

*Prepared for the
Santa Clara Basin Watershed Management Initiative*

Inventory of Santa Clara Basin Stream Studies

Updated Version 2.0

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



February 15, 2000

Inventory of Santa Clara Basin Stream Studies

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

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February 15, 2000

Santa Clara Valley Urban Runoff Pollution Prevention Program

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Introduction

Summary

The *Inventory of Santa Clara Basin Stream Studies* describes twenty-six stream-related multi-stakeholder studies and projects that are recently completed or in-progress in the Santa Clara Basin. The Basin is shown in Figures 1 and 2. This inventory of stream studies 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.

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 is in the process of preparing a Watershed Assessment Report, and in the future will produce a comprehensive Watershed Management Plan for the Basin. The Management Plan will integrate 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 Watershed Assessment Subgroup (WAS) is an entity within the SCBWMI with a mission to provide the SCBWMI with a solid scientific foundation for watershed planning. One of the WAS's tasks is to coordinate the SCBWMI's data collection and data management efforts with stream monitoring studies in the Basin. The Stream Studies Inventory is a result of this task.

Purpose

The WAS sponsored this inventory to provide information that will enable the 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 WAS 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 both a memo that described the purpose of the SCBWMI and Task 7.1 of the WAS Action Plan, and a draft of the Stream Studies Inventory form. The memo requested documentation for information categories in this form.

Follow-up to the memo consisted of at least two phone calls to project-contacts and email correspondences as necessary to repeat requests for documentation, request additional information, and to answer questions. Profiles of individual stream studies were sent to respective project-contacts for verification of information content. Blank spaces next to information categories indicate that project-contacts did not provide this information, but should not be interpreted to mean that such information does not exist.

Updating the Inventory

The Stream Studies Inventory was intended to be a living document. As such, the original document (completed November 4, 1998) has been updated to reflect information current as of February 2000. Verification by project contact is noted at the end of each stream study profile. In addition, new projects identified by members of the SCBWMI were investigated using similar methods as stated above and included in the Inventory as time allowed, focusing first on studies being conducted in the 3 representative watersheds (Guadalupe, Upper Penitencia, and San Francisquito). Where potential projects were identified but unable to be included in this year's Inventory, contact information and a general description are provided in Appendix A and will be incorporated into the Inventory during future updates.

Funding

The Santa Clara Valley Urban Runoff Pollution Prevention Program funded the preparation (Monitoring Task 18-05) and updating (Task SC22.62) of the Stream Studies Inventory. The inventory fulfills Task 7.1 of the WAS Action Plan (July 7, 1998) for contributing to the Watershed Assessment Report.

List of Acronyms

BMP	Best Management Practices
CCRS	Coyote Creek Riparian Station
CDFG	California Department of Fish and Game
City SJ	City of San Jose
CRMP	San Francisquito Creek Coordinated Resources Management Plan
EIR/S	Environmental Impact Report/Statement
EOA, Inc	Eisenberg, Olivieri and Associates, Incorporated
GCRCD	Guadalupe Coyote Resource Conservation District
GGNRA	Golden Gate National Recreation Area
GIS	Geographic Information System
GPS	Global Positioning System
IC/ID	Illicit Connections/Illegal Discharges
KLI	Kinetic Laboratories, Inc.
NHI	National Heritage Institute
NMFS	National Marine Fisheries Service
NOI	Notice Of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PCCF	Peninsula Conservation Center Foundation
RWQCB	Regional Water Quality Control Board
SCBWMI	Santa Clara Basin Watershed Management Initiative
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD	Santa Clara Valley Water District
SFEI	San Francisco Estuary Institute
SJRA	San Jose Redevelopment Agency
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
URSGWC	URS Greiner Woodward Clyde
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
WAS	Watershed Assessment Subgroup (of the SCBWMI)
WERF	Water Environment Research Foundation

Santa Clara Basin Stream Studies Information Template

Project: *Full project name and acronym if used*

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

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

Lead Agencies/Organizations: *Entities managing the project*

Funding Sources: *Names of sources funding the project*

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

Contact Information:

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

Organization:

Phone:

Fax:

Email:

Relevance to SCBWMI:

Goals: *Project goals*

Objectives: *Project 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.*

Projected Study Completion Date: *Date after which data analysis and reporting will be completed.*

General Data Types Collected: *Chemical, biological, physical, social, etc.*

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

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).*

Follow-up Studies: *Summary information on spin-off projects or resultant studies. Typically these projects are in early phases of development. This field is only included when pertinent.*

Stakeholders Common to SCBWMI: *Entities involved in the study that are also participants in the SCBWMI.*

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

Keywords

bioassessment/biomonitoring
biological communities
biological data
channel morphology/hydrogeomorphology
chemical data
citizen monitoring/volunteer monitoring
erosion
fisheries
flooding/flood control
groundwater
herbicides
hydrology
Illicit Connections/Illegal Discharges (IC/ID)
invasive/introduced species
land use
macroinvertebrates
mercury/methylmercury
metals
Notice of Intent (NOI) facilities
NPDES permit
pesticides
physical data
physical habitat
pollutant loads
pollutant reduction
pollution prevention
recreation
riparian
salmonids
sediment/sedimentation
special status species
storm drain outfalls
stormwater
streamflow
toxicity
urbanization
water chemistry
water quality
watershed assessment
wetlands

Summary of Projects by Watershed

WATER-SHED	CATE-GORY ¹	PROJECT NAME	LEAD AGENCY ²	GEN. DATA TYPE ³	KEYWORDS	PG #
Basin-Wide	RM	Program for Control of Invasive Exotic Species	SCVWD	BIO	flood control, invasive/introduced species	18
	RM	1997-98 Sediment Removal Projects	SCVWD	CHEM PHYS	flood control, metals, pesticides, sediment, storm drain outfalls, toxicity, water quality.	25
Adobe	RM	Adobe Creek Watershed Planning Study	SCVWD	CHEM	erosion, flooding, herbicides, pesticides, riparian, sedimentation, water quality	28
	PC	Palo Alto Stream Monitoring	City of Palo Alto	CHEM	metals, NPDES permit, sediment, water quality	54
Arroyo la Laguna						
Cala-bazas	RM	Calabazas Creek Flood Control Project	SCVWD		erosion, flooding, riparian, sedimentation	24
Coyote	RE	1998 RMP Estuary Interface Pilot Study, Phase II	SFEI	CHEM PHYS	land use, mercury, metals, pesticides, pollutant loads, sediment, water quality	68
	RM	Upper Penitencia Creek Flood Control Project	USACE, SCVWD	BIO CHEM PHYS	flooding/flood control, hydrology, sediment	22
	MI	Environmental Enhancement Project(s) - Streamflow Augmentation and Wetland Creation using Recycled Water	City of San Jose	BIO CHEM PHYS	bioassessment, biological communities, fisheries, macroinvertebrates, metals, NPDES permit, physical habitat, sediment, streamflow, toxicity, water quality, wetlands	41

¹ Category Abbreviations:

RM = Resource Management; MI = Mitigation project;

PC = Permit Compliance; WM = Watershed Management (precedent setting)

² See acronyms listed on Page 7

³ General Data Type Abbreviations:


BIO = Biological; CHEM = Chemical; PHYS = Physical; SOC = Social

WMI Watershed Assessment Subgroup 
Inventory of Santa Clara Basin Stream Studies

WATER-SHED	CATEGORY ¹	PROJECT NAME	LEAD AGENCY ²	GEN. DATA TYPE ³	KEYWORDS	PG #
Coyote	MI	Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)	SCVWD	BIO PHYS	channel morphology/ hydrogeomorphology, fisheries, land use, macroinvertebrates, physical habitat, riparian, salmonids, sediment/sedimentation, special status species, streamflow	43
	PC	First Flush Monitoring Project	City of San Jose	CHEM	IC/ID, metals, pesticides, pollutant loads, sediment, storm drain outfalls, stormwater, water quality	46
	PC	Stormwater Monitoring to Support Illicit Connection/Illegal Discharge and Industrial Inspection Programs	City of San Jose	CHEM	IC/ID, land use, metals, stormwater, pesticides, pollution prevention, sediment, streamflow, water quality	48
	WM	Stormwater Environmental Indicators Demonstration Project (SEIDP)	SCVURP PP	BIO CHEM PHYS SOC	biological communities, biological data, chemical data, fisheries, flooding, IC/ID, macroinvertebrates, physical data, physical habitat, sediment, streamflow, storm drain outfalls, stormwater, urbanization, water quality	57
	WM	Lower Silver Creek Watershed Project	USDA- NRCS	BIO CHEM	biological communities, citizen monitoring, fisheries, flood control, riparian, sediment, water quality, wetlands	63
	RE	Factors Affecting the Distribution of Lotic Macroinvertebrates in an Urban Setting	USGS	BIO CHEM PHYS	bioassessment/biomonitoring, channel morphology/ hydrogeomorphology, macroinvertebrates, physical habitat, streamflow, urbanization.	66
	RE	Genetic Relationships Among Steelhead and Rainbow Trout Populations in Tributaries to South San Francisco Bay	SJSU	BIO	fisheries, introduced species, salmonids, special status species.	72
Guadalupe	RM	Upper Guadalupe River Flood Control Project	SCVWD	BIO CHEM PHYS	erosion, flooding, metals, recreation, riparian, sedimentation	20

WMI Watershed Assessment Subgroup 
Inventory of Santa Clara Basin Stream Studies

WATER-SHED	CATEGORY ¹	PROJECT NAME	LEAD AGENCY ²	GEN. DATA TYPE ³	KEYWORDS	PG #
Guadalupe	MI	Environmental Enhancement Project(s) - Streamflow Augmentation and Wetland Creation using Recycled Water	City of San Jose	BIO CHEM PHYS	bioassessment, biological communities, fisheries, macroinvertebrates, metals, NPDES permit, physical habitat, sediment, streamflow, toxicity, water quality, wetlands	41
	MI	Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)	SCVWD	BIO PHYS	channel morphology/hydrogeomorphology, fisheries, land use, macroinvertebrates, physical habitat, riparian, salmonids, sediment/sedimentation, special status species, streamflow	43
	PC	First Flush Monitoring Project	City of San Jose	CHEM	IC/ID, metals, pesticides, pollutant loads, sediment, storm drain outfalls, stormwater, water quality	46
	PC	Stormwater Monitoring to Support Illicit Connection/Illegal Discharge and Industrial Inspection Programs	City of San Jose	CHEM	IC/ID, land use, metals, stormwater, pesticides, pollution prevention, sediment, streamflow, water quality	48
	PC	San Jose Industrial Stormwater Monitoring Pilot Program	City of San Jose	CHEM	metals, pollution prevention, stormwater, water quality	50
	WM	Guadalupe River Flood Management Collaborative (GRFMC)	USACE, SCVWD, City SJ, SJRA	BIO CHEM	flooding/flood control, recreation	59
	RE	Factors Affecting the Distribution of Lotic Macroinvertebrates in an Urban Setting	USGS	BIO CHEM PHYS	bioassessment/biomonitoring, channel morphology/hydrogeomorphology, macroinvertebrates, physical habitat, streamflow, urbanization.	66
	RE	Genetic Relationships Among Steelhead and Rainbow Trout Populations in Tributaries to South San Francisco Bay	SJSU	BIO	fisheries, introduced species, salmonids, special status species.	72
Lower Penitencia	RE	1998 RMP Estuary Interface Pilot Study, Phase II	SFEI	CHEM PHYS	land use, mercury, metals, pesticides, pollutant loads, sediment, water quality	68

