

## Attachment 4-4

**Table 4-1. FY 03-04 SCVURPPP monitoring plan for Santa Clara Basin Watersheds<sup>1</sup>.**

Watershed Area	Data Type <sup>2</sup>	Quarter in FY 03-04				Rationale	Lead Agency
		1st	2nd	3rd	4th		
Adobe Creek	<b>Chemical</b>						
	Contaminants-Water <sup>3</sup>	S (2)		S (2)	S (2)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Conduct screening level monitoring of receiving waters for suite of pesticides (organophosphates) for three seasonal time periods at two sites.</li> <li>Future: Conduct monitoring of contaminants in water, synoptically with toxicity testing and physical and biological parameters, to determine status and trends. Monitoring pollutants of concern will be coordinated with the CEP.</li> </ul>	SCVURPPP
	Contaminants-Sediment <sup>4</sup>	S (1)				<ul style="list-style-type: none"> <li>Baseline: SCVURPPP conducted screening level monitoring of PCB, mercury and chlorinated pesticides at two locations in FY 01-02: just upstream Highway 101 and in headwaters at the confluence of the West Fork. SCVWD conducted bedded sediment chemistry sampling (total and dissolved metals, pesticides) in FY 01-02 at Highway 101 as part of sediment removal project.</li> <li>FY 03-04: Conduct screening level monitoring of metals (total and dissolved), PCBs, mercury, PAHs and chlorinated pesticides in sediment at lower end of watershed.</li> <li>Future: Conduct monitoring of contaminants in sediments to determine status and trends. Monitoring pollutants of concern will be coordinated with the CEP.</li> </ul>	SCVURPPP
	General Water Quality <sup>5</sup>	S (3)		S (3)	S (3)	<ul style="list-style-type: none"> <li>Baseline: SCVWD conducted general water quality sampling (turbidity, DO and pH) in October 2001 at Highway 101 as part of sediment removal project</li> <li>FY 03-04: Collect general water quality parameters during each sampling event at three sites.</li> <li>Future: Conduct general water quality monitoring synoptic with chemical, physical and biological parameters to determine status and trends.</li> </ul>	SCVURPPP
	<b>Biological</b>						
	Toxicity-Water Quality <sup>6</sup>	S (2)		S (2)		<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Water toxicity testing will be conducted at two sites for wet and dry season, synoptically with water chemistry samples.</li> <li>Future: Water toxicity will be conducted synoptically with water chemistry for three species during wet and dry seasons to determine status and trends.</li> </ul>	SCVURPPP
	Conventional Water Chemistry <sup>7</sup>	S (3)		S (3)	S (3)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Conduct monitoring of conventional water quality parameters during three seasons at three locations to investigate potential sources of nutrients.</li> <li>Future: Conduct monitoring of conventional water chemistry synoptically with other chemical, biological and physical parameters to determine status and trends.</li> </ul>	SCVURPPP

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Watershed Area	Data Type <sup>2</sup>	Quarter in FY 03-04				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Pathogens (Indicator Organisms) <sup>8</sup>	S (3)		S (3)	S (3)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Conduct monitoring of bacterial indicators for 3 seasonal time periods.</li> <li>Future: Conduct monitoring of bacterial indicator organisms synoptically with other chemical, biological and physical parameters to determine status and trends.</li> </ul>	SCVURPPP
	Bioassessment – Macroinvertebrates <sup>9</sup>				S (4)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Conduct benthic macroinvertebrate bioassessment at four sites.</li> <li>Future: Conduct benthic macroinvertebrate bioassessment synoptically with chemical and physical data to determine status and trends.</li> </ul>	SCVURPPP
	Bioassessment – Fish <sup>10</sup>				S (3)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Conduct fish bioassessment at three sites. Coordinate with SCVWD.</li> <li>Future: Conduct fish bioassessment synoptically with chemical and physical data to determine status and trends.</li> </ul>	SCVURPPP/ SCVWD
	<b>Physical</b>						
	Physical Habitat <sup>11</sup>				S (4)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Conduct visual habitat assessment, concurrent with macroinvertebrate sampling, at four sites</li> <li>Future: Conduct visual habitat assessment to determine status and trends.</li> </ul>	SCVURPPP
	Sediment Characterization <sup>12</sup>				S (4)	<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Sample sediment composition and embeddedness, concurrent with visual habitat assessment, at four sites.</li> <li>Future: Conduct sediment sampling to determine status and trends.</li> </ul>	SCVURPPP
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> <li>Baseline: Baseline information describing geomorphic and hydrologic characteristics of stream channels in the Santa Clara Basin will be compiled to assist in the development of the Hydrogeomorphic Management Plan, as required in the C.3 Provision.</li> <li>FY 03-04: Specific monitoring objectives have not been identified at this time.</li> <li>Future: Conduct monitoring to evaluate BMP effectiveness and status and trends.</li> </ul>	SCVURPPP/ SCVWD
	Riparian Vegetation					<ul style="list-style-type: none"> <li>Baseline: No existing data sources identified.</li> <li>FY 03-04: Specific monitoring objectives have not been identified at this time.</li> <li>Future: Future monitoring objectives have not been identified at this time.</li> </ul>	SCVURPPP

