

 WATERSHED PROGRAM 

GRANT PROJECTS CATALOG

Grant Awards 2002-2004





**ABOUT THE COVER:
THE LOWER MOKELUMNE RIVER WATERSHED EDUCATION PROJECT**

The art featured on the cover of this catalog is a detail from the fourth panel of an eight-panel mural of the Mokelumne River Watershed. It is installed in Lodi at the Nature Area trailhead in Lodi Lake Park.

With the help of a CALFED Grant highlighted in the previous edition of this catalog, the mural was painted by Liberty High School (LHS) students under the direction of Suzanne Kennedy, project designer, and Steve Jordan, art teacher from LHS. Students spent 6 months studying watershed principles on field trips, taking pictures, talking with various professionals, and designing the murals. The theme of the murals is: “Seeing Stormwater’s Impact from a Whole New Perspective.” The students did much of their painting in public—at farmers’ markets, City Hall Park, and other public venues—where the public could be engaged in stormwater education.

The panels are viewed by visitors to the nature area and are used as an interpretive tool by the Lodi Lake Nature Area’s Docent Council. The docents lead school groups on tours of the 58-acre riparian nature area at Lodi Lake Park.

BACKGROUND

“The Watershed Program will use a comprehensive, integrated, basin-wide approach with a goal to improve conditions in the Bay-Delta system. This Watershed Program will emphasize local participation and provide financial and technical assistance for local watershed stewardship, and promote coordination and collaboration among watershed efforts.”

- CALFED Bay-Delta Program (CALFED) Record of Decision; August 28, 2000

The foundation of the CALFED Watershed Program is that community-based, locally led watershed management is essential to protect the health and future of the Bay-Delta system and to attain the goals outlined for CALFED. With an objective of ensuring the permanent health and productivity of the Bay-Delta system, The Watershed Program administers a grant program aimed at improving local interest and participation in managing the Bay-Delta system’s natural resources on a watershed scale.



Photo courtesy of the Trinity County Resource Conservation District

The Watershed Program recognizes a logical progression for local watershed management, beginning with building watershed management capacity and evolving to the production of watershed assessments, the development of watershed plans, and eventually the implementation of those plans. The intent of the grant program has been to mirror that progression in watersheds throughout the CALFED solution area.



Photo courtesy of the Sacramento River Watershed Program

PURPOSE OF THIS DOCUMENT

This catalog contains summaries of the most recent 63 projects funded through grants from the Watershed Program during its second and third proposal solicitations. This is the second project catalog developed by the Watershed Program—the first summarized the original 53 grant projects awarded during the first proposal solicitation. The purpose of this catalog is to highlight these locally designed watershed projects and to illustrate their individual contributions to their local communities and toward the goals and objectives of the CALFED Bay-Delta Program. The descriptions also outline the primary benefits and beneficiaries of each project.

Each project described in this document was reviewed for technical merit and its potential to help meet CALFED Program objectives. In addition, an effort was made to select a set of projects that:

- ✿ define and illustrate relationships between watershed processes and the primary goals and objectives of the CALFED Bay-Delta Program;
- ✿ demonstrate the value of watershed management efforts in geographically diverse locations in the CALFED solution area, and
- ✿ demonstrate the value of a community-based approach in addressing a diversity of issues, circumstances, and community characteristics found in different watersheds in the CALFED solution area.

These projects are supported in part with grants of public funds authorized in Proposition 13 and Proposition 50, and are intended to help implement the Watershed Program Plan. The State Water Resources Control Board (State Water Board) administers the grant funding on behalf of the Watershed Program for each project presented here. The projects were reviewed and selected to receive grant funding from either of two separate competitive grant cycles conducted by the State Water Board in 2002 and 2004.

The nature of the funding sources and implementation partnerships in the second and third solicitations for proposals has tended to push the Program expenditures toward implementation projects in lieu of, or ahead of, the capacity building, assessment, and planning considered primary for improving sustained, effective, local watershed management. Therefore, the projects highlighted in this catalog have a larger percentage of implementation projects than those in the first catalog.

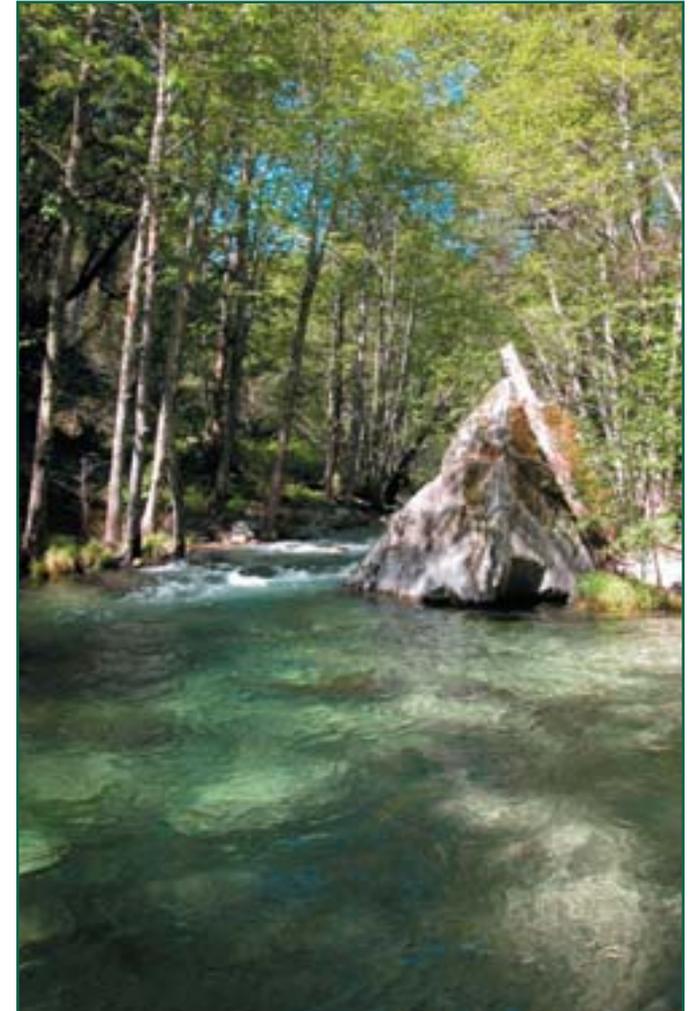


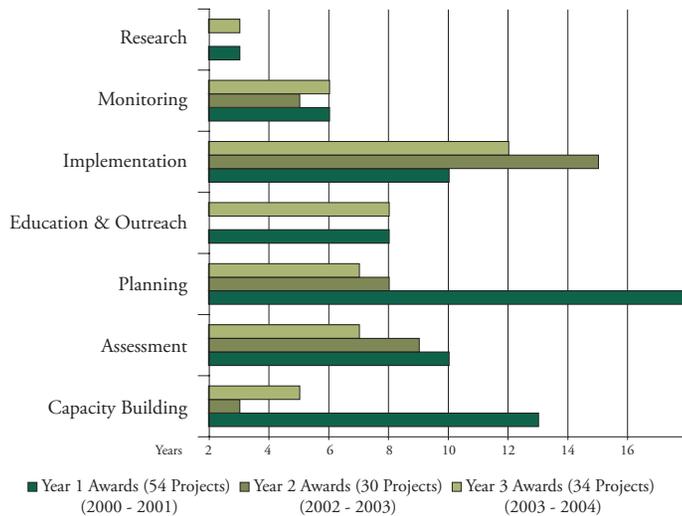
Photo courtesy of Jeff Peters, Jones & Stokes

GRANT PROJECT STATISTICS

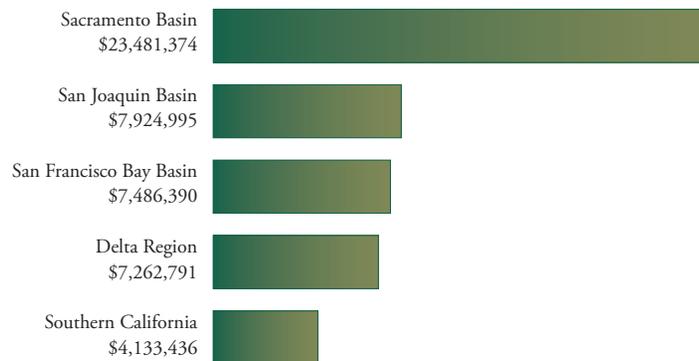
The charts below show distribution by geographic area and by type of project for the grants awarded by the Watershed Program over the last three grant cycles.

These grant awards show a steady growth in the number of funded projects that directly implement objectives of multiple CALFED elements.

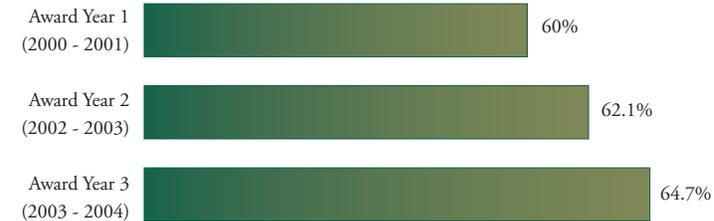
PROJECT TYPE DISTRIBUTION



GRANT DISTRIBUTION 2001-2004

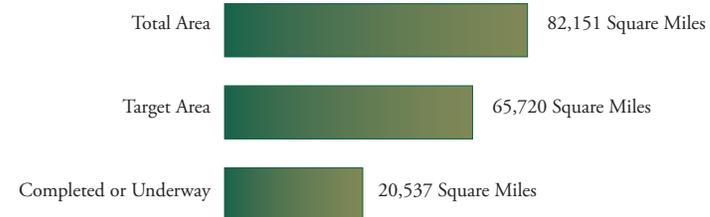


PROJECTS THAT FURTHER MULTIPLE CALFED ELEMENT OBJECTIVES



These projects also are helping the Program move toward its goal of completed baseline assessments for 80–100% of the Bay-Delta watershed.

BAY-DELTA SYSTEM WATERSHED ASSESSMENTS SQUARE MILES



The Program will continue to provide financial and technical support to local communities to expand local capacity for effective watershed management in the Bay-Delta system. As projects continue and additional solicitations are developed, subsequent catalogs will illustrate the work of the Watershed Program's local partners.

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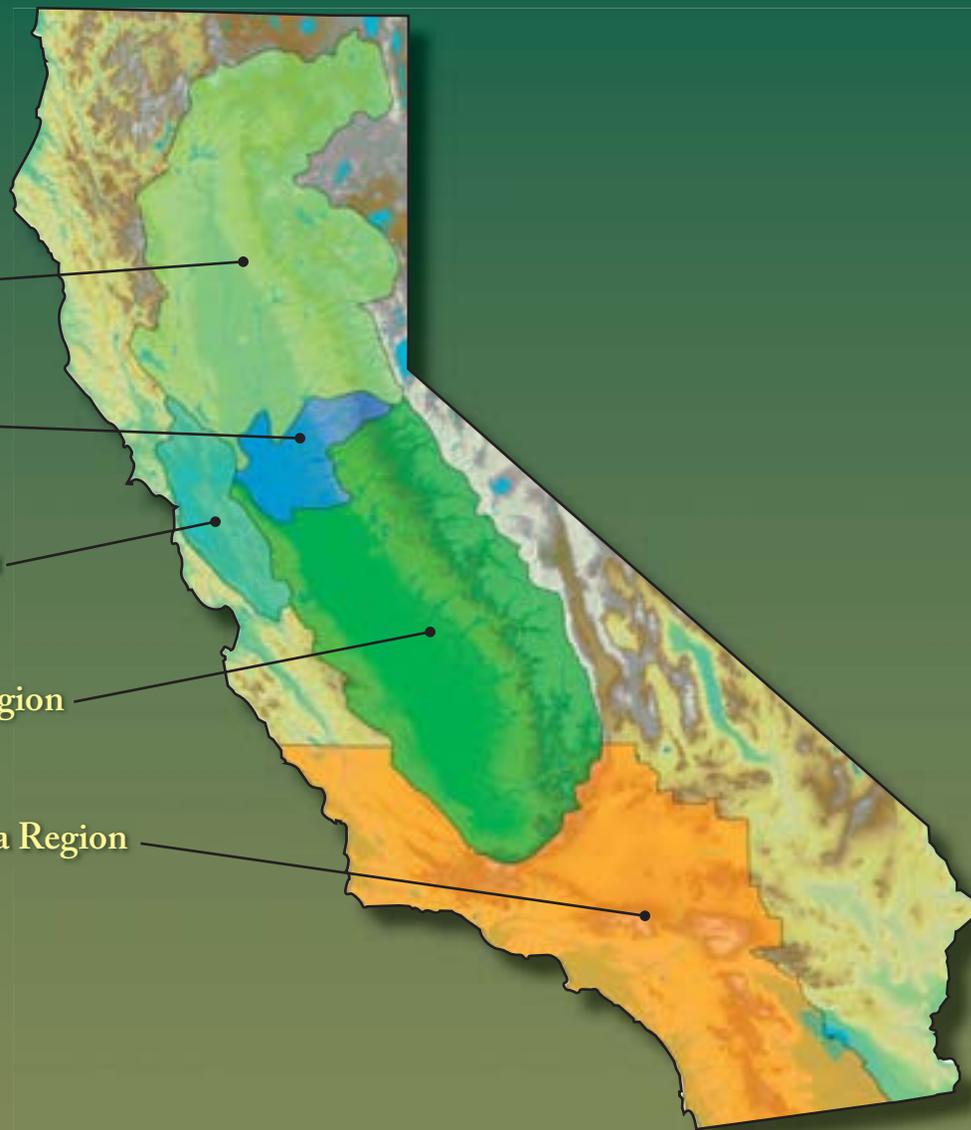
Sacramento Valley Region

Delta Region

Bay Region

San Joaquin Valley Region

Southern California Region



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BEAR CREEK WATERSHED ASSESSMENT

Western Shasta Resource Conservation District



Confluence of Bear Creek and the Sacramento River.

PURPOSE

Conduct a watershed assessment for Bear Creek and Ash Creek watersheds

PROJECT GOALS

- ✦ Gather existing data including water, geology and soils, erosion, hydrology, vegetation, fisheries, wildlife, human uses, and fire and fuels
- ✦ Identify data gaps where additional information is needed
- ✦ Determine if watershed conditions may be limiting beneficial water uses and/or anadromous and resident fish populations
- ✦ Document findings in a watershed assessment document to be used as the basis for a comprehensive watershed management plan

AWARD AMOUNT

\$140,806

WATERSHED

Bear Creek and Ash Creek Watersheds

COUNTY

Shasta County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

The value of streams such as Bear Creek can be integral and valuable in restoring ecological health to the Bay-Delta system, particularly for steelhead trout and fall-run Chinook salmon. Implementation of this project is an important step toward this restoration. A cooperative program with water users for a mutually acceptable flow schedule, that not only provides protection for downstream migrating salmon and steelhead, but also recognizes the needs of agriculture, will provide multiple benefits locally and downstream. By documenting existing conditions in the Bear Creek watershed, decision-makers and managers can make better-informed decisions regarding the use of water and natural resources in the watershed and provide the needed data to work toward a cooperative agreement that would benefit both fish and agricultural water users.

PROJECT OVERVIEW

Bear Creek is a small eastside tributary that enters the Sacramento River 5 miles below the town of Anderson. The watershed historically supported anadromous fish species such as salmon and steelhead. However, the limited runoff in this small stream makes it difficult to meet the instream flow needs of both anadromous fish and agricultural water demands simultaneously, especially in below-normal water years.

The Bear Creek watershed community began meeting in late 2001 to address instream flow needs and degraded water quality conditions. Residents of the community soon formed the Bear Creek Coordinated Resource Management Plan (CRMP) and agreed on the need for a watershed assessment. Ash Creek, a small tributary between the Bear Creek and Battle Creek watersheds that enters the Sacramento River just south of Bear Creek, is included in the assessment. The watershed assessment will focus on land use, hydrology, water quality, stream channel morphology, fisheries and aquatic habitat, sediment sources, and recreation. The watershed assessment will provide basic information for a comprehensive watershed management plan and will support future implementation projects.

Public meetings, quarterly newsletters to property owners and interested residents, and articles and public service announcements to the local media will supplement the watershed assessment and improve communication throughout the watershed.



The headwaters of Bear Creek: Thatcher Meadow and Latour Butte.

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CLEAR LAKE WATERSHED MERCURY AND NUTRIENT ASSESSMENT

Lake County Watershed Protection District



Sediment sampling in Eight Mile Glade.

PURPOSE

Determine mercury and nutrient inputs to Clear Lake to support the development and implementation of water quality protection measures

PROJECT GOALS

- ✦ Estimate average annual mercury and nutrient input (loads) to Clear Lake
- ✦ Develop an adaptive water quality monitoring program
- ✦ Identify sources of mercury within the watershed
- ✦ Provide data for use in implementation of Clear Lake Mercury Total Maximum Daily Load (TMDL) and support the implementation of the Clear Lake Nutrient TMDL
- ✦ Coordinate the monitoring and assessment program with local property owner groups, local organizations, Native American tribes, the USDA Natural Resources Conservation Service, and the Central Valley Regional Water Quality Control Board (CVRWQCB)

AWARD AMOUNT

\$147,182

WATERSHED

Cache Creek Watershed

COUNTY

Lake County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 1, State Assembly: 1, State Senate: 2

Benefits to the Bay-Delta System

Clear Lake is the headwaters of Cache Creek, a tributary to the Sacramento River and the Bay-Delta. This project provides direct benefits to wildlife and human health by identifying watershed mercury sources to Clear Lake and determining solutions to reduce mercury in the lake and the Bay-Delta. The project also provides benefits to local residential, recreational, and commercial interests by facilitating programs to reduce nutrient loads and eliminate seasonal algal blooms, which affect tourism and sport fishing. Implementation of this project will benefit five Native American tribes who use resources of the lake and watershed, local business owners, tourists, sport fishermen, and the East Lake and West Lake Resource Conservation Districts by improving the water quality of Clear Lake. The general public benefits from this project through the implementation of Total Maximum Daily Loads (TMDLs) in cooperation with the CVRWQCB and the U.S. Environmental Protection Agency.

PROJECT OVERVIEW

Clear Lake is located in the central Coastal Range of Northern California and is the headwater of Cache Creek, which is a tributary to the Sacramento River and the Bay-Delta. Historical mercury mining activities in the watershed have increased mercury loads entering the lake. Nutrient loads to the lake, particularly phosphorus, have caused seasonal algal blooms despite improved erosion control management. The mercury and nutrient loads have impaired the beneficial uses of Clear Lake, including fishing, recreation, and fish and wildlife habitat. In an effort to restore these beneficial uses, the CVRWQCB has adopted a Clear Lake Mercury TMDL and is developing a Clear Lake Nutrient TMDL to reduce the mercury and nutrient loading to Clear Lake.

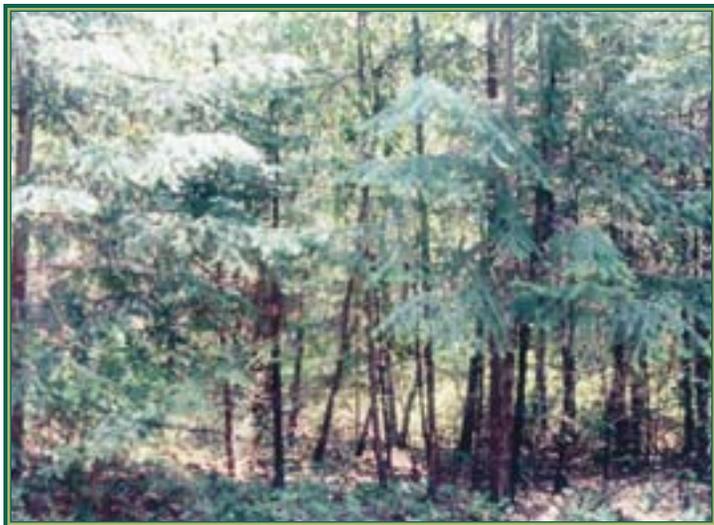
The Lake County Watershed Protection District is determining mercury and nutrient loads to Clear Lake to support TMDL development and implementation. The District works in coordination with the CVRWQCB with input from local property owner groups, local resource conservation districts, Yolo County, the Cache Creek Conservancy, five Native American tribes, the Delta Tributary Mercury Council, and the USDA Natural Resources Conservation Service. The project quantifies mercury and nutrient loading from major tributaries to the lake by collecting water quality samples at multiple times during the year and at varying flow regimes. The project also collects additional water quality samples throughout the watershed to identify mercury hotspots. The monitoring program will be evaluated at the end of each sampling period and revised, if necessary, in cooperation with the CVRWQCB. Public meetings encourage volunteer participation and provide opportunities for public input.



Stream sampling in the upper watershed.

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Foresthill shaded fuel break demonstration site before treatment.

PURPOSE

Protect urban areas within the Bear and American River watersheds from fire dangers while recognizing the natural fire ecology of the Sierra Nevada

PROJECT GOALS

- ✦ Implement a network of shaded fuel breaks at the urban-wildland interface
- ✦ Protect urban areas and residents from fire dangers
- ✦ Determine the impact of fuel reduction measures on water quality
- ✦ Implement a region-wide approach to accommodating the natural fire cycle
- ✦ Educate the public about fire management strategies

AWARD AMOUNT

\$99,700

WATERSHED

Upper Bear River and North Fork American River Watersheds

COUNTY

Placer County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 4, State Assembly: 4, State Senate: 1

Benefits to the Bay-Delta System

The American River and the Bear River originate in the Sierra Nevada and provide a significant amount of flow to the Sacramento River and the Bay-Delta. Excess fuel loads (vegetation) within these watersheds, because of historical fire suppression policies, have created conditions that can lead to very hot, catastrophic fires, rather than to a natural cycle of frequent, moderate fires. These fires have severe impacts on urban development and the soil, air, and water resources in these watersheds. This project will provide direct benefits to urban and suburban developments and will promote improved soil, air, and water resources within these watersheds by developing a regional approach to the natural fire cycle. Improved fire management will also benefit water quality in the Bay-Delta by reducing sediment and pollutant loading from severely burned areas. Recreation, water supply, wildlife, and plant communities of these watersheds also benefit in the long term with reduced fuel load, more frequent, moderate fires, and a more natural fire ecology.

PROJECT OVERVIEW

The American River and the Bear River originate in the Sierra Nevada and flow into the Sacramento River and ultimately into the Bay-Delta. Historical fire suppression has affected the quantity of vegetation (or fuel loading) within the American River and Bear River watersheds and the watershed ecosystems that are dependent on a natural cycle of frequent, moderate fires. Catastrophic fires are more likely to damage urban areas and the extensive development along the urban-wildland interface. Because the American River is a major tributary to the Sacramento River, impacts on water quality in these watersheds substantially affect the water quality of the Sacramento River and the Bay-Delta.

The City of Colfax is collaborating with the Ponderosa Fire Safe Council, the American River Watershed Group, the American River Watershed Institute, and established stakeholder forums to develop a fire management plan to protect urban communities from catastrophic fires and reduce potential water quality impacts resulting from these fires. Vegetation assessment and fire modeling in the Ponderosa Fire Safe Council project area will provide a basis for the fire management plan. The assessment and modeling will determine current fuel load and inform the project team of optimal areas to implement shaded fuel breaks. This project develops a GIS database of the ecological and geological features of the watersheds. A network of shaded fuel breaks constructed by individual private landowners will further separate urban development from wildland areas and accommodate the natural fire cycle. Citizen monitoring conducted prior to and following implementation of each shaded fuel break will evaluate the potential short-term impacts on water quality. This project includes a media tour of the completed shaded fuel breaks at which information about fire management strategies will be disseminated to the general public.



Foresthill shaded fuel break demonstration site after treatment.

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COTTONWOOD CREEK WATERSHED STRATEGY

Cottonwood Creek Watershed Group



An example of erosion that occurs each year during storm events on Cottonwood Creek. Such erosion will be addressed in the lower 12 to 15 miles of the channel.

AWARD AMOUNT

\$200,000

WATERSHED

Cottonwood Creek Watershed

COUNTY

Shasta County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2 and 3, State Assembly: 2, State Senate: 4

PURPOSE

Develop a watershed management strategy based on the watershed assessment and stakeholder participation

PROJECT GOALS

- ✦ Identify watershed management objectives
- ✦ Recommend specific management or restoration actions
- ✦ Build capacity of the Cottonwood Creek Watershed Group to coordinate management, restoration, and monitoring activities

Benefits to the Bay-Delta System

The Cottonwood Creek watershed is a tributary to the Sacramento River, which is a significant water supplier to the Bay-Delta and an integral component of the Bay-Delta system. Ecosystem health and water quality within the Bay-Delta are dependent on the quality of water from upstream areas. This project will develop a comprehensive management strategy for the Cottonwood Creek watershed. Restoration projects that stem from the management plan will result in improved habitat, water quality, and water supply reliability. These improvements will directly benefit fish and wildlife as well as the local community. Implementation of this project will also provide benefits to the Bay-Delta, predominantly through salmonid habitat and water quality improvements. Although Cottonwood Creek is located many miles from the Delta, its status and health are ultimately reflected in the health of the Delta.

PROJECT OVERVIEW

Cottonwood Creek is the largest undammed tributary on the west side of the Sacramento Valley. It drains an area of 930 square miles and enters the Sacramento River just downstream of the Redding/Anderson area. Cottonwood Creek watershed supports a number of sensitive species, including Chinook salmon, steelhead trout, northern spotted owls, and foothill yellow-legged frogs. Many studies have been conducted in the past on the creek's hydrology and sediment transport process. Additionally, the Cottonwood Creek Watershed Group (CCWG) recently completed an assessment of the entire watershed. CCWG is a nonprofit organization composed of landowners, business owners, agency representatives, and other local stakeholders. Building on this assessment, the CCWG is now working on a comprehensive management strategy for the watershed.

The watershed management strategy describes the desired condition of the watershed and outlines watershed management activities aimed at achieving that condition. The plan also provides direction for future watershed management activities, including those conducted by public agencies and private interests. The plan is being developed through an active public outreach/stakeholder involvement process and focuses on the following issue areas: erosion and sedimentation, flooding, rangelands, timber, green belts/riparian corridors, aquatic habitats, terrestrial habitats, groundwater, and water quality.



A pond left behind from the days of placer mining. Property owners are removing the piles of rock and plan to restore the area.

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Crossing before: Failing 25-year-old log stringer bridge at Swamp Creek, an intermittent tributary to Deer Creek (photo courtesy of Collins Pine Company and USFS).

PURPOSE

Reduce sediment discharge into Deer Creek by implementing nine restoration projects

PROJECT GOALS

- ✦ Maintain the high quality of Deer Creek water by managing roads and watercourse crossings to reduce excess erosion and sedimentation
- ✦ Maintain viable anadromous fish spawning and rearing habitat

AWARD AMOUNT

\$493,175

WATERSHED

Deer Creek Watershed

COUNTY

Tehama County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 3, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

Watershed planning through the locally driven Deer Creek Watershed Conservancy will help to preserve and restore spring-run Chinook salmon and steelhead trout and other important attributes of the watershed. In addition to providing direct benefits to the creek's fish populations, the improved water quality resulting from this project will also benefit Deer Creek's water users, and ultimately contribute to a healthier Bay-Delta.

PROJECT OVERVIEW

Deer Creek is a secondary tributary to the Sacramento River. The watershed drains 200 square miles and is 60 miles long. Deer Creek is home to highly valued populations of spring-run Chinook salmon and steelhead, as well as populations of other Chinook salmon and resident native fish. It contributes valuable surface water for agriculture, recreation, and fish and wildlife habitat. The watershed also provides timber resources for both private companies and the U.S. Forest Service.

The Conservancy participated in a comprehensive, systematic road and sediment source survey of Deer Creek in 1996. The survey identified the major sediment-producing sites in the upper watershed. This study found sediment yields were highest from sources related to roads, and were tied closely to geology. The greatest yields were from areas underlain with rhyolite and dacitic pyroclastic rocks. As a result of the survey, 44 significant sites were identified and prioritized.

This project implements restoration projects in nine of the 44 identified sites within a 3-year timeframe. Work includes upgrading culverts to meet 100-year flows, installing structures at stream-crossings to improve fish passage and reduce the potential for crossing failure, and narrowing roads and improving drainage on roads to reduce sedimentation and erosion. This implementation project is carried out by the Deer Creek Watershed Conservancy, a nonprofit organization composed of many different stakeholders. The project stems from the organization's comprehensive watershed management plan, which was completed in 1998.



Crossing after: Log stringer bridge has been replaced with an 8-foot-high, 12-foot-wide squashed culvert (photo courtesy of Collins Pine Company and USFS).

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GLENN COUNTY SURFACE WATER STEWARDSHIP

Glenn County Department of Agriculture



A guest speaker from the USGS discusses federal programs during a field day at one of the project's research/demonstration sites.

PURPOSE

Continue a pesticide and water quality management education program to enable and empower growers to effectively reduce water quality problems associated with orchard runoff

PROJECT GOALS

- ✦ Provide education to growers about orchard management practices that reduce pesticide use and pesticide runoff
- ✦ Maintain demonstration buffer strip sites as working nonpoint-source pollution reduction models for growers
- ✦ Establish a demonstration site to examine feasibility of rice straw compost as a water quality management strategy
- ✦ Conduct a study to measure and quantify the amount of pesticide that drifts off site after typical orchard application (referred to as regional atmospheric deposition)

AWARD AMOUNT

\$275,000

WATERSHED

Lower Sacramento River Watershed

COUNTY

Glenn County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 3, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

Water quality tests of the surface waters in the Central Valley and Bay-Delta system repeatedly have found pesticide levels toxic to aquatic life. The highest concentrations of pesticides in surface water are attributed to orchard runoff. The Glenn County Surface Water Stewardship program develops a pesticide/water management education program to promote awareness among local growers about cost-effective best management practices to reduce pesticide runoff and other nonpoint-source pollution from their orchards. This project benefits local surface waters and the Bay-Delta system by teaching growers how to keep downstream waters safe for aquatic life and beneficial uses, and by performing research to fill in data gaps related to pesticide dispersal and pesticide remediation techniques. It also benefits the local growers by demonstrating cost-effective management strategies that create sustainable orchards, as well as help meet water quality compliance regulations.

PROJECT OVERVIEW

The Glenn County Surface Water Stewardship program addresses nonpoint-source pollution associated with pesticide, sediment, and nutrient runoff from orchards. It expands existing outreach, education, research, and water quality management programs. The project develops pesticide and water management education with field days, farm tours, newsletters, and the media. It provides environmental education and promotes local grower awareness of cost-effective best management practices to reduce nonpoint-source pollution.

This project establishes two demonstration orchards to provide essential information to landowners on best management practices that reduce nonpoint-source pollution associated with runoff after winter storm events. The demonstration orchards (almond) will use and compare different types of vegetative buffer filter strips. Each site includes land preparation, herbicide use, fertilization, seed sowing, and irrigation practices. Each will have a control area that will be studied for a minimum of three years to assess management-measure effectiveness. Another demonstration will examine the feasibility of using rice straw compost as a management strategy to remediate soil that has been exposed to pesticides.

The project involves additional research to measure and quantify the amount of pesticide that drifts off site after typical orchard application. This reconnaissance study assesses the deposition of pesticides on soil and water surfaces relative to local pesticide application and to ambient regional sources. When complete, the project will help fill research data gaps and demonstrate practical, cost-effective means for farmers to control or mitigate off-site pollution.



At this research/demonstration site, planted native grasses act as a buffer strip and control area with an auto sampler to catch water runoff.

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INVENTORY, ERADICATION, AND MONITORING OF INVASIVE SPECIES

Lake County Watershed Protection District



One of the 108 locations of *Arundo donax* along the shores of Clear Lake.

PURPOSE

To educate the public about *Arundo donax* and *Tamarix* spp., two invasive plant species of concern; to inventory and eradicate the plants; and to monitor the effectiveness of eradication

PROJECT GOALS

- ✦ Eradicate *Arundo donax* in the project area
- ✦ Inventory *Tamarix* spp. for future eradication efforts
- ✦ Restore riparian habitat
- ✦ Work with local watershed groups to increase public awareness of invasive species and how they affect riparian function

AWARD AMOUNT

\$181,262

WATERSHED

Cache Creek and Putah Creek Watersheds

COUNTY

Lake County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 1, State Assembly: 1, State Senate: 2

Benefits to the Bay-Delta System

Nonnative species removal is critical to the health of the state's water systems. The health of the upper Cache and Putah Creek watersheds can be improved by reducing wildfire fuels and minimizing sediment input to the stream by implementing practices to protect streamflows, stream channels, and riparian habitat. Efforts to control or eradicate *Tamarix* spp. and *Arundo donax* infestations in these watersheds will allow natural vegetation succession by native plant species. Direct benefits include decreased wildfire threat, enhanced riparian corridors and habitat, and overall improved watershed health. Each of these benefits contributes to improved water quality, reduced water use by water-sucking nonnative plants, and improved discharge to the Bay-Delta system.

PROJECT OVERVIEW

Lake County contains the headwaters of Cache Creek and Putah Creek. Both watersheds are plagued by two invasive plant species - *Arundo donax* and *Tamarix* spp., which are listed among 100 of the “world’s worst invaders” in the Global Invasive Species Database. Once established, these species displace native riparian vegetation and provide poor habitat for terrestrial insects and wildlife. *Arundo donax* and *Tamarix* spp. trap sediments and narrow flood channels, leading to accelerated erosion and overbank flooding. *Arundo donax* is prone to wildfire and debris blockages that often lead to public and private infrastructure damage. Additionally, because *Tamarix* spp. develops a very dense root system that can reach 30 feet in depth, it lowers the water table, causing native vegetation disappearance and the soil salt chemistry to change.

