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[Revision 1]

VENTURA COUNTY AGRICULTURAL IRRIGATED
LANDS GROUP (VCAILG)

Monitoring and Reporting Program (MRP) Plan

submitted to

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

prepared by

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on behalf of the

VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP (VCAILG)



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Introduction

The Ventura County Agricultural Irrigated Lands Group (VCAILG) was formed in 2006 to act as one unified "Discharger Group" in Ventura County for the purpose of compliance with the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands* (Order No. R4-2005-0080), which was adopted by the Los Angeles Regional Water Quality Control Board on November 3, 2005. A condition of the *Ag Waiver* is to develop monitoring programs to monitor and report the discharge of constituents of concern and/or pollutants in discharges from irrigated agricultural lands and where necessary, identify pollutant sources, implement and monitor management practices for control of pollutants, and report results and other required information on an annual basis. The objectives of the VCAILG Monitoring Program (VCAILGMP) include the following:

- Assess the impact on waters of the State from wastes discharged from irrigated lands;
- Determine concentration and loading (where practicable) of pollutants present in surface waterbodies influenced primarily by irrigated agriculture;
- Evaluate compliance with applicable water quality benchmarks to determine whether modifying management practices is necessary to improve surface water quality;
- Attempt to identify pollutant sources, if necessary;
- Provide feedback to growers in areas where benchmarks are exceeded to facilitate implementation and monitoring of management practices employed for controlling pollutant loads, if necessary;
- Report results and other required information as specified in the Monitoring and Reporting Program (CI-8836);
- Monitor trends in ambient water quality over time (long term objective);
- Coordinate monitoring efforts with existing and future monitoring programs so that data generated are complementary and not duplicative (*e.g.*, coordinate monitoring sites and sampling events with the Calleguas Creek Watershed TMDL Monitoring Program).

Water samples will be collected from surface waterbodies influenced primarily by irrigated agriculture throughout Ventura County and analyzed for constituents typically associated with agricultural activities, including suspended sediment, nutrients, and pesticides. Data collected at each site will be compared with water quality benchmarks to determine whether these benchmarks are being met. A benchmark exceedance will trigger development of a Water Quality Management Plan (WQMP), which will outline specific steps that will be taken to reduce pollutant loading to receiving waters and ultimately attain water quality objectives through the use of best management practices. VCAILGMP data will be used to determine monitoring program effectiveness at meeting program objectives.

Background

On November 3, 2005, the Los Angeles Regional Water Quality Control Board adopted the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands* (Order No. R4-2005-0080). The Order states that the intent of the *Conditional Ag Waiver* is to attain water quality objectives in receiving waters by regulating discharges from irrigated lands to ensure that such discharges are not causing or contributing to exceedances of applicable water quality

standards. In order to comply with the *Conditional Ag Waiver*, water quality monitoring must be conducted and the monitoring results compared to water quality benchmarks. Exceedances of these benchmarks indicate that management practices are in need of implementation or improvement to better protect water quality, triggering the requirement to develop a Water Quality Management Plan (WQMP). The WQMP outlines specific steps that will be taken to reduce pollutant loading to receiving waters and ultimately attain water quality objectives through the use of best management practices.

The VCAILG was formed to comply with the *Conditional Ag Waiver* as a county-wide Discharger Group. Group members represent irrigated acreage located throughout Ventura County watersheds, including the Calleguas Creek, Santa Clara River, Ventura River and Coastal watersheds. A map of Ventura County highlighting the main watersheds is presented in Figure 1.

Ventura County Agriculture

Ventura County covers 1,843 square miles (approximately 1.2 million acres) with 43 miles of coastline. The Pacific Ocean forms its southwestern boundary, with Los Angeles County to the southeast, Kern County to the north and Santa Barbara County to the west. The Los Padres National Forest accounts for the northern half of the county, with residential, agricultural and business uses in the southern portion. Of the estimated 330,000 acres of agricultural land in the county, there are approximately 125,000 acres of irrigated land.¹ The Calleguas Creek Watershed contains the highest number of irrigated acres (roughly 60,000), followed by the Santa Clara River Watershed (approximately 50,000) and Ventura River watershed (approximately 15,000).²

Agriculture is a major industry in Ventura County, generating \$1.4 billion in gross sales in 2004, placing the county 9th in a statewide ranking of California's 58 counties and 10th in a nationwide ranking of all U.S. counties. Ventura County was ranked as one of the top five counties in California for thirteen agricultural commodities in 2004.

A disproportionate number of waterbodies in Ventura County appear on the federal 303(d) list of impaired waterbodies. Impairments listed include constituents that are commonly associated with irrigated agriculture, including suspended sediment, nutrients and pesticides. The 2002 303(d) list identifies agriculture as a potential source of the constituents listed. Accordingly, the Los Angeles Regional Water Quality Control Board adopted the *Conditional Ag Waiver* to address these impairments.

¹ The estimate of 330,000 acres of irrigated agricultural land in the county: U.S. Department of Agriculture-National Agricultural Statistics Service, *2002 Census of Agriculture*. Washington, D.C.: June 2004.

² Estimates of irrigated acreage in each watershed are based on data obtained from the Ventura County Assessor's Office. For irrigated acreage estimates, the same acreage is counted only once for land on which multiple crops are grown throughout the year.

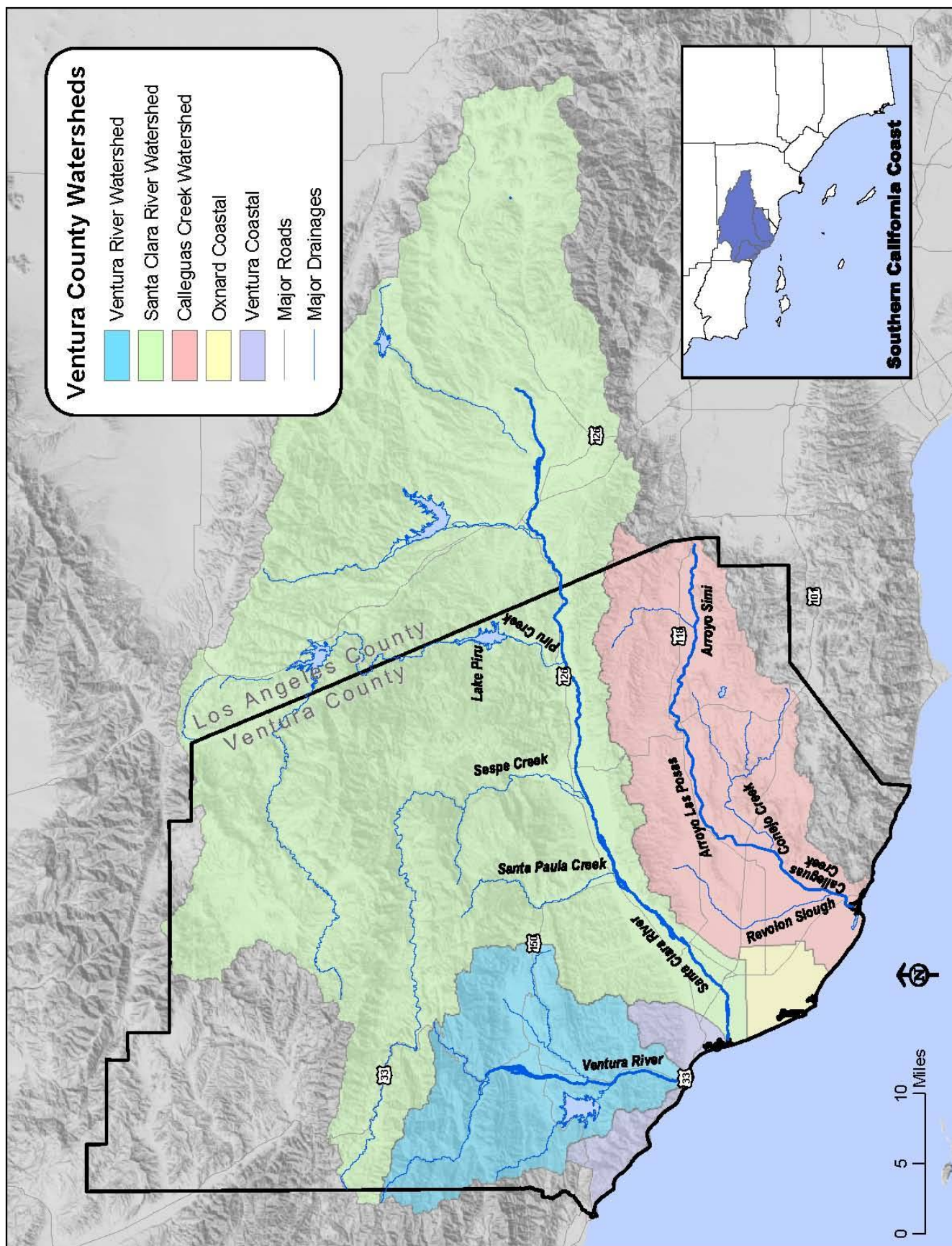


Figure 1. Ventura County Watersheds

Approach

Water samples will be collected from surface waterbodies influenced primarily by irrigated agriculture throughout Ventura County and analyzed for constituents typically associated with agricultural activities, including suspended sediment, nutrients, and pesticides. Data collected will be compared with water quality benchmarks to determine whether these benchmarks are being met. Water quality benchmarks include water quality objectives contained in the Basin Plan for the Los Angeles Region, criteria contained in the California Toxics Rule, and load allocations established through adopted Total Maximum Daily Loads (TMDLs) in local watersheds. A benchmark exceedance will trigger development of a Water Quality Management Plan (WQMP), which will outline specific steps that will be taken to reduce pollutant loading to receiving waters and ultimately attain water quality objectives through the use of best management practices.

VCAILGMP data also may be used to assist CCWTMP with loading determinations from agriculture. Conversely, receiving water data collected concurrently in the Calleguas Creek Watershed (CCW) through the CCW TMDL Monitoring Program (CCWTMP, monitoring scheduled for Spring 2007) or other regulatory programs (NPDES, Stormwater), may be evaluated to determine whether agricultural drainages in that watershed may be contributing to receiving water impairments, and will likely inform BMP implementation and effectiveness.

Monitoring Sites

The process for selection of appropriate sites for monitoring is based on land uses, subwatershed characteristics, VCAILG landowner representation, and access considerations. The specific criteria for selection of monitoring sites are as follows:

1. Land use (primarily agricultural drainages);
2. Subwatershed representation;
3. Acres of agricultural irrigated lands represented;
4. Drainage into waterbodies included on the 303(d) list of impaired waterbodies;
5. Safe access during dry and wet weather.

Monitoring sites were selected to best characterize agricultural inputs and are generally located at the lower ends of mainstem tributaries or agricultural drainages in areas associated with agricultural activity. In some cases, sites are also located to aide in distinguishing agricultural inputs from other sources.

Monitoring site selection in the Calleguas Creek Watershed was coordinated with the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP). Data collected at these sites are designed to augment TMDL implementation monitoring by establishing loadings from agricultural inputs. Monitoring sites in the Santa Clara River and Ventura River Watersheds were selected to collect baseline data to determine whether agricultural discharges are causing or contributing to water quality impairments in receiving waters in those watersheds.

Table 1 lists monitoring sites selected in each watershed and associated global positioning system (GPS) coordinates. Driving directions to each site are included in Appendix A. Monitoring sites located in the Calleguas Creek/Oxnard Coastal, Santa Clara River and Ventura River watersheds are presented in Figure 2, Figure 3, and Figure 4, respectively. Table 2 presents estimates of irrigated acreage by crop type represented by each monitoring site selected. Figure 5, Figure 6 and Figure 7 present crops grown in the vicinity of each monitoring site in the Calleguas Creek/Oxnard Coastal, Santa Clara River and Ventura River Watersheds, respectively. More detailed information regarding cultural and other management practices (*e.g.*, irrigation water sources, pesticides applied) in each watershed is contained in the Notice of Intent (NOI). Used in conjunction with information contained in Table 2, information contained in the NOI can be used to identify practices that may contribute to water quality characteristics at a given monitoring site.