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Watershed Area	Data Type <sup>2</sup>	Quarter in FY 03-04				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Trash <sup>13</sup>					<ul style="list-style-type: none"> <li>Baseline: SCVURPPP compiled and mapped trash removal locations as a first step to identify trash problem areas.</li> <li>FY 03-04: Trash assessments will be conducted by Co-permittee agencies using strategy identified in Trash Work Plan (i.e., identify problem areas and potential sources and evaluate effectiveness of trash control measures).</li> <li>Future: Conduct trash surveys in future to continue identifying problem areas, evaluate effectiveness of trash control measures and identify status and trends.</li> </ul>	SCVURPPP
<b>San Thomas Aquino</b>	<b>Chemical</b>						
	Contaminants – Water Quality	S (3)		S (3)	S (3)	<ul style="list-style-type: none"> <li>Baseline: No baseline data sources identified.</li> <li>FY 03-04: Conduct screening level monitoring of receiving waters for suite of pesticides (organophosphates) at three seasonal time periods at two sites on Saratoga Creek and one site on San Thomas Creek.</li> <li>Future: Conduct monitoring of contaminants in water, synoptically with toxicity testing and physical and biological parameters, to determine status and trends. Monitoring pollutants of concern will be coordinated with the CEP.</li> </ul>	SCVURPPP
	Contaminants - Sediment	S (1)				<ul style="list-style-type: none"> <li>Baseline: SCVWD conducted sediment chemistry sampling (total and dissolved metals, pesticides) in FY 02-03 below Highway 101 as part of sediment removal project.</li> <li>FY 03-04: Conduct screening level monitoring of metals (total and dissolved), PCBs, mercury, PAHs and chlorinated pesticides in lower San Thomas.</li> <li>Future: Conduct monitoring of contaminants in water, synoptically with toxicity testing and physical and biological parameters, to determine status and trends. Monitoring pollutants of concern will be coordinated with the CEP.</li> </ul>	SCVURPPP
	General Water Quality	S (7)		S (7)	S (7)	<ul style="list-style-type: none"> <li>Baseline: SCVWD conducted general water quality sampling (turbidity, DO and pH) in FY 02-03 below Highway 101 as part of sediment removal project.</li> <li>FY 03-04: Collect general water quality parameters during each sampling event at all sites in Saratoga and San Thomas Creeks.</li> <li>Future: Conduct general water quality monitoring synoptic with chemical, physical and biological parameters to determine status and trends.</li> </ul>	SCVURPPP
	<b>Biological</b>						
	Toxicity - Water Quality	S (2)		S (2)		<ul style="list-style-type: none"> <li>Baseline: No baseline data sources identified.</li> <li>FY 03-04: Toxicity of water will be conducted at mouth of San Thomas Creek and lower Saratoga Creek for wet and dry season, synoptically with water chemistry samples.</li> <li>Future: Water toxicity will be conducted synoptically with water chemistry for three species during wet and dry seasons to determine status and trends.</li> </ul>	SCVURPPP