This project builds on previous eradication efforts undertaken by the County over the past three years, including identifying, mapping, and eradicating primary sources of *Arundo donax*. Volunteers using a variety of cutting methods continue eradication efforts. *Tamarix* spp. site information is collected concurrently with site information for *Arundo donax*. The information is put into a Geographic Information System (GIS) database for future eradication. Surveying and monitoring protocols have been developed and used for collecting site information and monitoring success of eradication projects. This project also includes the development of a revegetation plan and an invasive species management plan, including a public outreach and education strategy.



Active watershed groups making a difference in Scotts Valley.

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LOWER CLEAR CREEK SPAWNING GRAVEL INJECTIONS

Western Shasta Resource Conservation District



Lower Clear Creek gravel injections site at Placer Bridge.

PURPOSE

Increase the amount of in-channel gravel substrate available in Lower Clear Creek to address a limiting factor for anadromous salmonid production

PROJECT GOALS

- ✦ Increase instream spawning and rearing habitat for anadromous fish (Chinook salmon and steelhead trout)
- ✦ Monitor gravel movement
- ✦ Improve channel and floodplain ecological functions

AWARD AMOUNT

\$335,489

WATERSHED

Clear Creek Watershed

COUNTY

Shasta County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

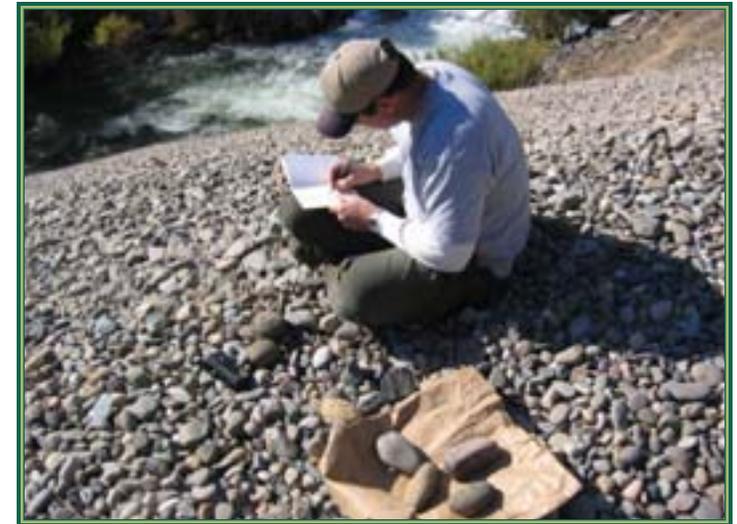
This project increases the instream spawning gravel substrate to improve salmonid production and provides improvements to the channel floodplain and ecological functions of the Lower Clear Creek watershed. Clear Creek, located in Shasta County, is an important tributary to the Sacramento River. Gravel enhancements in Clear Creek will provide spawning habitat from Whiskeytown Dam to the Sacramento River. This project fosters local efforts in watershed management. The restoration work has involved the cooperative efforts of numerous federal, state, and local agencies, local landowners, and Native American tribes, who will benefit from the restoration of anadromous salmonid habitat in the watershed. Restoration efforts can lead to significant increases in fall-run Chinook salmon spawning populations. The local economy will benefit from this project, as it has been estimated by the U.S. Department of Agriculture that each salmon caught in the Sacramento River generates \$1,000 in local revenues.

PROJECT OVERVIEW

Lower Clear Creek has been identified as an important stream for anadromous fish in the Sacramento Valley. A significant portion of the Clear Creek channel is in substantial sediment deficit as a result of past gravel extraction activities and blockage of upstream gravel sources by Whiskeytown Reservoir. This project is part of a larger comprehensive watershed restoration program that has been actively implementing restoration actions since 1995 to address all factors limiting production of anadromous salmonids in lower Clear Creek.

The Lower Clear Creek Spawning Injection project augments gravel resources in the Clear Creek stream channel to restore anadromous salmonid spawning and rearing habitat. The project uses an injection method that stockpiles clean, appropriately sized gravel on the stream bank. High winter flows move the gravel into the channel. This method is beneficial for its low cost and minimal environmental disturbance.

This project monitors gravel movement by photo monitoring during low-to-normal flow regimes and by radio telemetry during high flow regimes when visual observation is difficult. Six transmitters are installed in gravel rocks of various sizes at each gravel injection site to track gravel movement by telemetry. As the rocks move downstream, they are located using the signals broadcasted by the transmitters.



Western Shasta RCD Projects Manager Michael Harris records gravel monitoring data at Placer Bridge gravel injections site.

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The North Yuba River.

PURPOSE

Restore watershed functions in the North Yuba River and its tributaries

PROJECT GOALS

- ✦ Reduce sedimentation
- ✦ Provide geomorphic stabilization in disturbed areas
- ✦ Improve water quality, including drinking water quality
- ✦ Foster a collaborative work group within the Watershed Council
- ✦ Increase interest in and understanding of the watershed and its resources
- ✦ Contribute to the local economy

AWARD AMOUNT

\$217,000

WATERSHED

Yuba River Watershed

COUNTY

Sierra County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

Benefits to the Bay-Delta System

The North Fork Yuba River is a major tributary to the Yuba River, which, in turn, is an important tributary to the Sacramento River. This project delivers both local benefits and broader public benefits of improved habitat for fish and wildlife downstream. Restoration of the mining sites in the North Fork Yuba River watershed improves water quality by reducing sediment loads, benefiting local fish and the Chinook salmon and steelhead downstream in the Yuba River. Replacing nonnative vegetation with native vegetation improves habitat for local wildlife species. The improved conditions provide greater opportunity for sport fishing and other recreational pursuits. Improved stream stability provides additional benefits by reducing maintenance costs for streamside landowners.

PROJECT OVERVIEW

The North Yuba River flows through Sierra County on the west slope of the Sierra Nevada. New Bullards Bar Reservoir is the only impoundment on the North Yuba River; above it, the river is free-flowing with no water diversions. Just downstream of New Bullards Bar Reservoir, the North Yuba River flows into the Yuba River, a major tributary to the Sacramento River and the Bay-Delta. The quality of water from the North Yuba River is an important influence on the quality of water in the mainstem of the Yuba River, which supports steelhead and fall- and spring-run Chinook salmon.

Historical mining and more recent activities have altered flows, threatened water quality, and degraded fish and wildlife habitat at abandoned mine sites in the North Yuba River watershed. Abandoned mines and roads have been shown to contribute a majority of the sediment to watercourses in the North Yuba watershed. Erosion from these sites is affecting soil productivity, hydrologic conditions, vegetation, and aquatic and riparian resources.

The Sierra County Fire Safe and Watershed Council, working as advisors to the Sierra County Board of Supervisors and composed of local residents and private property owners, has formed partnerships with industry and government representatives to lead an effort to reclaim and restore up to five inactive mine sites in the North Yuba River watershed. These sites were selected based on a number of criteria, including: availability of recent site-specific information from existing surveys, a high probability of successful outcomes, good access and visibility, and the existence of multiple resources that would benefit from the restoration. All sites involve neglected access roads, which cause undue sedimentation to nearby streams, and have been identified as having opportunities for wildlife habitat improvements.

Work at these sites includes reestablishment of natural hydrology, removal of non-eligible historic structures, stabilization of soils around abandoned roads, removal of abandoned equipment, removal and remediation of hazardous materials on site, and removal of nonnative vegetation. Restoration includes planting native vegetation, restoring meadows, enhancing hardwood and aspens, and increasing bird nesting through the installation of bird boxes. Work is being undertaken by contractors and through a volunteer partnership with the Nevada Union High School Adopt-A-Stream program.



Lower Brush Creek Mine Road project.

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PUTAH CREEK—YOLO HOUSING AUTHORITY PROJECT

Solano County Water Agency



This California black sedge estuary is a unique feature of Yolo Housing on Lower Putah Creek.

PURPOSE

Restore riparian vegetation, instream wetland, and fish spawning habitat at the Yolo Housing Authority property along lower Putah Creek

PROJECT GOALS

- ✦ Restore and enhance riparian vegetation, instream wetland, and fish spawning habitat with the combined involvement of landowners, tenants, and local agencies
- ✦ Monitor restoration efforts to assess performance
- ✦ Educate landowners and support watershed stewardship

AWARD AMOUNT

\$279,655

WATERSHED

Putah Creek Watershed

COUNTY

Solano and Yolo Counties

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 3, State Assembly: 8, State Senate: 4

Benefits to the Bay-Delta System

The Yolo Housing Authority (YHA) property is located along lower Putah Creek. This project restores riparian vegetation, instream wetland, and fish spawning habitat at the YHA property. Because the property's habitat is degraded relative to upstream and downstream areas, restoration of the site will improve the riparian corridor, which is part of a wildlife migration pathway from the north coast to the Bay-Delta. Benefits of these actions include improved habitat for fall-run Chinook salmon, steelhead, Pacific lamprey, and resident fish populations as well as migratory birds, raptors, northwestern pond turtle, valley elderberry longhorn beetle, and numerous other sensitive and common species dependent on the rare strips of riparian habitat along Central Valley waterways. Other benefits include erosion control and trash cleanup, resulting in improved water quality and community involvement, improved neighborhood relations, and educational opportunities. This project is an important step forward for a priority restoration site.

PROJECT OVERVIEW

Putah Creek's riparian corridor links the Yolo Bypass wildlife area with contiguous natural areas that extend from Lake Berryessa to Clear Lake and into the Mendocino National Forest, forming a significant wildlife migration pathway from the north coast to the Bay-Delta. The Yolo Housing Authority (YHA) property is a public housing development located along lower Putah Creek, $\frac{3}{4}$ of a mile east of the Highway 505 overcrossing of the creek. This property is degraded as a result of invasive nonnative vegetation and illegal dumping. There are more submerged tires and other debris per square foot at the YHA property than at any other location along the 23 miles of lower Putah Creek. Because the site is particularly degraded relative to upstream and downstream areas, restoration of the site will improve the riparian corridor.

This project engages local landowners and tenants of the YHA property in dialogues about trespassing and illegal trash dumping in the neighborhood and involves them in the removal of illegally dumped debris; abatement of invasive nonnative vegetation such as eucalyptus, tree-of-heaven, and Himalayan blackberry; and restoration of riparian, wetland, and Valley oak woodland plant communities and fish spawning habitat along lower Putah Creek. Creating fish spawning habitat involves installation of a boulder bar and placement of spawning gravels. The YHA project also includes monitoring aquatic invertebrates, birds, and fish. Through the physical restoration of the site, this project builds community among residents and engages them as stewards of their environment.



Legacy solid wastes will be cleaned up as part of the restoration project.

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Algal bloom on Lower Deer Creek. Studies are underway to determine its causes and to plan remediation actions.

PURPOSE

Improve watershed health and address the degradation of Deer Creek resulting from historical gold mining practices

PROJECT GOALS

- ✦ Describe the hydrology and geomorphology of Deer Creek
- ✦ Conduct a sediment study
- ✦ Develop a restoration plan
- ✦ Conduct water quality monitoring
- ✦ Implement erosion control projects
- ✦ Build local capacity to effectively manage the watershed

AWARD AMOUNT

\$360,000

WATERSHED

Deer Creek Watershed

COUNTY

Nevada County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

Benefits to the Bay-Delta System

Deer Creek is a major tributary to the Yuba River and one of the few remaining wild steelhead fisheries in the Central Valley. Implementation of this project will help benefit downstream and local communities by limiting the amount of sediment and mercury entering the Bay-Delta system and by improving water quality. These improvements will directly benefit the highly valued population of steelhead trout, Chinook salmon, and other anadromous and resident fish, as well as downstream urban water users. Improved water quality, restored streambanks, and improved ecological health of the creek will also benefit the local community and encourage its citizens to take pride in their watershed and to safely use the local watershed for recreational activities.

PROJECT OVERVIEW

Deer Creek is a main tributary to the Lower Yuba River below Englebright Dam. Rich deposits of gold were discovered in Deer Creek and the surrounding watershed in the late 1800s. As a result, Deer Creek was severely degraded and altered by gold mining activities. Following the cessation of hydraulic mining, the river incised and left behind gold mining debris and mercury deposits. Today, this material is mixed with the sediment of Upper Deer Creek, resulting in high sediment loads. The high sediment loads not only affect the instream ecology of the creek, but also contribute to heavy sediment loads in the lower Yuba River that threaten salmon and steelhead populations.

The Deer Creek watershed is now under the stewardship of a rural coalition composed of city and county governments, state and federal agencies, local nonprofit organizations, local landowners, and educational and youth groups. The intent of this coalition is to develop a restoration model for a river that flows through the center of a small Gold Country town. Restoring Deer Creek builds on work previously conducted, including the preparation of watershed assessments and identification of priority actions. This project will achieve a better understanding of the watershed by assessing the hydrology and geomorphology of the creek, analyzing the flow regime, and conducting a sediment study. This information will be added to the previous data to develop a restoration plan to improve habitat value and water quality. The restoration component of one of the project elements includes relocation of a footbridge, streambank revegetation and stabilization, and trash removal.



The Friends of Deer Creek lab, which is used for research, training, and public outreach.

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Pitcher plant bog threatened by sediment from eroded logging road.

PURPOSE

Improve water quality of the South Yuba watershed, strengthen local stewardship education programs, and foster education and sustainable forest management practices

PROJECT GOALS

- ✧ Reduce erosion and sedimentation within the South Yuba River watershed
- ✧ Build community capacity to implement forest restoration and fuel reduction projects
- ✧ Educate the public about forest ecosystems, sustainable forest management and restoration, and fire ecology
- ✧ Educate the public and schoolchildren about water quality and watershed health

AWARD AMOUNT

\$300,536

WATERSHED

Yuba River Watershed

COUNTY

Nevada County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 2

Benefits to the Bay-Delta System

The South Yuba River watershed drains into the mainstem of the Yuba River at Englebright Dam and ultimately into the Sacramento River. Improved conditions in the South Yuba provide downstream benefits to public and private users of water from the system. The extensive public outreach and education efforts of the South Yuba Watershed Project contribute to the improvement of source water quality of the Bay-Delta and reduction of sediments into Englebright Lake. Timber supply interests also benefit from improvements in the sustainability of timberlands. The South Yuba watershed community benefits from this project's financial and technical assistance for private land improvements and added protection against fire damage. This project benefits the general public by promoting watershed stewardship and sustainable forest management practices, and by reducing long-term water quality problems and fire danger.

PROJECT OVERVIEW

Flows in the South Yuba River enter the mainstem of the Yuba River at Englebright Dam and are then transported to the Feather River, the Sacramento River, and ultimately the Bay-Delta. The South Yuba River's watershed has excess fuel buildup in its forests, altered hydrology in some locations, and numerous water quality issues. Excess fuel buildup has become a major concern for forest health, water quality, human safety, and overall watershed management. Altered hydrology has increased sediment loads to the Pat Yore Flat fen system, which are detrimental to the moss and plant species living in the fen. Water quality issues include the release of mine tailings containing heavy metals, and sediment erosion from trails. Soil-borne pollutants released into local surface waters also affect the water quality of Lake Englebright.

To promote greater watershed health, the Nevada County Land Trust is implementing this project with the support of the Yuba/Bear Watershed Council, California State Parks, Tahoe National Forest, Nevada County Public Schools, Sequoia Challenge, Yuba Watershed Institute, the local resource conservation district, Bureau of Land Management, Nevada County Irrigation District, South Yuba River Citizens League, Nevada County Department of Transportation, and Sierra Pacific Industries. This project supports healthy, sustainable forests in the South Yuba River watershed through sharing the cost of an expanded fuel reduction education program with private landowners, subsidizing consulting services for private landowners, and supporting a sustainable forestry program that makes it economically feasible for landowners to practice sustainable forestry.

The community capacity for watershed and forest management is greatly enhanced by this project's multiple workshops on mature forest management, demonstrations by the Yuba Watershed Institute on natural history and forest practices, an expanded watershed education program at the Bridgeport Natural Science Center, and fire ecology workshops and demonstrations. The water quality of the South Yuba River watershed and the Bay-Delta is improved by erosion reduction in the watershed via the project's Excelsior/South Yuba Mining Canal restoration, restoration of the natural hydrology in Pat Yore Flat fen, and restoration of the abandoned Ancho Erie gold mine. In addition, the project improves watershed stewardship through extensive outreach efforts to all South Yuba watershed residents and stakeholders.



Surveying areas of erosion potential on the Independence Trail near Nevada City.

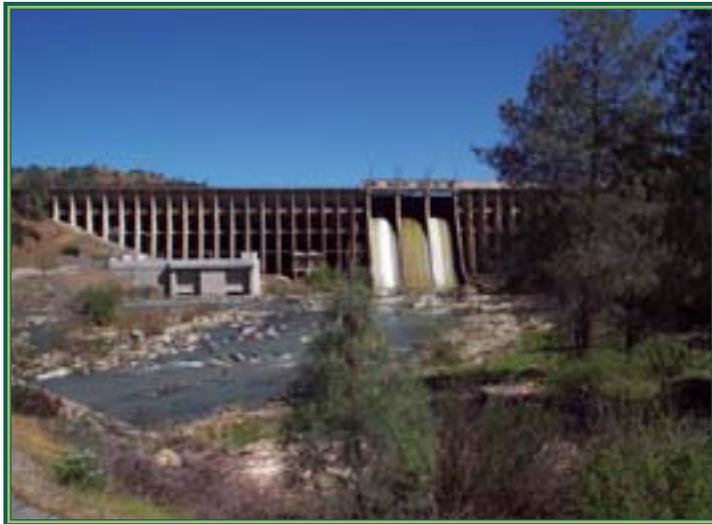
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STONY CREEK WATERSHED MANAGEMENT PLAN

Glenn County Resource Conservation District



Stony Gorge Dam near Elk Creek (Photo courtesy of Cindy Horney).

PURPOSE

Hire a watershed coordinator to bring together individuals from various backgrounds to outline a watershed management strategy that will establish protocols for conducting baseline assessments for the watershed, identify potential projects, and conduct and coordinate watershed activities.

PROJECT GOALS

- ✦ Improve public outreach and increase environmental education opportunities
- ✦ Compile and analyze existing watershed information and identify information gaps
- ✦ Identify a list of projects and methods to improve watershed conditions
- ✦ Establish a watershed monitoring program

AWARD AMOUNT

\$200,000

WATERSHED

Stony Creek Watershed

COUNTY

Glenn County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 1

Benefits to the Bay-Delta System

The Stony Creek watershed is a tributary to the Sacramento River, which is a significant water supply source to the Bay-Delta and an integral component of the Bay-Delta system. Ecosystem and water quality in the Bay-Delta is dependent on the quality of water from upstream areas. Improving the quality of discharge from Stony Creek will provide benefits to the lower Sacramento River and the Delta, including recreation, water supply, and wildlife. Improvements made within the watershed will provide recreational, water supply, and wildlife benefits to local citizens as well.

PROJECT OVERVIEW

The Stony Creek watershed includes an area of 700 square miles. It is the second largest Sacramento River tributary on the west side of the Sacramento Valley. Principal issues of concern in the watershed include altered flow regime attributable to dam operations; loss of quality stream and riparian habitat; accelerated erosion and sediment deposition; property damage from flooding and channel bank erosion; decline in wildlife, fish, and birds; and invasion of exotic plant species (primarily *Arundo donax* and *Tamarisk*). This project provides funding for a watershed coordinator to organize efforts to address these issues. The coordinator will serve as a liaison among resource agencies, landowners, and other stakeholders. Key tasks of the watershed coordinator include conducting public outreach and environmental education activities, facilitating stakeholder meetings, compiling and analyzing existing watershed information, facilitating the identification of methods to improve watershed conditions, establishing a watershed monitoring program, developing a quarterly newsletter regarding the health and opportunities for improvements of the Stony Creek watershed, and managing the existing *Arundo donax* mapping and eradication restoration project.



Picnic area at the East Park Reservoir (Photo courtesy of Cindy Horney).

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TEHAMA WEST WATERSHED ASSESSMENT

Tehama County Resource Conservation District



Forested lands in western Tehama County.

AWARD AMOUNT

\$199,500

WATERSHED

Thomes Creek and Elder Creek Watersheds

COUNTY

Tehama County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

PURPOSE

Conduct an assessment of the Tehama West watersheds, which include the westside tributaries of the Sacramento River between Cottonwood Creek and Stony Creek

PROJECT GOALS

Prepare a document that:

- ✦ provides a package of tools to efficiently guide implementation of watershed improvements
- ✦ helps to develop solutions that protect the resource-based economy of the region
- ✦ leads to a cooperative non-regulatory effort to improve the ecosystem in the watershed
- ✦ educates stakeholders and serves as a repository of information about the watershed

Benefits to the Bay-Delta System

The reach of the Sacramento River within this project's area is a very important spawning and rearing area for anadromous fish. The management support developed through this project will enable restoration of the creeks, providing ecosystem benefits within the watershed, in the mainstem of the Sacramento River, and for the Bay-Delta system as a whole. These could include improvements to habitat for species of special importance to the CALFED Program, including winter-run Chinook salmon and steelhead, and to the species that occupy wetland/vernal pool and riparian habitats. Reductions in the fine sediment load discharged from this watershed to the Sacramento River provide benefits to the ecosystem and to downstream water users. Local benefits include improved ecological conditions, reduced maintenance costs for local landowners, and diminished pressures on land use choices owing to improved conditions for special-status species in the watersheds.

PROJECT OVERVIEW

The creeks in the Tehama West watershed flow from the east slopes of the coast range to the Sacramento River below Red Bluff Diversion Dam. The area includes 1,440 square miles, and the principal waterways are Thomes Creek and Elder Creek. Smaller streams include Reeds, Red Bank, Coyote, Oat, and McClure Creeks. All are intermittent streams that generally dry up in the summer. The mainstem of the Sacramento River in this area contains important spawning and rearing habitat for many fish species, including the endangered winter-run Chinook salmon and steelhead. Although some of the area is federally owned, 80% of the property, a majority of which are large ranch properties and commercial timberlands, is owned privately.

Thomes Creek and Elder Creek have been identified by the U.S. Fish and Wildlife Service (USFWS) as being restorable for Chinook salmon spawning and rearing habitat. This watershed historically was a major contributor of gravel to the Sacramento River, and Thomes Creek in particular was cited by USFWS and the Department of Water Resources as a critical gravel recruitment source. Impediments to the realization of the potential of these streams as salmon habitat include: loss of riparian vegetation, the existence of nonnative invasive species such as *Arundo donax* and *Tamarix*, physical barriers to migration, and unscreened agricultural diversions. Another valuable natural resource in the watershed is a large concentration of wetland/vernal pool habitat.

The Tehama County Resource Conservation District (TCRCD) is the sponsor of this project that takes a first step toward recovery of the natural benefits of the watershed by completing a watershed assessment. The assessment documents existing conditions in the watershed through research of historical conditions and by compiling existing data on the physical and ecological resources within the watershed using a GIS system. The assessment process also provides a valuable educational tool and platform for building consensus with landowners, agencies, and stakeholders within the watershed. The TCRCD Board of Directors, staff, and a Technical Advisory Committee are reviewing this information to identify critical gaps and to identify and prioritize restoration and management efforts. This process also identifies restoration activities that will benefit other watersheds in the area and the Sacramento Valley as a whole



Chaparral lands in western Tehama County.

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A typical summertime flow on the North Fork Pit River.

PURPOSE

Implement restoration projects to improve water quality, reduce bank erosion, restore riparian vegetation, and restore wetlands along selected reaches of the Pit River

PROJECT GOALS

- ✦ Conduct education and outreach to involve stakeholders, citizens of Alturas, and the county's Native American community in project planning
- ✦ Develop a stormwater management plan for the City of Alturas
- ✦ Reduce erosion along the X-L Ranch reach of the North Fork Pit River
- ✦ Install livestock fencing along 5 miles of the Pit River and its tributaries to protect riparian areas
- ✦ Develop restoration techniques for seasonally inundated riparian and wetland areas

AWARD AMOUNT

\$585,580

WATERSHED

Pit River Watershed

COUNTY

Modoc County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

Benefits to the Bay-Delta System

The Pit River watershed is one of the primary headwaters to the Sacramento River. These projects improve water quality by reducing soil erosion, thus decreasing sediment loads in the Upper Pit River and in downstream waters. This improvement benefits local fish as well as Chinook salmon and steelhead downstream in the Sacramento River. Local Native American communities and local landowners will benefit from the improvements to their property, and the entire local community benefits from the economic influx of restoration funds. Further benefits accrue to migratory waterfowl, including the greater sandhill crane.

PROJECT OVERVIEW

The Pit River watershed is one of the primary headwaters to the Sacramento River. Its waters flow through Shasta Lake and down the Sacramento River to the Bay-Delta. The Pit River is currently listed as an impaired water body for nutrients, organic enrichment, low dissolved oxygen, and temperature. Other problems include erosion, channel downcutting, sediment discharge, and excess turbidity. These adverse conditions are felt both locally and throughout the Bay-Delta ecosystem. The Central Modoc Resource Conservation District (CMRCD) has supported stakeholders to select several projects intended to increase landowner participation, demonstrate restoration techniques for other similar portions of the watershed, and complete first steps toward effective community management of the Upper Pit River. The following projects have been funded:

- ✧ The Alturas Storm Water Management Plan. Reduces chronic flooding in Alturas and identifies nonpoint source water pollution.
- ✧ The North Fork Pit/X-L Ranch Riparian Restoration Project. Addresses bank erosion that threatens a tribal cemetery and livestock management.
- ✧ The Pit River Fencing Initiative. Provides landowner incentives to establish and maintain riparian fencing programs, including offstream water development for livestock.
- ✧ The Dry Creek Basin Fence Project. Improves the management of a 6,000-foot-elevation valley that feeds into Parker Creek, a tributary to the North Fork Pit River.
- ✧ The Pit River–John and Sally Clark Riparian and Wetland Enhancement Project. Develops riparian revegetation techniques applicable to those parts of the river subject to moderate seasonal inundation as a result of irrigation impoundment.

The data and documentation generated by these sub-projects are consistent with statewide standards and coordinated with the Regional Water Quality Control Board water quality monitoring program for the Pit River. The resulting data will be made available to local interests and other entities through public meetings, reports, and posting of information and data on local and statewide websites. The CMRCD is also conducting extensive public outreach to build support and participation from citizens, and has formed a close partnership with the X-L Ranch Community of the Pit River Tribe. Community education and outreach efforts focus on the urban watershed issues found in Alturas, as well as on inclusion of the county's Native American community in watershed planning and management.



Central Modoc RCD Crew installing a brush barb on the Pit River near Alturas.

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UPPER SPANISH CREEK WATERSHED ASSESSMENT AND RESTORATION STRATEGY

Plumas Corporation



Collecting substrate and flow data on Spanish Creek.

PURPOSE

Develop a detailed watershed assessment and restoration strategy for Spanish Creek

PROJECT GOALS

- ✦ Develop a watershed assessment
- ✦ Develop a restoration strategy to stabilize bank erosion
- ✦ Establish riparian habitat
- ✦ Build community capacity for effective watershed management

AWARD AMOUNT

\$170,000

WATERSHED

Spanish Creek Watershed

COUNTY

Plumas County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

Benefits to the Bay-Delta System

Spanish Creek is a tributary to the Feather River, which is the major water supply basin for the State Water Project and an integral component of the Bay-Delta system. Ecosystem and water quality within the Bay-Delta is dependent on the quality of water from upstream areas. Stabilization of Spanish Creek will:

- ✦ reduce sediment load and the transport of other contaminants, such as nitrogen and phosphorus, from entering the Feather River and Bay-Delta system, thereby providing multiple benefits to water users and the general public;
- ✦ prevent the loss of property for creekside landowners;
- ✦ build community capacity to assess and effectively manage the watershed; and
- ✦ encourage technology transfer and information sharing within the watershed management community.

PROJECT OVERVIEW

The Spanish Creek watershed is located in the northern Sierra Nevada Mountains and is a tributary to the Upper North Fork Feather River. The Feather River contributes a major portion of runoff flow to the Sacramento River. Over the years, the banks of Spanish Creek have become unstable largely as a result of historical hydraulic mining and channelization projects. The creek was used as a commercial gravel source in the 1960s. Since operations ceased in the mid-1990s, sediment buildup has caused mid-channel sandbars to form, changing the flow of Spanish Creek and resulting in the loss of land for creekside landowners.

To address these issues, landowners along Spanish Creek are working together with the Feather River Coordinated Resource Management Group, an alliance of natural resource management agencies, local landowners, private interests, and the public, to develop a watershed assessment and design long-term effective management practices. Rather than individual landowners attempting to fix their own portions of the streambank, and thus transferring the problem to their neighbors, they have agreed to participate in a coordinated approach and assess the problem as a whole by examining the entire channel. This project calls for a thorough scientific study of the Spanish Creek watershed to quantify river geomorphology, flow, and sediment characteristics. From this study, a comprehensive restoration strategy for Spanish Creek will be developed. The restoration strategy will focus on reducing excess erosion and sedimentation from the watershed. This project also educates the community to help build its capacity to collaborate and participate in effective watershed management and restoration activities.



Vertical banks such as this one on Spanish Creek are eroding riparian habitat and property and contributing to water quality degradation.

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UPPER TRINITY RIVER WATERSHED MANAGEMENT PLANNING PROJECT

Trinity County Resource Conservation District



Alpine lakes store the winter snowmelt that feeds the entire watershed.

PURPOSE

Develop a watershed assessment and action plan to address the high levels of sedimentation and turbidity in the Upper Trinity River watershed

PROJECT GOALS

- ✧ Minimize sedimentation and turbidity
- ✧ Improve water quality and water supply reliability
- ✧ Improve fish habitat

AWARD AMOUNT

\$200,000

WATERSHED

Upper Trinity River Watershed

COUNTY

Trinity County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

Nearly 1 million acre-feet of water per year is diverted from Trinity Lake into the Bay-Delta system, making the Upper Trinity River an important source watershed to the system. This project provides the necessary planning needed to:

- ✧ improve water quality and water supply reliability for downstream urban and agricultural water users by reducing sedimentation and turbidity in the Upper Trinity River watershed,
- ✧ reduce erosion of silts and sands that impair the quality of spawning gravels for anadromous fish, and
- ✧ improve recreation and tourism opportunities for the local community by improving water quality and supply.

PROJECT OVERVIEW

The Upper Trinity River watershed has a drainage area of 692 square miles that includes Trinity Lake. Water is diverted regularly from Trinity Lake into the Bay-Delta system, which provides 2.5 million acre-feet of storage for the Central Valley Project. The upper watershed has been heavily logged. In heavy rainfall years, large volumes of fine sediment are eroded from the watershed upstream of Trinity Dam and are flushed into the lake, reducing its storage volume. Water exports from the dam to the Sacramento River can experience extremely high turbidity levels during heavy rainfall years. The buildup of sediment in Trinity Lake reduces the available storage capacity that can shorten the expected life of the dam. The seriousness of the sedimentation issue has led the Trinity County Resource Conservation District to develop the Upper River Trinity River watershed Management Planning Project.

The overall objective of this community-based project is to develop a comprehensive watershed plan for the Upper Trinity River using a collaborative approach. Included in this process are the following activities:

- ✧ Form a new community-based watershed group entitled “Upper Trinity River Watershed Team”
- ✧ Conduct a sediment-source inventory
- ✧ Prepare a strategic fuels reduction and thinning plan and demonstration project
- ✧ Develop a comprehensive watershed assessment and action plan



One key to watershed planning is learning about the resources from the landowners.

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WATER QUALITY IMPROVEMENT IN COW CREEK WATERSHED

Western Shasta Resource Conservation District



Upper South Cow Creek water quality monitoring site.

PURPOSE

Improve water quality in the Cow Creek watershed

PROJECT GOALS

- ✦ Identify the sources of known water quality problems, fecal coliform contamination, and elevated water temperatures, in the Cow Creek watershed
- ✦ Obtain baseline temperature data and fecal coliform data
- ✦ Determine options to remedy the water quality problems in the watershed
- ✦ Develop an implementation plan to address water quality issues
- ✦ Conduct a water quality monitoring program on Cow Creek

AWARD AMOUNT

\$67,160

WATERSHED

Cow Creek Watershed

COUNTY

Cow Creek Watershed

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

Cow Creek is an eastside tributary to the Sacramento River, below Keswick Dam. Project-related improvements will reduce fecal coliform levels and lower water temperatures in the watershed. This will have direct benefits to stakeholders in the watershed, including improvements to municipal and domestic water supply, irrigation, stock watering, hydroelectric power generation, and contact and non-contact recreation. Lowering water temperature conditions in the watershed will also contribute to better conditions for Chinook salmon and steelhead by providing improved spawning habitat and migration for anadromous fisheries, and other habitat improvements. This project continues the collaborative efforts of agencies, landowners, and tribal interests to address problems in the Cow Creek watershed.

PROJECT OVERVIEW

The Cow Creek watershed drains approximately 274,000 acres in Shasta County. Cow Creek is an eastside tributary to the Sacramento River, downstream of Keswick Dam, and is thus directly connected to the Bay-Delta. Water quality studies have identified high levels of fecal coliform in several of the main tributaries to Cow Creek and in Cow Creek. Elevated levels of fecal coliform prevent waters from being used for contact recreation, municipal and domestic water supply, and other beneficial uses.

In addition, previous studies have identified water temperatures exceeding preferred developmental thresholds for coldwater fish species. Such high temperatures have repeatedly been identified as limiting factors for species such as Chinook salmon and steelhead on Cow Creek.

