

# **Inventory of Santa Clara Basin Stream Studies**

**Updated Version 6.0**

**Prepared for the  
Santa Clara Basin Watershed Management Initiative  
Watershed Assessment Subgroup**

**Prepared By  
EOA, Inc**

**Funded by:  
Santa Clara Valley Urban Runoff Pollution Prevention Program**



**June 21, 2005**



## Table of Contents

<b>TABLE OF CONTENTS</b> .....	<b>1</b>
<b>LIST OF FIGURES</b> .....	<b>2</b>
<b>INTRODUCTION</b> .....	<b>4</b>
<b>KEYWORDS</b> .....	<b>9</b>
<b>TABLE 1. NEW PROJECTS AND STATUS OF PROJECTS</b> .....	<b>10</b>
<b>TABLE 2. SUMMARY OF PROJECTS BY WATERSHED</b> .....	<b>12</b>
<b>SECTION 1: RESOURCE MANAGEMENT PROJECTS</b> .....	<b>21</b>
<b>CORTE MADERA CREEK PROJECT</b> .....	<b>23</b>
<b>LAKE CUNNINGHAM IMPROVEMENT PROJECT</b> .....	<b>25</b>
<b>PERMANENTE CREEK PLANNING STUDY</b> .....	<b>27</b>
<b>SEDIMENT REMOVAL PROJECTS</b> .....	<b>29</b>
<b>STREAM CHARACTERISTIC MEASUREMENTS</b> .....	<b>31</b>
<b>UPPER BERRYESSA CREEK FLOOD PROTECTION PROJECT</b> .....	<b>33</b>
<b>UPPER PENITENCIA CREEK FLOOD PROTECTION PROJECT</b> .....	<b>35</b>
<b>VEGETATION MANAGEMENT PROJECTS</b> .....	<b>37</b>
<b>SECTION 2: MITIGATION PROJECTS</b> .....	<b>39</b>
<b>COYOTE PARKWAY FRESHWATER WETLAND</b> .....	<b>41</b>
<b>GUADALUPE RIVER FLOOD CONTROL AND RESTORATION PROJECT</b> .....	<b>43</b>
<b>POND A4 TIDAL WETLAND RESTORATION</b> .....	<b>45</b>
<b>SECTION 3: PERMIT COMPLIANCE</b> .....	<b>47</b>
<b>GUADALUPE RIVER WATERSHED MERCURY TMDL</b> .....	<b>49</b>
<b>SAN FRANCISQUITO CREEK AQUATIC HABITAT ASSESSMENT AND LIMITING FACTORS ANALYSIS</b> .....	<b>53</b>
<b>SCVURPPP MULTI-YEAR RECEIVING WATERS MONITORING PLAN</b> .....	<b>55</b>
<b>WATERSHED ANALYSIS AND SEDIMENT MANAGEMENT ASSESSMENT</b> .....	<b>59</b>
<b>SECTION 4: WATERSHED MANAGEMENT</b> .....	<b>63</b>
<b>CREEK AND WATERSHED MAPS OF THE BAY AREA</b> .....	<b>65</b>
<b>HISTORICAL TIDAL MARSH MAPS</b> .....	<b>67</b>
<b>INTEGRATED REGIONAL WATER MANAGEMENT PLAN</b> .....	<b>69</b>
<b>SAN FRANCISCO ESTUARY WATERSHEDS EVALUATION</b> .....	<b>71</b>
<b>SANTA CLARA VALLEY HISTORICAL ECOLOGY PROJECT</b> .....	<b>73</b>
<b>STREAM STEWARDSHIP FOR THREE WATERSHED AREAS IN THE SANTA CLARA BASIN</b> .....	<b>75</b>
<b>SECTION 5: RESEARCH</b> .....	<b>79</b>
<b>BIOASSESSMENT: A TOOL FOR MANAGING URBAN AQUATIC LIFE USES</b> .....	<b>81</b>
<b>MEASUREMENT OF SEDIMENT AND CONTAMINANT LOADS FROM THE GUADALUPE RIVER WATERSHED</b> .....	<b>83</b>

**SECTION 6: WATERSHED MONITORING AND ASSESSMENT .....85**

**BAY AREA MACROINVERTEBRATE BIOASSESSMENT INFORMATION NETWORK (BAMBI) .....87**

**DIAZINON AND PESTICIDE-RELATED TOXICITY IN BAY AREA URBAN CREEKS .....89**

**MATADERO CREEK MONITORING .....93**

**SCVURPPP TRASH WORK PLAN.....95**

**STEVENS AND PERMANENTE CREEKS WATERSHED COUNCIL VOLUNTEER MONITORING PROGRAM.....97**

**THE SURFACE WATER AMBIENT MONITORING PROGRAM (SWAMP) .....99**

**UPPER GUADALUPE RIVER TRIBUTARY MONITORING AND PILOT RESTORATION PROJECT PROPOSAL .....103**

**PRELIMINARY INFORMATION ON ADDITIONAL PROJECTS.....105**

## List of Figures

**FIGURE 1: SANTA CLARA BASIN: COUNTIES AND MUNICIPALITIES WITHIN .....17**

**FIGURE 2: HYDROLOGIC FEATURES IN THE SANTA CLARA BASIN .....19**

## LIST OF ACRONYMS

BAMBI	Bay Area Macroinvertebrate Bioassessment Information Network
BMP	Best Management Practice
CDFG	California Department of Fish and Game
CEP	Clean Estuary Partnership
EIR/S	Environmental Impact Report/Statement
GCRCD	Guadalupe Coyote Resource Conservation District
GGNRA	Golden Gate National Recreation Area
GIS	Geographic Information System
GPS	Global Positioning System
HMP	Hydromodification Management Plan
LFA	Limiting Factors Analysis
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PCCF	Peninsula Conservation Center Foundation
RMAS	Regional Monitoring and Assessment Strategy
SFRWQCB	San Francisco Regional Water Quality Control Board
SFEI	San Francisco Estuary Institute
SFCJPA	San Francisquito Creek Joint Powers Authority
SCBWMI	Santa Clara Basin Watershed Management Initiative
SCVAS	Santa Clara Valley Audubon Society
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD	Santa Clara Valley Water District
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SMP	Stream Maintenance Program
SWAMP	Surface Waters Ambient Monitoring Program
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WAP	Watershed Action Plan
WAR	Watershed Assessment Report
WAS	Watershed Assessment Subgroup (of the SCBWMI)
WERF	Water Environment Research Foundation

## Introduction

### Summary

The *Inventory of Santa Clara Basin Stream Studies* describes thirty stream-related multi-stakeholder studies and projects that recently started or are in-progress in the Santa Clara Basin. Information for eight new studies was added to the current version of the Stream Studies Inventory (SSI) report and twenty-two ongoing projects were updated with current information. Ten projects listed in the Version 5.0 SSI report were determined to be complete or discontinued, and therefore, not included in this year's report. Information describing the completed studies was archived into the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) metadata database.

The Santa Clara Basin (Basin) is shown in Figures 1 and 2. This SSI was compiled as part of the Santa Clara Basin Watershed Management Initiative (SCBWMI). It is an information tool intended to promote inter-agency awareness of environmental investigations within riparian corridors, and to facilitate coordination of related data collection and management. It also describes stream-related multi-stakeholder studies and projects that were in-progress in the Basin.

### Background

Initiated in the summer of 1996, the SCBWMI provides a mechanism for all agencies, organizations, and interested individuals operating in this geographic region to develop a coordinated approach to managing surface water resources within the Basin. The SCBWMI completed a Watershed Assessment Report (WAR) for three pilot watersheds in the spring of 2003 and produced a comprehensive Watershed Action Plan (WAP) for the Basin in the fall of 2003. The WAP integrates the following issues: watershed protection and enhancement, habitat and water quality enhancement, water rights and water supply reliability, flood control, regulatory compliance, land use, and public awareness and involvement. The SCBWMI is currently in the implementation phase of the WAP.

The Watershed Assessment and Monitoring Subgroup (WAMS) is an entity within the SCBWMI with a mission to provide the SCBWMI with a solid scientific foundation for watershed planning. One task of the WAMS is to coordinate the SCBWMI's data collection and data management efforts with stream monitoring studies in the Basin. The Stream Studies Inventory (SSI) is a result of this task and was initially prepared by the SCVURPPP in November 1998. The SSI was intended to be a living document, and as a result, has been updated, revised and reissued in February 2000 (version 2.0), July 2001 (version 3.0) and August 2002 (Version 4.0) and November 2003 (Version 5.0). The SCVURPPP funded the initial development of the SSI

and each of the annual updates. All project information was entered into the SCVURPPP metadata database.

### **Purpose**

The WAMS sponsored this inventory to provide information that will enable agencies and organizations directing the stream studies, and the SCBWMI, to 1) adopt consistent data collection procedures, 2) adopt consistent data storage formats and 3) promote efficient data sharing. By communicating such procedures the Stream Studies Inventory may produce several benefits, including:

- Identification of opportunities for collaborating on data collection and database development.
- Standardization of data collection protocols that enable efficient data comparison.

### **Methods**

The studies included in the Stream Studies Inventory were identified by the WAMS subgroup members and by phoning selected representatives of local agencies and organizations. This inventory is therefore a representative, but not necessarily comprehensive, catalog of ongoing stream studies in the Basin.

Agency representatives were contacted initially to explain the purpose of the Stream Studies Inventory and to identify relevant projects and contacts within their agency. Project-contacts were sent electronically a template of the SSI form that describes the type of information being requested and provides standardized list of responses for several fields (e.g., data type and format) to maintain consistency in the data. The original survey form was revised in the 2002 SSI Update to increase compatibility with watershed information compiled in the SCBWMI's Metadata Database (MDDB) and to facilitate archival into the SCVURPPP metadata database (see below). Project-contacts were requested to return completed surveys in an electronic format to improve the efficiency of data entry and report production. All project information not completed was entered into the database as either "not reported" or "to be determined" when details of the project were not known at the time of the survey.

### **Archiving and Maintaining SSI Data**

The SCVURPPP developed a relational database to systematically describe and document data used for its activities. The database is a metadata database which focuses on the description, documentation, and indexing of the data sets, sources, reports, etc. It does not focus on the data. The SCVURPPP metadata database incorporated information on data sources that were documented in the existing SCBWMI's MDDB and the data collected in the SSI.

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*Inventory of Santa Clara Basin Stream Studies*

The SCVURPPP database currently stores new project information included in Version 6.0 of the SSI Report, as well as archived information from previous versions of the SSI. The database was also developed to produce a report listing current project information in a format similar to previous SSI Reports. The project summaries of this SSI report was produced from the database. In addition, the SCVURPPP database provides querying capabilities for watershed information listed in both the SSI and SCBWMI's MDDB.

The intent of the SCVURPPP database is to demonstrate its usefulness of how to systematically and efficiently collect and document all of the relevant data used in the SCVURPPP's activities. In addition, the database was designed to explore the feasibility of eventually expanding and coordinating its maintenance and use with other agencies and organizations in the SCVURPPP. The SCVURPPP is also exploring ways to make the database accessible on the Internet.

**Funding**

The Santa Clara Valley Urban Runoff Pollution Prevention Program funded the preparation for the current SSI Update, which fulfills Task 7.8 of the WAMS Work Plan.

Santa Clara Basin Stream Studies Information Template

**Project Name:** *Full project name and acronym if used*

**Project description:** *Primarily a research or a resource management project? Is the purpose to influence policy, or is it routine compliance with existing regulations and/or policies? Is the impetus for the project to respond to actions filed by representatives outside the organization?*

**Keywords:** *Developed from list of possible keywords (see page 9)*

**Lead Agencies/Organizations:** *Entities managing the project*

**Funding Sources:** *Names of sources funding the project*

**Contracted Parties:** *Entities conducting the project, including Consultants*

**Contact Information:**

*Name: Primary contact(s) for project management and follow-up information*

*Organization:*

*Phone:*

*Fax:*

*Email:*

**Purpose:** *State Project goals and objectives*

**Study Area Watersheds:** *Watershed names and if known, 4-digit RWQCB subwatershed code*

**Tributaries Sampled in Watershed:** *Tributary names*

**Sampling Location:** *Sampling site coordinates, or methods of selecting sample points, e.g., samples are taken every ## m upstream, at specified stream confluences, below stormdrain outfalls, etc., (if a subset of outfalls are sampled, provide outfall identification numbers).*

**Sampling Frequency:** *Time interval between sampling; are samples taken every hour, day, week, month, year, every major storm event (if so, define storm event), etc.*

**Field Sampling Period:** *Start and finish date, or indicate if ongoing.*

**Sampling Protocols:** *If using standard, published protocols, please include references. If not using standard protocols, please include description of methods.*

**Data Format:** *Specify whether hardcopy (tables, maps, etc.) or digital (spreadsheet, database, geographic information system, etc., including the name and version of the software used).*

**Detailed Data Description:** *For example, pH, conductivity, number of species and individuals of species X, substrate type, public perception of project, etc.*

**Project Timeline:** *Date(s) after which data analysis and reporting will be completed.*

**Product Title:** *Name of reports, maps or databases that were produced as the result of this project.*

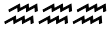
**Study Information Verified:** *Indication of whether the study contact verified the Inventory information for the study, and verification date.*

## Keywords

aquatic habitat  
aquatic vegetation  
baylands  
bioaccumulation  
bioassessment/biomonitoring  
biological data  
channel improvements  
channel maintenance  
channel morphology/hydrogeomorphology  
chemical data  
citizen/volunteer monitoring  
erosion  
fisheries  
fish barriers  
flood protection  
GIS  
groundwater recharge  
herbicides  
hydrology  
Illicit Connections/Illegal Discharges (IC/ID)  
imperviousness  
invasive/introduced species  
land use  
macroinvertebrates  
mercury/methylmercury  
metals  
NPDES permit  
nutrients  
pathogens  
pesticides  
physical data  
physical habitat  
pollutant loads  
pollutant reduction  
pollution prevention  
public health  
recreation  
restoration  
riparian habitat  
riparian vegetation  
salmonids  
sediment/sedimentation  
sediment chemistry  
soil  
special status species  
storm drain outfalls  
stormwater  
streamflow  
tissue chemistry  
TMDL  
toxicity  
trash  
urbanization  
water chemistry  
water quality  
watershed assessment  
watershed management  
wetlands

**Table 1. New Projects and Status of Projects**

Page No.	Project Name	Project Added to SSI 2005	Project Status is Ongoing	Project Archived to Database
<b>Resource Management Projects</b>				
NA	Baseline Development for the HMP			X
23	Corte Madera Creek Study		X	
NA	Giant Reed Control			X
25	Lake Cunningham Improvement Project		X	
27	Permanente Creek Planning Study		X	
29	Sediment Removal Projects		X	
31	Stream Characteristic Measurements	X		
33	Upper Berryessa Creek Flood Protection Project		X	
35	Upper Penitencia Creek Flood Protection Project		X	
37	Vegetation Management Projects		X	
<b>Mitigation Projects</b>				
41	Coyote Parkway Freshwater Wetland		X	
43	Guadalupe River Flood Control and Restoration		X	
NA	Los Capitancillos Wetlands Mitigation			X
NA	Northern Channel Feasibility Study Former NAS Moffett Field			X
45	Pond A4 Tidal Restoration Wetland Restoration		X	
<b>Permit Compliance</b>				
49	Guadalupe River Watershed Mercury TMDL		X	
NA	Hydromodification Management Plan (HMP)			X
53	San Francisquito Creek Aquatic Habitat Assessment and Limiting Factors Analysis		X	
NA	San Francisquito Sediment Study			X
55	SCVURPPP Multi-Year Receiving Waters Monitoring Plan		X	
59	Watershed Analysis and Sediment Management Assessment		X	
<b>Watershed Management</b>				
65	Creek and Watershed Maps of the Bay Area	X		
67	Historical Tidal Marsh Maps	X		
69	Integrated Regional Water Management Plan	X		
71	San Francisco Estuary Watershed Evaluation	X		
73	Santa Clara Valley Historical Ecology Project	X		
75	Stream Stewardship for Three Watershed in the Santa Clara Basin		X	
<b>Research</b>				
81	Bioassessment: A Tool for Managing Urban Aquatic Life Uses		X	
83	Measurement of Sediment and Contaminant Loads from the Guadalupe River Watershed		X	
NA	Urban Stream Ecology			X
<b>Monitoring and Assessment</b>				

