Inventory of Santa Clara Basin Stream Studies

Updated Report
Version 7.0

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

September 15, 2006

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LIST OF ACRONYMS

BAHM	Bay Area Hydrology Model
BAMBI	Bay Area Macroinvertebrate Bioassessment Information Network
BMP	Best Management Practice
CDFG	California Department of Fish and Game
CEMAR	Center for Ecosystem Management and Restoration
EIR/S	Environmental Impact Report/Statement
GIS	Geographic Information System
GPS	Global Positioning System
HMP	Hydromodification Management Plan
IRWMP	Integrated Regional Water Management Plan
LFA	Limiting Factors Analysis
LTMAP	Long-Term Monitoring and Assessment Plan
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
RMP	Regional Monitoring Program
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
SCC	State Coastal Conservancy
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD	Santa Clara Valley Water District
SPCWC	Stevens and Permanente Creeks Watershed Council
SVPPC	Silicon Valley Pollution Prevention Center
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
WAMS	Watershed Assessment and Monitoring Subgroup (of the SCBWMI)
WERF	Water Environment Research Foundation

Introduction

Summary

The *Inventory of Santa Clara Basin Stream Studies* describes twenty-nine stream-related multi-stakeholder studies and projects that recently started or are in-progress in the Santa Clara Basin. Information for seven 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 (Table 1). Eight projects listed in the Version 6.0 2005 SSI report were determined to be complete or discontinued, and therefore, not included in this years report. Information is provided for some of the products that were developed from completed or nearly completed projects (Table 2). 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), November 2003 (Version 5.0) and June 2005 (Version 6.0). 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.

Spatial Distribution of Projects

The approximate locations for each of the stream studies/projects described in the 2006 SSI are shown in Figure 3. These study locations are represented by a single location for each tributary that data was collected and were created for graphical display purposes only to show the geographical extent of the projects within the Basin. Coyote, Guadalupe, and Stevens Creek Watersheds contained the highest number of stream studies, with 14, 7 and 5 projects respectively (Note: This does not include studies with basinwide geographical extent).

Figures 4 – 6 includes locations of stream studies described in the previous seven years of the SSI categorized by general data types (i.e., biological, physical and chemical). Each study is further categorized by more detailed data type (i.e., aquatic biota survey, salmonid fish barrier, etc.). The appropriate categories for each project were based on best professional judgment and from the information provided in the SSI summaries.

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.

The SCVURPPP database currently stores new project information included in Version 7.0 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 7.0 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: D*eveloped 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
Waste water/recycled water
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 2006	Project Status is Ongoing	Project Archived to Database
Resource Management Projects				
NA	Corte Madera Creek Study			X
31	Fish Passage Improvement Project	X		
33	Fish Passage Inventory Project	X		
37	Lake Cunningham Improvement Project		X	
39	Mid-Coyote Creek Project	X		
43	Permanente Creek Planning Study		X	
45	Sediment Removal Projects		X	
47	Stream Characteristic Measurements		X	
49	Upper Berryessa Creek Flood Protection Project		X	
51	Upper Penitencia Creek Flood Protection Project		X	
53	Vegetation Management Projects		X	
Mitigation Projects				
57	Coyote Parkway Freshwater Wetland		X	
NA	Guadalupe River Flood Control and Restoration			X
NA	Pond A4 Tidal Restoration Wetland (Discontinued)			X
59	Stream Flow Augmentation Project	X		
Permit Compliance				
63	Bay Area Hydrology Model	X		
65	Guadalupe River Watershed Mercury TMDL		X	
NA	San Francisquito Creek Aquatic Habitat Assessment and Limiting Factors Analysis			X
69	SCVURPPP Multi-Year Receiving Waters Monitoring Plan		X	
73	Water Quality Monitoring in Palo Alto Creeks	X		
75	Watershed Analysis and Sediment Management Assessment		X	
Watershed Management				
NA	Creek and Watershed Maps of the Bay Area			X
NA	Historical Tidal Marsh Maps			X
81	Integrated Regional Water Management Plan		X	
85	San Francisco Estuary Watershed Evaluation		X	
87	Santa Clara Valley Historical Ecology Project		X	
89	Stream Stewardship for Three Watershed in the Santa Clara Basin		X	
Research				
93	Bioassessment: A Tool for Managing Urban Aquatic Life Uses		X	
95	Coyote Creek Sediment Sampling Project	X		
97	Measurement of Sediment and Contaminant Loads from the Guadalupe River Watershed		X	
Monitoring and Assessment				

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Page No.	Project Name	Project Added to SSI 2006	Project Status is Ongoing	Project Archived to Database
101	Bay Area Macroinvertebrate Bioassessment Information network (BAMBI)		X	
NA	Diazinon and Pesticide-Related Toxicity in Bay Area Urban Cr			X
103	Matadero Creek Monitoring Downstream of Highway 101		X	
105	SCVURPPP Trash Work Plan		X	
109	Stevens and Permanente Creek Watershed Council Volunteer Monitoring Program		X	
113	The Surface Water Ambient Monitoring Program (SWAMP)		X	
NA	Upper Guadalupe River Tributary Monitoring and Pilot Restoration Project (Discontinued)			X

Table 2. Summary of Products Developed by Completed Projects

Project Title	Product Title	Type	Document Location	Contact Information
Corte Madera Creek	Maintaining Corte Madera Creek, A Citizens' Guide to Creek-Side Property Protection	Report	http://www.city.palo-alto.ca.us/public-works/jpa-projects.html	Kevin Murray 650-330-6767 kmurray@menlopark.org
Guadalupe River Flood Control and Restoration	Annual Monitoring Plans	Report	Santa Clara Valley Water District	Terry Neudorf 408-265-2607 x2695 tneudorf@valleywater.org
San Francisquito Creek Aquatic Habitat Assessment and Limiting Factors Analysis	San Francisquito Creek Aquatic Habitat Assessment and Limiting Factors Analysis	Report	http://www.city.palo-alto.ca.us/public-works/jpa-references.html	Dale Jacques 408-265-2607 x2637 djacques@valleywater.org
Creek and Watershed Maps of the Bay Area	Creek & Watershed Maps for: 1. Palo Alto & Vicinity 2. West Santa Clara Valley 3. Milpitas & North San Jose 4. Central San Jose 5. South San Jose Baylands & Creeks of South San Francisco Bay	Maps and GIS data	Oakland Museum of California	Christopher Richard 510-238-3297 crichard@museumca.org
Historical Tidal Marsh Maps	Historical Tidal Marsh Maps	GIS data	San Francisco Estuary Institute	Robin Grossinger 510-746-7380 robin@sfei.org
Santa Clara Valley Historical Ecology Project	1. Stewardship Plans for Guadalupe, West Valley and Lower Peninsula Watershed Areas 2. Coyote Creek Historical Ecology Study	Report	1. http://www.valleywater.org/_wmi/Stewardship_plan 2. http://www.sfei.org/HEP/reports/coyotecreek1.htm	Sarah Young 408-265-2607 x2637 x2468 syoung@valleywater.org
Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks	Analysis of Bay Area Urban Creeks Monitoring, 2004-2005	Technical Memorandum	http://www.cleanestuary.org/publications/index.cfm	Armand Ruby armandr@lwa.com

Table 3. 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 Francisquito
31	Fish Passage Improvement Project	fish barriers, salmonids, restoration, hydrologic modeling		X										
33	Fish Passage Inventory Project	fish barriers, restoration, salmonids	X	X	X	X	X	X	X	X	X	X	X	X
37	Lake Cunningham Improvement Project	Biological data, chemical data, flood protection, hydrology, physical data, sediment		X										
39	Mid-Coyote Creek Project	flooding/flood protection, sediment/sedimentation, streamflow, hydrologic modeling, fish, aquatic habitat, water quality		X										
43	Permanente Creek Planning Study	Channel improvements and maintenance, geomorphology, erosion, flood protection, hydraulic modeling, hydrology, restoration									X			
45	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
47	Stream Characteristic Measurements	Channel improvements, channel maintenance, channel morphology/geomorphology, flooding/flood protection, hydrology, sediment/sedimentation		X									X	

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
49	Upper Berryessa Creek Flood Protection	Biological data, chemical data, flood protection, hydrology, physical data, sediment	X											
51	Upper Penitencia Creek Flood Protection	Flood protection, hydrology, sediment		X										
53	Vegetation Management Projects	Flood protection, vegetation, pesticides, water quality	X	X	X	X	X	X	X	X	X	X	X	X
57	Coyote Parkway Freshwater Wetland	Aquatic habitat, aquatic vegetation, riparian habitat, salmonids, special status species, wetlands		X										
59	Stream Flow Augmentation Project	water quality, waste water/recycled water, water chemistry, metals, nutrients		X										
63	Bay Area Hydrology Model	Stream flow, hydrology		X	X									
65	Guadalupe River Watershed Mercury TMDL	Water chemistry, sediment chemistry, erosion, mercury/methylmercury, sediment/sedimentation			X									
69	SCVURPPP Multi-Year Receiving Waters Monitoring Plan	Bioassessment/biomonitoring, macroinvertebrates, aquatic habitat, metals, pesticides, pathogens, toxicity, nutrients, water chemistry, sediment chemistry, channel morphology, sediment/sedimentation	X	X		X	X	X	X	X	X	X	X	
73	Water Quality Monitoring in Palo Alto Creeks	metals, nutrients, pesticides, streamflow, water quality, water chemistry										X	X	X

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**
75	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				
81	Integrated Regional Water Management Plan	Watershed management, restoration, habitat	X	X	X	X	X	X	X	X	X	X	X	X
85	San Francisco Estuary Watersheds Evaluation	Hydrology, restoration, salmonids, watershed management	X	X	X	X	X	X	X	X	X	X	X	X
87	Santa Clara Valley Historical Ecology Project	Channel improvements, hydrology, watershed management, wetlands	X	X	X	X	X	X	X	X	X	X	X	X
89	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
93	Bioassessment: A Tool for Managing Urban Aquatic Life Uses	Bioassessment/biomonitoring, macroinvertebrates, fish, aquatic habitat, water quality, channel morphology/geomorphology, hydrology, hydraulic modeling, percent imperviousness, land use		X	X									X
95	Coyote Creek Sediment Sampling	metals, mercury/methylmercury, pollutant loads, sediment/sedimentation, sediment chemistry		X										

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
97	Measurement of Sediment and Contaminant Loads from the Guadalupe River Watershed	Pollutant loads, mercury, pesticides, sediment/sedimentation			X									
101	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
103	Matadero Creek Monitoring Downstream of Highway 101	Channel morphology/geomorphology, sediment/sedimentation										X		
105	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
109	Stevens and Permanente Creeks Watersheds Council Volunteer Monitoring Program	Bioassessment/biomonitoring, macroinvertebrates, habitat, water quality, citizen/volunteer monitoring								X	X			
113	The Surface Water Ambient Monitoring Program (SWAMP)	Bioassessment, metals, pesticides, water chemistry, sediment, toxicity, nutrients, pathogens, bioaccumulation, macroinvertebrates								X	X			