WMI Watershed Assessment Subgroup 
Inventory of Santa Clara Basin Stream Studies

WATER-SHED	CATEGORY ¹	PROJECT NAME	LEAD AGENCY ²	GEN. DATA TYPE ³	KEYWORDS	PG #
L. Pen.	PC	First Flush Monitoring Project	City of San Jose	CHEM	IC/ID, metals, pesticides, pollutant loads, sediment, storm drain outfalls, stormwater, water quality	46
Mata-dero	PC	Palo Alto Stream Monitoring	City of Palo Alto	CHEM	metals, NPDES permit, sediment, water quality	54
Permanente	WM	Regional Geographic Initiative Demonstration of the Bay Area Watersheds Science Approach in Permanente Creek	SFEI	PHYS	land use, erosion, hydrogeomorphology, invasive/introduced species, physical habitat, pollutant reduction, sediment, storm drain outfalls, water quality, watershed assessment.	61
San Francisco	RM	San Francisquito Creek Pilot Volunteer Monitoring Project	CRMP	BIO CHEM PHYS	citizen monitoring, fisheries, riparian, salmonids, sediment, special status species, water chemistry, water quality	30
	RM	Sampling and Analysis of Water from the San Francisquito Creek Watershed	CRMP, City of Palo Alto	CHEM	water chemistry, water quality	32
	RM	Sediment and Water Quality Monitoring in the Upper San Francisquito Creek Watershed	CRMP	BIO CHEM PHYS	channel morphology, citizen monitoring, fisheries, riparian, salmonids, sediment, special status species, stream flow, water quality.	34
	RM	Fish Migration Barrier Assessment	CRMP	PHYS	channel morphology, fisheries, sediment.	36
	RM	Water Quality Assessment for Sustaining Habitat	CRMP	CHEM PHYS	fisheries, hydrology, metals, pesticides, salmonids, special status species, stream flow, water chemistry, water quality.	38
	PC	Palo Alto Stream Monitoring	City of Palo Alto	CHEM	metals, NPDES permit, sediment, water quality	54
	RE	Factors Affecting the Distribution of Lotic Macroinvertebrates in an Urban Setting	USGS	BIO CHEM PHYS	bioassessment/biomonitoring, channel morphology/hydrogeomorphology, macroinvertebrates, physical habitat, streamflow, urbanization.	66
	RE	Comparison of Water Quality in Urban and Rural Stormwater Runoff	SJSU	CHEM	land use, pesticides, pollutant loads, storm drain outfalls, stormwater, urbanization, water chemistry, water quality	70

WMI Watershed Assessment Subgroup 
Inventory of Santa Clara Basin Stream Studies

WATER-SHED	CATEGORY ¹	PROJECT NAME	LEAD AGENCY ²	GEN. DATA TYPE ³	KEYWORDS	PG #
Sam Francisco Siquito	RE	Genetic Relationships Among Steelhead and Rainbow Trout Populations in Tributaries to South San Francisco Bay	SJSU	BIO	fisheries, introduced species, salmonids, special status species.	72
San Tomas Aquino/Saratoga	RE	Factors Affecting the Distribution of Lotic Macroinvertebrates in an Urban Setting	USGS	BIO CHEM PHYS	bioassessment/biomonitoring, channel morphology/hydrogeomorphology, macroinvertebrates, physical habitat, streamflow, urbanization.	66
	RE	Genetic Relationships Among Steelhead and Rainbow Trout Populations in Tributaries to South San Francisco Bay	SJSU	BIO	fisheries, introduced species, salmonids, special status species.	72
Stevens	MI	Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)	SCVWD	BIO PHYS	channel morphology/hydrogeomorphology, fisheries, land use, macroinvertebrates, physical habitat, riparian, salmonids, sediment/sedimentation, special status species, streamflow	43
	RE	Factors Affecting the Distribution of Lotic Macroinvertebrates in an Urban Setting	USGS	BIO CHEM PHYS	bioassessment/biomonitoring, channel morphology/hydrogeomorphology, macroinvertebrates, physical habitat, streamflow, urbanization.	66
	RE	Genetic Relationships Among Steelhead and Rainbow Trout Populations in Tributaries to South San Francisco Bay	SJSU	BIO	fisheries, introduced species, salmonids, special status species.	72
Sunnyvale East	PC	Sunnyvale Industrial Stormwater Monitoring Pilot Program	City of Sunnyvale	CHEM	metals, NPDES permit, sediment, stormwater, streamflow, water chemistry	52
Sunnyvale West	PC	Sunnyvale Industrial Stormwater Monitoring Pilot Program	City of Sunnyvale	CHEM	metals, NPDES permit, sediment, stormwater, streamflow, water chemistry	52

Figure 1:

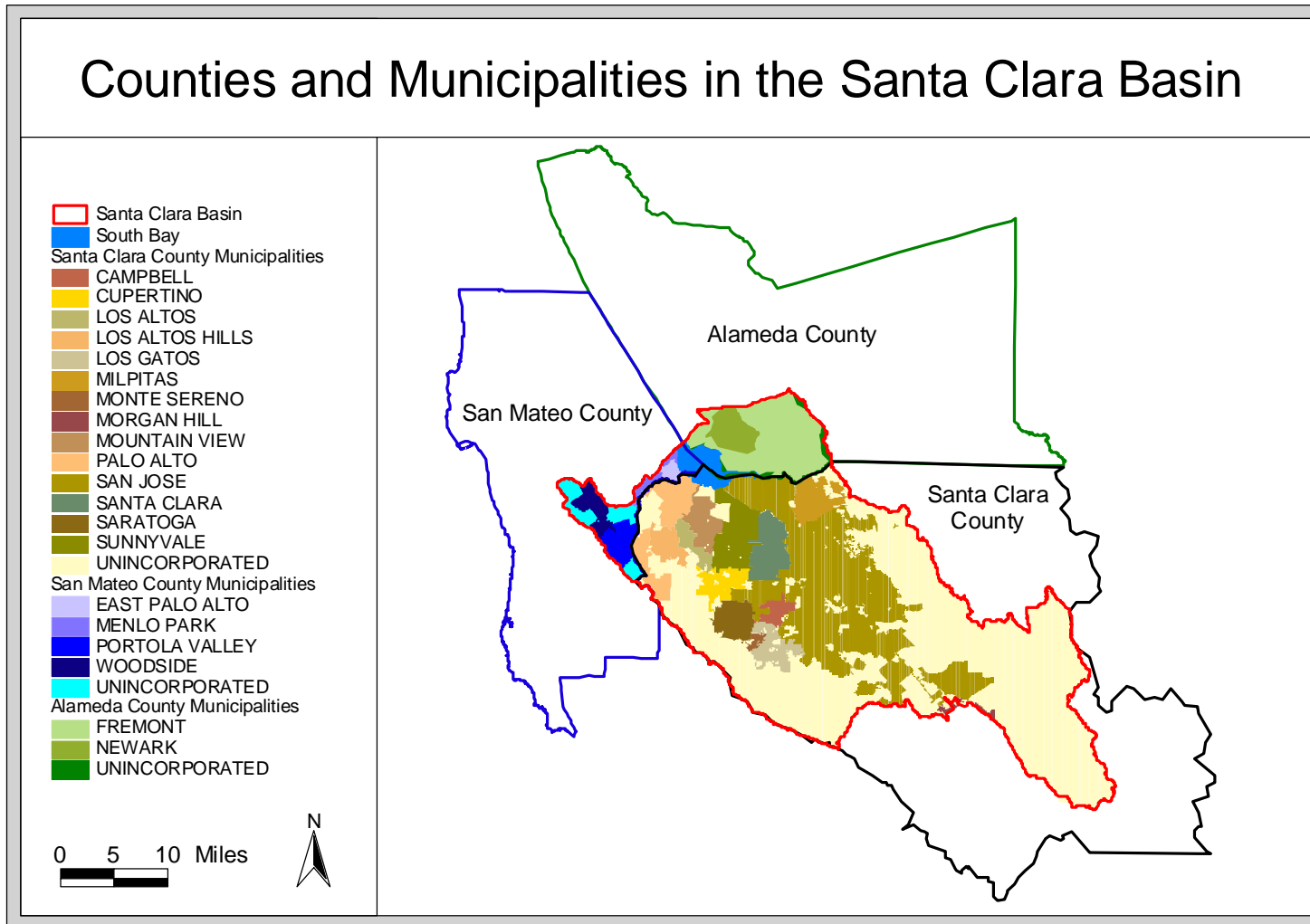
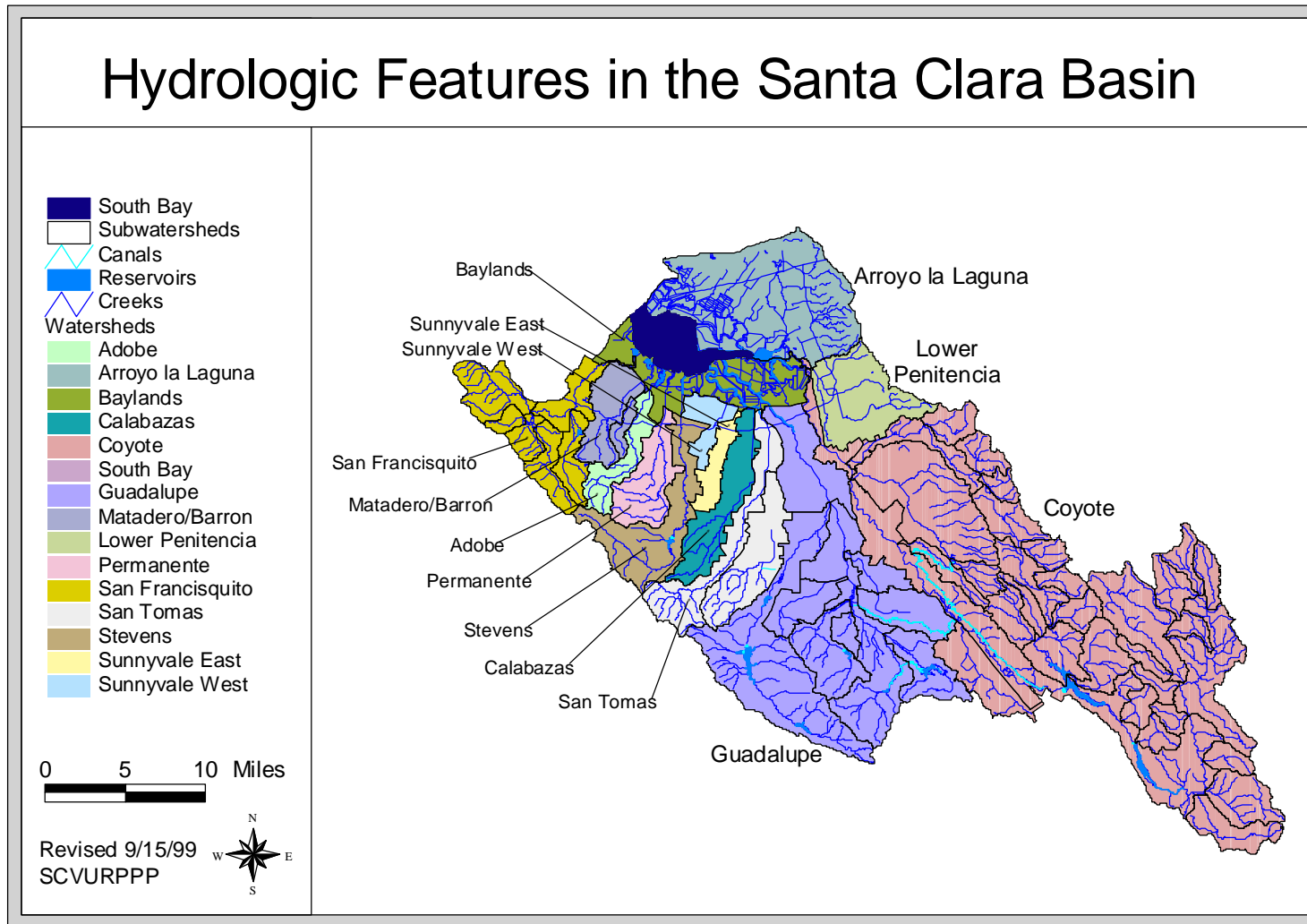


Figure 2:



Section 1: Resource Management Projects

Project Name: Program for Control of Invasive Exotic Species
(Part of the SCVWD Stream Maintenance Program)

Overall Purpose: Resource Management

Lead Agencies/Organizations: SCVWD

Funding Source: SCVWD

Contracted Party(s): none

Contact Information:

Name: Rick Austin

Organization: SCVWD

Phone: 408-265-2607 x 2573

Fax:

Email: rickaust@scvwd.dst.ca.us

Keywords: biological data, flood control, invasive/introduced species.