This project includes monitoring fecal coliform levels in tributaries with known problems, as well as in the mainstem of Cow Creek. A technical advisory team will review results and develop remediation recommendations. Monitoring includes field temperature testing and evaluation of data to narrow sources and causes of elevated temperature, as well as an analysis of project feasibility to help lower temperatures in priority areas. Results will support the implementation of restoration activities in the Cow Creek watershed.



"Tidbit" sensor used in water quality monitoring on Cow Creek.

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YUBA RIVER CITIZEN MONITORING PROGRAM—PHASE II

South Yuba River Citizens League



The North Yuba River below Downieville.

AWARD AMOUNT

\$215,000

WATERSHED

Yuba River Watershed

COUNTY

Nevada County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2 and 4,

State Assembly: 3 and 4, State Senate: 1

PURPOSE

Expand a successful volunteer monitoring program in the Yuba River watershed and use the data to evaluate effectiveness of previous work and report on water quality

PROJECT GOALS

- ✦ Design and execute scientifically credible studies to assess Yuba River conditions
- ✦ Empower and educate citizens to be responsible stewards and decision-makers
- ✦ Screen for water quality problems
- ✦ Identify pollution sources
- ✦ Evaluate the effectiveness of restoration and management practices
- ✦ Evaluate the quality of water compared to specific water quality criteria
- ✦ Conduct a conference on monitoring by citizens
- ✦ Produce a handbook on the “how to’s” of monitoring by citizens

Benefits to the Bay-Delta System

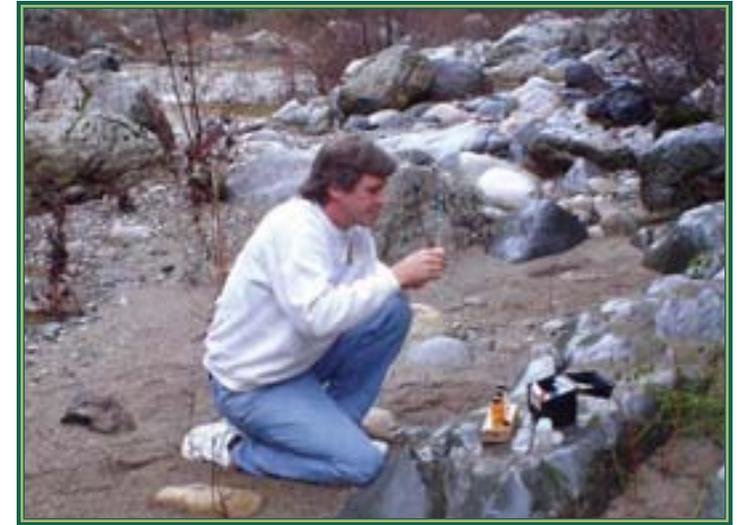
The Yuba River supports highly valued populations of steelhead trout and Chinook salmon. The river’s wild steelhead fishery is significant. The Yuba River historically supported 15% of the annual fall-run Chinook salmon in the Sacramento River system. In addition, the health of the watershed is critical to downstream urban water users who depend on the Yuba River for their drinking water. Implementation of this project:

- ✦ facilitates more informed decision-making by continuing to conduct water quality monitoring of the various parameters that can affect humans and fish in the Bay-Delta system and
- ✦ encourages continued collaboration by sharing the data compiled through this project with 13 local, state, and federal agencies, and seven restoration and planning efforts in the Yuba River watershed.

PROJECT OVERVIEW

The Yuba River is one of the most diverted and dammed rivers in the Sierra Nevada. Its 1,325 square miles of watershed is a source of drinking and irrigation water for hundreds of thousands of consumers. During summer months, more than 95% of normal flows can be diverted out of the middle and south forks of the Yuba for delivery to Placer County residents. Damage from historical mining practices continues to degrade Yuba River water quality with the accumulation of mercury, arsenic, and other pollutants in sediment behind reservoirs and in riverbeds.

The Yuba River Citizen Monitoring Project was initiated in 2000 to address the degraded water quality in the watershed. The Monitoring Project has become a successful, collaboratively developed, watershed-wide monitoring and assessment program. Phase I of the project included the services of more than 65 trained citizen volunteers and 21 monitoring sites throughout the Yuba River watershed. Data on a variety of parameters, including pH, dissolved oxygen, water temperature, arsenic, iron, copper, zinc, mercury, and flow, have been compiled at the monitoring sites on a monthly basis since October 2000. This project—Phase II of the Yuba River Citizen Monitoring Program—expands the program to include additional parameters and sites that are relevant to new or forthcoming resource issues. Phase II monitors six additional parameters (lead, chromium, enterococci bacteria, turbidity, nitrogen, and phosphate), increases the number of monitoring locations to include eight new monitoring sites, and continues an investigation into the extent and causes of enterococci contamination in the Yuba River. Additionally, this project will help build the capacity of other volunteer monitoring programs by developing curriculum and materials for a Citizens Monitoring Academy.

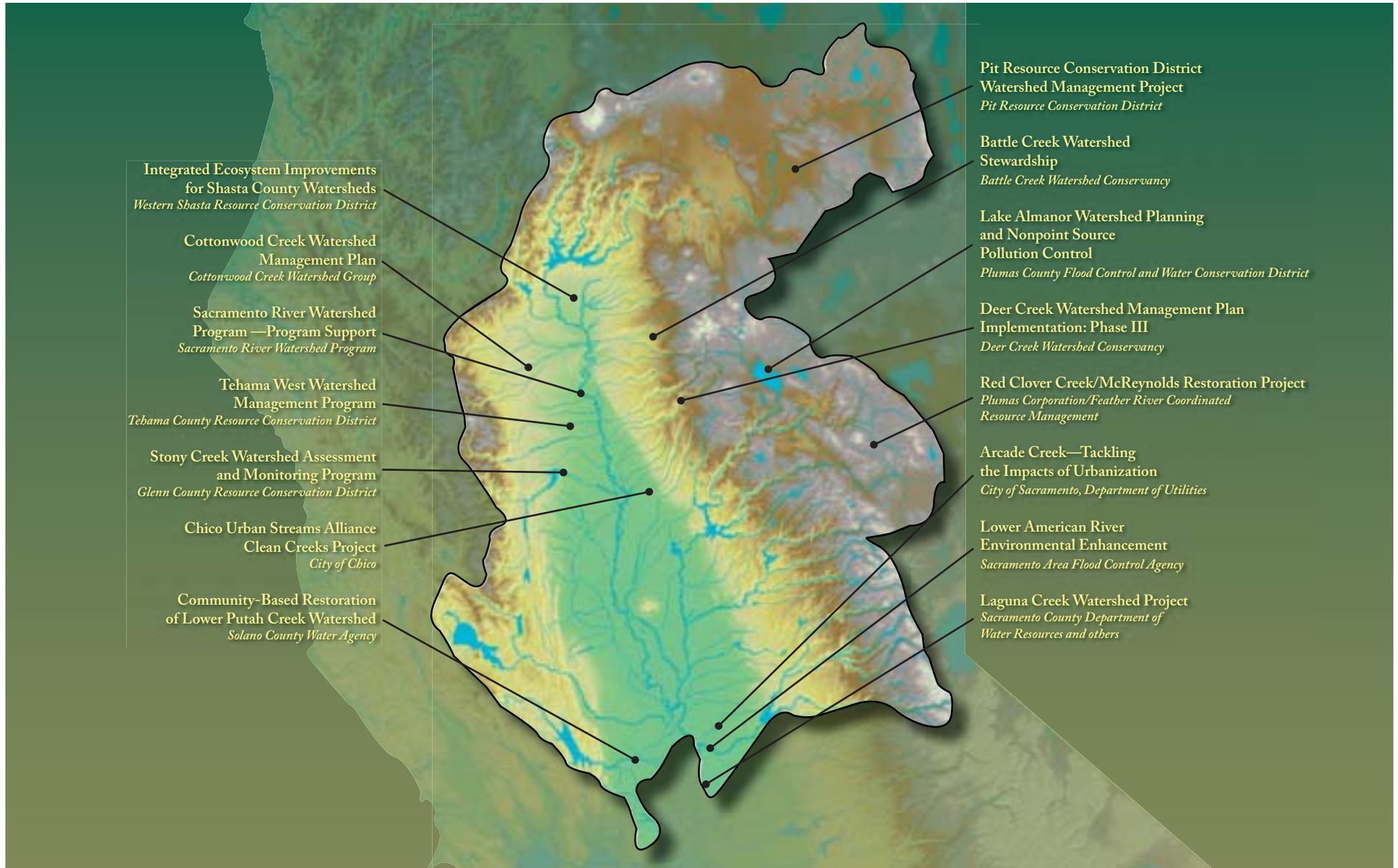


Dissolved oxygen sampling on the South Yuba River in December 2004.

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ARCADE CREEK—TACKLING THE IMPACTS OF URBANIZATION

City of Sacramento, Department of Utilities



Site of the planned Del Paso Park Detention/Filtration Wetland, which will treat the stormwater runoff from this outfall.

PURPOSE

Expand the planning process for the Arcade Creek watershed and implement restoration activities

PROJECT GOALS

- ✦ Increase participation of local residents in the Arcade Creek Watershed Group through public outreach and education
- ✦ Perform in-depth watershed assessment to provide information baseline
- ✦ Develop plan to manage and/or eliminate nonnative invasive plants
- ✦ Construct a stormwater runoff detention basin and filtration wetland for multiple benefits

AWARD AMOUNT

\$930,000

WATERSHED

Arcade Creek Watershed

COUNTY

Sacramento County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 3, 4, and 5; State Assembly: 4, 5, and 9;

State Senate: 1 and 6

Benefits to the Bay-Delta System

The Arcade Creek watershed is located within the city of Citrus Heights and unincorporated areas of Sacramento County. The watershed is a major source of polluted urban runoff to the Bay-Delta system. The Arcade Creek project raises public awareness and understanding of watershed health issues and improves collaboration among local residents and government agencies. The project will expand the planning process through increased public participation in the development of a watershed assessment. By eradicating invasive plants and restoring native riparian vegetation, the project will benefit local aquatic, terrestrial, and bird species, and migratory birds and mammals. The construction of a detention/filtration wetland as part of this project will also improve water quality in Arcade Creek that will benefit water users downstream in the Bay-Delta system. Local residents and local governments are primary beneficiaries of the improved natural environment, enhanced recreational opportunities, and improved water quality.

PROJECT OVERVIEW

Arcade Creek watershed is located in Sacramento County, mostly within the city of Citrus Heights and unincorporated areas of Sacramento County. The watershed drains approximately 38 square miles of mostly commercial and residential neighborhoods. It is a major source of urban runoff to the Bay-Delta system. The Arcade Creek Watershed Group was formed in 2002 with support from the City of Sacramento and from the US Environmental Protection Agency. Members include city and county agency representatives and local residents. The group is working to improve water quality, reduce flood damage, enhance habitat, increase recreational opportunities, and encourage local participation in protection efforts within the Arcade Creek watershed.

This project implements priority tasks identified in previous assessment, planning, and outreach efforts. A watershed coordinator will help to increase support and involvement from homeowners and local residents by facilitating the watershed group, conducting field trips, and seeking public input. The project will increase public awareness about the effects of landscape maintenance chemicals on stream water quality and educate the community about the use of environmental restoration to treat urban runoff. The construction of the Del Paso Park Detention/Filtration Wetland will be used to demonstrate the value of environmental restoration. The wetland restoration will improve the flood-carrying capacity of Arcade Creek through moderate-sized storms, protect streambanks from excess erosion, enhance habitat, and improve downstream water quality through the detention and treatment of urban stormwater runoff. Furthermore, the Phase II Watershed Plan and the Invasive Species Eradication and Management Plan will be developed in concert to provide better information about the watershed in order to improve and protect its long-term health. Together, the plans will improve watershed planning efforts, prioritize several watershed improvement projects, and enhance riparian and aquatic habitat. The plans will be developed by the Arcade Creek Watershed Group, local residents and neighbors, the cities of Citrus Heights and Sacramento, and the County of Sacramento.



This thicket of Arundo donax on Arcade Creek highlights the need for a nonnative invasive species management plan.

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North Fork of Battle Creek.

PURPOSE

Increase protection, implement restoration of stream conditions, and build capacity for landowners and resource agencies to manage watershed restoration efforts

PROJECT GOALS

- ✦ Continue to implement the Battle Creek Watershed Conservancy's Watershed Strategy and evaluate outcomes of previously implemented projects
- ✦ Implement and monitor erosion reduction actions and restore riparian areas in the watershed
- ✦ Design and implement a stream condition monitoring plan and a water quality monitoring program
- ✦ Provide community outreach and training about watershed processes, protection needs, and restoration opportunities

AWARD AMOUNT

\$680,380

WATERSHED

Battle Creek Watershed

COUNTY

Shasta and Tehama Counties

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2 and 3, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

The Battle Creek watershed is located on the southwestern slopes of Mt. Lassen and drains to the Sacramento River. Battle Creek is historically one of the most important Chinook salmon and steelhead spawning streams in the Sacramento Valley. This project is helping to reduce or eliminate sediment sources that degrade anadromous fish habitat in Battle Creek. Integral to the project are community outreach programs that educate local watershed residents and children about how to protect and restore habitat in the Battle Creek watershed. This project will also develop and implement a stream conditions monitoring plan based on protocols used by state and federal agencies. The resulting data will be made available to other public interests to aid in similar efforts. This project provides direct benefits to landowners and water users in the watershed and water users of the Central Valley Project. Local, state, and federal agencies, including the Lassen National Forest, will benefit from their investments in this project.

PROJECT OVERVIEW

The Battle Creek watershed is situated on the volcanic slopes of Mt. Lassen in southeastern Shasta and northeastern Tehama Counties and covers approximately 360 square miles. Battle Creek flows from the foothills of Mt. Lassen, enters the Sacramento River southeast of the town of Cottonwood in Shasta County, and drains to the Bay-Delta. The Battle Creek watershed is widely recognized as a watershed critical to the survival and restoration of Chinook salmon and steelhead populations listed under the federal and state Endangered Species Acts.

The Battle Creek Watershed Conservancy (BCWC) is implementing the Battle Creek Watershed Stewardship project in partnership with the Lassen National Forest. Two independent scientific assessments of Battle Creek conducted by the BCWC and Lassen National Forest have indicated that stream conditions may be negatively affected by increased erosion and sedimentation in the upper Battle Creek watershed, which could impair water quality and reduce salmonid spawning success. These assessments have identified a need to increase protection and implement restoration of stream conditions, especially the stabilization or elimination of sediment sources that could further degrade anadromous fish habitat in Battle Creek.

The BCWC project has four components: evaluating the effectiveness of previous restoration investments in Battle Creek; continuing the implementation of the Battle Creek Watershed Strategy, which includes sponsoring watershed landowners and resources agencies in community education and outreach programs; identifying and eliminating significant sediment sources that are degrading the Battle Creek watershed; and designing and implementing a stream condition monitoring plan.



Riparian corridor along Battle Creek.

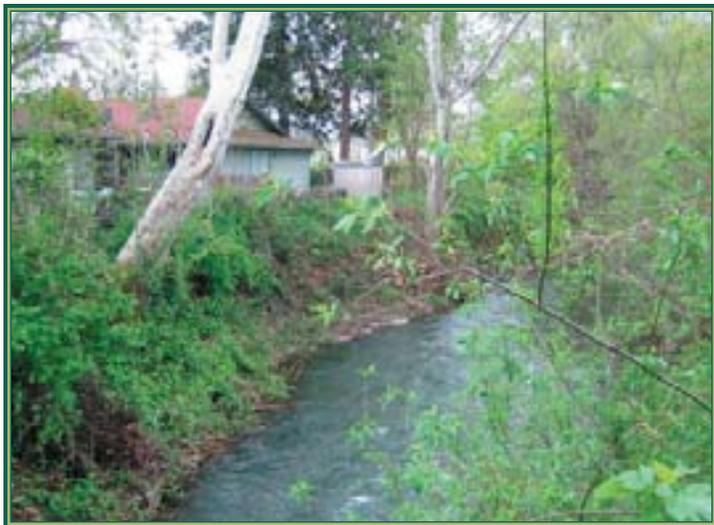
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CHICO URBAN STREAMS ALLIANCE CLEAN CREEKS PROJECT

City of Chico



Little Chico Creek flowing through Chapmantown.

PURPOSE

Conduct a community-based water quality and habitat assessment of Big Chico Creek and Little Chico Creek watersheds

PROJECT GOALS

- ❖ Increase the awareness and understanding of urban runoff problems and solutions by the public, particularly Chico area residents
- ❖ Enhance volunteer participation in stream assessment programs
- ❖ Assess the performance of water quality management practices used in the City of Chico
- ❖ Improve migration, spawning, and rearing habitat for multiple fish species in Big Chico and Little Chico Creeks
- ❖ Increase recreational opportunities on Little Chico Creek

AWARD AMOUNT

\$400,714

WATERSHED

Big Chico Creek and Little Chico Creek Watersheds

COUNTY

Butte County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

Benefits to the Bay-Delta System

Big Chico Creek and Little Chico Creek flow through the City of Chico and discharge into the Sacramento River and ultimately the Bay-Delta. The quality of the creeks' water and habitat for multiple fish species is impaired by urban runoff pollutants, including sediments, pathogens, and trash. This project will conduct a community-based water quality and habitat assessment of the Big Chico and Little Chico Creek watersheds. The project will also increase public awareness and involvement in order to better manage urban runoff problems. Extensive public outreach, education, and volunteer monitoring efforts will provide direct benefits to the City of Chico and its citizens. Decreased pollutant loads benefit surface water users, locally and downstream, by improving Delta source water quality. The project provides multiple benefits to the general public by increasing salmonid populations and by improving the drinking water quality of the Bay-Delta system. This project also benefits recreational users of the creeks by increasing the safety of water contact sports and improving habitat conditions for fish.

PROJECT OVERVIEW

Big Chico and Little Chico Creeks are tributaries to the Sacramento River near the city of Chico. Water quality is good for the creeks upstream of the Chico urban area, but downstream water quality has been impaired by pathogens, sediments, trash, and other runoff pollutants from the urban areas. Big Chico and Little Chico Creeks provide migration, spawning, and rearing habitat for several fish species, including steelhead and winter-, spring- and fall- run Chinook salmon. Pollutants from the urban area affect the quality of these habitats and also affect the water quality of the Sacramento River and the Bay-Delta. The pathogens discharged into Little Chico Creek have also compromised the recreational use of the creek near the low-income community of Chapmantown.

Several organizations, including the City of Chico, the Big Chico Creek Watershed Alliance, the Butte Environmental Council, and Kennedy/Jenks Consultants, are working together as the Chico Urban Streams Alliance (Chico USA) to reduce impairment to Big Chico and Little Chico Creeks' water quality and habitat. Chico USA is evaluating public knowledge about urban runoff pollution as part of a large public outreach campaign. The outreach campaign also includes public service announcements, presentation booths at multiple events, brochures, billboards, posters, and one-on-one outreach with businesses that have potential to pollute the creeks. The project will increase public knowledge about urban runoff characteristics to encourage public willingness to implement water quality management practices and reduce urban runoff pollutant input to the creeks. The project also establishes a Creek Watch Hotline to provide information to the public on water quality regulation, urban runoff pollution prevention, and violation reporting. Voluntary citizen participation in water quality monitoring programs for the creeks is increasing as a result of the project.



Big Chico Creek at the Chico city limits.

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COMMUNITY-BASED RESTORATION OF LOWER PUTAH CREEK WATERSHED

Solano County Water Agency



Ken Davis leads a citizen monitoring event focused on aquatic invertebrates.

PURPOSE

Restore fish and wildlife habitat and water quality in the Lower Putah Creek watershed balancing science-based and stakeholder-focused approaches

PROJECT GOALS

- ✧ Increase community stewardship and awareness of natural resources
- ✧ Improve watershed partner and stakeholder collaboration
- ✧ Improve habitat restoration monitoring and implementation practices
- ✧ Prepare a project assessment and evaluation plan
- ✧ Prepare a watershed action management plan

AWARD AMOUNT

\$992,236

WATERSHED

Putah Creek Watershed

COUNTY

Solano County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 1 and 3; State Assembly: 2, 7, and 8;
State Senate: 2 and 5

Benefits to the Bay-Delta System

While the Lower Putah Creek watershed has much of the best remaining habitat in the south Sacramento Valley, the watershed requires improvements to restore it to its full potential, including providing fish and wildlife habitat and clean water for beneficial use. This project builds on previous work in the watershed by preparing a Watershed Management Action Plan (WMAP). The WMAP will include objectives and suggested projects to further improve resources in the Lower Putah Creek watershed based on a project assessment and evaluation plan and the interests of stakeholders. This project also includes natural resource education and community outreach, facilitation and coordination of watershed groups and protection activities, long-term volunteer community stewardship, and comprehensive partnership and collaboration to ensure the success of watershed management efforts and the long-term sustainability of watershed stewardship, maintenance, and restoration.

PROJECT OVERVIEW

The Lower Putah Creek watershed begins at Monticello Dam and ends at the confluence of Putah Creek and the Yolo Bypass. The Yolo Bypass carries Putah Creek water to the Bay-Delta. Lower Putah Creek supports a riparian corridor that links the Yolo Bypass wildlife area with contiguous natural areas that extend from Lake Berryessa to Clear Lake and into the Mendocino National Forest, forming a significant wildlife migration pathway from the north coast to the Bay-Delta. Lower Putah Creek contains critical habitat for Chinook salmon and valley elderberry longhorn beetle and provides high density nesting habitat for Swainson's hawk and other birds.

While the Lower Putah Creek watershed has much of the best remaining habitat in the south Sacramento Valley, it requires watershed improvements to restore it to its full habitat potential. Community-based restoration is needed to reverse the habitat- and water-degrading effects of dams, channelization, gravel mining, invasive plants, solid waste dumps, fish barriers, bank erosion, lack of spawning gravels, roads and bridges, and significant riparian vegetation loss from agricultural and urban development.

This project includes preparation of a project assessment and evaluation plan. The project assessment and evaluation plan will identify non-point water-pollution sources, describe baseline water quality, describe proposed measures to be implemented, evaluate effectiveness of proposed measures in preventing or reducing pollution, monitor fish and wildlife populations, measure aquatic and riparian species composition, and provide success indicators and assessment protocols for fish and wildlife population and habitat restoration. This project also encourages community support and develops community awareness of natural resources in the Lower Putah Creek watershed through the coordination and implementation of restoration and monitoring events, updating of the Putah Creek Guidebook Series, enhancement of a project website, and implementation of the Putah Creek Discovery Corridor Master Plan, which will be a resource for other community outreach projects.

Additionally, this project includes preparation of a watershed management action plan (WMAP). The WMAP will include objectives and suggested projects to further improve resources in the lower Putah Creek watershed based on the project assessment and evaluation plan and the interests of stakeholders.



Local children using photo keys to identify aquatic invertebrates.

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COTTONWOOD CREEK WATERSHED MANAGEMENT PLAN

Cottonwood Creek Watershed Group



Vicky Campbell of the U.S. Fish and Wildlife Service speaking at a regular stakeholder meeting for the Safe Harbor Agreement.

PURPOSE

Develop a locally based management plan and supporting monitoring program to inform management of the Cottonwood Creek watershed, and improve the local capacity to implement these programs

PROJECT GOALS

- ✦ Build on the Cottonwood Creek Watershed Group's (CCWG's) recently completed watershed assessment and other planning and monitoring efforts to develop a comprehensive watershed management plan in a science-based, adaptive management framework
- ✦ Develop long-term support of the implementation of the watershed management plan
- ✦ Provide additional support to the CCWG and its watershed coordinator

AWARD AMOUNT

\$300,000

WATERSHED

Cottonwood Creek Watershed

COUNTY

Shasta and Tehama Counties

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

As the largest undammed tributary to the Sacramento River on the west side of the Sacramento Valley, as well as the largest contributor of salmon spawning gravels for the Upper Sacramento River, the Cottonwood Creek watershed has a significant and direct impact on the Bay-Delta. Over the last few years, CCWG has developed and mobilized a strong network of local landowners, agencies, and resource professionals who actively collaborate to provide organized stewardship of the watershed. This project builds on those successes, as well as a completed watershed assessment, to bring together agencies, organizations, and landowners who make land and resource management decisions under one comprehensive watershed management plan. Improved watershed conditions benefit local landowners; wildlife, including neotropical birds, Chinook salmon, and steelhead; and downstream water users, including those using Delta water sources.

PROJECT OVERVIEW

Cottonwood Creek is a significant tributary to the Sacramento River, draining more than 900 square miles of Coast Range and western Sacramento Valley lands. This project builds on previous and concurrent CCWG efforts, including the completed Cottonwood Creek Watershed Assessment and the ongoing Cottonwood Creek Watershed Management Strategy. The watershed assessment documented existing available data, defined current watershed baseline conditions, recommended further studies, and identified gaps in the data record. The ongoing Cottonwood Creek Watershed Management Strategy involves workshops initiated by CCWG with agencies and stakeholders to define desired conditions in the watershed. This project continues the successful leadership of CCWG and stewardship of the Cottonwood Creek watershed.

This project develops a watershed management plan that outlines a vision for the watershed. It includes strategies for environmental management, long-term monitoring, and education. This watershed management plan will fill data gaps and incorporate technical analyses identified in the Cottonwood Creek Watershed Assessment. It recommends specific action alternatives to achieve watershed objectives outlined through the concurrent Watershed Management Strategy workshops. It enables the CCWG to systematically coordinate planned and ongoing restoration and monitoring actions throughout the watershed by various agencies and organizations, including the CCWG. As a part of this process, the CCWG will design studies and analyses to further the understanding of key watershed processes (natural and land-use-driven) identified in the Cottonwood Creek Watershed Assessment and Watershed Strategic Plan.

This project will conduct a series of plan development workshops to cover water quality and quantity; channel and riparian conditions; plant, fish, and wildlife resources; fire and fuels management; and urbanization. The workshops are advertised in the local newspaper and a quarterly newsletter. The Watershed Management Plan will contain a strategy for long-term stakeholder participation in management so that watershed management remains responsive to changing watershed conditions and issues.



Fall-run Chinook salmon in the mainstem of Cottonwood Creek.

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DEER CREEK WATERSHED MANAGEMENT PLAN IMPLEMENTATION: PHASE III

Deer Creek Watershed Conservancy



Eighth grade Chester schoolchildren learning about watershed restoration in the Lassen National Forest.

PURPOSE

Implement actions of the Deer Creek Management Plan's Watershed Management Strategy

PROJECT GOALS

- ✧ Increase coordination, public outreach, and effectiveness of activities in the watershed
- ✧ Increase citizen understanding of fish ecology and water quality in the watershed
- ✧ Develop a coordinated water quality monitoring program to establish baseline conditions that can be used to assess the effectiveness of watershed restoration actions and to make better-informed watershed management decisions
- ✧ Improve conditions in the upper Deer Creek watershed to protect and enhance habitat for anadromous fish species
- ✧ Improve and expand information-sharing with other entities who address similar environmental issues in the watershed and elsewhere

AWARD AMOUNT

\$457,150

WATERSHED

Deer Creek Watershed

COUNTY

Tehama County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

Deer Creek is known to have significant potential for restoring populations of spring-run Chinook salmon and steelhead, and the DCWC is a cornerstone in this effort. This project will promote watershed stewardship by increasing collaboration among various stakeholders in the Deer Creek watershed, including increasing citizen understanding of fish and water quality issues, and developing a coordinated monitoring program that will help to assess effectiveness of watershed restoration actions to assist in better-informed decision-making. In addition, the information can be used by stakeholders in other watersheds who are addressing similar environmental issues. An investment in Deer Creek provides direct benefits to the creek and valuable information about how to improve overall watershed health; how to integrate local, state, federal, and private efforts into a large-scale restoration program; how to design and implement actions to benefit salmonids; and how to best manage ecological processes such as sediment transport and stream meander in a partially modified stream system.

PROJECT OVERVIEW

The Deer Creek watershed contains important habitat for naturally reproducing stocks of anadromous fish in the Sacramento–San Joaquin River system. Conservation and improvement of habitat for these fish are priorities of the Deer Creek Watershed Conservancy (DCWC), a collaborative organization of private landowners, stakeholders, and public agency representatives. This project is rooted in several past assessment and planning efforts, including the Deer Creek Watershed Analysis, Deer Creek Watershed Plan, and the Deer Creek Watershed Management Strategy.

One of the main goals of this project is to develop and implement a surface water monitoring program to establish a baseline from which the effectiveness of watershed management and restoration activities can be assessed. A specific restoration activity of the project expands the efforts of the Lassen National Forest and the Collins Pine Company to enhance and protect habitat of anadromous fish species by treating sources of accelerated surface erosion and disrupted streamflow.

The project also extends the DCWC's outreach efforts to other organizations concerned with similar watershed issues. The DCWC will use a variety of communication tools for this outreach, including public meetings, newsletters, increased use of local and regional print media, presentations at local and regional organizational meetings, and field trips. The DCWC is also increasing their ability to share information about collaborative work in the watershed with other watershed groups, agencies, and interested stakeholders. In addition, this project expands educational programs focusing on fish ecology and water quality at local schools. The school curricula also reach the general public as students are given opportunities to present their findings from environmental education work to community groups. Furthermore, advanced students are given the opportunity to participate in an inventory, monitoring, and restoration work-study program with the Lassen National Forest.



Upper Deer Creek Falls represents the upper limit of anadromous salmonid habitat.

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INTEGRATED ECOSYSTEM IMPROVEMENTS FOR SHASTA COUNTY WATERSHEDS

Western Shasta Resource Conservation District (WSRCD)



Site for fish screen retrofit to an established irrigation ditch.

PURPOSE

Implement integrated ecosystem improvements and watershed education and outreach

PROJECT GOALS

- ✦ Improve anadromous fish habitat and water quality in Cow Creek
- ✦ Create implementation procedure to follow for future watershed improvement projects in the Cow Creek watershed
- ✦ Increase landowner awareness of water quality and watershed issues
- ✦ Develop a watershed assessment for Stillwater and Churn Creeks to document existing conditions and to identify data gaps
- ✦ Increase community watershed group participation in the Adopt-A-Creek program
- ✦ Fund a watershed coordinator position for Stillwater Creek and Churn Creek to encourage watershed stewardship by the local community

AWARD AMOUNT

\$821,727

WATERSHED

Cow Creek, Stillwater Creek, and Churn Creek Watersheds

COUNTY

Shasta County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

This project focuses on three watersheds in western Shasta County: Cow Creek, Stillwater Creek, and Churn Creek. These watersheds and their streams drain into the Sacramento River and ultimately into the Bay-Delta system. In 2002, several streams in the Cow Creek watershed were added to the Clean Water Act, Section 303(d) listing for impaired water bodies for constituents such as fecal coliform bacteria, cadmium, copper, and zinc. This project implements a number of actions to address threats to water quality, and includes an education and outreach program for landowners who often directly influence the entry of such constituents into local streams. These improvements provide multiple benefits to water users and habitat values. These improvements will have direct benefits for stakeholders in the watershed, including local, state, and federal agencies, and for municipal and domestic water supply and irrigation.

PROJECT OVERVIEW

The health of Shasta County watersheds is directly connected to the health of the Bay-Delta system in several ways. Physical processes occurring in Shasta County watersheds result in sediment, nutrient, and streamflow contributions to the Sacramento River. Ecological functions provided by these same watersheds support many sensitive species, including steelhead trout, Chinook salmon, native resident fish species, neotropical birds, amphibians, and invertebrates.

The Integrated Ecosystem Improvements for Shasta County Watersheds project focuses on three western Shasta County watershed areas: Cow Creek, Stillwater Creek, and Churn Creek. The Cow Creek watershed is the largest in Shasta County with approximately one-third of the watershed used for agriculture and grazing. Issues of concern in this watershed include anadromous fish habitat protection and enhancement, water quality, fire and fuel management, and seasonal flow from irrigation diversions. Building from a watershed assessment prepared in 2001, the project goals for Cow Creek include:

- ✧ construction and monitoring of a tailwater recycling pond to reduce the nutrients, temperature, and fecal coliform entering Cow Creek, and to demonstrate best management practices for collection and treatment of pasture irrigation discharge;
- ✧ design, installation, and monitoring of two irrigation diversion fish screens to prevent entrainment of juvenile salmonids;
- ✧ feasibility studies for five ditch piping projects to enhance instream flow; and
- ✧ community education and outreach to increase participation in local restoration projects.

The Stillwater Creek and the adjacent Churn Creek watersheds share similar issues; thus, they are treated as one ecological unit. The watersheds drain rural and urban land use areas. Issues of concern in these watersheds include accelerated erosion and sediment discharge from flooding, degraded aquatic habitat, invasive species such as *Arundo* and *Tamarisk* in riparian habitat, urban source pollutants, and land use conversion from rural to urban. This project establishes a community process in the Stillwater Creek and Churn Creek watersheds to develop watershed stewardship, increase local capacity for improved watershed management, and educate the community about responsibility for natural resources. In addition, the project promotes improving and increasing aquatic and terrestrial habitats and ecological functions by addressing natural sediment supply and restoration of riparian and riverine aquatic habitats.



Metering site on irrigation ditch near Cow Creek.

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LAGUNA CREEK WATERSHED PROJECT

Sacramento County Department of Water Resources, Laguna Creek Watershed Council, and Sacramento Chapter Urban Creeks Council



Stewardship and outreach programs in the Laguna Creek watershed target all age levels. Here, preschoolers learn firsthand about Laguna Creek and its habitat.