Table 1. VCAILGMP Monitoring Locations

Watershed / Subwatershed	Station ID ^[1]	Reach	Water-body Type ^[1]	Station Location	GPS Coordinates	
					Latitude	Longitude
Calleguas Creek / Mugu Lagoon	01T_ODD2_DCH	1	T	Duck Pond/Oxnard Drain #2/Mugu Drain S. of Hueneme Rd.	34.139514	-119.118330
	01T_ODD3_ARN	1	T	Rio de Santa Clara/Oxnard Drain #3 at Arnold Rd.	34.123564	-119.156514
Calleguas Creek /	02D_BROOM	2	D	Discharge to Calleguas Creek at Broome Ranch Rd.	34.143406	-119.071103
Calleguas Creek	02D_CSUCI	2	B	Potential Background Site for 02D_BROOM	34.158183	-119.042683
Calleguas Creek /	04D_ETTG	4	D	Discharge to Revolon Slough at Etting Rd.	34.162430	-119.090947
Revolon Slough	04D_LAS	4	D	Discharge to Revolon Slough at S. Las Posas Rd.	34.134208	-119.079767
Calleguas Creek / Beardsley Channel	05D_SANT_VCWPD	5	D	Santa Clara Drain at VCWPD Gage #781	34.242667	-119.113736
	05D_SANT_BKGD	5	B	Potential Background Site for 05_D_SANT_VCWPD (as yet unidentified)	Not Yet Identified	
	05D_LAVD	5	T	La Vista Drain at La Vista Ave.	34.265849	-119.094145
	05T_HONDA	5	T	Honda Barranca at Hwy. 118	34.263608	-119.057431
Calleguas Creek /	06T_FC_BR	6	T	Fox Canyon at Bradley Rd.	34.264653	-119.011128
Arroyo Las Posas	06T_LONG	6	T	Long Canyon at Hwy. 118	34.268411	-118.959333
Calleguas Creek / Conejo Creek	9BD_GERRY	9B	D	Drain Crossing Santa Rosa Rd. at Gerry Rd.	34.268411	-118.959333
Oxnard Coastal	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.220872	-119.254875
Santa Clara River	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.306805	-119.141275
	S02T_TODD	2	T	Todd Barranca at Hwy. 126	34.313584	-119.117095
	S03T_TIMB	3	T	Timber Canyon at Hwy. 126	34.370204	-119.021140
	S03T_BOULD	3	T	Boulder Creek at Hwy. 126	34.389578	-118.958738
	S03T_BARDS	3	T	Discharge Along Bardsdale Ave. at Santa Clara River	34.371917	-118.965547
	S04T_HOPP	4	T	Hopper Creek on at Hwy. 126	34.401616	-118.826799
	S04T_TAPO	4	T	Tapo Canyon Creek	34.403905	-118.722000
Ventura River	VRT_THACH	--	T	Thacher Creek at Ojai Avenue	34.446719	-119.210893
	VRT_SANTO	--	T	San Antonio Creek at Grand Avenue	34.454455	-119.221723

Notes to Table 1:

[1] Station IDs indicated in **bold type** represent Calleguas Creek TMDL Monitoring Program sites that will be monitored through that program once that program is underway. Monitoring results from these sites will be included in VCAILG Annual Monitoring Reports and used to assess compliance with water quality benchmarks.

[2] Waterbody Type: B = Potential Background Site; D = Agricultural Drain; T = Tributary to Receiving Water.

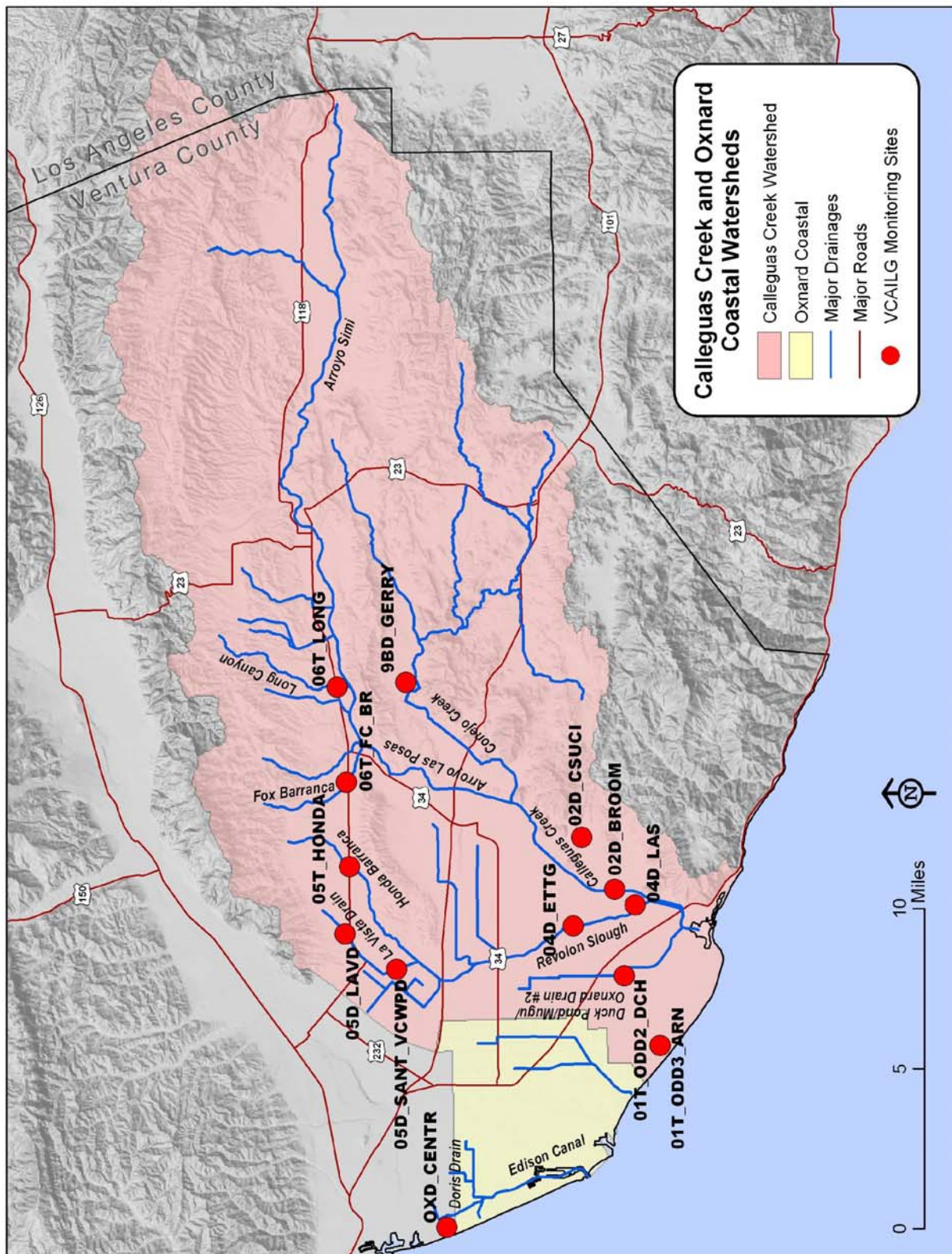


Figure 2. VCAILGMP Monitoring Sites Located in the Calleguas Creek / Oxnard Coastal Watersheds

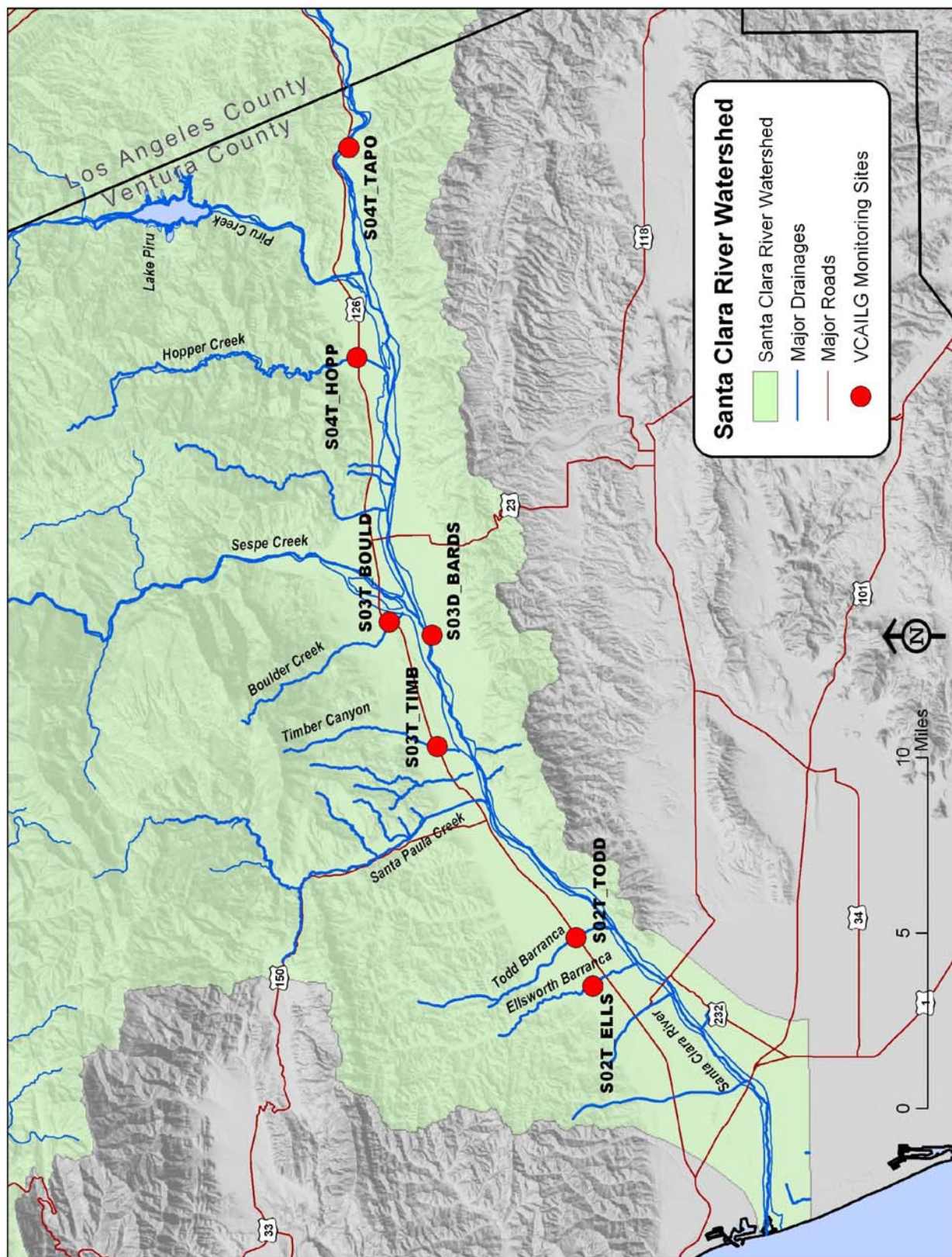


Figure 3. VCAILGMP Monitoring Sites Located in the Santa Clara River Watershed

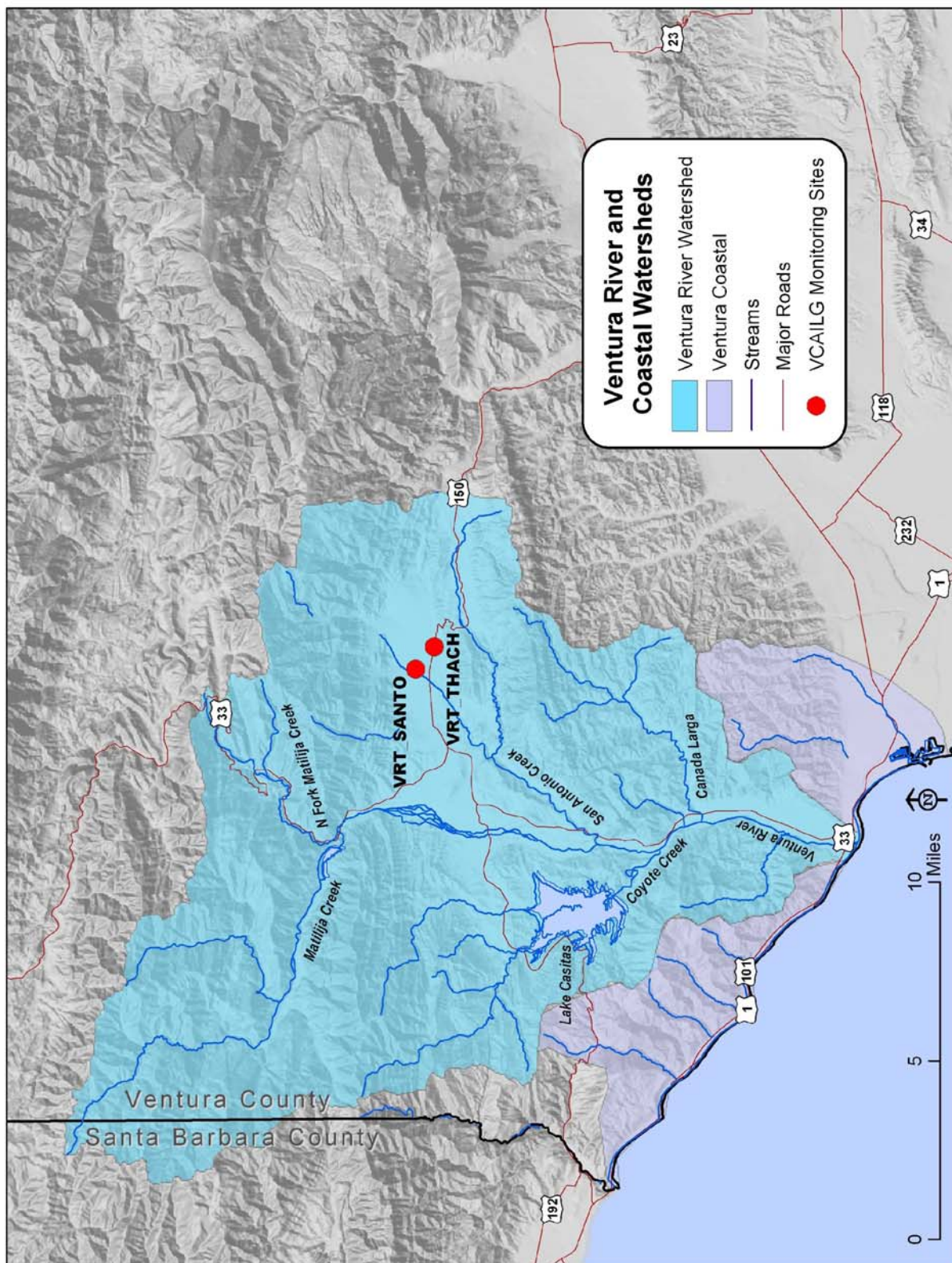


Figure 4. VCAILGMP Monitoring Sites Located in the Ventura River Watershed

Table 2. Estimated Irrigated Acreage Represented at Each VCAILGMP Monitoring Site