Relevance to SCBWMI: Coordinated effort for resource management of invasive species.

Goals: Initiate coordinated research and control efforts for invasive exotics (in Santa Clara County) in south flood control zone of Santa Clara County.

Objectives: (1) Continue to remove invasive exotics (e.g. Giant Cane, *Arundo donax*) for flood control purposes; (2) Participate in the Santa Clara County Weed Management Area to coordinate efforts in mapping, data gathering, control and restoration; (3) Develop an EIR for SCVWD maintenance programs using control of exotics as a viable method of habitat enhancement in conjunction with other mitigation requirements. Implementation of this program will require approval of appropriate regulatory agencies.

Study Watersheds and Codes (RWQCB): Santa Clara County

Tributaries Sampled in Watersheds: to be determined.

Sampling Location: to be determined.

Sampling Frequency: to be determined.

Field Sampling Period: Project put on hold for FY 98-99. (Project being incorporated into Stream Maintenance Project)

Projected Study Completion Date: Undetermined; subject to reinstating project.

General Data Types Collected: biological

Detailed Data Description: Mapping effort: currently, generic location information on major infestations exists from data gathered by NRCS, SCVWD and the San Francisquito Creek CRMP. This will eventually be incorporated into a GIS. Test plots will be developed utilizing different chemical control methods and varying the timing of herbicide application in order to determine the effectiveness of different control methods (e.g. for *Arundo*). Project will consist of developing detailed information on target populations of invasive plants species, prioritization of eradication efforts, and specific strategies for programmatic eradication of the exotic species and conversion to native plant habitat.

Sampling Protocols: to be developed. Most likely based on 1999 Team Arundo del Norte sampling protocols.

Data Format: to be determined.

Stakeholders Common to SCBWMI: SCVWD, NRCS, Santa Clara County Weed Management Area (see Appendix A)

Study Information Verified: Yes (1/5/00)

Project Name: Upper Guadalupe River Flood Control Project

Overall Purpose: Resource Management

Lead Agencies/Organizations: SCVWD

Funding Source: USACE, SCVWD

Contracted Parties: Jones and Stokes Associates, Inc.

Contact Information:

Name: Dennis Cheong

Organization: SCVWD

Phone: 408-265-2607 x2618

Fax: (408) 268 7687

Email: DennisC@scvwd.dst.ca.us

Keywords: erosion, flooding, metals, recreation, riparian, sedimentation.

Relevance to SCBWMI: May provide useful data for the Watershed Assessment Report.

Goals: Reduce economic damage and threat to human safety caused by flooding along the Guadalupe River within the City of San Jose.

Objectives: 1) Modify the River channel to increase capacity for anticipated 100-year flow; 2) Reduce bank erosion and sedimentation; 3) Provide for long-term riparian habitat improvement; 4) Provide opportunity for future implementation of parks and continuous trail system that will go through downtown San Jose.

Study Watersheds and Codes (RWQCB): Guadalupe (5512), Alamos (5510)

Tributaries Sampled in Watersheds: Canoas Creek, Alamos Creek, Ross Creek, Guadalupe Creek.

Sampling Location: 8 Reaches of Guadalupe System between SR101 and Blossom Hill Rd; Canoas: from Almaden Expressway to ¼ mile upstream of Nightingale Drive; Ross: from Almaden Expressway to 700' upstream of Jarvis Avenue;

Sampling Frequency:

Field Sampling Period:

Projected Study Completion Date: 4/99; District is planning to certify the FEIR/S in January 2000.

General Data Types Collected: biological, physical, chemical.

Detailed Data Description: Turbidity, heavy metal analysis, storm drainage outfall inventory, vegetation mapping, hazardous material sites, cultural resource sites

Sampling Protocols:

Data Format:

Stakeholders Common to SCBWMI: SCVWD, USACE, CDFG, RWQCB, USFWS, NMFS, City SJ, GCRCD

Study Information Verified: Yes (11/16/1999)

Project Name: Upper Penitencia Creek Flood Control Project

Overall Purpose: Resource Management for Flood Protection

Lead Agencies/Organizations: USACE, SCVWD

Funding Sources: SCVWD, USACE (Feasibility Study 50/50; Project Construction variable 30-50% for USACE)

Contracted Parties: USACE, SCVWD, USFWS, additional parties to be determined.

Contact Information:

Name: Randy Talley

Organization: SCVWD

Phone: 408-265-2607 x 2611

Fax: 408-268-7687

Email: randyt@scvwd.dst.ca.us

Keywords: biological data, chemical data, flooding/flood control, hydrology, physical data, sediment.

Relevance to SCBWMI: Because this flood control project is in its initial assessment phase, it could set a precedent for A) how the SCBWMI may interface with such projects, and B) how SCVWD's recent policy amendment to "manage riparian corridors to facilitate movement from mitigation toward enhancement or restoration" may be implemented.

Goals: Reduce damages by existing and expected future flooding in the Upper Penitencia Creek watershed.

Objectives: Conduct a Feasibility Study to provide information required to develop alternative implementable remedies to reduce flood damages.

Sediment Study 12/98: Field reconnaissance to evaluate geomorphic character; Estimate sediment yield, load, and transport capacity; Assess channel stability and upstream and downstream effects of the project; Bridge scour analysis.

Hydrologic Study 12/98: Estimate flow versus frequency curve using USGS stream gauge data, for existing and future hydrologic conditions. Generate flood hydrographs. SCVWD will obtain new data in coordination with USACE and other agencies.

At later dates:

Hydraulic Design and Risk-based Studies - USACE

Social Environment Study - SCVWD

Hazardous Materials Study - SCVWD

Environmental Impact Statement and Report - SCVWD

Fish and Wildlife Studies - USFWS

Economic Studies - SCVWD

Surveying and Mapping - SCVWD

Study Watersheds and Codes (RWQCB): Coyote (Upper Penitencia 5506)

Tributaries Sampled in Watersheds: Upper Penitencia

Sampling Location: Upper Penitencia from Coyote Creek to Dorel Drive

Sampling Frequency:

Field Sampling Period: 12/98 - 12/99

Projected Completion Date: 2/01

General Data Types Collected: Physical, chemical, biological, social

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 real estate (land & structural values).

Sampling Protocols:

Data Format: Intergraph, AutoCAD, HEC-RAS (HEC-2), HEC-HMS (HEC-1), HEC-FFA

Stakeholders Common to SCBWMI: SCVWD, USFWS, USEPA

Study Information Verified: Yes (11/15/1999)

Project Name: Calabazas Creek Flood Control Project

Overall Purpose: Resource Management: Flood Control

Lead Agencies/Organizations: SCVWD

Funding Sources:

Contracted Parties:

Contact Information:

Name: Roy Weese

Organization: SCVWD

Email: royweese@scvwd.dst.ca.us

Keywords: erosion, flooding, riparian, sedimentation.

Relevance to SCBWMI: May provide useful data for the Watershed Assessment Report.

Goals: Reduce economic damage and threat to human safety caused by flooding Calabazas creek.

Objectives: 1) Modify the River channel to increase capacity for anticipated 100-year flow; 2) Reduce bank erosion and sedimentation; 3) Provide for long-term riparian habitat improvement.

Study Watersheds and Codes (RWQCB): Calabazas (5523)

Tributaries Sampled in Watersheds: Calabazas

Sampling Location:

Sampling Frequency:

Field Sampling Period:

Projected Completion Date:

General Data Types Collected:

Detailed Data Description:

Sampling Protocols:

Data Format:

Stakeholders Common to SCBWMI: SCVWD

Study Information Verified: Yes (12/2/1999)

Project Name: 1997 and 1998 Sediment Removal Projects
(Part of the SCVWD Stream Maintenance Program)

Overall Purpose: Resource Management for Flood Protection

Lead Agencies/Organizations: SCVWD

Funding Sources: SCVWD

Contracted Parties: SCVWD

Contact Information:

Name: Uday Mandlekar

Organization: SCVWD

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Keywords: flood control, metals, pesticides, sediment, storm drain outfalls, toxicity, water quality.

Relevance to SCBWMI: Activities include data collection and affect channel morphology and habitat of stream organisms.

Goals: Remove sediment in designated areas to alleviate local flooding problems and to meet the requirements of the Federal Emergency Management Agency for flood protection.

Objectives: Sample and analyze sediments (total sampling population is approximately 100,000 cubic yards for 1997, and 141,650 cy for 1998) to 1) characterize physical and chemical properties, 2) comply with regulatory permits for sediment removal, disposal or reuse, 3) provide data for feasibility of long-term disposal, reuse and recycling, and 4) provide a basis for the Self-Monitoring Program to determine whether additional water quality constituents should be monitored.

Study Watersheds and Codes (RWQCB):

1997: San Tomas (5319), San Francisquito (5516), Stevens (5319), Coyote (5501)

1998: Adobe, Matadero (5518), Permanente (5519), Calabazas (5523), Sunnyvale East (5523, 5319), San Tomas Aquino/Saratoga (5520), Lower Penitencia, Coyote (5501), San Francisquito (5516).

Tributaries Sampled in Watersheds:

1997: San Tomas, Saratoga, San Francisquito, Stevens, Berryessa, Lower Penitencia, Los Coches, Calera.

1998: Adobe, Matadero, Permanente, Hale, Calabazas, Sunnyvale East, Regnart, Saratoga, Berryessa, Lower Penitencia, Lower Silver, Sierra, San Francisquito, San Tomas.

Sampling Location: Sampling locations are selected in three dimensions:

- 1) Creek station or location along creek: locations are referenced by their proximity to major transportation corridors and by District station numbers (both downstream and upstream) (see Appendix A); sampling interval determined by dividing length of creek reach by number of samples to be collected. Initial location determined by selecting a random number (X) within the sampling interval, and initial sample shall be collected X feet upstream.
- 2) Location along creek cross section: chosen by dividing the creek invert into thirds, generating a random number between 1 and 3 at each cross section to determine which third will be sampled.
- 2) Depth below ground surface: determined in the field -- use visual clues and/or existing data to determine sediment depth, and generate a random number to determine the depth at which samples shall be collected.

In addition, in 1998 “hot spot” sampling was employed based on known locations of outfalls, storm water runoff locations, and by visually identifying potential sediment deposition areas and industrial sources.

In 1998, 19 sites were sampled. The approximate locations can be found in the SCVWD Sediment Characterization Plan for the 1998 Sediment Removal Project.

Sampling Frequency: Two-tiered sampling design: collect samples for every 1,000 cubic yd³ of sediment and composite up to 4 consecutive samples; every 4,000 yd³ collect an additional in-situ sample that remains uncomposited. If no sediment is found at designated sampling interval, staff will proceed either upstream or downstream until they find a sediment deposit to sample. Extent of sampling on each creek is based on volume of identified sediment deposit, e.g., if 30,000 yd³ of sediment are to be removed on a single creek, 30 sites will be sampled. In 1998, “hot spot” samples (single continuous core samples between 0 – 4 foot depth) were also taken.

Field Sampling Period: Summer 1996-1997; Summer 1998.

Projected Completion Date: Summer, 1997; Summer 1998.

General Data Types Collected: chemical, physical

Detailed Data Description: Sediment; testing for metals (total CAM 17 – arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium, zinc, silver, barium, cobalt, molybdenum, antimony, thallium, vanadium), pesticides, halogenated volatiles, polynuclear aromatic hydrocarbons (PAHs), petroleum products, toxicity, moisture content, grain size. Field sampling logs will document the sampling date, time, location, collector, methods, location within creek, depth, number, site conditions, analysis requested, and other information describing the sampling event.

Sampling Protocols: Sediment Collection: slide hammer and a stainless steel sleeve to minimize volatilization; in gravelly soils of poor cohesion, a hand trowel, hand auger, or another sampling method approved by the regulatory agencies. Sediment Analysis: (Note: only composite samples were analyzed) EPA Methods 8010 and 8015 for volatile organics (halogenated); EPA Methods 6010 and 7000 for CAM 17 metals – at least 25% of all samples will be tested using the standard WET extraction method, and an additional 25% will be tested using the modified WET extraction

method; EPA Method 8080 for pesticides; EPA Method 8310 for polynuclear aromatic hydrocarbons (PAHs); EPA Method 8015 for petroleum products; EPA method 160.3 for sediment moisture content; ASTM method D422 – sieve test – for grain size, samples with > 10% fines as determined by the sieve test will also be tested using ASTM D422 – hydrometer test. All samples analyzed for toxicity (TOC) by EPA 415.2.