AWARD AMOUNT

\$695,741

WATERSHED

Lower Sacramento River Watershed

COUNTY

Sacramento County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 3, State Assembly: 10 and 15, State Senate: 1

PURPOSE

Develop a watershed management plan and support watershed education and stewardship

PROJECT GOALS

- ✦ Assess watershed conditions and develop a balanced approach to address water quality improvement, habitat protection, flood and drainage conditions, recreation, and open space conservation in the watershed
- ✦ Prepare a watershed management plan to assess environmental conditions, identify problems and sources of pollution, and recommend prioritized projects
- ✦ Involve residents, schools, and public agencies in watershed protection and creek stewardship projects
- ✦ Support the activities of the Laguna Creek Watershed Council, including a watershed coordinator position

Benefits to the Bay-Delta System

This project will benefit stakeholders in the rapidly urbanizing Laguna Creek watershed area of South Sacramento County by assessing watershed conditions and developing a watershed management plan to protect Laguna Creek's resources. This project supports coordination among government agencies, organizations, and the Watershed Council. The project will develop a watershed monitoring and assessment plan, support education and outreach to the community, and develop and implement actions to support the long-term sustainability of the Laguna Creek watershed. These efforts will pave the way to improved water quality by reducing sedimentation and runoff into the creek, and ultimately into the Sacramento River and the Bay-Delta system, benefiting users of the system statewide.

PROJECT OVERVIEW

The Laguna Creek watershed consists of almost 50 square miles of land, draining to Laguna, Whitehouse, and Elk Grove Creeks in a rapidly urbanizing area of South Sacramento County. Laguna Creek is the last remaining stream inside the city limits of Elk Grove and Sacramento that has retained sufficient natural functions and values to provide contiguous, high-quality habitat for several threatened riparian species, as well as wildlife corridors to interconnect current and future habitat preserves.

The Laguna Creek watershed is home to more than 100,000 residents, with just over one-third of the watershed owned and/or managed by farmers and ranchers. This portion will most likely shrink as the current explosive rate of growth is expected to continue over the next 10–20 years. There is a critical need to collect environmental data, assess conditions in the watershed, and use the information in a collaborative planning approach to introduce management strategies and projects that will help mitigate impacts and avoid the irreversible damage caused by urban development on creeks in the area.

The grassroots-based Laguna Creek Watershed Council, established in late 2002, is directing the preparation of a watershed management plan in concert with education and stewardship outreach activities. The Watershed Council holds regular community meetings and conducts watershed tours and other hands-on field activities to inform and educate the community and stakeholders. This process will be used to solicit feedback on the watershed management plan as it is developed. The watershed management plan will recommend actions that address priority watershed stewardship needs.

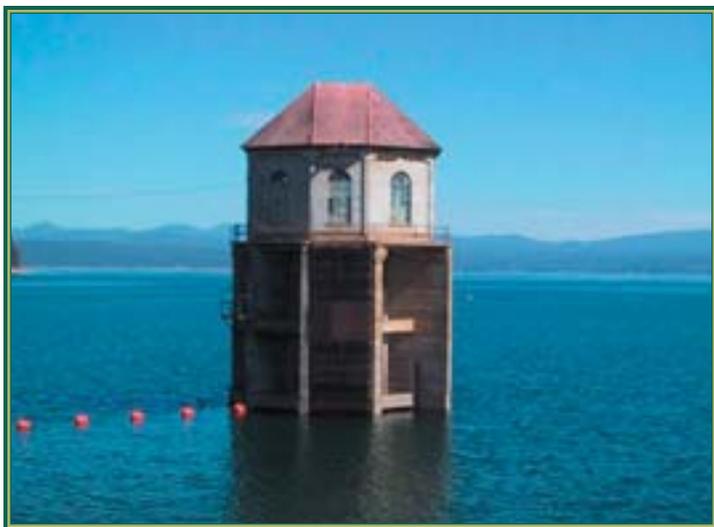
In addition to the watershed management plan, the project will support education and monitoring efforts to provide the basis for long-term support of sustainable habitat improvements and improved water quality in the watershed. Ongoing stewardship projects will lead to an informed citizenry that continues to support and implement restoration projects and monitor the health of the watershed for generations to come.



Sedimentation in the older channelized sections of the creek is one of many problems that will be investigated during the assessment of the Laguna Creek watershed.

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Intake tower in Lake Almanor.

PURPOSE

Coordinate watershed management activities and water quality monitoring efforts

PROJECT GOALS

- ✦ Organize a technical advisory committee (TAC) to guide and review watershed studies
- ✦ Facilitate stakeholder group meetings and share information among TAC participants
- ✦ Prepare a watershed assessment document and Geographic Information System (GIS) database to present information about baseline conditions of the watershed
- ✦ Enhance public awareness of water quality and watershed issues
- ✦ Compile a web-based database of water quality information
- ✦ Coordinate and supplement water quality monitoring and prepare monitoring reports
- ✦ Evaluate alternatives for septic waste collection and treatment along the East Shore of Lake Almanor

AWARD AMOUNT

\$615,200

WATERSHED

North Fork Feather River Watershed

COUNTY

Plumas County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

Benefits to the Bay-Delta System

Lake Almanor drains into the North Fork of the Feather River and then flows into the Feather River's mainstem. The watershed, which is a source area for water in the Bay-Delta system, has impaired water quality, and improving the conditions of Lake Almanor will provide benefits to those who rely on the Feather River for irrigation, drinking water, and other beneficial uses. The project coordinates stakeholder efforts to develop a watershed assessment and to compile technical information that can be used to increase public awareness and evaluate alternatives to manage water quality impairments in the Lake Almanor watershed. The evaluation of septic waste collection and treatment alternatives will provide direct benefits to local residents and local government. The project provides multiple benefits to the general public and those who use the Bay-Delta as their drinking water supply by improving the drinking water quality of the Bay-Delta by reducing pathogens, nutrients, and other water quality impairments that originate in the Lake Almanor watershed.

PROJECT OVERVIEW

Water released from Lake Almanor, located on the North Fork of the Feather River, flows to the mainstem of the Feather River and ultimately into the Sacramento River and the Bay-Delta. Water quality in portions of the North Fork Feather River watershed, including Lake Almanor, has been affected by land use activities related to timber harvesting, agricultural and livestock practices, recreation, and urban development. Lake Almanor's water quality has particularly been affected by septic system failures, which result in discharges of pathogens and organics into the lake. Previous efforts to develop a Lake Almanor Watershed Management Plan, coordinate stakeholder groups, and protect watershed resources have been unfocused. In addition, water quality monitoring by various groups has not been coordinated, and data collected from these efforts have not been compiled into a centralized database. Involvement by the Almanor Water Quality Committee and the Forest Community Research group has furthered the efforts to involve other stakeholders and define the issues and needs of the watershed.

The Plumas County Department of Public Works is creating a technical advisory committee (TAC) to create a watershed management plan to understand the water quality issues of the watershed. The TAC is comprised of participants from federal and state agencies, landowners, businesses, and other interested entities. Its function is to guide and review watershed work. The project includes facilitating stakeholder group meetings, providing technical and administrative support, and facilitating the transfer of information and products among participants. In addition, the project develops a comprehensive watershed assessment report and a Geographic Information System (GIS) database to document baseline conditions throughout the watershed and support the efforts of the TAC.

The project also will introduce a public education campaign to increase the cooperation of landowners in implementing appropriate water quality protection measures and to increase the general awareness of water quality issues and watershed function. The project compiles water quality data collected by various groups and conducts additional water quality monitoring. The project evaluates septic waste collection and treatment options to reduce discharges from septic tanks, chiefly along the east shore of Lake Almanor.



Erosion along Highway 147 into Lake Almanor.

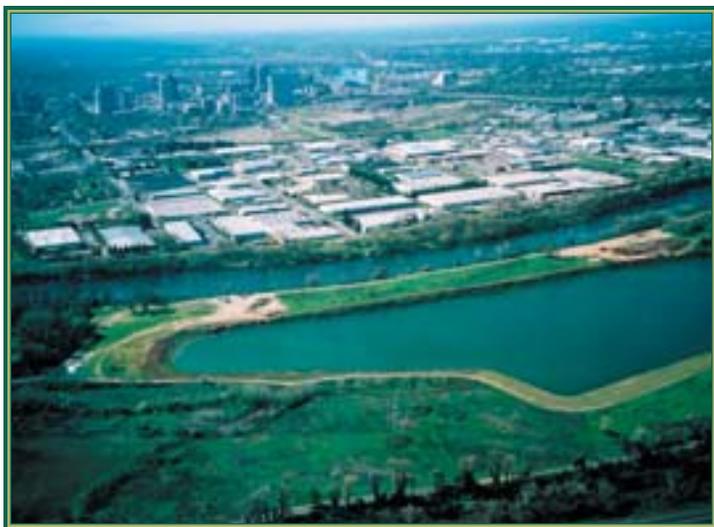
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LOWER AMERICAN RIVER ENVIRONMENTAL ENHANCEMENT

Sacramento Area Flood Control Agency



Aerial view of the Gardenland Mine site, a portion of which will be restored as a part of this project.

PURPOSE

Broaden and strengthen local capacity for integrated management of the riparian corridor along the Lower American River

PROJECT GOALS

- ✦ Complete an integrated management plan covering approximately 1,000 acres of riparian land in the lower 5 miles of the American River Parkway as part of the update of the 1985 American River Parkway Plan
- ✦ Restore riparian habitat on a portion of the land in the management plan area disturbed by previous mining activities and currently occupied by the Gardenland Sand and Gravel Mine
- ✦ Engage stakeholders and interested citizens in planning and restoration efforts

AWARD AMOUNT

\$1,733,680

WATERSHED

American River Watershed

COUNTY

Sacramento County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 5, State Assembly: 9, State Senate: 6

Benefits to the Bay-Delta System

By broadening and strengthening the local capacity for managing the Lower American River, this project will benefit those communities served by the Lower American River Parkway. The American River provides approximately 15% of total Sacramento River flow to the Bay-Delta. This project benefits ecological functions, as well as water quality for beneficial uses, by directly restoring a disturbed site, reconnecting the river with a lower floodplain, and buffering urban uses from the river with restored native vegetation. This locally led effort also involves extensive stakeholder consultation and involvement in the development of an integrated management plan for the lower 5 miles of the river and provides local environmental justice benefits by reaching out to lower-income and politically underserved communities of Sacramento. Increased community awareness and support of integrated management planning will significantly contribute to the long-term sustainability of local watershed stewardship activities.

PROJECT OVERVIEW

The Lower American River extends 23 miles from the Nimbus Dam at the base of the Sierra Nevada foothills to its confluence with the Sacramento River near downtown Sacramento. From dam to confluence, this corridor is flanked by 5,000 acres of publicly held land and is known as the American River Parkway. The Parkway sustains important populations of fish and wildlife species, including up to 25% of the Central Valley's fall-run Chinook salmon population, and offers numerous recreational opportunities, including trails and parks. Recent assessments of the Lower American River show several threats to the Parkway:

- ✧ high flood terraces of Gold Rush era mining debris are subject to mass failure during floods at the expense of riparian vegetation and levee stability,
- ✧ riparian vegetation on the terraces is too high above the water table to naturally regenerate and is shifting toward upland and invasive species,
- ✧ infrequent flooding of the high terraces provides little spawning and rearing habitat for native anadromous fish, and
- ✧ management of parkway resources is directed by the 1985 American River Parkway Plan, which does not reflect current resource knowledge and does not contain area plans for Woodlake and downstream areas of the Parkway, which were privately owned when the plan was written.

This project includes development of an integrated management plan for the lower 5 miles of the parkway that balances habitat protection and enhancement with public access and public use of the landscape, and will ultimately be included in the current update of the Parkway Plan. Development of the integrated management plan involves stakeholder outreach and education, including targeting members of the environmental justice community, and is intended to lead to a high-level of local ownership and enthusiasm for the plan, as well as increase citizens' satisfaction with and continued interest in the management of the area. To energize the planning process, the project also includes restoration of a portion of the Gardenland Mine site using innovative designs that stabilize banks while increasing habitat values.



Stakeholders tour a restoration site along the Lower American River.

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PIT RESOURCE CONSERVATION DISTRICT WATERSHED MANAGEMENT PROJECT

Pit Resource Conservation District



Future restoration site located on the Shaw Ranch along the mainstem Pit River upstream of the community of Lookout.

PURPOSE

Assist the Pit Resource Conservation District (RCD) in implementing a more comprehensive, proactive watershed management program

PROJECT GOALS

- ✦ Develop a watershed management strategy consistent with the broader assessment and management plan under development for the Pit River watershed
- ✦ Implement demonstration restoration projects and other activities consistent with the management strategy
- ✦ Assist the Pit River Watershed Alliance in a watershed monitoring program
- ✦ Improve communication between partners and stakeholders
- ✦ Support watershed education and outreach

AWARD AMOUNT

\$305,000

WATERSHED

Upper Pit and Lower Pit River Watersheds

COUNTY

Lassen and Modoc Counties

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2 and 3,
State Senate: 1 and 4

Benefits to the Bay-Delta System

The Pit River watershed, one of the state's largest systems of channels and meadows, contributes about 67% of the inflow to Lake Shasta, which provides approximately 20% of the surface-water flow to the Bay-Delta system. Portions of the Pit River are degraded, and efforts are underway to improve management practices and implement restoration projects to improve water quality, aquatic habitat, and aesthetic values. Watershed improvements implemented through this project will contribute to improved water supply reliability for downstream project users. The Shaw Ranch and Ash Creek projects affect water quality parameters positively in the Pit River watershed, preventing loss of valuable land to erosion, reducing sediment loading, minimizing nutrient loading, increasing dissolved oxygen, and decreasing water temperatures. Developing Shaw Ranch into a working site for education and outreach expands the opportunities for watershed citizens to observe good stewardship in action.

PROJECT OVERVIEW

Sections of the Pit River are listed as impaired water bodies for temperature, dissolved oxygen, and nutrient loading as defined in the Federal Clean Water Act, Section 303(d). Sediment and turbidity in the Pit River and some of its tributaries are also believed to be at levels that impair certain beneficial uses. The Pit RCD is in the early stages of establishing a proactive, locally directed watershed management program; this project is directed at two related activities—continued support for a watershed coordinator and implementation of Shaw Ranch Riparian Restoration and the Ash Valley Stream Protection Program to improve problem areas identified in a watershed assessment.

The watershed coordinator contributes to a more proactive Pit RCD watershed management program and a more informed and involved watershed community. The coordinator also works with individual landowners to identify project opportunities and seek funding and technical assistance to implement projects.

The Shaw Ranch Riparian Restoration project is located in southwestern Modoc County. The ranch, which contains 2.5 miles of the Pit River, has been progressive in promoting sound and innovative natural resource stewardship practices, serving as a model for other ranches. Components of this project include resloping 600 feet of high, vertically eroding banks to promote floodplain access on the mainstem of the Pit River; planting native vegetation to minimize erosion and promote bank stability; installing 1 mile of fencing to contain livestock; and providing a large-scale demonstration site for education and outreach.

Ash Valley is located in Lassen County and is the hydrologic start for Ash Creek, which flows into the Pit River. The unique spring-fed Ash Creek holds vital habitat for the endangered Modoc sucker. Riparian habitat on this creek is degraded. Fencing will be installed at selected reaches of Ash Creek to reduce livestock pressure on the creek. Newly planted vegetation will develop and shade Ash Creek. Other components of the project include filtering irrigation tailwater and unifying adjacent landowners to integrate stream restoration practices that will help improve the overall water quality in Ash Creek.



The mainstem Pit River near the confluence of Stone Coal Creek near the Stone Coal Valley.

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RED CLOVER CREEK/MCREYNOLDS RESTORATION PROJECT

Plumas Corporation/Feather River Coordinated Resource Management (FRCRM)



FRCRM staff and tour participants assess an active headcut on Red Clover Creek that is continuing the degradation in a 50-foot-wide, 15-foot-deep gully downstream.

AWARD AMOUNT

\$1,101,000

WATERSHED

North Fork Feather River Watershed

COUNTY

Plumas County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

PURPOSE

Restore the meadow/floodplain functions that existed in a key subwatershed of the Feather River before gullies developed

PROJECT GOALS

- ✧ Reduce peak winter flows and increase summer base flows
- ✧ Reduce sediment delivery to downstream areas and improve water quality constituents associated with excess sediment
- ✧ Eliminate active excess erosion of gully walls
- ✧ Improve fish and wildlife habitat

Benefits to the Bay-Delta System

The Red Clover Creek/McReynolds Restoration Project restores floodplain function to the Feather River watershed and the Bay-Delta system, and provides watershed, ecosystem restoration, water use efficiency, water quality, and environmental justice benefits. This project reduces sedimentation, which has been linked with declining habitat in upper watershed streams. The reduced sedimentation maintains capacity of storage reservoirs, and the restructured flows increase water use efficiency by slowing water releases in winter and increasing them in summer. The meadows that are created by plugging the gully restore soil nutrients and historical wildlife and aquatic habitat. By eliminating the gully, turbidity is lessened, improving environmental and drinking water beneficial uses. This project will develop assessment protocols through its monitoring component, and will help build capacity to manage the watershed efficiently through education and outreach activities. Collaborating in the restoration of what was once an important cultural material gathering area, the local Maidu community gains an economic base for their cultural programs.

PROJECT OVERVIEW

The Upper Feather River watershed has approximately 400 square miles of meadow floodplain, 98% of which has become dewatered by gullied, down-cut channels that formed over the last 100 years. The down-cut channels have undermined the function of the floodplain and have accelerated the flow of water out of the watershed, adding to the natural sediment supply through bank erosion and depriving the ecosystem of nutrients formerly captured in the wet meadows.

Local and regional initiatives have determined that restoration efforts in the Red Clover Valley have the potential to significantly improve the timing of flows, erosion control, water quality, wildlife and fisheries habitat, and quality of lands for agricultural production. Red Clover Creek is the fourth highest sediment-producing subwatershed in the North Fork Feather River Basin, with 70% of its sediment derived from gully-wall erosion of the entrenched stream channel system in Red Clover Valley. The vast majority of the sediment is transported downstream, negatively affecting instream habitat, channel stability, water quality, and reservoir storage capacity.

The Red Clover/McReynolds project area is dominated by a large and expanding gully—now averaging 11 feet deep and 95 feet wide. The gully contains all floodflows, contributing to extreme depths and velocities during moderate and major floods, and acts as a flume, delivering sediment-laden peak flows downstream. This project uses a method that has been very successful in other locations in the watershed to eliminate the gully and restore floodplain function. Ponds are created by widening and deepening portions of the gully, and the remaining channel is plugged back to the original grade with the excavated material. Channel flow is directed into remnant channels at the meadow elevation. The project is designed to be self-maintaining and includes a monitoring component. Additionally, Plumas Company is working with the Maidu Cultural and Development Group and others in the vicinity to help determine the original conditions of the area and develop training for archaeological monitors.



FRCRM partners from DFG, DWR, and Plumas Corporation collect pre-project fish population data on Red Clover Creek.

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SACRAMENTO RIVER WATERSHED PROGRAM (SRWP)—PROGRAM SUPPORT

Sacramento River Watershed Program



"Sacramento River Oxbow" by Geoff Fricker, April 2001. TNC Collection, Chico.

PURPOSE

Provide a network among local and regional watershed management efforts throughout the Sacramento River watershed to improve watershed health

PROJECT GOALS

- ✦ Conduct watershed monitoring
- ✦ Coordinate environmental education activities and conduct public outreach
- ✦ Provide assistance and support to local watershed groups

AWARD AMOUNT

\$2,262,760

WATERSHED

Sacramento River Watershed

COUNTY

Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehama, Yolo, and Yuba Counties

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 1, 2, 3, 4, and 5; State Assembly: 2, 3, 4, 7, and 10; State Senate: 1, 2, 4, and 5

Benefits to the Bay-Delta System

The health of the Bay-Delta System is dependent on the rivers and streams that make up its watershed. The Sacramento River is the largest tributary to the Delta's watershed, providing about 80% of the inflow to the Delta. It is the largest riverine ecosystem in the State. Californians depend on this watershed for agriculture, drinking water, timber harvesting, hydroelectric power generation, fishing and recreation, and many other diverse and sometimes competing needs. Implementation of this project provides valuable information regarding the health of the watershed through a water quality monitoring program. It also raises awareness about the importance of watershed management through education and outreach, and assists local groups to manage their own tributary watersheds more effectively. Implementation of this project provides direct benefits to agriculture, municipal, and environmental interests, as well as recreational users of areas of the watershed and of the Delta.

PROJECT OVERVIEW

The Sacramento River watershed encompasses more than 27,000 square miles, roughly 17% of the land area of California. The river itself is more than 400 miles long, stretching from north of Mount Shasta through the Sacramento Valley to San Francisco Bay. Its major tributaries include the Pit, Feather, Yuba, and American Rivers. The SRWP was founded in 1995 to serve as an “umbrella organization” to help coordinate local watershed efforts in the Basin. The SRWP brings together public and private stakeholders, including representatives of agricultural, environmental, industrial, and municipal interests. Using a watershed approach, the SRWP encourages these interest groups to come together in search of workable approaches to watershed management. This project focuses on three main areas (1) capacity building for watershed management efforts; (2) public outreach and education; and (3) watershed monitoring and technical support.

Capacity-building activities include establishing and maintaining relationships throughout the watershed to create successful collaboration and partnerships and to develop stronger regional and local watershed stewardship. The purpose of SRWP’s public outreach and education strategy is to promote greater understanding of what a watershed is, what constitutes watershed health, and to provide information about the Sacramento River Basin and its watersheds. Public outreach activities include implementing television public service announcements, media releases regarding watershed events, a website, exhibits at regional public events, educational workshops, and an annual stakeholders meeting. The SRWP also coordinates various K-12 environmental education activities such as the international GLOBE Program and River of Words competitions.

The third project component—watershed monitoring—has been a major component of the SRWP since its inception. The SRWP conducts water quality monitoring on the mainstem river to: (1) assess conditions throughout the watershed, including the attainment of beneficial uses and water quality standards; (2) identify and evaluate alternative management options to improve water quality in the watershed; and (3) provide information on watershed health to all stakeholders.

The SRWP provides for stakeholder input by using open subcommittees to oversee major program components and associated tasks. The subcommittees also serve as technical review and discussion groups for implementation of program plans. The four primary subcommittees include: Monitoring Subcommittee, Delta Tributaries Mercury Council, “Ag Issues” Subcommittee, and Public Outreach and Education Subcommittee.



Art by SRWP 2003 Regional River of Words Grand Prize Winner Michelle Wurlitzer, age 14. Marsh Junior High School, Chico.

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STONY CREEK WATERSHED ASSESSMENT AND MONITORING PROGRAM

Glenn County Resource Conservation District



Giant reed and salt cedar in the Stony Creek stream channel (Photo courtesy of Cindy Horney).

PURPOSE

Establish and implement a locally directed watershed management program for the Stony Creek watershed

PROJECT GOALS

- ✦ Establish an active and locally directed watershed-wide management program
- ✦ Complete a comprehensive watershed assessment that will guide the management program
- ✦ Implement a watershed monitoring program to track long-term watershed conditions and trends
- ✦ Demonstrate applications of innovative mapping, eradication, and restoration techniques for managing giant reed and tamarisk

AWARD AMOUNT

\$763,200

WATERSHED

Stony Creek Watershed

COUNTY

Glenn, Colusa, and Tehama Counties

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

Benefits to the Bay-Delta System

Numerous studies and assessments have been performed in the Stony Creek watershed area. However, none of these efforts has addressed the watershed as a whole. The Stony Creek Watershed Assessment will examine all existing information and consider the watershed as a whole, providing a basis for improved local watershed planning and management. The monitoring portion of this project focuses on creek characteristics directly related to the watershed's impacts on the Sacramento River and Bay-Delta system, such as flow, water quality, channel morphology, and aquatic/riparian habitat conditions. Ultimately, this effort will lead to a watershed restoration strategy that provides a wide range of benefits, including reduced erosion; reduced sediment transport; improved hydrologic conditions; reduced populations of giant reed and tamarisk with corresponding reduction in propagule load transported to the Sacramento River; restored riparian corridors and associated linkages for wildlife; and improved landowner management practices. Landowners will benefit from the project, as will recreational users of the watershed.

PROJECT OVERVIEW

The Stony Creek watershed is approximately 780 square miles of public and private lands in Glenn, Colusa, and Tehama Counties. It is the second largest tributary on the west side of the Sacramento River and provides habitat to many aquatic and terrestrial species. Land and water management activities, particularly in the lower reach, have resulted in degraded riparian habitat and altered streamflows and have accelerated stream bank erosion, excess sediment transport to the Sacramento River, and the establishment of significant giant reed and salt cedar populations.

This project builds on a previous CALFED Watershed Program grant that allowed the Glenn County Resource Conservation District (GCRCD) to hire a watershed coordinator to bring together individuals from various backgrounds to outline a watershed management strategy and initiate a community capacity-building process. Through this project, the GCRCD and the watershed coordinator will lead the establishment and implementation of a locally directed watershed management program for the Stony Creek watershed. This program is a multi-stakeholder effort and includes the following elements:

- ✧ The Stony Creek Watershed Assessment will be the basis for ecosystem planning and management and is necessary to initiate coordinated efforts to rehabilitate key segments of the watershed. The assessment process will characterize current and reference conditions and data needs. It will serve as an educational tool and platform for continuing the consensus-building process with landowners, agencies, and other stakeholders of the watershed.
- ✧ The monitoring program element is designed to monitor watershed conditions and track long-term trends. It will evaluate the effectiveness of watershed management actions, such as changes in land management practices, changes in reservoir release operations, and on-the-ground restoration projects.
- ✧ The eradication and restoration element establishes a demonstration site to examine existing technologies and develop strategies tailored to control nonnative invasive plants and establish native riparian habitats. This effort also engages local farmers and businesses in ecological restoration, demonstrating the cost-effectiveness of these techniques for future projects.
- ✧ A digital mapping effort will identify and plot nonnative, invasive giant reed colonies along the upper 10 miles of Lower Stony Creek. This task will provide the GCRCD and landowners with specific data on the total quantity of giant reed in the riparian area, and estimates of its rate of spread over a 12-month period. This information will be used to prioritize giant reed colonies for removal and to estimate restoration costs.



Herd of Elk near the Snowy Mountain Wilderness (Photo courtesy of Dennis Nay).

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TEHAMA WEST WATERSHED MANAGEMENT PROGRAM

Tehama County Resource Conservation District (TCRCD)



Heavy infestation of *Arundo donax* along Burch Creek.

AWARD AMOUNT

\$385,775

WATERSHED

Westside Tehama County Watersheds

COUNTY

Tehama County

CALFED REGION

Sacramento Valley Region

LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

PURPOSE

Collect needed watershed condition data, create a watershed management plan, and increase the involvement of citizens in the conservation of natural resources

PROJECT GOALS

- ✦ Describe baseline watershed conditions in Western Tehama County
- ✦ Establish a monitoring program
- ✦ Continue education of and outreach to landowners by providing natural resources workshops on best management practices
- ✦ Continue restoration and education activities to increase community and landowner participation in support of the TCRCD mission to assist citizens with managing, conserving and improving the natural resources of Tehama County

Benefits to the Bay-Delta System

The creeks in the Tehama West watershed flow from the east slopes of the coast range to the Sacramento River below Red Bluff Diversion Dam. This project takes the efforts of the Tehama West Watershed Assessment to the next level through data collection and development of a watershed management plan. This project recognizes the need to monitor baseline watershed conditions in Western Tehama County, and create a comprehensive management plan to guide the direction of land management and restoration activities beyond the time frame of the project itself. Local landowners will benefit directly from the improved conditions on their land and from the data collected there. Standard and accepted monitoring protocols will be used for the baseline data collection, resulting in data that can be shared across watersheds for comparison purposes. The added data will benefit larger management and ecosystem improvement projects in the upper Sacramento River basin. Improved conditions in the upper basin will help achieve the goals of CALFED and other management efforts such as the Sacramento River Watershed Program.

PROJECT OVERVIEW

The creeks in western Tehama County watersheds flow from the east slopes of the coast range to the Sacramento River below Red Bluff Diversion Dam. They range in elevation from 200 feet at the valley floor to 8,092 feet at the crest of the Yolla Bolly Wilderness area. The westside Tehama County watersheds have complex natural resource issues and a diverse variety of ecosystems and land uses. In addition, the westside watersheds contain one of the largest concentrations of vernal pool habitat areas remaining in California. The Tehama County Resource Conservation District (TCRCD) is implementing the West Watershed Management Project, which integrates a number of aspects of environmental stewardship into a well-rounded project for long-term results.

Building on the soon-to-be-completed Tehama Westside Watershed Assessment, this project will continue the TCRCD effort to define watershed condition and management goals while implementing restoration and educational activities. TCRCD will conduct "how to" workshops on best management practices for local landowners and will assist with the creation of individual monitoring plans for landowners. TCRCD will also expand the book *Nature's Nursery: A Guide to the Beneficial Plants of Tehama County* to include twenty additional local native plants. Each new plant entry will have a color picture, and each description will include habitat types, growth characteristics, leaf characteristics, wildlife and livestock uses, propagation, and the plant's benefits. A key outcome of the outreach and education program is to communicate to landowners the important connection between the health and productivity of their lands and the health of the surrounding watersheds and natural resources.

TCRCD also uses the education and outreach program to facilitate the participation of stakeholders in preparing a watershed management plan. The plan will guide restoration, research, and management decisions in the Tehama West watershed. Although the watershed management plan will identify and prioritize restoration efforts, some priority restoration projects have already been identified. TCRCD is funding some demonstration restoration projects including removing *Arundo donax* and *Tamarisk*, fencing cattle out of waterways, and planting native vegetation to restore riparian corridors.

TCRCD works with a Technical Advisory Committee (TAC) to develop a meaningful monitoring plan for Red Bank, Reeds, Elder, and Thomes Creeks. The TAC concluded that collecting watershed condition data, including socioeconomic parameters, would be emphasized in the monitoring plan.



Portion of Jewett Creek where Arundo donax eradication has been maintained.

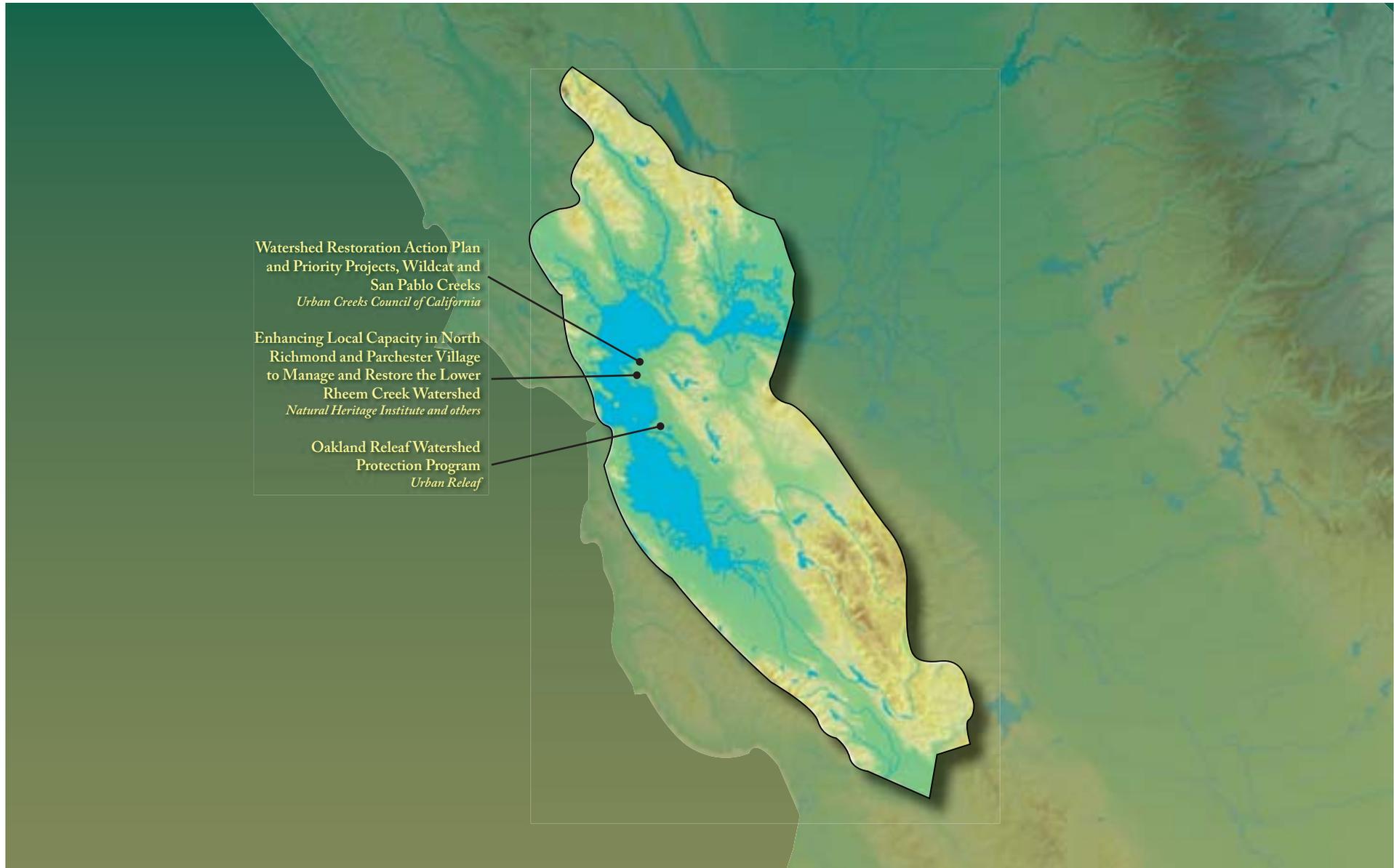
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Enhancing Local Capacity in North Richmond and Parchester Village
to Manage and Restore the Lower Rheem Creek Watershed
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ENHANCING LOCAL CAPACITY IN NORTH RICHMOND AND PARCHESTER VILLAGE TO MANAGE AND RESTORE THE LOWER RHEEM CREEK WATERSHED

Natural Heritage Institute and others



Portion of the restoration site at the mouth of Rheem Creek as it enters San Pablo Bay.