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**Inventory of Santa Clara Basin Stream Studies**

<b>Page No.</b>	<b>Project Name</b>	<b>Project Added to SSI 2005</b>	<b>Project Status is Ongoing</b>	<b>Project Archived to Database</b>
NA	Assessment of Watershed Assessment Methods			X
87	Bay Area Macroinvertebrate Bioassessment Information network (BAMBI)		X	
89	Diazinon and Pesticide-Related Toxicity in Bay Area Urban Cr	X		
93	Matadero Creek Monitoring Downstream of Highway 101		X	
NA	Santa Clara Valley Audubon Society Creek Mapping			X
95	SCVURPPP Trash Work Plan		X	
97	Stevens and Permanente Creek Watershed Council Volunteer Monitoring Program	X		
99	The Surface Water Ambient Monitoring Program (SWAMP)		X	
NA	Thompson Creek Sediment Yield			X
103	Upper Guadalupe River Tributary Monitoring and Pilot Restoration Project		X	

**Table 2. Summary of Projects by Watershed**

Page Number	Project Name	Keywords	Major Watersheds in the Santa Clara Basin												
			Lower Penitencia	Coyote	Guadalupe	San Thomas Aquino	Calabazas	Sunnyvale East	Sunnyvale West	Stevens	Permanente	Matadero Barron	Adobe	San Francisco	
23	Corte Madera Creek Project	Channel improvements, channel maintenance, channel morphology/geomorphology, citizen/volunteer monitoring, erosion GIS, riparian habitat, sediment/sedimentation, watershed management													X
25	Lake Cunningham Improvement Project	Biological data, chemical data, flood protection, hydrology, physical data, sediment		X											
27	Permanente Creek Planning Study	Channel improvements and maintenance, geomorphology, erosion, flood protection, hydraulic modeling, hydrology, restoration									X				
29	Sediment Removal Projects	Flood protection, metals, pesticides, sediment, storm drain outfalls, toxicity, water quality.	X	X	X	X	X	X	X	X	X	X	X	X	X
31	Stream Characteristic Measurements	Channel improvements, channel maintenance, channel morphology/geomorphology, flooding/flood protection, hydrology, sediment/sedimentation		X										X	
33	Upper Berryessa Creek Flood Protection	Biological data, chemical data, flood protection, hydrology, physical data, sediment	X												

**WMI Watershed Assessment Subgroup**   
**Inventory of Santa Clara Basin Stream Studies**

Page Number	Project Name	Keywords	Major Watersheds in the Santa Clara Basin											
			Lower Penitencia	Coyote	Guadalupe	San Thomas Aquino	Calabazas	Sunnyvale East	Sunnyvale West	Stevens	Permanente	Matadero Barron	Adobe	San Francisquito
35	Upper Penitencia Creek Flood Protection	Flood protection, hydrology, sediment		X										
37	Vegetation Management Projects	Flood protection, vegetation, pesticides, water quality	X	X	X	X	X	X	X	X	X	X	X	X
41	Coyote Parkway Freshwater Wetland	Aquatic habitat, aquatic vegetation, riparian habitat, salmonids, special status species, wetlands		X										
43	Guadalupe River Flood Control and Restoration Project	Biological data, mercury, NOI, NPDES, riparian, salmonids, sediment, erosion, flood control, recreation			X									
45	Pond A4 Tidal Restoration Project	Aquatic habitat, baylands, restoration, sediment/sedimentation, recreation, wetlands						X	X					
49	Guadalupe River Watershed Mercury TMDL	Water chemistry, sediment chemistry, erosion, mercury/methylmercury, sediment/sedimentation			X									
53	San Francisquito Creek Aquatic Habitat Assessment and Limiting Factors Analysis	Salmonid, riparian, physical habitat, sediment/sedimentation, special status species, biological data.												X
55	SCVURPPP Multi-Year Receiving Waters Monitoring Plan	Bioassessment/biomonitoring, macroinvertebrates, aquatic habitat, metals, pesticides, pathogens, toxicity, nutrients, water chemistry, sediment	X	X		X	X	X	X			X	X	

**WMI Watershed Assessment Subgroup**   
**Inventory of Santa Clara Basin Stream Studies**

Page Number	Project Name	Keywords	Major Watersheds in the Santa Clara Basin											
			Lower Penitencia	Coyote	Guadalupe	San Thomas Aquino	Calabazas	Sunnyvale East	Sunnyvale West	Stevens	Permanente	Matadero Barron	Adobe	San Francisco
		chemistry, channel morphology, sediment/sedimentation												
59	Watershed Analysis and Sediment Management Assessment	Aquatic habitat, channel maintenance, channel morphology/geomorphology, erosion, hydrology, salmonids, sediment/sedimentation, special status species, urbanization, watershed assessment, water quality		X							X			
65	Creek and Watershed Maps of the Bay Area	Baylands, channel improvements, GIS, storm drain outfalls, urbanization	X	X	X	X	X	X	X	X	X	X	X	X
67	Historical Tidal Marsh Maps	Baylands, wetlands, GIS	X	X	X	X	X	X	X	X	X	X	X	X
69	Integrated Regional Water Management Plan	Watershed management, restoration, habitat	X	X	X	X	X	X	X	X	X	X	X	X
71	San Francisco Estuary Watersheds Evaluation	Hydrology, restoration, salmonids, watershed management	X	X	X	X	X	X	X	X	X	X	X	X

**WMI Watershed Assessment Subgroup**   
**Inventory of Santa Clara Basin Stream Studies**

Page Number	Project Name	Keywords	Major Watersheds in the Santa Clara Basin											
			Lower Penitencia	Coyote	Guadalupe	San Thomas Aquino	Calabazas	Sunnyvale East	Sunnyvale West	Stevens	Permanente	Matadero Barron	Adobe	San Francisco
73	Santa Clara Valley Historical Ecology Project	Channel improvements, hydrology, watershed management, wetlands	X	X	X	X	X	X	X	X	X	X	X	X
75	Stream Stewardship for Three Watershed Areas in the Santa Clara Basin	Biological communities, channel improvements, channel maintenance, land use, recreation, restoration, watershed management			X	X	X	X	X	X	X	X	X	X
81	Bioassessment: A Tool for Managing Urban Aquatic Life Uses	Bioassessment/biomonitoring, macroinvertebrates, fish, aquatic habitat, water quality, nutrients, pesticides, metals, channel morphology/geomorphology, hydrology, hydraulic modeling, percent imperviousness, land use		X	X									X
83	Measurement of Sediment and Contaminant Loads from the Guadalupe River Watershed	Pollutant loads, mercury, pesticides, sediment/sedimentation			X									
87	Bay Area Macroinvertebrate Bioassessment Information network (BAMBI)	Bioassessment/biomonitoring, macroinvertebrates, water quality, channel morphology/geomorphology, riparian habitat, watershed assessment, land use	X	X	X	X	X	X	X	X	X	X	X	X
89	Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks	Pesticides, toxicity, TMDL, urbanization	X	X	X	X	X	X	X	X	X	X	X	X

**WMI Watershed Assessment Subgroup**   
**Inventory of Santa Clara Basin Stream Studies**

Page Number	Project Name	Keywords	Major Watersheds in the Santa Clara Basin											
			Lower Penitencia	Coyote	Guadalupe	San Thomas Aquino	Calabazas	Sunnyvale East	Sunnyvale West	Stevens	Permanente	Matadero Barron	Adobe	San Francisco
93	Matadero Creek Monitoring Downstream of Highway 101	Channel morphology/geomorphology, sediment/sedimentation											X	
95	SCVURPPP Trash Work Plan	Channel maintenance, land use, pollution prevention, trash, urbanization, watershed management	X	X	X	X	X	X	X	X	X	X	X	X
97	Stevens and Permanente Creeks Watersheds Council Volunteer Monitoring Program	Bioassessment/biomonitoring, macroinvertebrates, habitat, water quality, citizen/volunteer monitoring									X	X		
99	The Surface Water Ambient Monitoring Program (SWAMP)	Bioassessment, metals, pesticides, water chemistry, sediment, toxicity, nutrients, pathogens, bioaccumulation, macroinvertebrates									X	X		
103	Upper Guadalupe River Tributary Monitoring and Pilot Restoration Project	Aquatic habitat, channel morphology/geomorphology, citizen/volunteer monitoring, erosion, fish barriers, percent imperviousness, riparian vegetation, streamflow, watershed assessment			X									

Figure 1. Counties and Municipalities in the Santa Clara Basin

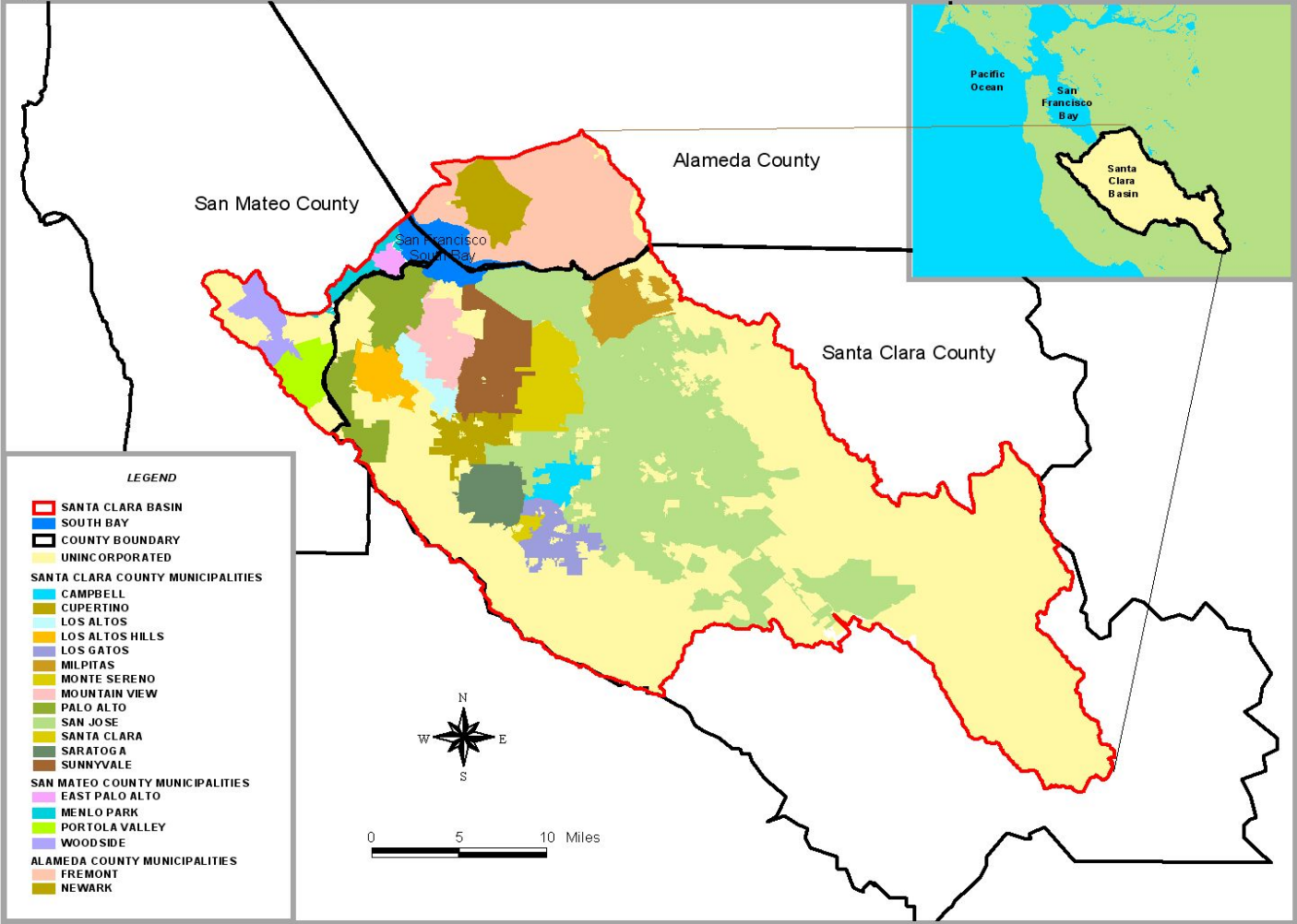
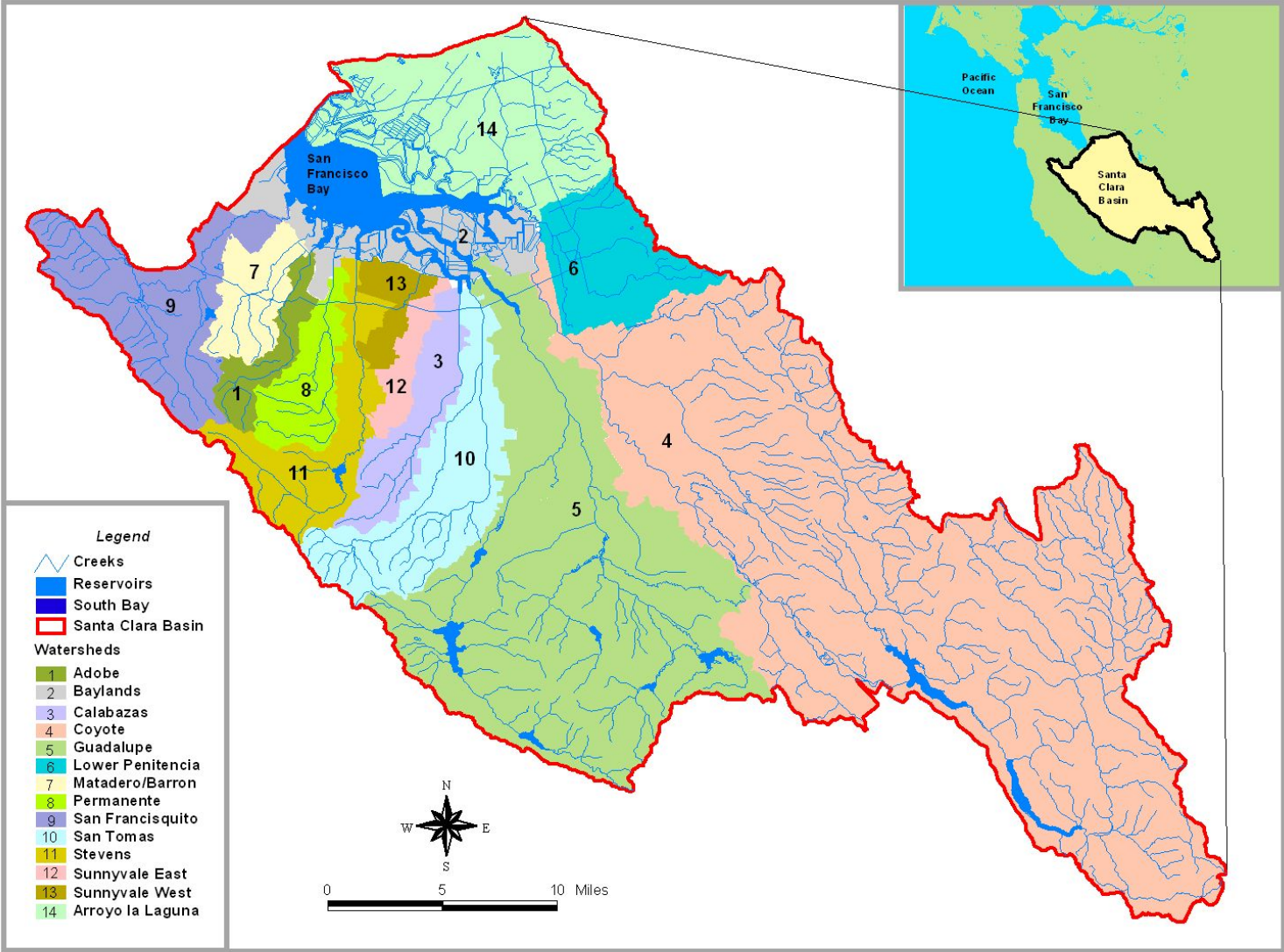




