

APPENDIX A

Sampling Sites, Constituents, PQLs and Standards/Criteria, Basin Plan Objectives

Table A-1a. Major Watersheds and Associated Tributaries Sampled During Storm Events.
Corresponding Site Map: Figure A-2a. Goleta

Site #	Watershed	Creek Name	Station Number	Thomas Guide page & grid #	Location	# of times sampled during rain season 1999/2000		
						Pre-season low flow	Full Suite	Bacteria Only
57	Eagle Canyon	Eagle Canyon	Eagle 1	993 B2	S of 101, just above the lagoon		1	
1	Tecolote Canyon	Tecolote Canyon	TE 010+00	993 D2	The new access road to the Baccara Resort	1	4	1
2	Bell Canyon	Bell Canyon	BE 010+00	993 D2	The new access road to the Baccara Resort	1	4	1
3	Devereaux	Devereaux West Branch	DEW1 057+00	993 G3	The end of Coronado Dr., just upstream from the DEW2 confluence			4
4		Devereaux West Branch	DEW2 000+00	993 G3	The end of Coronado Dr., just upstream from the DEW1 confluence			4
5		Devereaux North Branch	DEN 017+00	993 H3	Phelps Rd.	1		5
6		Devereaux	DE 000+00	993 H4	The upstream end of the culvert underneath golf course service road between the Ocean Meadows Golf Course and the Devereaux Slough		4	1
7	Tecolotito	Glen Annie	GLA 120+00	994 A2	Hollister Rd.		1	4
8		Carneros	CC 028+00	994 B2	Hollister Rd.		1	4
9		Tecolotito	TT 012+00	994 D4	Rt. 217		1	
10		Tecolotito	TT 085+00	994 B3	End of dirt service road passing the Goleta Sanitary District office		1	1
11	San Pedro	San Pedro	SPW 062+00	994 D2	Twin Lakes Golf Course, just upstream of LVEG confluence			5
12		Las Vegas	LVEG 000+00	994 D2	Twin Lakes Golf Course, just upstream of SPW confluence			5
13		San Pedro	SP 024+00	994 D3	Fowler Rd.		4	1
14	San Jose	San Jose West Branch	SJW 006+00	994 E3	End of Placencia St.			
15		San Jose	SJ 024+00	994 E3	End of Kellogg Blvd.	1	3	1
16		San Jose	SJ 062+00	994 F2	Just downstream from Hollister Rd.		1	
17	Atascadero	Atascadero	AT 030+00	994 E3	End of Ward Dr.	1	4	1
18		Maria Ygnacio	MY 000+00	994 G3	Patterson Av.			5
19		Maria Ygnacio	MYW 074+00	994 G1	End of Natorral Way			5
20		San Antonio	SA 002+00	994 G1	End of Natorral Way			5
21		Hospital	HO 000+00	994 J2	100 yards west of Puente Dr., just upstream of AT confluence			5
22		Atascadero	ATW 190+00	995 B2	Nueces Dr.			5
23		Cieneguitas	CI 005+00	995 B2	Arboleda Dr.			5
24	Las Palmas	Las Palmas	LP 000+00	995 A5	End of culvert at beach, end of Las Olas Dr.			5

Table A-1a. Continued

Site #	Watershed	Creek Name	Station Number	Thomas Guide page & grid #	Location	# of times sampled during rain season 1999/2000		
						Pre-season low flow	Full Suite	Bacteria Only
25	Arroyo Burro	Arroyo Burro	AB 020+00	995 F6	Cliff Dr.	1	4	1

Table A-1b. Major Watersheds and Associated Tributaries Sampled During Storm Events.
Corresponding Site Map: Figure A-2b. Montecito to Carpinteria