AWARD AMOUNT

\$440,870

WATERSHED

Rheem Creek Watershed

COUNTY

Contra Costa County

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 7, State Assembly: 14, State Senate: 7 and 9

PURPOSE

Build community capacity in North Richmond and Parchester Village to effectively manage the Lower Rheem Creek watershed and to restore Lower Rheem Creek

PROJECT GOALS

- ✦ Develop a watershed assessment
- ✦ Create a sustainable adaptive management plan for Lower Rheem Creek
- ✦ Restore the tidal portion of Lower Rheem Creek
- ✦ Build community capacity by engaging and educating local citizens in stream restoration activities and environmental monitoring

Benefits to the Bay-Delta System

Rheem Creek is a small stream in western Contra Costa County, surrounded by low income, minority communities. This project involves local residents and local, state, and federal agencies in the restoration, monitoring, and management of Lower Rheem Creek. The project will improve habitats and populations of at-risk species, improve the quality of water entering San Pablo Bay, and provide more natural sediment and nutrient supplies to the Bay. Improved creek conditions will directly benefit the City of Richmond and Contra Costa County. The project builds community capacity by educating and training local citizens in stream monitoring and restoration activities. By involving the local residents in decision-making and management, this project supports CALFED's commitment to environmental justice, including the North Richmond Neighborhood House.

PROJECT OVERVIEW

Rheem Creek is a small stream in western Contra Costa County. The Lower Rheem Creek watershed is largely undeveloped and surrounded by the low income, minority communities of North Richmond and Parchester Village. With more than 400 acres of tidal and freshwater wetlands and undeveloped uplands, the watershed is exceptional in the Bay Area. In the early 1960s, Rheem Creek was routed into a traditional, flood-control-style channel. Grading and flood control levees disrupted the natural hydrology and degraded the riparian and tidal wetlands.

Several project partners are participating in implementing this project. They include the Natural Heritage Institute, the Parchester Village Neighborhood Council, the West County Toxics Coalition, Community Health Initiative, and the Urban Creeks Council. These project partners are working with the local communities to restore Rheem Creek to a meandering channel through its natural floodplain to the mouth of San Pablo Bay. The meander will filter storm water runoff to improve water quality before it enters San Pablo Bay. The project team is also conducting a thorough watershed assessment to support the development of the Lower Rheem Creek Adaptive Management and Monitoring Program to guide long-term decision making for the creek.

The long-term health of the creek and success of the project depend on the commitment of the community to stewardship. Through outreach and education activities, the project team solicits the involvement of local citizens and students in the restoration of the creek and the management of the Lower Rheem Creek watershed. The project partners hold workshops to educate local citizens, provide a venue for sharing concerns and issues related to the management plan, invite participation in restoration implementation activities, and provide training in monitoring protocol and techniques.



This project involves the local community in restoration design.

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Volunteers examining trees in the community.

PURPOSE

Improve water quality and reduce urban runoff into San Francisco Bay

PROJECT GOALS

- ✦ Reduce urban runoff into San Francisco Bay
- ✦ Increase community awareness and participation in local watershed management
- ✦ Monitor impacts of tree growth on runoff quality and quantity

AWARD AMOUNT

\$350,000

WATERSHED

Ettie Street Watershed

COUNTY

Alameda County

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 9, State Assembly: 16, State Senate: 9

Benefits to the Bay-Delta System

This project increases community awareness of and participation in watershed management activities through planting trees in an urban watershed and monitoring the water quality impacts of these trees. When mature, these trees will help reduce urban runoff to the Bay-Delta system—runoff that contains contaminants like metals, sediment, oil, grease, bacterial coliform, nitrogen, and phosphorus. Improved water quality in the Bay benefits recreation, waterborne commerce, and wildlife habitat. In addition to water quality benefits, these trees improve the quality of life for West Oakland residents. Trees absorb heat and airborne pollutants, provide habitat, and contribute to neighborhood beautification and property values. The tree-planting project also provides direct benefits to the city of West Oakland, while contributing to broader water quality goals. The Oakland Releaf Watershed Protection Program improves the health of the community while empowering the residents to improve their environment.

PROJECT OVERVIEW

The Ettie Street watershed is located at the eastern edge of San Francisco Bay, in a predominantly commercial/industrial area of the city of West Oakland. Because the area is largely paved, most rainfall runs into storm drains and is pumped into the Bay from the Ettie Street Pump Station. The outflow to the Bay carries metals (copper, cadmium, zinc, and lead), sediment, oil, grease, bacterial coliform, nitrogen and phosphorus from highways, streets, parking lots, and rooftops. Because most of the land in this urban area is developed, the options to regulate flows into the Bay are limited.

Through this project, local residents are planting 1,800 trees. When mature, these trees will reduce annual runoff into the Bay by up to 9 million gallons. Tree planting also provides environmental, social, and economic benefits to local communities. Youth from Urban Releaf, the East Bay Conservation Corps, and the Oakland Unified School District are planting and maintaining the trees, assisting with research and monitoring, and distributing information to the public. Local business owners, residents, and volunteer organizations are also participating in tree plantings and maintenance and learning how to protect the watershed. This project includes a monitoring and assessment program to collect information about different types of trees and planting densities and their effect on runoff volume and quality. Staff from the City of Oakland's Environmental Services Division, U.S. Forest Service Center for Urban Forest Research, and the UC Davis Land, Air and Water Resources Department are providing technical assistance.



The Urban Releaf Executive Director, Kemba Shakur, discussing monitoring results with Qingfu Xiao of UC Davis and William Madison of the City Of Oakland.

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With concrete vertical banks and a channel littered with shopping carts and other miscellaneous items, this stretch of Wildcat Creek represents the state of many urban streams.

AWARD AMOUNT

\$750,000

WATERSHED

Wildcat Creek and San Pablo Creek Watersheds

COUNTY

Contra Costa County

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 7, State Assembly: 14, State Senate: 7 and 19

PURPOSE

Design and implement a community-based restoration plan for Wildcat and San Pablo Creeks

PROJECT GOALS

- ✦ Improve aquatic habitat and ecological functions including a demonstration restoration component
- ✦ Reduce the threat of flooding
- ✦ Increase environmental education opportunities

Benefits to the Bay-Delta System

Implementation of this project helps improve aquatic habitat and ecological functions in the Bay to support sustainable populations of diverse and valuable plant and animal species. Endangered steelhead are known to occupy both Wildcat and San Pablo Creeks and are a primary beneficiary of the restoration activities. At the mouths of the creeks, where fresh water mixes with water from San Pablo Bay and San Francisco Bay, a variety of threatened and endangered species would benefit from restoration activities, including California clapper rail, black rail, migratory songbirds, salt marsh harvest mouse, San Pablo vole, and others. Implementation of this project also benefits the local community by reducing the threat of flood damage and by improving water quality.

PROJECT OVERVIEW

Wildcat Creek and San Pablo Creek are among the few remaining free-flowing creeks within the dense urban areas surrounding San Francisco Bay. Both creeks flow through the low-income, small community of San Pablo. Because of the threat of flood damage, the lower reaches of these creeks were once slated by the U.S. Army Corps of Engineers (Corps) to be converted to concrete channels. At the urging of the community, a consensus-based alternative plan that offered both improved flood capacity and habitat benefits was developed and implemented. The Wildcat-San Pablo Creeks Watershed Council (Council) was formed from this design process. Since then, the Council has worked on multiple restoration projects in the watershed and is now developing the Watershed Restoration Action Plan and Priority Projects (WRAPPP) for the highly-urbanized middle reaches of the watershed. The Wildcat-San Pablo Creeks WRAPPP builds on extensive restoration and planning efforts that have already taken place. The Council, in connection with the Urban Creeks Council, is taking the lead and performing the following WRAPPP tasks: conducting project alternatives analysis, conducting public outreach and environmental education activities, determining restoration priorities, and implementing restoration projects.

The Corps is again poised to develop and implement a flood control project within these watersheds. The goal of the WRAPPP is to provide the Corps with a community-supported multi-objective alternative plan for implementation that provides flood damage reduction, habitat improvements, and water quality benefits.

Restoration projects associated with the WRAPPP may include reshaping and/or revegetation of up to 1,000 linear feet of stream, as well as removal of culverts, hydraulic constrictions, or other barriers to fish passage.

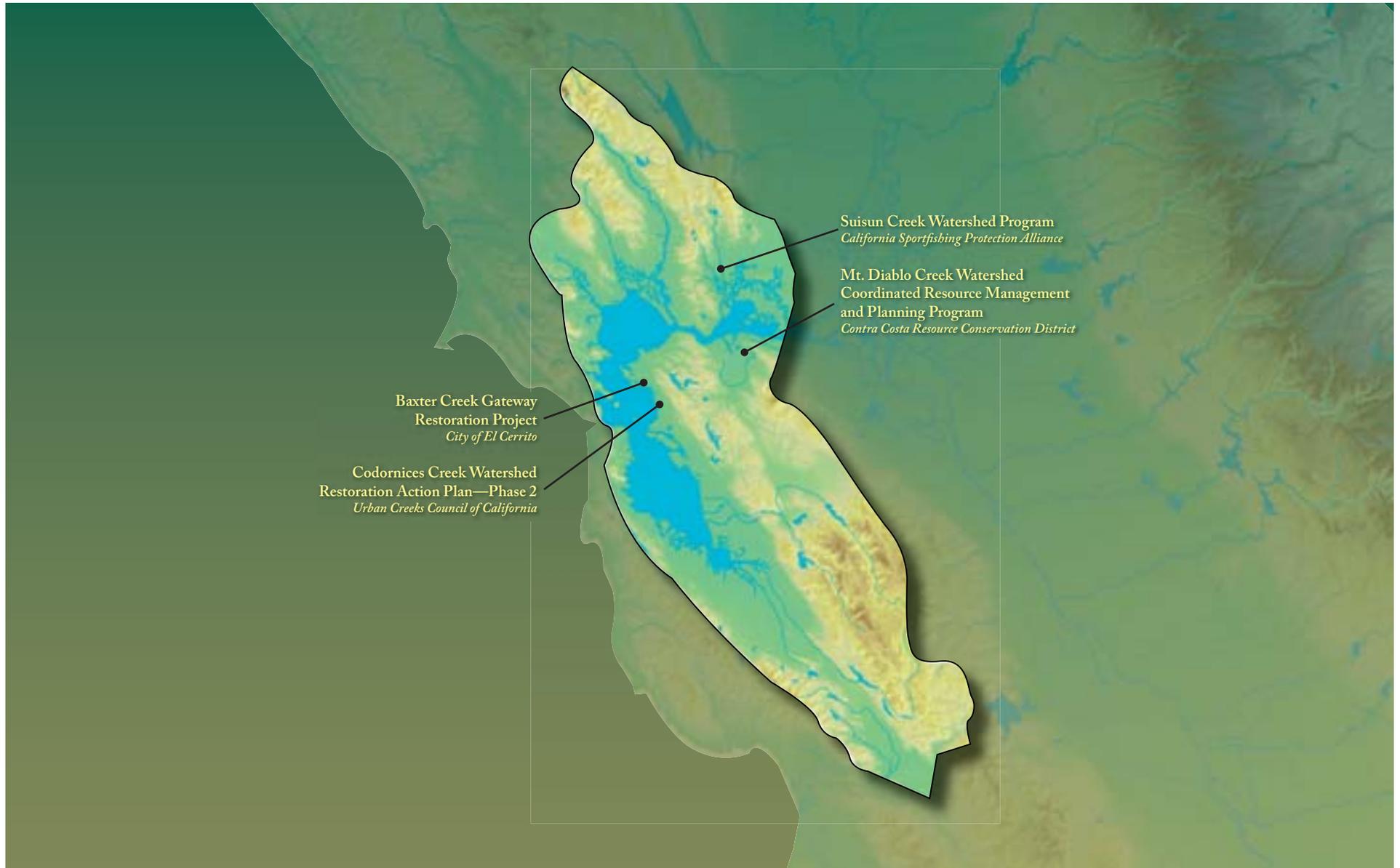


Aerial view of the flatlands of Wildcat Creek and San Pablo Creek. This project targets flood damage reduction and will include a demonstration restoration component.

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BAXTER CREEK GATEWAY RESTORATION PROJECT

City of El Cerrito



Baxter Creek under flood conditions.

PURPOSE

Restore a portion of Baxter Creek and provide a setting for educational lessons and community involvement

PROJECT GOALS

- ✦ Restore and maintain the stretch of Baxter Creek at the City of El Cerrito's northern gateway to offer benefits for wildlife, improve water quality, and reduce flooding impacts
- ✦ Build the community's capacity to maintain and manage the Baxter Creek and other San Francisco and Bay Area watersheds and encourage stewardship by developing watershed-wide programs for education and outreach, monitoring, and maintenance
- ✦ Integrate amenities along Baxter Creek that facilitate ongoing education, participation, and training related to watershed stewardship and restoration

AWARD AMOUNT

\$492,042

WATERSHED

Baxter Creek Watershed

COUNTY

Contra Costa County

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 7 and 10, State Assembly: 14,
State Senate: 7 and 10

Benefits to the Bay-Delta System

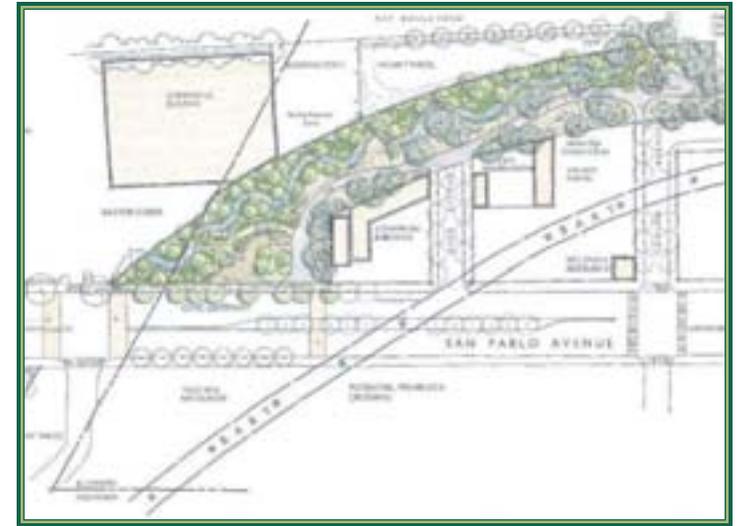
Restoration of the Baxter Creek Gateway site will enhance riparian habitat and improve water quality in the creek, which will lead to improved conditions downstream in San Francisco Bay, an important nursery area for marine, estuarine, and anadromous fish. The local community will benefit from the community-based outreach and education program intended to increase community awareness of Baxter Creek and to encourage community protection of its watershed. The Baxter Creek project provides local government benefits as it strengthens and builds linkages between local organizations to increase local watershed management capacity and to sustain long-term stewardship of the creek.

PROJECT OVERVIEW

Baxter Creek, located in the San Francisco Bay watershed, flows through densely urbanized west Contra Costa County. It is publicly accessible at five parks and open space areas. Three main branches of Baxter Creek originate in underground springs beneath the El Cerrito and Richmond hills and drain the watershed through the main channel into San Francisco Bay. The Baxter Creek Gateway Restoration Project will restore approximately 750 feet of channelized Baxter Creek to increase riparian habitat and improve water quality, and provide outreach to the surrounding community on the value of creeks and watersheds.

The Baxter Creek Gateway Restoration Project culminates a 6-year effort by the community and local government to acquire and restore the gateway property at the highly urbanized border between Richmond and El Cerrito. This project restores a 750-foot stretch of Baxter Creek to create a 950-foot meandering stream and riparian corridor. Restoring native plants on the creek banks will reduce erosion potential, improve aesthetics, guide access, suppress the establishment of invasive nonnative species, and increase wildlife habitat values. The restored creek will include a functional floodplain that will provide a diversity of aquatic habitats.

The project provides increased opportunities for public access to parklands and education among the local community on the value of watershed protection. The restoration site extends the Ohlone Greenway, a regional pedestrian and bicycle trail, to the Central Richmond Greenway, another multi-use trail that will eventually connect to the San Francisco Bay Trail. In partnership with The Watershed Project and Friends of Baxter Creek, the project also includes an outreach and education program to expand an existing watershed awareness program. The outreach activities are designed to involve the local community in implementing and maintaining the restoration project, to demonstrate and interpret watershed functions, and to change individuals' everyday behaviors that affect the water quality of the Bay.



The final schematic site plan for the Baxter Creek Gateway site. Construction estimated to begin July 2005.

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CODORNICES CREEK WATERSHED RESTORATION ACTION PLAN—PHASE 2

Urban Creeks Council of California



Urban Creeks Council staff member Kristen Van Dam records longitudinal profile survey data on Codornices Creek along the Berkeley/Albany city line.

PURPOSE

Implement priority actions recommended in Codornices Creek Watershed Restoration Action Program Plan—Phase 1

PROJECT GOALS

- ✦ Increase the extent of salmonid habitat in Codornices Creek by eliminating migration barriers without decreasing channel capacity
- ✦ Improve overall creek quality to encourage the continuation and health of the remnant steelhead population
- ✦ Implement a permanent community- and science-based watershed program for the protection and restoration of the creek

AWARD AMOUNT

\$482,500

WATERSHED

San Francisco Bay Watershed

COUNTY

Alameda County

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 9, State Assembly: 14, State Senate: 9

Benefits to the Bay-Delta System

This ecosystem restoration project alleviates major barriers to fish migration on Codornices Creek (including steelhead populations), improves instream habitat for riparian wildlife populations through bank stabilization projects, and works with residents and other agencies to improve the suitability of habitat. Local property owners benefit through riparian vegetation demonstration projects that stabilize streambanks, enhance instream habitat, and apply sound principles of habitat restoration to their properties. This project’s stream survey protocols and user-friendly data storage contribute to the technical improvement of watershed planning throughout the state. Citizen participation in monitoring programs and a strong outreach component of the project build local benefits through increased capacity for good watershed stewardship.

PROJECT OVERVIEW

Codornices Creek flows from the Berkeley hills, through North Berkeley, under Interstate 80, and into the San Francisco Bay mudflats. Codornices Creek is one of the most open streams in the area and hosts a remnant steelhead run, making it one of the best native salmonid restoration opportunities in the East Bay. In 2002, the CALFED Watershed Program funded Phase 1 of this program. A watershed-wide assessment and prioritization of actions for restoring the stream and its steelhead run were completed in Fall 2004. The plan can be downloaded from the UCC webpage.

Phase 2 of the program meshes with three other important efforts to restore the creek. An Urban Streams Restoration grant is providing support to establish a new stream meander and riparian buffer in the part of Codornices Creek that was severely channelized during World War II. Concurrently, the Union Pacific Railroad is preparing to expand conveyance under its tracks, an area where constriction has led to sediment buildup. In a third related project, Caltrans is planning to increase conveyance capacity where the creek flows under Interstate 80 to eliminate flooding upstream.

The Urban Creeks Council project team works with landowners along Codornices Creek who express a desire to make their backyards “fish friendly” through riparian vegetation restoration demonstration projects. Streambank stabilization projects reduce erosion at priority sites along the creek that are contributing substantial amounts of sediment to the stream, degrading salmonid habitat by smothering spawning gravels and filling in pools needed for juvenile rearing. A primary component of this project is the remediation of fish passage barriers, particularly the current limiting barrier at Albina Avenue. This limiting barrier, a result of the streambed downcutting, is causing the surface elevation of the outfall plunge pool to be too low for fish to navigate. Downstream tailwater grade control structures are being installed to raise the water level. Additionally, the installation of baffles, which add depth and roughness to the flow, are being considered to alleviate fish exhaustion at suitable sites. Community outreach and education are conducted through workshops, digital media, school programs, presence at festivals, printed materials, and a website.



Top view of a 12" rainbow trout/steelhead in Codornices Creek inside the Curtis Street culvert.

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Friends of Mt. Diablo Creek conducting the first GPS survey of the creek as part of Contra Costa County's volunteer creek monitoring program.

PURPOSE

Develop a citizen-based watershed management plan using a local, consensus-based planning process

PROJECT GOALS

- ✦ Facilitate and improve coordination, collaboration, and assistance among government agencies, local organizations, and individuals with an interest in resource conservation
- ✦ Conduct a watershed assessment
- ✦ Develop a watershed management plan
- ✦ Provide education and outreach to support the efforts of individuals and organizations to become better stewards of their natural resources
- ✦ Build strong working relationships to ensure support and long-term sustainability of local watershed activities
- ✦ Create a citizen-based water quality monitoring program

AWARD AMOUNT

\$227,117

WATERSHED

Suisun Bay Watershed

COUNTY

Contra Costa County

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 7 and 10, State Assembly: 11, State Senate: 7

Benefits to the Bay-Delta System

This project brings together diverse stakeholders in the Mt. Diablo Creek watershed to develop a plan to help ensure the long-term ecological health and function of the watershed. The planning process is expected to build public and agency support for restoration actions that will directly benefit steelhead trout in the watershed and other important species that use or pass through Suisun Marsh. Education and outreach activities will build awareness of watershed issues, instill pride and sense of place, and inspire individuals and organizations to become better stewards of their natural resources. The citizen monitoring component will provide benefits to the cities and the Contra Costa Clean Water Program by helping identify and reduce sources of stormwater pollution and non-point source pollution. The U.S. Navy will also benefit from the information gathered, and from the increased participation of the local community in managing the watershed.

PROJECT OVERVIEW

The Mt. Diablo Creek watershed extends from Mt. Diablo to Suisun Bay and is Contra Costa County's fourth largest watershed. Land uses within the watershed include ranchlands, urban areas, a state park, tidal marshland, and an EPA Superfund Site (the Naval Weapons Station Seal Beach Detachment Concord). The Mt. Diablo Creek watershed is unique in Contra Costa County in that it contains no structural modifications for flood control. Recently, steelhead trout have been found in a headwater tributary, and two downstream perennial reaches of Mt. Diablo Creek may provide suitable rearing habitat. Currently, no watershed management plan for Mt. Diablo Creek exists, and there is crucial need for increased public awareness and participation in the decision-making processes that will determine the watershed's future.

The Contra Costa Resource Conservation District is conducting the Mt. Diablo Creek Watershed Coordinated Resource Management and Planning (CRMP) Program to develop a watershed management plan for the Mt. Diablo Creek watershed. This plan is being developed by stakeholders using a voluntary, locally controlled, consensus-based planning process, and will contain recommendations of voluntary actions regarding flood management, water quality, recreation and other issues. Other ongoing studies, when combined with the results of this project, will provide a baseline that will serve to enhance local watershed management science by filling gaps in existing knowledge and understanding about natural habitats, species, and stream functions. Further, because parts of the watershed are relatively undisturbed, the watershed may serve as a reference site for watershed restoration throughout the county.

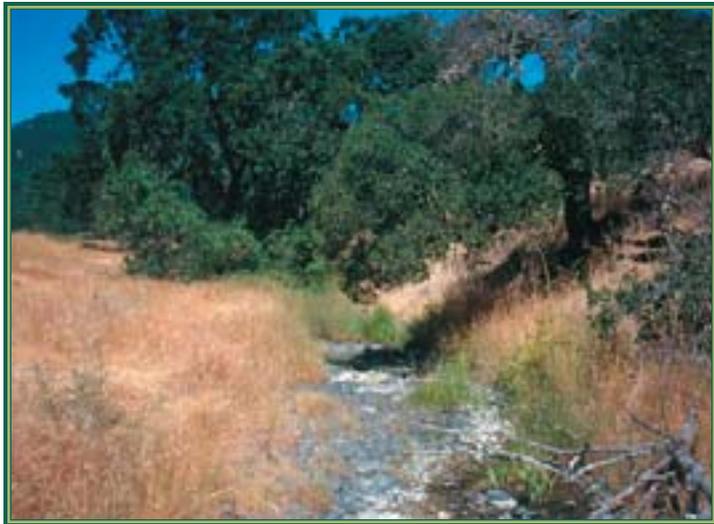
This project involves numerous activities, including a citizen-based water quality monitoring program, a summary of existing scientific information about current watershed conditions, a stream channel assessment, and an outreach and education effort. The project will educate planning group participants and other citizens about watershed functions and current conditions in the Mt. Diablo Creek watershed. The Mt. Diablo Creek watershed CRMP process will build local community capacity for watershed management by providing a forum for stakeholders representing diverse interests to develop a plan for the entire watershed. This plan eventually will result in the design and implementation of watershed improvement activities to maintain and restore ecosystem function and protect and improve water quality in the Mt. Diablo Creek watershed.



Springtime view of Donner Creek—tributary and headwaters of Mt. Diablo Creek.

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A lack of riparian cover contributes to early summer dryness of this tributary to Suisun Creek.

PURPOSE

Implement priority elements of the Suisun Creek Watershed Program (SCWP) to enhance habitat and improve land management practices

PROJECT GOALS

- ✦ Improve collaboration between public and private parties by increasing local community capacity
- ✦ Evaluate the potential for improving Lake Curry to provide a reliable water supply that also benefits coldwater fish in Suisun Creek
- ✦ Work with property owners to eradicate invasive nonnative plant species and replant riparian habitats with native species that support fish and wildlife
- ✦ Implement the Fish Friendly Farming Program on agricultural lands

AWARD AMOUNT

\$580,000

WATERSHED

Suisun Bay Watershed

COUNTY

Napa and Solano Counties

CALFED REGION

Bay Region

LEGISLATIVE DISTRICTS

US Congress: 1 and 7, State Assembly: 8,
State Senate: 2 and 4

Benefits to the Bay-Delta System

The Suisun Creek watershed drains portions of Napa and Solano Counties and flows into Suisun Marsh and Suisun Bay. Working with local landowners and agencies, the SCWP helps improve water quality through direct actions with landowners and improves land management practices by agricultural and rural residential owners. The backbone of this project is outreach to residents with a goal of increasing their capacity to effectively manage their watershed and resources. Education topics include watershed stewardship, resource conservation, erosion control, and fish-friendly farming practices. This project also incorporates invasive species removal and native plant revegetation demonstration projects at volunteered sites throughout the watershed to build the local knowledge base in addressing the widespread invasive plant problem, bringing benefits to the local community as well as Bay-Delta users. Improved local water quality in the Suisun Creek watershed can reduce the area's dependence on Delta water imports. The project also yields local benefits to the agricultural interests in the watershed, and to recreational users in the watershed and downstream in the Delta.

PROJECT OVERVIEW

The Suisun Creek watershed is a 56-square-mile drainage in Napa and Solano Counties that flows into Suisun Marsh and Suisun Bay. Suisun Bay is listed as a Class I impaired water body. However, the Suisun Creek watershed is one of the few Bay Area watersheds without major urbanization, and it currently supports wild steelhead. The SCWP was started in 2000 as a partnership between local landowners interested in protecting Suisun Creek and the nonprofit California Sportfishing Protection Alliance. These partners, along with elected officials, environmental and agricultural groups, resource agencies, and other stakeholders, directed the development of the Suisun Creek Watershed Plan. The plan identified a number of integrated priority actions that are now being implemented.

To increase the reliability of the local urban water supply and provide coldwater releases for steelhead, SCWP is evaluating changes to the management operations of Lake Curry. Several invasive plants—*Arundo donax*, Himalayan blackberry and blue periwinkle—are overtaking the native plant species in the riparian corridor. In collaboration with local landowners, SCWP is developing an eradication program and educating landowners on effective removal and revegetation techniques through demonstration projects. Pre- and post-project monitoring provides data on the effectiveness of these techniques. The results are shared with other watershed communities.

Agricultural landowners are also participating in the Fish Friendly Farming Program, which has been highly successful in the Russian, Navarro, and Napa River watersheds. Through a series of workshops, farmers learn about effective watershed management practices that can be implemented on their agricultural land. These practices can improve habitat and water quality and reduce excess sediment loading. While agriculture is the primary land use in the watershed, rural residential development is on the rise. Outreach materials and workshops for non-farming landowners cover rural road maintenance and management, fire hazard reduction, water conservation, pesticide use, erosion control, and creek care. These integrated outreach and education programs are leading to increased local stewardship and improved environmental quality.



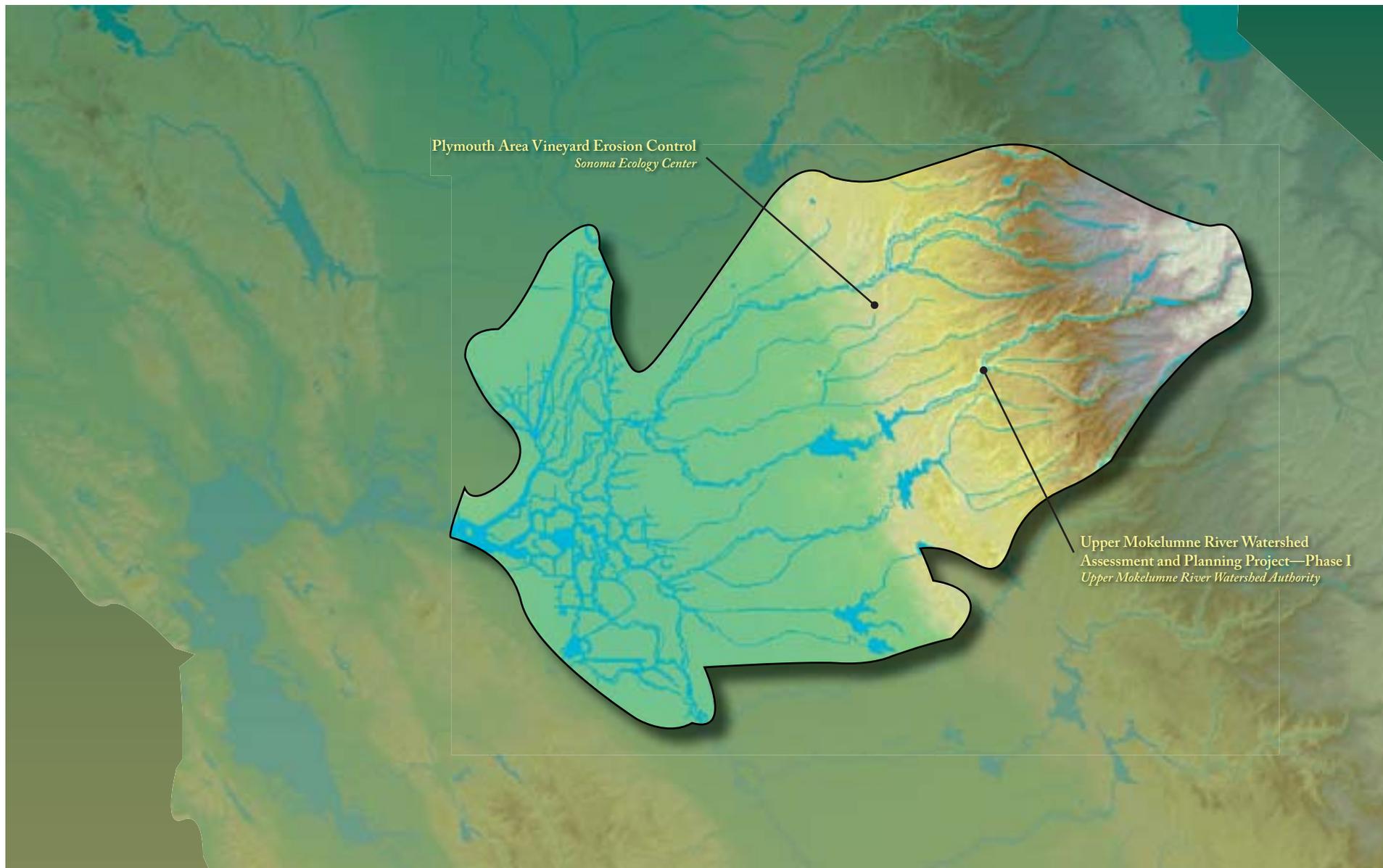
Downstream section of the same tributary with well-shaded, cool-water steelhead rearing habitat.

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Plymouth Area Vineyard Erosion Control
Sonoma Ecology Center

Upper Mokelumne River Watershed
Assessment and Planning Project—Phase I
Upper Mokelumne River Watershed Authority



PLYMOUTH AREA VINEYARD EROSION CONTROL

Sonoma Ecology Center



Rainfall simulator preparation; the rainfall rate is set at about 1 inch per hour.

AWARD AMOUNT

\$468,500

WATERSHED

Upper Cosumnes River Watershed

COUNTY

Amador County

CALFED REGION

Delta Region

LEGISLATIVE DISTRICTS

US Congress: 4, State Assembly: 4, State Senate: 1

PURPOSE

Protect the water quality of local creeks by promoting vineyard erosion control in the Shenandoah Valley and adjacent areas

PROJECT GOALS

- ✦ Conduct site assessments to analyze soils and erosion potential
- ✦ Conduct stream water quality and stage monitoring to assess the current contribution of vineyard and non-vineyard erosion to stream water quality
- ✦ Develop an education and outreach component that demonstrates the need for erosion control measures in the area
- ✦ Hold sustainability assessment workshops for growers in Amador County
- ✦ Implement erosion control strategies at test sites and monitor their effectiveness

Benefits to the Bay-Delta System

The Plymouth Area Vineyard Erosion Control project studies the impacts of vineyard erosion in the Shenandoah Valley in Amador County and enlists the help of community members in protecting the health of their local water resources by educating them about the function and health of the larger Cosumnes River watershed. By reducing erosion and sedimentation and by determining which erosion control measures work best, this project directly improves the surface water quality of local streams, the Cosumnes River, and ultimately, the Bay-Delta system. As part of the project, a pamphlet summarizing the effectiveness of each implemented erosion control strategy, management concerns, and costs will be created and widely distributed. Local growers will benefit from increased knowledge of different treatment methods. The information can be shared with growers in similar areas, such as the Central Coast and Sonoma-Napa regions. Local groundwater users will also benefit through increased protection for local aquifers.