Figure 2. Hydrologic Features in the Santa Clara Basin





## **Section 1: Resource Management Projects**



# **Corte Madera Creek Project**

## **Project Type**

Resource Management

## **Project Description**

Document erosion problems on Corte Madera Creek and produce a report providing recommendations for bank stabilization and revegetation for a 6-mile stretch of Corte Madera Creek in Portola Valley

## **Keywords**

channel improvements, channel maintenance, channel morphology/geomorphology, citizen/volunteer monitoring, erosion, GIS, riparian habitat, riparian vegetation, sediment/sedimentation, watershed management

## **Lead Agencies**

San Francisquito Creek Joint Powers Authority (SFCJPA), Town of Portola

## **Funding Sources**

Department of Water Resources (DWR)

## **Contracted Parties**

Philip Williams and Associates

## **Contact Information**

Name: Kevin Murray

Organization: San Francisquito Creek Joint Powers Authority (SFCJPA)

Phone: 650-330-6767

Email: kmurray@menlopark.org

## **Purpose**

The objective of the project is to provide a user-friendly tool for landowners that provide easy to understand assistance in planning for effective, ecologically sensitive bank stabilization projects. Project goals include: 1) citizen participation and input throughout the progress of this project; 2) interaction with creekside property owners; and 3) workshops in the beginning, mid-point and at the end of the project.

## **Study Watersheds**

San Francisquito

## **Tributaries Sampled in Watershed**

Corte Madera Creek

## **Sampling Location**

Not applicable

## **Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

Map, Image, Report

**Detailed Data Description**

Field reconnaissance was conducted to assess bank stability, riparian function and identify restoration opportunities.

**Project Timeline**

Report is anticipated to be completed in May 2005.

**Product Title**

Maintaining Corte Madera Creek, A Citizens' Guide to Creek-Side Property Protection

**Study Information Verified**

Kevin Murray, SFCJPA, personal communication, March 2005.

# **Lake Cunningham Improvement Project**

## **Project Type**

Resource Management

## **Project Description**

Resource Management for Flood Protection

## **Keywords**

biological data, chemical data, flooding/flood protection, hydrology, physical data, sediment/sedimentation

## **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

## **Funding Sources**

SCVWD

## **Contracted Parties**

(N/A)

## **Contact Information**

Name: George Fowler

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2748

Email: Gfowler@valleywater.org

## **Purpose**

Project goals are to reduce damages by existing and expected future flooding, sedimentation, and erosion in the Lower Silver Creek and Thompson Creek watersheds upstream of Cunningham Avenue to Aborn Road.

Project objectives are to plan, design and construct modifications to allow Lake Cunningham to operate as an off-stream storage facility as originally planned under the NRCS/SCVWD Lower Silver Creek Watershed Project.

Hydrologic Study completed April 2001. Verified design flows. Future project work and responsible parties include: Hydraulic Design (SCVWD); Social Environment Study (N/A); Hazardous Materials Study (SCVWD); Fish and Wildlife Studies (as necessary) (USFWS); Economic Studies (N/A); and Surveying and Mapping (SCVWD).

## **Study Watersheds**

Coyote

## **Tributaries Sampled in Watershed**

Lower Silver Creek, Thompson Creek

## **Sampling Location**

Watershed area above Lake Cunningham.

**Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

Table

**Detailed Data Description**

Geology, sediment (basin yield, load, and transport capacity), hydrologic (flow/frequency & flood hydrographs), hydraulic (water surface profiles, floodplains & bridge scour), topographic (aerial photos & contour maps), economic (costs/benefits) and rea

**Project Timeline**

Project is currently on hold.

**Product Title**

To be determined

**Study Information Verified**

Steve Bui, SCVWD, personal communication, May 2005.

# Permanente Creek Planning Study

## Project Type

Resource Management

## Project Description

Project is to study watershed problems and to develop solutions for Permanente and Hale Creeks between Foothill Expressway and the Bay and Permanente Diversion.

## Keywords

channel improvements, channel maintenance, channel morphology/geomorphology, erosion, flooding/flood protection, habitat, hydraulic modeling, hydrology, restoration, riparian habitat, streamflow

## Lead Agencies

Santa Clara Valley Water District (SCVWD)

## Funding Sources

SCVWD

## Contracted Parties

None

## Contact Information

Name: Afshin Rouhani

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607

Email: arouhani@valleywater.org

## Purpose

The objectives of the project include:

- 1) Conduct a planning study to reduce damages to homes, businesses, and public facilities due to creek flooding for flows up to the one-percent flood for Permanente Creek, Hale Creek, and the Permanente Diversion between Foothill Expressway and San Francisco Bay pursuant to Board Policy No. E-2, Section 2-2;
- 2) Develop design of flood improvement structures to provide flood protection to the watershed downstream of El Camino Real, and acquire necessary flood control or temporary construction easements;
- 3) Perform design and prepare construction documents to repair the 212-foot-long seriously deteriorated channel section in the vicinity of Mountain View Avenue pursuant to Board Policy No. E-2, Section 2.2.2.1. Construction of this repair will be supported by watershed operations;
- 4) Identify localized bank erosion problems in the natural channel and prioritize them for repair;
- 5) Identify maintenance requirements to achieve flood protection objectives and assess benefits in reduced maintenance cost;

6)Develop right-of-way mapping for the creeks and explore opportunities for acquiring easements for maintenance purposes; and

7)Protect the watershed

**Study Watersheds**

Permanente

**Tributaries Sampled in Watershed**

Permanente Creek, Hale Creek

**Sampling Location**

Not applicable

**Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

Not reported

**Detailed Data Description**

Project primarily using existing data sources; compiled data includes channel flood capacity, predicted flood areas, sediment removal volumes and locations, bank erosion sites, channel reach descriptions and photos

**Project Timeline**

Planning Study completed February 2004; project completed in summer 2007.

**Product Title**

Permanente Creek Watershed Planning Study

**Study Information Verified**

Afshin Rouhani, SCVWD, personal communication, May 2005.

## **Sediment Removal Projects**

### **Project Type**

Resource Management

### **Project Description**

Restore flood conveyance capacity in improved channels by removing accumulated sediment as part of the SCVWD's Stream Maintenance Program.

### **Keywords**

flooding/flood protection, sediment chemistry, sediment/sedimentation, water quality

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

### **Funding Sources**

SCVWD

### **Contracted Parties**

None

### **Contact Information**

Name: John Shay

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2733

Email: [jshay@valleywater.org](mailto:jshay@valleywater.org)

### **Purpose**

Goal is to restore flood conveyance capacity in improved channels by removing accumulated sediment in accordance with the criteria, standards, or guidelines of the Federal Emergency Management Agency, the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or the District.

Objectives are to remove sediment from channels; characterize the physical and chemical properties of the sediments for proper removal and disposal actions; conduct water quality monitoring to verify compliance with the effluent and receiving water limitations by the RWQCB and implement general and site-specific BMPs associated with sediment removal projects.

### **Study Watersheds**

Basinwide

### **Tributaries Sampled in Watershed**

Variable year to year

### **Sampling Location**

Sampling sites are determined by the Notification of Proposed Work submitted to the Regional Board each year. Sampling locations are selected randomly (discrete samples) within the work areas and at locations that have highest potential for detecting maximum number of

contaminants (continuous core samples). Criteria for selecting continuous core locations includes proximity to storm water runoff locations, including outfalls, in depositional areas, and where industrial sources may have impacted areas where dredging is planned. Both tidal and non-tidal sites may be sampled.

**Sampling Frequency**

For continuous soil core samples are taken for approximately one soil sample per 4,000 cubic yards of sediment estimated to be removed for each proposed project. For discrete samples, one sample is collected for every 1,000 cy of sediment estimated to be removed, and up to four samples are composited together in laboratory.

**Field Sampling Period**

Typically June through October.

**Sampling Protocols**

Standard soil sampling and laboratory protocols are described in the District Sediment Characterization Plan. Water quality sampling protocol are described in the District's Self-Monitoring Program Water Quality Sampling Plan.

**Data Format**

Report, Table

**Detailed Data Description**

Analytical testing of soil for metals, pesticides, solvents, hydrocarbons, organic carbon, salinity, toxicity, pH, and asbestos. Water quality parameters include at minimum turbidity, pH and dissolved oxygen.

**Project Timeline**

Projects completed annually.

**Product Title**

Annual Self-Monitoring Report for Sediment Removal Projects, Analytical Data for Sediment Samples

**Study Information Verified**

John Shay, SCVWD, personal communication, May 2005.

## **Stream Characteristic Measurements**

### **Project Type**

Resource Management

### **Project Description**

Geomorphic Measurements, HEC-HMS modeling, stream flow measurement and calibration

### **Keywords**

channel improvements, channel maintenance, channel morphology/geomorphology, flooding/flood protection, hydraulic modeling, hydrology, sediment/sedimentation

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

### **Funding Sources**

SCVWD

### **Contracted Parties**

Balance Hydrologics, Philip Williams and Associates, Colorado State University

### **Contact Information**

Name: Dipankar Sen

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x3036

Email: dsen@valleywater.org

### **Purpose**

Collect baseline geomorphic data to assist SCVWD in erosion repair and sediment removal projects for the Stream Maintenance Program (SMP) and provide information necessary to design stream channel that maintains stream function and flood protection for Capital Improvement Projects.

### **Study Watersheds**

Adobe, Coyote

### **Tributaries Sampled in Watershed**

Adobe Creek, Berryessa Creek, Upper Penitencia Creek

### **Sampling Location**

Cross sections, longitudinal profile and pebble counts were taken along Berryessa Creek (between Old Piedmont and Hillview), and Upper Penitencia Creek (between Dorel and King Rd) and Adobe Creek (Hidden Villa Farm and Foothill Expressway). Stream flow gage and bedload and suspended load will be monitored at upper and lower ends of project area in Berryessa and Upper Penitencia Creek and at Middlefield Rd in Adobe Creek.

### **Sampling Frequency**

Longitudinal profiles, cross-sections and pebble counts were conducted summer and fall 2004; some cross-sections will be repeated in subsequent year(s); particle size of

pavement/subpavement was conducted in Upper Penitencia and Berryessa summer of 2004; monitoring of bedload and suspended load planned in all three watersheds through winter 2006. HEC-HMS modelling complete in Adobe Creek; planned for Upper Penitencia and Berryessa in future.

**Field Sampling Period**

June 2004 to 2007

**Sampling Protocols**

Geomorphic field data collected using approach developed by Bill Annable (CSU). Stream gage installation by Balanced Hydrologics. Phil Williams and Assoc. assisted in the development of the HEC-HMS model.

**Data Format**

HEC Data, Table, Report

**Detailed Data Description**

Longitudinal profiles, channel cross-sections, pebble counts, suspended and bedload sediment characterization, stream flow measurements, bank material classification and shear stress measurements.

**Project Timeline**

2007

**Product Title**

To be determined

**Study Information Verified**

Dipankar Sen, SCVWD, personal communication, May 2005.

# Upper Berryessa Creek Flood Protection Project

## **Project Type**

Resource Management

## **Project Description**

Flood Protection Project

## **Keywords**

biological data, chemical data, flooding/flood protection, hydrology, physical data, sediment/sedimentation

## **Lead Agencies**

Santa Clara Valley Water District (SCVWD), United States Army Corps of Engineers (USACE)

## **Funding Sources**

USACE, SCVWD (Clean, Safe Creeks and Natural Flood Protection Program)

## **Contracted Parties**

United States Fish and Wildlife Service (USFWS)

## **Contact Information**

Name: George Fowler

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2748

Email: Gfowler@valleywater.org

## **Purpose**

Project goal is to provide 100-year level of flood protection in the Berryessa Creek watershed while striving to incorporate the Clean, Safe Creeks Natural Flood Protection Program in achieving the project's overall goals and objectives.

Project objectives are to prepare a General Reevaluation Study and Environmental Impact Statement/Report (EIS/EIR) to develop alternatives and select one that would provide 100-year level of flood protection. A Hydrologic Study was completed which included developing flow versus frequency for existing and future hydrologic conditions and generating flood hydrographs. Work is progressing to generate floodplain maps to delineate the extent of flooding for a 100-year flood event.

Future project work and responsible party includes: 1)Hydraulic Design and Risk-based Studies (USACE); 2) Social Environment Study (SCVWD/USACE); 3) Hazardous Materials Study (SCVWD/USACE); 4) Environmental Impact Statement/Report (USACE/SCVWD); 5) Fish and Wildlife Studies HEP Analysis (USFWS); 6) Economic Studies (USACE); and 7) Geotechnical Investigation (USACE).

## **Study Watersheds**

Lower Penitencia

**Tributaries Sampled in Watershed**

Berryessa Creek

**Sampling Location**

Not applicable

**Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

Not reported

**Detailed Data Description**

Geology, sediment (basin yield, load, and transport capacity), hydrologic (flow/frequency & flood hydrographs), hydraulic (water surface profiles, floodplains & bridge scour), topographic (aerial photos & contour maps), and economic (costs/benefits).

**Project Timeline**

General Reevaluation Study currently in progress and targeted for completion in 2006.

**Product Title**

To be determined

**Study Information Verified**

Steve Bui, SCVWD, personal communication, May 2005.

# Upper Penitencia Creek Flood Protection Project

## **Project Type**

Resource Management

## **Project Description**

Flood Protection Project

## **Keywords**

biological data, chemical data, flooding/flood protection, hydrology, physical data, sediment/sedimentation

## **Lead Agencies**

Santa Clara Valley Water District (SCVWD), United States Army Corps of Engineers (USACE)

## **Funding Sources**

USACE, SCVWD

## **Contracted Parties**

United States Fish and Wildlife Service (USFWS)

## **Contact Information**

Name: George Fowler

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2748

Email: Gfowler@valleywater.org

## **Purpose**

Project goal is to provide 100-year level of flood protection in the Upper Penitencia Creek watershed while striving to incorporate the Clean, Safe Creeks Natural Flood Protection Program in achieving the project's overall goals and objectives. Project objectives are to prepare a Feasibility Study and Environmental Impact Statement/Report (EIS/EIR) to develop alternatives and select one that would provide 100-year level of flood protection.