Figure 1. Counties and Municipalities in the Santa Clara Basin

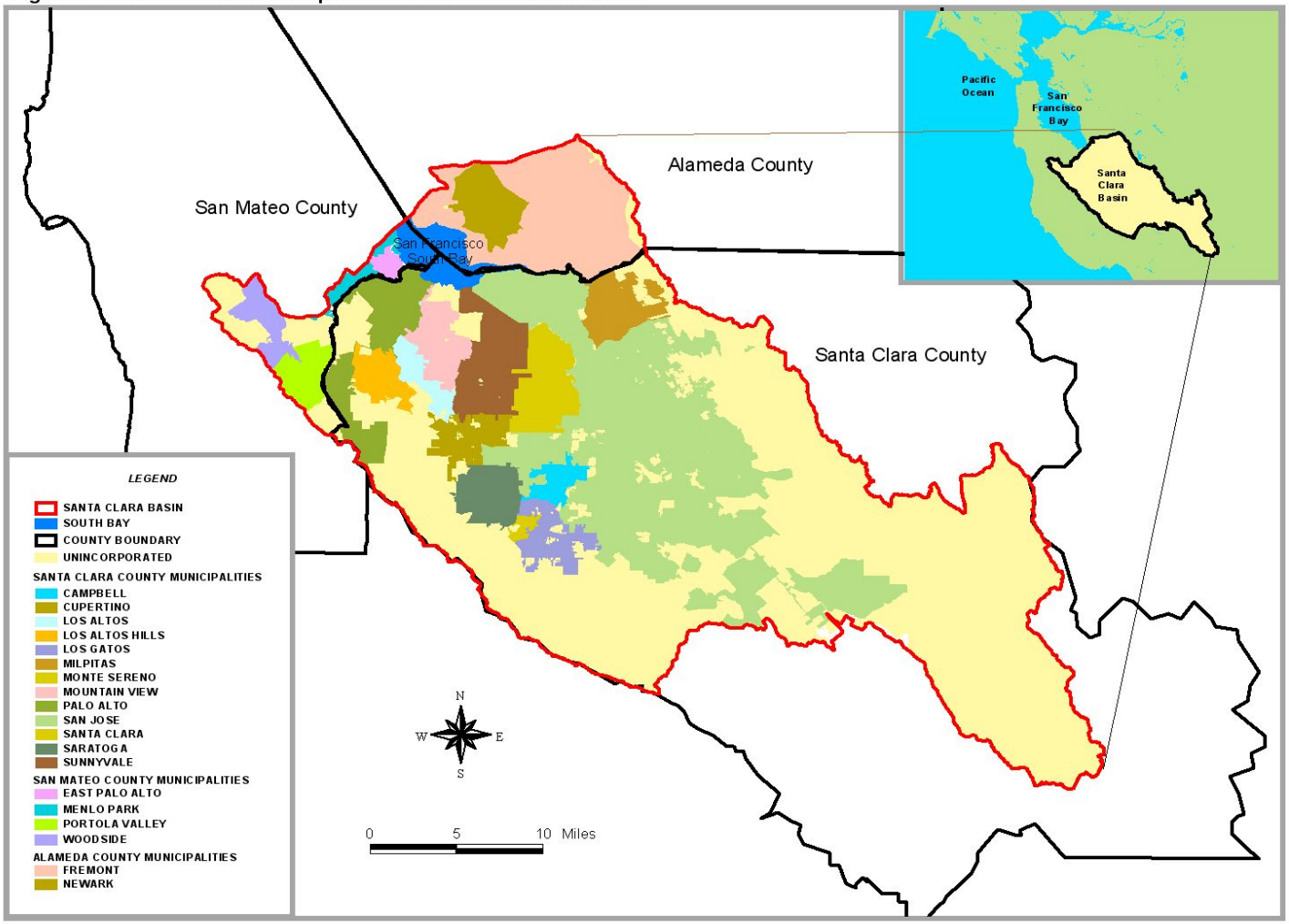

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Figure 2. Hydrologic Features in the Santa Clara Basin

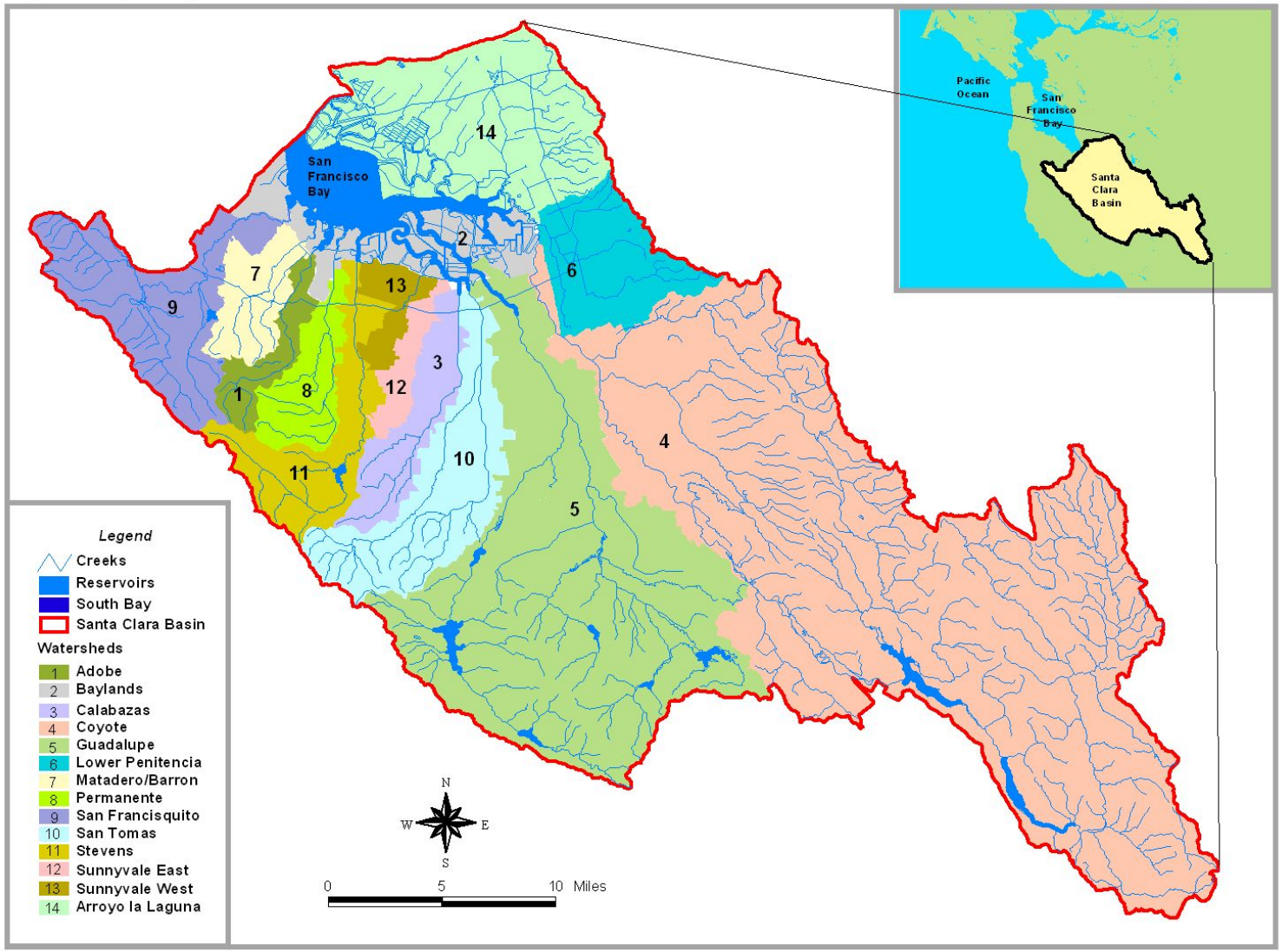

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Figure 3. Stream Study Locations in Santa Clara Basin Watersheds Described in the 2006 SSI Update

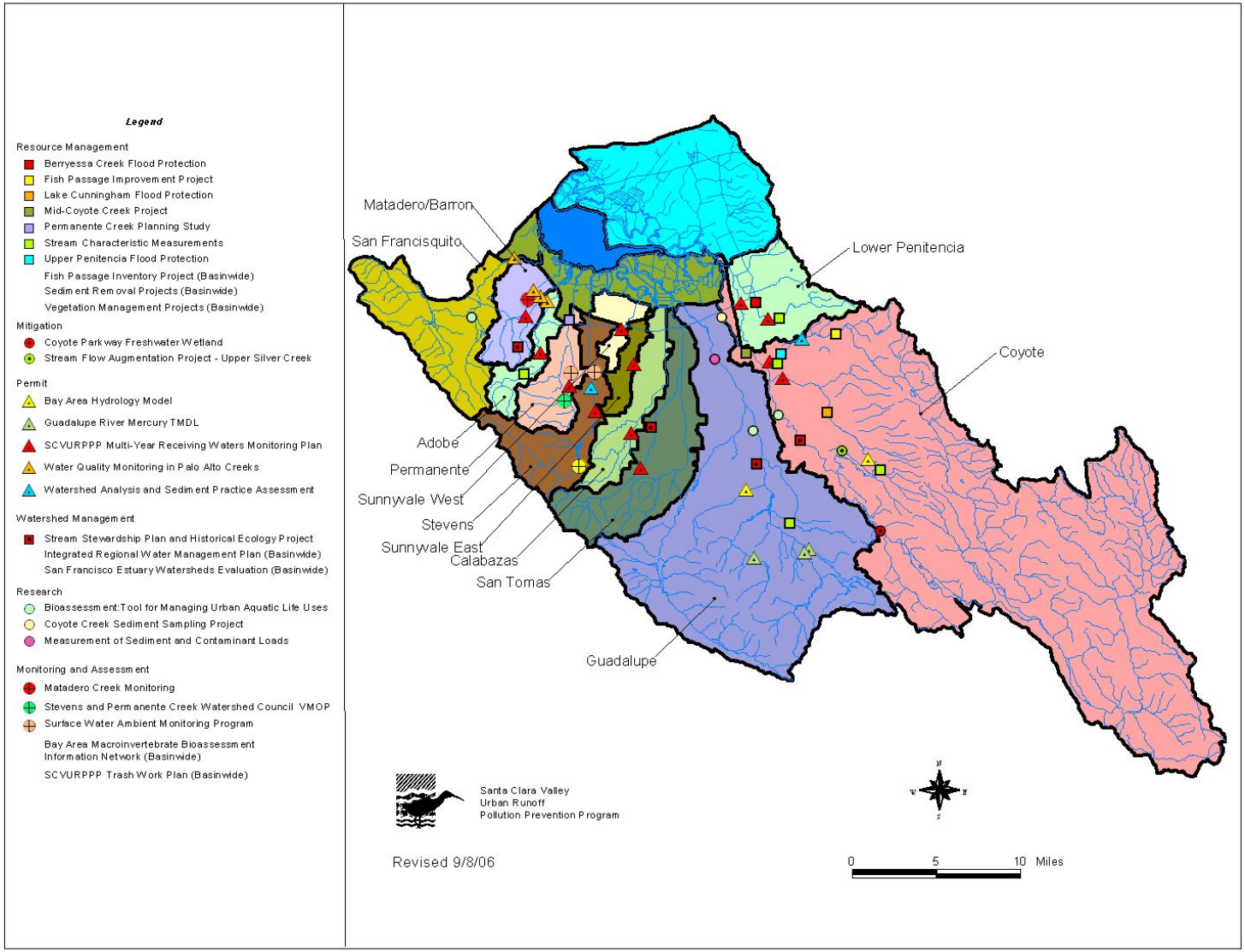

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Figure 4. SSI Projects Described in the Previous 7 Years That Involved Collection of Biological Data