Site #	Watershed	Creek Name	Station Number	Thomas Guide page & grid #	Location	# of times sampled during rain season 1999/2000		
						Pre-season low flow	Full Suite	Bacteria Only
26	Montecito	Cold Springs	CS 133+00	986 G7	Ashley Dr.			5
27		Hot Springs	HS 020+00	986 G7	E. Mountain Dr.			3
28		La Vereda	LV 005+00	996 J3	La Vereda Rd			4
29		Montecito	MO 000+00	996 J4	Bonnymeade Gate Dr.		3	
30	Oak	Oak	OAK 003+00	997 A4	S. Jameson Ln.		3	
31	San Ysidro	San Ysidro	SY 007+00	997 A4	Fernald Point Ln.		3	
32	Romero	Romero	RO 012+00	997 A4	Fernald Point Ln.	1	3	1
33		Buena Vista	BV 003+00	997 C3	Sheffield Dr.			5
34		Romero	ROW 107+00	997 D1	E. Valley Dr.			3
35		Picay	PI 017+00	997 E1	E. Valley Dr.			4
36	Toro Canyon	Toro Canyon Main West Branch	TOMW 016+00	997 F3	Lambert Rd			5
37		Toro Canyon	TO 009+00	997 F4	Padaro Ln.		3	1
38		Toro Canyon West Branch	TOW 064+00	997 G2	El Torito Rd.			3
39		Toro Canyon East Branch	TOE 008+00	997 G2	El Torito Rd.			2
40	Garrapata	Garrapato	GAR 004+00	997 H4	Padaro Ln.		3	1
41	Arroyo Paredon	Arroyo Paradon	AP 006+00	997 J5	Via Real	1	4	1
42	Santa Monica	Santa Monica	SM 061+00	998 C6	Via Real	1	4	1
43	Franklin	Franklin	FR 001+00	998 C7	Sandyland Cove Rd.		1	
44		Franklin	FR 029+00	998 C6	7 th St.		3	1
45		Franklin	FR 066+00	998 D5	Meadow View Ln.			5
46		Franklin West Branch	FRW 000+00	998 D5	Foothill Rd.	1		5
47		Franklin East Branch	FRE 010+00	998 E5	Foothill Rd.	1		5
48	Carpinteria	Carpinteria	CA 013+00	998 E7	Concha Loma Dr.	1	4	1
49	Rincon	Rincon	RC 010+00	1018 J3	Bates Rd.		4	1

Table A-1c. Major Watersheds and Associated Tributaries Sampled During Storm Events.

Corresponding Site Map: Figure A-2c. Orcutt

Site #	Watershed	Creek Name	Station Number	Thomas Guide page & grid #	Location	# of times sampled during rain season 1999/2000		
						Pre-season low flow	Full Suite	Bacteria Only
50	Orcutt	Orcutt	OR1	816 A3	Black Rd.		2	
51		Orcutt	OR2	816 A3	0.3 miles southeast of Black Rd. on Rt. 1			2
52		Orcutt	OR3	816 B4	Rancho Maria Golf Club			2
53		Orcutt	OR4	816 D5	Solomon Rd.			2
54		Orcutt	OR5	817 A6	Bradley Rd			2

Table A-1d. Major Watersheds and Associated Tributaries Sampled During Storm Events.

Corresponding Site Map: Figure A-2d. Vandenberg Village

Site #	Watershed	Creek Name	Station Number	Thomas Guide page & grid #	Location	# of times sampled during rain season 1999/2000		
						Pre-season low flow	Full Suite	Bacteria Only
55	Davis	Davis	VV1	876 D7	Just west of Club House Rd. on Burton Mesa Blvd.	1		1
56		Davis	VV2	879 D7	Just east of Club House Rd. on Burton Mesa Blvd.	1		1

