yard to Weber Creek Conveyance	2019	2020
319	Countywide Park BMP Retrofit Improvements	2019	2031
327	El Dorado Hills Library Water Conservation Project	2019	2022
330	Countywide Water Quality Awareness Campaign	2019	2031
331	Countywide Stormwater Asset Management Program	2019	2021
334	County Water Quality Standards Improvement Project	2019	2021
335	West Slope Watershed and Pollutant Generation Study	2019	2030
336	West Slope BMP Manual	2019	2020
337	Outingdale Stormwater Management Study/Pre-Design	2019	2021
338	Stormwater Detention Basin- Hangtown Creek Flood Damage Reduction Project	2019	2020
339	Facility Upgrades for the El Dorado Disposal MRF	2019	2020
340	Union Mine Landfill Retention Pond	2019	2020
341	Best Management Practices for Agricultural Erosion and Sediment Control Manual	2019	2020
345	Cameron Park Drainage Improvements	2019	2022
346	Priority County Culvert Replacements	2019	2021
347	Sly Park Portal Subdivision Flood Management Project	2019	2021
348	Fish and Wildlife Routine Maintenance Agreement	2019	2021
356	Sand Ridge Road Paving	2019	2021
	Start Year: 2020		
200	Biomass Plant-Union Mine	2020	2027
202	Slate Creek Monitoring Project	2020	2031
206	Carson Creek Restoration	2020	2022
207	New York Creek Restoration	2020	2022
208	Weber Creek Restoration	2020	2022
213	Anaerobic Digestion System at Union Mine WWTP	2020	2022
214	In-Vessel Composting System at Union Mine Landfill or MRF	2020	2022