Data Format:

Stakeholders Common to SCBWMI: SCVWD, RWQCB, CDFG

Study Information Verified: Yes (12/7/1999)

Project Name: Adobe Creek Watershed Planning Study

Overall Purpose: Resource Management: Watershed Planning and Flood Control

Lead Agencies/Organizations: SCVWD

Funding Sources: SCVWD

Contracted Parties: SCVWD

Contact Information:

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Organization: SCVWD

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Email: randyt@scvwd.dst.ca.us

Keywords: erosion, flooding, herbicides, pesticides, riparian, sedimentation, water quality.

Relevance to SCBWMI: May provide useful data for the Watershed Assessment Report.

Goals: Reduce economic damage and threat to human safety caused by Adobe Creek flooding and address sources of water quality impairment.

Objectives: 1) Modify the River channel to increase capacity for anticipated 100-year flow; 2) Reduce bank erosion and sedimentation; 3) Provide for long-term riparian habitat improvement.

Study Watersheds and Codes (RWQCB): Adobe Creek

Tributaries Sampled in Watersheds: Adobe, Barron

Sampling Location: Adobe Sites: 3 above intersection with Barron Crk, 1 on South of El Camino Real, 2 N of Foothill Expressway, 2 on either side of junction with Robleda Crk, 1 NW of El Monte Ave, 3 south of 280, 1 at junction with West and Middle Forks, 1 downstream of this junction, and 1 at intersection with North Fork. Barron Sites: 1 above intersection with Adobe Crk.

Sampling Frequency:

Field Sampling Period:

Projected Completion Date:

General Data Types Collected: Sediment, Water Quality

Detailed Data Description: Sediments: EPA priority pollutant metals, chlorinated pesticides, polychlorinated biphenyls, polynuclear aromatic hydrocarbons, chlorinated herbicides, total petroleum hydrocarbons, total recoverable petroleum hydrocarbons.

Sampling Protocols:

Data Format:

Stakeholders Common to SCBWMI: SCVWD

Study Information Verified: Yes (12/3/99)

Project Name: San Francisquito Creek Pilot Volunteer Monitoring Project

Overall Purpose: Resource Management: water quality, biological, and riparian habitat monitoring and assessment.

Lead Agencies/Organizations: CRMP

Funding Sources: USEPA/SCVWD

Contracted Parties: Coyote Creek Riparian Station

Contact Information:

Name: Pat Showalter

Organization: San Francisquito CRMP

Phone: 650-962-9876

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Email: crmp@pccf.org

Keywords: chemical data, citizen monitoring, fisheries, physical data, riparian, salmonids, sediment, special status species, water chemistry, water quality.

Relevance to SCBWMI: San Francisquito is one of the three pilot watersheds for the SCBWMI. The study, which had a strong emphasis on community participation, may provide useful data for watershed assessment.

Goals: To develop protocols and procedures by which high quality biological data could be collected by volunteers and developed into a usable database; and to educate and involve citizens in riparian issues in order to facilitate community-based resource protection and restoration efforts.

Objectives: To conduct training workshops on habitat and water quality sampling for interested citizens. To establish sampling points along each stream to be inventoried and permanently mark them for future reference. To coordinate scheduling of volunteer field crews, act as data coordinator and analyst and compile a report of stream characteristics and baseline water quality data; data to be summarized in report form. To provide a database and maps for local, county and regional agencies for land use planning. To devise, based upon data analysis, a ranking system for determination of preservation priorities. To produce a stream care guide for the pilot stream (San Francisquito Creek) and a general guide for all county streams.

Study Watersheds and Codes (RWQCB): San Francisquito (5516)

Tributaries Sampled in Watersheds: San Francisquito Creek.

Sampling Location: 41 sites every 500 m upstream from mouth (see map @ www.sfei.org/ccrs).

Sampling Frequency: Water quality: Weekly, 10/92 – 10/93; Birds: Quarterly, 7/93 – 5/94; Vegetation: One time/station, 5/93 – 3/94; Reptiles/amphibians: One time/station, 3/94 – 10/94; Fisheries habitat: One time/station, 5/93 – 7/94.

Field Sampling Period: 10/92 – 12/94.

Projected Study Completion Date: 10/98.

General Data Types Collected: Chemical, biological, and physical.

Detailed Data Description: Water quality: Temperature, DO, turbidity, pH, conductivity, nitrates, nitrites, ammonia, orthophosphates; Birds: Distribution, abundance, and diversity; Vegetation: Distribution, abundance, percent cover, percent native/non-native; Reptiles/amphibians: Distribution and abundance; Fisheries habitat: habitat type and substrate size classes.

Sampling Protocols: Water quality: LaMotte Water Sampling Bottle; Birds: Adapted Point Count method; Vegetation: 10-meter wide transect; Reptiles/amphibians: Time-constrained area search with cover boards; Fisheries habitat: CDFG California Salmonid Habitat Classification System (Flosi et al)

Data Format: Database - Paradox for Windows; GIS – MapInfo.

Stakeholders Common to SCBWMI: USEPA, SCVWD, PCCF, CCRS

Study Information Verified: Yes (2/15/00)

Project Name: Sampling and Analysis of Water from the San Francisquito Creek Watershed

Overall Purpose: Resource Management: water quality monitoring and assessment.

Lead Agencies/Organizations: CRMP, City of Palo Alto

Funding Sources: CRMP, City of Palo Alto

Contracted Parties: CCRS, CRMP staff, City of Palo Alto staff

Contact Information:

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Keywords: chemical data, water chemistry, water quality.

Relevance to SCBWMI: San Francisquito is one of the three pilot watersheds for the SCBWMI. This study may provide useful data for watershed assessment.

Goals: To gather data on chemical parameters during varying flow conditions.

Objectives: Water quality monitoring of seven sites on San Francisquito Creek and its major tributaries through one winter and spring.

Study Area Watersheds: San Francisquito (5516)

Tributaries Sampled in Watershed: San Francisquito Creek, Corte Madera Creek, Los Trancos Creek, Bear Creek, West Union Creek.

Sampling Location: West Union Creek @ Squealer Gulch & Greer Road (37° 26' 14"/122° 16' 58"), Bear Creek @ Sand Hill Road (37° 24' 40"/122° 14' 24"), Corte Madera Creek @ Westridge Road (37° 23' 00"/122° 13' 18"), Los Trancos Creek @ Piers Lane (37° 24' 48"/122° 11' 28"), San Francisquito Creek @ USGS gauge (Stanford University)(37° 25' 25"/122° 11' 19"), @ Searsville Dam (37° 24' 30"/122° 14' 15"), and @ Piers Lane (37° 24' 49"/122° 11' 30").

Sampling Frequency: Irregular including immediately after light to major storms, in-between storms, several weeks after and several months after the last storm.

Field Sampling Period: 10/97 – 6/98.

Projected Study Completion Date: 3/99.

General Data Types Collected: chemical.

Detailed Data Description: heavy metals (Ag, As, Cd, Cr, Cu, Hg, Ni, Pb, Se, Zn); pesticides (diazinon & chlorpyrifos); ammonia, nitrate, orthophosphate.

Sampling Protocols: Grab samples from as near the center of the undisturbed stream flow as possible between 8 AM and noon.

Data Format: Hardcopy printouts from City of Palo Alto database spreadsheet.

Stakeholders Common to SCBWMI: San Francisquito Creek CRMP, CCRS, City of Palo Alto.

Study Information Verified: Yes (2/15/00)

Project Name: Sediment and Water Quality Monitoring in the Upper San Francisquito Creek Watershed

Overall Purpose: Resource Management: water quality and riparian habitat monitoring and assessment.

Lead Agencies/Organizations: CRMP

Funding Sources: USEPA

Contracted Parties: CRMP staff, CCRS, Balance Hydrologics

Contact Information:

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Email: crmp@pccf.org

Keywords: channel morphology, chemical data, citizen monitoring, fisheries, physical data, riparian, salmonids, sediment, special status species, stream flow, water quality.

Relevance to SCBWMI: San Francisquito is one of the three pilot watersheds for the SCBWMI. The study, which had a strong emphasis on community participation, may provide useful data for watershed assessment.

Goals: Collect baseline water quality and geomorphic data in the upper watershed of San Francisquito Creek to be used as a starting point for long-term monitoring.

Objectives: Conduct basic water chemistry volunteer monitoring in the upper reaches of San Francisquito Creek by utilizing pre-existing protocols. Collect data on the geomorphology of the upper San Francisquito Creek using longitudinal and cross-sectional surveys. Collect suspended sediment and flow data. Establish permanent benchmarks to enable the sampling and surveying locations to be easily located. Add to existing data already collected on San Francisquito Creek.

Study Area Watersheds: San Francisquito (5516)

Tributaries Sampled in Watershed: San Francisquito Creek, Corte Madera Creek, Los Trancos Creek, Bear Creek, West Union Creek.

Sampling Location: West Union Creek @ Squealer Gulch & Greer Road (37° 26' 14"/122° 16' 58"), Bear Creek @ Sand Hill Road (37° 24' 40"/122° 14' 24"), Corte Madera Creek @ Westridge Road (37° 23' 00"/122° 13' 18"), Los Trancos Creek @ Piers Lane (37° 24' 48"/122° 11' 28"), San Francisquito Creek @ USGS gauge (Stanford University)(37° 25' 25"/122° 11' 19"), @ Searsville Dam (37° 24' 30"/122° 14' 15"), and @ Piers Lane (37° 24' 49"/122° 11' 30").

Sampling Frequency: Temperatures and water chemistry: Biweekly, 11/97 – 11/98; Suspended sediment and Stream flow: Two to five times/station, 12/97 – 6/98; Profiling: Twice/station, 9 - 10/97 and 6 - 8/98; Pebble counts: Once/station – West Union (10/97) and Corte Madera (11/97), Twice/station – San Francisquito Creek (9/97).

Field Sampling Period: 11/97 – 11/98.

Projected Study Completion Date: 6/00.

General Data Types Collected: chemical, biological, physical.

Detailed Data Description: air and water temperature variation, pH, conductivity, DO, turbidity, suspended sediment, stream flow, pebble counts, height of streambank and water, Thalweg profile.

Sampling Protocols: Channel Morphology: USFS (GTR RM-245); Substrate: Wolman (1954) protocol in riffle areas only, w/in 600' of sampling point. Flow, sediment, temperature, and salinity: USFS (GTR RM-245); USGS (no reference provided by Balance Hydrologics, Inc.).

Data Format: Excel 5.0 workbook with a field that includes coordinates and links to a GIS (ARC/INFO, ArcView).

Stakeholders Common to SCBWMI: San Francisquito Creek CRMP, CCRS.

Study Information Verified: Yes (2/15/00)

Project Name: Fish Migration Barrier Assessment

Overall Purpose: Resource management: physical monitoring and assessment.

Lead Agencies/Organizations: CRMP

Funding Sources: CDFG

Contracted Parties: CRMP

Contact Information:

Name: Pat Showalter

Organization: San Francisquito CRMP

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Keywords: channel morphology, fisheries, physical data, sediment.

Relevance to SCBWMI: San Francisquito is one of the three pilot watersheds for the SCBWMI. This study may provide useful data for watershed assessment.

Goals: To assess potential barriers to steelhead trout migration.

Objectives: Systematically map and assess barriers to steelhead trout migration, develop plans to improve barriers, and set priorities for barrier modification.

Study Area Watersheds: San Francisquito (5516)

Tributaries Sampled in Watershed: Bear Gulch and West Union Creek.

Sampling Location: Bear Gulch and West Union Creek reaches of the San Francisquito Creek watershed.

Sampling Frequency: One time assessment during low flow period (summer).

Field Sampling Period: 11/99 – 11/00.

Projected Study Completion Date: 11/00.