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Watershed Area	Data Type <sup>2</sup>	Quarter in FY 03-04				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Conventional Water Chemistry	S (7)		S (7)	S (7)	<ul style="list-style-type: none"> <li>• Baseline: No baseline data sources identified.</li> <li>• FY 03-04: Conduct monitoring of conventional water quality parameters for three seasons at all sites to investigate potential sources of nutrients.</li> <li>• Future: Conduct monitoring of conventional water chemistry synoptically with other chemical, biological and physical parameters to determine status and trends.</li> </ul>	SCVURPPP
	Pathogens (Indicator Organisms)	S (7)		S (7)	S (7)	<ul style="list-style-type: none"> <li>• Baseline: No baseline data sources identified.</li> <li>• FY 03-04: Conduct monitoring of bacterial indicators for 3 seasonal time periods at all sites.</li> <li>• Future: Conduct monitoring of bacterial indicator organisms synoptically with other chemical, biological and physical parameters to determine status and trends.</li> </ul>	SCVURPPP
	Bioassessment - Macroinvertebrates				S (7)	<ul style="list-style-type: none"> <li>• Baseline: Benthic macroinvertebrate data collected at 6 sites on Saratoga Creel in 1997 by USGS.</li> <li>• FY 03-04: Conduct benthic macroinvertebrate bioassessment at six sites in Saratoga and one site in San Thomas Creeks.</li> <li>• Future: Conduct benthic macroinvertebrate bioassessment synoptically with chemical and physical data to determine status and trends.</li> </ul>	SCVURPPP
	Bioassessment - Fish				S (4)	<ul style="list-style-type: none"> <li>• Baseline: No baseline data sources identified. Saratoga Creek contains resident rainbow trout population</li> <li>• FY 03-04: Conduct fish bioassessment at four sites. Coordinate with SCVWD.</li> <li>• Future: Conduct fish bioassessment synoptically with chemical and physical data to determine status and trends.</li> </ul>	SCVURPPP
	<b><i>Physical</i></b>						
	Physical Habitat				S (7)	<ul style="list-style-type: none"> <li>• Baseline: No baseline data sources identified.</li> <li>• FY 03-04: Conduct visual habitat assessment synoptically with macroinvertebrate bioassessment.</li> <li>• Future: Visual habitat assessment will be conducted in the future, concurrent with macroinvertebrate sampling, to determine status and trends</li> </ul>	SCVURPPP

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Watershed Area	Data Type <sup>2</sup>	Quarter in FY 03-04				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Sediment Characterization				S (7)	<ul style="list-style-type: none"> <li>• Baseline: No baseline data sources identified.</li> <li>• FY 03-04: Sample sediment composition and embeddedness, concurrent with visual habitat assessment, at four sites.</li> <li>• Future: Monitoring design to test hypotheses of sediment impacts to salmonid fish habitat will be implemented in conjunction with work identified in watershed assessment and sediment management practices workplan. Investigative monitoring in the future may include measuring concentrations of fine sediment during and following storm events and measuring spawning gravel permeability to determine potential impacts to salmonid fish populations.</li> </ul>	SCVURPPP
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> <li>• Baseline: Baseline information describing geomorphic and hydrologic characteristics of stream channels in the Santa Clara Basin will be compiled to assist in the development of the Hydrogeomorphic Management Plan, as required in the C.3 Provision. The specific creeks in which to compile baseline data have not been selected at this time.</li> <li>• FY 03-04: Specific monitoring objectives have not been identified at this time.</li> <li>• Future: Conduct monitoring to evaluate BMP effectiveness and status and trends.</li> </ul>	SCVURPPP/ SCVWD
	Riparian Vegetation					<ul style="list-style-type: none"> <li>• Baseline: No baseline data sources identified.</li> <li>• FY 03-04: Specific monitoring objectives have not been identified at this time.</li> <li>• Future: Future monitoring objectives have not been identified at this time.</li> </ul>	SCVURPPP
	Trash					<ul style="list-style-type: none"> <li>• Baseline: SCVURPPP compiled and mapped trash removal locations as a first step to identify trash problem areas.</li> <li>• FY 03-04: Trash assessments will be conducted by Co-permittee agencies using strategy identified in Trash Work Plan (i.e., identify problem areas and potential sources and evaluate effectiveness of trash control measures).</li> <li>• Future: Conduct trash surveys in future to continue identifying problem areas, evaluate effectiveness of trash control measures and identify status and trends.</li> </ul>	SCVURPPP

1 Parameter types are listed with category of monitoring design, which include: (S) screening level, (I) detailed investigation, and (T) status and trends. The number in parentheses represents the number of sampling locations for that sampling period. Sampling locations are described in separate table and figure attached to Plan.

2 Description of analyses conducted for each data type is described in the footnotes below. In some cases, partial analyses may be implemented for data types when existing data satisfies screening level target. Standard analytical methods are indicated in separate table attached to Plan; methods are intended to be congruent with SWAMP/RMAS methodology. Adjustments will be made, if necessary, when SWAMP QAPP becomes available in September 2002.

3 Water Chemistry: Total and dissolved metals (Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se) and organophosphate pesticides; sampling conducted for three seasonal time periods.