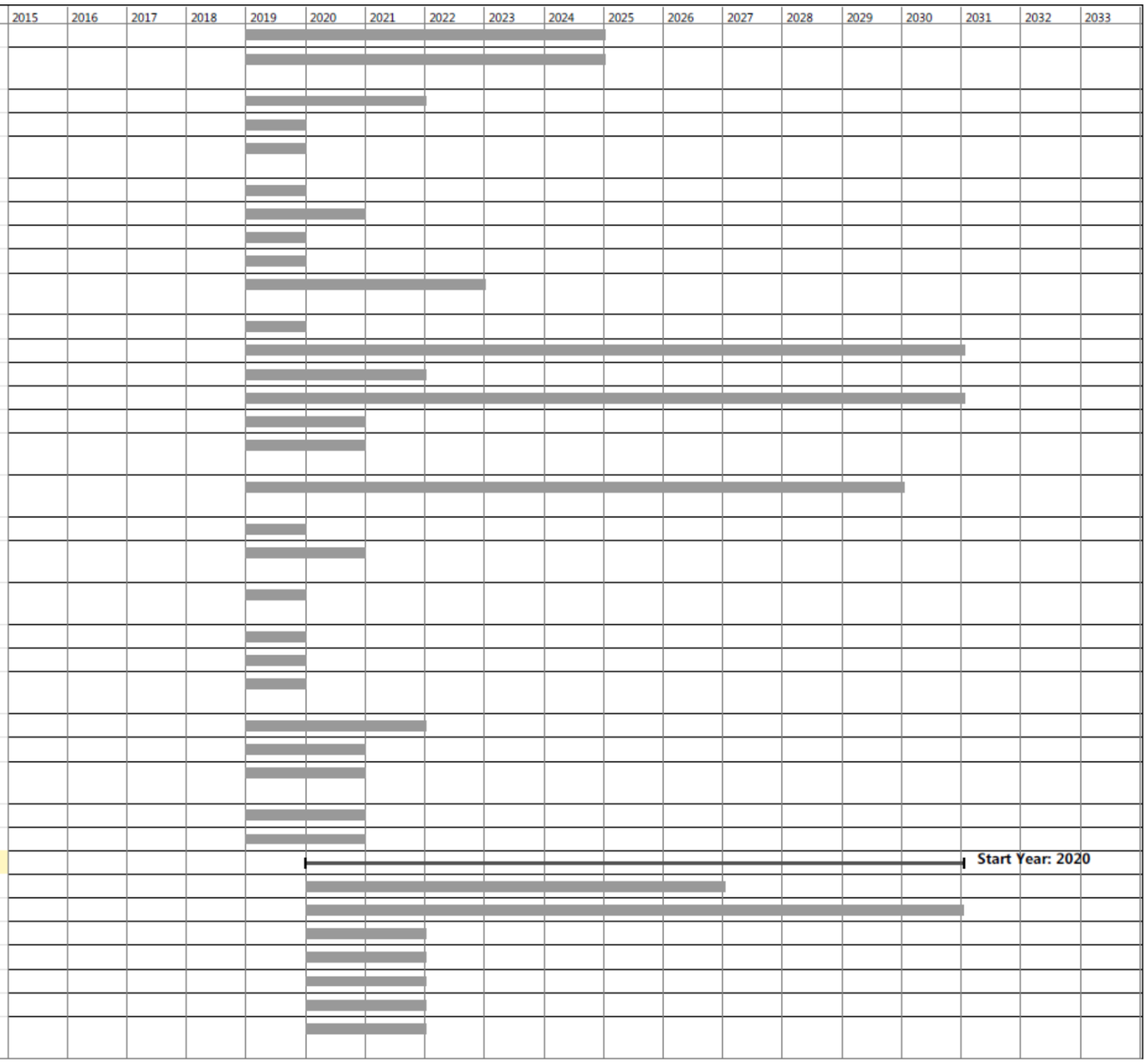

Figure 5-2. West Slope SWRP Project Implementation Schedule Pending Funding Availability (continued)

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Project	Project Name	Start	End
215	Compost Facility within El Dorado County	2020	2026
217	Residual Lime Remediation near El Dorado Trail	2020	2026
218	Countywide Water Quality Monitoring	2020	2031
219	Fire Adaptive along Highway 50-Fuels Reduction	2020	2026
221	Camino Bio Mass Facility	2020	2027
223	Two-fer Integrated Resource Timber Contract-Timber Sale	2020	2026
224	Reservoir Thinning Integrated Resource Timber Contract	2020	2026
225	Quintette Integrated Resource Timber Contract – Supplemental Information Report-Timber Sale	2020	2026
226	Western Georgetown Fuel Reduction Integrated Resource Timber Contract-Timber Sale	2020	2026
227	Georgetown Divide Fuelbreak	2020	2026
228	Jenkinson Lake Fuels Reduction	2020	2026
307	Town of El Dorado Drainage Improvements	2020	2022
320	BMP Countywide Demostration Projects	2020	2026
324	Airport Road/Broadway Culvert Storm Drain Improvement	2020	2021
350	Debby Lane/Green Valley Road Culvert Improvement	2020	2022
352	Lions Park Drainage Improvement	2020	2021
353	Pleasant Street Storm Drain Improvement	2020	2024
354	Wiltse Road Storm Drain Improvement	2020	2024
355	Pierroz Road at Hangtown Creek, Drainage Improvement	2020	2021
	Start Year: 2021		
343	Culvert Rehabilitation along Highway 50 near the City of Placerville	2021	2023
357	Upper Main Ditch Stormwater Improvements	2021	2022
	Start Year: 2022		
342	Culvert Rehabilitation along Highway 50 near Cameron Park and Shingle Springs	2022	2024
	Start Year: 2023		
104	Silver Lake Dam Remediation	2023	2024
	Start Year: 2025		
220	Caples Watershed Improvement	2025	2031
349	Cedar Ravine Road Drainage Improvement	2025	2032
351	Full Capture Storm Drain Inlet Replacements in Placerville	2025	2029
	Start Year: 2028		
100	Alder Creek Reservior	2028	2040