PROJECT OVERVIEW

In recent years, the rural areas surrounding the City of Plymouth, located in the Shenandoah Valley in Amador County, increasingly have been converted to vineyards. Easier-to-farm bottomlands are already in production, so farmers are turning steeper slopes into areas of winegrape production. The slopes are within the drainage basins of Pigeon Creek and Big Indian Creek, both of which are tributaries to the Cosumnes River, and their soils are highly volcanic. While some grape growers in this region have voluntarily implemented erosion control strategies, little, if any, monitoring has been done to evaluate the effectiveness of these strategies. Few data exist regarding the impact of vineyard development on the shallow groundwater of this area, the nutrient and sediment loads in Pigeon Creek and Big Indian Creek, and water quality in general.

The Plymouth Area Erosion Control Project investigates vineyard erosion in the Shenandoah Valley and adjacent areas, the contribution of this erosion to water quality in local creeks and groundwater, and the effectiveness of several vineyard erosion control measures at volunteer demonstration sites around the watershed. The initial stage of this project assesses actual current contribution of vineyard and non-vineyard erosion to stream water quality through stream monitoring to provide a baseline data set.

Local winegrape growers play a large role in this project, as volunteer growers are implementing the erosion control measures at demonstration sites on their own land. Workshops are being held to educate growers about erosion processes, impacts, and control strategies, and to select which erosion control strategies each grower will implement at which sites. This project uses rainfall simulation, a convenient and easily replicated methodology, to evaluate erosion and associated sediment, nutrient, and pesticide transport at each site. Additional stream monitoring is used to assess the value of the erosion control strategies in protecting groundwater and surface water.

Public outreach and follow-up workshops will be conducted to educate the general public about the overall need for watershed protection, the effects of various land use practices on watershed processes, and the role of erosion control in watershed protection.



Rainfall simulation has begun. Samples will be collected as soon as runoff begins.

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Using a collaborative process, this project reflects the knowledge and interests of the Mokelumne River watershed communities.

PURPOSE

Establish an assessment methodology, select a preferred tool/model for evaluating drinking water threats, identify applicable existing data, and design a data collection strategy to prepare for the Phase II watershed assessment and plan for the Upper Mokelumne River watershed

PROJECT GOALS

- ✦ Develop a science-based, stakeholder-supported watershed assessment methodology
- ✦ Create a database to compile existing data needed to conduct a watershed assessment.
- ✦ Build a stakeholder-supported monitoring and data collection program designed to fill identified data gaps

AWARD AMOUNT

\$200,000

WATERSHED

Upper Mokelumne River Watershed

COUNTY

Alpine, Amador, and Calaveras Counties

CALFED REGION

Delta Region

LEGISLATIVE DISTRICTS

US Congress: 3; State Assembly: 4, 10, and 25;

State Senate: 1

Benefits to the Bay-Delta System

The Upper Mokelumne River watershed is a significant source of drinking water and is a key tributary to the Bay-Delta. This project develops a stakeholder-supported and stakeholder-implemented watershed data collection and monitoring program to establish a baseline for a watershed assessment of the Upper Mokelumne River. This effort provides benefits to water users by identifying areas in need of source water protection and any negative impacts on beneficial uses of surface water. The local community will benefit from improved local drinking water conditions and improved recreation opportunities. In addition, local governments will have better information for making land use decisions. The protocol developed through this project will serve as a model for other watersheds and could be integrated into the overall CALFED science and monitoring program.

PROJECT OVERVIEW

The Upper Mokelumne River watershed is a source of drinking water for millions of Californians and is a key tributary to the Sacramento–San Joaquin River Delta. The watershed encompasses 578 square miles in Alpine, Amador, and Calaveras Counties on the western slope of the Sierra Nevada and is home to many threatened and endangered fish and wildlife species. Though water quality in the watershed is generally good, local citizens have identified significant threats to the support of several beneficial uses. Issues of concern include protection and enhancement of public drinking water supplies and resource-based recreation, restoration of riparian and aquatic habitat, and protection of water quality from the impacts of timber harvesting, hydropower production, wildfires, and land development.

The Upper Mokelumne River watershed currently lacks comprehensive, data-based documentation of threats to the watershed, its sources, and potential impacts on different beneficial uses. This project is the first phase of the assessment process, and calls for the development and implementation of a stakeholder-supported assessment and data collection methodology. Potential threats to currently supported uses will be identified by stakeholders and addressed in the data collection and monitoring plan. In a subsequent phase, a watershed assessment will be completed based on the systematic interpretation of objective data collected in this phase using the stakeholder-supported assessment methodology. Building and achieving stakeholder support for the assessment methodology and data collection strategy is essential to obtain acceptance of the management actions and a commitment to work collaboratively to implement them.

An important expected outcome of the project is a better cooperative environment within which future management decisions affecting beneficial uses within the Upper Mokelumne River watershed can be made. The collaborative nature of this project will allow watershed stakeholders to develop a vision for how the various beneficial uses can be balanced to achieve conditions acceptable for every stakeholder. After the assessment is completed, stakeholders can identify locations where restoration or protection projects are most critical using the assessment results for guidance. The technical approaches developed as part of this project represent a means to measure current progress toward implementing the vision.

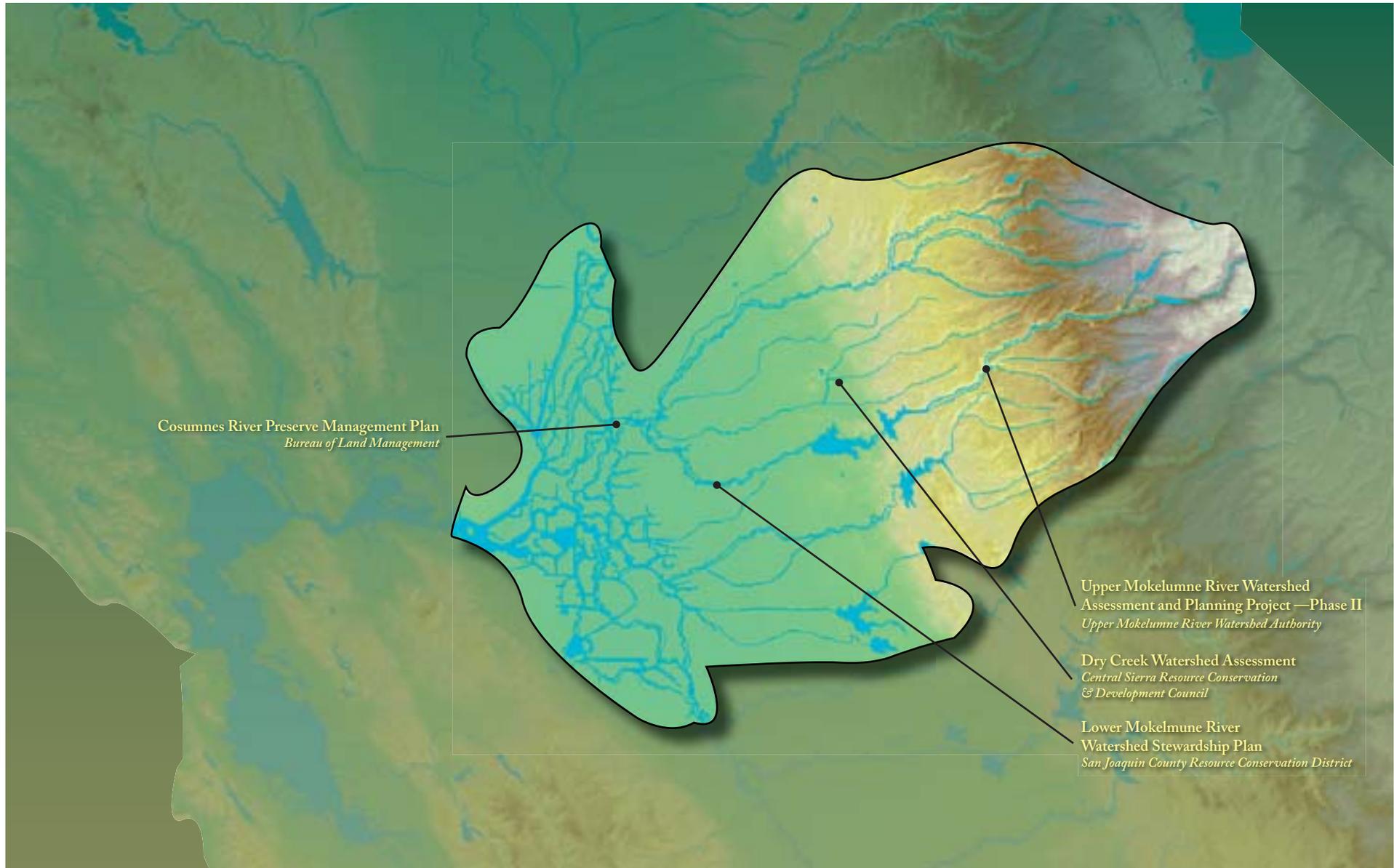


A critical piece of the UMRWAP is the development of a tool to assess threats to the drinking water supply.

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COSUMNES RIVER PRESERVE MANAGEMENT PLAN

Bureau of Land Management



The Cosumnes River Preserve incorporates local agriculture into habitat enhancement for sensitive species.

PURPOSE

Improve watershed management for the Cosumnes River Preserve management area

PROJECT GOALS

- ✦ Prepare a comprehensive watershed management plan, including management direction and an action-oriented protection and restoration plan in collaboration with partner agencies and organizations, and with input from local watershed stakeholders
- ✦ Develop a GIS database to consolidate existing data, facilitate ongoing monitoring, and provide for long-term sustainability of management actions
- ✦ Implement community-based education and stewardship programs to build local support and capacity for conservation and restoration

AWARD AMOUNT

\$692,150

WATERSHED

Lower Cosumnes and Lower Mokelumne River Watersheds

COUNTY

Sacramento and San Joaquin Counties

CALFED REGION

Delta Region

LEGISLATIVE DISTRICTS

US Congress: 3 and 11; State Assembly: 10, 15, and 26;

State Senate: 1 and 14

Benefits to the Bay-Delta System

Building on substantial past and ongoing investment made by CALFED and other funding entities, the Cosumnes River Preserve adds to the greater watershed of the Bay-Delta system through efforts to restore ecological health and improve water management within the lower Cosumnes watershed. The Cosumnes River Preserve Management Plan consolidates the findings and practices of 16 years of successful cooperative management to develop new restoration strategies, reaffirm successful restoration techniques, and support watershed conservation. Developing a management plan collaboratively improves coordination among Preserve partners. The scientific findings and adaptive management techniques resulting from this project are applicable to other parts of the watershed and other watersheds, contributing to the health of the Bay-Delta system as a whole.

PROJECT OVERVIEW

The Cosumnes River Preserve partnership is developing a comprehensive management plan for the Cosumnes River Preserve, which includes 13 miles of the lower Cosumnes River corridor and more than 40,000 protected acres in the lower Cosumnes watershed and northeast Delta. The Preserve encompasses natural and restored habitats (riparian valley oak forest, wetlands, vernal pools, grasslands, streams), as well as managed wetlands, agricultural lands, and rangeland.

Past strategic planning has resulted in activity plans for managed wetlands, grazing, organic rice farming, and weed management. No plans exist for riparian restoration and public use. This effort will focus on developing an integrated management plan, addressing the “on-ground” management of these important uses and values. Local community meetings will be used to identify important social and community concerns and define desired future conditions. The proposed project develops and refines goals and objectives from diverse partnerships into a single comprehensive plan that will improve management efficiency, develop adaptive management protocols, and better integrate the groups in the watershed.

Development of the management plan includes outreach to the local community and relevant agencies and organizations in the watershed. Dissemination of information through public meetings during the planning process, newsletter updates, and periodic public events at the Preserve are opportunities to carry out watershed education and foster sound stewardship.



Restoration activities at the Preserve provide opportunities for education and community involvement.

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Stream restoration/community education project site at Minnie Provis Park on Sutter Creek near the City of Sutter Creek.

PURPOSE

Develop a dynamic stakeholder group to evaluate the Dry Creek watershed and develop plans to improve water quality, water supply reliability, and ecosystem quality in the watershed

PROJECT GOALS

- ✦ Build a formal, broad-based, collaborative organization of stakeholders
- ✦ Increase awareness and understanding of natural processes in the watershed and the impacts these processes have downstream and to the Bay-Delta
- ✦ Improve the capacity of the community to manage its watershed by providing stakeholders with the knowledge and tools to make responsible land use and resource decisions
- ✦ Assemble data and produce reference documents on the Dry Creek watershed that will assist with watershed planning

AWARD AMOUNT

\$225,000

WATERSHED

Dry Creek Watershed

COUNTY

Amador County

CALFED REGION

Delta Region

LEGISLATIVE DISTRICTS

US Congress: 4, State Assembly: 4, State Senate: 1

Benefits to the Bay-Delta System

The Dry Creek watershed is located in the Upper Mokelumne River watershed federal hydrologic unit, which is a significant source of drinking water and a key tributary to the Delta. The Dry Creek Watershed Assessment project contributes to the goals of the CALFED Water Quality Program by addressing surface water quality concerns in the Dry Creek watershed. This project also helps by identifying ways to improve water quality in the Upper Mokelumne River watershed, which will lead to improved habitat downstream for self-sustaining anadromous fish populations. Other benefits of the project include outreach and education programs to increase awareness of overall watershed health, encouragement of stakeholder participation, and creation of a sense of ownership among the local community.

PROJECT OVERVIEW

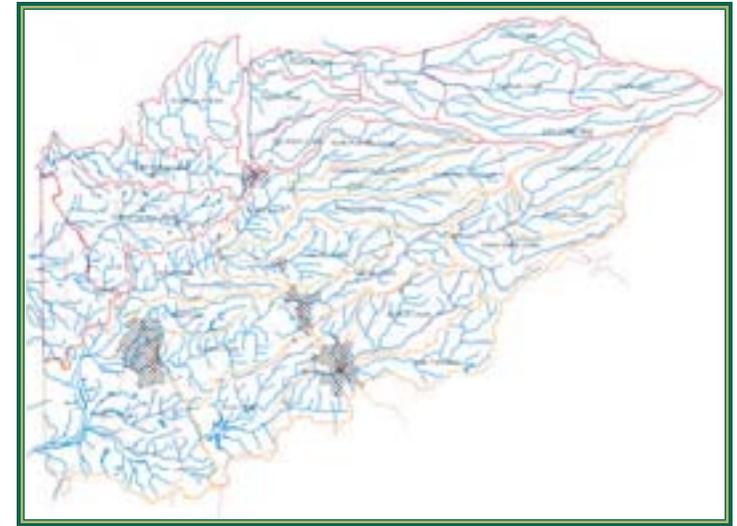
The Dry Creek watershed covers more than 300 square miles between the Upper Mokelumne River watershed and the Upper Cosumnes River, primarily in Amador County. Stakeholders in the Dry Creek watershed have expressed concern that surface water quality in their watershed may be threatened. Stormwater runoff, degraded ecosystem quality, discharge from mines, timber management practices, agriculture, urbanization, elevated water temperature, and waste discharge are key factors in degraded water quality in the watershed.

This project creates a new watershed organization, the Dry Creek Watershed Association (DCA), to assess the Dry Creek watershed and address concerns identified by stakeholders. The Central Sierra Resource Conservation and Development Council—a partnership among representatives of five counties, numerous cities, several private and public entities, and other special interest groups—is working together to develop the DCA. In addition to developing the Dry Creek Watershed Assessment, the DCA will:

- ✿ establish priorities among a variety of watershed concerns expressed by stakeholders,
- ✿ gather knowledge through education workshops to assist the DCA assessment,
- ✿ develop an inventory of current watershed conditions,
- ✿ assess water quality pollutants through monitoring,
- ✿ synthesize existing studies and data into a reference document for watershed planning, and
- ✿ engage public agencies to help address watershed issues.

The desired outcomes of the Dry Creek Watershed Assessment are to address the concerns expressed by the watershed stakeholders and improve water quality, water supply reliability, and ecosystem quality in the watershed.

The DCA is reaching out to watershed stakeholders through organized meetings and watershed tours to promote awareness, encourage dialogue, and increase a shared understanding of natural and human-made processes in the Dry Creek watershed and the impacts these processes have in the watershed and downstream in the Delta. The next phase of this project will develop a formal watershed management plan and begin implementation of corrective measures to protect and restore the Dry Creek watershed.



The Dry Creek planning area contains the tributaries of Dry Creek (gold) and the Cosumnes River within Amador County (red). Major communities are checked on the map.

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LOWER MOKELUMNE RIVER WATERSHED STEWARDSHIP PLAN

San Joaquin County Resource Conservation District



Growers filling out the Lodi Winegrape Growers workbook, in which farmers examine their on-farm practices. A similar workbook for walnut growers is being developed.

AWARD AMOUNT

\$1,377,884

WATERSHED

Mokelumne River Watershed

COUNTY

San Joaquin County

CALFED REGION

Delta Region

LEGISLATIVE DISTRICTS

US Congress: 11, State Assembly: 10, State Senate: 5

PURPOSE

Enhance overall watershed health and water quality

PROJECT GOALS

- ✧ Improve water quality
- ✧ Reduce non-point source pollution from agricultural and urban/suburban areas
- ✧ Develop and strengthen community partnerships needed to further implement the Lower Mokelumne River Watershed Stewardship Plan
- ✧ Increase awareness of watershed issues
- ✧ Increase wildlife and riparian habitat
- ✧ Build capacity for future watershed projects

Benefits to the Bay-Delta System

The Mokelumne River is the largest eastside tributary to the Bay-Delta, draining approximately 661 square miles. Implementing this project benefits the Bay-Delta through improved water quality, ecosystem restoration, and increased capacity of residents to understand issues and promote practices that contribute to a healthy watershed. Grape and walnut growers will benefit from improved management practices and accrued returns from a successful market-based strategy developed through this project. Downstream water users will gain from the improved water quality in the Mokelumne River. Improved water quality also will provide benefits to recreational users of the Delta waters in of the project area and downstream. The added monitoring data will help local governments and state agencies develop more effective policies and programs related to natural resource management of the lower river.

PROJECT OVERVIEW

This project implements part of the Lower Mokelumne River Watershed Stewardship Plan, a 3-year stakeholder-led effort that identifies and addresses important watershed issues. One major issue in the watershed is the removal or loss of natural riparian vegetation. Rearing habitat for Chinook salmon suffers from a lack of riparian shade and cover, particularly in the lower reach of the river. This project establishes a permit clearinghouse for restoration efforts—both privately and publicly funded—and is being implemented in coordination with the City of Lodi, the Lodi-Woodbridge Winegrape Commission, UC Extension, consultants, and East Bay Municipal Utility District. It facilitates efforts to protect, enhance, and restore riparian habitat by helping landowners determine the type of restoration best suited to their property, and assisting in installation. The anticipated results of riparian habitat restoration are improved conditions for spawning salmonids; improved habitat for wildlife, including some special-status species; improved water quality resulting from buffer strips between agriculture and the water, lessening of chemical input; streambank stabilization and erosion control; and reduction of invasive nonnative plants.

To monitor success of the project, baseline data on specific water quality parameters are collected downstream. Because part of the project encourages integrated pest management, vineyard pest numbers also are monitored. Many incentive programs exist for winegrape growers, but few are focused on increasing the value of the grape by using sustainable farming practices. The project includes a market-based program that rewards growers financially for being good watershed stewards. If successful, the program will be expanded to other growers.

The outreach component of the project includes citizen monitoring, school programs, media campaigns, and self-assessment materials. Increased public awareness of priority watershed issues is a primary step toward the overall goal of a healthy watershed. Self-assessment programs for urban and suburban residents and agricultural producers explain important watershed issues like water and habitat quality, ecosystem function, and non-point source pollution. Using the Lodi Winegrape Grower's Workbook as a model, workbooks are underway for growers of walnuts, the second largest agricultural crop in the watershed. It will help them evaluate practices such as water management and pesticide use that affect watershed health and water quality. Follow-up contacts after materials are sent encourage awareness of issues, participation in the self-assessment, and behavior changes.



The Lodi Lake Docents educate the community on watershed function, and use the watershed model to demonstrate how non-point source pollution affects our watersheds.

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The UMRWAP develops understanding of threats to water quality in the watershed.

PURPOSE

Develop a technically defensible, stakeholder-supported watershed assessment and watershed management plan for the Upper Mokelumne River watershed

PROJECT GOALS

- ✦ Provide support for local land use and resource management decision-making
- ✦ Create a better informed and cooperative decision-making structure for management
- ✦ Increase local capacities for integrated, comprehensive watershed management
- ✦ Develop performance measures and indicators for protection of beneficial uses
- ✦ Fill critical gaps in existing data on indicators of watershed health and establish a continuing data collection program for the watershed
- ✦ Provide outreach to the broader watershed community on issues pertaining to watershed health and water quality

AWARD AMOUNT

\$750,000

WATERSHED

Upper Mokelumne River Watershed

COUNTY

Alpine, Amador, and Calaveras Counties

CALFED REGION

Delta Region

LEGISLATIVE DISTRICTS

US Congress: 3; State Assembly: 4, 10, and 25;
 State Senate: 1

Benefits to the Bay-Delta System

The UMRWAP provides significant benefits to the Upper Mokelumne River watershed community by fostering collaboration and coordination among multiple watershed stakeholders—including local, state, and federal agencies, residents, commercial interests, recreationists, environmental organizations, and landowners—to develop a watershed assessment and management plan for watershed protection and restoration. Local benefits will also include improved recreational opportunities and improved protection for local groundwater supplies. Other benefits are ongoing resources for a variety of stakeholders, including a framework to guide timber harvest plans (timber industry), state and federal resource plans (U.S. Forest Service and Bureau of Land Management), local land use plans (local governments), operation plans and schedules (hydroelectric operations), and source water protection plans (local water supply districts).

PROJECT OVERVIEW

The Upper Mokelumne River watershed is an important eastside tributary to the Sacramento–San Joaquin River Delta. The watershed is home to many threatened and endangered fish and wildlife species, provides a source of drinking water for millions of Californians, and is a four-season recreational playground for many more. Land and water resource management decisions in the watershed are made by a variety of public and private entities, and this project aims to create a better-informed and cooperative decision-making structure to guide land use and resource management activities. Members of the Upper Mokelumne River Watershed Authority include the Alpine County Water Agency, Amador County Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, Jackson Valley Irrigation District, and Alpine, Amador, and Calaveras Counties.

This project represents Phase II of the UMRWAP. Phase I developed a watershed assessment methodology, compiled a database of existing information, and developed a stakeholder-supported monitoring and data collection plan needed for conducting a watershed assessment. Phase II develops the watershed assessment and a watershed management plan to increase local capacity for integrated, comprehensive watershed management. The intent of Phase II is to develop a better understanding of the water bodies in the watershed and to identify the factors that may threaten or impair water quality. Tasks included in this phase are:

- ✿ monitoring and other data collecting activities designed to fill critical data gaps in existing data on indicators of watershed health;
- ✿ assessing the Upper Mokelumne River watershed using stakeholder-supported watershed assessment methodology;
- ✿ developing a tool/model for assessing threats to drinking water supply;
- ✿ developing a watershed management plan; and
- ✿ conducting continuing stakeholder and community outreach.

The UMRWAP has led to improved interagency relationships and a better understanding of stakeholder interests. Ultimately, implementation of the actions identified in the watershed management plan will restore and protect a variety of beneficial uses. The plan will also provide technically defensible guidance for local, state, and federal decision-making through existing processes. In this way, the achievement of watershed improvement will not be dependent upon the availability of continued grant funding.



The UMRWAP process and resulting watershed management plan will be a template for watersheds throughout the state.

CONTACT INFORMATION

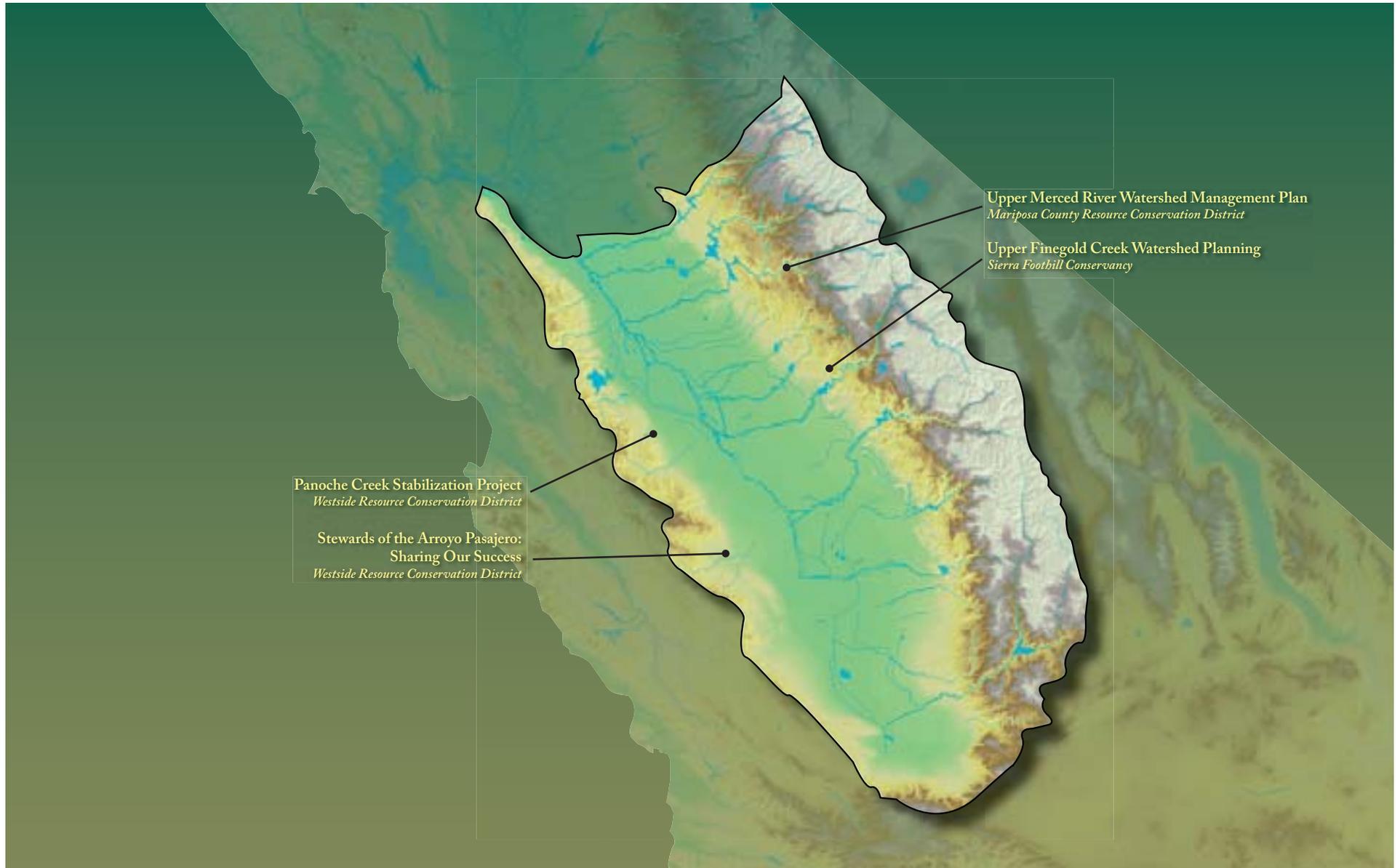
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PANOCHÉ CREEK STABILIZATION PROJECT

Westside Resource Conservation District



Low-flow crossing, panoramic view.

PURPOSE

Design a stable, permanent low-flow crossing at North Avenue and Panoche Creek

PROJECT GOALS

- ✦ Reduce sediment and contaminants
- ✦ Stabilize streambanks in the vicinity of the low-flow crossing

AWARD AMOUNT

\$200,000

WATERSHED

Panoche Creek and Silver Creek Watersheds

COUNTY

Fresno County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 20, State Assembly: 30, State Senate: 16

Benefits to the Bay-Delta System

The Panoche Creek and Silver Creek watersheds are located approximately 35 miles west of Fresno. The Water Quality Program Plan identifies the watersheds as the largest source of selenium-laden runoff to the San Joaquin River. Through stabilization of an earthen stream crossing, this project reduces contaminated sediment flow through the watershed, and ultimately in the San Joaquin River and Bay-Delta system. A reduction in contaminated runoff from westside San Joaquin River tributaries generally benefits wildlife habitats downstream. This locally led, collaborative project will educate the local community about watershed values and construct and monitor an innovatively designed stream crossing. Monitoring results will provide Caltrans, Fresno County Public Works, and other agencies with information to implement effective crossings in other areas of the San Joaquin Valley. Local landowners, residents, and businesses benefit directly by obtaining a stable crossing to reach their homes, businesses, and agricultural land.

PROJECT OVERVIEW

The Panoche Creek and Silver Creek watersheds are located in western Fresno County, approximately 35 miles west of Fresno. Panoche Creek and Silver Creek originate in the Coast Range and ultimately drain through the San Joaquin River to the Bay-Delta. Over the past 50 years, residents of the watershed have been subjected to frequent flooding that has caused extensive agricultural damage, erosion, and sediment transport in and beyond the watershed's boundaries. The constituents of the sediment include selenium, boron, salts, and other minerals that cause surface and subsurface water quality concerns.

This project creates a low-flow crossing over Panoche Creek at North Avenue through a cooperative and collaborative effort between local landowners and technical experts facilitated by the Panoche Creek–Silver Creek Coordinated Resource and Management Planning team (CRMP). The crossing, located approximately 4 miles downstream of Interstate 5 and 1.5 miles upstream of the California Aqueduct, is privately maintained. There are more than 30 low-income residents who must use this crossing to reach their homes. In addition, the crossing provides access to three major industrial/commercial businesses and to 1,000 acres of productive agricultural land. The current temporary earthen crossing is often washed out by storm events, contributing a significant amount of contaminated sediment to Panoche Creek. Stabilization of this crossing will dramatically decrease the erosion rate of this section of Panoche Creek and will decrease the volume of sediment reaching downstream agricultural lands, the City of Mendota, the San Joaquin River, and the Bay-Delta.

Design of the crossing is more technologically advanced than crossings that have been installed in the past. The improved design will address the problems attributable to the geology and hydrology in the western San Joaquin Valley. Installation and monitoring of this demonstration project will provide California Department of Transportation (Caltrans), Fresno County Public Works, and other agencies with information to implement effective creek crossings in other areas of the San Joaquin Valley. The CRMP is an open public process in which all information gathered by monitoring is circulated for public use. The results of this project will be made available to citizens and organizations throughout California via the CRMP website, which is hosted by the California Department of Water Resources Watershed Program.



Approaching the low-flow crossing.

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STEWARDS OF THE ARROYO PASAJERO: SHARING OUR SUCCESS

Westside Resource Conservation District



Domengine Creek meanders within Ragged Valley.

PURPOSE

Develop a watershed management plan for the Domengine watershed

PROJECT GOALS

- ✦ Involve local landowners and communities in watershed education programs
- ✦ Reduce sediment transport downstream and decrease runoff and erosion rates
- ✦ Implement best management practices and monitoring plans on local farms and ranches

AWARD AMOUNT

\$55,550

WATERSHED

Domengine Watershed

COUNTY

Fresno County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 20, State Assembly: 30, State Senate: 15

Benefits to the Bay-Delta System

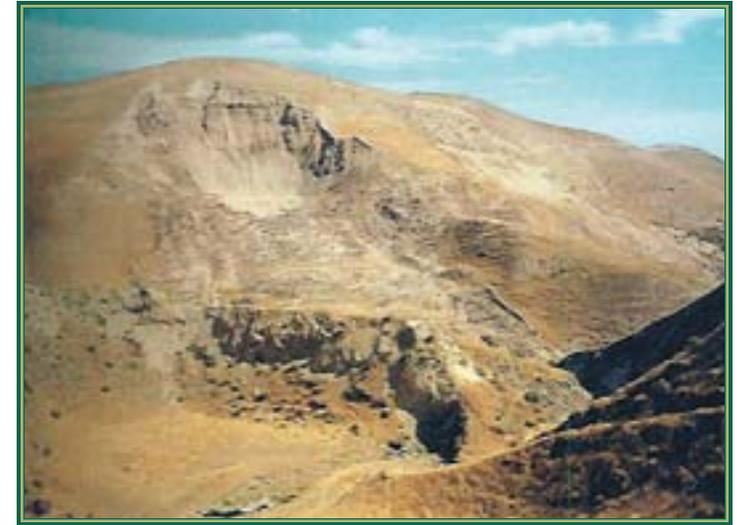
The Domengine watershed, located in the San Joaquin Valley, is substantially impaired. Runoff flooding during major storms causes problems at local drinking water treatment plants and adds sediment and selenium to the California Aqueduct. This project will markedly decrease inflow of sediments and pollutants into local water sources and the Aqueduct. Implementing best management practices, improving grazing management, and developing long-term planning for the watershed will benefit both local water supply treatment plants and water users in Southern California who receive water from the Aqueduct. Flood damage reduction, local rangeland improvements, and improved grazing conditions are additional benefits to the local community. Wider public benefits will come from improvements to the riparian corridors, reduction of excess erosion, and removal of nonnative invasive species.