General Data Types Collected: physical.

Detailed Data Description: Migration barrier location, description, ownership, obstruction type, dimensions, condition, impact on channel morphology and fishery, and amount and type of trapped sediment.

Sampling Protocols: Survey the stream channel and systematically assess the status of each potential migration barrier including: the barriers' geomorphic function within the reach, precise

location (via GPS), whether the barrier functions as an obstruction to fish migration (upstream or downstream), and suggestions for modification or removal.

Data Format: Standardized data sheets will be used to ensure each barrier is evaluated in a systematic manner.

Stakeholders Common to SCBWMI: CRMP, CDFG, Town of Woodside.

Study Information Verified: Yes (2/15/00)

Project Name: Water Quality Assessment for Sustaining Aquatic Habitat

Overall Purpose: Resource Management: water quality and riparian habitat monitoring and assessment.

Lead Agencies/Organizations: San Francisquito CRMP

Funding Sources: SCVURPPP, Packard Foundation

Contracted Parties: CRMP staff, Balance Hydrologics

Contact Information:

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Keywords: chemical data, fisheries, hydrology, metals, pesticides, salmonids, special status species, stream flow, water chemistry, water quality.

Relevance to SCBWMI: San Francisquito is one of the three pilot watersheds for the SCBWMI. This study may provide useful data for watershed assessment.

Goals: Provide scientific information required to understand the local dynamics of the steelhead trout fishery and to restore the steelhead trout population.

Objectives: Evaluate whether pollutants discharged to Bear Creek adversely affect steelhead.

Study Area Watersheds: San Francisquito (5516)

Tributaries Sampled in Watershed: West Union Creek, Bear Gulch, Bear Creek, Dry Creek.

Sampling Location: West Union Creek @ Flood Estate, @ Kings Mountain, @ Adobe Corner; Bear Gulch @ Water Service Co. intake; Bear Creek @ Fox Hollow, @ Mountain Home, @ Sand Hill Road; Dry Creek @ Olive Hill and @ Woodside Town Hall.

Sampling Frequency: stream flow will be monitored at least 5 times during the wet season. Measurements will be timed to a range of storm events and will hopefully include the “first-flush” event. In addition, at least two stream flow measurements will be made during the low flow season. One round of water quality samples will be collected.

Field Sampling Period: 12/99 – 12/02.

Projected Study Completion Date: 12/02.

General Data Types Collected: chemical, physical.

Detailed Data Description: stream flow, pool depth, pH, dissolved oxygen, water quality samples will be analyzed for nitrate, ammonia, total suspended sediment, dissolved heavy metals (Cd, Cu, Pb, Zn), specific conductance, diazinon, and chlorpyrifos.

Sampling Protocols: Flow: USGS hydrographic procedures (Carter and Davidian, 1968); Sediment: Equal discharge increment approach (Edwards and Glysson, 1988, Ward and Herr, 1990); Water quality: see Sampling and Analysis Plan for detailed description.

Data Format: To be determined but intention is to provide during period of study through existing databases and websites developed for the Peninsula Conservation Center and CRMP. Copies of the data will also be made available to archival locations (e.g., SQWIS STORET), and repositories (e.g., municipalities, academic institutions, and agencies).

Stakeholders Common to SCBWMI: San Francisquito CRMP, Town of Woodside, SCVURPPP.

Study Information Verified: Yes (2/15/00)

Section 2: Mitigation Projects

Project Name: Environmental Enhancement Project(s) - Streamflow Augmentation and Wetland Creation using Recycled Water

Overall Purpose: Mitigation to enhance environment and minimize impacts to salt marsh ecosystem.

Lead Agencies/Organizations: City of San Jose

Funding Source: City of San Jose, Environmental Services Department; SCVWD

Contracted Party(s): Tetra Tech, Inc. and subconsultants

Contact Information:

Organization: City of San Jose

Name: Don Arnold

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Keywords: bioassessment, biological communities, biological data, fisheries, macroinvertebrates, metals, NPDES permit, physical habitat, sediment, streamflow, toxicity, water quality, wetlands.

Relevance to SCBWMI: 1) Explicit intent to coordinate data collection efforts with those of other stream studies: project will only collect those data not collected by other current stream studies; 2) NPDES permit requirements; 3) Actions will increase streamflows and wetland acreage; South Bay precedent for reintroducing recycled water into streams.

Goals: Optimize environmental benefits of introducing recycled water to enhance streamflows.

Objectives: 1) Design and support implementation of two streamflow pilot augmentation projects; 2) Feasibility studies of wetland creation project.

Study Watersheds (and RWQCB Code): Guadalupe (5512), Coyote (5501)

Tributaries Sampled in Watersheds: Mainstems of Guadalupe and Coyote.

Sampling Location: 18 miles of Coyote Creek above Standish Dam; three five-mile sampling segments below introduced flow (near crossing of Umbarger Road), and one three-mile segment above point of introduced flow.

Sampling Frequency: Monthly for water quality; quarterly for macroinvertebrates; as needed for fisheries.

Field Sampling Period: Mostly during dry season (May through Oct)

Projected Study Completion Date: 12/02

General Data Types Collected: Water quality, biological and physical habitat assessment, biological communities.

Detailed Data Description: Salinity, T^o, TOC, DOC, TSS, TDS, trace metals, nutrients, species numbers, abundance, and habitat for macroinvertebrates and fishes, toxicity, nuisance vegetation, sediment grain size.

Sampling Protocols: Macroinvertebrates: US EPA Rapid Bioassessment Protocol (CDFG 1996); Fish: riffle/run habitat will be sampled via electrofishing using block nets and a three-pass depletion method, pool habitat will be sampled using a 150 x 6-foot beach seine with 1/4-inch mesh and a three-pass depletion method; physical habitat: to be determined. Water Quality: EPA Clean Techniques for metals.

Data Format: Electronic relational database with georeferenced sampling sites

Follow-up Projects: The City of San Jose has contracted with San Jose State University to complete additional sampling for nutrients and plant growth (attached algae). Preliminary site assessment will begin January 2000, surveying and assessment is scheduled for spring (low-flow), and the scheduled project completion date is December 2000.

In addition, the USGS may provide additional macroinvertebrate control data by replicating sampling on other, similar systems.

Stakeholders Common to SCBWMI: Cities of San Jose, Sunnyvale, Santa Clara, SCVWD, CDFG.

Study Information Verified: Yes (1/25/00)

Project Name: Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)

Overall Purpose: Mitigation required to respond to lawsuit

Lead Agencies/Organizations: SCVWD, CDFG

Funding Source: SCVWD, CALFED

Contracted Party(s): Study design and evaluation: TAC, SCVWD

Contact Information:

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Organization: SCVWD

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Keywords: biological data, channel morphology/ hydrogeomorphology, fisheries, land use, macroinvertebrates, physical data, physical habitat, riparian, salmonids, sediment/sedimentation, special status species, streamflow.

Relevance to SCBWMI: 1) Explicit intent to coordinate and collaborate on data collection with other stream studies, including SCVWD flood control projects, RWQCB water quality monitoring, City of San Jose streamflow augmentation project; 2) useful data for SCBWMI.

Goals: 1) Identify the contribution of SCVWD facilities and operations to existing fishery habitat conditions within the context of the variety of factors impacting salmon and steelhead populations; 2) Identify reasonable flow and non-flow measures that will improve habitat conditions for such fish populations within the context of competing water and land use demands.

Objectives:

1.0) Research Objectives: Provide a technical basis for well-grounded policy decisions; specifically, quantify:

- 1.1) the diversity, abundance, and condition of existing salmon and steelhead resources;
- 1.2) habitat quantity and quality that may limit the above listed in (1.1);
- 1.3) non-flow measures that could change existing conditions that limit the above listed in (1.1);
- 1.4) alternative flow regimes that could change the conditions that limit the above listed in (1.1).

2.0) Management Objectives: Identify and evaluate alternative management actions based in part on the above studies and on the following:

- 2.1) Improve habitat conditions to maintain fish populations in good condition;
- 2.2) Protect, maintain, and improve habitat conditions for species listed under the State and Federal Endangered Species Acts or identified as California Species of Special Concern;
- 2.3) Improve the availability and suitability of stream corridor and channel habitat for a diversity of species of fish and wildlife.

Study Watersheds: Guadalupe (5512), Coyote (5501), Stevens (5319)

Tributaries Sampled in Watersheds: Guadalupe, Alamitos, Los Gatos Creek, Stevens Creek, Upper Penitencia Creek, Pheasant Creek; Reynolds Creek.

Sampling Location: Coyote: Hwy 237 to Anderson Reservoir; Guadalupe: Tasman to Calero, Almaden, Guadalupe Reservoirs, Camden Ave.; Stevens Creek Moffet Blvd to Stevens Creek Reservoir.

Sampling Frequency: varies by data type.

Field Sampling Period: 7/20/98 – 10/15/00

Projected Study Completion Date: 12/00

General Data Types Collected: biological, physical, hydrologic.

Detailed Data Description: toe-to-toe channel widths, stream depth, proportion of bankside cover that is woody debris, riparian vegetation, undercut bank, boulder, or aquatic vegetation, bank stability, instream cover complexity, residual pool volume index, stream substrate (Wentworth scale), degree of sedimentation, area affected by fine sediment, sediment sources, area of salmonid spawning gravel, terrestrial drift potential (fish food), benthos production potential, salmonid habitat quality, constraints to salmonid habitat quality, potential salmonid migration barriers, temperature, dissolved oxygen.

Sampling Protocols: Fish Habitat, CDFG - Flosi and Reynolds 1988; macroinvertebrate communities (CDFG 1996); fluvial geomorphic classes (Rosgen 1994); residual pool volume index (Lisle and Hilton 1991), bank stability (Platts et al. 1983), salmonid habitat quality (Li et al. 1994), constraints to salmonid habitat quality (Li et al. 1994), sediment (McNeil Sampler, samples will be dried and sieved to determine cumulative frequency distribution statistics), temperature (continuous on the hour).

Data Format: Excel, Access, others (unspecified).

Stakeholders Common to SCBWMI: SCVWD, CDFG, GCRC, NHI, City SJ, SJRA, NMFS, USFWS, SWRCB.

Study Information Verified: Yes (11/17/1999)

Section 3: Permit Compliance

Project Name: First Flush Monitoring Project

Overall Purpose: Permit Compliance: NPDES

Lead Agencies/Organizations: City of San Jose, Environmental Services Department

Funding Sources: City of San Jose

Contracted Parties: City of San Jose

Contact Information:

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Organization: City of San Jose

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Keywords: IC/ID, metals, pesticides, pollutant loads, sediment, storm drain outfalls, stormwater, water quality.

Relevance to SCBWMI: Results may influence how stormwater programs are implemented.

Goals: Support IC/ID, Industrial Inspection Programs, and Outreach Programs by identifying sectors in City of San Jose with greatest pollutant loads.

Objectives: Collect and analyze samples from major storm drain outfalls to identify the presence and relative magnitude of pollutants in different sectors of the stormwater system. As the City continues to collect data for this and the Stormwater Monitoring to Support IC/ID and Industrial Inspection Programs, a feasibility study for modeling storm water runoff and loads assessment will be done.

Study Watersheds and Codes (RWQCB): Guadalupe (5512, 5511, 5311), Coyote (5501), Lower Penitencia.

Tributaries Sampled in Watersheds: Sampling outfalls on Guadalupe River and Coyote Creek

Sampling Location: 25 storm drain outfalls:

River	Street	Outfall Number
Guadalupe	River Oaks	526
Guadalupe	Montague	581
Guadalupe	George	510
Guadalupe	San Pedro	509
Guadalupe	W. Virginia	119
Guadalupe	Edwards	128
Guadalupe	Blossom Hill	386
Guadalupe	Blossom Hill	410

Guadalupe	Tasman	Lift station
Coyote	Brokaw	635
Coyote	Story	162
Coyote	Balfour	182
Coyote	Umbarger	222
Coyote	Senter	298
Coyote	Needles	310
Coyote	Oswego	133
Coyote	Alma	151
Coyote	Tully	313
Canoas	Cottle	397
Canos	Cottle	398
Lower Penitencia	Ringwood	No number
Lower Penitencia	Old Oakland	No number
Los Gatos	Lincoln	232

Sampling Frequency: First effective rainfall and every opportune rainfall event of the wet season

Field Sampling Period: 4/98 - ongoing

Projected Completion Date: Ongoing

General Data Types Collected: Water quality

Detailed Data Description: Toxic metals, pesticides, PCBs, poly aromatic hydrocarbons, total suspended solids, nitrates, phosphates, oil and grease.