Key:
MRF = Material Recovery Facility
BMP = Best Management Practices
WWTP = Wastewater Treatment Plant
LID = Low Impact Development
TMDL = Total Maximum Daily Load

Figure 5-2. West Slope SWRP Project Implementation Schedule Pending Funding Availability (continued)

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5.5.2 Strategy and Potential Timeline for Obtaining Necessary Permits

As funding becomes identified for projects, one of the first tasks will be identifying necessary permits as part of the design phase of the project. Depending on the type of project, the necessary permits will vary and sufficient time must be allocated to meet the overall project implementation schedules shown above. For project implementation, project proponents are responsible for being compliant with applicable laws, regulations, and permit conditions (e.g., transportation encroachment, utility, and building permits) as discussed in Section 1.5.

5.5.3 Information and Data Management

Managing water resources data at a watershed scale in a consistent manner and providing access to this information to the entities identified in Section 5.3 are critical to successful implementation of the West Slope SWRP. Properly managed data will help the SWRP Partners, project proponents, stakeholders, interested parties, elected officials, and the public understand water quantity and quality issues, assess and develop additional potential projects as solutions, and implement projects efficiently. Water quality monitoring will continue to be assessed by the responsible agencies, as described in Section 2.12.

The SWRP Partners developed an internal data management tool using Microsoft PowerBI with information on all current and future projects identified in the West Slope SWRP. The responsibility for providing project data is on the entity collecting it (i.e., project proponents). Any entity can contribute potential projects and updated project data to the Agency for consideration to incorporate in the data management tool. This data management tool will be managed by the Agency and updated on a regular basis up to three times a year by the SWRP Partners. While only the SWRP Partners will have access to the data management tool, the information contained in the tool will be published every December/January as part of the annual accomplishment summary. The data management tool includes a dashboard summary of the projects and performance measures to help provide decision support. Data gaps will be indicated when entering and reviewing individual project information.

5.6 IMPLEMENTATION PERFORMANCE MEASURES

The West Slope SWRP uses an outcomes-based approach. This approach means that the SWRP Partners will measure the implementation of this plan against the overarching purpose rather than meeting specific numeric limits. Education and awareness about the direction of the West Slope SWRP in El Dorado County is required for successful implementation. Monitoring of performance measures will take place at two levels, the plan and individual implementation of projects. The West Slope SWRP will be measured against the following implementation performance measures:

- Make progress towards meeting West Slope SWRP objectives
- Provide additional funding for projects in the West Slope area
- Enhance the water quality and water availability in the West Slope area
- Educate the public about the how local water supplies are impacted by daily activities

- Create a dialogue with all entities implementing stormwater programs on the West Slope and collaborate to pursue funding opportunities

Implementation of projects will be measured against the following performance measures:

- Meet schedule, budget, and technical specifications identified in West Slope SWRP
- Realize multi-benefits in West Slope area
- Conduct active public outreach in project design and construction

The internal data management tool will serve as one method to track performance measures in combination with other monitoring efforts. These activities will provide ongoing analysis and information management as to the performance of West Slope SWRP implementation. As mentioned above, the performance of the plan will be published every December/January as part of an annual accomplishment summary. Future updates to the West Slope SWRP will also summarize the performance of the plan to date.

6.0 EDUCATION, OUTREACH, AND PUBLIC PARTICIPATION

This section describes the education, outreach, and public participation that were completed as part of the West Slope SWRP development, and outlines the plan for long-term continued participation.