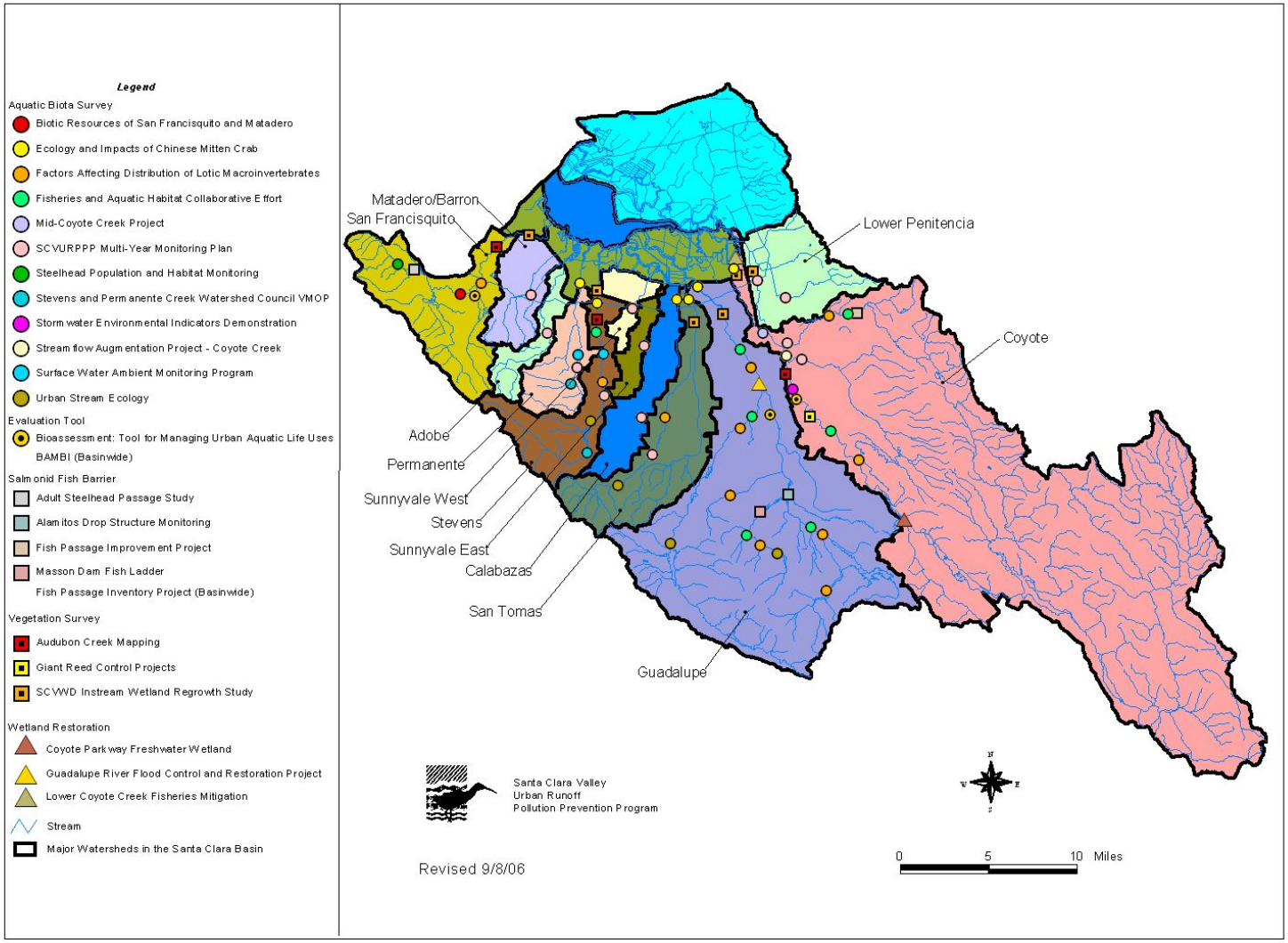

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Figure 5. SSI Projects Described in the Previous 7 Years That Involved Collection of Physical Data