Sampling Protocols: Manually composited, time-proportional samples. A single grab sample is collected every hour during the storm event and composited into a single sample for analysis.

Data Format: Access 2.0

Stakeholders Common to SCBWMI: Cities San Jose, Sunnyvale, Santa Clara, SCVURPPP

Study Information Verified: Yes (11/18/1999)

Project Name: Stormwater Monitoring to Support Illicit Connection/Illegal Discharge and Industrial Inspection Programs

Overall Purpose: Permit Compliance: Support and improve stormwater program implementation of City of San Jose Urban Runoff Management Plan and the Santa Clara Valley Urban Runoff Pollution Prevention Plan.

Lead Agencies/Organizations: City of San Jose, Environmental Services Department

Funding Sources: City of San Jose

Contracted Parties: City of San Jose

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Organization: City of San Jose

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Keywords: IC/ID, land use, metals, stormwater, pesticides, pollution prevention, sediment, streamflow, water quality.

Relevance to SCBWMI: Results may improve implementation of stormwater programs.

Goals: 1) Support IC/ID, Industrial Inspection Programs, and Outreach Programs by proactive investigation of pollutant sources; 2) Evaluate effectiveness of Urban Runoff Management Program activities.

Objectives: Characterize drainage areas and stormwater discharges including land use characteristics, pollutant concentrations, and mass loading; 2) assess existing or potential adverse impacts on beneficial uses caused by pollutants; 3) identify potential sources of pollutants; 4) evaluate effectiveness of stormwater pollution prevention control measures. As the City continues to collect data for this and the First Flush Monitoring Project, a feasibility study for modeling storm water runoff and loads assessment will be done.

Study Watersheds and Codes (RWQCB): Guadalupe, Coyote

Tributaries Sampled in Watersheds: Stormdrains connected to Guadalupe and Coyote

Sampling Location: Six drainage areas representing commercial/industrial parks within San Jose.

River	Street	Outfall Number
Coyote	Charter Park Dr.	171
Coyote	Yard Ct.	553
Guadalupe	Terminal Ave.	607
Coyote	Industrial Ave.	631
Coyote	Rogers Ave.	644
Coyote	Paragon Dr.	641

Sampling Frequency: Every major storm event that is preceded by sufficient dry weather for pollutant accumulation to occur.

Field Sampling Period: 10/97 – 3/00

Projected Completion Date: 7/00

General Data Types Collected: Water quality and flow

Detailed Data Description: Toxic metals, pesticides, PCBs, Poly Aromatic Hydrocarbons, total suspended solids, nitrates, phosphates, oil and grease.

Sampling Protocols: Flow-proportional, composite samples are collected for analysis.

Data Format: Access 2.0

Stakeholders Common to SCBWMI: Cities of San Jose, Sunnyvale, Santa Clara, SCVURPPP

Study Information Verified: Yes (11/18/1999)

Project Name: San Jose Industrial Stormwater Monitoring Pilot Program

Overall Purpose: Permit Compliance: support and improve implementation of City of San Jose Urban Runoff Management Plan and the Santa Clara Valley Urban Runoff Pollution Prevention Plan.

Lead Agencies/Organizations: City of San Jose, Environmental Services Department

Funding Sources: City of San Jose

Contracted Parties: City of San Jose

Contact Information:

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Email: dave.grabiec@ci.sj.ca.us (*preferred form of contact*)

Keywords: metals, pollution prevention, stormwater, water quality.

Relevance to SCBWMI: Results may improve implementation of stormwater programs, specifically may improve SWPPP implementation and monitoring.

Goals: Provide a general indication of the extent to which industries have met the objectives of their stormwater pollution prevention plans (SWPPPs).

Objectives: 1) Characterize pollutant sources from industrial facilities in SIC (Standard Industrial Code) sectors whose processes have potential to produce metal contaminants as a by-product of their operations; 2) evaluate effectiveness of SWPPP implementation at industrial facilities that have implemented control measures; 3) provide information and training to industry and inspection staff to improve SWPPP monitoring techniques and control measure implementation. Since the Industrial Pilot was completed, City of San Jose has been trying to develop a very general outreach program for commercial and industrial facilities, focusing on the NOI filing requirements of the General Permit.

Study Watersheds and Codes (RWQCB): Guadalupe (5512)

Tributaries Sampled in Watersheds: N/A

Sampling Location: Two printed circuit board manufacturers were sampled at locations that represent specific manufacturing activities.

Sampling Frequency: A single-storm monitoring event.

Field Sampling Period: 10/97

Projected Completion Date: 10/98

General Data Types Collected: Water quality

Detailed Data Description: Copper, Nickel

Sampling Protocols: Grab samples representing runoff downstream of industrial pollutant sources were collected at 20 – 40 minute intervals.

Data Format: Program report hardcopy.

Stakeholders Common to SCBWMI: Cities of San Jose, Sunnyvale, and Santa Clara, SCVURPPP

Study Information Verified: Yes (11/18/1999)

Project Name: Sunnyvale Industrial Stormwater Monitoring Pilot Program

Overall Purpose: Permit compliance: NPDES

Lead Agencies/Organizations: City of Sunnyvale

Funding Sources: City of Sunnyvale

Contracted Parties: City of Sunnyvale

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Keywords: metals, NPDES permit, sediment, stormwater, streamflow, water chemistry.

Relevance to SCBWMI: Study results may influence BMPs for some industrial manufacturing facilities.

Goals: Improve compliance with NPDES permit for detecting and reducing stormwater metal loadings.

Objectives: Determine whether copper and/or nickel concentrations found in stormwater runoff sampled at electroplating, metal finishing, and semiconductor manufacturing facilities differ significantly from those sampled at other commercial and industrial sites.

Study Watersheds and Codes (RWQCB) : Sunnyvale East (5523, 5319) and West (5319).

Tributaries Sampled in Watersheds: NA

Sampling Location: *Phase I:* Three facilities from each of the three targeted industrial categories (electroplating, metal finishing, and semiconductor manufacturing). *Phase II* will narrow focus to one or two facilities from each category, although individual facilities may be different from those monitored during Phase I.

Sampling Frequency:

Phase I: 5 storm events: 2 samples per event, the 1st within the first hour of the storm event (1st flush samples), and the 2nd after the 2nd hour of the storm event. Total of 120 industrial stormwater samples were taken (3 facilities x 4 types of facilities x 5 storms x 2 samples per storm).

Phase II: only 2nd flush samples will be monitored.

Field Sampling Period: *Phase I:* 11/97 - 5/98. *Phase II:* 11/99-5/00.

Projected Completion Date: *Phase I:* 7/98. *Phase II:* 9/00

General Data Types Collected: Water chemistry

Detailed Data Description: Total Copper, total Nickel, total suspended solids, specific conductance, total organic Carbon, pH, and oil and grease (in some cases). For samples > 500 ppb Cu or Ni, a series of additional metals may be analyzed upon request.

Sampling Protocols: Grab and catch methods; flow measurement sampling using an automatic sampling instrument. Detection limits for copper and nickel, 0.01 and 0.003 mg/L, respectively.

Data Format: Technical memorandum; sample data are stored in the City's sample history database (format not specified)

Stakeholders Common to SCBWMI: Cities of Sunnyvale, Santa Clara, San Jose, SCVURPPP

Study Information Verified: Yes (12/2/1999)

Project Name: Palo Alto Stream Monitoring

Overall Purpose: Permit compliance: NPDES

Lead Agencies/Organizations: City of Palo Alto

Funding Sources: City of Palo Alto

Contracted Parties: City of Palo Alto

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Keywords: metals, NPDES permit, sediment, water quality.

Relevance to SCBWMI: Useful data. Analysis may provide useful information.

Goals: Monitor water quality

Objectives: Identify trends in levels of metals in creeks during rainy season.

Study Watersheds and Codes (RWQCB): San Francisquito (5516)

Tributaries Sampled in Watersheds: San Francisquito, Matadero, Barron, Adobe

Sampling Location: N = 4. San Francisquito: Stanford Diversion Canal on Arastradero and Alpine Roads (control), Newall/San Fran Creek @ bridge (downstream); Matadero: Sand Hill Rd next to Palo alto Booster Pump Station (control); Matadero Crk @ Greer and Maddux Roads (downstream). Barron: Barron Crk @ Louise St. (downstream); Adobe: Adobe Crk @ E. Meadow Circle.

Sampling Frequency: 4 storm events per winter rainy season

Field Sampling Period: Oct-Jan

Projected Completion Date: Completed Spring 1998.

General Data Types Collected: Water quality

Detailed Data Description: Copper, nickel, lead, zinc, total and dissolved solids, nitrates, turbidity, dissolved oxygen, pH, and conductivity.

Sampling Protocols: Isco Sequential sampler for composite 5 gallon samples collected at 15 minute intervals (100 ml / interval). Set sampler for 24 hour cycle. EPA method for handling samples.

Data Format: MS Access and Excel for graphs

Stakeholders Common to SCBWMI: City of Palo Alto, SCVURPPP

Study Information Verified: Yes (12/3/1999)

Section 4: Precedent-Setting for Watershed Management

Project Name: Stormwater Environmental Indicators Demonstration Project (SEIDP)

Overall Purpose: Precedent Setting: Evaluate EPA's Environmental Indicator methodology for assessing stormwater programs; Develop a guidance manual for applying this methodology in the arid West.

Lead Agencies/Organizations: SCVURPPP

Funding Sources: SCVURPPP, WERF

Contracted Parties: SCVURPPP, URSGWC, KLI, EOA Inc.

Contact Information:

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Keywords: biological communities, biological data, chemical data, fisheries, flooding, IC/ID, macroinvertebrates, physical data, physical habitat, sediment, streamflow, storm drain outfalls, stormwater, urbanization, water quality.

Relevance to SCBWMI: Testing a methodology to evaluate the effectiveness of stormwater programs. Physical and biological indicators may be used to assess the effects of urbanization on stream habitat.

Goals: Evaluate the usefulness of the Center for Watershed Protection's Environmental Indicator Methodology (Claytor and Brown 1996) to measure the success of stormwater Programs by applying it in Coyote Creek and a small industrial catchment (Walsh Avenue) in the City of Santa Clara.

Objectives: 1) Evaluate indicators at 2 scales: a large urban/residential watershed (310 m²) and a small industrial drainage (28 m²); 2) Compare pre-program data to current data.

Study Watersheds and Codes (RWQCB): Coyote (5501, 5308, 5503, 504, 5304, 5502, 5507, 5509, 5506)

Tributaries Sampled in Watersheds: Coyote Creek mainstem.

Sampling Location: Coyote Creek: 18 sampling stations for biological and physical habitat data (macroinvertebrates sampled at 9/18 stations), 5 stations for temperature monitoring (see map). Walsh Avenue catchment is located at the corner of Walsh Avenue and Lafayette Street in the City of Santa Clara.

Sampling Frequency: Sediment: 2 x (June & Oct.); Physical habitat: once (June/July); Temperature: continuous June-September; Fisheries: 3 x (April, June & Sept.); Macroinvertebrates: 2 x (April & June).

Field Sampling Period: 3/99 - 9/99

Projected Completion Date: 6/00

General Data Types Collected: Biological, chemical, physical, and social.

Detailed Data Description: *Coyote Creek field data:* 1.) surficial sediment (Indicator #5) (top 2cm) tested for arsenic, cadmium, chromium, copper, lead, mercury, particle size distribution, 2.) Stream Widening and Downtcutting (#7) stream morphology, gradient 3.) Physical Habitat (#8): habitat type (Flosi et al., 1998), substrate, embeddedness, riparian canopy, streamflow, length/width/depth, instream shelter, bank composition and vegetation, 4.) Fish Assemblages (#12): species number, relative abundance, length and total weight by species, metrics (Barbour et al. 1997), 5.) Macroinvertebrate Assemblages (#13): species number and abundance, 6.) Public Attitude and User Perception (#17&20): random digit dial telephone survey sampling ~850 watershed resident's awareness of issues relating to urban runoff pollution.