4 Sediment chemistry: Metals (Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As), PCB, mercury, PAHs and organochlorine pesticides; bedded sediment sampling conducted in the dry season only. Sediment samples taken only at integrator sites. Sediment characterization includes collecting sediment grain size (full analysis)

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- 5 General water quality: Temperature, dissolved oxygen, pH and specific conductance (multiparameter probe readings and/or continuous measurements); sampling conducted for three seasonal time periods.
- 6 Toxicity testing of water on three species: (1) Ceriodaphnia: 7 day survival and reproduction; (2) pimephales 7-day; and (3) selenastrum test; toxicity conducted at wet and dry season. Frequency of toxicity was reduced (RMAS/SWAMP conducts 3 samples/year at each site) to cut costs and to increase the number of sites.
- 7 Conventional water chemistry: Major anions: ortho-phosphate, nitrate, nitrite, chloride, sulfate; total phosphate, boron, TKN, TDS, SSC, ammonia, chlorophyll-a, alkalinity, hardness, TOC and DOC; sampling conducted for three seasonal time periods.
- 8 Indicator organisms: total and fecal coliform and *enterococcus*; sampling conducted for three seasonal time periods.
- 9 Bioassessment: following CSBP methodology and conducted in the spring season.
- 10 Rapid bioassessment of fish communities will be done using methods established in the SEIDP or by other standardized methods utilized by the SCVWD or other Co-permittee agencies.
- 11 Habitat survey physical habitat assessment using CSBP methodology.
- 12 Bedload sediment composition and embeddedness is estimated using pebble counts during bioassessment and habitat survey.
- 13 Trash assessment methodology will include implementing modified RWQCB rapid trash assessment protocols for wadeable streams. SCVURPPP will consider using the Keep America Beautiful (KAB) litter index.

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**Table 4-2. Sampling locations and data types for SCVURPPP's FY 03-04 Monitoring Plan.**

Stat Id	Station Name	Potential Impacts/ pollutant sources	Water Chem	Sed Chem	Gen Water Qual	Water Tox (3spp.)	Conven chem	Bact Indicat	Bioass Fish	Bioass Macro- Invert	Habitat/ Sed
<b>Adobe Creek</b>											
A-1	Adobe Creek at Middlefield Road	Integrator site above tidal zone	3	1	3	2	3	3			
A-2	Adobe Creek at Terman Park	Residential land use; cemetery, park			3		3	3		1	1
A-3	Adobe Creek at Edith Ave	Residential land use; downstream bank erosion	3		3	2	3	3	1	1	1
A-4	Adobe Creek at Foothill College	New development; college campus							1	1	1
A-5	Adobe Creek at Moody Road, near Youth Hostel	Undeveloped open space							1	1	1
<b>San Thomas Aquino</b>											
STA-1	San Thomas at Scott Blvd	Integrator site above tidal zone	3	1	3	2	3	3			
STA-2	San Thomas at Saratoga Ave	Residential and commercial land uses			3		3	3			
STA-3	San Thomas at Westmont High School	Residential land use; high school			3		3	3		1	1
S-1	Saratoga Creek at Cabrillo	Residential and commercial land uses;	3		3	2	3	3			
S-2	Saratoga Creek at Bollinger Rd	Residential land use			3		3	3		1	1
S-3	Saratoga Creek at Prospect Ave	Residential and commercial land uses;							1	1	1
S-4	Saratoga Creek at Via Monte Ave	Residential land use	3		3		3	3	1	1	1
S-5	Saratoga Creek at Alta Vista Ave	Residential and commercial land uses;								1	1
S-6	Saratoga Creek at Congress Springs and Gate Road	Undeveloped open space			3		3	3	1	1	1
S-7	Saratoga Creek at Congress Springs and Pierce Road	Open Space							1	1	1
<b>Total Number of Sampling Events</b>			15	2	30	8	30	30	7	11	11

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**Table 4-3. Analytical methods used in SCVURPPP FY 02-03 and Multiyear Monitoring Plan.**