Station ID ^[1]	Estimated Irrigated Agricultural Acreage						Estimated Total Acres Drained
	Strawberries	Nursery Stock	Citrus	Avocado	Row Crops	Berries	
01T_ODD2_DCH	825	70	250	110	1895		3150
01T_ODD3_ARN					470		970
02D_BROOM		15	40	60	1065	20	1200
04D_ETTG					1650		1650
04D_LAS	200	55			945		1500
05D_SANT_VCWPD			460	210	100	550	1320
05D_LAVD			345	200	40	65	655
05T_HONDA			1400	800	200		2400
06T_FC_BR		70	900	160	70		1200
06T_LONG		100	1000	1000	200		2300
9BD_GERRY			175	100		25	300
OXD_CENTR	500		80		395		975
S02T_ELLS			600	450		100	1150
S02T_TODD			945	235	120		1300
S03T_TIMB			300	300			600
S03T_BOULD		140	290	620			1050
S03T_BARDS			340	20	40		400
S04T_HOPP		100	210		70		380
S04T_TAPO			80		240		320
VRT_THACH			800	100			900
VRT_SANTO			700	200			900

[1] Potential background Sites 02D_CSUCI (primarily runoff from landscape irrigation) and 05D_SANT_BKGD (location unidentified as yet) are not included in this table.