A sediment study was completed April 2003, which included a field reconnaissance to evaluate geomorphic character, an estimate of sediment yield, load, and transport capacity and an assessment of channel stability for upstream and downstream effects of the project. A bridge scour analysis was completed February 14, 2003.

Future project work and responsible parties include: 1) Hydraulic Design and Risk-based Studies (USACE); 2) Social Impact Study (SCVWD/USACE); 3) Hazardous Materials Study (USACE); 4) Environmental Impact Statement and Report (USACE); 5) Fish and Wildlife Studies HEP Analysis (USFWS); 6) Economic Studies (USACE); and 7) Geotechnical Investigation (USACE).

## **Study Watersheds**

Coyote

**Tributaries Sampled in Watershed**

Upper Penitencia Creek

**Sampling Location**

Upper Penitencia from Coyote Creek confluence to Dorel Drive

**Sampling Frequency**

Sediment samples were collected at five geomorphic reaches.

**Field Sampling Period**

Feb - April 2003

**Sampling Protocols**

Watershed Sediment Source Assessment: Compilation and evaluation of previous studies and topographic maps was conducted to characterize the watershed geology and soils, and their landslide tendency.

Reach Analysis: Field reconnaissance was conducted in five geomorphic sub-reaches. In addition, a sediment budget analysis was conducted for each reach. Bulk samples of channel bed material were collected at one location in each sub-reach, at approximately trapezoidal cross-sections between riffles and pools. Analysis of 26 years of streamflow data and channel cross-section data.

**Data Format**

Not reported

**Detailed Data Description**

Geology, sediment (basin yield, load, and transport capacity), hydrologic (flow/frequency & flood hydrographs), hydraulic (water surface profiles, floodplains & bridge scour), topographic (aerial photos & contour maps), and economic (costs/benefits).

**Project Timeline**

Feasibility study currently in progress and targeted for completion in 2007.

**Product Title**

Upper Penitencia Creek Reconnaissance Level Sediment Assessment:Existing Conditions Summary, Upper Penitencia Creek Reconnaissance Level Sediment Assessment:Project Conditions Evaluation, Upper Penitencia Creek Reconnaissance Level Sediment Assessment: Bridge Scour Analysis

**Study Information Verified**

Steve Bui, SCVWD, personal communication, May 2005.

## **Vegetation Management Projects**

### **Project Type**

Resource Management

### **Project Description**

Management of vegetation near channels and canals as part of the SCVWD's Stream Maintenance Program.

### **Keywords**

flooding/flood protection, vegetation, pesticides, water quality

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

### **Funding Sources**

SCVWD

### **Contracted Parties**

None

### **Contact Information**

Name: Jen Codianne

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x3876

Email: [jcodianne@valleywater.org](mailto:jcodianne@valleywater.org)

### **Purpose**

Project goals are to maintain the ability of channels to function as flood protection facilities and canals to function for water conveyance. Other goals include protecting levees and concrete linings from roots, meeting local fire codes requiring the control of combustible weeds and grasses, providing visual clearance to inspect the condition of a facility, and providing access along maintenance roads.

Project objectives are to manage vegetation near channels and canals; conduct water quality monitoring to determine if there are any environmental impacts from the District

### **Study Watersheds**

Basinwide

### **Tributaries Sampled in Watershed**

Variable year to year

### **Sampling Location**

Sampling sites are selected from the Notification of Proposed Work submitted to the Regional Board each year. Sampling locations are selected randomly based on the selection criteria described in the District

**Sampling Frequency**

Ten percent of the proposed vegetation management projects will be sampled each year. Projects to be sampled will be representative of the District's work and will be sampled according to the In-Stream Aquatic Herbicide Control Program. Water quality monitoring is conducted prior to start of work, at least two times during daily work activities and after daily work activities have concluded. Background samples are taken 100 feet upstream of the active daily work site and 100 feet downstream of the active daily work site.

**Field Sampling Period**

Typically June through October.

**Sampling Protocols**

Water quality sampling protocols are described in the District's In-Stream Aquatic Herbicide Control Program.

**Data Format**

Table, Report

**Detailed Data Description**

Water quality parameters include at minimum glyphosate, turbidity, pH, temperature, and dissolved oxygen.

**Project Timeline**

Projects completed annually.

**Product Title**

SCVWD Draft Self-Monitoring Report for the In-Stream Aquatic Herbicide Control Program for Northern Santa Clara County, SCVWD Multi-Year Stream Maintenance Program Post-Construction Report

**Study Information Verified**

Mark Wander, SCVWD, personal communication, May 2005.

## **Section 2: Mitigation Projects**



## **Coyote Parkway Freshwater Wetland**

### **Project Type**

Mitigation

### **Project Description**

As part of the implementation of the Multi-Year Stream Maintenance Program (SMP) in 2002, the District has committed and is required to provide mitigation for impacts from routine maintenance activities. Creating freshwater wetland at the Coyote Lake Park Site 10A is one of the projects identified in the SMP mitigation program.

### **Keywords**

aquatic habitat, aquatic vegetation, riparian habitat, riparian vegetation, salmonids, special status species, wetlands

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

### **Funding Sources**

SCVWD

### **Contracted Parties**

None

### **Contact Information**

Name: Ngoc Nguyen

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2632

Email: nnguyen@valleywater.org

### **Purpose**

This project will create about 7 acres of near perennial wetland as a mitigation component of the Santa Clara Valley Water District

### **Study Watersheds**

Coyote

### **Tributaries Sampled in Watershed**

Coyote Creek

### **Sampling Location**

Soil samples were collected for analysis of geotechnical properties, soil planting properties, and wetland soil reuse criteria in November 2003. Six soil borings were installed and four were converted to piezometers. The soil borings were located inside the proposed wetland basin. Soil samples were collected from 5 test pits and analyzed for soil planting properties.

Additional soil samples were collected in January 2005 to evaluate the potential solubility of the metals in the soil.

**Sampling Frequency**

Soil samples in each soil boring were collected at approximately 5-foot intervals from the ground surface of each soil boring. Groundwater levels were monitored monthly from January 2004 to December 2004.

**Field Sampling Period**

Soil samples were collected in November 2003 and January 2005.

**Sampling Protocols**

Soil samples from soil borings were collected by using modified California, Shelby tube and shallow soil samples were collected by hand auger. Soil samples from test pits were collected by hand tools.

**Data Format**

Table, Map, Technical Memo, Image

**Detailed Data Description**

Riparian vegetation community, terrestrial wildlife, Special status species, Heavy metals, Pesticides, Salinity, TOC, Total nutrients, Soil type, Groundwater elevation, Visual habitat survey, Ground elevation, Contour map, Water temperature

**Project Timeline**

Monitoring and data collection to be completed in July 2005; project construction to be completed in March 2006.

**Product Title**

To be determined

**Study Information Verified**

Ngoc Nguyen, SCVWD, personal communication, May 2005.

# **Guadalupe River Flood Control and Restoration Project**

## **Project Type**

Mitigation

## **Project Description**

Resource Management and Enhancement

## **Keywords**

biological communities, erosion, fish, flooding/flood protection, mercury/methylmercury, NPDES permit, notice of intent (NOI) facilities, recreation, riparian habitat, salmonids, sediment/sedimentation

## **Lead Agencies**

Santa Clara Valley Water District (SCVWD), United States Army Corps of Engineers (USACE)

## **Funding Sources**

SCVWD, USACE

## **Contracted Parties**

Ferma, Jones and Stokes Associates, Northwest Hydraulics

## **Contact Information**

Name: Terry Neudorf

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2695

Email: [tneuforf@valleywater.org](mailto:tneuforf@valleywater.org)

## **Purpose**

Project goals are to reduce the frequency of flooding in Downtown San Jose as well as to mitigate the subsequent effects it has on the habitat along the Guadalupe River. Also to implement an environmental mitigation program to compensate for environmental impacts caused by the flood control measures by improvement and restoration of the affected fish, wildlife and riparian habitat.

Objectives of project are to modify the Guadalupe River channel in order to control flooding and reduce damages caused by flooding, and enhance the riparian habitat. This includes the construction of bypass culverts and channel armoring to increase channel capacity and reduce erosion; a low flow channel to facilitate fish passage and spawning; training walls to divert upstream flood waters back into the channel; as well as a series of recreational trails providing access to the river corridor. The project also includes the implementation of a mitigation and monitoring program to restore on and off-site salmonids habitat by planting Shaded Riparian Area (SRA) cover vegetation, reforming the creek channel, installing instream structures, and narrowing the low flow channel in order to stabilize the channel, reduce erosion, and restore vegetation, and fisheries and wildlife habitat.

## **Study Watersheds**

Guadalupe

## **Tributaries Sampled in Watershed**

Guadalupe Creek

### **Sampling Location**

A 2.6 mile long portion of the Guadalupe River in downtown San Jose between Interstate Highway I-880 and Interstate Highway I-280. Additionally, 1.5 miles of the River downstream and 1.6 miles of Guadalupe Creek located 4 miles above downtown project.

### **Sampling Frequency**

Diverted Water Discharge: conducted on the first two days of the commencement of diversion, one week later, and monthly thereafter.

Reintroduced Flow Discharge: daily for two days upon commencement of discharge

Background Water: daily

Receiving Water: two samples within every 24 hour period, evenly spaced during work hours

Mercury: quarterly for chemicals, continuously for flow and suspended solids

### **Field Sampling Period**

Completed four years of monitoring (2000-2004).

### **Sampling Protocols**

Water analyses: laboratory analysis shall be performed by a laboratory approved by the Department of Health Services or a laboratory approved by the Executive Officer.

Background Water: collected from 100 feet from the point of discharge, representative samples of typical undisturbed conditions, additional daily samples taken from a minimum of 500 feet upstream of the active site.

Receiving Water: taken 1 foot below the surface of the water, 100 feet from point of discharge for immediate analysis; duplicates are collected a minimum of once per month for separate on site and laboratory analyses.

### **Data Format**

Report, Form

### **Detailed Data Description**

pH, turbidity, dissolved oxygen, odor, discoloration, health of new vegetation, percent cover by plant canopy, tree height, tree basal area, percent shaded stream area, bank stability, temperatures, spawning gravel abundance and quality.

### **Project Timeline**

Continue for lifetime of project or until mitigation requirements are satisfied.

### **Product Title**

Annual Mitigation Monitoring Reports (June 2001 - 2005)

### **Study Information Verified**

Terry Neudorf, SCVWD, personal communication, May 2005.

## **Pond A4 Tidal Wetland Restoration**

### **Project Type**

Mitigation

### **Project Description**

Create tidal marsh wetlands in former Cargill salt evaporator pond

### **Keywords**

water quality, wetlands

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

### **Funding Sources**

SCVWD

### **Contracted Parties**

CH2M Hill

### **Contact Information**

Name: Belinda Allen

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2644

Email: BAllen@valleywater.org

### **Purpose**

Purpose of project is to develop 66 acres of tidal marsh at the 310 acre Pond A4, a former Cargill salt evaporator pond adjacent to Guadalupe Slough, to satisfy permit requirements for the SCVWD's Stream Maintenance Program (SMP) and for the Lower Guadalupe River Project. Mitigation site may be changed to Ponds 19A, 20A and 21A. As a result, monitoring approach is to be determined. Decision on the location of mitigation will be made by end of 2005.

### **Study Watersheds**

Sunnyvale East, Sunnyvale West

### **Tributaries Sampled in Watershed**

Guadalupe Slough, Sunnyvale East Channel, Sunnyvale West Channel

### **Sampling Location**

To be determined

### **Sampling Frequency**

To be determined

### **Field Sampling Period**

To be determined

**Sampling Protocols**

To be determined

**Data Format**

To be determined

**Detailed Data Description**

To be determined

**Project Timeline**

Design of the initial 66 acres is scheduled for completion by 2006, with construction scheduled to begin in 2007.

**Product Title**

(N/A)

**Study Information Verified**

Belinda Allen, SCVWD, personal communication, May 2005.

## **Section 3: Permit Compliance**



# Guadalupe River Watershed Mercury TMDL

## **Project Type**

Permit Compliance

## **Project Description**

Preparation of the Mercury Total Maximum Daily Load (TMDL) in the Guadalupe River Watershed.

## **Keywords**

bioaccumulation, tissue chemistry, fish, TMDL, water chemistry, sediment chemistry, erosion, mercury/methylmercury, sediment/sedimentation

## **Lead Agencies**

San Francisco Bay Regional Water Quality Control Board (SFRWQCB), Guadalupe River Mercury TMDL Work Group, Santa Clara Valley Water District (SCVWD)

## **Funding Sources**

SCVWD, SFRWQCB

## **Contracted Parties**

Tetra Tech, Kinnetic Laboratories, Inc., Jones and Stokes Associates, Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.), US Geological Survey (USGS)

## **Contact Information**

Name: Dave Drury

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2721

Email: DDrury@valleywater.org

## **Purpose**

Preparation of the Mercury TMDL in the Guadalupe River Watershed. The TMDL will ultimately be the regulatory responsibility of the Regional Board, but implementation will be the responsibility of the communities, private industry, and public agencies in the Watershed. The WMI will serve as the stakeholder forum for preparation of the TMDL, to ensure load allocations and the implementation plan are feasible. A technical TMDL Report will include load allocations for all sources of mercury.

The SCVWD funded all the products associated with data collection phase of the TMDL (under contract with Tetra Tech). The next phases of the TMDL Project Plan are to complete the Preliminary and Final TMDL Project Report and Implementation Plan; both will be completed by the SFRWQCB.

This project summary includes data collection activities that are associated with Phase 3: Data Collection and Analyses of the Guadalupe Mercury TMDL Project Plan. The three main goals for data collection effort are: 1) quantify mercury sources and loading; 2) develop additional information on the processes that control mercury fate, transport and bioavailability; and 3) provide linkage between mercury loads and water body impairment (see Section 1.1 of Data

Collection Plan, February 20, 2004). The sampling plan includes wet season water and sediment samples, fish samples from creeks and the River, and dry season reservoir methylmercury samples. A Final Conceptual Model Report describing biogeochemical processes controlling mercury fate and transport in the watershed will be completed in June 2005. This report is based on literature reviews and evaluation of water quality data collected during the dry and wet season, as well as 5-year load averages.

### **Study Watersheds**

Guadalupe

### **Tributaries Sampled in Watershed**

Alamitos Creek, Guadalupe Creek, Arroyo Calero

### **Sampling Location**

Guadalupe Creek: Below Guadalupe Reservoir and in Reservoir; Arroyo Calero: Near mouth of creek and in Calero Reservoir; and Alamitos Creek: Near mouth of creek and in Almaden Reservoir

### **Sampling Frequency**

In the wet season monitoring, total and methylmercury were measured in water column at 55 watershed locations and sediment from 9 locations. Additional sediment sampling (n=55) occurred in three reservoirs the following year. In the dry season monitoring, total and methylmercury were measured in epilimnion and hypolimnion of Almaden and Guadalupe Reservoirs and at the outlets. Fish tissue samples of largemouth bass were taken at 5 reservoirs and of California roach at 6 stream locations.

### **Field Sampling Period**

Wet season monitoring (mid-February to late April 2004). Dry season monitoring (May - August 2004). Sediment sampling in reservoirs occurred in March 2005.

### **Sampling Protocols**

Field sampling and laboratory methods and number of samples are listed in the Synoptic Survey Plan (July 30, 2003) Appendix Sampling Methods and Quality Assurance Plan (June 13, 2003).