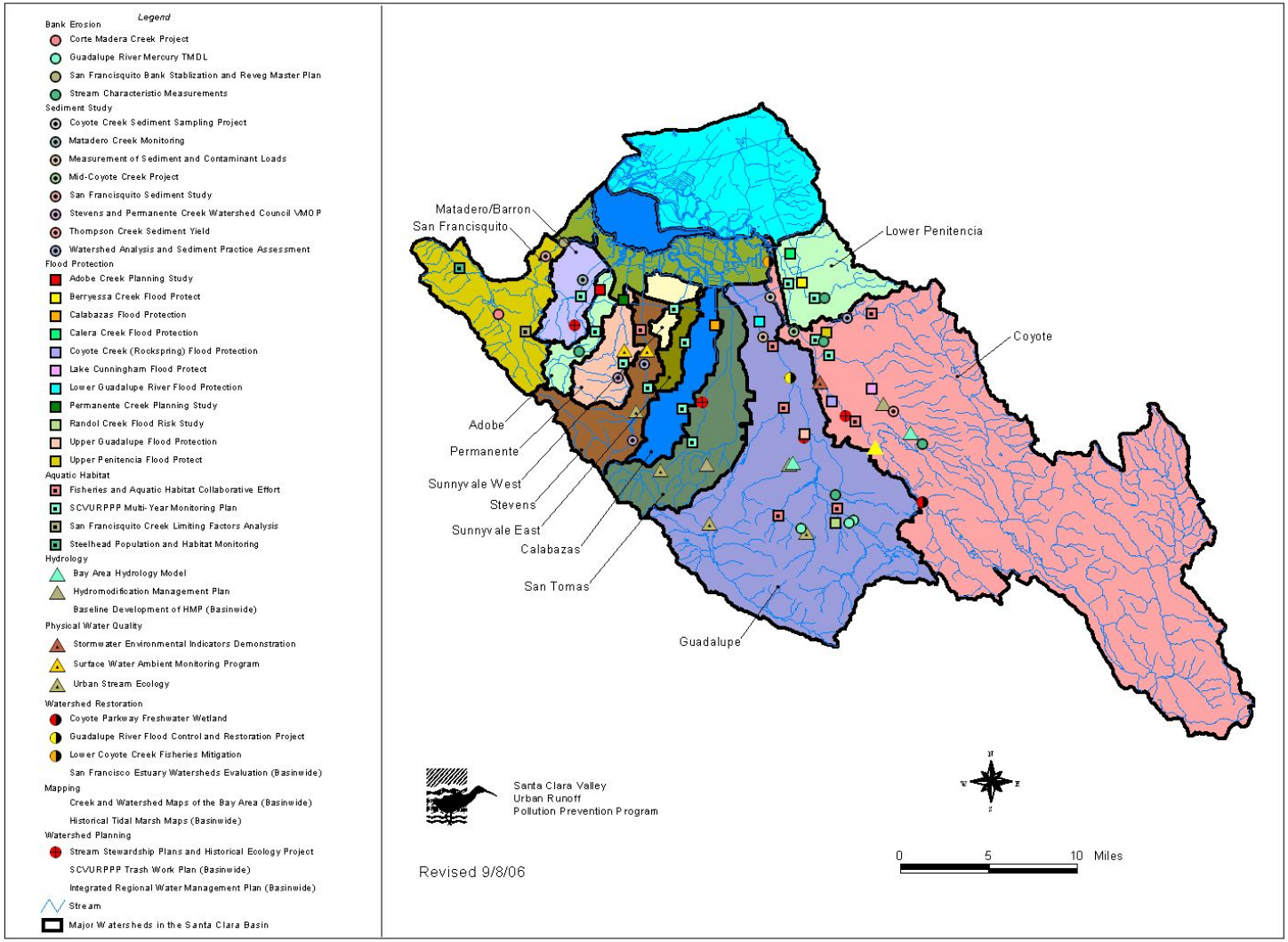

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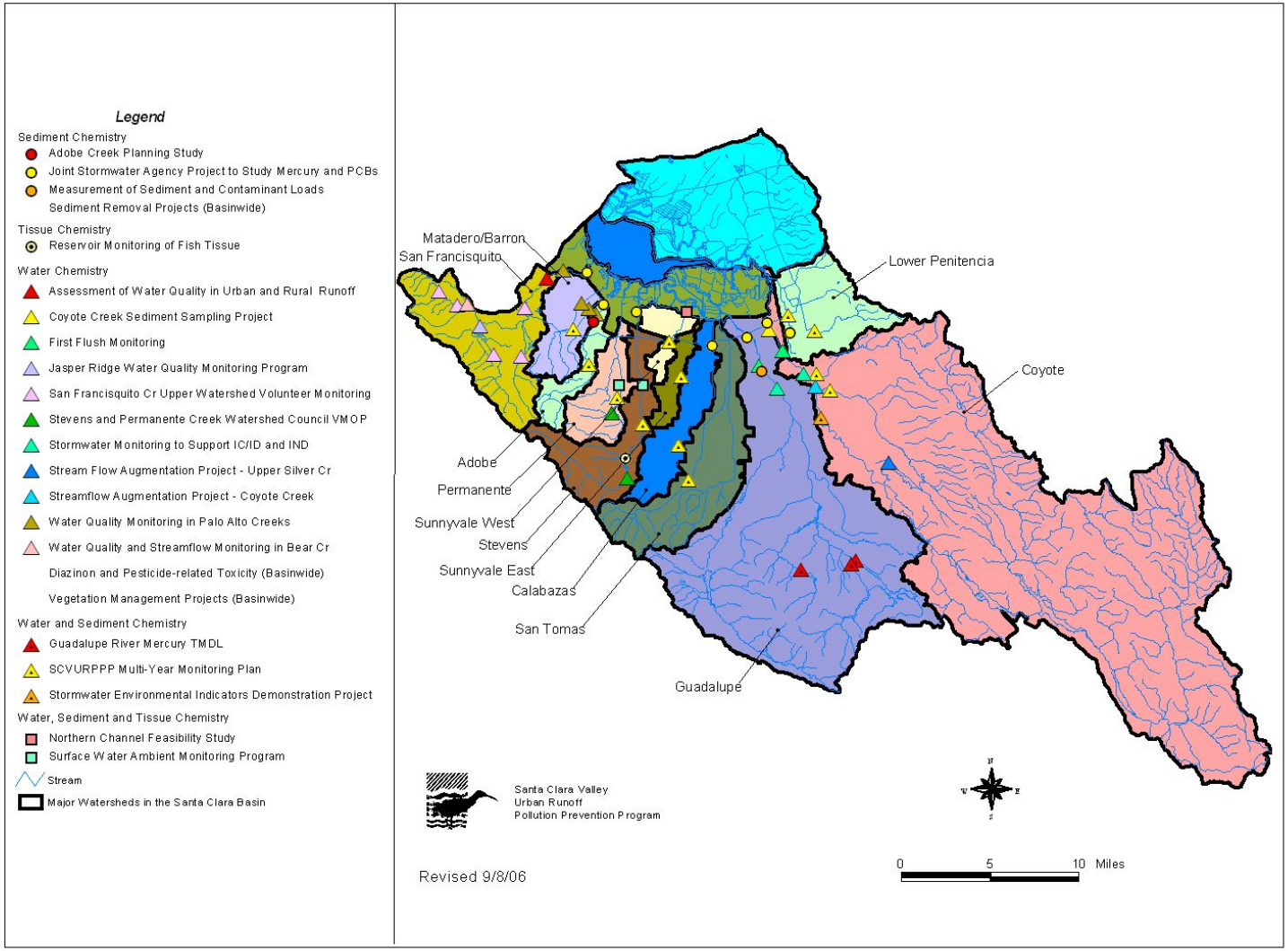
Figure 6. SSI Projects Described in the Previous 7 Years That Involved Collection of Chemical Data



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Section 1: Resource Management Projects

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Fish Passage Improvement Project

Project Type
Resource Management

Project Description
Conceptual design to modify steelhead barriers on four streams in the San Francisco Bay Area.

Keywords
fish barriers, salmonids, restoration, hydrologic modeling

Lead Agencies
Center for Ecosystem Management and Restoration (CEMAR)

Funding Sources
State Coastal Conservancy, Bella Vista Foundation

Contracted Parties
None

Contact Information
Name: Gordon Becker
Organization: Center for Ecosystem Management and Restoration (CEMAR)
Phone: 510-420-4565
Email: becker@cemar.org

Purpose
The purpose of the project is to assess the degree of fish passage impediment (i.e., identify range of flows that fish are unable to migrate through barrier) and develop conceptual designs to modify barrier for increased fish passage. Assessments and conceptual designs will be conducted at four known fish passage barriers. Conceptual designs will include an assessment of potential flood impacts and costs.

Study Watersheds
Coyote

Tributaries Sampled in Watershed
Upper Penitencia Creek

Sampling Location
Upper Penitencia Creek in Alum Rock Park; Corte Madera Creek (Marin County); Ritchie Creek (tributary to Napa River); and Stuart Creek (tributary to Sonoma Creek).

Sampling Frequency
Each barrier will be surveyed once.

Field Sampling Period
Spring 2007.

Sampling Protocols
Standard topographic survey methods.

Data Format
Drawing

Detailed Data Description
Topographic survey of fish passage barrier. Engineering specification for design of barrier remediation.

Project Timeline
Assessment will occur during spring 2007 and conceptual designs will be completed during spring 2008.

Product Title
To be determined

Study Information Verified
Gordon Becker, CEMAR, personal communication, August 2006.

Fish Passage Inventory

Project Type
Resource Management

Project Description
Inventory of barriers to fish passage in California Coastal Watersheds

Keywords
fish barriers, restoration, salmonids

Lead Agencies
California State Coastal Conservancy, California Department of Fish and Game (CDFG)

Funding Sources
State Coastal Conservancy, California Department of Fish and Game

Contracted Parties
None

Contact Information
Name: Michael Bowen
Organization: California State Coastal Conservancy
Phone: 510-286-0720
Email: mbowen@scc.ca.gov

Purpose
In 2001, the California Resources Agency established the eight-point California Coastal Salmon and Watersheds Program, which called for the coordination of State, federal, and local partners working toward the goal of restoring salmon and steelhead populations to naturally sustainable levels. This coordination requirement led to the establishment of the Fish Passage Forum (Forum), a stakeholder group, of which the Coastal Conservancy is a member.

Following the passage of Proposition 12, the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond, and concurrent with the establishment of the Fish Passage Forum, the State Legislature provided funds to the Coastal Conservancy from the Salmon Restoration Program Component of that bond. The appropriations language advised the Coastal Conservancy to conduct an inventory of fish passage barriers located on coastal streams that impede access to freshwater spawning habitats for anadromous fish species. The inventory is to be used to identify barriers suitable for decommissioning, demolition, removal, or modification for the purpose of restoring spawning and riparian habitat for anadromous fish, and to enhance aquatic and riparian habitat.

The project was conducted in four phases. Phase 1 involved identifying and contacting all individuals and organizations that might have information about fish passage barriers. Phase II entailed collecting data from the sources identified in Phase I as well as from newly identified sources in order to identify potential barriers to fish passage in coastal watersheds. This phase is

ongoing, and concurrent with Phase III, below.

Phase III consisted of: a) assembling a team of data technicians and Geographic Information System (GIS) experts; b) developing the Passage Assessment Database (PAD) structure to house available data, including peer review and approval of the structure by the Fish Passage Forum's data subgroup; and, c) outreach to agency officials, non-profits, anglers, and others to collect additional data on barriers to fish passage.

As the data team identified areas where data were lacking, the Coastal Conservancy contracted with biologists and field crews working in selected areas to conduct watershed assessments and inventories. These projects, which included data collection of physical habitat and barriers, helped fill in the data gaps on a number of coastal watersheds, including those of Marin County coastal streams.

In Phase III, the Coastal Conservancy's team of data technicians and GIS experts standardized the data and entered it into the database. In order to improve the data in the PAD, the data team also visited with a variety of data sources including regional DFG biologists and other State and federal officials. The biologists checked passage assessment sites that were already in the database and provided up-to-date information about those sites as well as adding new sites that were not yet in the database. The PAD data are now available for initial presentation and analysis in GIS layers and periodic updates are available for download at www.calfish.org where the barrier data can be displayed together with other fisheries and watershed datasets.

Phase IV, the project development phase, is ongoing, and the Conservancy is working with many local partners on fish passage improvement projects. The final report will be widely distributed electronically and in hard copy to sister agencies and Coastal Conservancy partners in order to facilitate the development of more fish passage improvement projects.

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
Report, GIS Coverage, Database, Web Page

Detailed Data Description
Identification and assessment of known fish passage barriers in California coastal watersheds. In the 2004 Passage Assessment Report, 3,323 known barriers were described, with 157 of the barriers identified as high-priority and 120 identified as moderate priority for modification or removal. An additional 9,057 barriers were identified but further investigation was needed to determine passage status.

Project Timeline
Final Report and Passage Assessment Database were completed in 2005; the PAD will be updated and maintained by CDFG staff.

Product Title
Fish Passage Improvement in California's Watersheds, Inventory of Barriers to Fish Passage - Final Report, Passage Assessment Database

Study Information Verified
Michael Bowen, SCC, personal communication, August 2006.

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
None

Contact Information
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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, August 2006.

Mid-Coyote Creek Project

Project Type
Resource Management

Project Description
Collect baseline creek information to help identify opportunities to improve fisheries and habitat values and provide public access as part of flood protection project.

Keywords
flooding/flood protection, sediment/sedimentation, streamflow, hydrologic modeling, fish, aquatic habitat, water quality

Lead Agencies
Santa Clara Valley Water District (SCVWD)

Funding Sources
Clean Safe Creeks Program (SCVWD)

Contracted Parties
Eisenberg, Olivieri and Associates, Inc. (EOA, Inc.), San Francisco Estuary Institute (SFEI), ENTRIX, Inc., Edaw

Contact Information
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Purpose
The Coyote Creek Project is located in the central portion of the Coyote watershed. Its limits extend approximately 6.1 miles between Montague Expressway and I-280, all within the city of San Jose. This project is part of the Clean Safe Creeks Program approved by the voters of Santa Clara County in November 2000. The project's primary goal is to enhance the creek's conveyance to protect homes, schools, businesses, and highways from the 100-year flood event. Additionally, the project will improve fisheries and habitat values and provide public access opportunities in cooperation with the City of San Jose. This multi-year study will necessitate preparation of a detailed Engineer's Report and an Environmental Impact report to comply with CEQA.

The objectives of the project are to: 1) Provide protection to the surrounding area from the one-percent flood event on Coyote Creek. Wherever feasible, the use of non-structural and/or minimal hardscape features will be used for creek improvements. Only flooding from Coyote Creek within the project limits will be evaluated in this project effort; 2) Mitigate for all project impacts to stream habitat values and fisheries; 3) Identify stream habitat enhancement and/or restoration opportunities; 4) Identify opportunities to improve water quality within the project limits; 5) Identify opportunities to provide for public recreation and access; 6) Minimize the need for future operations and maintenance activities and create a self-sustaining system within

the completed project limits; and 7) Obtain community support.

There are two major data collection activities associated with this project: 1) sediment and flow measurements; and 2) fish and aquatic habitat surveys and water temperature monitoring. Suspended and bedload sediment will be monitored as part of sediment transport study. Fish community will be surveyed to determine species composition and condition within the project reach. Physical habitat will be surveyed to determine the quality and quantity of the instream and riparian habitat that influences the structure and function of the aquatic community in the project reach. Habitat typing will be conducted before and after the flood protection project is constructed to appropriately assess impacts due to constructed design (i.e. loss of pool/riffle). In addition, the habitat typing will assist biologists in preparing an appropriate study design for fish community assemblage sampling and help quantify the results of that effort.

Study Watersheds
Coyote

Tributaries Sampled in Watershed
Lower Silver Creek, Upper Penitencia Creek

Sampling Location
Sediment study: The Charcot Avenue bridge at Coyote Creek, the Story Road bridge at Coyote Creek, the Whooster Avenue bridge at Lower Silver Creek.