Description of data parameters	Analytical Methods
Pesticides (water) - Organophosphate suite	EPA 8141A
Pesticides (sediment) - Organochlorine suite	EPA 8081A
PCB congeners	EPA 8082
PAH congeners	EPA 8270
ICPMS metals suite (sediment) (Includes Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As--all costs)	EPA 6020
ICPMS metals suite (water)--unfiltered "total" (Includes Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se--all costs)	EPA 200.8
ICPMS metals suite (water)--filtered "dissolved" (Includes Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se--al costs)	EPA 200.8
Total mercury (sediment)	EPA 245.7/1631M
Major anions nutrient scan: ortho-phosphate, nitrate, nitrite, chloride, sulfate	EPA 365.2, EPA 300
Total Phosphate	EPA 365.2
Boron	EPA 200.8
TKN	EPA 351.3
TDS	EPA 160.1
Suspended Sediment Concentration (SSC)	ASTM D3977-97
Ammonia	EPA 350.3
Chlorophyll-a	SM 10200H/EPA 445.0
Alkalinity	EPA 310.1
Hardness	EPA 130.2
TOC	EPA 415.1
DOC	EPA 415.1
Sediment grain size - full analysis (phi scale)	Plumb/PSEP
Total coliform	SM 9221B
Fecal coliform	SM 9221B
enterococcus	SM 9230B
<i>Ceriodaphnia</i> 7-day Survival & Reproduction	EPA 1002.0 (WET)
<i>Pimephales</i> (fathead minnow) 7 - day	EPA 1000.0 (WET)
<i>Selenastrum</i> (algae) test	EPA 1003.0 (WET)

(WET) Whole Effluent Toxicity: Guidelines Establishing Test Procedures for the Analysis of Pollutants (October 16, 1995)

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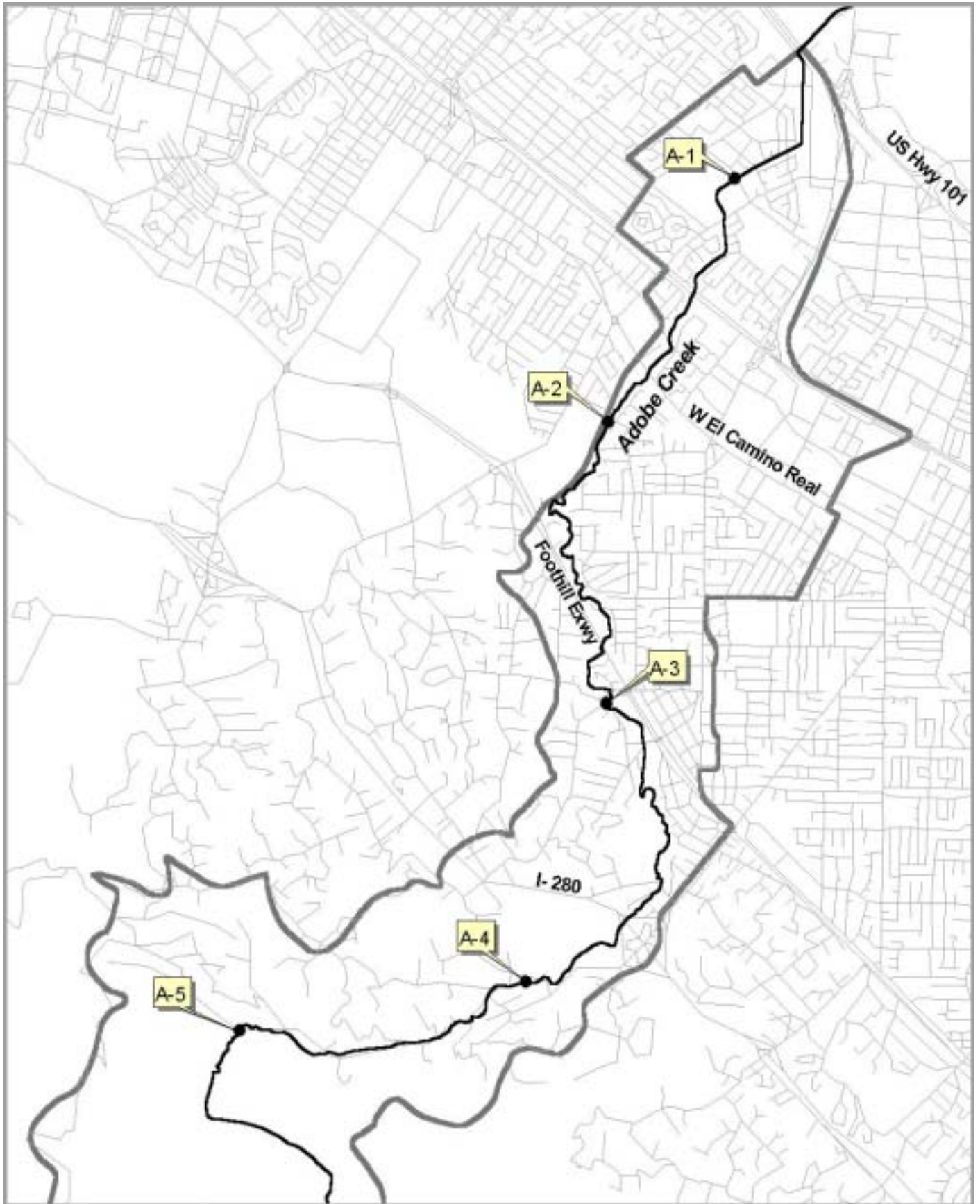


Figure 4-1. SCVURPPP FY 03-04 Monitoring Locations in Adobe Creek Watershed.