### **Data Format**

Database, GIS Coverage, Map, Report

### **Detailed Data Description**

Wet season monitoring includes total and methylmercury concentrations in suspended and bedded sediment and water. Flow rates and water quality parameters were also measured (ph, temp, conductivity, DO and turbidity). Fish tissue samples were taken from reservoirs to measure mercury concentrations resulting from bioaccumulation.

### **Project Timeline**

Phase 3 is nearly complete with the final completion of the Data Collection Report (February 2005) and the Final Conceptual Model (June 2005).

### **Product Title**

Tech Memo 2.2 Synoptic Survey Report (September 8, 2003), Tech Memo 4.1 Draft

Conceptual Model (October 2, 2003), Tech Memo 5.2.3 Data Collection Plan (February 20, 2004), Tech Memo 5.3.2 Data Collection Report (February 8, 2005), Final Conceptual Model Report (April 25, 2005), Tech Memo 7.1.2 Phase 1 Project Management Plan (June 13, 2003), Tech Memo 1.2 Preliminary Problem Statement (June 13, 2003), Tech Memo 7.4.2 Quality Assurance Plan (June 13, 2003), Tech Memo 2.1.2 Synoptic Survey Plan (July 30, 2003)

**Study Information Verified**

Kristen Kerr, EOA, Inc., personal communication, May 2005.



# **San Francisquito Creek Aquatic Habitat Assessment and Limiting Factors Analysis**

## **Project Type**

Permit Compliance

## **Project Description**

Produce information that will assist the Regional Board in preparing the sediment Total Maximum Daily Load (TMDL) for the watersheds to either confirm or reject the validity of the sediment impairment listing and help determine other causes for aquatic habitat impairment that may exist, which also warrant consideration.

## **Keywords**

biological communities, biological data, fish, habitat, riparian habitat, salmonids, sediment/sedimentation, special status species

## **Lead Agencies**

Santa Clara Valley Water District (SCVWD), San Francisquito Creek Joint Powers Authority (SFCJPA)

## **Funding Sources**

SCVWD (Clean, Safe Creeks and Natural Flood Protection)

## **Contracted Parties**

Northwest Hydraulics, Jones and Stokes Associates

## **Contact Information**

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Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2637

Email: djacques@valleywater.org

## **Purpose**

The goal of the Aquatic Habitat Assessment and Limiting Factors Analysis is to determine if steelhead spawning, rearing, and migratory habitat is degraded by land use activities due to excessive sedimentation in the San Francisquito Creek watershed.

The objective of the Aquatic Habitat Assessment and Limiting Factors Analysis is to characterize channel and habitat condition with respect to factors limiting to steelhead populations in the San Francisquito Creek watershed. The data collection and analysis will evaluate these stressors for those limiting to steelhead populations and condition of the aquatic habitat by conducting the following:

- Habitat survey and evaluation of stream hydrologic, geologic, and morphologic characteristics and habitat condition,
- Instream habitat assessment and stressor identification; and
- Limiting factor analysis of aquatic habitat for steelhead populations..

## **Study Watersheds**

San Francisquito

**Tributaries Sampled in Watershed**

San Francisquito Creek, Los Trancos Creek

**Sampling Location**

San Francisquito Creek (Oak Park to Alpine Road) and Los Trancos Creek (confluence to Arastradero Road).

**Sampling Frequency**

Aquatic habitat survey conducted in summer 2004; water temperature monitoring conducted in fall 2004; pool filling measured in fall and winter 2004; permeability measurements and benthic macroinvertebrate sampling in spring 2005.

**Field Sampling Period**

Summer 2004 - spring 2005.

**Sampling Protocols**

Aquatic Habitat Survey was conducted using CDFG methods. Survey included identifying habitat type, documenting steelhead spawning habitat, large woody debris and assessment of existing fish passage barriers. Pool filling was measured using modified V\* method (Lisle and Hilton 1991). Standpipe gravel permeability measurements were conducted using Barnard and McBain (1994). Benthic macroinvertebrate sampling following CSBP methods.

**Data Format**

Table

**Detailed Data Description**

Aquatic habitat survey, continuous water temperature monitoring, physical barrier assessment, gravel permeability, pool filling, bioassessment

**Project Timeline**

June 2005

**Product Title**

San Francisquito Creek Limiting Factors Analysis Technical Report

**Study Information Verified**

Matt Jones, Jones and Stokes Associates, personal communication, May 2005.

## **SCVURPPP Multi-Year Receiving Waters Monitoring Plan**

### **Project Type**

Permit Compliance

### **Project Description**

The SCVURPPP developed a Multi-Year Receiving Waters Monitoring Plan (Multi-Year Plan) that identifies Program monitoring activities in Santa Clara Basin Watersheds over an eight-year period.

### **Keywords**

aquatic habitat, bioassessment/biomonitoring, macroinvertebrates, fish, metals, pesticides, pathogens, toxicity, nutrients, water chemistry, sediment chemistry, channel morphology/geomorphology, sediment/sedimentation

### **Lead Agencies**

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

### **Funding Sources**

SCVURPPP

### **Contracted Parties**

Kinnetic Laboratories, Inc., Bioassessment Services

### **Contact Information**

Name: Chris Sommers

Organization: Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.)

Phone: 510-832-2852

Email: csommers@eoainc.com

### **Purpose**

The Multi-Year Plan was developed to satisfy Provision C.7.b and C.9 of its NPDES Permit. Activities identified in the Multi-Year Plan are one aspect of the Program's environmental monitoring and assessment measures (EMMs), which are activities that entail the collection of environmental data through field studies. EMMs are coordinated at the local or regional level and typically fall into one of four categories: (1) screening/baseline level monitoring; (2) detailed investigations; (3) status and trends monitoring; and (4) special studies/control measure monitoring. EMMs are intended to: (1) assist the RWQCB characterize receiving water quality in urban watersheds consistent with the priorities of the Watershed Management Initiative and the Program; (2) identify where and what type of status and trend monitoring is appropriate, (3) recognize the need for site-specific water quality investigations to address questions that might arise during the conduct of the routine monitoring efforts; and (4) allow for determining if control measures are having the intended effect.

The Multi-Year Plan contains the following information: watershed location (prioritized based on SCBWMI and Program assessment priorities), data type (chemical, biological, physical and trash), number and frequency of sampling events, fiscal years (eight years starting with FY 02-03 through FY09-10), rationale and lead agency. The information on data type utilizes a tiered

monitoring approach discussed by the RWQCB staff in its Regional Monitoring and Assessment Strategy (RMAS) memo (Draft Monitoring Design in Regional Board-lead Pilot Watersheds, Spring 2001) dated February 8, 2001. The following monitoring categories were included within the memorandum: screening level, detailed investigation, and status and trends. The field and analytical methods used in the (Multi-Year Plan) are consistent with the Regional Board's Surface Waters Ambient Monitoring Program (SWAMP) Quality Assurance Project Plan.

A clear identification of the specific monitoring activities planned for each year will be provided as part of the Program's Annual Monitoring Plan submitted every March 1. The Annual Monitoring and Assessment Plan includes the same type of information as the Multi-Year Plan. The Program has conducted monitoring activities in Coyote Creek and Lower Penitencia Creek Watersheds in FY 02-03, Adobe Creek and San Tomas Creek Watersheds in FY 03-04 and FY 04-05, and in Calabazas Creek, Matadero Creek, Barron Creek Watersheds and Sunnyvale East and West Channels in FY 04-05. Results and analyses for each years monitoring activities is provided in Watershed Monitoring and Assessment Summary Report, which is included in the Program's Annual Report submitted in September of each year. The Program is planning to monitor Stevens and Permanente Creek Watersheds in FY 05-06.

### **Study Watersheds**

Calabazas, Coyote, Lower Penitencia, Matadero/Barron, Adobe, San Tomas, Sunnyvale West, Sunnyvale East

### **Tributaries Sampled in Watershed**

San Tomas Aquino Creek, Adobe Creek, Calabazas Creek, Matadero Creek, Barron Creek, Sunnyvale East Channel, Sunnyvale West Channel, Upper Penitencia Creek, Lower Silver Creek, Thompson Creek, Berryessa Creek, Calera Creek, Los Coches Creek, Lower Penitencia Creek, Saratoga Creek

### **Sampling Location**

The location of sampling sites varies by watershed; refer to SCVURPPP Watershed Monitoring and Assessment Summary Reports for sampling locations.

### **Sampling Frequency**

Water samples were taken at selected sites for organophosphate pesticides and total and dissolved metal concentrations, toxicity testing of samples, were conducted during dry and wet season. Conventional water quality measurements, bacterial indicators and stream flow were also measured during wet and dry season. Sediment contaminant sampling was also conducted in FY 02-03 and FY 03-04 during dry season event only.

### **Field Sampling Period**

Starting in FY 04-05, water samples, along with conventional water quality parameters, were collected during the following hydrological cycles: wet season (January-March); and dry season (June - October). Spring season sampling events were also conducted prior to FY 04-05. Benthic macro-invertebrate sampling and physical habitat assessment is conducted April - May. Fish sampling conducted in October.

**Sampling Protocols**

Field sampling protocols and laboratory analytical methods are described in the SCVURPPP Watershed Monitoring and Assessment Summary Reports. SCVURPPP Quality Assurance Project Plan for the Multi-Year Receiving Waters Monitoring Project will be completed in September 2005.

**Data Format**

Report, Database, Map, GIS Coverage

**Detailed Data Description**

General water quality measurements (DO, temperature, pH, conductivity and velocity). Water samples analyzed for nutrients and anions, total and dissolved metals, suspended sediment concentration, organophosphate pesticides, bacterial concentrations and acute and chronic toxicity. Aquatic bioassessments using benthic macroinvertebrates and in some cases, fish assemblages.

**Project Timeline**

Annual Monitoring Plan submitted in March of each year in the SCVURPPP Draft Work Plan; Watershed Monitoring and Assessment Summary Report submitted in September each year in the SCVURPPP Annual Report.

**Product Title**

SCVURPPP Multi-Year Receiving Waters Monitoring Plan (Revised March 1, 2004), Watershed Monitoring and Assessment Summary Report (Submitted annually in September), Monitoring Plan (Submitted annually in March), Watershed Characterization and Sampling Design for Stevens and Permanente Creek Watersheds Memo (March 2005)

**Study Information Verified**

Paul Randall, SCVURPPP, May 2005.



## **Watershed Analysis and Sediment Management Assessment**

### **Project Type**

Permit Compliance

### **Project Description**

The SCVURPPP will conduct a watershed analysis and management practice assessment in the Stevens and Upper Penitencia Creek watersheds to help determine if beneficial uses may be impaired by excessive sediment production from erosion due to anthropogenic activities.

### **Keywords**

channel maintenance, hydrology, urbanization, water quality, watershed assessment, aquatic habitat, channel morphology/geomorphology, erosion, sediment/sedimentation, salmonids, special status species

### **Lead Agencies**

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

### **Funding Sources**

SCVURPPP

### **Contracted Parties**

Stillwater Sciences

### **Contact Information**

Name: Paul Randall

Organization: Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.)

Phone: 510-832-2852

Email: randall@eoainc.com

### **Purpose**

The Program prepared a workplan to conduct an analysis and sediment management practice assessment in watersheds previously identified as high priority creeks potentially impacted by sediment in fulfillment of the SCVURPPP NPDES Permit Provision C.9.f.iii paragraph two. The sediment assessment work plan contains two separate phases. Phase I is scheduled for FY 03-04 and includes conducting a Limiting Factors Analysis (LFA) and sediment management practices assessment in the Stevens Creek watershed. Tasks associated with the LFA include collecting available existing data to characterize the watershed and identify issues of concern; develop hypotheses to understand potential impacts of sediment to species that are sensitive to excess sediment; conduct focused studies to test hypotheses; and implement a limiting factors analysis to determine to what degree sediment impacts are key factors. The sediment management practices assessment will focus on documenting and evaluating existing sediment management practices in the Stevens Creek watershed. Study results indicated that excessive sediment from anthropogenic sources was not impairing beneficial uses in the watershed and therefore, Phase II: Conduct a Rapid Sediment Budget, was not recommended for the subsequent year. As a result, the SCVURPPP initiated Phase I: Limiting Factors Analysis in the next high priority watershed, Upper Penitencia Creek, for FY 04-05.

**Study Watersheds**

Stevens, Coyote

**Tributaries Sampled in Watershed**

Stevens Creek, Upper Penitencia Creek, Arroyo Aguague Creek

**Sampling Location**

Stevens Creek, between Fremont Ave and Stevens Creek Dam.

Sampling locations for Upper Penitencia Creek to be determined.

**Sampling Frequency**

Varies by focused study and project.

**Field Sampling Period**

Stevens Creek: Field reconnaissance in December 2003 - January 2004; focused studies conducted in March 2004.

Upper Penitencia Creek: Field reconnaissance conducted in January 2005; aquatic habitat survey and adult redd survey March 2005, focused studies will be conducted in May-June 2005.

**Sampling Protocols**

Gravel permeability was measured using a modified Mark IV standpipe (Terhune 1958, Barnard and McBain 1994). Pool filling was measured using modified V\* technique developed by Hilton and Lisle (1993) that is described in Stillwater Sciences and Dietrich (2002). Surface and subsurface embeddedness was measured using methods described in the Stevens Creek LFA Report.

Aquatic habitat survey was conducted in Arroyo Aguague using modified CDFG protocols. Focused studies for Upper Penitencia to be determined.

**Data Format**

Report, GIS Coverage, Table

**Detailed Data Description**

In addition to compilation and assessment of existing data sources, special focused studies were conducted to identify importance of sediment as limiting factor for steelhead populations. Studies included measurements of gravel permeability, pool filling, embeddedness and assessment of geomorphic function and aquatic habitat condition during field reconnaissance.

**Project Timeline**

Both technical report on the limiting factors analysis and memorandum on the sediment management practices assessment was completed in September 2004. Upper Penitencia Creek LFA is anticipated to be complete in October 2005.

**Product Title**

Workplan for Conducting Watershed Analysis and Management Practice Assessment in Other Creeks Potentially Impaired by Sediment from Anthropogenic Activities, Sediment Management Practices Assessment Report for the Stevens Creek Watershed

Stevens Creek Watershed, Stevens Creek Limiting Factors Analysis Technical Report

**Study Information Verified**

Paul Randall, SCVURPPP, May 2005.



## **Section 4: Watershed Management**



## **Creek and Watershed Maps of the Bay Area**

### **Project Type**

Watershed Management

### **Project Description**

Develop maps showing historic and current drainage patterns in urban watersheds of the Bay Area.

### **Keywords**

baylands, channel improvements, GIS, storm drain outfalls, urbanization

### **Lead Agencies**

Oakland Museum of California

### **Funding Sources**

CALFED; San Francisco Watershed Council; SCVWD; cities of San Jose, Milpitas, Sunnyvale, Palo Alto and Mountain View; Silicon Valley Pollution Prevention Center; Alameda Countywide Clean Water Prog; USFWS; S.F. Estuary Project; and the Oakland Museum.

### **Contracted Parties**

William Lettis and Associates, San Francisco Estuary Institute (SFEI), The Bay Institute

### **Contact Information**

Name: Christopher Richard

Organization: Oakland Museum of California

Phone: 510-238-3297

Email: crichard@museumca.org

### **Purpose**

The purpose of the project is to produce printed maps and GIS products presenting a combined drainage network of creeks, canals, and storm drains, in delineated watersheds. Presentations of historical drainage patterns, water balances, and other aspects of the hydroscape. Current coverage includes western and central Alameda County, and will cover the Santa Clara Basin by July 2005. The Peninsula and Western Contra Costa County will follow.