Fish and habitat survey: Habitat typing will occur within project reach (approximately 6.1 miles between Montague Expressway and I-280). Fish sampling locations for fish community assemblage monitoring has not yet been established; however sites will primarily be concentrated in project reach. In addition, reference reaches will be selected in both tributaries and other locations on mainstem of Coytoe Creek. Sampling stations have been selected for temperature monitoring. That information will be available in report format in December 2007

Sampling Frequency
Sediment: Sampling occurs during flows greater than approximately 300 cfs on Coyote Creek and 30 cfs on Lower Silver Creek.

Fish and habitat survey: Habitat typing will occur before and after project construction. Temperature data will be collected hourly at 13 established locations within the project reach with onset temperature loggers. Fish community assemblage sampling will occur three times a year. The sampling periods are May 20 to June 4, June 21 to June 29 and September 14 to October 8. Water quality monitoring will coincide with fish community assemblage sampling.

Field Sampling Period
Sediment: Sampling began in the winter of 2005 and is ongoing.

Fish: Habitat typing will be conducted July-August 2006. Temperature monitoring will be conducted Febuary-November 2006.

Sampling Protocols
Sediment: Discharge measurements made with Price AA meter. Suspended sediment samples

are collected using a US DH-76 depth integrated sampler that is lowered from a bridge to collect multiple samples per discharge measurement. Suspended samples are analyzed by Sequoia Analytical. Bedload materials are collected using a Heli-Smith BL-84 3" sampler. Bedload samples are analyzed by San Jose State University.

Fish and water quality sampling will use the following protocols:
1) Habitat typing: California Salmonid Stream Habitat Restoration Manual (1998), California Department of Fish and Game.
2) Fish community assemblage: Barbour et. Al, 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. Environmental Protection Agency (EPA 841-B-99-002)
3) Temperature monitoring: Data loggers (Onset Stowaway Temp®) will record water temperature every hour and will be deployed at one-half mile increments throughout the project reach. Temperature will also be recorded for the two tributaries that influence the project reach, Upper Penitencia and Lower Silver Creek, just upstream of the confluence points with Coyote mainstem.

Data Format
Report

Detailed Data Description
Suspended and bedload sediment, discharge measurements, fish community assemblage, aquatic habitat survey, and continuous water temperature data.

Project Timeline
The first report will be available December 2007.

Product Title
To be determined

Study Information Verified
Zhen Shao, SCVWD, personal communication, August 2006.

Permanente Creek Planning Study

Project Type
Resource Management4

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, hydrologic modeling, hydrology, restoration, riparian habitat, streamflow

Lead Agencies
Santa Clara Valley Water District (SCVWD)

Funding Sources
SCVWD

Contracted Parties
None

Contact Information
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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 is anticipated to be completed in Dec 2007 and project construction is due to be completed in 2016.

Product Title
Permanente Creek Watershed Planning Study

Study Information Verified
Afshin Rouhani, SCVWD, personal communication, August 2006.

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 Maitenance 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
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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 Crops 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, August 2006.

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, hydrologic modeling, hydrology, sediment/sedimentation

Lead Agencies
Santa Clara Valley Water District (SCVWD)

Funding Sources
SCVWD

Contracted Parties
Balance Hydrologics, Colorado State University

Contact Information
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Purpose
Collect baseline geomorphic data and conduct analysis for design of flood protection, stream stabilization, erosion repair and sediment removal projects.

Study Watersheds
San Tomas, Stevens, Adobe, Coyote, Guadalupe

Tributaries Sampled in Watershed
Alamitos Creek, Stevens Creek, Ross Creek, San Tomas Aquino Creek, Lower Silver Creek, Thompson Creek, 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), Stevens Creek (upstream of Deep Cliff Golf Course to 1000 feet downstream of Stevens Creek Road) and Alamitos Creek (between Randol Creek and 1000 feet downstream of confluence with Greystone Creek) and Ross Creek (vicinity of two reach length rehabilitation projects at Harwood Avenue and Kirk Road). Stream flow gage installed, gage data analyzed to develop flow frequency relationships for some creeks. Bedload and suspended load will be monitored at upper and lower ends of project area in Berryessa and Upper Penitencia Creek.

Sampling Frequency
Longitudinal profiles, cross-sections and pebble counts were conducted; particle size of pavement/subpavement was measured; for Berryessa and Upper Pen - cross-sectional measurements repeated in two subsequent year(s) for the purposes of calibrating a Sediment Mass Balance Model (SIAM); monitoring of bedload and suspended load has been conducted over two winters. HEC-HMS modelling complete in Adobe Creek, Upper Penitencia and Berryessa.

Field Sampling Period
June 2004 to 2007

Sampling Protocols
Geomorphic field data collected using approach developed by the District, based on revisions made to method developed at Colorado State University and by Balance Hydrologics

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
To be determined

Product Title
To be determined

Study Information Verified
Dipankar Sen, SCVWD, personal communication, August 2006.

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
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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 2007.

Product Title
To be determined

Study Information Verified
Steve Bui, SCVWD, personal communication, August 2006.

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
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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, August 2006.

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
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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 protocol 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
Jen Codianne, SCVWD, personal communication, August 2006.

Section 2: Mitigation Projects

September 15, 2006

September 15, 2006

Coyote Parkway Freshwater Wetland

Project Type
Mitigation5

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 Parkway (formerly referred to as 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
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Purpose
This project will create about 7.6 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 were completed in July 2005; project construction began in August 2006 and is scheduled for completion in June 2007.

Product Title
N/A

Study Information Verified
Ngoc Nguyen, SCVWD, personal communication, August 2006.

Stream Flow Augmentation Project

Project Type
Mitigation

Project Description
The Stream Flow Augmentation Project entails a one season release of tertiary treated recycled water (which is produced from treated wastewater) into Upper Silver Creek at the South Bay Water Recycling Yerba Buena Pump Station.

Keywords
water quality, waste water/recycled water, water chemistry, metals, nutrients

Lead Agencies
Santa Clara Valley Water District (SCVWD)

Funding Sources
SCVWD

Contracted Parties
Thomas Reid Associates

Contact Information
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Purpose
The objectives of the project are to determine whether augmenting stream flow with tertiary-treated recycled water in the Coyote Creek watershed is feasible within economic, environmental, and county-wide policy objectives for water supply management.

In this grant-funded phase, the objectives are: 1)To evaluate the water quality impacts to surface water and groundwater (the upper aquifer) from the release of tertiary-treated recycled water to augment stream flows; 2)To determine whether the chemical constituents in tertiary-treated recycled water are adequately filtered or degraded by natural processes, or further treatment of the recycled water is needed before it can be used for streamflow augmentation; 3) To evaluate the major issues that are hurdles to implementing streamflow augmentation projects; and 4) To identify the potential solutions to these issues within existing policy and regulatory frameworks.

The Stream Flow Augmentation Project entails a one season release of tertiary treated recycled water (which is produced from treated wastewater) into Upper Silver Creek at the South Bay Water Recycling Yerba Buena Pump Station located off Yerba Buena Road. The Initial Study/Mitigated Negative Declaration addresses the potential environmental impacts associated with augmenting the stream flows of Upper Silver Creek by discharging up to 1 cubic foot per

second (cfs) of dechlorinated tertiary treated recycled water for a trial period from August to November. The project includes water quality monitoring at several stations along Upper Silver Creek and downstream Coyote Creek.

Study Watersheds
Coyote

Tributaries Sampled in Watershed
Upper Silver Creek

Sampling Location
Sampling would be done at the recycled water (Yerba Buena Pump Station), seven surface water (four sites on Upper Silver Creek and three sites on Coyote Creek) and three groundwater locations.

Sampling Frequency
Monthly

Field Sampling Period
June - October 2007.

Sampling Protocols
Water samples will be taken using grab and probes.

Data Format
Not reported

Detailed Data Description
General water quality (temperture, dissolved oxygen, pH and conductivity), cations and anions, metals and organic compounds.

Project Timeline
Monitoring is anticipated to be completed in November 2007.

Product Title
Stream Flow Augmentation Project Upper Silver Creek and Coyote Creek Initial Study / Mitigated Negative Declaration

Study Information Verified
Alice Ringer, SCVWD, personal communication, August 2006.

Section 3: Permit Compliance

September 15, 2006

September 15, 2006

Bay Area Hydrology Model

Project Type
Permit Compliance

Project Description
Develop an automated tool, based on a continuous simulation hydrologic model calibrated for Alameda, Santa Clara and San Mateo Counties, to allow developers, consultants and municipal staff to size and check the sizing of stormwater detention and infiltration facilities in order to efficiently meet the requirements of the stormwater permits and the HMP.

Keywords
hydrologic modeling

Lead Agencies
Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

Funding Sources
Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), Alameda Countywide Clean Water Program (ACCWP), San Mateo Countywide Pollution Prevention Program (STOPPP)

Contracted Parties
Clear Creek Solutions, Inc., Geosyntec Consultants, Inc.

Contact Information
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Purpose
Provisions in the SCVURPPP (Program) NPDES permit require Co-permittees to manage increases in runoff peak flows and volumes from Group 1 development projects through the implementation of a Hydromodification Management Plan (HMP). To assist Co-permittees meet HMP requirements, the Program, along with the San Mateo and Alameda County stormwater programs, is jointly funding the development of a tool for simulating pre- and post-project hydrology and automatically sizing flow control facilities. Clear Creek Solutions (CCS) has been contracted to develop the tool, to be called the Bay Area Hydrology Model (BAHM), based on the Hydrologic Simulation Program Fortran (HSPF) watershed hydrology model. The regional component of the BAHM is near completion and has been calibrated for Alameda County watersheds. A joint stormwater program demonstration of the Alameda version of the BAHM was conducted on May 19, 2006.

The Program contracted separately with CCS to perform local calibration of the model to two watersheds in Santa Clara Valley. Information related to the stream flow monitoring data that was used to calibrate the watersheds is presented in this project summary. Local calibration is anticipated to be completed by early September 2006, and training workshops on the BAHM

will be conducted in fall 2006. The BAHM will include the ability to model common site design and treatment control measures and quantify the reduction in flow duration due to these measures.

The Program also contracted with GeoSyntec Consultants to conduct studies comparing flow basin sizing using the HEC-HMS (the hydrology model used to develop the SCVURPPP HMP) and HSPF models, in order to provide guidance on model use and sizing procedures and to assist development of the BAHM.

Study Watersheds
Guadalupe, Coyote

Tributaries Sampled in Watershed
Ross Creek, Thompson Creek

Sampling Location
SCVWD Alert ID 2058 Ross Creek streamflow gage at Cherry Ave; Thompson Creek streamflow gage at Early Morning Drive; Thompson Creek streamflow gage at Quimby Road

Sampling Frequency
Streamflow data collected at 15-minute intervals.