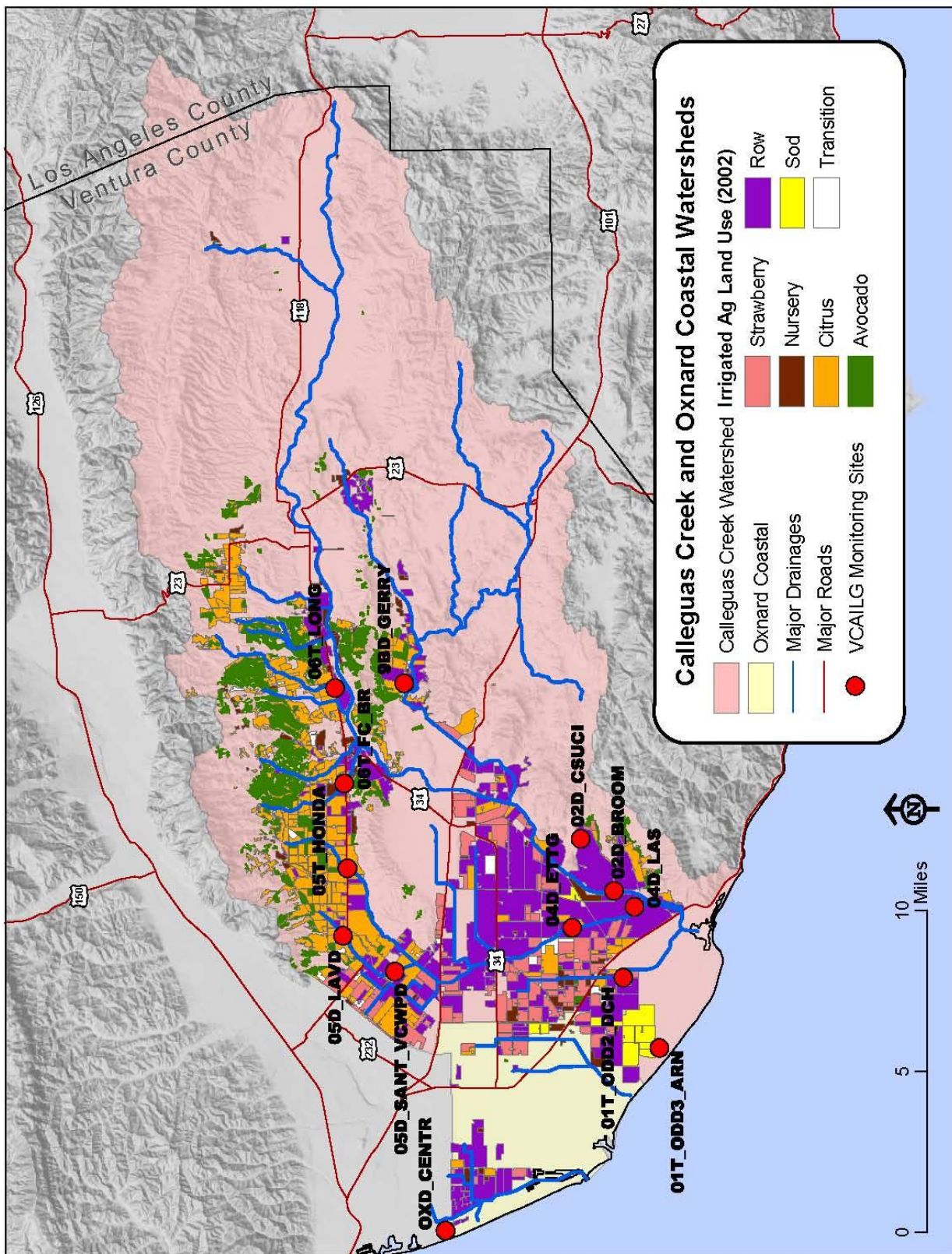


Figure 5. Calleguas Creek Watershed: Monitoring Sites and Land Use

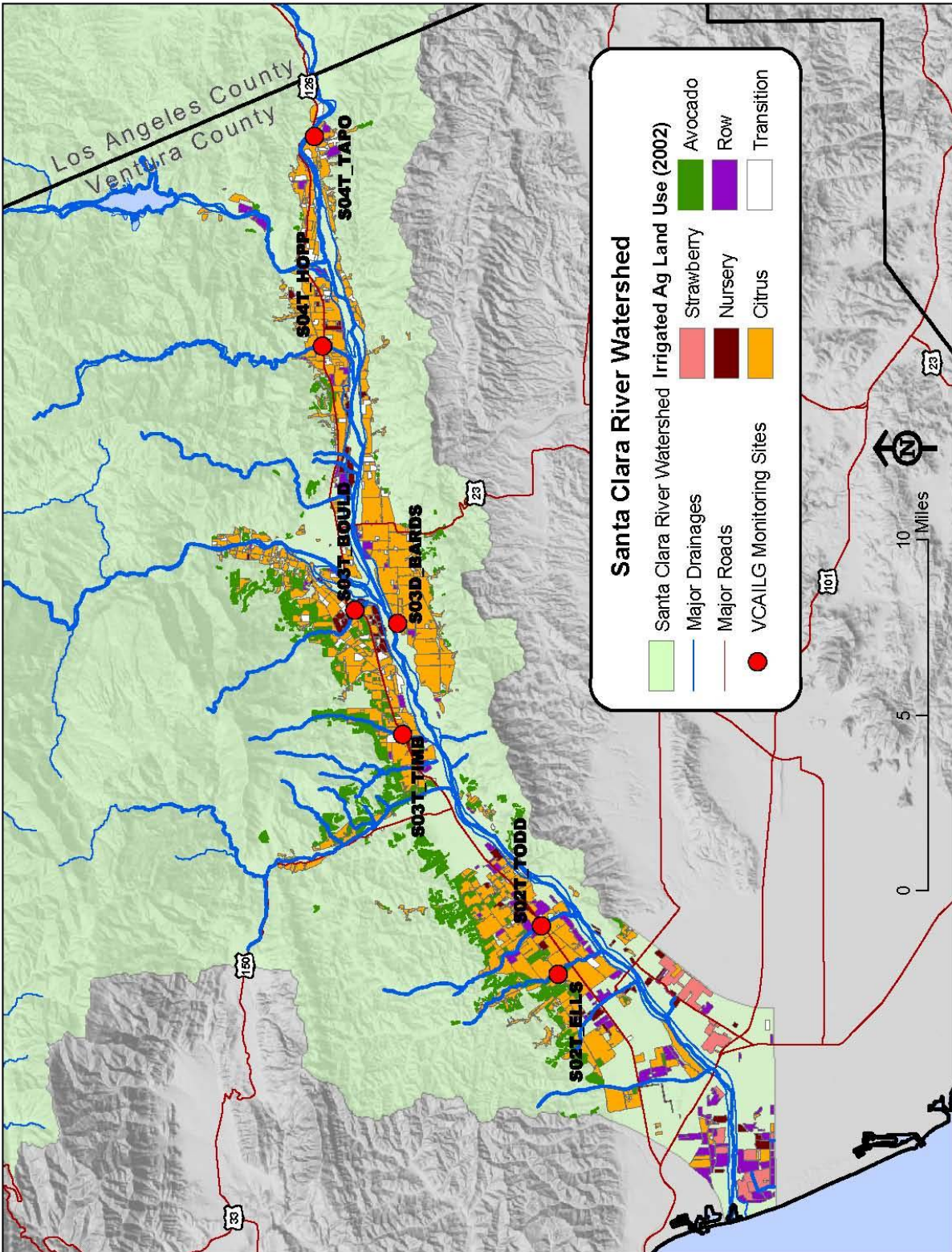


Figure 6. Santa Clara River Watershed: Monitoring Sites and Land Use

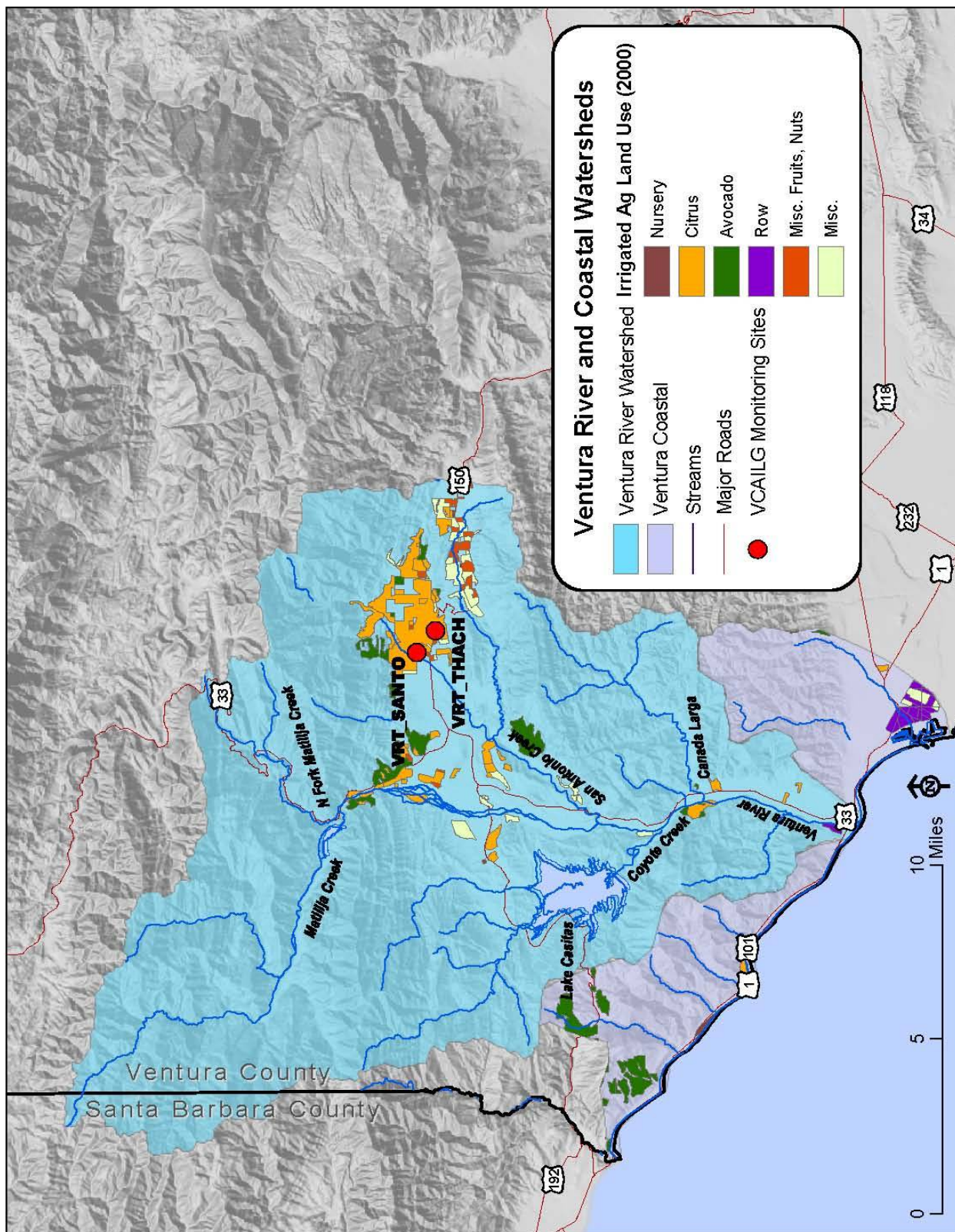


Figure 7. Ventura River Watershed - Monitoring Sites and Land Use

Sampling Schedule

Monitoring will be conducted during the dry season (May 16 – October 14) and the wet season (October 15 – May 15) and will be conducted quarterly during Phase I (semiannually for toxicity testing only) and semiannually during Phase II (annually for toxicity testing only). Table 3 and Table 4 present a tentative VCAILGMP sampling schedule for Phase I (the first two monitoring years). Dates will be finalized during coordination with other monitoring efforts, particularly the CCWTMP, in order to minimize duplication of effort and to develop a representative data set. Toxicity testing will be conducted on receiving water monitoring sites only. Toxicity monitoring will be conducted concurrently through the CCWTMP on receiving water sites and will provide an indication of whether agricultural drainages are causing or contributing to toxicity in the receiving water. The schedule for Phase II monitoring will be developed based on results of Phase I monitoring and in consultation with Regional Board staff. Phase I monitoring is expected to begin in January or February of 2007.

Table 3. VCAILGMP Monitoring Schedule: Phase I – Year 1 (2007)

Watershed / Subwatershed	Station ID	Reach	Month ^[1]			
			Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec
Calleguas Creek / Mugu Lagoon	01T_ODD2_DCH	1	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	01T_ODD3_ARN	1	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
Calleguas Creek / Calleguas Creek	02D_BROOM	2	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	02D_CSUCI	2	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
Calleguas Creek / Revolon Slough	04D_ETTG	4	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	04D_LAS	4	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	05D_SANT_VCWPD	5	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
Calleguas Creek / Beardsley Channel	05D_SANT_BKGD	5	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	05D_LAVD	5	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	05T_HONDA	5	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
Calleguas Creek / Arroyo Las Posas	06T_FC_BR	6	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	06T_LONG	6	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
Calleguas Creek / Conejo Creek	9BD_GERRY	9B	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
Oxnard Coastal	OXD_CENTR	--	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	S02T_ELLS	2	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	S02T_TODD	2	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	S03T_TIMB	3	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
Santa Clara River	S03T_BOULD	3	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	S03T_BARDS	3	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	S04T_HOPP	4	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	S04T_TAPO	4	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
Ventura River	VRT_THACH	--	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P
	VRT_SANTO	--	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P	WQ,N,P

TOX = Toxicity WQ = General Water Quality Constituents N = Nutrients P = Pesticides

[1] Frequency indicated is for the first year of Phase I monitoring.

Table 4. VCAILGMP Monitoring Schedule: Phase I – Year 2 (2008)

Watershed / Subwatershed	Station ID	Reach	Month ^[1]			
			Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec
Calleguas Creek / Mugu Lagoon	01T_ODD2_DCH	1	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	01T_ODD3_ARN	1	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
Calleguas Creek / Calleguas Creek	02D_BROOM	2	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	02D_CSUCI	2	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
Calleguas Creek / Revolon Slough	04D_ETTG	4	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	04D_LAS	4	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
Calleguas Creek / Beardsley Channel	05D_SANT_VCWPD	5	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	05D_SANT_BKGD	5	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	05D_LAVD	5	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	05T_HONDA	5	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
Calleguas Creek / Arroyo Las Posas	06T_FC_BR	6	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	06T_LONG	6	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
Calleguas Creek / Conejo Creek	9BD_GERRY	9B	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
Oxnard Coastal	OXD_CENTR	--	WQ,N,P	WQ,N,P	WQ,N,P	WQ,N,P
	S02T_ELLS	2	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	S02T_TODD	2	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	S03T_TIMB	3	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
Santa Clara River	S03T_BOULD	3	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	S03T_BARDS	3	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	S04T_HOPP	4	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	S04T_TAPO	4	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
Ventura River	VRT_THACH	--	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P
	VRT_SANTO	--	WQ,N,P	Tox,WQ,N,P	WQ,N,P	Tox,WQ,N,P

TOX = Toxicity WQ = General Water Quality Constituents N = Nutrients P = Pesticides

[1] Frequency indicated is for the second year of Phase I monitoring.

Should measurable precipitation occur during the seven days prior to a scheduled dry weather event, data from stream gages within each watershed will be evaluated to determine if flow rates have returned to pre-storm levels. If flow rates have returned to pre-storm levels, the sampling event may be conducted as scheduled. If flow rates have not returned to pre-storm levels, the sampling event will be rescheduled either to allow for flow rates to return to pre-storm levels, or for at least seven days without measurable precipitation prior to sampling, whichever period is shorter. Dry weather monitoring will be scheduled to occur after the majority of growers have applied pesticides and/or fertilizers and during the period when irrigation is required, where practicable.

All efforts will be made to conduct two wet weather events during the wet season (October 15 through May 15). Sufficient precipitation is needed to produce runoff, mobilize constituents of interest, and increase drainage/stream flow. Although the *Conditional Ag Waiver* Monitoring and Reporting Program (MRP, CI-8836) requires that the first wet season sample be collected "within the first 24 hours of the first storm of the year with greater than 0.25 inches of rain as measured by the nearest National Weather Service rain gage", field crews with extensive wet weather monitoring experience in Ventura County, including Ventura County Watershed Protection District and United Water Conservation District personnel, have identified the targeted rainfall amount of 0.5 inches to produce runoff and trigger a wet season monitoring event. However, even a storm of that magnitude will not necessarily produce runoff from agricultural lands if it occurs early in the wet

season. It is therefore recognized that a flexible approach to establishing a wet season event trigger is required to achieve the goals of the *Conditional Ag Waiver* MRP. Therefore, the VCAILGMP defines the targeted storm for wet weather sampling as a storm of at least 0.5 inches of rainfall, but ultimately, the decision to conduct a wet weather event will be made in consultation with weather forecasting information services and after a quantity of precipitation forecast (QPF) has been determined, in conjunction with information obtained from sampling personnel out surveying the watershed to determine whether rainfall is producing runoff from irrigated agricultural lands. The timing of sample collection will be targeted toward the first 24 hours of discharge, to the extent practicable. Regional Board staff will be notified by email and/or phone when a wet weather monitoring event is initiated.

Parameters to be Monitored

Table 5 lists the constituents for which samples will be analyzed, analytical methods, project method detection limits and project reporting limits for each constituent.

Table 5. Constituents, Methods, Project Method Detection Limits and Project Reporting Limits

Constituent	Analytical Method	Project Method Detection Limits	Project Reporting Limits
<i>Aquatic Toxicity</i> ^[1]			
Chronic (7 day) <i>Ceriodaphnia dubia</i> ^[2]	EPA-821-R-02-013, EPA-600-4-91-002	N/A	N/A
Chronic (7 day) <i>Pimephales promelas</i> ^[3]		N/A	
Chronic (96-hour) <i>Selenastrum Capricornutum</i> ^[4]		N/A	
<i>General Water Quality Constituents (GWQC)</i>			
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Turbidity	Field Measurement	N/A	IR
Total Dissolved Solids (TDS)	SM 2540C	4 mg/L	20 mg/L
Total Suspended Solids (TSS)	SM 2540D	2 mg/L	5 mg/L
Chloride	300.0	0.2 mg/L	1 mg/L
Sulfate	300.0	0.03 mg/L	1 mg/L
Total Ammonia-N	SM 4500NH3G	0.04 mg/L	0.2 mg/L
Nitrate-N	300.0	0.008 mg/L	0.1 mg/L
Phosphate	SM 4500PE	0.01 mg/L	0.05 mg/L
<i>Organic Constituents</i>			
Organochlorine Pesticides ^[5]	EPA 625(m)/8270C(m)	1-10 ng/L	5-50 ng/L
Organophosphorus Pesticides ^[6]	EPA 625(m)/8270C(m)	1-10 ng/L	2-16 ng/L
Pyrethroid Pesticides ^[7]	EPA 625(m)/8270C(m)	1-8 ng/L	5-10 ng/L

IR = Instrument Resolution N/A = Not applicable

[1] Chronic toxicity tests will be performed on three species for the first monitoring event, after which the most sensitive species will be used for subsequent monitoring events.

[2] If sample salinity exceeds suitable levels, *Hyaella azteca* or *Americamysis bahia* (formerly *Mysidopsis bahia*) may be used to conduct toxicity testing, depending on the salinity of the sample.

[3] If sample salinity exceeds suitable levels, *Atherinops affinis* or *Cyprinodon variegatus* (Sheepshead Minnow) may be used to conduct toxicity testing, depending on organism availability.

[4] If sample salinity exceeds suitable levels, *Thalassiosira pseudonana* may be used to conduct toxicity testing.

[5] Organochlorine Pesticides include aldrin, alpha-BHC, beta-BHC, gamma-BHC (Lindane), delta-BHC, chlordane-alpha, chlordane-gamma, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, toxaphene.

[6] Organophosphorus Pesticides include bolstar, chlorpyrifos, demeton, diazinon, dichlorvos, dimethoate, disulfoton, ethoprop, fenchlorophos, fensulfathion, fenthion, malathion, merphos, methyl parathion, mevinphos, phorate, tetrachlorvinphos, tokuthion, trichloronate.

[7] Pyrethroid Pesticides include bifenthrin, cyfluthrin, cyhalothrin, cypermethrin, deltamethrin/tralomethrin, esfenvalerate/fenvalerate, fenprophathrin, fluvalinate, permethrin, resmethrin.

All results will meet data quality objectives as stated in the VCAILGMP Quality Assurance Project Plan (QAPP) (LWA, 2006), and be otherwise qualified in conformity with USEPA QA/QC guidance. An analytical method used for this monitoring program may change if a different method is found to give better results (better QC data and/or a more relevant detection limit). Laboratories selected to analyze samples for this program must be certified either by the National Environmental Laboratory Accreditation Program, or by the California Department of Health Services – Environmental Laboratory Accreditation Program (ELAP), or by both agencies.

Toxicity Testing and Toxicity Identification Evaluations (TIEs)

Water quality samples will be analyzed for chronic toxicity to *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* for the first monitoring event. The most sensitive species determined at each toxicity site will be used for subsequent monitoring events.

Determination of chronic toxicity to *C. dubia*, *P. promelas* and *Selenastrum* will be performed generally as described in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition (USEPA 2002). Toxicity tests will be conducted on 100% sample.

One toxicological protocol has been modified in the QAPP. The chronic fathead minnow test is susceptible to Pathogen Related Mortality (PRM), a phenomenon that is not uncommon in toxicity tests of ambient waters. PRM is characterized by high inter-replicate variability in mortality and pathogenic "coronas" around the fish, resulting in fish mortality related to a pathogen infestation and not due to toxicant exposure. The US EPA recognized this test interference in the 2002 edition of the freshwater chronic toxicity testing manual (EPA-821-R-02-013), and suggests the use of a modified exposure method that increases the number of replicates while decreasing the number of fish in each replicate as an approach to reduce pathogen infestation among the fish in a replicate. The toxicity testing laboratory (Pacific EcoRisk) has demonstrated success with other large monitoring programs in the application of this modified protocol. The chronic fathead minnow SOP in Attachment 4 of Appendix D has been updated to include this PRM exposure protocol.