### **Study Watersheds**

Basinwide

### **Tributaries Sampled in Watershed**

Basinwide

### **Sampling Location**

Not applicable

### **Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

GIS Coverage, Map

**Detailed Data Description**

Compilation of existing data sets of creeks, former creek courses, storm drains, flood-control channels, lentic water bodies, watershed basin boundaries, and coarse delineation of wetland types.

**Project Timeline**

Within the Santa Clara Basin, Palo Alto and Milpitas maps are complete, the rest of the basin will be completed June 30, 2005.

**Product Title**

Creek & Watershed Map of Palo Alto & Vicinity, Creek & Watershed Map of Milpitas & North San Jose, Creek & Watershed Map of Central San Jose, Creek & Watershed Map of West Santa Clara Valley, Creek & Watershed Map of South San Jose, Baylands & Creeks of South San Francisco Bay

**Study Information Verified**

Christopher Richard, Oakland Museum, personal communication, May 2005.

# Historical Tidal Marsh Maps

## Project Type

Watershed Management

## Project Description

Develop South Bay Historical Tidal Marsh GIS database

## Keywords

baylands, wetlands, GIS

## Lead Agencies

San Francisco Estuary Institute (SFEI)

## Funding Sources

SCVWD, SCVURPPP, City of San Jose, South Bay Salt Pond Restoration Project, and Alameda County Flood Control and Water Conservation District

## Contracted Parties

(N/A)

## Contact Information

Name: Robin Grossinger

Organization: San Francisco Estuary Institute (SFEI)

Phone: 510-746-7380

Email: robin@sfei.org

## Purpose

The main goal of the project is to provide historic information on the South Bay in a practical format useful to planners and researchers. The project was divided into three phases. Phase I involved digital acquisition, georectification and vectorization of original USGS topographic surveys conducted in the 1850s and 1890s. These existing maps are known as "T-sheets" Phase II of the project includes providing web access to the images, metadata, and a Users Guide. Phase III of the project include the following tasks:

1. Attribute key habitat types in database;
2. Integrate with existing EcoAtlas historical wetlands data;
3. Collect addition data from map images; and
4. Sub-set the data set into smaller tiles that correspond to USGS quad maps.

Phase III products include improved GIS coverages with new metadata that will be available on both DVD and project website.

## Study Watersheds

Baylands

## Tributaries Sampled in Watershed

None

**Sampling Location**

Not applicable

**Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

GIS Coverage

**Detailed Data Description**

Conversion of existing wetland data into digital format.

**Project Timeline**

Phase I has been completed; Phases II and III will be completed by December 2005.

**Product Title**

To be determined.

**Study Information Verified**

Robin Grossinger, SFEI, personal communication, May 2005.

## **Integrated Regional Water Management Plan (IRWMP)**

### **Project Type**

Watershed Management

### **Project Description**

Develop Watershed Management and Habitat Protection/Restoration Component of the IRWMP

### **Keywords**

watershed management, restoration, habitat

### **Lead Agencies**

California State Coastal Conservancy

### **Funding Sources**

Proposition 50 Grant Program

### **Contracted Parties**

Jones and Stokes Associates

### **Contact Information**

Name: Jeff Melby

Organization: California State Coastal Conservancy

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Email: [jmelby@scc.ca.gov](mailto:jmelby@scc.ca.gov)

### **Purpose**

Water Agencies from the Bay Area have been working with a Technical Coordinating Committee (TCC) comprised of their counterparts from Stormwater and Flood Control Agencies, Watershed and Habitat Protection Agencies, and Wastewater management agencies to contemplate assembly of an Integrated Regional Water Management Plan (IRWMP). The TCC members desire to undertake the development of an IRWMP for the Bay Area in order to: 1) Foster coordination, collaboration and communication among Bay Area agencies responsible for water and habitat-related issues and to achieve greater efficiencies and build public support for vital projects; and 2) Improve regional competitiveness for project funding.

Developing a Watershed Management and Habitat Protection/Restoration Plan (WMHPR) is one component of the IRWMP. The WMHPR will address six key issues: 1) The WMHPR will provide a comprehensive web-based inventory of San Francisco Bay Area watershed and habitat information, projects, and plans; 2) the WMHPR is focused on improving the availability of comprehensive information to, and coordination between, organizations and individuals engaging in watershed and habitat management and restoration in the San Francisco Bay Area; 3) the WMHPR will build upon, rather than duplicate, the efforts of other entities; 4) the WMHPR will be developed through an open, inclusive, stakeholder driven process where all viewpoints are heard and considered; 5) the WMHPR will identify key regional watershed/habitat management and restoration priorities for the Bay Area; and 6) participation in the WMHPR will allow improved access to funding for individual projects, either through the Proposition 50 grantmaking process or other available funding.

**Study Watersheds**

Basinwide

**Tributaries Sampled in Watershed**

Basinwide

**Sampling Location**

Not Applicable

**Sampling Frequency**

Not Applicable

**Field Sampling Period**

Not Applicable

**Sampling Protocols**

Not Applicable

**Data Format**

Web Page, Report

**Detailed Data Description**

Compilation of existing data relevant to watershed/habitat management and restoration.

**Project Timeline**

Website and the WMHPR Plan are anticipated to be complete in December 2005.

**Product Title**

Watershed Management and Habitat Protection/Restoration Plan

**Study Information Verified**

Ken Schwarz, Jones and Stokes Assoc, personal communication, May 2005.

# San Francisco Estuary Watersheds Evaluation

## Project Type

Watershed Management

## Project Description

Assessment of Bay Area watersheds for potential restoration opportunities of salmonid populations.

## Keywords

hydrology, restoration, salmonids, watershed management

## Lead Agencies

Center for Ecosystem Management and Restoration (CEMAR)

## Funding Sources

California State Coastal Conservancy

## Contracted Parties

None

## Contact Information

Name: Gordon Becker

Organization: Center for Ecosystem Management and Restoration (CEMAR)

Phone: 510-420-4565

Email: becker@cecar.org

## Purpose

The overall objective of the project will be to analyze available data on anadromous fishes and their habitat in the San Francisco Estuary region, and to use this information to evaluate the relative potential of watersheds to support restored salmonid populations. The project is intended to support on-going efforts of natural resources agencies and other organizations working toward the recovery of steelhead in the Bay Area. The project will utilize information from existing report published by CEMAR entitled "Historical distribution and current status of steelhead in streams of the San Francisco Estuary, California (Estuary Streams Report)"

The watershed evaluation project will include the following tasks:

Task 1: Establish evaluation criteria and process. The project team will develop a proposed approach to evaluate San Francisco Estuary watersheds for salmonid restoration potential, including candidate screening criteria. A Technical Advisory Committee will be assembled to review the proposed approach and provide comments. Initial analysis of existing information indicates that watershed hydrology and habitat are key factors likely to be used as selection criteria.

Task 2: Collect data. This task involves assembling existing information that will be used to apply the TAC-approved method to evaluate San Francisco Estuary watersheds. The project team will examine the data produced by other investigations and incorporate appropriate portions for thoroughness and consistency with the methods and format proposed for the

analysis. GIS layers will be developed for some of the data used for the analyses.

Task 3: Determine data gaps; conduct screening-level surveys. The project team will identify instances in which the evaluation criteria cannot be applied due to insufficient information for specific watersheds. This tasks may include conducting limited screening-level investigations such as site visits to verify habitat conditions, U.S. Geological Survey records searches and channel measurement to characterize flows, or interviews to determine the status of potential restoration projects such as barrier modifications or provision of in-stream flows.

Task 4: Evaluation and reporting. This task will assess the various watersheds using each criterion and use the results to group watersheds into restoration priority categories. The results of the analysis will be presented in a draft report to be reviewed by NOAA Fisheries, DFG, the Conservancy, and other TAC members.

**Study Watersheds**

Basinwide

**Tributaries Sampled in Watershed**

Basinwide

**Sampling Location**

To be determined

**Sampling Frequency**

To be determined

**Field Sampling Period**

To be determined

**Sampling Protocols**

To be determined

**Data Format**

Report

**Detailed Data Description**

Compilation of existing information resources describing aquatic habitat condition, hydrology and other relevant data needed to assess restoration potential of salmonid populations (e.g., fish barriers).

**Project Timeline**

The project is expected to be completed in spring 2006.

**Product Title**

To be determined

**Study Information Verified**

Gordon Becker, CEMAR, personal communication, May 2005.

## **Santa Clara Valley Historical Ecology Project**

### **Project Type**

Watershed Management

### **Project Description**

Develop information and analysis about Santa Clara Valley landscape conditions prior to Euro-American modification.

### **Keywords**

channel improvements, hydrology, watershed management, wetlands

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD), Silicon Valley Pollution Prevention Center

### **Funding Sources**

SCVWD, Silicon Valley Pollution Prevention Center

### **Contracted Parties**

San Francisco Estuary Institute (SFEI)

### **Contact Information**

Name: Robin Grossinger

Organization: San Francisco Estuary Institute (SFEI)

Phone: 510-746-7380

Email: robin@sfei.org

### **Purpose**

The Santa Clara Valley Historical Ecology Project is developing information and analysis about Santa Clara Valley landscape conditions prior to Euro-American modification, to provide a basis for stream restoration/enhancement and natural flood protection. The project will produce an inventory of available historical data, georeferenced historical maps and aerial photography, GIS coverages, and summary technical reports.

### **Study Watersheds**

Basinwide

### **Tributaries Sampled in Watershed**

Basinwide

### **Sampling Location**

Not applicable

### **Sampling Frequency**

Not applicable

### **Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

Map, Report, GIS Coverage, Image

**Detailed Data Description**

Compilation of available historical data sources, including maps, aerial photos, GIS data and summary technical reports.

**Project Timeline**

Products are being developed as part of the Watershed Stewardship Project and the Mid-Coyote Flood Protection Project, and will be available in phases during 2005-2007.

**Product Title**

Guadalupe Watershed Stewardship Plan, West Valley Watershed Stewardship Plan, Lower Peninsula Watershed Stewardship Plan

**Study Information Verified**

Robin Grossinger, SFEI, personal communication, May 2005.

# **Stream Stewardship Plans for Three Watershed Areas in the Santa Clara Basin**

## **Project Type**

Watershed Management

## **Project Description**

Develop strategy for implementing the SCVWD Ends Policy using a watershed management approach within watershed areas of Lower Peninsula, West Valley, and Guadalupe.

## **Keywords**

biological communities, channel improvements, channel maintenance, land use, recreation, restoration, watershed management

## **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

## **Funding Sources**

SCVWD

## **Contracted Parties**

Tetra Tech, Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.), Philip Williams and Associates, San Francisco Estuary Institute (SFEI), Design, Community and Environment

## **Contact Information**

Name: Clayton Creager

Organization: Tetra Tech

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Email: ClayCreager@cs.com

## **Purpose**

Development of stream stewardship plan for stream corridors within three watershed areas (Lower Peninsula, West Valley, and Guadalupe) that will provide the framework for budgeting SCVWD's watershed stewardship activities. The Plans will include a dynamic ranking system that will allow the prioritization of programs or projects within the watershed boundaries. The Plans will also establish opportunities and/or constraints for meeting multi-objectives/use and improve accessibility, transparency and timeliness for sharing water resources management information and land use opportunities.

## **Study Watersheds**

Adobe, Calabazas, Guadalupe, Matadero/Barron, Permanente, San Francisquito, San Tomas, Stevens

## **Tributaries Sampled in Watershed**

Alamitos Creek, Calabazas Creek, Stevens Creek

## **Sampling Location**

Stevens Creek (Interstate 280 upstream to the Reservoir), and Calabazas Creek (Miller Avenue upstream to Comer Drive for USA method, and Bollinger Bridge upstream to Pierce Avenue).

### **Sampling Frequency**

Each site sampled once during this Pilot Study.

### **Field Sampling Period**

October 2004 – April 2005.

### **Sampling Protocols**

Riparian Corridor Condition and Impact Assessment: Center for Watershed Protection Unified Stream Assessment (CWP 2004) – Calabazas Creek. The Unified Stream Assessment (USA) is a method designed to rapidly assess in-stream and riparian corridor conditions and identify restoration and rehabilitation opportunities for urban creeks.

Longitudinal Tier 1 Surveys: Phil Williams Associates methodology (see below) – Stevens and Calabazas Creeks. Tier One assessments consisted of a number of quantitative and qualitative observations of the stream channel at cross sections, located at approximately 1000- 1500 foot intervals. At each cross-section, the following occurred: surveyed and monumented a representative cross section; conducted a pebble count; classified the channel according to the Rosgen, Schumm, and Montgomery-Buffington channel morphology classification schemes; measured width and depth at the approximate height of bankfull flow; described bank material; estimated erosion on each bank; and collected photo documentation.

Fish Barrier Assessment: Phil Williams Associates methodology (see below) – Stevens Creek. The purpose of the fish barrier assessment was to build upon previous qualitative assessments (Abel 2001) by quantifying boundary conditions and flow hydraulics limiting to adult and juvenile salmonid species.

### **Data Format**

Report, Table, Map, GIS Coverage

### **Detailed Data Description**

Riparian Corridor Condition:

The Unified Stream Assessment protocol includes an overall reach assessment in which information about stream corridor conditions, such as average bank stability, in-stream and riparian habitat, and flood plain connectivity and condition are scored during a rapid, continuous upstream walk. Parameters are scored on a continuous scale and summarized to reflect overall stream condition, overall buffer and floodplain condition, and overall reach condition. Notable impacts occurring within each reach are recorded on separate forms and are spatially referenced through the reach survey forms. Eight categories of impacts are included in the USA: severe stream erosion, impacted stream buffers, utilities, trash and debris, stream crossings, channel modifications, storm water outfalls, and a catch-all category for miscellaneous features. In addition, the Calabazas survey team created forms to document positive stream features such as trail opportunities and spawning gravels.

Geomorphic Surveys:

To characterize bed gradation, 100 randomly selected particles were measured from the channel bed using a Wolman Pebble Count (Wolman, 1954). Wherever possible, the embeddedness of the sample was estimated prior to dislodging it or by measuring the line of discoloration on the

removed particle (Bunte and Steven, 2001). Samples were measured along the intermediate axis in the range of 4 to 150 mm. Samples below 4 mm were labeled as “fines” or “fine sand” and samples above 128 mm were labeled as boulders.

Width and depth measurements were taken perpendicular to the channel and parallel to the line between monuments at each cross section and estimated for bankfull rather than baseflow levels. Bank materials were assessed visually or by hand, with a simple finger roll test for clay (Sanders, 1998). Bank stability was assessed using several qualitative factors: the degree of the bank slope relative to apparent bank cohesion, toe versus total bank incision, and the magnitude of previous bank failure. An attempt was made to estimate the percent of actively eroding surface at each site, and photos were made of the left and right banks at each cross section. Photos were also taken facing upstream and downstream directly in the channel. Channel bank material was classified by estimating approximate grain size. Bank erosion was estimated visually by estimating the percent of actively eroding surface. Bank material and erosion were photo-documented on both the left and right bank at each cross section. Cross-section locations were also documented by taking photos facing upstream and downstream. Channels were classified using several schemes. The Rosgen classification (1996) was selected because it estimates an entrenchment ratio. The Schumm classification (1984) was selected as it provides an indication of relative geomorphic stability and evolution of the reach. This classification uses indicators of incision or widening, such as a low width/depth ratio for an incised channel or bank toe erosion for a widening channel. Channel Morphology was assessed qualitatively using the Montgomery and Buffington classification (1997).