Figure A-1. Santa Barbara County, Location of Figures A-2a, A-2b, A-2c and A-2d

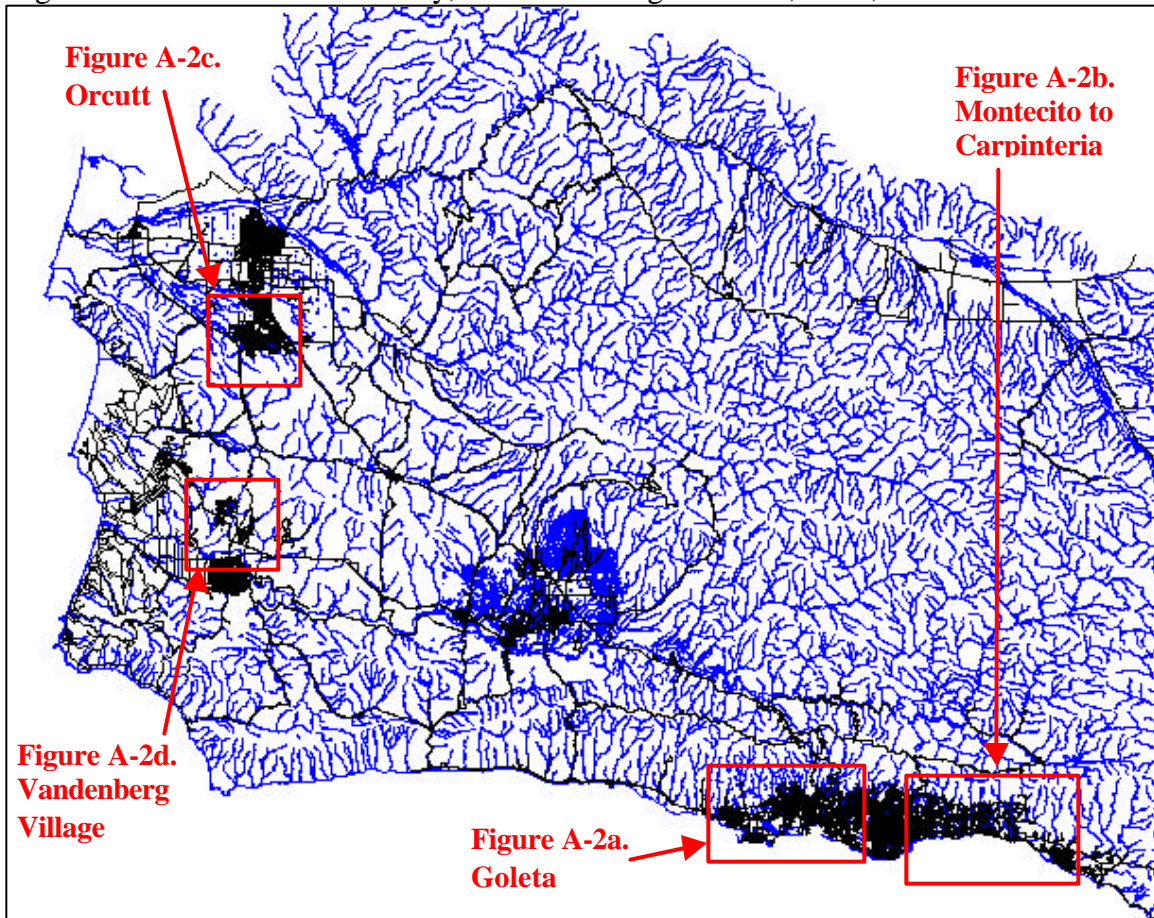


Figure A-2a. Goleta Sample Locations

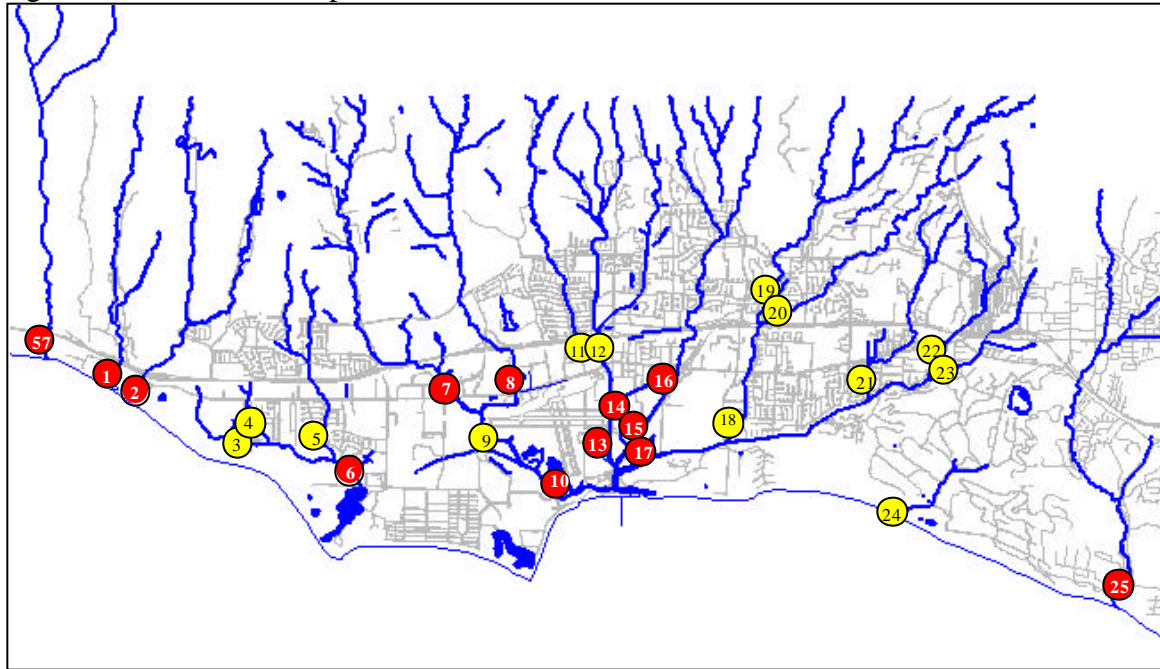