The results of toxicity testing will be used to trigger further investigation to determine the cause of observed laboratory toxicity. If testing indicates the presence of significant toxicity in the sample, TIE procedures may be initiated to investigate the cause of toxicity. For the purpose of triggering TIE procedures, significant toxicity is defined as at least 50% mortality (*P. promelas* and *C. dubia*) or a 50% reduction in growth (*Selenastrum*). The 50% threshold is consistent with the approach recommended in guidance published by U.S. EPA for conducting TIEs (USEPA 1996b), which recommends a minimum threshold of 50% mortality because the probability of completing a successful TIE decreases rapidly for samples with less than this level of toxicity. A targeted Phase I TIE will be conducted to determine the general class of constituents (*e.g.*, non-polar organics) causing toxicity. The targeted TIE will focus on classes of constituents anticipated to be observed in drainages dominated by urban and agricultural discharges and those previously observed to cause toxicity. These classes of constituents have been determined to be primarily non-polar organics. TIE methods will generally adhere to EPA procedures documented in conducting TIEs (USEPA 1991, 1992, 1993a-b). For samples exhibiting toxic effects consistent with carbofuran, diazinon, or chlorpyrifos, TIE procedures will follow those documented in Bailey *et al.* (1996).

Adequate sample volume will be collected so that TIE procedures can be initiated as soon as possible after toxicity is observed. This will reduce the potential for loss of toxicity due to extended sample storage and will therefore increase the likelihood that the toxicant will be identified.

The decision to initiate TIE procedures on any sample, including samples exceeding the mortality threshold, as well as the focus and scope of TIE procedures, will be determined through consultation between the Project Manager, the toxicity laboratory, and Regional Board staff. When

deciding whether to initiate TIE procedures for a specific site and monitoring event, a number of factors will be considered, including the level of toxicity, history of toxicity at the site, the species and endpoints exhibiting toxic effects, as well as the primary technical basis for triggering TIEs described above. The rationale for determining the TIE procedures for a specific sample will be clearly documented in subsequent data reports.

Attempts will be made to collect samples at low tide at potentially tidally-influenced monitoring sites. However, because it has been determined that some agricultural drainages have higher salinity levels, if sample salinity exceeds levels suitable for the three species identified in this Element, alternative species will be selected based on previous testing in the area and recommendations of the toxicity testing laboratory. Potential alternate species include the following:

- For *C. dubia*: *Hyallela azteca* will be used if the conductivity exceeds 3000 uS/cm. *Americamysis bahia* will be used if the salinity exceeds 15 ppt.
- For *P. pimephales*: *Atherinops affinis*. If this species is unavailable, *Cyprinodon variegatus* (Sheepshead Minnow) will be used.
- For Selenastrum: *Thalassiosira pseudonana*.

The *Conditional Ag Waiver* Monitoring and Reporting Program (MRP, CI-8836) requires that any exceedance of the 1.0 TUC trigger be followed up with two consecutive months of toxicity testing, and that a TIE must be initiated if the toxicity exceedances persist. Although the follow-up approach is consistent with NPDES monitoring protocols, it will not provide information that will lead to the identification of specific toxicants which can allow for toxicity reductions in agricultural discharges through implementation of best management practices. Although the follow-up testing approach may provide a temporal assessment of low-level toxicity, there will be no concurrent chemical analysis of the sample to identify a potential toxicant and therefore no indication that the same toxicant is causing toxicity from one sampling event to the next. The toxicity monitoring approach developed for the VCAILGMP is designed to identify toxicants and thereby provide a mechanism for achieving toxicity reductions in agricultural discharges. This approach was used successfully in the Calleguas Creek Watershed for toxicity monitoring in support of toxicity TMDL development, and it has been recommended by US EPA toxicologists because of its success in identifying toxicants. It is therefore the approach selected for the VCAILGMP.

Planned Use of Data

Data generated through the VCAILGMP will be used to determine whether discharges from irrigated agricultural lands are causing or contributing to exceedances of water quality benchmarks in receiving waters. Exceedances of benchmarks will trigger development of Water Quality Management Plans (WQMPs) that outline specific management measures and practices to improve the discharge quality. WQMPs may include a plan for additional monitoring designed to systematically identify sources of pollutants causing benchmark exceedances and to assess the effectiveness of management practices in reducing pollutant loads to receiving waters. Flow and chemistry data collected through the VCAILGMP will also be used to determine pollutant loads to receiving waters for which TMDLs have been developed in the Calleguas Creek and Santa Clara

River watersheds. VCAILGMP data will also be used to determine monitoring program effectiveness at meeting program objectives.

Monitoring at sites shared by the VCAILG and Calleguas Creek TMDL Monitoring programs (01T_ODD2_DCH, 05D_SANT_VCWPD, 06T_FC_BR, and 9BD_GERRY) will be performed through the CCWTMP. Data generated from these sites will be used by both programs and will be evaluated by the VCAILGMP for exceedances of water quality benchmarks.

Reporting Requirements

Toxicity Trigger Exceedance Notification

Prepared by the Project Manager and submitted to the Regional Board's QA Officer, this report will consist of an email notification that the toxicity trigger has been exceeded and at which site(s). This report will be submitted within five business days of a toxicity trigger exceedance.

Quarterly Summary Report

Prepared by the Project QA Manager or designee after each monitoring event and submitted to the Project Manager, this will present a tabular summary of sample results and provide a summary of QA/QC assessments and evaluations, including precision, accuracy, comparability, representativeness, and completeness of the monitoring data, a summary of any lab and/or field performance audits that were conducted, and a summary of any exceedances of water quality benchmarks. The information will be submitted to the VCAILG Steering Committee at their quarterly meeting for review.

Annual Monitoring Report

The Annual Monitoring Report will be prepared annually by the Project Manager and will be submitted within two months of receipt of the final analytical data report for the monitoring year. As required by Monitoring and Reporting Program No. CI-8836, the Annual Monitoring Report will contain the following components:

- Title Page;
- Table of Contents;
- Description of the Group membership and setting;
- Monitoring objectives;
- Monitoring site descriptions including GPS coordinates for each site and a location map of all sites;
- Tabulated results of field laboratory data, including sampling and analytical methods used;
- Copies of chain-of-custody forms;
- Associated field and laboratory quality control sample results, including a summary of accuracy and precision;
- A summary of compliance / non-compliance with water quality benchmarks;
- A summary of education requirements fulfilled by each VCAILG participant;

- Conclusions and recommendations.
- An electronic database will be submitted as an attachment to the Annual Report and will include the results of all field and laboratory data, as well as copies of all field documentation and laboratory original data reports in PDF format. Data submitted electronically will be made available for inclusion in the SWAMP database.

Water Quality Management Plan (WQMP)

A Water Quality Management Plan (WQMP) will be submitted annually six months after the first Annual Monitoring Report is submitted that contains data demonstrating that water quality benchmarks have been exceeded. As required by Monitoring and Reporting Program No. CI-8836, a WQMP will contain the following components:

- Title Page;
- Table of Contents;
- Monitoring objectives;
- Monitoring site descriptions including GPS coordinates for each site and a location map of all sites;
- Tabulated results of laboratory analyses specifying locations where benchmarks were exceeded and including sampling dates and times, weather and crop conditions or any other information (*e.g.*, pesticide evaluation) which may be pertinent to the determination of the source of the benchmark exceedance;
- If feasible, the source and direction of flow of discharges containing constituents of concern will be identified by location on a map, by the timing and frequency of discharge, and by characteristics of the flow which accounts for the presence of constituents of concern;
- A description of existing management practices which serve to limit the movement of the constituent of concern into waters of the state;
- A description of a time-limited implementation of management practices (new or revised) that will reduce pollutant concentrations to benchmark levels or lower, where feasible, including an estimate of the time necessary for the results to be measurable and any future plans for pollutant management;
- A description of a revised MRP Plan which will document the efficiency of the management practice(s);
- Conclusions and recommendations.

Monitoring Event Preparation

Monitoring event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps will be completed two weeks prior to each sampling event:

1. Contact laboratories to order sample containers and to coordinate sample transportation details.

2. Confirm scheduled monitoring date with field crew(s), and set-up sampling day itinerary including sample drop-off.
3. Prepare equipment (see Table 6).
4. Prepare sample container labels and apply to bottles.
5. Prepare the monitoring event summary and field log sheets to indicate the type of field measurements, field observations and samples to be collected at each of the monitoring sites.
6. Verify that field measurement equipment is operating properly (*i.e.*, check batteries, calibrate, etc.)

Table 6 provides a checklist of field equipment to prepare prior to each monitoring event.

Table 6. Field Equipment Checklist

X	Monitoring Plan	X	Tape Measure	X	Clean Secondary Container(s)
X	Sample Containers plus Extras with Extra Lids	X	Paper Towels or Rags in a Box	X	Peristaltic Pump
X	Pre-Printed and Extra Labels	X	Safety Equipment	X	Extra Pump Batteries
X	Event Summary Sheets	X	First Aid Kit	X	1 length of Clean Tubing per Site
X	Field Log Sheets	X	Cellular Telephone	X	Field Measurement Equipment
X	Chain of Custody Forms	X	Gate Keys		
X	Bubble Wrap	X	Hip Waders		
X	Coolers with Ice	X	Plastic Trash Bags		
X	New Powder-Free Nitrile Gloves	X	Distilled/DI Wash Bottles		
X	Pens	X	Blank Water		
X	Stop Watch	X	Sealable Plastic Bags		
X	Camera	X	Grab Pole		

Monitoring Event Summary and Post Event Summary

A monitoring event summary sheet will be produced for the field crew(s) prior to each monitoring event. Appendix B contains an example of a sampling event summary sheet. The event summary sheet will outline sampling requirements at each sampling station, including a list of samples to be collected and quality control (QC) sample collection requirements. This summary will act as a guide to assist field crews prepare for and track sample collection during each event. Additionally, the event summary sheet will list required containers and processing and storage requirements.

A post event summary report will be produced by the field crew and submitted to the Project Manager and Project QA Manager within one week of the completion of each sampling event, and will consist of the following:

1. A brief (one- to two-page) narrative summary of samples successfully collected;
2. A summary of any deviations from QAPP requirements;
3. A discussion of any problems encountered during the monitoring event;
4. A copy of the field logbook and chain-of-custody (COC) forms.

An example Post Event Summary Sheet is included in Appendix C. The field logbook and COCs will be scanned into PDF files and stored electronically by the Project Manager and in hard copy format by the field crew lead. The field logbook and COC forms are discussed in more detail in the Sample Collection / Field Measurements and Observations section of this MRP Plan.

Bottle Order/Preparation

Sample container orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Containers will be ordered for all water samples, including quality control samples, as well as extra containers in case the need arises for intermediate containers or a replacement. The containers must be the proper type and size and contain preservative as appropriate for the specified laboratory analytical methods. Table 7 presents the proper container type, volume, and immediate processing and storage needs. The field crew must inventory sample containers upon receipt from the laboratory to ensure that adequate containers have been provided to meet analytical requirements for each monitoring event. After each event, any bottles and tubing used to collect water samples will be cleaned by the laboratory and either picked up by or shipped to the field crew.

Sample Container Labeling

All samples will be identified with a unique identification code to ensure that results are properly reported and interpreted. Samples will be identified such that the site, sampling location, matrix, sampling equipment and sample type (i.e., environmental sample or QC sample) can be distinguished by a data reviewer or user. Sample identification codes will consist of a site identification code, a matrix code, and a unique sample ID number. The format for sample ID codes is *VCAILGMP* - ###.# - AAAA - XXX, where:

- *VCAILGMP* indicates that the sample was collected as part of the VCAILGMP.
- ###.# identifies the sequentially numbered monitoring event, and .# is an optional indicator for re-samples collected for the same event. Sample events are numbered from 001 to 999 and will not be repeated.
- AAAA indicates the unique site identification code assigned to each site. Site identification codes are provided in Table 1.
- XXX identifies the sample number unique to a sample bottle collected for a single event. Sample bottles are numbered sequentially from 001 to 999 and will not be repeated within a single event.

All sample containers will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample containers simplifies field activities, leaving only sample collection time and date and field crew initials to be filled out in the field. Custom labels will be produced using blank water-proof labels. This approach will allow the site and analytical constituent information to be entered in advance and printed as needed prior to each monitoring event. Labels will be applied to the appropriate sample containers in a dry environment as labels usually do not adhere to wet containers. The labels will not be applied to container caps. Container labels will contain the following information:

- Program Name
- Station ID
- Sample ID
- Date
- Time
- Sampling Personnel
- Analytical Requirements
- Preservative Requirements
- Analytical Laboratory

Sample Collection

Table 7 lists specific constituents for which samples will be analyzed and specifies the sample container, volume required, and immediate processing and storage and holding time requirements.