Beyond field measurements, flow frequency analyses of Stevens Creek discharges were assessed using the program PEAKFQ (v4.1) developed by the USGS. This program performs flood-frequency analyses based on guidelines discussed in Bulletin 17B and uses the method of moments to fit the Pearson Type III distribution to the logarithms of annual flood peaks. The maximum peak of mean daily flows based on water years 1930 to 1998 was used for the analysis.

#### Fish Barrier Assessments:

Ten non-district maintained structures were assessed for fish passage on Stevens Creek. The fish barrier assessments built upon previous qualitative assessments (Abel 2001) by quantifying boundary conditions and flow hydraulics limiting to adult and juvenile salmonid species. Previous evaluation of these structures was based on field observations at low to moderate discharge conditions (e.g., 5 to 100 cfs) and the assignment of a 0 to 5 ranking depending on the magnitude of the barrier. The primary objective of Stewardship Project’s field assessment was to characterize the bed-step geometry and obtain calibration data for hydraulic modeling. Field measurements of step geometry included approach, brink, and exiting cross-sections, and a thalweg profile. Baffles and tunnel geometries also were included. Field measurements of hydraulic conditions include the water surface elevation of the approaching flow above the structure, at the brink, as well as at the tailwater. Several documentary photographs were also taken at each structure, with additional notes on sediment deposition and damaged structures such as riprap.

Through the Stewardship Project, the Compendium of Municipal Development Policies

(SCVURPPP 2003) was updated.

**Project Timeline**

Completion of draft reports May, 2005; completion of final reports December, 2005.

**Product Title**

Guadalupe Watershed Stewardship Plan, West Valley Watershed Stewardship Plan, Lower Peninsula Watershed Stewardship Plan

**Study Information Verified**

Lucy Buchan, SCVURPPP, May 2005.

## **Section 5: Research**



# **Bioassessment: A Tool for Managing Urban Aquatic Life Uses**

## **Project Type**

Research

## **Project Description**

Study will evaluate the degree to which urban systems can be assessed using predictive relationships between relevant dimensions of urban gradient and biological condition

## **Keywords**

bioassessment/biomonitoring, macroinvertebrates, fish, aquatic habitat, water quality, nutrients, pesticides, metals, channel morphology/geomorphology, hydrology, hydraulic modeling, percent imperviousness, land use

## **Lead Agencies**

Tetra Tech

## **Funding Sources**

Water Environment Research Foundation (WERF)

## **Contracted Parties**

University of California, Berkeley

## **Contact Information**

Name: Alison Purcell

Organization: University of California, Berkeley

Phone: 510-642-6315

Email: alisonp@nature.berkeley.edu

## **Purpose**

In this research, we intend to address how the relationship of the mosaic of land use dimensions (e.g., riparian buffer, impervious surface, etc.) influence the biology of urban watersheds. We postulate that urban systems can fall into one of three general assessment categories (i.e., irretrievable, restoration possible, or attainment of Aquatic Life Use) depending on the characteristics of the stream and its surrounding watershed. Our proposed research will evaluate the degree to which urban systems can be assessed using predictive relationships between relevant dimensions of urban gradient and biological condition.

The project goals are: 1) Ensure that sufficient data are obtained to validate the use of bioassessment in urban streams; 2) Provide scientific linkage between bioassessment and stormwater impacts to improve decision-making; 3) Determine appropriate biological metrics (or other biological indicator) for urban streams; 4) Provide technical input for support to regulatory decision-making, e.g., TMDL targets, etc.; and 5) Provide guidance to regulated community for sound investment in protection and restoration.

The project objectives are: 1) Characterize the advantages and challenges that exist for using bioassessment to investigate systematic and cumulative impacts from impairments in urban watersheds; 2) Identify the appropriate methodologies for determining reference locations in an

urban-dominated watershed, where biological communities change along stream order gradients and with differing degrees of urbanization; and 3) Prescribe the kinds of bioassessments [and ancillary land use data] that should be used to determine the most reasonable aquatic life use in urban watersheds, based on the appropriateness of stream reference conditions, and stream improvement and recovery expectations.

We have also developed four key research questions: 1) What is the capacity of aquatic life across (human disturbance) gradients of urbanization? 2) How do we structure biological indicators to determine ecological status and aquatic life uses in urban systems? 3) Does the relationship between the capacity of aquatic life and urbanization change with climatic zones? 4) Does the relationship between the capacity of aquatic life and urbanization change with watershed size?

**Study Watersheds**

San Francisquito, Coyote, Guadalupe, Stevens

**Tributaries Sampled in Watershed**

None

**Sampling Location**

Not applicable

**Sampling Frequency**

Not applicable

**Field Sampling Period**

Not applicable

**Sampling Protocols**

Not applicable

**Data Format**

Database, GIS Coverage, Table, Map

**Detailed Data Description**

Study will focus on the development and testing of data models using existing data sources.

**Project Timeline**

Data compilation in December 2003; Model development and calibration in December 2004; Focused studies in June 2005; Final report in May 2006

**Product Title**

To be determined

**Study Information Verified**

Alison Purcell, personal communication, May 2005.

# Measurement of Sediment and Contaminant Loads from the Guadalupe River Watershed

## **Project Type**

Research

## **Project Description**

To evaluate the significance of contaminant loading from tributaries into the San Francisco Bay.

## **Keywords**

metals, mercury/methylmercury, pesticides, pollutant loads, sediment/sedimentation, water chemistry, sediment chemistry

## **Lead Agencies**

Regional Monitoring Program (RMP), United States Army Corps of Engineers (USACE), Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

## **Funding Sources**

Regional Monitoring Program (RMP); United States Army Corps of Engineers (USACE); Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

## **Contracted Parties**

Moss Landing Marine Laboratory, Redwood Science Laboratory, San Francisco Estuary Institute (SFEI), United States Geological Survey (USGS)

## **Contact Information**

Name: Lester McKee

Organization: San Francisco Estuary Institute (SFEI)

Phone: 510-746-7363

Email: lester@sfei.org

## **Purpose**

The study will provide valuable information to the TMDL process in the San Francisco Bay for addressing pollutants of special concern. Some of questions this study proposes to address are:

- 1) should control measures to reduce contaminant loading be implemented in local tributaries;
- 2) are tributaries more import source of contaminants than the Central Valley;
- 3) help measure effectiveness of management actions taken to reduce mercury discharge from mining districts;
- and 4) verify the accuracy of estimates of urban runoff loads from local watersheds.

## **Study Watersheds**

Guadalupe

## **Tributaries Sampled in Watershed**

Guadalupe River

## **Sampling Location**

USGS stream gage (11169025) near Hwy 101

**Sampling Frequency**

40 grab water samples for contaminant concentration analysis; continuous monitoring of turbidity (15 minute interval during wet season), and about 60-150 samples for suspended sediment. 10 bed sediment samples will be collected and analyzed for grain size.

**Field Sampling Period**

October 2004 – December 2005 (project may continue through 2006, depending on funding). Sampling efforts will focusing on the wet season. Real-time discharge and rainfall data will be utilized to determine when to mobilize sampling teams.

**Sampling Protocols**

Contaminant water samples conducted using “clean sampling protocols” following EPA specifications; turbidity collected using DTS12 Turbidity Probe; suspended and bed load sediment analyses following USGS protocols.

**Data Format**

Report

**Detailed Data Description**

Suspended sediment concentrations (SSC) and turbidity; water analysis for metals, including mercury, nickel and copper; PCBs and PBDEs; sediment analyses for total mercury and grain size.

**Project Timeline**

October 2004 - December 2005

**Product Title**

Concentrations and loads of PCBs, OC pesticides, and mercury associated with suspended sediments in the lower Guadalupe River, San Jose, California.

**Study Information Verified**

Lester McKee, SFEI, personal communication, April 2005.

## **Section 6: Watershed Monitoring and Assessment**



## **Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI)**

### **Project Type**

Watershed Monitoring and Assessment

### **Project Description**

Continue development of regional bioassessment tools necessary to provide context to bioassessment data collected in Santa Clara Basin creeks

### **Keywords**

urbanization, water quality, watershed assessment, bioassessment/biomonitoring, macroinvertebrates, aquatic habitat, biological communities, channel morphology/geomorphology, land use, riparian habitat

### **Lead Agencies**

San Francisco Bay Regional Water Quality Control Board (SFRWQCB), Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), Contra Costa Clean Water Program, San Mateo Countywide Stormwater Pollution Prevention Program (STOPPP)

### **Funding Sources**

SCVURPPP, STOPPP, CCCWP, ACCWP, RWQCB

### **Contracted Parties**

Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.)

### **Contact Information**

Name: Chris Sommers

Organization: Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.)

Phone: 510-832-2852

Email: csommers@eoainc.com

### **Purpose**

Since February 2002, SCVURPPP staff has participated in an annual workshop for information sharing and discussion of recent and ongoing rapid bioassessment (benthic macroinvertebrates) studies in the Bay Area. The network of individuals participating in the workshop was named the Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI). BAMBI has two primary objectives: 1) coordinate and share bioassessment information throughout the Bay Area; and 2) develop a benthic macroinvertebrate Index of Biological Integrity (IBI) for Bay Area watersheds. BAMBI has developed an IBI work plan that includes the following tasks: 1) form a technical advisory group; 2) compile existing BMI data from Bay Area agencies/organizations; 3) identify and standardized relevant data sets and enter into database; 4) develop reference conditions; 5) select appropriate metrics to measure BMI health; and 6) develop and validate IBI.

Bay Area Stormwater Programs and the RWQCB have contributed funding to complete tasks 1-3. BAMBI participants are seeking additional funding sources to complete the remaining work plan tasks.

**Study Watersheds**

Basinwide

**Tributaries Sampled in Watershed**

Basinwide

**Sampling Location**

To be determined

**Sampling Frequency**

To be determined

**Field Sampling Period**

To be determined

**Sampling Protocols**

Benthic macroinvertebrate data will be collected using the California Stream Bioassessment Procedure (CSBP) December 2003 version.

**Data Format**

GIS Coverage, Database, Report

**Detailed Data Description**

Compile existing data (e.g., benthic macroinvertebrate community assemblages, physical habitat, land use) from the SF Bay Area. Future tasks will include conducting bioassessments at potential reference watershed locations.

**Project Timeline**

Specific products and timeline yet to be determined.

**Product Title**

To be determined

**Study Information Verified**

Paul Randall, SCVURPPP, May 2005.

# **Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks**

## **Project Type**

Watershed Monitoring and Assessment

## **Project Description**

Monitoring Plan for Diazinon and Pesticide-Related Toxicity in Urban Creeks

## **Keywords**

pesticides, toxicity, TMDL, urbanization

## **Lead Agencies**

Clean Estuary Partnership (CEP)

## **Funding Sources**

Clean Estuary Partnership (CEP)

## **Contracted Parties**

Armand Ruby Consulting

## **Contact Information**

Name: Armand Ruby

Organization: Armand Ruby Consulting

Phone: (N/A)

Email: armandr@lwa.com

## **Purpose**

The overall goal of the monitoring plan is to support adaptive management of diazinon and pesticide-related toxicity in Bay Area urban creeks in accordance with the Urban Creeks Water Quality Attainment Strategy (WQAS) and Total Maximum Daily Load (TMDL). The first year of the monitoring plan is designed to provide data and other information to help guide the development of a more detailed monitoring plan for the second and subsequent years.

The monitoring plan addresses the following requirements listed in the WQAS Implementation Plan:

- Monitoring Program Design
- Watershed Characterization
- Site Selection and Sample Collection
- Analytical Tests

The design of the monitoring plan is guided by direction and input received from the Diazinon/Toxicity Work Group of the Clean Estuary Partnership (CEP).

## **Study Watersheds**

Basinwide

## **Tributaries Sampled in Watershed**

Basinwide

### **Sampling Location**

The following preliminary site selection criteria are identified for the 2004-05 monitoring season:

- Creeks for which the watershed characterization data indicate at least 50% urban land use.
- Locations with established records of previous monitoring data.
- Locations with existing structural monitoring facilities, e.g., protective equipment enclosures, automated sampling equipment, protective conduits for sampling tubes and/or sensor cables, rain gauges.
- Sites that are safely accessible by field crews.
- Sites that are above the elevation of tidal influence

In FY 04-05, monitoring activities in Santa Clara Valley have been implemented by the SCVURPPP Annual Monitoring Program at locations within Matadero, Barron, Adobe, San Tomas, Calabazas Creeks and Sunnyvale West Channel.

### **Sampling Frequency**

For 2004-05 the frequency and timing of monitoring varies by agency, supplemented where possible to achieve monitoring of creek flows during one early-season and one mid-to-late-season storm event, and once during the dry season.

For 2005-06 and subsequent years, the minimum expected frequency and timing of monitoring at the selected representative sites will be:

- A minimum of three samples will be collected annually from each site.
- Samples will be collected during: (1) one early-to-mid wet season storm that produces substantial runoff; (2) one mid-to-late season storm; and (3) dry weather when creek flows have declined (but before they go dry).

### **Field Sampling Period**

Plan identifies monitoring activities starting in 2004-05 and continuing for an undetermined number of years.

### **Sampling Protocols**

Samples should be collected as time-based composite samples unless logistical or safety considerations prevent composite sample collection. For storm event-based samples, this should involve composite collection over the duration of a storm event, to an upper limit of 24 hours. For wet weather events, sample collection is initiated at the point when runoff from the surrounding landscape begins to enter the creek, and is terminated after rainfall has ceased and the creek flow has returned to near pre-storm levels.

For dry weather samples, composite collection should extend for a minimum duration of four hours and a maximum duration of 24 hours. The 24 hour period is preferable so as to capture the full diurnal fluctuation in creek quality, but may only be practical when unattended automated samplers are employed.

Composite samples should involve collection of a minimum of one aliquot per hour. The sampling frequency may be selected based on the expected duration of a storm event; up to three aliquots per hour for a shorter event (less than 8 hours) and fewer aliquots per hour for a

longer event (over 12 hours).

**Data Format**

(N/A)

**Detailed Data Description**

Organophosphate pesticides with toxicity testing.

**Project Timeline**

First year of monitoring in FY04-05; monitoring plan provides guidance on the use of the 2004-05 data in planned monitoring activities in subsequent years.

**Product Title**

CEP Urban Creeks Monitoring Plan

**Study Information Verified**

Chris Sommers, EOA Inc., personal communication, May 2005.



## **Matadero Creek Monitoring**

### **Project Type**

Watershed Monitoring and Assessment

### **Project Description**

Sediment transport study in tidal reaches of Matadero Creek.

### **Keywords**

channel morphology/geomorphology, sediment/sedimentation

### **Lead Agencies**

Santa Clara Valley Water District (SCVWD)

### **Funding Sources**

SCVWD

### **Contracted Parties**

None

### **Contact Information**

Name: Saeid Hosseini

Organization: Santa Clara Valley Water District (SCVWD)

Phone: 408-265-2607 x2680

Email: shosseini@valleywater.org

### **Purpose**

This project monitors the creek geometry, in both cross-sectional and longitudinal forms, for a period of 10 years. It started in 2002 and will last through 2011. Land survey will be conducted once a year in late summer. This reach of the Matadero Creek is within the Palo Alto Flood Basin where the tidal range is significantly reduced from that of the San Francisco Bay by operation of the 16 tide gates. The purpose of this project is to monitor the changes in creek geometry to understand the sediment transport phenomena in this muted tidal reach of the Creek.