Field Sampling Period
Ross Creek streamflow data 10/1/2002 – 6/21/2006; Thompson Creek at Early Morning Drive streamflow data 10/1/2002 – 9/30/2005; Thompson Creek at Quimby Road streamflow data 10/1/2002 – 9/30/2005

Sampling Protocols
HSPF calibration of streamflow based on input land use, soils, precipitation, and potential evapotranspiration data for multiple water years (2003-2005).

Data Format
Report, Database

Detailed Data Description
Project will use existing data (i.e., land use, soils, precipitation, and potential evapotranspiration data) that was provided by GeoSyntec Consultants and SCVWD. The model will include a user interface that presents the different hydrologic and land use conditions, as well as map features (e.g., roads, creeks) that will allow user to select the specific development site of interest found in participating counties.

Project Timeline
September 2006

Product Title
Santa Clara County Watersheds HSPF Calibration Report, HSPF WDM database

Study Information Verified
Jill Bicknell, SCVURPPP, personal communication, August 2006.

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, USEPA

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

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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).

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 included 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 was completed in May 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.

Additional fish sampling in Lexington Reservoir will be conducted in August/September 2006. The purpose of the sampling is to supplement previous data collected from large mouth bass samples with data collected from smaller, more abundant fish species that occur in the reservoir. These species may include stocked rainbow trout, black crappie and sunfish. Data will be analyzed to determine potential threat to wildlife.

A SolarBee solar-powered reservoir circulator was installed into Almaden Lake during spring 2006. Water quality will be monitored at various depths on a weekly basis to determine affect of water circulation on methylmercury production.

The SFRWQCB completed the TMDL Project Report and Implemenation Plan in January 2006.

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. Lexington Reservoir (fish samples) and Almaden Lake (water quality).

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. Additional fish tissue samples (undetermined smaller sized fish) will be collected in Lexington Reservoir in fall 2006.

Water quality measurements taken in Almaden Lake on weekly basis.

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. Fish sampling will occur in fall 2006. Water quality sampling in Almaden Lake (spring 2006 to present).

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
TMDL is anticipated to be adopted in June 2007.

Product Title
Data Collection Report (February 2005), Final Conceptual Model (May 2005), TMDL Project Report (January 2006)

Study Information Verified
Carrie Austin, RWQCB, personal communication, August 2006.

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
Scott Cressey and Associates, Kinnetic Laboratories, Inc., Bioassessment Services

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Purpose
The Multi-Year Plan, completed in March 2002 and revised in March 2004, 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, which are activities that entail the collection of environmental data through field studies.

Monitoring activites 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. Monitoring and assessment activities 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 are 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 and Sunnyvale East and West Channels Watersheds in FY 04-05 and FY 05-06, and Stevens and Permanente Creek Watersheds in FY 05-06. Results and analyses for each years monitoring activities are 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 initiate monitoring in Coyote Creek mainstem during FY 06-07.

Study Watersheds
Calabazas, Coyote, Lower Penitencia, Matadero/Barron, Adobe, San Tomas, Sunnyvale West, Sunnyvale East, Stevens, Permanente

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 are typically collected twice annually during dry and wet season. Starting in FY 06-07, sediment samples will be collected twice annually during dry and spring season. Bioassessments are collected once annually.

Field Sampling Period
Monitoring for the SCVURPPP Multi-Year Monitoring Plan has occurred from September 2001 to present.

Water quality parameters are collected during the following hydrological cycles: dry season

(June - October), wet season (January-March); and spring season (April - May). 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 and SCVURPPP Draft Quality Assurance Project Plan.

Data Format
Report, Database, Map, GIS Coverage

Detailed Data Description
General water quality measurements (DO, temperature, pH, conductivity and velocity). Water samples collected by the Program over the years have been 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 sites, fish assemblages. Starting in FY 06-07, Program will begin to sample and analyze bedded sediments for metals, PCBs, PBDEs, pyrethroid pesticides and acute and chronic toxicity.

Project Timeline
Annual Monitoring Plan submitted in March of each year in the SCVURPPP 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 (Version 2.0 dated March 1, 2004), Watershed Monitoring and Assessment Summary Report (Submitted annually in September), Monitoring Plan (Submitted annually in March), Watershed Characterization and Sampling Design Technical Memo (Submitted annually in March)

Study Information Verified
Paul Randall, SCVURPPP, August 2006.

Water Quality Monitoring in Palo Alto Creeks

Project Type
Permit Compliance

Project Description
Water Quality Monitoring in Palo Alto Creeks

Keywords
metals, nutrients, pesticides, streamflow, water quality, water chemistry

Lead Agencies
City of Palo Alto, Stanford University, San Francisquito Creek Watershed Council (SFCWC)

Funding Sources
City of Palo Alto, Stanford University

Contracted Parties
Balance Hydrologics

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Purpose
There are three water quality monitoring projects that are being implemented in creeks within City of Palo Alto jurisdiction. These projects include: 1) Long-Term Monitoring and Assessment Plan (LTMAP); 2) Volunteer Creek Monitoring Program; and 3) Matadero Creek Metals/Cyanide Monitoring. A brief description of each project is provided below.

The Long-Term Monitoring and Assessment Plan (LTMAP) is sponsored by Stanford University and City of Palo Alto and managed by the San Francisquito Watershed Council. The LTMAP was originally created by a subcommittee of the San Francisquito Creek Coordinated Resource Management and Planning (CRMP) Steering Committee, the group now known as the San Francisquito Watershed Council. The LTMAP was established primarily to monitor and assess current (i.e., baseline) conditions, analyze trends, and evaluate watershed management.

The City of Palo Alto's volunteer creek monitoring program was developed after a fish die-off that occurred in November 2002 within the Palo Alto Flood Control Basin. Since April 2003, volunteers and RWQCB staff monitor sites on Adobe, Barron, and Matadero Creeks, as well as the Palo Alto Flood Control Basin. The data is collected to evaluate trends in water quality within the creeks and the flood basin and to help make policy decisions regarding management of the Flood Control Basin to maintain adequate dissolved oxygen levels.

The City of Palo Alto's NPDES permit for wastewater discharge requires monthly monitoring

of Matadero Creek for metals and cyanide.

Study Watersheds
Adobe, Matadero/Barron, San Francisquito

Tributaries Sampled in Watershed
San Francisquito Creek, Los Trancos Creek, Bear Creek, Adobe Creek, Barron Creek, Matadero Creek

Sampling Location
There are four LTMAP monitoring stations in the San Francisquito Creek watershed: 1) San Francisquito Creek at Newell Road; 2) San Francisquito Creek at Piers Lane; 3) Los Trancos Creek at Piers Lane; and 4) Bear Creek at Sand Hill Road.

The volunteer monitoring program has been monitoring 21 sites on Adobe, Barron, and Matadero Creeks, as well as the Palo Alto Flood Control Basin. The City of Palo Alto monitors Matadero Creek at Greer Road and Oregon Expressway.

Sampling Frequency
LTMAP: five to six rainfall events are sampled during each water year. Volunteer monitoring occurs bi-monthly.

Field Sampling Period
LTMAP monitoring at three lower stations since fall 2001; Bear Creek station was added in fall 2003. Volunteer monitoring has been occuring since April 2003.

Sampling Protocols
Draft Surface Water Quality Monitoring Plan, developed by Larry Walker and Asociates in 2001, provides a complete description of the methods and protocols used for LTMAP monitoring. The volunteer monitoring program uses a YSI multi-meter probe to take measurements of temperature, conductivity, dissolved oxygen, and pH.

Data Format
Web Page, Table

Detailed Data Description
LTMAP water samples are analyzed for metals (including low level mercury, dissolved mercury, and methylmercury), nutrients, pesticides (organochlorine, organophosphate, and pyrethroids), and suspended solids. One sample each year is analyzed for dioxins.

Project Timeline
LTMAP monitoring will occur through Water Year 2006. Volunteer monitoring is ongoing.

Product Title
Long-Term Monitoring and Assessment Plan Annual Water Quality Reports

Study Information Verified
Brad Eggleston, City of Palo Alto, personal communication, August 2006.

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

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Purpose
The SCVURPPP 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 high priority creeks include Stevens, Upper Penitencia, Coyote mainstem, and Saratoga. The sediment assessment work plan contains two separate phases. Phase I includes conducting a Limiting Factors Analysis (LFA) and sediment management practices assessment. 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.

Study results from the Stevens Creek LFA indicated that excessive sediment from anthropogenic sources was not impairing beneficial uses and therefore, Phase II: Conduct a Rapid Sediment Budget, was not conducted. The SCVURPPP is currenting conducting Phase I

in Upper Penitencia Creek subwatershed.

Study Watersheds
Stevens, Coyote

Tributaries Sampled in Watershed
Stevens Creek, Upper Penitencia Creek, Arroyo Aguague Creek

Sampling Location
Stevens Creek, between Fremont Avenue and Stevens Creek Dam.

Upper Penitencia Creek, between Capital Avenue and natural waterfalls occuring in both Upper Penitencia Creek and Arroyo Aguague within Alum Rock Park.

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, snorkel surveys in May and October 2006, remaining focused studies 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* technicque 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.

Snorkel surveys were conducted in Upper Penitencia Creek using methods developed by Dr. David Hankin, Humbolt State University (Hankin and Mohr, in preparation). Aquatic habitat survey was conducted in Arroyo Aguague using modified CDFG protocols. Protocols used for focused studies in Upper Penitencia were consistent with Stevens Creek.

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. Focused studies in Upper Penitencia Creek included a steelhead population snorkel survey.

Project Timeline
StevensCreek: LFA technical report and sediment management practices assessment was

completed in September 2004. The Upper Penitencia Creek: LFA was completed in August 2006 and management practices assessment will be completed in FY 06-07.

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, Upper Penitencia Creek Limiting Factors Analysis Technical Report, Stevens Creek Limiting Factors Analysis Technical Report

Study Information Verified

Paul Randall, SCVURPPP, August 2006.

Section 4: Watershed Management

September 15, 2006

September 15, 2006

Integrated Regional Water Management Plan (IRWMP)

Project Type
Watershed Management

Project Description
The Bay Area IRWMP is a multi-stakeholder, nine-county effort to coordinate a strategic approach to regional water resources management.

Keywords
watershed management, restoration, habitat, water quality, flooding/flood protection, waste water/recycled water

Lead Agencies
California State Coastal Conservancy

Funding Sources
Proposition 50 Grant Program

Contracted Parties
Jones and Stokes Associates

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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.

The IRWMP is an integration of water resources planning and management strategies from the following Functional Area Documents (FAD): 1) Water Supply & Water Quality; 2) Wastewater & Recycled Water; 3) Flood Protection & Stormwater Management; and 4) Bay Area Watershed Plan. The purpose of these four FADs was to (1) identify specific needs and challenges relating to the specific functional area; (2) describe water management strategies and approaches to address these needs; and (3) develop a list of potential strategies and implementation projects that would maximize benefits and enhance opportunities for regional cooperation within a given functional area.