Table 7. Sample Container, Volume, Initial Preservation, and Holding Time Requirements

Parameter	Sample Container	Sample Volume ^[1]	Immediate Processing And Storage	Holding Time
<i>Aquatic Toxicity</i>				
Freshwater Sites (EC<3000 uS/cm): for 3-Species Screening, Routine Testing and Targeted Phase I TIE	FLPE-lined jerrican	1 x 20-L	Store at 4°C	36 hours ^[2]
Non-Freshwater Sites (EC>3000 uS/cm): for 3-Species Screening, Routine Testing and Targeted Phase I TIE	FLPE-lined jerrican	2 x 20-L	Store at 4°C	36 hours ^[2]
<i>Field Measurements</i>				
Flow, pH, Temperature, Dissolved Oxygen, Turbidity, Conductivity	Field Meter	N/A	N/A	N/A
<i>General Water Quality Constituents (GWQC)</i>				
Total Suspended Solids (TSS)	Polyethylene	1 L	Store at 4°C	7 days
Total Dissolved Solids (TDS)				7 days
Chloride				28 days
Sulfate				28 days
Phosphate				48 hours
Nitrate-N				48 hours
Total Ammonia-N	Polyethylene	250 mL	H ₂ SO ₄ ; Store at 4°C	28 days
<i>Organic Constituents</i>				
Organochlorine Pesticides	Amber Glass	2 x 1-L	Store at 4°C	7/40 days ^[3]
Organophosphorus Pesticides				3/40 days ^[4]
Pyrethroids				3/40 days ^[4]

NA = Not Applicable

[1] Additional sample volume may be required for quality control analyses.

[2] Tests should be initiated within 36 hours after sample collection. The 36-hour hold time does not apply to subsequent analyses for TIEs. For interpretation of toxicity results, samples may be split from toxicity samples in the laboratory and analyzed for specific chemical parameters. All other sampling requirements (sample containers, preservation, holding times) for these samples are as specified in this document for the specific analytical method. Results of these analyses are qualified for any other use (e.g., characterization of ambient conditions) because of potential holding time exceedances and variance from sampling requirements.

[3] 7/40 days = 7 days to extraction and 40 days from extraction to analysis.

[4] 3/40 days = 3 days to extraction and 40 days from extraction to analysis.

Sampling Technique

Samples will be collected in a manner that minimizes the possibility of sample contamination. These sampling techniques are summarized below:

- Samples are collected only into rigorously pre-cleaned sample containers.
- At least two persons are required on a sampling crew.

- Clean, powder-free nitrile gloves must be worn while collecting samples and must be changed whenever something not known to be clean has been touched.
- To reduce the potential for contamination and to ensure crew safety, field crews must observe the following precautions while collecting samples:
 1. Smoking is prohibited.
 2. Collecting samples near a vehicle, running or otherwise, is prohibited.
 3. Eating or drinking during sample collection is prohibited.
 4. Sampling personnel should avoid breathing, sneezing or coughing in the direction of an open sample container.
 5. Do not allow rain water to drip from rain gear or any other surface into sample containers.

Field Protocols

Field crews (2 persons per crew, minimum) will be mobilized for sampling only when weather conditions and flow conditions are considered to be safe. For safety reasons, sampling will be scheduled to occur during daylight hours. Sampling events will proceed in the following manner:

1. Before leaving the base of operations, confirm number and type of sample bottles as well as the complete equipment list.
2. Proceed to the first monitoring site.
3. Record the general information on the field log sheet.
4. Collect the samples indicated on the event summary sheet in the manner described in this MRP Plan. Collect additional volume and blank samples for field-initiated Quality Control (QC) samples as necessary. Place filled sample containers in coolers and carefully pack and ice samples as described in this MRP Plan. Using the log sheet, confirm that all appropriate bottles were filled.
5. Collect field measurements and observations, and record these on the field log sheet.
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining monitoring sites.
7. Complete the chain of custody forms using the field log sheets.
8. After sample collection is completed at all monitoring sites, deliver and/or ship samples to the appropriate laboratory.

Water Sample Collection

Grab samples will be collected at approximately mid-stream, mid-depth at the location of greatest flow (where feasible) by direct submersion of the sample container. This is the preferred method for grab sample collection. However, due to monitoring site configurations and safety concerns, direct filling of sample containers may not always be feasible, especially during wet events. Monitoring site configuration will dictate grab sample collection technique. Grab samples will be collected directly into the appropriate containers as outlined in the Project QAPP. Clean, powder-free nitrile gloves will be worn while collecting samples. In the event that a peristaltic pump and priority-cleaned silicone and Teflon™ tubing are used as a last resort to collect samples (*i.e.*, due to unsafe conditions during wet events), the sample collection tubing and the sample bottle and lid must come into contact only with surfaces known to be clean, or with the water sample.

The potential exists for monitoring sites to lack discernable flow. The lack of discernable flow may generate non-representative data as standing puddles will not appropriately characterize agricultural discharges. To address the potential confounding interference that can occur under such conditions, sites monitored under the VCAILGMP should be assessed for the following conditions and sampled (or not sampled) accordingly:

- Pools of water with no flow or visible connection to another surface water body should **NOT** be sampled. The field log should be completed for non-water quality data (including date and time of site visit), and the site condition should be photo-documented.
- Flowing water (*i.e.*, determined by visual observations, flow meter data, and a photo-documented assessment of conditions immediately upstream and downstream of the sampling site) should be sampled.

If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The Project Manager will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

The grab sample techniques that may be employed are described below.

Direct Submersion: Hand Technique

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures.

1. Wear clean powder-free nitrile gloves when handling containers and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples.
2. Use pre-labeled sample containers as described in the Sample Container Labeling section.
3. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill and secure the lid.
4. Place the sample on ice.
5. Collect the remaining samples including quality control samples, if required, using the same protocols described above.
6. Fill out the COC form, note sample collection time on the field log sheet, and deliver samples to the appropriate laboratory.

Intermediate Container Technique

Samples may be collected with the use of a specially cleaned intermediate container, if necessary, following the steps listed below. A secondary container may include a container that is similar in composition to the sample container or a pre-cleaned pitcher made of the same material as the sample container.

1. Wear clean powder-free nitrile gloves when handling bottles and lids. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples.
2. Use pre-labeled sample containers as described in the Sample Container Labeling section.
3. Submerge the intermediate container to mid-stream/mid-depth (if possible), let the container fill, and quickly transfer the sample into the individual sample container(s) and secure the lid(s).
4. Place the sample(s) on ice.
5. Collect remaining samples including quality control samples, if required, using the same protocols described above.
6. Fill out the COC form, note sample collection time on the field log sheet, and deliver the samples to the appropriate laboratory.

Pumping

Samples for which the use of a peristaltic pump is necessary because of sampling station configuration or safety reasons may be collected with the use of a peristaltic pump and specially cleaned tubing following the steps listed below.

1. Wear clean powder-free nitrile gloves when handling bottles, lids, and pump tubing. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples;
2. Use pre-labeled sample containers as described in the Sample Container Labeling section;
3. Attach pre-cleaned tubing into the pump, exercising caution to avoid allowing tubing ends to touch any surface known not to be clean. A separate length of clean tubing must be used at each sample location for which the pump is used;
4. Place one end of the tubing below the surface of the water. To the extent possible, avoid placing the tubing near the bottom of the channel so that settled solids are not pumped into the sample container.
5. Hold the other end of the tubing over the opening of the sample container, exercising care not to touch the tubing to the sample container.
6. Pump the necessary sample volume into the sample container and secure the lid;
7. Place the sample on ice;
8. Collect remaining samples including quality control samples, if required, using the same protocols described above; and
9. Fill out the COC form, note sample collection time on the field log sheet, and deliver the samples to appropriate laboratory.

Field Measurements and Observations

Field measurements (listed in Table 5) will be collected and observations will be made at each monitoring site after all samples associated with the site are collected. Field measurements will include flow, pH, temperature, dissolved oxygen, turbidity, and conductivity. Measurements (except for flow) will be collected at approximately mid-stream, mid-depth at the location of greatest

flow (if feasible) with a portable field meter that meets data quality objectives listed in the VCAILGMP QAPP.

All field measurement results and comments regarding site observations will be recorded on a field log sheet for each site. Field crews will keep a field log book for each sampling event that contains a calibration log sheet, a field log sheet for each site, and appropriate contact information. The following items should be recorded on the field log sheet for each sampling event:

- Monitoring station location (Site ID);
- Date and time(s) of sample collection;
- Name(s) of sampling personnel ;
- Sampling depth;
- Sample ID numbers and unique IDs for any replicate or blank samples;
- QC sample type (if appropriate);
- Requested analyses (specific parameters or method references);
- Sample type, (*i.e.*, grab);
- The results of any field measurements (*i.e.*, flow, pH, temperature, dissolved oxygen, turbidity, conductivity) and the time field measurements were made;
- Qualitative descriptions of relevant water conditions (*e.g.*, water color, flow level, clarity) or weather (*e.g.*, wind, rain) at the time of sample collection;
- A description of any unusual occurrences associated with the sampling event, particularly those that may affect water quality or data quality.

Several monitoring sites may be dry during the dry season. This information is relevant in that it establishes the absence of discharges from irrigated lands in the vicinity of these monitoring sites during the dry season. This information will be photo-documented and recorded on field log sheets to document site conditions. Background sites may also be dry during the dry season, in which case the absence of flow will also be photo-documented and recorded on the field log.

The field log will be scanned into a PDF and transmitted along with the Event Summary Report to the Project Manager within one week of the conclusion of each sampling event. Appendix D contains an example field log sheet.

Flow will be estimated using a velocity meter and channel cross-sectional area measurements, or will be estimated by other means at each monitoring site after all samples are collected. Appendix C of the QAPP contains the flow measurement standard operating procedure (SOP). When a velocity meter is unavailable or flow is not sufficiently deep to use a velocity meter, depth, width, and velocity will be estimated to provide an estimate of flow. Depth will be estimated using the average of several depth measurements taken across the width of the channel. Width will be measured by extending a tape measure from one bank to the other. Velocity will be estimated by measuring the time it takes a floating object (*e.g.*, stick, orange peel) to travel a known distance. Regardless of the measurement technique used, if a staff gage is present, gage height will be noted on the field log sheet. Flow at the time of sampling will also be obtained from the nearest Ventura County stream gage, if one exists on the channel in question and if channel depth is sufficient to produce an accurate measurement.

If at any time the collection of field measurements by wading appears to be unsafe, field crews will not attempt to collect mid-stream, mid-depth measurements. Rather, field measurements will be made either directly from a stable, unobstructed area at the channel edge, or by using a telescoping pole and intermediate container to obtain a sample for field measurements and for filling sample containers. Use of sample collection methods other than the mid-stream, mid-depth method will be documented on the field log sheet. Field crews may not be able to measure flow at several sites during wet weather because of inaccessibility of the site. If this is the case, site inaccessibility will be documented on the field log sheet.

The field sampling crew has the primary responsibility for responding to failures in the sampling or measurement systems. Deviations from established monitoring protocols outlined in the VCAILGMP QAPP will be documented in the comment section of the field log sheet. If monitoring equipment fails, monitoring personnel will report the problem in the notes section of the field log sheet and will not record data values for the variables in question. Broken equipment will be replaced or repaired prior to the next field use. Data collected using faulty equipment will not be used for the VCAILGMP.

Sample Handling and Chain-of-Custody

Sample Handling

The field crews will have custody of samples during each monitoring event. Chain-of-custody (COC) forms will accompany all samples during shipment to contract laboratories to identify the shipment contents. All water quality samples will be transported to the analytical laboratory by the field crew or by overnight courier. The original COC form will accompany the shipment, and a signed copy of the COC form will be sent, typically via fax, by the laboratory to the field crew to be retained in the project file.

While in the field, samples will be stored on ice in an insulated container, so that they will be kept at approximately 4°C. Samples that must be shipped to the laboratory must have lids securely tightened and must be placed on ice to maintain the temperature at approximately 4°C. The ice packed with samples must be sealed in re-sealable bags, be approximately 2 inches deep at the top and bottom of the cooler, and must contact each sample to maintain temperature. The original COC form(s) will be double-bagged in re-sealable plastic bags and either taped to the outside of the cooler or to the inside lid. Samples must be shipped to the contract laboratory according to Department of Transportation standards. The method(s) of shipment, courier name, and other pertinent information should be entered in the "Received By" or "Remarks" section of the COC form.

Coolers must be sealed with packing tape before shipping and must not leak. It is assumed that samples in tape-sealed ice chests are secure whether being transported by field staff vehicle, by common carrier, or by commercial package delivery. The laboratory's sample receiving department will examine the shipment of samples for correct documentation, proper preservation, and compliance with holding times.