6.1 PUBLIC EDUCATION, OUTREACH, AND PARTICIPATION DURING WEST SLOPE STORMWATER RESOURCE PLAN DEVELOPMENT

As part of West Slope SWRP development, the following public education and outreach activities were conducted to engage stakeholders, foster community participation, expand the mailing list of interested parties, and inform the public (Figure 6-1):

- **Webpage:** (https://www.edcgov.us/Water/Pages/Projects.aspx): The Agency posted West Slope SWRP information on its webpage and provided regular updates to alert the public of upcoming workshops, opportunities to comment, available reports and other materials, and related resources.
- **Workshops**: During development of the West Slope SWRP, two workshops were held that were open to the public, and announcements were posted on the webpage. The workshops provided opportunities for the public to develop a common understanding of the West Slope SWRP and contribute to plan development (draft content, technical information, project development and design, policies, etc.). These workshops were held October 25, 2017, and February 14, 2018.
- **Informational Briefings**: Informational briefings were made to local IRWM groups to engage larger audiences, inform the public, and provide opportunities for involvement. At each briefing, participants were informed of the West Slope SWRP and an invitation was extended to participate in plan development and review.
    - American River Basin IRWMP Planning Forum (October 23, 2017)
    - CABY Quarterly Planning Committee/Coordinating Committee Meeting (December 6, 2017)
    - American River Basin IRWMP Planning Forum (January 22, 2018)
- **Public Comment on West Slope SWRP**: The draft West Slope SWRP underwent a 30-day public comment period where a notice of availability of the draft plan was widely disseminated through announcements on the webpage and notification was given to those on the mailing list described below. Information was provided regarding the structure and content of the draft plan, ways to provide comments, and a contact person for additional information and questions. All comments were considered in finalizing the West Slope SWRP.
- **Mailing List**: A mailing list for the West Slope SWRP was developed. Please go to the webpage (https://www.edcgov.us/Water/Pages/Projects.aspx) to be added.

- **Distribution of West Slope SWRP**: Each of the SWRP Partners distributed the draft West Slope SWRP, as discussed below. The Agency maintains a list of elected officials, local entities and organizations. The Agency mailed a notification to this list, in addition to posting a notification on the webpage mentioned above. The County has developed a stakeholder database[1] that was used to solicit public comments from local residents, business owners, interested citizens, DAC and Economically Distressed Areas representatives, agricultural users, and other potential stakeholders. The draft plan was also advertised through the County's Facebook page. Placerville posted the draft plan on its webpage and Facebook page to notice its availability. The final West Slope SWRP is available on the West Slope SWRP webpage and was presented to the SWRP Partner's board and council members during their public meetings.

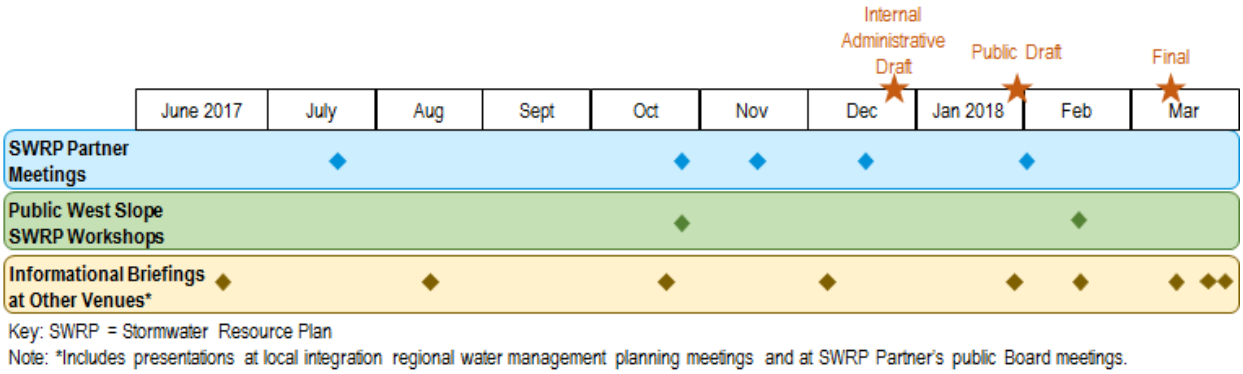

Figure 6-1. Outreach Activities During West Slope Stormwater Resource Plan Development