### **Study Watersheds**

Matadero/Barron

### **Tributaries Sampled in Watershed**

Matadero Creek

### **Sampling Location**

Downstream of Highway 101 on Matadero Creek.

### **Sampling Frequency**

Annually

### **Field Sampling Period**

Monitoring started in 2002 and will continue through 2011.

**Sampling Protocols**

Land survey of 10 cross-sections

**Data Format**

Table, Report

**Detailed Data Description**

Annual measurement of channel geometry, including cross-sections and longitudinal profiles.

**Project Timeline**

Monitoring anticipated to be completed in year 2011.

**Product Title**

Annual report entitled Matadero/Barron Creek Remediation Project Sediment Monitoring Plan

**Study Information Verified**

Saeid Hosseini, SCVWD, personal communication, May 2005.

## **SCVURPPP Trash Work Plan**

### **Project Type**

Watershed Monitoring and Assessment

### **Project Description**

Workplan to address trash problems in urban streams within SCVURPPP jurisdiction.

### **Keywords**

channel maintenance, land use, pollution prevention, trash, urbanization

### **Lead Agencies**

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

### **Funding Sources**

SCVURPPP

### **Contracted Parties**

None

### **Contact Information**

Name: John Fusco

Organization: Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.)

Phone: 510-832-2852

Email: jrfusco@eoainc.com

### **Purpose**

The Trash Work Plan was submitted to fulfill a Program FY01-02 Continuous Improvement item and actions identified within the Program's Multi-Year Receiving Waters Monitoring Plan. The Work Plan was developed in response to the November 14, 2001 San Francisco Bay Regional Water Quality Control Board (RWQCB) 303(d) Staff Report that proposed all urban creeks, lakes and shorelines be placed on the 2002 303(d) (monitoring) list due to the threat of trash impairment to water quality.

The goal of the Trash Work Plan is to identify a strategy for municipalities and agencies to address trash problems in urban streams within the Program's jurisdiction. Five major objectives have been identified for the Work Plan. They include the following:

- 1) Document and evaluate existing trash management practices implemented by municipalities and agencies within the Program's jurisdiction;
- 2) Develop a strategy to conduct trash evaluations in creeks;
- 3) Assist municipalities in identifying the high priority trash problem areas and sources of trash;
- 4) Provide guidance on the implementation of potential control measures and evaluation criteria needed to address problem areas; and
- 5) Develop a standardized reporting format for documenting and evaluating trash management and monitoring activities.

The Program places a higher priority on specific urban areas of special concern (identified trash problem areas and creek segments that are visible and/or accessible to the general public). Thus, the Program will focus on implementing trash control measures within these areas and

documenting the effectiveness of management activities. The FY 03-04 tasks focus on further documentation and evaluation of existing management practices; the identification of potential management actions; the further development of trash evaluation tools and the development of standardized format for reporting and evaluating trash management practices. The FY 04-05 tasks focus on the implementation of trash evaluations, identification of potential trash management practices, and development of standardized format for reporting.

Evaluation results and implementation efforts will be documented and provided within the Program and Co-permittee's Annual Reports. The information is intended to assist Regional Board staff in their assessment of creeks or more specifically, creek reaches (for potential trash impairment) by the next 303 (d) listing cycle.

### **Study Watersheds**

Basinwide

### **Tributaries Sampled in Watershed**

Basinwide

### **Sampling Location**

Trash problem areas were located at various sites throughout Santa Clara Basin watersheds.

### **Sampling Frequency**

Trash problem areas were assessed 1X or 2X during fall and spring season.

### **Field Sampling Period**

October 2004 - June 2005

### **Sampling Protocols**

San Francisco Regional Water Quality Control Board (RWQCB) Rapid Trash Assessment Protocol V.7 was used at creek sites and Keep America Beautiful (KAB) Litter Index was used at non-creek sites.

### **Data Format**

Database, GIS Coverage, Table, Technical Memo

### **Detailed Data Description**

Project will compile existing data relevant to trash accumulation and sources of litter; rapid trash assessments will be conducted at selected trash problem areas.

### **Project Timeline**

Memorandum documenting results and preliminary analysis of trash evaluations will be completed within the FY 04-05 Annual Report.

### **Product Title**

Implementing Existing Trash Assessment Tools Tech Memo, SCVURPPP Trash Work Plan, Trash Problem Area Survey Results Tech Memo

### **Study Information Verified**

Paul Randall, SCVURPPP, May 2005.

## **Stevens and Permanente Creeks Watershed Council Volunteer Monitoring and Outreach Program**

### **Project Type**

Watershed Monitoring and Assessment

### **Project Description**

Volunteer Monitoring Program administered by the Stevens and Permanente Creeks Watershed Council (SPCWC) and funded by a Supplemental Environmental Project from the Palo Alto Regional Water Quality Control Plant

### **Keywords**

bioassessment/biomonitoring, macroinvertebrates, habitat, water quality, citizen/volunteer monitoring

### **Lead Agencies**

Stevens and Permanente Creeks Watershed Council

### **Funding Sources**

Palo Alto Regional Water Quality Control Plant

### **Contracted Parties**

United States Geological Survey (USGS)

### **Contact Information**

Name: Mondy Lariz

Organization: Stevens and Permanente Creeks Watershed Council

Phone: 408-356-8258

Email: mlariz@nccfff.org

### **Purpose**

The goals of this pilot monitoring program are 1) to promote stewardship and educate the community about health of Stevens and Permanente Creeks; and 2) produce data to assess current creek conditions and evaluate where pollution prevention or restoration efforts are needed.

### **Study Watersheds**

Stevens, Permanente

### **Tributaries Sampled in Watershed**

(N/A)

### **Sampling Location**

Water Quality Monitoring sites were as follows

1) La Avenida\*

2) McClellan Ranch

3) Chestnut\*

4) Moss Rock\*

\* Previously sampled by SWAMP in 2002 and 2003

Bioassessment sites include 10 sites in Stevens Creek; all sites were previously sampled by SWAMP.

**Sampling Frequency**

Water quality is measured two times per month. Bioassessment will be conducted during April - May of 2006 and 2007.

**Field Sampling Period**

September 2004 - June 2007

**Sampling Protocols**

Water quality measurements were taken on a portable YSI meter. Turbidity measurements were taken from grab samples and analyzed using a portable turbidity meter. Bioassessment will be conducted using CSBP.

**Data Format**

Table

**Detailed Data Description**

General water quality and bioassessment

**Project Timeline**

The SPCWC has funding to continue monitoring through June 2007.

**Product Title**

Stevens and Permanente Creeks Watershed Council Volunteer Monitoring and Outreach Program Status Report

**Study Information Verified**

Mondy Lariz, SPCWC, personal communication, May 2005.

## **The Surface Water Ambient Monitoring Program (SWAMP)**

### **Project Type**

Watershed Monitoring and Assessment

### **Project Description**

Conduct stream monitoring by rotating basin approach, using rapid bioassessment and general water quality parameters.

### **Keywords**

bioaccumulation, bioassessment/biomonitoring, macroinvertebrates, metals, nutrients, pathogens, pesticides, sediment/sedimentation, toxicity, water chemistry

### **Lead Agencies**

San Francisco Bay Regional Water Quality Control Board (SFRWQCB)

### **Funding Sources**

SWRCB

### **Contracted Parties**

California Department of Fish and Game (CDFG)

### **Contact Information**

Name: Karen Taberski

Organization: San Francisco Bay Regional Water Quality Control Board (SFRWQCB)

Phone: 510-622-2424

Email: kmt@rb2.swrcb.ca.gov

### **Purpose**

The goal of the SWAMP program in this Region is to monitor and assess all waterbodies of the Region in order to identify reference sites (clean sites) and waterbodies or sites that are impaired, based on data and information that provide a weight-of-evidence assessment of water quality. Objectives of the program include: (1) assessing the physical, chemical, and biological condition of waterbodies in the region in order to determine if waterbodies are impaired and beneficial uses are being protected; (2) measuring environmental indicators of stressors (e.g., pollutants or other water quality parameters), laboratory exposure/effects measurements (e.g., toxicity tests), and ecological response (e.g., benthic macroinvertebrate community analyses) from the same location and/or season; (3) generating data and information during different seasonal conditions; (4) generating data and information that is somewhat evenly distributed across a waterbody to provide a screening level of assessment; (5) determining if impacts are associated with specific stressors or land uses and (6) evaluating monitoring tools in the watershed in order to develop a program that uses the best environmental indicators to achieve the purposes of the program.

Six San Francisco Bay watersheds were monitored in FY 00-01 (none were located in Santa Clara Basin). An additional five watersheds were monitored in FY 01-02, including two in the Santa Clara Basin (Stevens and Permanente Creek). Watersheds in Marin, Sonoma, San Mateo and Contra Costa Counties were monitored in FY 02-03. Monitoring was conducted in creeks

within Oakland, Berkeley, El Cerrito and Richmond areas, as well as Arroyo Mocho watersheds in Alameda County in FY 03-04. FY 04-05 monitoring was not conducted due to budget cuts. Future monitoring is pending review of SWAMP by scientific advisory committee, which will begin in summer 2005.

### **Study Watersheds**

Permanente, Stevens

### **Tributaries Sampled in Watershed**

Hale Creek, East Fork Permanente Creek, West Fork Permanente Creek, Stevens Creek

### **Sampling Location**

Eight sites on Stevens Creek, including four in urban area (from La Avenida upstream to Barranca Dr.), one site below Steven Reservoir at gauging station, and three sites above reservoir in rural area. Seven sites in Permanente watershed, including 5 sites in urban reaches (1 site on Hale Creek) and 2 sites in the upper rural areas.

### **Sampling Frequency**

Bioassessment conducted once in spring at all sites. Water chemistry and toxicity testing conducted at 2 locations in each watershed for three hydrological regimes. The 3 hydrologic cycles are the wet season (January - March), decreasing hydrograph /spring (April - May) and the dry season (June - August). Conventional water chemistry (nutrients and anions) conducted at 3 locations in Stevens and 2 locations in Permanente for all three sampling periods. Continuous monitoring devices measuring temperature, pH, conductivity, and dissolved oxygen are deployed at three locations in each watershed for two-week intervals about 4 to 7 times per year. At the bottom of each watershed in the non-tidal area is one station, the integrator station, which will integrate the contaminant conditions in the waterbody and determine which contaminants from that waterbody flow into the receiving waters. At these stations, Corbicula will be deployed for bioaccumulation measurements and sediment samples will be collected for toxicity analysis, using Hyalella, grain size analysis and sediment chemistry. Sampling will be concurrent and occur early in the dry season. Pathogen indicators, total and fecal coliforms and E.coli, will be sampled at three locations in each watershed for all three sampling periods. These pathogen indicators require five samples within 30 days to evaluate against objectives listed in the Basin Plan.

### **Field Sampling Period**

Sampling for the SWAMP started in 2000 and continues to this date. Monitoring in Stevens and Permanente Creeks occurred from spring 2002 through summer of 2003.

### **Sampling Protocols**

Water quality samples will be obtained from grab samples and probes. Benthic macro-invertebrates will be sampled using the CDFG's California Stream Bioassessment Protocol.

### **Data Format**

Report, Database

### **Detailed Data Description**

Water and sediment chemistry, tissue chemistry, conventional water quality parameters including chlorophyll, ammonia, nitrate/nitrite, total nitrogen (by TKN), phosphate, alkalinity,

hardness, total and dissolved organic carbon (TOC/DOC), total suspended solids.

**Project Timeline**

Interpretive report on SWAMP data collected from watersheds monitored in the first 2 years is anticipated in summer 2005.

**Product Title**

To be determined

**Study Information Verified**

Karen Taberski, RWQCB, personal communication, May 2005.



# Upper Guadalupe River Tributary Monitoring and Pilot Restoration Project Proposal

## Project Type

Watershed Monitoring and Assessment

## Project Description

The project will gather hydrologic, hydraulic, geomorphic and other stream related data, mostly via field measurements, that are absolute essential to any type of watershed assessment program or for any successful stream restoration or flood protection project.

## Keywords

aquatic habitat, channel morphology/geomorphology, citizen/volunteer monitoring, erosion, fish barriers, hydrology, percent imperviousness, riparian vegetation, streamflow, watershed assessment

## Lead Agencies

Guadalupe/Coyote Resource Conservation District

## Funding Sources

CALFED

## Contracted Parties

None

## Contact Information

Name: Larry Johmann

Organization: Guadalupe/Coyote Resource Conservation District

Phone: 408-288-5888

Email: lawrence.johmann@lmco.com

## Purpose

The objective of the project is to institute a comprehensive stream assessment and monitoring program on a number of upper Guadalupe River tributaries. The program will establish permanent monitoring sites, which will facilitate continuous assessment efforts. Data obtained from reference sites will be use to generate regional hydrology curves, which can then be used to support proposals in more disturbed area of the watershed.

## Study Watersheds

Guadalupe

## Tributaries Sampled in Watershed

Alamitos Creek, Arroyo Calero, Guadalupe Creek, Santa Teresa Creek, Randol Creek

## Sampling Location

Alamitos Creek: Upstream of Graystone Lane and upstream of Camden Ave.;

Guadalupe Creek: Upstream of Gage Station on Hicks Rd. and upstream of Meridian Ave.;

Randol Creek: Upstream of Camden Ave.

**Sampling Frequency**

Once an area is surveyed, sampling will be performed on a yearly basis with spot samples taken during or shortly after storms or high flows.

**Field Sampling Period**

2002 to 2005

**Sampling Protocols**

1)Stream Channel Reference Sites: An Illustrated Guide to Field Technique, General Technical Report RM-245.

2)USDA Forrest Service Pfankuch Channel Stabilityu Rating

3)Rosgen Level I, II and III Steam Survey Methods

4)Rosgen Bank Erosion Hazard Index (BEHI)

5)NCRS Stream Visual Assessment Protocol

**Data Format**

Table, Map, Report

**Detailed Data Description**

Monitor channel geometry, including channel cross sections and longitudinal profiles, bed material, stream flow velocities, bankfull discharge, habitat assessments and geomorphic surveys and stream classification.

**Project Timeline**

Specific tasks and schedule yet to be determined.

**Product Title**

To be determined

**Study Information Verified**

Larry Joehman, GCRCD, personal communication, May 2005.

**Preliminary Information on Additional Projects**

<b>Project Name</b>	<b>Lead Agency</b>	<b>Contact</b>	<b>Email</b>	<b>Description</b>	<b>Study Water-shed(s)</b>	<b>Sampling Period</b>
Mid-Coyote Flood Protection Project	SCVWD	George Fowler	gfowler@valleywater.org	This project is a part of the District's Clean, Safe Creeks & Natural Flood Protection Program. The project is to provide protection to the surrounding area from the 1% flood event on Coyote Creek, improve habitat condition, provide public access to the creek and minimize future O&M.	Coyote	The project started in 2002 and will end in 2016
Measure of Sediment and Contaminant Loads from the Coyote Creek Watershed	SCVWD	Lester McKee	lester@sfei.org	Collection of water samples for analysis of trace contaminants on Coyote Creek at Hwy 237 (USGS Water Gauge 11172175). Proposed maximum of ten (10) sampling events across a range of flow and turbidity conditions.	Coyote	Sampling began in spring 2005.