The following procedures are used to prevent bottle breakage and cross-contamination:

- Bubble wrap or foam pouches are used to keep glass bottles from contacting one another to prevent breakage.
- All samples are transported inside hard plastic coolers or other contamination-free shipping containers.
- The coolers are taped shut to prevent accidental opening.
- If arrangements are not made in advance, the laboratory's sample receiving department must be notified prior to sample shipment.

Any sample volume remaining in the laboratory after successful completion of analyses will be disposed of properly. It is the responsibility of each analytical laboratory to ensure that all applicable regulations are followed in the disposal of samples or related chemicals.

Chain-of-Custody Form

Sample custody procedures provide a mechanism for documenting information related to sample collection and handling. Sample custody must be traceable from the time of sample collection until results are reported. A sample is considered under custody if:

- It is in actual possession.
- It is in view after being in physical possession.
- It is placed in a secure area (accessible by or under the scrutiny of authorized personnel only after in possession).

A chain-of-custody (COC) form must be completed after sample collection and prior to sample shipment or release. The COC form, sample labels, and field documentation will be cross-checked by the field crew prior to shipment or delivery to the laboratory to verify sample identification, types of analyses, number of containers, sample volume, preservatives, and types of containers. A completed COC form is to accompany the samples to the analyzing laboratory. An example COC form is included in Appendix E.

Transport to Analytical Laboratories

Samples will be stored in coolers with ice and bubble wrap and delivered to the appropriate laboratory as indicated in Table 8.

Table 8. Analytical Laboratories

Laboratory	Analysis	Shipping Method	Contact	Phone	Address
Pacific EcoRisk	Toxicity, TIEs	Overnight delivery	Stephen Clark	[925] 313-8080	835 Arnold Dr., Ste. 104 Martinez, CA 94553
FGL, Inc.	Inorganic Chemistry	Same day delivery	David Terz	[805] 392-2000	853 Corporation St. Santa Paula, CA 93060
CRG Marine Labs, Inc.	Pesticides	Overnight delivery	Rich Gossett	[310] 533-5190	2020 Del Amo Blvd #200 Torrance, CA 90501-1206

Quality Assurance/Quality Control

Quality control (QC) samples will be collected in conjunction with environmental samples to verify data quality. QC samples collected in the field include field blanks and field duplicates; equipment blanks are prepared by the analytical laboratory for each batch of sampling equipment cleaned (*i.e.*, pump tubing). The frequency of QC sample collection is presented in Table 9. Specific collection methods for each type of quality control sample are described below.

Equipment Blanks

The purpose of analyzing equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment, before sending equipment to the field crew for use, and analyzed for constituents listed in Table 5. Equipment blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The blanks will be analyzed for salts, nutrients and pesticides listed in Table 5 using the same analytical methods specified for environmental samples. If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

Field Blanks

Field blanks will be collected for the stations and events specified in Table 9. Field blanks will be analyzed for salts, nutrients and pesticides. The field crew will use blank water provided by the laboratory to generate field blanks by pouring blank water directly into the appropriate sample containers. Field blanks will be identified with a unique Site ID by the Project Manager prior to each monitoring event and submitted "blind" to the laboratory. If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew will be notified so that the source of contamination can

be identified (if possible) and corrective measures implemented prior to the next sampling event. The frequency of field blank collection specified in Table 9 will be increased if contamination is detected.

Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate (MS/MSD) analyses will be requested on samples collected at monitoring sites specified in Table 9. MS/MSD samples will be analyzed for pesticides listed in Table 5. Double or triple the sample volume will be necessary for each set of MS/MSD samples.

Field Duplicates

Field duplicate analyses shall be requested for all constituents for the stations and events specified in Table 9. Field duplicates will be analyzed for TSS, TDS, salts, nutrients and pesticides. Double the sample volume may be required by the laboratory to run laboratory duplicates.

Quality Control Sample Collection Schedule

Table 9 presents the quality assurance/quality control (QA/QC) sample collection schedule for Phase I monitoring. The schedule is intended to provide general guidance on the timing of QC sample collection. However, due to the nature of environmental sampling, it may not be possible to collect all QC samples as outlined in this schedule. Therefore, this schedule is flexible and may be modified to meet in-field conditions and sampling schedule requirements. Deviations from this schedule will be recorded on the field log sheet and will be included in the event summary (if the deviation is planned in advance) and post event summary.

Table 9. Quality Control Sample Collection Schedule

Watershed/ Subwatershed	Station ID	Event Number-type ^[1]							
		1-wet	2-dry	3-dry	4-wet	5-wet	6-dry	7-dry	8-wet
Calleguas Creek/ Mugu Lagoon	01T_ODD2_DCH						FB, MS, FD		
Calleguas Creek/ Mugu Lagoon	01T_ODD3_ARN								
Calleguas Creek/ Calleguas Creek	02D_BROOM								
Calleguas Creek/ Calleguas Creek	02D_CSUCI								
Calleguas Creek/ Revolon Slough	04D_ETTG								
Calleguas Creek/ Revolon Slough	04D_LAS								
Calleguas Creek/ Beardsley Channel	05D_SANT_VCWPD								
Calleguas Creek/ Beardsley Channel	05D_SANT_BKGD								
Calleguas Creek/ Beardsley Channel	05D_LAVD					FB, MS, FD			
Calleguas Creek/ Beardsley Channel	05T_HONDA		FB, MS, FD						
Calleguas Creek/ Arroyo Las Posas	06T_FC_BR	FB, MS, FD							
Calleguas Creek/ Arroyo Las Posas	06T_LONG								
Calleguas Creek/ Conejo Creek	9BD_GERRY								
Oxnard Coastal	OXD_CENTR								
Santa Clara River	S02T_ELLS								
Santa Clara River	S02T_TODD			FB, MS, FD				FB, MS, FD	
Santa Clara River	S03T_TIMB				FB, MS, FD				
Santa Clara River	S03T_BOULD								FB, MS, FD
Santa Clara River	S03T_BARDS								
Santa Clara River	S04T_HOPP						FB, MS, FD		
Santa Clara River	S04T_TAPO								
Ventura River	VRT_THACH								
Ventura River	VRT_SANTO		FB, MS, FD						

[1] After eight events (2 years of monitoring), the cycle of quality control sample collection is repeated.

FB = Field Blank; analyzed for salts, nutrients and pesticides. If a site requires sample collection using a peristaltic pump, a pumped sample field blank will be collected in addition to the grab sample field blank.

FD = Field Duplicate: duplicate samples analyzed for TSS, TDS, salts, nutrients, pesticides, and chronic toxicity.

MS = Matrix Spike/Matrix Spike Duplicate: analyzed for pesticides.

References

SM 2450 D. APHA, AWWA, and WEF. 1998. Standard Methods for the examination of water and wastewater, 20th Edition.

Bailey, H.C., DiGiorgio, C., Kroll, K., Miller, J.L., Hinton, D.E., Starrett, G. 1996. Development of Procedures for Identifying Pesticide Toxicity in Ambient Waters: Carbofuran, Diazinon, Chlorpyrifos. Environ. Tox. and Chem. V15, No. 6, 837–845.

Larry Walker Associates, Inc (LWA). 2006. Ventura County Agriculture Irrigated Lands Group (VCAILG) Quality Assurance Project Plan (QAPP).

United States Environmental Protection Agency (USEPA). 1991. Methods for Aquatic Toxicity Identification Evaluations: Phase 1 Toxicity Characterization Procedures (Second Edition). EPA-600/6-91/003. USEPA, Environmental Research Laboratory, Duluth, MN.

United States Environmental Protection Agency (USEPA). 1992. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents Phase I. EPA-600/6-91/005. USEPA, Office of Research and Development, Washington, D.C.

United States Environmental Protection Agency (USEPA). 1993a. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fourth Edition. EPA/600/4-90/027F. USEPA, Office of Research and Development, Washington, D.C.

United States Environmental Protection Agency (USEPA). 1993b. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA/600/R- 92/080. USEPA, Office of Research and Development, Washington, D.C.

United States Environmental Protection Agency (USEPA). 1996. Marine Toxicity Identification Evaluation. Phase I Guidance Document EPA/600/R-96/054. USEPA, Office of Research and Development, Washington, D.C.

USEPA, 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C. EPA-821-R-02-013.

Appendix A. Monitoring Stations

Site ID	01T_ODD2_DCH
Drains to Reach:	CCW-1: Mugu Lagoon
Site Type	303(d)-Listed Agricultural Drain
Latitude	34.139514
Longitude	-119.118330
Site Description	Duck Pond/Oxnard Drain #2/Mugu Drain
Driving Directions	In Camarillo, exit Hwy 101 at Los Posas Rd. and head south. Turn right onto Hueneme Road. Just past the Hwy 1 interchange, turn left onto the 2 nd ranch road (Naumann Road is too far). The site is located at the bridge crossing.
Thomas Guide Page(s)	553, E7.

Site ID	01T_ODD3_ARN
Drains to Reach:	CCW-1: Mugu Lagoon
Site Type	303(d)-Listed Agricultural Drain
Latitude	34.123564
Longitude	-119.156514
Site Description	Rio de Santa Clara/Oxnard Drain #3
Driving Directions	In Camarillo, exit Hwy 101 at Los Posas Rd. and head south. Turn right onto Hueneme Road. Just past the Hwy 1 interchange, turn left onto Arnold Road and park at the bridge at the end of the road. The site is located on the N bank near the water pump.
Thomas Guide Page(s)	583, A2.

Site ID	02D_BROOM
Drains to Reach:	CCW-2: Calleguas Creek
Site Type	Agricultural Drain
Latitude	34.143406
Longitude	-119.071103
Site Description	Discharge to Calleguas Ck at Broome Ranch Rd.
Driving Directions	In Camarillo, exit Hwy 101 at Lewis Rd and head south. At the Potrero Rd. intersection, turn left onto Potrero Road and turn right onto the east flood control levy of Calleguas Creek. Go through the VCWPD locked gate and drive south along the eastern Calleguas Creek levee until the first dirt road intersection (Broome Ranch Rd.) and park. The site is a discharge pipe located on the Creek side of the levy.
Thomas Guide Page(s)	554, B6.

Site ID	02D_CSUCI
Drains to Reach:	CCW-2: Calleguas Creek
Site Type	Potential background site for 02D_BROOM
Latitude	34.158183
Longitude	-119.042683
Site Description	Potential Broome Rd background site at CSUCI
Driving Directions	After samples are collected at 02D_BROOM, proceed back to the VCWPD gate. Turn right onto Potrero Rd. and drive up along the CSUCI grounds. If landscape irrigation runoff is draining into the culvert by the athletic field, collect background samples at that site.
Thomas Guide Page(s)	554, D4/E4.

Site ID	04D_ETTG
Drains to Reach:	CCW-4: Revolon Slough
Site Type	Agricultural Drain
Latitude	34.162430
Longitude	-119.090947
Site Description	Discharge to Revolon Slough at Etting Rd.
Driving Directions	In Camarillo, exit Hwy 101 at Lewis Rd and head south. Turn right (west) onto Pleasant Valley Rd. Turn left (south) onto Wood Rd. Turn left (east) onto Etting Rd and drive across the Revolon Slough bridge. Turn right just past the bridge and park. The site is located on the ag drain just upstream of its confluence with Revolon Slough.
Thomas Guide Page(s)	553, H4.

Site ID	04D_LAS
Drains to Reach:	CCW-4: Revolon Slough
Site Type	Agricultural Drain
Latitude	34.134208
Longitude	-119.079767
Site Description	Discharge to Revolon Slough at S. Las Posas Rd
Driving Directions	In Camarillo, exit Hwy 101 at Las Posas Rd. Turn right onto the flood control levee just before the Revolon Slough bridge and go through the locked VCWPD gate. The site is the ag drain located to the east of the Revolon Slough levee.
Thomas Guide Page(s)	584, A1.

Site ID	05D_SANT_VCWPD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Agricultural Drain / Flood Control Channel
Latitude	34.242667
Longitude	-119.113736
Site Description	Santa Clara Drain at VCWPD Gage No. 781
Driving Directions	From US 101 in Camarillo, exit Santa Clara Ave and head northeast. Pull off to the right at the VCWPD gate about 0.75 miles beyond the Central Ave. intersection. Go through the locked gate and proceed southeast along the levy to County Gaging Station 781.
Thomas Guide Page(s)	493, F7.