PROJECT OVERVIEW

Located in the San Joaquin Valley, adjacent to the California Aqueduct and Interstate 5, the 142-square-mile Domengine watershed is substantially impaired. Heavy rainfall and natural erosion that has been accelerated by the decline of rangeland and lack of riparian vegetation have moved massive amounts of sediment to the valley floor. Runoff flooding during major storms causes problems at local drinking water treatment plants and adds sediment to the California Aqueduct. In 1997, a major storm washed out a bridge crossing at Arroyo Pasajero Creek and Interstate 5. The event killed motorists and rushed sediment and contaminants into the California Aqueduct. As a result, the Arroyo Pasajero Coordinated Resource Management and Planning Program (CRMP) was formed with the mission to improve erosion and sediment control through improved land management practices in the Arroyo Pasajero watershed. In 2001, landowners in the Domengine watershed, adjacent to the Arroyo Pasajero, asked to be included in the CRMP because the two watersheds share consistent goals and objectives. By coordinating their efforts, the landowners and the CRMP are maximizing their effect in the watershed.

In collaboration with the CRMP, the Domengine watershed landowners are preparing a regional watershed plan. The plan identifies best management practices for improving farm and ranch operations, such as better distribution of cattle to reduce grazing impacts on the watershed and better stream channel and bank protection to reduce erosion and flooding. The associated regional monitoring plan identifies protocols for training landowners, sampling, and data collecting methods that measure the effects of the implemented activities. Following the guidelines of the watershed plan, individual farm and ranch plans and associated individual monitoring plans are being developed with specific actions appropriate to each property. Activities in the plans include: installing improved water systems; fencing areas parallel to major drainages; stabilizing stream banks with native riparian plants, berms and matting; and removing invasive plants such as yellow starthistle and tamarisk.

The CRMP is offering annual workshops to continue educating local landowners on watershed monitoring practices such as GPS mapping, watershed assessment, and monitoring tools and protocols. Annual tours of completed projects are offered to the public to publicize improved watershed management practices.



Example of Ragged Valley mass wasting into Domengine Creek.

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Water quality monitoring training day on Upper Finegold Creek.

PURPOSE

Improve water quality and water quantity, and protect habitat in the Finegold Creek watershed

PROJECT GOALS

- ✦ Conduct a watershed assessment to identify resource problems that affect water quality and watershed health
- ✦ Develop a watershed protection plan
- ✦ Plan priority projects to implement the watershed protection plan
- ✦ Encourage watershed stewardship among local landowners

AWARD AMOUNT

\$109,388

WATERSHED

Finegold Creek Watershed

COUNTY

Madera County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 19, State Assembly: 25, State Senate: 14

Benefits to the Bay-Delta System

This project promotes watershed stewardship among local landowners by developing a watershed assessment and watershed management plan to identify priority projects that will improve the water quality, water quantity, and habitat protection in the Finegold Creek watershed. Finegold Creek is a major source of water for the San Joaquin River. Reducing erosion and pollutant levels in the Finegold Creek watershed through a community-based, collaborative process will directly benefit the landowners in the watershed. Local landowners will also benefit because of decreased fire threat and reduction of property loss attributable to erosion. This project improves water that flows into the San Joaquin River and benefits the users of this water. The project also will improve collaboration among agencies and stakeholders in the Finegold Creek watershed and educate landowners about best management practices to reduce soil erosion.

PROJECT OVERVIEW

Upper Finegold Creek comprises a major portion of the Millerton Area watershed and is a source of water for the San Joaquin River. The watershed encompasses 165,000 acres, most of which are under private ownership and zoned for agriculture. The Millerton Area Watershed Coalition, formed in 1998, is currently expanding to include a greater diversity of stakeholders working to better manage the watershed. A local steering committee, chaired by a local citizen, has been formed. The goal of the steering committee is to work with the local agencies, Native American representatives, and other stakeholders to develop a sense of stewardship in the watershed that will lead to a cooperative effort to improve its quality.

The soils in the watershed are of poor quality, and erosion that is causing degradation of water quality is occurring because of land-use activities, poorly constructed culverts, and runoff from 90 miles of paved roads. Additionally, fuel load in the watershed is extremely high, which creates the potential for fires and further erosion. This project is intended to reduce the potential for further watershed degradation by analyzing the Finegold Creek watershed, developing a management plan to identify stressors and other barriers to watershed health, and outlining an action plan and timetable for project implementation to improve water quality and quantity, and terrestrial and aquatic habitat protection. Identification of restoration projects that could be implemented by local contractors is expected to lead to an improvement in the local economy.



Performing dissolved oxygen (DO) analysis on Upper Finegold Creek.

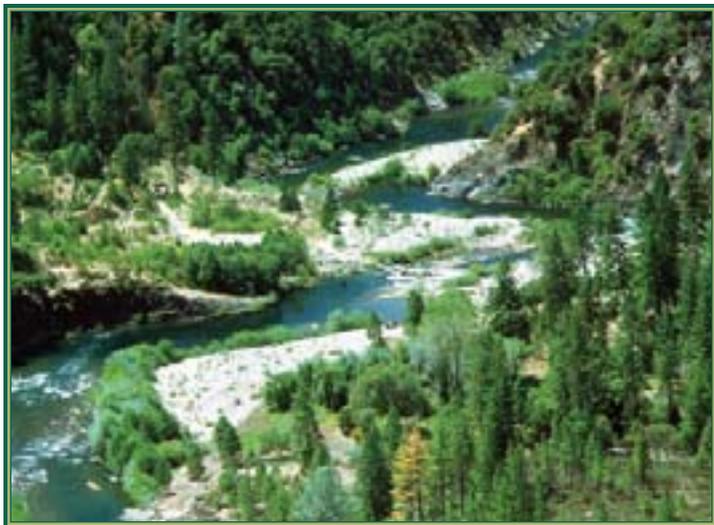
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UPPER MERCED RIVER WATERSHED MANAGEMENT PLAN

Mariposa County Resource Conservation District



The Upper Merced has been designated a Wild and Scenic River.

PURPOSE

Develop a management plan for the Upper Merced River watershed

PROJECT GOALS

- ✦ Create a framework for an Upper Merced River Watershed Plan
- ✦ Establish a formal structure for the Upper Merced River Watershed Council
- ✦ Develop monitoring and assessment protocols for the Upper Merced River

AWARD AMOUNT

\$199,825

WATERSHED

Upper Merced River Watershed

COUNTY

Mariposa County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 19, State Assembly: 25, State Senate: 12

Benefits to the Bay-Delta System

The Upper Merced River flows from its source above the Yosemite Valley, through the Sierra Nevada and the foothills to Lake McClure, and finally into the San Joaquin River and the Sacramento-San Joaquin Delta. It provides a permanent flow of high quality water into the Bay-Delta system. This project improves collaboration among agencies and stakeholders in the Upper Merced River watershed, and educates landowners about ways to reduce wildfires and control nonnative invasive species. Local landowners will benefit from improved watershed health and a reduced threat of wildfires. Implementation of this project will also benefit the Bay-Delta system by addressing nonnative plant species and reducing sedimentation that can follow large wildfires.

PROJECT OVERVIEW

The Upper Merced River watershed encompasses approximately 660,000 acres. The majority of the watershed is public land, including a large portion of Yosemite National Park. The Upper Merced River flows through the Yosemite Valley and is designated as a Wild and Scenic River. The river flows from the western slopes of the Sierra across the Central Valley to join the San Joaquin River, and then flows north to join the Delta near Antioch. The watershed is a key natural resource with significant recreation value.

In an effort to protect the valuable resources of the Upper Merced River watershed, the Mariposa County Resource Conservation District previously implemented Phase I of the watershed plan. Phase I initiated the watershed management planning process and formed a watershed council. This project funds Phase II, which creates a formal structure for the Upper Merced River Watershed Council, develops the framework for a long-range, watershed-wide management plan, and expands participation in the watershed planning process and in community-based education. Education efforts are designed to energize citizens to become stewards of the watershed and are focused on two major threats: wildfires and nonnative invasive species. This project also includes a water quality monitoring component that will establish a sound baseline data set and make the data publicly available. Restoration efforts will be aided by the coordination and expansion of baseline water quality monitoring.

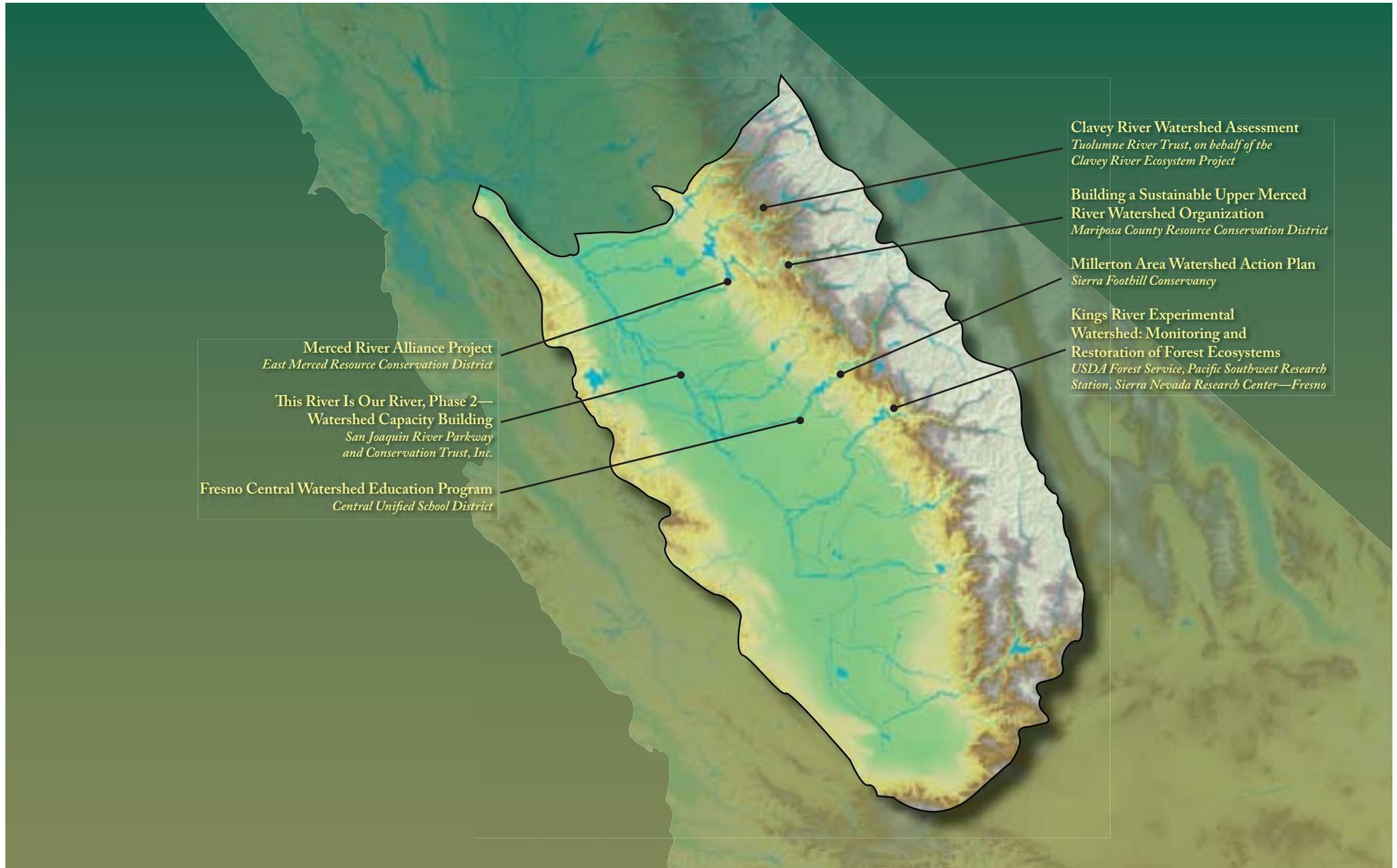


Volunteers learn about water quality monitoring protocols.

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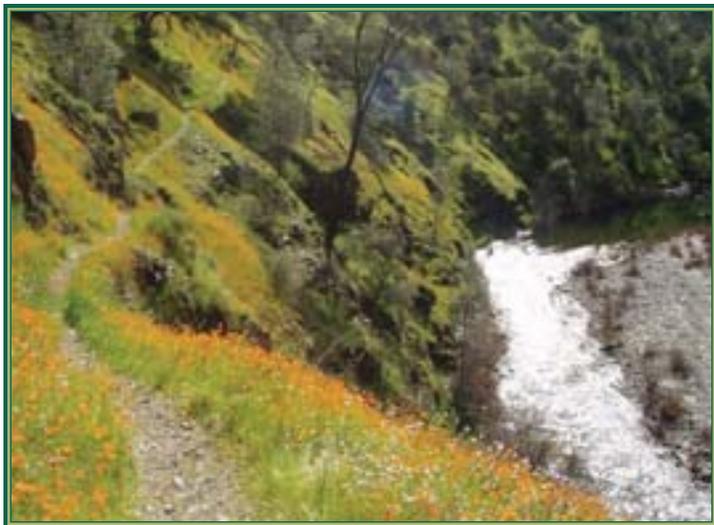
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BUILDING A SUSTAINABLE UPPER MERCED RIVER WATERSHED ORGANIZATION

Mariposa County Resource Conservation District



Mariposa County's economy relies heavily on visitors who come to the watershed to enjoy recreational opportunities, such as hiking along the Merced River.

AWARD AMOUNT

\$271,080

WATERSHED

Merced River Watershed

COUNTY

Mariposa County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 19, State Assembly: 25, State Senate: 14

PURPOSE

Build the sustainability of the Upper Merced River Watershed organization to better manage the cultural, scenic, and natural resources of the watershed

PROJECT GOALS

- ✦ Establish a watershed center to support outreach activities for visitors and residents
- ✦ Complete a scientific literature search for the Merced River watershed
- ✦ Continue yellow starthistle removal demonstration project
- ✦ Implement citizen water quality monitoring program
- ✦ Prioritize tasks that will lead to improved stewardship of the Upper Merced River watershed

Benefits to the Bay-Delta System

The Upper Merced River watershed is largely within Mariposa County in the central Sierra and encompasses 700,000 acres, including Yosemite National Park. Improving the sustainability of the Upper Merced Watershed organization will increase public awareness and understanding of watershed health issues; improve collaboration among local residents, government agencies, and visitors to the watershed; and ensure long-term support for the organization and the watershed. The priority activities of the stakeholders are to establish a watershed center, implement watershed monitoring and assessment protocols, improve scientific literature compilation and information sharing, and continue the removal of invasive yellow starthistle. Support of the Upper Merced River Watershed organization will benefit the visitors and stakeholders in the watershed by encouraging better watershed management practices to protect the scenic, cultural, and natural resources of the watershed.

PROJECT OVERVIEW

The Upper Merced River watershed is located largely within Mariposa County in the Central Sierra and encompasses 700,000 acres. Most of the land is managed by one of three federal agencies, each of which has its own management plans and resource practices. However, more than 100,000 acres are privately owned and used for widely dispersed residences, ranching, or logging. Mariposa County is sparsely populated and its economy depends on the three million tourists who visit the Yosemite National Park in the upper watershed each year. Mariposa County is a rural financial hardship county and its economic health is dependent on the health of the watershed. Visitors and residents must be educated in watershed processes and stewardship if their impact on the watershed is to be positive.

In an effort to extend capacity building, outreach, and education to watershed visitors and Merced River stakeholders, the Upper Merced River watershed (UMRW) organization is establishing a watershed center that will serve as an operations hub for the URMW organization and enhance its visibility and credibility. The center will provide public space for outreach and educational programs, volunteer workshops, and training programs.

Stakeholders in the watershed are focused on three priority projects that will be enhanced by the watershed center. The first priority is to continue the yellow starthistle removal demonstration project to remove the fast-growing nonnative invasive plant that is choking out native plants and habitat. A second priority is to monitor water quality. Volunteer citizen monitors “adopt” a monitoring site on the Merced River and tributaries and conduct quarterly water quality testing. This systematic monitoring will lead to a better understanding of UMRW watershed processes and expand the core of trained volunteer stewards. A third priority is to search for, compile, and share scientific literature about the watershed. The literature search addresses a key need identified by the stakeholders to share and coordinate data among agencies or stakeholder interests. A stakeholder committee is reviewing the scientific literature and identifying gaps in existing research. Stakeholders and agencies can then work together to fill the gaps.



Volunteer citizen monitors learn about water quality sampling.

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CLAVEY RIVER WATERSHED ASSESSMENT

Tuolumne River Trust, on behalf of the Clavey River Ecosystem Project



God's Bath, a Clavey River swimming hole, with rushing waters of spring flows.

PURPOSE

Develop a detailed watershed analysis for the Clavey River to provide the basis for long-term protection and management of the watershed

PROJECT GOALS

- ✧ Determine existing conditions in the watershed
- ✧ Define desired future condition of the watershed
- ✧ Identify and prioritize projects and management actions to move the watershed to the desired future condition
- ✧ Build community capacity to understand and participate in management of the Clavey

AWARD AMOUNT

\$774,927

WATERSHED

Clavey River Watershed

COUNTY

Tuolumne County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 19, State Assembly: 25, State Senate: 14

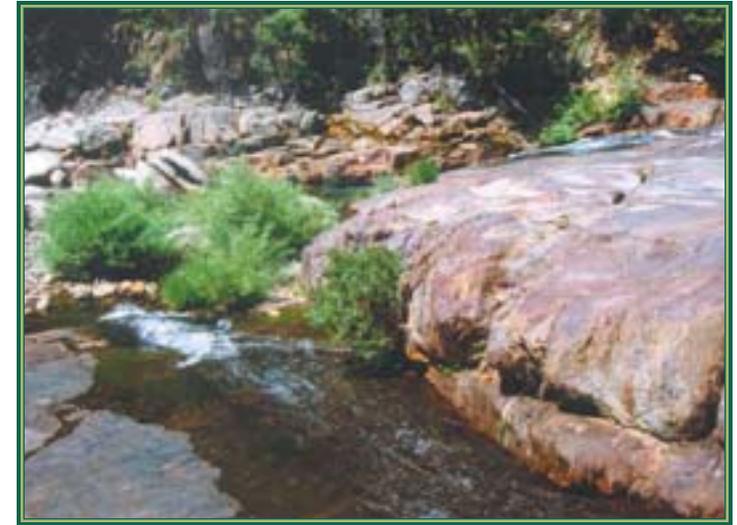
Benefits to the Bay-Delta System

The Clavey River is one of the longest remaining free-flowing rivers in the Sierra Nevada. It supports many terrestrial and aquatic plant and animal species, and is an important component of the regional water supply. It is tributary to the Tuolumne River, which is captured by Don Pedro Reservoir for agricultural and urban water supplies. The goal of the Clavey River Watershed Assessment project is to define existing conditions and build community capacity for better watershed management. Primary benefits of this project will be to the Stanislaus National Forest and the public who use the forest for recreation. Recreational and water users of the Tuolumne River and Don Pedro Reservoir will also benefit from this project. Overall, the watershed analysis will increase knowledge about the Clavey River and recommend management actions that will be of use to management efforts for all Sierra streams. Recommended actions in the watershed analysis will lead to improved water quality, healthier fish populations, and improved ecosystem conditions within the Bay-Delta system.

PROJECT OVERVIEW

The Clavey River, a tributary of the Tuolumne River, is located in Tuolumne County northwest of Yosemite National Park. It is one of the longest remaining free-flowing rivers in the Sierra Nevada. The Stanislaus National Forest manages 92% of the watershed, and 8% is privately owned. The Clavey River watershed supports many terrestrial and aquatic plant and animal species, including a unique variety of rainbow trout and nearly 8,000 acres of old-growth forest. However, the watershed is threatened by the multiple demands on its resources from local communities and the growing urban populations of the Central Valley and Bay Area. Poor roads, seasonal grazing, logging practices, recreation, and the incursion of nonnative noxious weeds jeopardize the health of the Clavey watershed. The Clavey River Watershed Analysis will document the Clavey's resource values so the values can be better protected and restored. The analysis will help build community understanding and participation in managing the watershed and has the potential to be used as a reference for similar stream restorations in the Bay-Delta system.

A group of local stakeholders, The Clavey River Ecosystem Project (CREP), initiated the watershed analysis. They continue to play an important role in overseeing and participating in the project and informing and educating other stakeholders and interested parties. CREP is working with a professional facilitator to guide the project to completion. The watershed analysis consists of three key sections: desired conditions, existing conditions, and prioritized recommended actions and projects. A Science Review Team will provide peer review and technical guidance to the watershed analysis, including assistance in refining data collection, assessment, and adaptive management. Throughout the development of the watershed analysis, stakeholders will be involved through interviews, focus groups, public meetings and workshops, and an interactive website. The anticipated result is a watershed analysis with broad support in the community and a community with greater capacity to manage its watershed.



The Clavey River in July.

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FRESNO CENTRAL WATERSHED EDUCATION PROGRAM

Central Unified School District



Central Unified School District students monitor San Joaquin River water quality as members of a Clean Water Team.

PURPOSE

Implement a place-based environmental education program that enhances student learning and develops responsible stewards in the San Joaquin River watershed

PROJECT GOALS

- ✦ Train teachers in the Watershed Education Program
- ✦ Involve students in watershed restoration and monitoring projects
- ✦ Develop and implement community outreach program

AWARD AMOUNT

\$364,497

WATERSHED

San Joaquin River Watershed

COUNTY

Fresno County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 19, State Assembly: 29 and 30,

State Senate: 14

Benefits to the Bay-Delta System

The Central Unified School District is located in a rapidly growing area of Fresno in the heart of the San Joaquin Valley. The Fresno-Central Watershed Education Program (WEP) is educating thousands of students to better understand their environment and watershed, and fostering their commitment to stewardship at a young age. Their restoration projects along the river and tributaries provide learning experiences as well as lasting environmental improvements. In addition to the direct benefits to the school district, employees, and students, the education curriculum provides benefits to the Fresno community through improvements in watershed understanding among local residents and organizations. WEP is sharing its resources and experience through collaboration with educational, environmental, community, and government organizations, providing public benefits both locally and statewide.

PROJECT OVERVIEW

The Central Unified School District is located in Fresno in the heart of the San Joaquin Valley. For several years, significant resources have been directed to restoration of the San Joaquin River. Through the Fresno-Central Watershed Education Program (WEP), students and teachers are learning about the significance of the San Joaquin River and its relationship to the Bay-Delta system, and participating in restoration projects on the river and its tributaries. The rapid growth of the district has meant that more schools and teachers want to participate in WEP than can be supported.

This project is providing WEP with the resources to reach more students and teachers, and to fully integrate environmental education into the classroom curriculum. Nearly 90 additional teachers are training in the WEP curriculum and implementing the program in the classroom. An additional 3,000 students are participating in environmental education. A lending library that includes tools and equipment for restoration projects has been established. In collaboration with several community partners, students are applying their classroom lessons in hands-on restoration and monitoring activities on the river and its tributaries. These activities include planting native vegetation and trees; removing nonnative invasive plants; installing irrigation systems; removing trash, tires, and debris for disposal; and maintaining and monitoring existing restoration areas. Students are also performing monthly water quality tests and bioassessments of macroinvertebrates on the San Joaquin River. Selected restoration projects are consistent with the San Joaquin River Parkway Master Plan.

Students are taking their learning to the community. In collaboration with local watershed organizations, students are developing presentations to share within and outside of the San Joaquin River watershed. They are developing a website, informational brochure, and monthly electronic newsletter to educate and involve the community in the watershed.



Working with community partners and government agencies, Central Unified School District students assist in environmental restoration projects.

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KINGS RIVER EXPERIMENTAL WATERSHED: MONITORING AND RESTORATION OF FOREST ECOSYSTEMS

USDA Forest Service, Pacific Southwest Research Station, Sierra Nevada Research Center—Fresno



Sampling stream invertebrates, which are good indicators of stream condition.

PURPOSE

Collect valuable and pertinent data for Sierra Nevada headwater streams and their associated watersheds needed to assess ecosystem health and the effects of management, and demonstrate how this information may be applicable to other local watersheds

PROJECT GOALS

- ✦ Quantify the variability in characteristics of headwater stream ecosystems and their associated watersheds
- ✦ Evaluate the effects of forest management and fire and fuel reduction treatments on the watersheds' riparian vegetation and stream chemical, physical, and biological conditions
- ✦ Make data and methods accessible to the public for analysis and use in other similar watersheds

AWARD AMOUNT

\$661,000

WATERSHED

Upper Kings River Watershed

COUNTY

Fresno County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 21, State Assembly: 29, State Senate: 14

Benefits to the Bay-Delta System

The Kings River drains the western slope of the Sierra Nevada and is the main drainage basin between the San Joaquin and Kaweah Rivers in the San Joaquin Valley. This research project makes a significant contribution to the understanding of the small Sierra streams that contribute to the Bay-Delta system and the forest management practices required to keep such watersheds healthy. The nature of the research makes it applicable to other watersheds throughout the Sierra Nevada with similar fire and ecosystem management concerns. The project contributes to the objectives of the CALFED Water Quality Program by increasing the database and understanding of source watersheds to the Bay-Delta. The Kings River Experimental Watershed project combines industry, government agencies, universities, and community organizations in its research study, thus promoting collaboration among many local watershed interests.

PROJECT OVERVIEW

The Kings River drains the western slope of the Sierra Nevada and is the main drainage basin between the San Joaquin and Kaweah Rivers in the San Joaquin Valley. Although 60% of California's water originates in small streams in the Sierra Nevada, very little is known about how these streams are affected by management activities at the source. These stream systems are considered the most altered and impaired habitats of the entire Sierra, yet quantitative information is not available to define appropriate management for them.

The Kings River Experimental Watershed project (KREW) is a long-term study to collect, quantify and evaluate information about Sierran headwater streams and their associated watersheds. Two sites typical of the southern Sierra Nevada and forested headwaters, which contribute substantially to the Bay-Delta system, were selected for study, Providence Creek and Bull Creek. KREW examines the physical, chemical, and biological attributes of the atmospheric, terrestrial, and aquatic systems of the project's eight watersheds. The study addresses all areas of the CALFED Watershed Program: ecological, physical, social (management methods and effects), and emergent (effects on watershed processes from wildlife and land use). It also incorporates CALFED's suggested monitoring parameters. Outreach to local stakeholder groups and educational entities is integrated throughout the study, both to inform the community and to elicit input and comments.

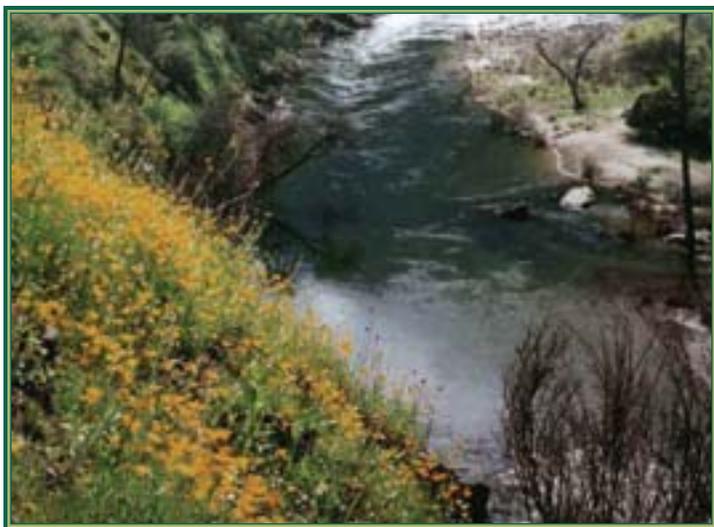
The study will fill a significant data gap and serve as a model for other watersheds, leading to development of better land use and fire management strategies and management practices. KREW is implemented and jointly funded by the Pacific Southwest Research Station of the USDA Forest Service. It is located on the Sierra National Forest and Southern California Edison lands.



Each experimental stream has a large and small flume to accurately measure streamflow.

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The Upper Merced River canyon below El Portal.

AWARD AMOUNT

\$2,299,730

WATERSHED

Merced River Watershed

COUNTY

Merced County

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 18 and 19, State Assembly: 14 and 25,
 State Senate: 12 and 14

PURPOSE

Create an alliance under which stakeholders representing the upper and lower reaches of the Merced River watershed can collaboratively address watershed-wide issues

PROJECT GOALS

- ✦ Establish baseline populations of birds, fish, and macroinvertebrates in the Merced River
- ✦ Create a long-term sustainable alliance among stakeholders, agencies, communities, and students in the upper and lower reaches of the Merced River
- ✦ Foster the perception of the watershed as a single unit with unique reaches
- ✦ Develop and prioritize collaborative projects and leverage funding opportunities
- ✦ Promote acceptance of water quality monitoring in the lower reach
- ✦ Promote watershed management and stewardship activities among local communities and schools in both reaches

Benefits to the Bay-Delta System

The Merced River is a tributary to the San Joaquin River, and is a major freshwater contributor to the Delta. The Merced River Alliance Project provides a vehicle for stakeholder groups in the upper and lower reaches of the Merced River watershed to work together to manage their shared resource and produce mutual management benefits. Establishing this innovative watershed partnership leverages stakeholder stewardship and management efforts to more effectively plan, implement, and manage on behalf of the entire Merced River watershed community. Restoration plans resulting from this project will provide added value to affected landowners and to wildlife habitat in the area. In addition, this project develops important data of transferable value to neighboring watersheds. The river-wide management action recommendations will provide a significant opportunity to improve the effectiveness of collaborative, community-based watershed management in general, with resulting public and local government returns. The data gathered through the baseline assessment will be valuable for several state and federal programs.

PROJECT OVERVIEW

The Merced River drains the Merced River watershed and originates in Yosemite National Park. It flows southwest through the Sierra Nevada before joining the San Joaquin River in the Central Valley, ultimately reaching the Bay-Delta. The New Exchequer Dam bisects the Merced River into upper and lower reaches. Watershed functions and values in both reaches have changed because of several factors, including water storage and diversion, land use conversion, exotic plant and animal species, mining, non-point source pollution, riverbank alterations, discharge from sewage treatment plants, and recreational uses. Multiple restoration and management actions are planned and underway in both reaches of the Merced River. However, political jurisdiction lines, differing terrain and land use, and the dam have hindered local ability to recognize the entire basin as a single unit.

The Merced River Alliance Project joins the two independent watershed management efforts for the upper and lower reaches of the Merced River by creating an umbrella under which the East Merced Resource Conservation District and Merced River stakeholders (representing the lower reach of the watershed) and the Mariposa County Resource Conservation District and the Upper Merced River Watershed Council (representing the upper reach) can address watershed-wide issues collaboratively, while allowing the two groups to continue work in their own reaches.

This project addresses several key issues identified for the Merced River watershed: a) limited coordination between agencies and watershed groups working in the lower and upper reaches of the watershed; b) a lack of baseline biological data in both reaches upon which to base management decisions, project selection, and project prioritization, and c) a lack of watershed issue awareness in local communities, schools, and government, along with significant stakeholder resistance to water quality monitoring in the lower reach.

This project is the first phase of a unified comprehensive local effort to enhance the Merced River watershed, teach residents and others about the watershed, and attract involved support for future projects. The main thrust of the project is to develop a baseline inventory of watershed conditions that will allow all stakeholders—including agencies—to work from a single source of scientific data. The result will be more connected and interrelated decisions and actions that will enhance the entire watershed. This community pool of information will form the basis for gauging performance and for adjusting management for the benefit of the entire system.



Bioassessment training for local residents in the lower reach of the Merced River.

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MILLERTON AREA WATERSHED ACTION PLAN

Sierra Foothill Conservancy



Millerton Lake area of the Upper San Joaquin River surrounded by the distinctive Table Mountains.

PURPOSE

Conduct an in-depth assessment and develop a watershed protection action plan of the Millerton Area watershed

PROJECT GOALS

- ✦ Coordinate and train volunteers to monitor water quality and to conduct field surveys
- ✦ Conduct a watershed assessment to be used as a basis for developing a watershed protection plan
- ✦ Develop a watershed protection action plan that identifies stressors and other barriers to watershed health
- ✦ Outline an action plan and timetable for project implementation to improve water quality and quantity and to protect terrestrial and aquatic habitat
- ✦ Build the capacity of the Millerton Area Watershed Coalition

AWARD AMOUNT

\$200,000

WATERSHED

Millerton Area Watershed

COUNTY

Fresno and Madera Counties

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 19 and 21, State Assembly: 25 and 29,
State Senate: 14

Benefits to the Bay-Delta System

The Millerton Area watershed is an significant source of water for the San Joaquin River. The Millerton Area Watershed Coalition's development of a watershed action plan is an important step toward building the capacity of local communities to assess and manage their watersheds. The project includes numerous activities such as funding locally led watershed monitoring, assisting local watershed groups in addressing common issues, and ensuring effective communication and implementation among local, state, and federal government agencies and stakeholder groups. Effective planning will lead to watershed stewardship, maintenance, and restoration. Area residents will benefit directly from improved water quality, water supply, and ecosystem and habitat values, as will users of water from the San Joaquin River, including citizens, stakeholders, and tribal organizations.

PROJECT OVERVIEW

The Millerton Area watershed consists of approximately 148,000 acres on both sides of the San Joaquin River between Friant Dam and Kerckhoff Dam in Fresno and Madera Counties. In 2001, the Sierra Foothill Conservancy facilitated the creation of the Millerton Area Watershed Coalition (MAWC), a community-based watershed stakeholder group. All landowners in the watershed have been invited to participate in a multi-phased process to develop a watershed protection action plan. Phase I and Phase II have been completed or are in progress. The Millerton Area Watershed Action Plan represents Phase III of the process.