Figure A-2b. Montecito to Carpinteria Sample Locations

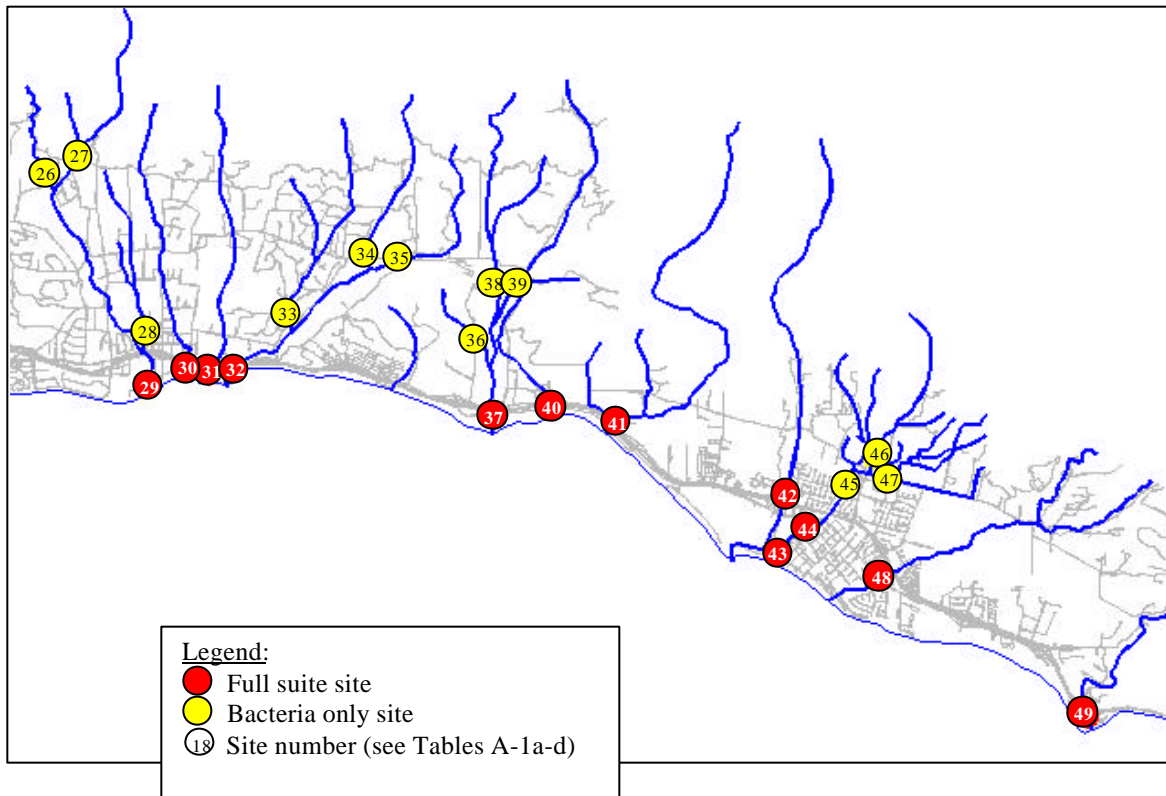


Figure A-2c. Orcutt Sample Locations

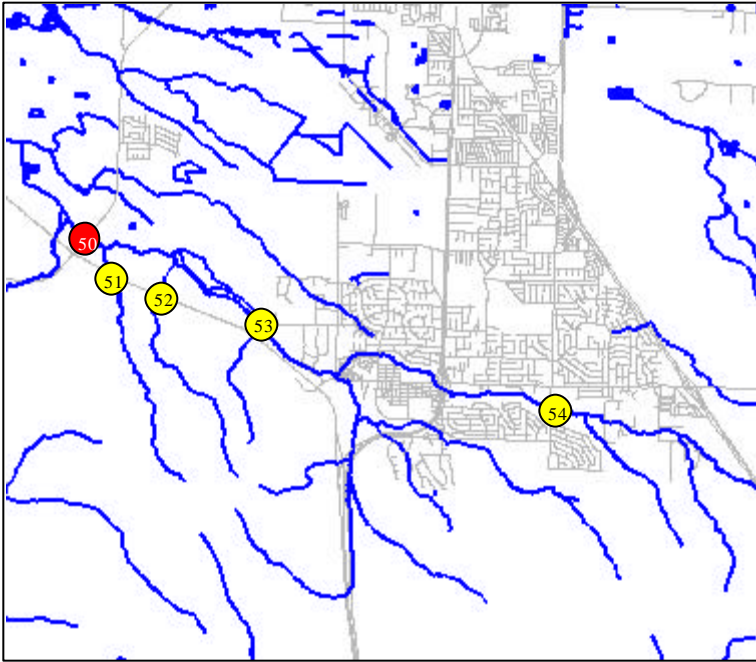
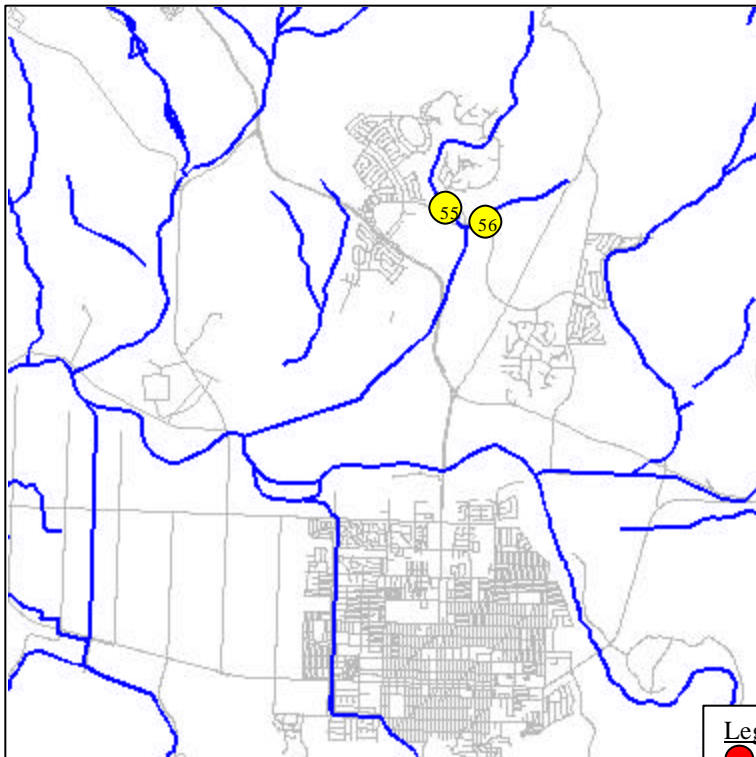