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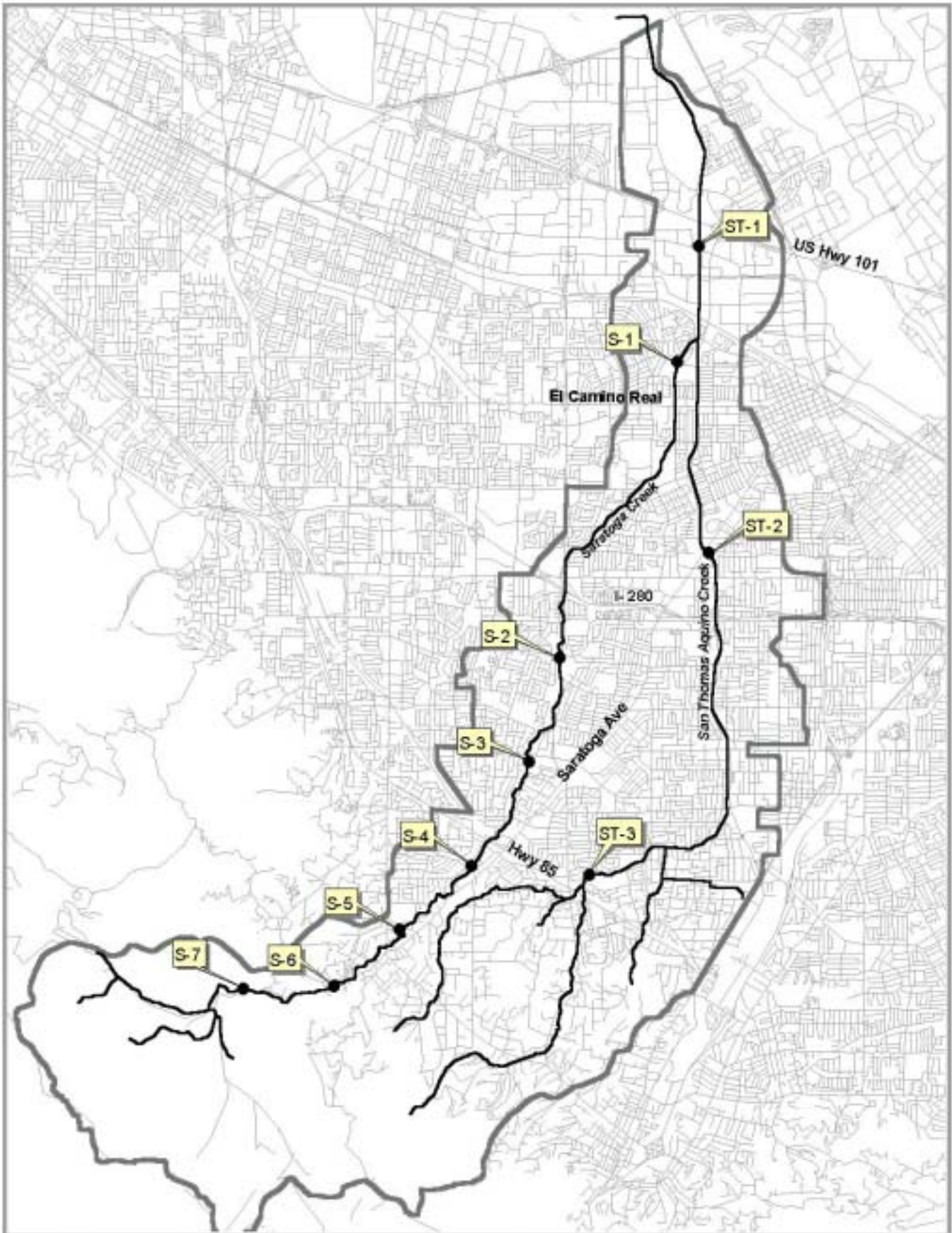


Figure 4-2 SCVURPPP FY 03-04 Monitoring Locations in San Thomas Aquino Watershed.