6.2 STRATEGY FOR LONG-TERM EDUCATION, OUTREACH, AND PUBLIC PARTICIPATION

The West Slope area is a sparsely populated foothill area and identifying a single location and time where all of the stakeholders, interested parties, and the public can easily and readily attend is unlikely. Thus, the SWRP Partners intend to continue to provide opportunities for education, outreach, and public participation through several vehicles, including leveraging existing venues and forums whenever possible. Existing venues where the SWRP Partners are able to provide updates on the West Slope SWRP, include but are not limited to, the following:

- Regular meetings:
    - *Agency*
        - Board of Directors Meetings – Meetings are generally held the 2nd Wednesday of every month at 10:00 a.m. in the Agency's building and are open to the public. Meetings are

[1] To subscribe to the County's various e-mail lists, please go here: https://www.edcgov.us/landing/I%20Want%20To/Pages/email_subscription_service.aspx

live streamed and available on its webpage here: https://www.edcgov.us/Water/Pages/Meetings_and_Minutes.aspx.

- *County*
  - Board of Supervisors Meetings – Meetings are typically held three Tuesdays a month at 8:00 a.m. in the County's building and are open to the public. Special meetings and workshops are scheduled as needed. Meetings are live streamed and available on its webpage here/: https://www.edcgov.us/Government/BOS.
  - Planning Commission Meetings – The Planning Commission advises the Board of Supervisors on land use planning. Meetings are held on the 2nd and 4th Thursdays of every month at 8:30 a.m. in the County's building and are open to the public. More information can be found on their website here: http://edcapps.edcgov.us/bos/detail4.asp?BoardNumber=51.
- *Placerville*
  - City Council Meetings – Meetings are held on the second and fourth Tuesdays of each month. Special meetings and workshops are scheduled as needed. Meetings are held at 6:00 p.m. in Town Hall and are open to the public. More information can be found on their website here: https://www.cityofplacerville.org/mayor-and-city-council.
  - Planning Commission Meetings – The Planning Commission helps guide and monitor Placerville's long-term planning and development. Meetings are held on the 1st and 3rd Tuesdays of every month at 6:00 p.m. at Town Hall and are open to the public. More information can be found on their website here: https://www.cityofplacerville.org/pc-meetings.

- **Webpage:** The Agency will continue to update its West Slope SWRP webpage as needed to inform stakeholders, interested parties, and the public of upcoming activities and major implementation updates.
- Other Informational Briefings:
  - **CABY IRWM Effort:** As the West Slope SWRP and associated projects will be incorporated into the CABY IRWMP, the SWRP Partners intend to make use of the CABY IRWM venue to engage those with stormwater interest/expertise in the West Slope SWRP planning and implementation. The CABY IRWM planning commission is active and meets on a quarterly basis. Participation includes local government, Tribes, watershed groups, and interested partners in the foothills region of California. CABY Work Groups have also been formed as needed to address specific topics and stormwater could be a future focus.
  - **American River Basin IRWM Effort:** As a small portion of the West Slope SWRP is located in the American River Basin IRWM Planning Area, the SWRP Partners intend to provide updates as necessary during the American River Basin IRWMP's biannual meetings.

  - **Other Entities:** The SWRP Partners will also provide informational briefings to other entities as requested. Some active and existing groups in El Dorado County where updates on the West Slope SWRP implementation could be provided include Citizens for Water, SAGE (Surveyors, Architects, Geologists and Engineers), Apple Hill Growers Association, Farm Trails, and Gold Trail Grange.

- **Mailing List:** The mailing list will continue to serve as the stakeholder database and be updated to provide updates on the West Slope SWRP implementation and future updates. The opportunity to be added to the mailing list will continue to be available on the webpage.

In addition to regular engagement and outreach related to the overall West Slope SWRP, proponents for each project will be responsible for engaging communities in project design and implementation.