Figure A-2d. Vandenberg Village Sample Locations



Legend:
● Full suite site
● Bacteria only site
Ⓢ Site number (see Tables A-1a-d)

Table A-2. Percent of Land Use by Watershed in the South Coast
Note: Land use data obtained from County Assessor's Parcel database

	Agricultural	Commercial	Single Family	Multiple Residence	Rancho Estates	Institutional	Industrial	Recreational	Vacant	Other	Beaches, Sand Dunes ¹	Total Area (10 ⁶ ac)
Tecolote	30.69	0.04	4.73	0.13	54.66	0.00	0.00	0.57	2.47	0.11	7.07	155.5283
Bell	66.55	0.00	0.83	0.00	24.04	0.00	0.00	0.56	1.31	0.26	6.89	168.0442
Devereaux	11.19	6.88	20.95	7.02	0.08	12.89	3.25	14.62	16.20	6.88	0.03	89.75351
Tecolotito	52.19	2.02	0.88	0.57	4.86	16.13	4.86	1.82	0.64	4.51	13.02	321.3049
San Pedro	56.60	1.88	15.86	1.69	8.51	2.89	1.15	1.18	3.73	1.92	4.81	184.9804
San Jose	43.08	0.97	10.29	2.41	25.92	0.60	1.45	8.81	2.92	2.00	1.57	225.3475
Atascadero	11.20	2.52	19.96	3.58	30.51	4.74	0.81	12.10	10.02	3.84	0.72	515.5078
Las Palmas	0.00	0.00	83.26	0.41	0.00	4.12	0.00	1.54	9.19	1.41	0.07	26.99435
Arroyo Burro	2.10	3.14	28.73	2.25	33.92	3.00	0.07	8.35	9.92	1.68	7.36	256.2652
Montecito	0.67	0.05	27.24	0.70	10.57	1.62	0.00	49.87	8.10	0.93	0.23	186.4506
Oak	9.16	1.20	62.22	4.64	0.87	2.53	0.00	0.32	17.70	1.16	0.19	39.61791
San Ysidro	0.34	0.00	15.64	0.38	0.00	0.74	0.00	45.44	18.70	0.17	22.83	112.4276
Romero	16.52	0.04	29.02	0.57	3.44	0.83	0.25	25.64	19.23	0.52	4.09	160.6059
Toro Canyon	35.41	0.23	25.59	0.16	15.72	0.57	0.00	3.22	14.66	2.96	1.50	99.73906
Garrapata	41.21	0.00	28.08	1.41	24.96	0.00	0.00	0.00	4.03	0.20	0.11	17.85416
Arroyo Paredon	73.84	2.53	3.88	0.17	5.68	0.00	0.00	8.26	4.14	0.27	1.23	129.8322
Santa Monica	89.27	1.26	0.62	0.31	0.00	0.01	0.05	2.47	0.08	1.34	4.82	105.8041
Franklin	74.76	6.72	9.04	2.33	0.46	3.38	0.32	0.37	1.04	1.56	0.01	117.4137
Carpinteria	81.63	0.98	1.73	0.38	1.27	1.42	0.02	11.17	1.05	0.24	0.11	420.1739
Total	38.93	1.71	14.27	1.53	15.55	3.60	0.88	11.29	6.48	1.94	3.98	3333.645

¹ This land use category is in need of verification, as is all parcel data obtained from the County Assessor's office.