The overall purpose of this project is to conduct an in-depth baseline study of creeks that make up the watershed and use collected data and existing literature and research to develop a watershed assessment that will be the basis for developing a comprehensive watershed protection action plan.

The purpose of the plan is to clearly identify specific problems and threats to watershed health and to recommend actions for protection, restoration, and ongoing management of the watershed. It will include detailed information about watershed conditions, urgent needs, and major areas of concern and will recommend restoration projects and other measures needed to protect the watershed. High priority implementation projects will be identified collaboratively by stakeholders.



The Millerton Lake area provides many recreation opportunities.

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THIS RIVER IS OUR RIVER, PHASE 2—WATERSHED CAPACITY BUILDING

San Joaquin River Parkway and Conservation Trust, Inc.



San Joaquin River near Ball Ranch.

PURPOSE

Increase public awareness of the health of the San Joaquin River, and increase involvement in local restoration efforts

PROJECT GOALS

- ✿ Assess current awareness of San Joaquin River restoration planning efforts
- ✿ Increase the number of students and community members familiar with the conditions of and restoration plans for the nearest reach of the San Joaquin River or tributary in their area

AWARD AMOUNT

\$300,000

WATERSHED

San Joaquin River Watershed

COUNTY

Calaveras, Contra Costa, Fresno, Madera, Mariposa, Merced, San Joaquin, Stanislaus, and Tuolumne Counties

CALFED REGION

San Joaquin Valley Region

LEGISLATIVE DISTRICTS

US Congress: 10, 11, 18, 19, 20, and 21; State Assembly: 15, 17, 25, 26, 29, and 31; State Senate: 5, 12, 14, and 16

Benefits to the Bay-Delta System

The public opinion research conducted in This River Is Our River, Phase 2 will provide new information about what residents know about the San Joaquin River Basin and the various restoration planning efforts underway. The research also will determine how the public prefers to receive information about San Joaquin River issues. This information will be of value to local governments and organizations, the CALFED Bay-Delta Program, and other state and federal agencies. Much of the information will be transferable to the Sacramento River Basin and will be helpful in conducting education programs about the Delta and its tributaries. Implementing effective outreach and education projects will benefit the health of the local and regional ecosystems by engaging the community in important work already in progress.

PROJECT OVERVIEW

This River Is Our River, Phase 2 (TRIOR2) builds on the previous work of Phase 1 to expand public support for a variety of restoration planning efforts on the San Joaquin River and its major tributaries. There are currently numerous restoration planning efforts on the San Joaquin River and its major tributaries, ranging from studies to reduce dissolved oxygen in the Stockton Deep Water Ship Channel to restoration plans developed out of the settlement negotiations of *Natural Resources Defense Council v. Rogers* (USBR/FWUA). Groups also have developed reach-specific restoration plans on the major tributaries of the San Joaquin River. Broad-based public support will be necessary for funding and construction of these many planned projects.

Phase 1 of this project used surveys to gauge public knowledge about issues related to the San Joaquin River in Fresno County and Madera County, and a media program to increase the awareness within the two counties. TRIOR2 will continue to use public opinion research, but will expand its survey area from two counties to nine. The results of the surveys will help direct decisions on implementing effective outreach and community education projects. The goal is to develop an effective campaign that successfully educates a large community about San Joaquin River issues and the restoration planning efforts currently underway by various stakeholder groups.

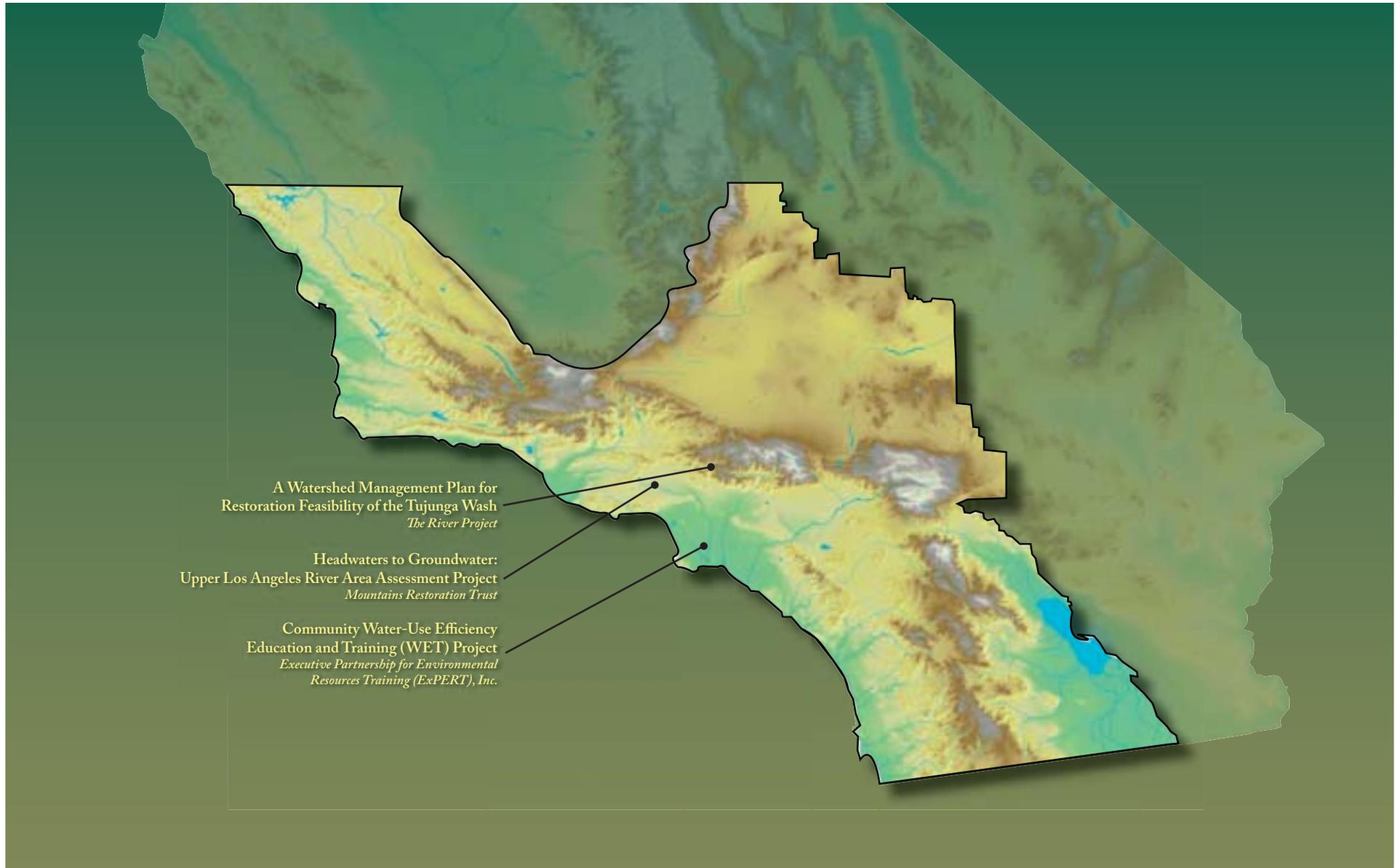


San Joaquin River from Ledger Island.

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A Watershed Management Plan for Restoration Feasibility of the Tujunga Wash <i>The River Project</i>	136
Community Water-Use Efficiency Education and Training (WET) Project <i>Executive Partnership for Environmental Resources Training (ExPERT), Inc</i>	138
Headwaters to Groundwater: Upper Los Angeles River Area Assessment Project <i>Mountains Restoration Trust</i>	140





Alluvial fan scrub in Big Tujunga Wash.

PURPOSE

Develop a stakeholder-driven comprehensive watershed management plan to improve water management for beneficial uses and to restore ecological health

PROJECT GOALS

- ✦ Develop a watershed assessment and watershed management plan to reduce dependence on imported water supplies through improved water quality and ecosystem health
- ✦ Implement a broad-based watershed community education and outreach program
- ✦ Improve collaboration among agencies and organizations
- ✦ Improve stakeholder capacity to be fully involved in implementing watershed management

AWARD AMOUNT

\$650,000

WATERSHED

Los Angeles River Watershed

COUNTY

Los Angeles County

CALFED REGION

Southern California Region

LEGISLATIVE DISTRICTS

US Congress: 26, 27, and 29; State Assembly: 38, 39, 42, and 43; State Senate: 17, 20, and 23

Benefits to the Bay-Delta System

The Tujunga Wash watershed is located in the Los Angeles area, a region that imports large amounts of Bay-Delta water and will benefit from improved local water supply. This project develops a watershed management plan intended to reduce water supply demand from the Bay-Delta system through the capture and conservation of an annual average of up to 5,000 acre-feet of stormwater in the Tujunga Wash watershed. This project also quantifies local water quality improvements by demonstrating the potential to eliminate pollutant loading from runoff to the Los Angeles River. The project's outreach and education component enables local citizens to participate directly in development of the plan and in making informed decisions for enhancing water quality, water supply, and habitat. When complete, the watershed management plan may act as a template for regional implementation of similar efforts that could produce a large cumulative reduction in dependence on Bay-Delta water supplies.

PROJECT OVERVIEW

The Tujunga Wash is the largest subwatershed of the upper Los Angeles River watershed, located in the northeast San Fernando Valley. The 225-square-mile Tujunga Wash watershed comprises remote open space areas of the Angeles National Forest and highly urbanized lands of the City of Los Angeles. Although Los Angeles averages only 15 inches of annual rainfall, the upper Los Angeles River watershed receives some of the most concentrated rainfall in the United States (as much as 26 inches in 24 hours). Under current conditions, as much as 80% of stormwater from the Los Angeles River watershed is discharged into the ocean, carrying contaminant loads from urbanized land use. The area's largely impervious, heavily urbanized lower watershed is located above the San Fernando groundwater basin, which is not recharging at its full capacity. The depleted basin currently provides 15% of local drinking water supplies to Los Angeles. The Tujunga Wash provides as much as 20% of the total flow of the Los Angeles River, and 100% of the water to the San Fernando groundwater basin. The Tujunga Wash watershed provides significant opportunities to maximize recharge, optimize reuse, improve water quality, and reduce reliance on imported water from the Bay-Delta system.

This project develops a comprehensive Watershed Management Plan for the Tujunga Wash to restore ecological health and improve water management for beneficial uses in the watershed. The plan identifies multiple benefits for the watershed ranging from enhanced regional water supply and quality to restoration of Tujunga Wash.

An ongoing education and outreach program is generating stakeholder interest in participating in the development of the watershed management plan. The project Planning Team, Stakeholder Steering Committee and Technical Advisory Committee are identifying goals and objectives for the watershed, compiling a GIS inventory of existing data, developing a watershed assessment, and identifying criteria to evaluate the ongoing success of the plan. Several interconnected models will be developed to assess hydrologic conditions and evaluate the potential benefits of proposed alternatives. When complete, the plan will identify actions, programs, and projects to improve the healthy functioning of the watershed; guide agencies and stakeholders in implementing the plan; and recommend project implementation priorities for the next 20 years.



Tujunga Wash in the lower watershed.

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COMMUNITY WATER-USE EFFICIENCY EDUCATION AND TRAINING (WET) PROJECT

Executive Partnership for Environmental Resources Training (ExPERT), Inc.



Project participants review system water audit and sonic leak detection data.

PURPOSE

Educate local and regional community members and stakeholders on multiple watershed issues while promoting water-use efficiency and water conservation

PROJECT GOALS

- ✦ Build community watershed management capacity
- ✦ Identify and pursue opportunities to achieve environmental justice objectives
- ✦ Develop and deliver a comprehensive watershed awareness education and outreach campaign
- ✦ Recruit and train residents of the watershed to provide sustainable leadership on issues of resource management
- ✦ Reduce demands on water supply from the Bay-Delta

AWARD AMOUNT

\$754,600

WATERSHED

Compton Creek Watershed

COUNTY

Los Angeles County

CALFED REGION

Southern California Region

LEGISLATIVE DISTRICTS

US Congress: 35 and 37; State Assembly: 51, 52, 53, and 55;
State Senate: 25, 27, and 28

Benefits to the Bay-Delta System

The WET project focuses on raising awareness of environmental justice, watershed, and water-use efficiency issues in the Compton Creek watershed, a low-income, minority neighborhood of Los Angeles. This project addresses environmental justice goals of the CALFED Program by empowering an underprivileged community to take action toward improving its environment by facilitating the formation of sustainable community groups. Implementation of water conservation and reuse measures is a significant benefit in Southern California, a region that imports large amounts of Bay-Delta water. This project addresses water-use efficiency and water quality concerns by educating citizens about and implementing several water-use improvements, with resulting benefits both locally and to other users of limited water from the Delta. Through this project, 27,701,500 gallons of potable water per year will be conserved, thus reducing the amount of water exported from the Bay-Delta.

PROJECT OVERVIEW

The Compton Creek watershed is a 42-mile-long tributary to the Los Angeles River located in the highly urbanized, low-income Southern California communities of Compton, Lynwood, South Gate, Watts/Willowbrook, and Harbor Gateway. Compton Creek is a highly polluted stream, and is listed in the *Clean Water Act 303(d)* list of impaired waters for trash, copper, lead, pH and coliform bacteria. Local residents rely on water imported from the Bay-Delta system by the Metropolitan Water District for their municipal needs.

The Community Water-Use Efficiency Education and Training (WET) Project seeks to increase local learning and awareness across multiple watershed issues, coordinate collaboration at the local and regional levels, and assist residents and businesses to develop and implement local watershed management actions. Integral to this project is an extensive outreach program that broadens the community's understanding of how the ecological health of their watershed affects the quality of their lives. This outreach program fosters substantive discussion of water resources management and environmental justice issues, and increases the level of community actions to change patterns of water use. Recruitment and training of local "community watershed ambassadors" ensures sustainable leadership within the community on issues related to the management of watershed resources for the long term.

The WET project provides several measures for eliminating unnecessary water loss with simple implementations. The measures include conducting 200 residential water-use surveys, 200 residential plumbing retrofits, 1,000 residential or small commercial meter reads/retrofits, and 2,000 ultra low flush toilet retrofits, as well as performing leak detection on 50–70 miles of main. The WET project anticipates a total potable water savings of more than 27 million gallons per year.



Dismantled cast-off toilets from residential retrofits are recycled for roadbed construction to reduce landfill waste.

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A view of the urbanized portion of the Los Angeles River watershed from the Santa Susana Hills.

PURPOSE

Conduct research to determine an effective means to increase groundwater recharge and develop an assessment that will quantify potential reduction in water demand from the Bay-Delta system

PROJECT GOALS

- ✦ Provide information to watershed agencies and groups on how to decrease dependency on Delta-derived water by supplementing groundwater
- ✦ Protect existing infiltration areas to increase recharge of high quality native water
- ✦ Raise local and regional awareness of the importance of high quality native water recharge to groundwater basins
- ✦ Encourage jurisdictional agencies, local stakeholders, and community groups to incorporate the findings of the research into watershed planning, land use policy, and community outreach

AWARD AMOUNT

\$399,650

WATERSHED

Los Angeles River Watershed

COUNTY

Los Angeles County

CALFED REGION

Southern California Region

LEGISLATIVE DISTRICTS

US Congress: 30, State Assembly: 41, State Senate: 23

Benefits to the Bay-Delta System

Headwaters to Groundwater is a research project that assesses the potential for developing a dependable local water supply system in the Upper Los Angeles River watershed that can reduce the dependency on water imported from the Bay-Delta system. Increasing groundwater recharge with high quality native water reduces reliance on the entire Bay-Delta system to supply the water needs of Los Angeles River watershed residents. The decreased dependence on Delta-derived water assists in protecting the beneficial uses of the Bay-Delta system and meets the CALFED objectives of ecosystem quality and water supply reliability. Research derived from this project will encourage jurisdictional agencies, local stakeholders, and community groups to refine existing plans and incorporate the findings into watershed planning, land use policy, and community outreach. This project has the potential to be replicated in other watersheds and stands to provide a large cumulative benefit to the Bay-Delta system.

PROJECT OVERVIEW

The San Fernando Valley groundwater basin, a source of drinking water for more than 600,000 residents of Los Angeles, Glendale, and Burbank, is threatened by dropping water levels, pollution, and recharge areas that have been replaced by urban development. Bay-Delta water is imported to mitigate the water supply needs compounded by these issues.

The geographical area covered by this project comprises approximately 33,000 acres in the western end of the Upper Los Angeles River area, including the undeveloped sections of the Santa Susana Mountains, Simi Hills, and Santa Monica Mountains. This focus area has not been covered in any planning or assessment efforts to date, as emphasis has been on the main channel of the Los Angeles River and the Sun Valley subwatershed. This project identifies areas that currently recharge quality native water to the local water source and provides opportunities to increase infiltration of unimpaired water from an undeveloped area to the local water source. The project integrates science-based data into the existing watershed plans of jurisdictional agencies and local watershed groups. The project will raise local awareness of water management issues and lead to better-informed watershed stewardship. This research will assist in the management of the watershed as a whole by fostering an understanding of the role natural lands play in the health of local water supplies.

A research advisory committee will ensure that the results of this project are based on sound science and can be replicated in other watersheds. The prime task of the project is to conduct a recharge suitability analysis in order to determine critical areas in need of protection and enhancement. A watershed assessment will include an analysis for contaminants. Water quality is monitored to determine the health of streams and whether the streams contribute pollutants to groundwater and the Los Angeles River. Biotic surveys are conducted to avoid any negative impacts on high quality habitat. Following the analysis, recommendations will be made and circulated for potential incorporation into existing and future planning efforts.



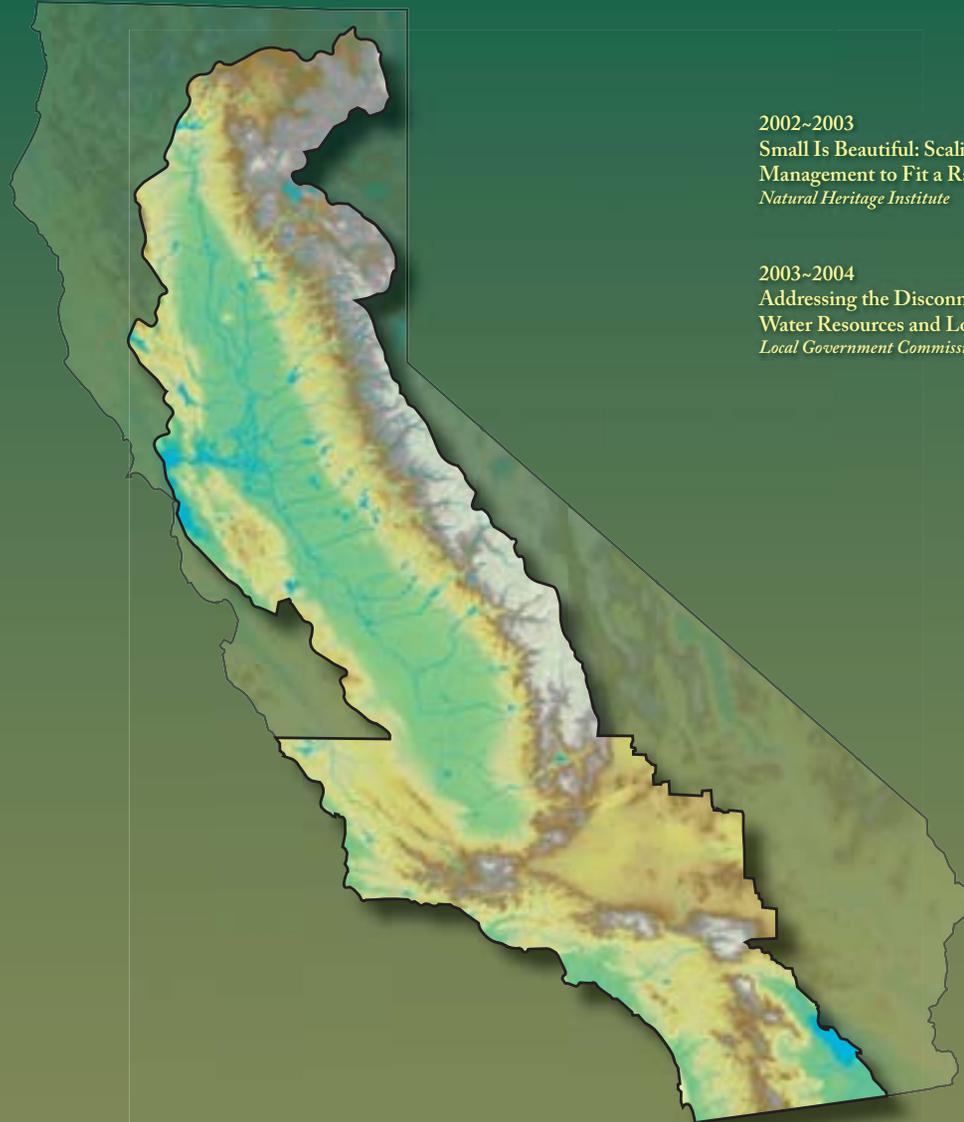
Undeveloped open space in the Los Angeles River watershed.

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Water Resources and Local Land Use Decisions
Local Government Commission



Yuba River (photograph by Alan Banfield).

PURPOSE

Tailor the concept of adaptive management to support small-scale restoration and watershed management efforts

PROJECT GOALS

- ✦ Identify and develop pilot projects in several communities and assist in the application of adaptive management to restoration projects
- ✦ Effectively apply adaptive management to small-scale systems to generate meaningful and transferable information about river function and restoration
- ✦ Develop and distribute a primer for applying adaptive management in smaller-scale restoration projects

AWARD AMOUNT

\$183,500

WATERSHED

Applicable to all watersheds in the CALFED solution area

COUNTY

Applicable to all counties in the CALFED solution area

CALFED REGION

Program-wide

LEGISLATIVE DISTRICTS

Applicable to all legislative districts in the CALFED solution area

Benefits to the Bay-Delta System

Implementing an effective adaptive management plan is essential for projects that aim to optimize water quality and improve aquatic and terrestrial habitats. The Natural Heritage Institute is working with other organizations, including the College of Natural Resources at the University of California, Berkeley, to provide adaptive management expertise for small projects. Project activities help communities identify key ecological processes in their watershed and manage more effectively to restore those processes. Small Is Beautiful meets an environmental justice goal by assisting small urban and rural watersheds that have financial hardships with developing adaptive management plans for their riverine and restoration projects. This project benefits the Bay-Delta system by helping smaller projects meet their restoration and management goals, and improving the health of the individual watersheds and the Bay-Delta system as a whole.

PROJECT OVERVIEW

Adaptive management is a resource management strategy based on the assumption that ecosystems are highly variable systems with dynamic and difficult-to-predict responses to management activities. In a world of insufficient information about whole systems, adaptive management involves monitoring the results of management efforts and adjusting activities as needed. In the cases where adaptive management is practiced, lessons are being learned about how best to apply this new approach.

A significant amount of restoration work is being undertaken on a small watershed or sub-basin scale. However, examples of how to apply adaptive management are derived from large-scale ecosystem restoration efforts implemented by teams of scientists and managers with relatively large budgets. There is much to be learned from applying adaptive management to small-scale systems with limited institutional capacity and financial resources. The project will produce and use a new model of adaptive management that recognizes these constraints. The project will develop a primer, "Applying Adaptive Management in Small-Scale Restoration Projects," to present the knowledge gained by implementing adaptive management in three to five smaller-scale experiments. This information will be publicized and widely distributed.

The Small Is Beautiful project is designed to directly address the limitations or gaps in knowledge regarding the application of adaptive management to small-scale restoration initiatives, by initially working with three to five small pilot projects. Expected outcomes include:

- ✧ increasing the number of CALFED-supported projects that produce significant direct scientific connections between implementation and physical effects in the watershed;
- ✧ increasing community involvement in the management of local resources;
- ✧ increasing the likelihood that projects meet their management goals;
- ✧ increasing the level of confidence in scientific data generated through citizen-based monitoring in the adaptive management process;
- ✧ reducing the cost associated with long-term project management and adaptive management;
- ✧ increasing coordination and learning across restoration projects; and
- ✧ ensuring technology/information transfer.



Yuba Science Advisory Committee at their first meeting (photograph by Steve Nicola).

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A drainage swale at Village Homes in Davis, a model community that incorporates on-site water retention, groundwater recharge, and sustainability values in its design.

PURPOSE

Educate and encourage locally elected officials to consider effects on water resources when making land-use decisions

PROJECT GOALS

- ✦ Develop and implement an outreach and education project for local elected officials
- ✦ Develop local planning approval principles and policies for implementation by local governments
- ✦ Reduce overall water demand on the Bay-Delta system

AWARD AMOUNT

\$450,000

WATERSHED

Applicable to all watersheds in the CALFED solution area

COUNTY

Applicable to all counties in the CALFED solution area

CALFED REGION

Program-wide

LEGISLATIVE DISTRICTS

Applicable to all legislative districts in the CALFED solution area

Benefits to the Bay-Delta System

This project benefits local governments through education of local officials about sustainable development, water conservation practices, urban runoff, and groundwater recharge. The general public benefits when local officials make land-use decisions on a regional watershed basis, rather than as independent entities. The benefits accrue from supporting long-term sustainability of watersheds, reducing demands on imported water, and increasing collaboration among individual agencies throughout their shared watersheds.

PROJECT OVERVIEW

The Local Government Commission (LGC), in collaboration with the League of California Cities and the California State Association of Counties, is providing local elected officials with the tools to make land-use decisions that support the long-term sustainability of watersheds, work with neighboring jurisdictions in their watershed, and enact policies to reduce dependence on imported water. This project provides support for communities to make land-use planning decisions in the context of a watershed, rather than just existing jurisdictional boundaries.

The LGC has convened a technical advisory committee of local, regional and state officials and water experts to review draft principles and policies that focus on whole-systems planning and the value of making decisions at the watershed scale. A guidebook that includes these principles, a model general plan water element, and implementation policies will be published and introduced at an annual conference for mayors, city council members, and county supervisors. Five executive briefs that provide in-depth information on watershed management, water reuse and recycling, water conservation strategies, urban runoff, groundwater and conjunctive use, and best management practices and technology for new development will complement the guidebook. The principles of watershed planning will be the topic of six workshops within the Bay-Delta system to further educate local elected officials and provide an opportunity to interact and work together on a watershed basis.

This project includes a new web-based resource entitled “First Stop Shop for Water” for use by local elected officials and staff. It will be located on the LGC website and provide basic information and links to key resources for local government staff to implement the general plan water element. The guidebook, executive briefs, and conference and workshop presentations will be available for download from the website.

Within the project’s three years, the LGC expects a minimum of 50 local governments to adopt a water conservation element in their general plans and a minimum of 100 local governments to adopt at least one recommended water conservation strategy. As these local governments successfully implement these learned conservation strategies, other local governments may duplicate their efforts. Ultimately, the LGC hopes that the full complement of strategies, including working within a watershed context, will become business as usual in California’s cities and counties.



Community members working together on a local plan.

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2002-2003 Awards by U.S. Congressional District (cont'd.)

Project Name	District Number																																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47					
Upper Mokelumne River Watershed Assessment and Planning Project (UMRWAP)—Phase I			✓																																																	
Upper Pit River Watershed Enhancement and Protection Project, combined with the Alturas Storm Water Management Plan		✓																																																		
Upper Spanish Creek Watershed Assessment and Restoration Strategy		✓																																																		
Upper Trinity River Watershed Management Planning Project		✓																																																		
Water Quality Improvement in Cow Creek Watershed		✓																																																		
Watershed Restoration Action Plan and Priority Projects (WRAPPP), Wildcat and San Pablo Creeks							✓																																													
Yuba River Citizen Monitoring Program—Phase II		✓		✓																																																

2002-2003 Awards by State Senate District

Project Name	District Number																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Bear Creek Watershed Assessment				✓																									
Clear Lake Watershed Mercury and Nutrient Assessment		✓																											
Colfax Community Watershed and Fire Safe Ecosystem Project	✓																												
Cottonwood Creek Watershed Strategy				✓																									
Deer Creek Watershed Erosion and Sediment Control Project—Phase II Implementation				✓																									
Enhancing Local Capacity in North Richmond and Parchester Village to Manage and Restore the Lower Rheem Creek Watershed							✓		✓																				
Glenn County Surface Water Stewardship				✓																									
Inventory, Eradication, and Monitoring of Invasive Species		✓																											
Lower Clear Creek Spawning Gravel Injections				✓																									
North Yuba River Watershed Improvement: Abandoned Mine Reclamation and Restoration	✓																												
Oakland Releaf Watershed Protection Program									✓																				
Panoche Creek Stabilization Project																	✓												
Plymouth Area Vineyard Erosion Control	✓																												
Putah Creek—Yolo Housing Authority Project				✓																									
Restoring Deer Creek: Building Partnerships to Overcome the Legacy of the Gold Rush Era	✓																												
Small Is Beautiful: Scaling Adaptive Management to Fit a Range of Riverine Systems *																													
South Yuba Watershed Project		✓																											
Stewards of the Arroyo Pasajero: Sharing Our Success																	✓												
Stony Creek Watershed Management Plan	✓																												
Tehama West Watershed Assessment				✓																									
Upper Finegold Creek Watershed Planning																													
Upper Merced River Watershed Management Plan												✓																	
Upper Mokelumne River Watershed Assessment and Planning Project (UMRWAP)—Phase I	✓																												
Upper Pit River Watershed Enhancement and Protection Project, combined with the Alturas Storm Water Management Plan	✓																												

*This project is not district-specific. It is applicable to all watersheds in the CALFED solution area.

2002-2003 Awards by State Senate District (cont'd.)

Project Name	District Number																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Upper Spanish Creek Watershed Assessment and Restoration Strategy	✓																												
Upper Trinity River Watershed Management Planning Project				✓																									
Water Quality Improvement in Cow Creek Watershed				✓																									
Watershed Restoration Action Plan and Priority Projects (WRAPPP), Wildcat and San Pablo Creeks							✓												✓										
Yuba River Citizen Monitoring Program—Phase II	✓																												

2003-2004 Awards by U.S. Congressional District (cont'd.)

Project Name	District Number																																																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47								
Lower American River Environmental Enhancement					✓																																																		
Lower Mokelumne River Watershed Stewardship Plan		✓									✓																																												
Merced River Alliance Project																																																							
Millerton Area Watershed Action Plan																																																							
Mt. Diablo Creek Watershed Coordinated Resource Management and Planning Program																																																							
Pit Resource Conservation District Watershed Management Project																																																							
Red Clover Creek/McReynolds Restoration Project																																																							
Sacramento River Watershed Program—Program Support																																																							
Stony Creek Watershed Assessment and Monitoring Program																																																							
Suisun Creek Watershed Program																																																							
Tehama West Watershed Management Program																																																							
This River Is Our River, Phase 2—Watershed Capacity Building																																																							
Upper Mokelumne River Watershed Assessment and Planning Project (UMRWAP)—Phase II																																																							

2003-2004 Awards by State Senate District

Project Name	District Number																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
A Watershed Management Plan for Restoration Feasibility of the Tujunga Wash																		✓		✓		✓							
Addressing the Disconnect: Water Resources and Local Land Use Decisions *																													
Arcade Creek—Tackling the Impacts of Urbanization	✓					✓																							
Battle Creek Watershed Stewardship				✓																									
Baxter Creek Gateway Restoration Project							✓			✓																			
Building a Sustainable Upper Merced River Watershed Organization															✓														
Chico Urban Streams Alliance Clean Creeks Project	✓																												
Clavey River Watershed Assessment														✓															
Codornices Creek Watershed Restoration Action Plan—Phase 2									✓																				
Community Water-Use Efficiency Education and Training (WET) Project																										✓	✓	✓	
Community-Based Restoration of Lower Putah Creek Watershed		✓			✓																								
Cosumnes River Preserve Management Plan	✓													✓															
Cottonwood Creek Watershed Management Plan				✓																									
Deer Creek Watershed Management Plan Implementation: Phase III				✓																									
Dry Creek Watershed Assessment	✓																												
Fresno Central Watershed Education Program															✓														
Headwaters to Groundwater: Upper Los Angeles River Area Assessment Project																								✓					
Integrated Ecosystem Improvements for Shasta County Watersheds				✓																									
Kings River Experimental Watershed: Monitoring and Restoration of Forest Ecosystems															✓														
Laguna Creek Watershed Project	✓																												
Lake Almanor Watershed Planning and Nonpoint Source (NPS) Pollution Control	✓																												
Lower American River Environmental Enhancement							✓																						
Lower Mokelumne River Watershed Stewardship Plan					✓																								
Merced River Alliance Project													✓	✓															

*This project is not district-specific. It is applicable to all watersheds in the CALFED solution area.

2003-2004 Awards by State Senate District (cont'd.)

Project Name	District Number																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Millerton Area Watershed Action Plan															✓														
Mt. Diablo Creek Watershed Coordinated Resource Management and Planning Program							✓																						
Pit Resource Conservation District Watershed Management Project	✓			✓																									
Red Clover Creek/McReynolds Restoration Project	✓																												
Sacramento River Watershed Program—Program Support	✓	✓		✓	✓																								
Stony Creek Watershed Assessment and Monitoring Program				✓																									
Suisun Creek Watershed Program		✓		✓																									
Tehama West Watershed Management Program				✓																									
This River Is Our River, Phase 2—Watershed Capacity Building					✓							✓		✓		✓													
Upper Mokelumne River Watershed Assessment and Planning Project (UMRWAP)—Phase II	✓																												

WATERSHED PROGRAM