Additional information collected for this study: *Programmatic data:* flooding frequency (#10), industrial/commercial pollution prevention (#18), public involvement and monitoring (#19), number of illicit discharges identified/corrected (#21), number of BMPs installed, inspected and maintained (#22), permitting and compliance (#23), growth and development (#24), industrial site compliance monitoring (#26). *Walsh Avenue field data:* water quality constituent monitoring (#1), toxicity testing (#2), non-point source loadings (#3).

Sampling Protocols: Fish: beach seines and electrofishing. Macroinvertebrates: Rapid Bioassessment Protocols (RBPs; 1989, 1997). Physical Habitat: CDFG protocol (Flosi et al. 1998). Public Attitude and User Perception: random digit dial (RDD) telephone survey.

Data Format: Hardcopy: interim technical memoranda. Electronic: relational database and in a GIS (PC ARC/INFO)

Stakeholders Common to SCBWMI: SCVURPPP, USEPA

Study Information Verified: Yes (12/2/1999).

Project Name: Guadalupe River Flood Management Collaborative (GRFMC)

Overall Purpose: Precedent for Watershed Management: Develop an integrated solution to river management that achieves a long-term resolution of issues related to the completion of the Guadalupe River Flood Control Project.

Lead Agencies/Organizations: USACE, SCVWD, City SJ, SJRA

Funding Source: USACE, State Flood Control Subventions, SCVWD, SJRA, City SJ

Contracted Parties: USACE (ANWest, Jones & Stokes, Hargreaves Associates, Northwest Hydraulic Consultants), SCVWD (Jones & Stokes, Biggs Cardosa Associates, Archaeological Resource Management), SJRA (Hargreaves, Sasaki Associates).

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Keywords: flooding/flood control, recreation.

Relevance to SCBWMI: Collaborative, multi-stakeholder approach to watershed management.

Goals: Reduce the threat of flooding along the Guadalupe River within the downtown areas of the City of San Jose and provide 1% flood protection, develop a riverside park, ensure that the environment and community interests in transportation and development are fully protected, and satisfy conditions of the SWRCB Certification.

Objectives: Review available alternatives and development of alternative design and complete a mitigation and monitoring plan to respond to habitat loss and temperature increase caused by increased flood protection and recreation; complete the flood control project in compliance with the Water Quality Certification and the Endangered Species Act. The primary focus is on the specific flood control project in Contracts 1, 2, and 3; a secondary focus is to review the flood control project in the context of the broader watershed.

Study Watersheds and Codes (RWQCB): Guadalupe (5511, 5512)

Tributaries Sampled in Watersheds: Alamitos Creek, Guadalupe Creek, Canoas Creek, Ross Creek, Los Gatos Creek (these streams are within purview of project but are not being sampled).

Sampling Location: NA

Sampling Frequency: NA

Field Sampling Period: NA

Projected Study Completion Date: Scheduled for completion in December 2002. The Corps of Engineers will undertake monitoring work as stipulated in the Mitigation and Monitoring Plan for three years from the time that Shaded Riverine Aquatic (SRA) cover planting is complete. Thereafter, SCVWD will be responsible for project monitoring in addition to operations & maintenance, and adaptive management responsibilities.

General Data Types Collected:

Detailed Data Description: NA

Sampling Protocols: NA

Data Format: NA

Stakeholders Common to SCBWMI: SCVWD, USACE, City SJ, SJRA, NHI, GCRCD, CDFG, NMFS, SWRCB, RWQCB, USFWS

Study Information Verified: Yes (2/15/00)

Project Name: Regional Geographic Initiative Demonstration of the Bay Area Watersheds Science Approach in Permanente Creek

Overall Purpose: Precedent for developing a unified approach for watershed assessment in the Bay Area.

Lead Agencies/Organizations: SFEI

Funding Sources: US EPA, SCVURPPP

Contracted Parties: SFEI

Contact Information:

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Keywords: land use, erosion, hydrogeomorphology, invasive/introduced species, physical data, physical habitat, pollutant reduction, sediment, storm drain outfalls, water quality, watershed assessment.

Relevance to SCBWMI: Prototype development of a scientifically based watershed assessment procedure based on Bay Area Watershed Science Approach.

Goals: Develop a science-based watershed assessment template to promote regional consistency among local watershed assessment.

Objectives: 1) Develop an understanding of the historical ecology and land uses of the watershed; 2) to develop base map for field notations of local conditions, visualize study findings and to serve as a public directory to spatial data and data sources; 3) identify source and relative contribution of sediment loads; 2) identify meaningful sampling points in coordination with the Regional Geographic Initiative; 3) Establish protocol for sampling water quality and hydrogeomorphology that will enable the SCVURPPP to strategically apply pollutant reduction measures.

Study Watersheds and Codes (RWQCB): Permanente (5519)

Tributaries Sampled in Watersheds: Permanente, and selected tributaries (undetermined).

Sampling Location: Contiguous segments of reaches of the mainstem channel, selected tributaries, or within selected reference reaches, where a reach is defined as a length of channel between obvious changes in channel form or between stream crosses, and a segment is defined as a length of left or right bank or terrace, or a length of channel bed within a reach.

Sampling Frequency: Undetermined.

Field Sampling Period: Project on hold.

Projected Completion Date: Project on hold.

General Data Types Collected: Physical

Detailed Data Description: Stream Terraces and Stream Banks: height above bankfull stage, length of eroded segment, average lateral and vertical extent of erosion, cause and kind of erosion, average volume of erosion per cause and kind, total length of revetment per type and condition, total length of terrace per natural substrate type and condition, total length of segments dominated by invasive/exotic plants, total length of segments dominated by native plants, diameter at breast height (DBH) and age of over-story trees, and dimensions of storm drains or other point sources. Channel Beds: bed form and substrate type, length and depth of pools, cause of pool, bankfull height, width, depth, mean depth, cross-sectional area, flood-prone width and depth, entrenchment ratio, average volume of aggradation or degradation, D50 of substrate particle size, average height of point bars and mid-channel bars, average volume of sediment storage, and Thalweg profile.

Sampling Protocols: Experimental to develop a local standard, with the exception of sediment size. D50 particle size determined using pebble count (Harrelson et al., 1994).

Data Format: Report, GIS (ARC/INFO, ArcView).

Stakeholders Common to SCBWMI: SFEI, SCVURPPP, US EPA, RWQCB.

Study Information Verified: 11/98

Project Name: Lower Silver Creek Watershed Project

Overall Purpose: Resource Management for Flood Protection

Lead Agencies/Organizations: USDA-NRCS

Funding Sources: Public Law 566

Contracted Parties: NRCS, SCVWD, GCRC

Contact Information:

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Keywords: biological communities, biological data, citizen monitoring, fisheries, flood control, riparian, sediment, water quality, wetlands.

Relevance to SCBWMI: Precedent for redesigning the traditional flood control project design (concrete channel construction); updating design with modern practices including soil bioengineering practices, urban fishery enhancement, riparian and wetland habitat creation, sediment traps, etc. Citizen baseline monitoring data obtained by high school students. Future monitoring to continue throughout construction and for 10 years after completion.

Goals: Provide protection from 100-year (1%) flood-events while incorporating water quality, environmental education, fishery and wildlife enhancement in a rapidly urbanizing area of San Jose.

Objectives: Redesign the flood control project that was developed for this creek in the 1970's, paying particular attention to engineering designs that maintain riparian corridor function and sustain biological communities.

Study Watersheds and Codes (RWQCB): Lower Silver Creek portion of Coyote Creek watershed (5507).

Tributaries Sampled in Watersheds: Lower Silver Creek

Sampling Location: McKee, Maybury, and Wooster cross-streets.

Sampling Frequency: Weekly

Field Sampling Period: 2/95 – 6/95

Projected Completion Date: 1995; portions are ongoing

General Data Types Collected: water quality, biological

Detailed Data Description: pH, depth and velocity, temperature, dissolved oxygen, conductivity, turbidity, macroinvertebrate assemblages.

Sampling Protocols: Coyote Creek Riparian Station protocols (CCRS 1995).

Data Format: Custom field sample sheets entered into a spreadsheet (not specified).

Stakeholders Common to SCBWMI: NRCS, SCVWD, GCRCD

Study Information Verified: 11/98

Section 5: Research

Project Name: Factors Affecting the Distribution of Lotic Macroinvertebrates in an Urban Setting

Overall Purpose: Research to improve the USGS National Water-Quality Assessment Program, and to establish biomonitoring protocols in the South Bay and other urban centers.

Lead Agencies/Organizations: USGS

Funding Sources: USGS, SCVURPPP

Contracted Parties: none

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Keywords: bioassessment/biomonitoring, biological data, channel morphology/hydrogeomorphology, chemical data, macroinvertebrates, physical data, physical habitat, streamflow, urbanization.

Relevance to SCBWMI: Researchers will: 1) produce useful assessment tools: a) a model to predict the expected invertebrate community at urban stream sites; b) determine the level of sampling effort and taxonomic resolution that is most cost effective to use the model; and 2) provide useful macroinvertebrate data; 3) try to coordinate with other studies sampling macroinvertebrate communities and habitats.

Goals: To determine the factors that most influence the distribution of stream macroinvertebrates in an urban environment.

Objectives: Relate the distribution of lotic macroinvertebrates to site- and basin-scale physical, chemical, and geomorphological variables. Determine how these factors vary within and among sub-basins and determine their rate of longitudinal (downstream) change. Explore the relationships between variables driving the distribution of lotic macroinvertebrates and measures of urbanization, such as: population density, percentage impervious area, etc.

Study Watersheds and Codes (RWQCB): San Francisquito (5516, 5521), Stevens (5319), Saratoga (5520), Guadalupe (5512, 5510), Coyote (5501, 5506).

Tributaries Sampled in Watersheds: Streams included in the study are 1. San Francisquito Ck., 2. Corte Madera Ck., 3. Los Trancos Ck., 4. Stevens Ck., 5. Saratoga Ck., 6. Guadalupe R., 7. Los Gatos Ck., 8. Ross Ck., 9. Guadalupe Ck., 10. Alamitos Ck., 11. Barret Ck., 12. Arroyo Calero, 13. Coyote Ck., and 14. Upper Penitencia Ck.

Sampling Location: Sites were established at approximately 2 kilometer intervals, starting at the mouth of each stream. On most streams, the upstream most sites are limited to an altitude of 300-

400 m. Some locations were inaccessible and/or proved to have insufficient riffle habitat. In total, 85 sites were sampled.

Sampling Frequency: 2 x /year for invertebrates, 1-2 x /year for water chemistry. *For 1997:* Sampling for invertebrates, DO, pH, and conductivity occurred during May. NO₂+NO₃ was mainly sampled during June. Geomorphological measurements were made July – August.

Field Sampling Period: May - August 1997, Sept-Oct 1998, and ongoing if funded.

Projected Completion Date: Ongoing.

General Data Types Collected: Physical, chemical, and biological.

Detailed Data Description: Depth, velocity, temperature, substrate particle size in riffle habitats, channel geometry (slope and wetted and bankfull width and depth), DO, pH, conductivity, NO₂+NO₃, percent canopy, qualitative vegetative cover, number of species and individuals of lotic invertebrates found in riffle and multi-habitat collections.

Sampling Protocols: Substrate particle size measured using Wolman pebble count technique (Wolman 1954). Chemical samples were taken as grab samples or measured instream with a meter except NO₂+NO₃, which was filtered at 0.2 µm and kept at 4°C and analyzed within 30 days. Invertebrates were sampled with a 500 µm kick net: riffle samples were taken by compositing 5 - .09 m² randomly chosen kick samples; multi-habitat samples were taken by a percentage habitat weighted technique. Riffle samples were taken by compositing 5 - .09 m² randomly chosen kick samples (Furst et al. 1981).