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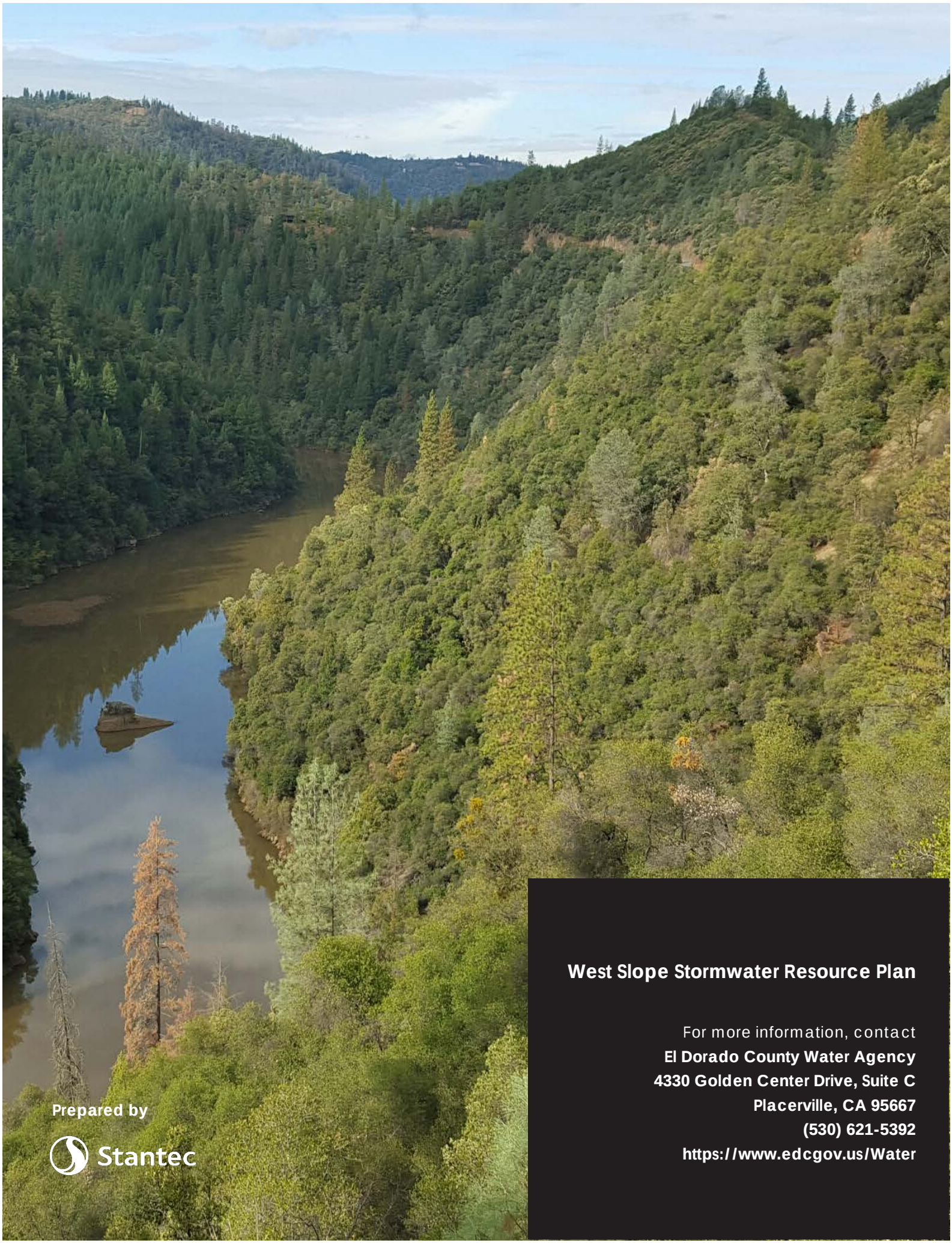

West Slope Stormwater Resource Plan

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https://www.edcgov.us/Water

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