Table A-3. Parameters and Constituents Measured in Sampling Program

General ¹	VOCs		Pesticides ²			Nutrients	Total metals
Biochemical Oxygen Demand*	Benzene	1,3-Dichloropropane	Glyphosate	Chlorinated Pesticides	2,4-D	Ammonical Nitrogen*	Arsenic
Total Recoverable Petroleum Hydrocarbons*	Bromobenzene	2,2-Dichloropropane	Aldrin		2,4-DB	Nitrate as Nitrogen (NO ₃ -N)*	Cadmium*
Total Organic Carbon*	Bromochloromethane	1,1-Dichloropropene	Alpha-BHC		Dalapon	Nitrite as Nitrogen (NO ₂ -N)*	Chromium* -mostly Cr3
Oil and Grease	Bromodichloromethane	cis-1,3-Dichloropropene	Beta-BHC		Dicamba	Total Kjeldahl Nitrogen*	Copper*
Hardness	Bromoform	trans-1,3-Dichloropropene	Delta-BHC		Dichloroprop	Phosphorus as Phosphate (PO ₄ -PO ₄)*	Lead*
Specific Conductance	Bromomethane	Dichlorotrifluoroethane	Gamma-BHC (Lindane)		Dinoseb	Phosphorus as Phosphorus (PO ₄ -P)*	Mercury*
Total Dissolved Solids	n-Butylbenzene	Ethylbenzene	Chlordane		MCPP	Total Phosphorus	Nickel*
Total Suspended Solids*	sec-Butylbenzene	Ethylene Dibromide (EDB)	4,4'-DDD		MCPA		Zinc*
Methylene Blue Activated Substances	tert-Butylbenzene	Hexachlorobutadene	4,4'-DDE		2,4,5-T		
Turbidity	Carbon Tetrachloride	Isopropylbenzene	4,4'-DDT		2,4,5-TP		
Flow	Chlorobenzene	4-Isopropyltoluene	Dieldrin	Organophosphorus Pesticides	Chlorpyrifos		
	Chloroethane	Methylene Chloride	Endosulfan I		Demeton		
	2-Chloroethylvinyl ether	Naphthalene	Endosulfan II		Diazinon		
	Chloroform	n-Propylbenzene	Endosulfan sulfate		Malathion		
	Chloromethane	Styrene	Endrin		Parathion		
	2-Chlorotoluene	1,1,1,2-Tetrachloroethane	Endrin aldehyde				
	4-Chlorotoluene	1,1,2,2-Tetrachloroethane	Endrin ketone				
	1,2-Dibromo-3-Chloropropane	Tetrachloroethene (PCE)	Heptachlor				
	Dibromochloromethane	Toluene	Heptachlor epoxide				
	Dibromomethane	1,2,3-Trichlorobenzene	Methoxychlor				
	1,2-Dichlorobenzene	1,2,4-Trichlorobenzene	Toxophene				
	1,3-Dichlorobenzene	1,1,1-Trichloroethane (TCA)	PCB 1016				
	1,4-Dichlorobenzene	1,1,2-Trichloroethane	PCB 1221				
	Dichlorodifluoromethane	Trichloroethene (TCE)	PCB 1232				
	1,1-Dichloroethane	Trichlorofluoromethane (Freon 11)	PCB 1242				
	1,2-Dichloroethane (EDC)	1,2,3-Trichloropropane	PCB 1248				
	1,1-Dichloroethene	1,2,4-Trimethylbenzene	PCB 1254				
	cis-1,2-Dichloroethene	1,3,5-Trimethylbenzene	PCB 1260				
	trans-1,2-Dichloroethene	Vinyl Chloride					
	1,2-Dichloropropane	Xylenes					

*also included in SCWCS (1999) wet weather analyses

¹ MBAS and Turbidity added after second storm² Organophosphorous Pesticides added after first storm