The Watershed Management-Habitat Protection and Restoration (WM-HPR) functional area addresses management of hydrologic systems with emphasis on habitat protection and enhancement. An open and inclusive public process, the WM-HPR document has been titled the Bay Area Watershed Plan. The purpose of the Bay Area Watershed Plan is development of scientifically valid goals to prioritize water quality, species recovery, and habitat protection/restoration opportunities within the region. The document includes a characterization of hydrologic and land development features in Bay Area watersheds, as well as identification of regional watershed management issues and opportunities. This Plan represents an initial attempt to create a project evaluation framework for ongoing use by the Conservancy and other decision-makers to consider larger watershed processes in distribution of grant funding.

An Integration White Paper was developed as a survey of regional water management efforts from throughout California and other states in the West. The objective of the Integration White Paper was to identify the lessons learned from other regional water management efforts, as well as the specific and implied integration requirements from the Proposition 50 Guidelines. The Bay Area IRWMP will be developed, with on-going TCC coordination and stakeholder outreach, using information gained from the FADs and the Integration White Paper. The Bay Area IRWMP will identify regional projects that provide multiple benefits across these functional areas. The prioritization criteria developed under each functional area will be considered in order to select a final list of projects that provide synergies in water resources management.

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
Specific information on the Bay Area Watershed Plan is available at http://www.bayareawatershedplan.net. The IRWMP project information and documents is available at http://www.bayareairwmp.net.

Project Timeline
The IRWMP will be completed by December 2006.

Product Title
Water Supply-Water Quality Functional Area Document, Wastewater-Recycled Water Functional Area Document, Flood Protection-Stormwater Management Functional Area Document, Bay Area Watershed Plan (will be completed in Sept 2006)

Study Information Verified
Jeff Melby, SCC, personal communication, August 2006.

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

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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 pulished 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 infomraiton indicates that watershed hydrology and habitat are key factors likley 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 2007.

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, Sillicon Valley Pollution Prevention Center

Contracted Parties
San Francisco Estuary Institute (SFEI)

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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.

The Coyote Creek report was developed to assist in the design of natural flood protection alternatives in the Mid-Coyote Flood Protection Project. The report identified significant opportunities for freshwater wetland restoration and provided ideas and rationale for managing environmental water releases. City and county agencies have shown additional interest in the report for existing planning efforts, including the Coyote Creek Parkway Master Plan, the Coyote Valley Specific Plan, and city general plan updates.

Historical ecology assessment for the Guadalupe, West Valley, and Lower Peninsula watershed management areas was initiated through the Watershed Stewardship Project, with coarse-scale information presented through the Project reports. The SVPPC will provide additional funding for the development of GIS/database products and an expanded presentation of historical ecology information for the three watershed areas (35-60 page reports). This funding is not sufficient to produce the detailed analysis found in the Coyote report. Additional funding

opportunities are being explored to produce more detailed reports (150-180 pages), to be tailored for specific needs identified.

The development of equivalent historical ecology resources for the southern part of Santa Clara County began in June 2006. This component has been extended into San Benito County to cover the Upper Pajaro River/Soap Lake area through funding from The Nature Conservancy. This component will produce equivalent GIS products, interpretation, analysis and detailed technical report, with an expanded focus on local interests such as land conservation prioritization and floodplain restoration, in addition to stream restoration, natural flood protection, and water management.

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
Coyote Creek Historical Ecology Report was completed in May 2006. Coarse-scale historical ecology information was compiled in Guadalupe, West Valley and Lower Peninsula Stewardship Plans; the need for more detailed information is being evaluated.

Product Title
Stewardship Plan for Guadalupe Watershed Area, Stewardship Plan for West Valley Watershed Area, Stewardship Plan for Lower Peninsula Watershed Area, Coyote Creek Historical Ecology Study

Study Information Verified
Sarah Young, SCVWD, personal communication, August 2006.

Stewardship Plans for Lower Peninsula, West Valley, and Guadalupe Watershed Areas in the Santa Clara Basin

Project Type
Watershed Management

Project Description
Develop Three Stewardship Plans for Lower Peninsula, West Valley, and Guadalupe Watershed Areas.

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

Lead Agencies
Santa Clara Valley Water District (SCVWD)

Funding Sources
SCVWD and CALFED BAY DELTA PROGRAM

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

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Purpose
Development of stream stewardship plan for stream corridors within three watershed areas (Lower Peninsula, West Valley, and Guadalupe) that will compile relevant existing information pertinent to each stream, and create a vision and potential projects. The plan provides basic existing and historical information on water supply, flood protection ecological health, open space and trails, as well as land use, hydrology, and geomorphology. The level or extent of information for each Watershed Management Unit varies. The information sections of the Plan provide a contextual level of information for decision making and can serve as a guide to where additional or more in-depth information may be needed. This plan was not designed to provide information at the level needed for engineering feasibility studies or project design.

The plans are intended for the use by staff and the Watershed Manager. External consultants, research institutions, city/county agencies, members of the public, as well as community or watershed groups, are also interested in accessing the information contained in the documents for their own uses.

Study Watersheds
Sunnyvale West, San Francisquito, Adobe, Calabazas, Guadalupe, Matadero/Barron,

Permanente, San Tomas, Stevens, Sunnyvale East

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, 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
Fine-Scale Assessment: See Appendix B, Section B4 (Stewardship Plan).

See Chapter 7 Stevens Creek of the Stewardship Plan for Lower Peninsula Watershed Area

See Chapter 9 Calabazas Creek of the Stewardship Plan for the West Valley Watershed Area

Data Format
Report, Table, Map, GIS Coverage

Detailed Data Description
Rapid continuous field survey evaluating condition of instream habitat and riparian corridor using Center for Watershed Protection's Unified Stream Assessment (USA) protocol (Calabazas Creek); geomorphic surveys measuring channel cross-sections, longitudinal profiles and pebble counts; and topographic surveys at selected fish barrier locations (Stevens Creek).

Project Timeline
Completion of draft reports in June 2006 available on the web. Refined versions will be updated at the same website by end of 2006.

Product Title
Stewardship Plan for Guadalupe Watershed Area, Stewardship Plan for West Valley Watershed Area, Stewardship Plan for Lower Peninsula Watershed Area

Study Information Verified
Sarah Young, SCVWD, personal communication, August 2006.

Section 5: Research

September 15, 2006

September 15, 2006

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, hydrologic modeling, percent imperviousness, land use

Lead Agencies
Tetra Tech

Funding Sources
Water Environment Research Foundation (WERF)

Contracted Parties
University of California, Berkeley

Contact Information
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Purpose
This WERF sponsored research addresses the utility of bioassessment for managing aquatic life uses in urban and/or urbanizing catchments (i.e., watersheds). Heavily urbanized catchments present a problem for facilities and water quality managers struggling to balance the socio-economic needs of urban areas with aquatic life use standards. Most standards either do not recognize the limitations on achievable biological condition in urban areas, or set attainment goals too low by not addressing biological potential for improvement. This research specifically defines a process for developing alternative biological benchmarks for aquatic life use in urban catchments.

This research was conducted across three distinct climatic regions (East - Baltimore, MD, West - San Jose, CA, and Midwest - Cleveland, OH). and describes a three-step process: 1) developing a primary urbanization gradient, 2) assembling an appropriate urban biological index, and 3) defining a biological potential that describes the highest biological condition currently achieved along the urban gradient. The primary urban gradient was developed using simple landscape and socio-economic measures of urbanization. Alternative urban gradients, comparable to the primary gradient, are presented that can be used as data and resources are available. The primary biological index was developed using a subset of commonly measured

biological metrics. Lastly, biological potential was defined using quantile regression to characterize the upper boundary on biological condition observed along the primary urban gradient. This approach establishes empirically defined and realistic aquatic life use benchmarks for urbanized catchments, and describes a process by which the aquatic life use status of waterbodies in urbanized catchments can be placed in a realistic context.

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, Map94

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 fall 2006

Product Title
WERF Research Digest (#01-WAM-3) Bioassessment: a tool for managing aquatic life uses for urban streams

Study Information Verified
Alison Purcell, personal communication, August 2006.

Coyote Creek Sediment Sampling

Project Type
Research

Project Description
Daily Seasonal Suspended Sediment Monitoring

Keywords
metals, mercury/methylmercury, pollutant loads, sediment/sedimentation, sediment chemistry

Lead Agencies
United States Geological Survey (USGS)

Funding Sources
California State Coastal Conservancy, San Francisco Bay Regional Water Board

Contracted Parties
San Francisco Estuary Institute (SFEI)

Contact Information
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Purpose
Sediment data are collected by the USGS and computed in support of the South Bay Salt Pond Restoration sediment transport modelling efforts.

SFEI collected seven grab water samples during WY 2005 at USGS water gage at Highway 237. The water samples were analyzed for contaminant concentrations to be compared with similar data being collected in Guadalupe River. The water sample collection and analysis was funded by the SF Bay Regional Water Board.

Study Watersheds
Coyote

Tributaries Sampled in Watershed
None

Sampling Location
USGS stream gage (11172175) at Hwy 237.

Sampling Frequency
Suspended sediment is collected October through April each year. Seven water samples were collected during wet season.

Field Sampling Period
Suspended sediment: October 2003 to present

Water samples: wet season during 2004-2005.

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
Web Page

Detailed Data Description
Suspended sediment concentrations (SSC) and turbidity; water analysis for metals, including mercury, methyl mercury, nickel and copper; PCBs and PBDEs. Sediment data is posted on USGS website. Contaminant data is currently unpublished.

Project Timeline
Sediment sampling by USGS is ongoing. Water samples and contaminant analysis was conducted in FY 04-05.

Product Title
To be determined

Study Information Verified
Larry Freeman, USGS, personal communication, August 2006.

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
San Francisco Estuary Institute (SFEI)

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, AXYS Analytical, United States Geological Survey (USGS)

Contact Information
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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) are concentrations and loads showing a trend; and 4) what is 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

In addition, SFEI did some unfunded in-kind spot sampling in other locations (A stormwater sewer on San Pedro Road, San Jose, McAbbee Ck near Senador Mine, Alamitos Creek at Graystone Lane, and Deep Gulch at Hacienda). The objective with this sampling was to

continue to increase knowledge about sources of Hg to the mainstem of the Guadalupe River. Overall 6 samples were collected in San Pedro drain, 2 at McAbbee creek, 3 at Graystone Lane, and 1 at Deep Gulch – all samples we analyzed for SSC and HgT. Lab analysis was paid for by Regional Board TMDL money and mileage and hours were paid for by SFEI overhead. These data will be reported through SPLWG meetings and perhaps through a poster presentation (there was no formal plan on how or when to report the data).

