

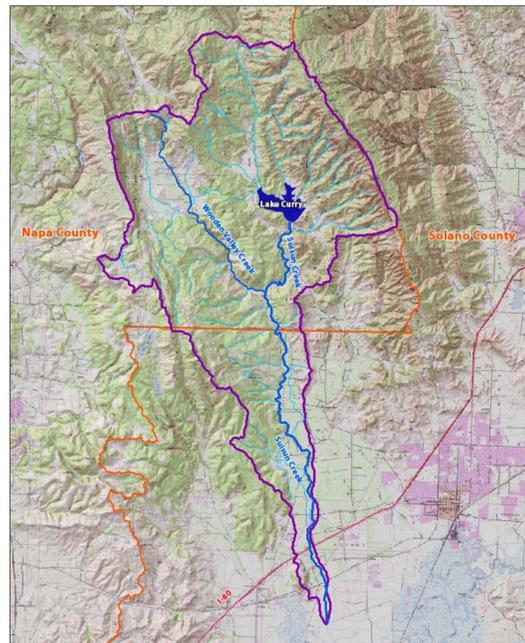
# Suisun Creek Watershed Program

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## Suisun Creek Watershed

The Suisun Creek watershed occupies 53 square miles in Napa and Solano counties. Most of the land is privately owned and either grazed or farmed in vineyards, orchards, and row crops. Landowners include descendants of the original Spanish land grant-holders and 5<sup>th</sup> generation ranchers.



Suisun Creek is one of the top streams for steelhead habitat in the San Francisco Bay area (CEMAR 2008).

## Goals

The Suisun Creek Watershed Program implements priority actions identified in the Suisun Creek Watershed Assessment and Enhancement Plan. This plan grew out of a collaboration between Laurel Marcus & Associates, the California Sportfishing Protection Alliance, local landowners, and agencies. Data was collected through several years of water quality monitoring and an extensive GIS mapping and analysis was completed.

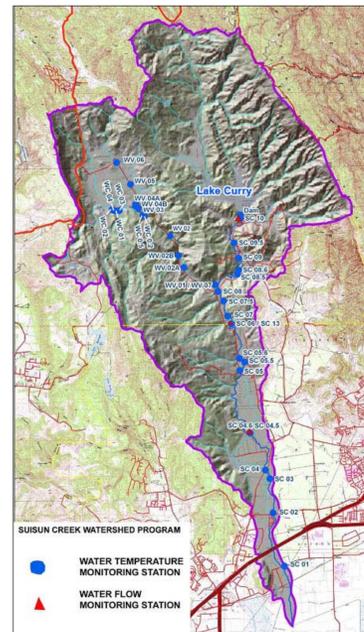
The priorities of the Suisun Creek Watershed Program are to:

- Restore riparian forest on denuded channel areas to reduce warm water temperatures;
- Eradicate invasive species in the riparian corridor to enhance wildlife habitat and reduce water temperatures;
- Reduce fine sediment delivery by improving land management measures;
- Remove identified fish passage barriers;
- Develop a re-operation strategy for Lake Curry releases;
- Continue monitoring of sediment, channel form, water quality and water temperature to inform an adaptive management strategy for the watershed.

## Methods

Between 2002 and 2010, water quality monitoring was carried out at over 34 stations in the Suisun Creek watershed. The purpose of the monitoring is to determine the baseline condition of habitat and inform and direct restoration efforts. Water quality parameters monitored include: temperature, dissolved oxygen (DO), pH, and specific conductance.

In addition, the following surveys and analyses were conducted:

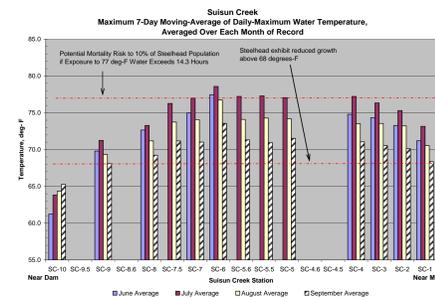


- Channel topographic surveys
- Bed material analysis
- Fish snorkel survey
- Riparian canopy assessment
- Benthic macroinvertebrate survey
- Watershed sediment source analysis

A water release experiment was conducted in 2006 in collaboration with the City of Vallejo to determine what release levels from Lake Curry reduce water temperatures at the 18 stations along Suisun Creek.

## Results

The monitoring data collected on Suisun Creek 2002-2010 demonstrated that water temperatures regularly occur which are too high for steelhead trout. The results of the Lake Curry release experiment indicated that extra cold water released from Lake Curry generally reduced water temperatures on the first few miles downstream of the dam. The study concluded that reduced canopy cover contributes to exceedingly warm water temperatures.



A program of native plant revegetation to increase shade canopy, combined with a high release rate from Lake Curry during the hottest months, is one of the recommended alternatives for improving habitat on Suisun Creek. Additional analysis of Lake Curry releases and stream temperatures is also recommended.

## Next Steps

In 2005 *Arundo donax* or Giant reed was mapped on Suisun Creek between Lake Curry and the tidal reach and a strategy was created for removal from upstream to downstream. Working with local invasive plant removal specialists Shelterbelt Builders, Inc., CLSI has treated and removed over 4.4 acres of *Arundo* on Suisun Creek. Another 5.4 acres of removal are planned for 2011-2013.



CLSI has been collaborating with landowners to install hundreds of native riparian trees along denuded areas of the riparian corridor. Over 800 native tree seedlings and cuttings were installed in 2010 on Wooden Valley Creek, a major tributary to Suisun Creek. Another 600 or more native plants have been installed at four locations on Suisun Creek, and additional revegetation areas have been identified for future planting as part of the *Arundo* removal project.

For revegetation projects on Suisun Creek, CLSI works with partners such as the Center for Social and Environmental Stewardship and the Solano Resource Conservation District to collect seeds and cuttings from local genetic stock. The goal is to plant trees that will provide a multi-storied canopy and shade the creek as they mature.

Other projects on Suisun Creek include a bank stabilization project to reduce sediment delivery and protect residences in partnership with the Natural Resources Conservation Service (NRCS), and the Fish Friendly Farming Environmental Certification Program.



Wooden Valley Creek revegetation site planted in 2010

## Lessons Learned

Successful invasive plant removal and native plant revegetation projects depend on the active engagement and participation of landowners. Landowners must be committed to the success of the project, since they are the first to observe any problems. Adaptive management of riparian corridors, even in relatively healthy watersheds, benefits from long-term partnership efforts between landowners and coordinating organizations.

Watersheds are complex systems with unique features. Analysis of the entire watershed, not just the creek, is the best means of improving fish habitat. Thorough multi-parameter quantitative monitoring should be conducted both prior to initiating projects and over the course of restoration efforts to determine success and inform subsequent actions.



## Program Funding

The following agencies and organizations have generously provided their support to the Suisun Creek Watershed Program:

- CALFED Bay-Delta Authority Ecosystem Restoration Program
- California Department of Fish and Game
- San Francisco Foundation Bay Fund
- California State Coastal Conservancy
- Department of Conservation
- CalTrans / California Department of Natural Resources
- California Sportfishing Protection Alliance



Juvenile steelhead observed in Suisun Creek

## Project Sponsor & Contact Information

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