Table A-4. EPA Method and Cost for Constituents

	Analyte	EPA Method	Cost/Sample
Bacteria	Total Coliform/ <i>E. Coli</i>	Colilert	\$45 ¹
	Enterococcus	Enterolert	\$45 ¹
Pesticides	Glyphosate	547	\$125
	Chlorinated Pesticides	608	\$120
	Phenoxy Acid Herbicides	615	\$170
	Organophosphorus Pesticides	8141	\$180
VOCs	VOCs	8260	\$150
Metals	Metals	200.8/7000	\$100
Nutrients	TKN	351.2	\$55
	Total Phosphorus	365.2	\$35
	Ammonia-N	350.2	\$25
	PO4-P	300.0	\$25
	PO4-PO4	300.0	\$25
	Nitrate/Nitrite as N	300.0	\$40
Other Constituents	TOC	415.1	\$45
	BOD	405.1	\$40
	TDS	160.1	\$20
	TSS	160.2	\$20
	TRPH	418.1	\$40
	Hardness	130.2	\$20
	Conductivity	120.1	\$10
	FOG/Oil and Grease	413.2/418.1M	\$70
	MBAS	5540C	\$50
	Turbidity	180.1	\$25

¹For 1:10 and 1:100 dilution

Table A-5. Practical Quantitation Limits (PQL), objectives and standards for each constituent which was detected (mg/l)

Constituent		PQL Range or Value	EPA Aquatic Toxicity Standards				Regional Water Quality Control Board Basin Plan Objectives				
			EPA CCC	EPA CMC	EPA Goldbook Acute	EPA Goldbook Chronic	MUN	(COLD or WARM) SOFT	(COLD or WARM) HARD	GEN	AGR
VOCs	Napthalene	0.0005									
	Chloroform	0.0005			28.9	1.24					
	4-Isopropyltoluene	0.0005									
	Toluene	0.0005			17.4						
	1,2,4-Trimethylbenzene	0.0005									
	Xylenes	0.0005					1.75				
Physical Constituents	Total Dissolved Solids	5-20									
	Total Suspended Solids	5-50									
	Specific Conductance	1									
	Hardness	1									
	Total Organic Carbon	1									
	Biological Oxygen Demand	3									
	Total Recoverable Petroleum Hydrocarbons	1									
	Oil and Grease	1									
	Turbidity	2									
	MBAS	0.02									0.2
	Pesticides	4,4'-DDE	0.00003			1.05					
2,4-D		0.001- 0.002					0.1				
Endosulfan I		0.00003	0.000056	0.00022	0.00022	0.000056					
Endosulfan II		0.00003	0.000056	0.00022	0.00022	0.000056					
Endosulfan Sulfate		0.00003									
Glyphosate							0.7				
Diazinon		0.00003-0.00004		0.0000009							
Chlorpyrifos		0.00004	0.000041	0.000083							
Malathion		0.00004	0.0001			0.0001					

Table A-5. Continued

Constituent	PQL Range or Value	EPA Aquatic Toxicity Standards				Regional Water Quality Control Board Basin Plan Objectives				
		EPA CCC	EPA CMC	EPA Goldbook Acute	EPA Goldbook Chronic	MUN	(COLD or WARM) SOFT	(COLD or WARM) HARD	GEN	AGR
Nutrients	Ammonical Nitrogen	0.1								
	Nitrate (NO ₃ -N)	0.5 & 3				45				
	Nitrite (NO ₂ -N)	0.5 & 300								
	Phosphate (PO ₄ -PO ₄)	3 & 2000								
	Phosphorous (PO ₄ -P)	1 & 500								
	Total Phosphorus	0.02								
	Total Kjeldahl Nitrogen	0.5								
Metals	Arsenic	0.05	0.15	0.34	0.36	0.19	0.05			0.1
	Chromium	0.01-0.05	0.074	0.57	1.7	0.21	0.05	0.05	0.05	0.1
	Copper	0.01-0.05	0.009	0.013	0.018	0.12		0.01	0.03	0.2
	Lead	0.005	0.0025	0.065	0.0082	0.0032	0.05	0.03	0.03	5
	Mercury	0.0002	0.00077	0.0014	0.0024	0.000012	0.002	0.0002	0.0002	
	Nickel	0.01-0.05	0.052	0.47	1.8	0.096		0.1	0.4	0.2
	Zinc	0.01-0.05	0.12	0.12	0.32	0.047		0.004	0.2	2

The standards outlined are:

- EPA National Recommended Water Quality Criteria – Correction, 1999

For the EPA National Recommended Water Quality Criteria, the criteria are reported in CMC and CCC, which are the Criteria Maximum Concentration and the Criterion Continuous Concentration, respectively. These are “an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly (CMC) or indefinitely (CCC) without resulting in an unacceptable effect”.

- EPA ‘Gold Book’ (Quality Criteria for Water), 1986

The Gold Book standards are reported in terms of acute and chronic LOEL (Lowest Observed Effect Level) for fresh water.