Data Format: Data are stored as field and laboratory data sheets, EXCEL 97 spreadsheets, and hard copy of raw EXCEL 97 files. Lotic macroinvertebrates are stored in an on-site reference collection.

Stakeholders Common to SCBWMI: SCVWD, SCVURPPP

Study Information Verified: Yes (12/2/99)

Project Name: 1998 RMP Estuary Interface Pilot Study, Phase II

Overall Purpose: Research

Lead Agencies/Organizations: SFEI

Funding Sources: SCVURPPP, RWQCB, and 77 industrial, municipal, stormwater, cooling water, and dredged material dischargers

Contracted Parties: SFEI

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Keywords: chemical data, land use, mercury, metals, pesticides, physical data, pollutant loads, sediment, water quality.

Relevance to SCBWMI: Useful data; their findings may influence the design of new source and loading components of the RMP. Data are suitable in designing follow-up studies to determine metal enrichment of sediment as it moves from upper watersheds through urban areas. Data are useful in designing copper and nickel action plans as a result of possible delisting.

Goals: Improve data collection and analysis of water-quality monitoring data; determine watershed contribution of pollutants to the Estuary

Objectives: 1) Evaluate 2 years of pollutant data to determine regional applicability of findings; 2) Identify sources of variability that could be minimized using the basic physical watershed characteristics to be assembled as part of the SCBWMI (e.g., flow, rainfall, TSS load, land use, stream channels, storm drains, and impervious surface cover) to develop a pollutant monitoring design at the estuary interface that is regionally applicable.

Study Watersheds and Codes (RWQCB): South Bay Estuary (5101)

Tributaries Sampled in Watersheds: Coyote Creek and Guadalupe River (a.k.a. Alviso Slough)

Sampling Location: Two “transitional” sampling stations south of the San Jose (Standish Dam site) and Sunnyvale local effects monitoring stations at the following coordinates (latitude, longitude as degree, minute, seconds), respectively: 37 27 43, 121 58 32; 37 26 8, 122 0 40.

Sampling Frequency: 2/5 – 2/14, 2/15 – 2/22, 4/22 – 4/29, 7/22 – 7/30, 7/31 – 8/6.

Field Sampling Period: 2/96 – 8/96, annually.

Projected Completion Date: 2/15/00

In 2000, the RMP Steering Committee will decide whether to incorporate these two (and possibly more) interface stations into the regular status and trends monitoring component of the RMP. Data will be available to everyone via the web.

General Data Types Collected: Physical and chemical for water and sediment.

Detailed Data Description: Water: Total Suspended Sediments, hardness, chlorophyll-a, NO₃, NH₄, PO₄, Si, temp. conductivity, dissolved and (near-) total concentrations of As, Ag, Cd, Zn, Cr, Se, Pb, Copper (Cu), Nickel (Ni), Mercury (Hg), dissolved and particulate trace organic compounds: polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorine pesticides (such as DDT compounds, chlordane, dieldrin mirex, , and organophosphate pesticides (diazinon and chlorpyrifos). Sediment: grain size, TOC, TN, redox potential, same trace metals as in water plus Al, Mn, and Fe. Same trace organics, except diazinon and chlorpyrifos.

Sampling Protocols: Water sampling: Ultra-clean sampling methods (Flegal and Stukas 1987; EPA Method 1977, 1995); Sediment sampling: modified van Veen grab with a 0.1 m² surface area.

Data Format: relational database accessible via customized interface at SFEI's web site: www.sfei.org

Stakeholders Common to SCBWMI: SFEI, SCVURPPP, SCVWD

Study Information Verified: Yes (11/15/1999)

Project Name: Comparison of Water Quality in Urban and Rural Stormwater Runoff

Overall Purpose: Research for Master of Science thesis.

Keywords: chemical data, land use, pesticides, pollutant loads, storm drain outfalls, stormwater, urbanization, water chemistry, water quality.

Lead Agencies/Organizations: CCRS

Funding Sources: San Mateo County

Contracted Parties: Kristen Sipes

Contact Information:

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Relevance to SCBWMI:

Goals: To compare pollutants in stormwater runoff draining urban and rural areas of the San Francisquito Creek watershed.

Objectives: What concentrations of nutrients and pesticides enter the creek from urban and rural land uses during storm events? Is there a significant difference in pollutant concentrations originating from urban and rural land uses? Is there a relationship between pollutant concentrations and the percent of different land uses in each drainage area?

Study Area Watersheds: San Francisquito (5516)

Tributaries Sampled in Watershed: San Francisquito Creek

Sampling Location: Samples were collected from 14 stormdrain outfalls. Sites were GPSed and location information is available upon request.

Sampling Frequency: Three storm events at various times throughout the rainy season.

Field Sampling Period: April 1999 to January 2000.

Projected Study Completion Date: June 2000

General Data Types Collected: Chemical

Detailed Data Description: Ammonia, Nitrate, Nitrite, Orthophosphate, Diazinon, Chlorpyrifos.

Sampling Protocols: Grab samples were collected from the first flush of 3 storm events. Stormwater samples were collected directly from the outfall before discharging into the creek.

Data Format: Hardcopy.

Stakeholders Common to SCBWMI:

Study Information Verified: Yes (12/8/1999)

Project Name: Genetic Relationships Among Steelhead and Rainbow Trout Populations in Tributaries to South San Francisco Bay

Overall Purpose: Master's thesis research

Lead Agencies/Organizations: SJSU

Funding Sources: SCVWD

Contracted Parties: Warren Hankinson

Contact Information:

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Organization: SJSU

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Keywords: biological data, fisheries, introduced species, salmonids, special status species.

Relevance to SCBWMI:

Goals: To determine genetic relationships among different populations of steelhead/rainbow trout and the relative influence of hatchery stocking on populations genetics.

Objectives: Perform RAPD genetic analysis on steelhead/rainbow trout populations at select South Bay tributaries, determine which populations are more genetically similar, and compare RAPD technique to more intensive microsatellite work in the Pajarro River system.

Study Area Watersheds: Guadalupe, Saratoga, Stevens, San Francisquito, Coyote (Watersheds outside of Santa Clara Basin included Alameda, San Lorenzo, and Pajarro)

Tributaries Sampled in Watershed: Guadalupe River, Los Gatos Creek, Saratoga Creek, Stevens Creek, Los Trancos Creek, San Francisquito Creek, Los Alamitos Creek, Guadalupe Creek, Penitencia Creek. (tributaries not in Santa Clara Basin included: Zayante Creek, Boulder Creek, Dos Picachos Creek, Corralitos Creek, Smith Creek, and Gazos Creek).

Sampling Location: 12 sites total

Los Gatos Creek above Lexington Reservoir, Saratoga Creek above Saratoga, Stevens Creek at 1) McClellan, 2) Moffett, 3) above Stevens Creek Reservoir, Los Trancos Creek at Stanford Diversion, San Francisquito Creek below Interstate 280.

Sampling Frequency:

Field Sampling Period:

Projected Study Completion Date: Spring 2000.

General Data Types Collected: biological

Detailed Data Description: Fin clips for 20-40 steelhead/rainbow trout at each of 12 sampling sites. Single primer (GTGx5) Randomly Amplified Polymorphic DNA (RAPD) genetic analysis.

Sampling Protocols: modified RAPD technique.

Data Format: Hardcopy (master's thesis and report to the SCVWD).

Stakeholders Common to SCBWMI: SCVWD

Study Information Verified: No

References:

- California Department of Fish and Game. 1996. California Stream Bioassessment Procedure. March 1996 edition. California Department of Fish and Game, Aquatic Bioassessment Laboratory, Rancho Cordova, California.
- Claytor, R.A., and W.E. Brown. 1996. Environmental Indicators to Assess Stormwater Control Programs and Practices. Center for Watershed Protection. Silver Spring, Maryland 172 pp.
- Coyote Creek Riparian Station. 1994. Santa Clara County Stream Inventory Mapping. Coyote Creek Riparian Station, Alviso, California.
- EPA. 1995. Method 1669: Sampling ambient water for trace metals at EPA water quality criteria levels. EPA 821-R-95-034, United States Environmental Protection Agency, Washington, DC.
- Flegal, A.R., and V. J. Stukas. 1987. Accuracy and precision of lead isotopic composition measurements in sea water. *Marine Chemistry* 22:163-177.
- Flosi, G. and F.L. Reynolds, 1998. California Salmonid Stream Habitat Restoration Manual, third Edition. California Department of Fish and Game, Sacramento, California.
- Furst, M.T., J.F. Wright, P.D. Armitage, and D. Moss. 1981. An appraisal of pond-net samples for biological monitoring of lotic macro-invertebrates. *Water Research* 15:679-689.
- Harrelson, C.C., C.L. Rawlins, and J.P. Potyondy. 1994. Stream channel reference sites: an illustrated guide to field technique. General Technical Report RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61 pp.
- Li, S.K., W.C. Fields, Jr., and D.B. Parkinson. 1994. Rainbow Trout Habitat Monitoring in Last Chance Creek in 1993, and Comparison with 1991 and 1992 Results. Report for the Plumas National Forest, United States Forest Service.
- Lisle, T. , and S. Hilton. 1991. Fine sediment in pools: An index of how sediment is affecting a stream channel. *FHR Currents* 6:1-7.
- Rosgen, D.L. 1994. A classification of natural rivers. *Catena* 22:169-199.
- SFEI. 1997. 1996 Annual Report: San Francisco Estuary Regional Monitoring Program for Trace Substances. San Francisco Estuary Institute, Richmond, CA.
- Ward, J.R. and Harr, C.A. 1990. Methods for collection and processing of surface-water and bed-material samples for physical and chemical analyses, (USGS, Reston, VA, United States), OF 90-0140, 71 pp.
- Wolman, M.G. 1954. A method of sampling coarse river-bed material. *Transactions of the American Geophysical Union* 35(6):951-956.

Appendix A: Preliminary Information on Additional Projects

Preliminary Information on Additional Projects

Project Name	Lead Agency	Contact	Description	Study Water-shed(s)	Time	Data Description
Mapping geomorphic condition of San Francisquito Creek Watershed	SJSU	Caroline Frey	Mapping geomorphic condition of creeks including bank erosion, sediment deposits, and quantitative classification	San Francisquito	99-00	
Monitoring Steelhead Management	GGNRA	Darren Fong	Measure treatment sites to assess management actions and track control sites for natural variation and as gauge of recovery at treatment sites	San Francisquito		Photo plots, Plan-view maps, Channel profiles and x-sections, Temperature, Substrate quality, Bankfull width and depth, Entrenchment, Streambank undercut width and length, Bank angle/height/condition, Bank erosion, Instream cover, Vegetation overstory/und
Historical Fisheries Studies for the Santa Clara Basin	SCVWD	Jae Abel	FAHCE effort to document historical fisheries data through literature review and compilation.	Basin-wide	Draft completed 12/99 and in review	literature review
Impacts of mercury on riparian systems	USFWS	Jim Haas	Detecting and analyzing impacts of mercury on riparian system for Guadalupe Watershed.	Guadalupe	Fall 1995 – 1999	Sampling for sediment (analytical), macroinvertebrates (Rapid Bioassessment), Fish (IBI), Fish tissue (mercury), bird eggs (mercury).
SCVWD Wetland Vegetation Regrowth Study	SCVWD	Gale Rankin	To study the regrowth of wetland vegetation in flood control channels after sediment removal projects.		July 1998 – March 2001	
Santa Clara Weed Management Area	Santa Clara County	Greg Van Wassenhove	Facilitate cooperation among land managers and owners for integrated weed management in Santa Clara County.	Basin-wide	1999 – in progress	
South San Francisco Bay Mitten Crab Monitoring	UC Berkeley	Debbie Rudnick	Lab has been monitoring invasive mitten crab populations since 1996 in the South Bay estuary and tributaries.	Basin-wide	1996 – ongoing	
Santa Clara County Parks Stream and Lake Stewardship Program	SC County Parks	Don Rocha	Establish a volunteer program to train residents to assist in protection and enhancement of streams and lakes in County Parks	Basin-wide	1999 – in progress	Hydrology, vegetation, soil erosion and sedimentation, wildlife and water characteristics, and macroinvertebrates.