Sampling Frequency
50 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.

Field Sampling Period
October 2004 – December 2006. 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, methyl mercury, nickel and copper; PCBs and PBDEs.

Project Timeline
October 2004 - December 2006

Product Title
Concentrations and loads of Hg, PCBs, and PBDEs associated with suspended sediments in the lower Guadalupe River, San Jose, California, WY 2006.

Study Information Verified
Lester McKee, SFEI, personal communication, August 2006.

Section 6: Watershed Monitoring and Assessment

September 15, 2006

September 15, 2006

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), Alameda Countywide Clean Water Program (ACCWP), 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.)

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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 work

plan tasks.

Study Watersheds
Calabazas, Coyote, Matadero/Barron, Permanente, San Tomas, Stevens, Adobe

Tributaries Sampled in Watershed
Saratoga Creek, Thompson Creek, Bonjetti Creek, Upper Penitencia Creek

Sampling Location
Since 2002, SCVURPPP have conducted bioassessments in Coyote Creek (10 sites), Saratoga Creek (8 sites), Adobe Creek (5 sites), Matadero Creek (2 sites), Calabazas Creek (5 sites), Stevens Creek (7 sites) and Permanente Creek (6 sites)

Sampling Frequency
Bioassessments are typically collected during spring season (April/May)

Field Sampling Period
Bioassessment data collected by SCVURPPP from April 2002 to April 2005 as part of the Multi-Year Monitoring Plan will be used, in combination with data collected by other agencies in SF Bay watersheds, to determine reference areas and develop and test metrics.

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 assesmblages, 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, August 2006.

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
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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, August 2006.

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
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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 (i.e., identified trash problem areas and creek segments that are visible and/or accessible to the general public).

Program activities will focus on evaluating condition of trash at creek and non-creek problem areas, implementing trash control measures within these areas and documenting the effectiveness of management actions. Tasks completed in FY 03-04 included the documentation and evaluation of existing management practices; identification of trash problem locations in creeks and non-creek areas; analysis of existing trash evaluation tools; and the development of standardized format for reporting and evaluating trash management practices. During FY 04-05 and FY 05-06, the Program refined trash evaluation tools; implemented evaluations at a subset of trash problem areas; identified potential trash management practices; and further development of standardized format for reporting. During FY 06-07, the Program will identify high priority trash problem areas to focus management efforts; continue trash evaluations at those locations; evaluate effectiveness of these actions and report results. In addition, the Program is planning to implement pilot test study using structural BMPs at selected locations.

Evaluation results and implementation efforts are documented and provided within the Program and Co-permittee's Annual Reports. The information is intended to assist Water 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 both creek and non-creek sites within all the major Santa Clara Basin watersheds.

Sampling Frequency
Trash problem areas are typically assessed one time each year; some sites have been assessed at higher frequencies (2-5 times/year).

Field Sampling Period
Trash assessments occurred from October 2004 to present.

Sampling Protocols
To assess trash problem areas in creeks, Program used the San Francisco Regional Water Quality Control Board (RWQCB) Rapid Trash Assessment Protocol V.7 in FY 04-05 and the Urban RTA Protocol (V.1) in FY 05-06. The Urban RTA Protocol was developed by Program staff to adapt the RWQCB RTA Protocol for trash problem areas in urbanized areas. The Keep America Beautiful (KAB) Litter Indiex 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; information collected during evaluations include assessment score; prevalent trash types; suspected trash sources; volume and enumeration of trash items (creek sites only); and recommended future monitoring and management actions.

Project Timeline
Memorandum documenting results and preliminary analysis of trash evaluations will be completed in September of each year and submitted in the Program's Annual Report.

Product Title
Implementing Existing Trash Assessment Tools Tech Memorandum, SCVURPPP Trash Work Plan, Trash Problem Area Survey Results Annual Tech Memoranda (Year 1 and 2)

Study Information Verified
Paul Randall, SCVURPPP, August 2006.

Stevens and Permanente Creeks Watershed Council Volunteer Monitoring and Outreach Program (VMOP)

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 and NFWF Grant

Keywords
bioassessment/biomonitoring, macroinvertebrates, habitat, invasive/introduced species, nutrients, water quality, citizen/volunteer monitoring

Lead Agencies
Stevens and Permanente Creeks Watershed Council

Funding Sources
Palo Alto Regional Water Quality Control Plant (Year 1), National Fisheries and Wildlife Foundation Grant (Years 2 and 3)

Contracted Parties
United States Geological Survey (USGS)

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Purpose
The objectives for the VMOP are to 1) contribute to public and private efforts to protect and restore the watershed by providing data on existing conditions for aquatic life; 2) quantify how water quality changes as the creeks flows from the hills above the reservoir through the urbanized area and also temporally with the seasons; 3) identify potential sources of pollutants (both from direct discharges or from urban runoff) allowing targeted pollution prevention efforts; 4) prioritize restoration projects (e.g., increasing shade in areas of high temperature and low dissolved oxygen); and 5) promote stewardship and educate the community about the value of creeks, threats to creek health, and actions individuals, organizations and agencies can take to protect and restore creek water quality and habitat value.

Study Watersheds
Stevens, Permanente

Tributaries Sampled in Watershed
Swiss Creek

Sampling Location
Water quality monitoring has been conducted at four sites in Stevens Creek since September 2004, including: 1) La Avenida, 2) McClellan Ranch, 3) Chestnut, and 4) Moss Rock. Beginning in February 2006, additional monitoring was conducted at five new sites in Stevens Creek watershed, including: 5) Evelyn, 6) Fremont, 7) Stevens Creek Blvd, 8) Dam Outlet 9) Swiss Creek and one new site in Permanente Creek at 10) Fremont.

Weed mapping will be conducted between the reservoir and the bay. Bioassessments will be conducted in 4 mile reach below Stevens Creek reservoir.

Sampling Frequency
Water quality is measured once per month, except for nutrients which will be analyzed quarterly, or more frequently if results detected. Weed mapping will be carried out throughout the summer and fall in 2006 and 2007. Bioassessment will be a conducted in the fall in 2006 and 2007. Additional BMI bioassessments may be conducted at a later date.

Field Sampling Period
September 2004 - March 2007

Sampling Protocols
Water quality measurements are taken on a portable YSI meter. Turbidity measurements are taken from grab samples and analyzed using a portable turbidity meter. Water samples were collected and analyzed for nutrients using protocols documented by the State Water Resources Control Board's Clean Water Team.

Volunteers will map 10 non-native, invasive plant species in the Stevens Creek Watershed using a GPS. Species identification, extent and location will be documented.

Bioassessment study includes the following methods. Six or more riffles will be sampled for BMIs and deposited fine sediments. Minimum of 3 BMI samples will be collected per riffle using a Hess Sampler. Deposited fine sediments will be measured from the same locations of BMI samples using a sampling technique developed by the USGS. The method employs a modified bucket that fits inside the Hess Sampler and turbidimeter. The substrate is dug up by hand, rubbed and stirred for 30 seconds. A turbidity reading is taken and a 250 ml aliquot is collected of the turbid water in the bucket. This sample is taken to the lab and refrigerated.

Laboratory methods include sorting and identification of BMI samples to family level and measurement of organic and inorganic suspendable solids concentrations from water sample.

The USGS will be collecting additional BMI and sediment data to generate a more robust data set for the study.

Data Format
Report, Table

Detailed Data Description
General water quality (water temperature, dissolved oxygen, pH, and conductivity) using

probes, turbidity, and nutrients (ammonia, nitrate nitrogen and phosphate), invasive plant mapping, and macroinvertebrate bioassessments.

Project Timeline
The SPCWC has funding to continue water quality monitoring through March 2007, and weed mapping and bioassessments through Fall 2007

Product Title
Stevens and Permanente Creeks Watershed Council Volunteer Monitoring and Outreach Program Annual Status Reports

Study Information Verified
Claire Elliot, SPCWC, personal communication, August 2006.

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)

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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. Monitoring was conducted in South Coastal Marin and San Francisco during FY 04-05. Monitoring was not conducted during FY 05-06, with the exception of some continuous water temperature monitoring.

Monitoring activities in FY 05-06 were stopped during a program evaluation by scientific advisory committee that occurred between October 2005 and March 2006. As a result of the review, the SWAMP approach is being revised at both state and regional levels. The statewide approach will focus more on bioassessments and bioaccumulation monitoring using probabilistic sampling design. The San Francisco Bay Regional approach will focus on fixed monitoring at both impacted and reference sites to evaluate annual variability. Specific monitoring design for regional approach has not been finalized.

Study Watersheds
Permanente, Stevens

Tributaries Sampled in Watershed
Hale Creek, East Fork Permanente Creek, West Fork Permanente Creek, Stevens Creek

Sampling Location
Santa Clara Basin: 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
Sampling in Stevens and Permanente Creek watershed typically occurred during three hydrologic cycles: wet season (January - March), decreasing hydrograph /spring (April - May) and the dry season (June - August). Bioassessment was conducted once during spring season at all sites. Water chemistry and toxicity testing conducted at 2 locations in each watershed for three hydrological regimes. 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 were deployed at three locations in each watershed for one to two week intervals about 3 times per year. Pathogen indicators (i.e., total and fecal coliforms and E.coli) were sampled during summer season; five water samples were collected within 30 days to evaluate against objectives listed in the Basin Plan.

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.

Field Sampling Period
SWAMP began monitoring in San Francisco Bay Region watersheds in 2000. Monitoring in Stevens and Permanente Creeks occurred from spring 2002 through summer of 2003.

Sampling Protocols
Field sampling protocols and laboratory analytical methods are described in the SWAMP Program Quality Assurance Project Plan (QAPP) (Quality Assurance Management Plan) (http://www.waterboards.ca.gov/swamp/qapp.html)

Data Format
Report, Database

Detailed Data Description
Probe and continuous water quality measurements (DO, temperature, pH, conductivity and velocity). Water, sediment and tissue samples are collected and analyzed for total and dissolved metals, pesticides, PCBs, and PAHs. Water samples are analyzed for nutrients and anions, as well as bacterial indicators (total and fecal coliform, e coli). Sediment characterization(TOC and grain size) is conducted for sediment samples. Acute and chronic toxicity is conducted for water samples (three species) and sediment samples (Hyella azteca). Aquatic bioassessments are conducted using benthic macroinvertebrates concurrent with visual physical habitat assessments. Trash assessments and removal are conducted at selected locations.

Project Timeline
Interpretive report on SWAMP data collected from watersheds monitored in the first 2 years, trash assessment report and water temperature report are anticipated to be completed during winter 2006.

Product Title
Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds

Study Information Verified
Karen Taberski, RWQCB, personal communication, August 2006.