- Regional Water Quality Control Board Basin Plan Objectives, 1994

¹The RWQCB has assigned a designated use for most of the creeks on the south coast. Table A-5 lists the creeks in which sampling is conducted and presents their ‘designated uses’, where MUN = Municipal and Domestic Supply, AGR = Agricultural Supply, COLD = Cold Fresh Water Habitat, WARM = SOFT = hardness < 100 mg/l CaCO₃, HARD = hardness > 100 mg/l CaCO₃, Warm Fresh Water Habitat, and SPWN = Spawning, Reproduction, and/or Early Development. Each designated use is assigned certain water quality objectives by the RWQCB. Note that several creeks that are sampled are not listed in the Basin Plan, namely Eagle, Bell, Montecito, Oak, and Garrapata.

²The EPA standards for metals presented in this table represent concentrations of dissolved metals. These EPA CCC and CMC values have been converted to total metals, and are presented in Figures A-3 and A-4. The Basin Plan objectives for metals presented in this table represent total concentrations of metals. See Section 5.2.1 for discussion

Table A-6. RWQCB Basin Plan Designated Uses

Creek	MUN	AGR	COLD	WARM	SPWN
Tecolote	X	X	X	X	X
Devereaux	X			X	
Carneros	X	X	X	X	
Glen Annie	X	X	X	X	X
Tecolotito	X		X	X	
Atascadero	X	X	X	X	X
Maria Ygnacio	X	X	X		X
San Antonio	X	X	X	X	X
San Jose	X	X	X	X	X
Las Vegas	X		X	X	
San Pedro	X	X	X	X	
Las Palmas	X			X	
Arroyo Burro	X			X	X
San Ysidro	X			X	
Romero	X			X	
Toro Canyon	X			X	
Arroyo Paredon	X			X	
Santa Monica	X			X	
Franklin	X			X	
Carpinteria	X	X		X	X
Rincon	X	X	X	X	X
Orcutt	X	X	X		
Davis	X			X	

Where

MUN = Municipal and Domestic Supply

AGR = Agricultural Supply

COLD = Cold Fresh Water Habitat

WARM = Warm Fresh Water Habitat

SPWN = Spawning, Reproduction, and/or Early Development

Figure A-3. Conversion of EPA CMC Dissolved Metal Standards to Total Metals for a range of hardness'

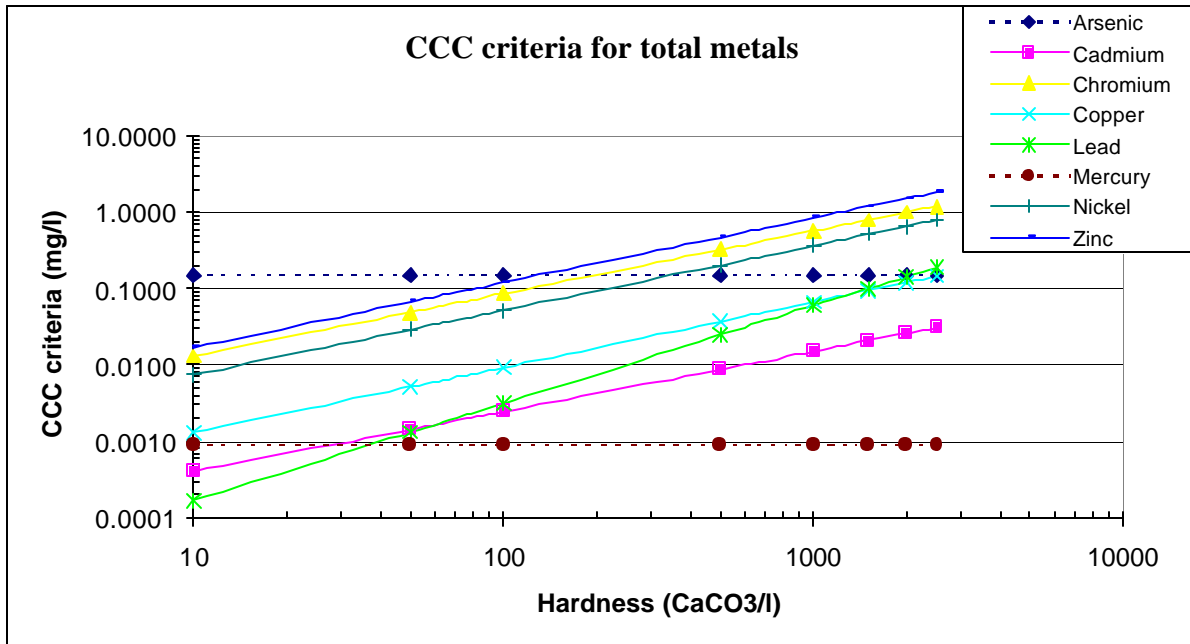


Figure A-4. Conversion of EPA CCC Dissolved Metal Standards to Total Metals for a range of hardness'