Site ID	05D_SANT_BKGD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Potential Background site for 05D_SANT_VCWPD near golf course; location to be determined
Latitude	To be determined
Longitude	To be determined
Site Description	Potential 05_D_SANT_VCWPD background site near the golf course
Driving Directions	After samples are collected at 05D_SANT_VCWPD, proceed to the background site. If landscape irrigation runoff is present and draining into the Santa Clara drain, collect background samples at that site.
Thomas Guide Page(s)	To be determined

Site ID	05D_LAVD
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Agricultural Drain / Flood Control Channel
Latitude	34.265849
Longitude	-119.094145
Site Description	La Vista Drain at La Vista Ave.
Driving Directions	From Oxnard, exit Hwy 101 at Central Ave. and head northwest. Turn right onto Santa Clara Ave., which turns into Hwy 118 at the stoplight. Continue on Hwy 118 and turn left onto La Vista Ave. Park near the bridge over La Vista Drain.
Thomas Guide Page(s)	493, H4

Site ID	05T_HONDA
Drains to Reach:	CCW-5: Beardsley Channel
Site Type	Tributary to Beardsley Channel
Latitude	34.263608
Longitude	-119.057431
Site Description	Honda Barranca at Hwy 118
Driving Directions	From Oxnard, exit Hwy 101 at Central Ave. and head northwest.. Turn right onto Santa Clara Ave., which turns into Hwy 118 at the stoplight. Continue on Hwy 118 until just past Center School Rd. Turn right off the Hwy onto the dirt area just before the Honda Barranca Bridge. The site is located down the west bank of the channel just downstream of the bridge.
Thomas Guide Page(s)	494, C4

Site ID	06T_FC_BR
Drains to Reach:	CCW-6: Arroyo Las Posas
Site Type	Tributary to Arroyo Las Posas
Latitude	34.264653
Longitude	-119.011128
Site Description	Fox Barranca at Hwy 118
Driving Directions	In Camarillo, exit Hwy 101 at Lewis-Somis Rd (Hwy 34) and head north. Turn left onto Hwy 118 and turn right onto Bradley Rd. Pull off Bradley Rd. to the right just past the Fox Canyon bridge. Site access is down the north bank of the channel, on the east side of Bradley Rd.
Thomas Guide Page(s)	494, H4

Site ID	06T_LONG
Drains to Reach:	CCW-6: Arroyo Las Posas
Site Type	Tributary to Arroyo Las Posas
Latitude	34.268411
Longitude	-118.959333
Site Description	Long Canyon at Hwy 118
Driving Directions	In Camarillo, exit Hwy 101 at Lewis-Somis Rd (Hwy 34) and head north. Turn right onto Hwy 118 and left onto Balcom Canyon Rd. Make a U-Turn and head back to Hwy 118 and turn right (west). Pull off the Hwy to the right just before the Long Canyon bridge.
Thomas Guide Page(s)	495, E3

Site ID	9BD_GERRY
Drains to Reach:	CCW-9B: Conejo Creek
Site Type	Agricultural discharge to Conejo Creek
Latitude	34.237135
Longitude	-118.957091
Site Description	Discharge at Santa Rosa Rd and Gerry Rd
Driving Directions	From US 101 in Camarillo exit Santa Rosa Rd. and head northeast. Turn left onto Gerry Rd. and park
Thomas Guide Page(s)	525, G1

Site ID	OXD_CENTER
Drains to:	McGrath Lake / Pacific Ocean
Site Type	Agricultural discharge to McGrath Lake
Latitude	34.220872
Longitude	-119.254875
Site Description	Central Ditch at Harbor Blvd
Driving Directions	In Ventura, exit Hwy 101 at Victoria Ave. and head south. Turn right onto Olivas Park Dr, then left onto Harbor Blvd. Pull off to the right just before the Gonzalez Rd intersection at the small "Gonzales Rd" sign. The sampling point is down the bank on the right.
Thomas Guide Page(s)	521, G3

Site ID	S02T_ELLS
Drains to Reach:	Santa Clara River, Reach 2
Site Type	Tributary to Santa Clara River
Latitude	34.306805
Longitude	-119.141275
Site Description	Ellsworth Barranca at Telegraph Rd
Driving Directions	In Ventura exit Hwy 101 at Hwy 126 and head east. Exit Hwy 126 at Wells Rd. and turn left onto Wells Rd. Turn right onto Telegraph Rd. Pull off Telegraph to the right just before the Ellsworth Barranca bridge and park.
Thomas Guide Page(s)	473, C5

Site ID	S02T_TODD
Drains to Reach:	Santa Clara River, Reach 2
Site Type	Tributary to Santa Clara River
Latitude	34.313584
Longitude	-119.117095
Site Description	Todd Barranca at Hwy 126
Driving Directions	In Ventura exit Hwy 101 at Hwy 126 and head east. Exit Hwy 126 at Wells Rd. and turn left onto Wells Rd. Turn right onto Telegraph Rd. Turn right onto Todd Rd. and follow Todd down to the Hwy 126 overpass and park. The site is located down the rip-rap slope just north of Hwy 126.
Thomas Guide Page(s)	473, E4

Site ID	S03T_TIMB
Drains to Reach:	Santa Clara River, Reach 3
Site Type	Tributary to Santa Clara River
Latitude	34.370204
Longitude	-119.021140
Site Description	Timber Canyon on the N side of Hwy 126
Driving Directions	From westbound Hwy 126, pull off to the right onto the dirt farm road past Timber Canyon Road and just past the bridge/guardrail over Timber Canyon. Turn to the right (east) and follow the road to the west bank of the creek.
Thomas Guide Page(s)	464, G3

Site ID	S03T_BOULD
Drains to Reach:	Santa Clara River, Reach 3
Site Type	Tributary to Santa Clara River
Latitude	34.389578
Longitude	-118.958738
Site Description	Boulder Creek on the N side of Hwy 126
Driving Directions	From westbound Hwy 126, pull off to the right into the driveway just past the Old Telegraph Rd. turnoff and park. Dry weather access is down the bank on the southwest side of the Creek.
Thomas Guide Page(s)	455, E7

Site ID	S03T_BARDS
Drains to Reach:	Santa Clara River, Reach 3
Site Type	Agricultural discharge to Santa Clara River
Latitude	34.371917
Longitude	-118.965547
Site Description	Drain at Bardsdale Ave at the Santa Clara River
Driving Directions	From Hwy 126, turn south onto Hwy 23 in Fillmore and cross the Santa Clara River bridge. Exit Hwy 23 at Bardsdale Ave. at the intersection where the Hwy turns due south. Drive to the end of Bardsdale Ave. and park.
Thomas Guide Page(s)	465, E3

Site ID	S04T_HOPP
Drains to Reach:	Santa Clara River, Reach 4
Site Type	Tributary to Santa Clara River
Latitude	34.401616
Longitude	-118.826799
Site Description	Hopper Creek on the N. side of Hwy 126
Driving Directions	From westbound Hwy 126, pull off the Hwy onto the right shoulder just after Piru and after the Hopper Cyn bridge and park. Dry weather access is down the bank on the west side of the channel, just south of the railroad bridge.
Thomas Guide Page(s)	457, B6

Site ID	S04T_TAPO
Drains to Reach:	Santa Clara River, Reach 4
Site Type	Tributary to Santa Clara River
Latitude	34.403905
Longitude	-118.722000
Site Description	Tapo Canyon Creek on the south side of Hwy 126
Driving Directions	From eastbound Hwy 126, turn right at the Newhall Land sign (about 4 miles past Piru). Call security at the Newhall gate for access. Cross the Santa Clara River and turn left at Camino Del Rio and drive to the Tapo Canyon crossing.
Thomas Guide Page(s)	458, E5

Site ID	VRT_THACH
Drains to:	San Antonio Creek and eventually the Ventura River
Site Type	Tributary to San Antonio Creek / Ventura River
Latitude	34.446719
Longitude	-119.210893
Site Description	Thacher Creek at Ojai Ave
Driving Directions	From Hwy 101 head north on Hwy 33. Veer to the right onto Hwy 150 (Ojai Ave.) at the Hwy 33/Hwy 150 intersection and drive through downtown Ojai. Pull off Ojai Ave to the right shoulder just before the Thacher Creek bridge and park. Dry weather access is on the north side of Ojai avenue.
Thomas Guide Page(s)	442, C7

Site ID	VRT_SANTO
Drains to:	Ventura River
Site Type	Tributary to the Ventura River
Latitude	34.454455
Longitude	-119.221723
Site Description	San Antonio Creek at Grand Ave
Driving Directions	From Hwy 101 head north on Hwy 33. Veer to the right onto Hwy 150 (Ojai Ave.) at the Hwy 33/Hwy 150 intersection and drive through downtown Ojai. Turn left onto Gridley Rd. Turn right onto Grand Ave. Pull off Ojai Ave to the right shoulder just after the San Antonio Creek bridge, just past Orange Rd. Dry weather access is on the north side of Grand Ave. Walk through the locked gate on the west side of the channel and down the west bank.
Thomas Guide Page(s)	442, B6

Appendix B. Example Event Summary Sheet

VCAILG Monitoring Program
Event Summary
Sampling Event # 001 January 1, 2007

Station	Constituents	Bottles	Lab
04D_ETTG + QC – FIELD BLANK			
Water	OC, OP and Pyrethroid Pesticides	2 x 1L Amber glass	CRG
	Total Suspended Solids	1 L HDPE	FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N	1 L HDPE	FGL
	Total Ammonia-N	250-mL polyethylene	FGL
	Chronic Toxicity	1 x 5-Gallon FLPE-Lined Jerricans	PER
	QC - Field Blank - Label as Station 20L_DAVIS * Collect field blank with lab water before collecting any other samples at this site *		
	OC, OP and Pyrethroid Pesticides	2 x 1L Amber glass	CRG
	Total Suspended Solids	1 L HDPE	FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N	1 L HDPE	FGL
	Total Ammonia-N	250-mL polyethylene	FGL
04D_LAS + QC – FIELD DUPLICATE			
Water	OC, OP and Pyrethroid Pesticides	2 x 1L Amber glass	CRG
	Total Suspended Solids	1 L HDPE	FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N	1 L HDPE	FGL
	Total Ammonia-N	250-mL polyethylene	FGL
	Chronic Toxicity	1 x 5-Gallon FLPE-Lined Jerricans	PER
	QC - Field Duplicate - Label as Station 20L_SANMO * Collect field duplicate simultaneously with original sample *		
	OC, OP and Pyrethroid Pesticides	2 x 1L Amber glass	CRG
	Total Suspended Solids	1 L HDPE	FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N	1 L HDPE	FGL
	Total Ammonia-N	250-mL polyethylene	FGL

Appendix C. Example Post-Event Summary Sheet

VCAILG Monitoring Program
Post Event Summary
Sampling Event # 001 January 1, 2007

Station	Requirements	Date Submitted to Lab	Date Data Received from Lab	Format of Data	Lab
04D_ETTG + QC – FIELD BLANK					
Water	OC, OP and Pyrethroid Pesticides				FGL
	Total Suspended Solids				FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N				FGL
	Total Ammonia-N				FGL
	Toxicity				PER
	QC - Field Blank - Label as Station 20L_DAVIS * Collect field blank with lab water before collecting any other samples at this site *				
	OC, OP and Pyrethroid Pesticides				FGL
	Total Suspended Solids				FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N				FGL
	Total Ammonia-N				FGL
04D_LAS + QC – FIELD DUPLICATE					
Water	OC, OP and Pyrethroid Pesticides				FGL
	Total Suspended Solids				FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N				FGL
	Total Ammonia-N				FGL
	Toxicity				PER
	QC - Field Duplicate - Label as Station 20L_SANMO * Collect field duplicate simultaneously with original sample *				
	OC, OP and Pyrethroid Pesticides				FGL
	Total Suspended Solids				FGL
	Total Dissolved Solids, Chloride, Sulfate, Phosphate, Nitrate-N				FGL
	Total Ammonia-N				FGL

FIELD SAMPLING DATA LOG SHEET: EVENT ____
Ag Waiver Program

Personnel:

[illegible]

Notes*

Other Foreign Matter:

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Appendix D. Example Field Log - continued

Field Observation Guidance and Standard Comments

Qualitative Measures

1) Dominant Substrate:

Record the dominant substrate in the upstream reach of the sample location using one of the following categories:

Boulder (B), cobble (C), gravel (G), sand (S), fines (F) or cement (K).

2) Algae:

a) Filamentous: Record the percent of the flowing water surface, up-stream from your sample location, that you estimate is occupied by filamentous algae.

b) Other Periphyton: Record the percent of substrate in the wetted channel, looking up stream from your sample location, that you estimate is covered in periphyton. Other periphyton is defined here as the living community attached to the substrate, including algae that is not the green filamentous type, aquatic mosses, fungi, diatoms and sessile invertebrates. To make this estimate feel the surface of the rocks and other substrate materials and estimate the percent of the substrate that is covered with a slimy organic community.

3) Shading:

Record the percent of the stream's surface (water surface), up-stream from your sample location, that you estimate would be shaded if the sun was directly over the creek.

4) Plants:

a) Bank: Record the percent of the surface of both banks, up-stream from your sample location that you estimate to be covered by vegetation. This estimate refers only to plants and roots at the water's edge.

b) In-Stream: Record the percent of the flowing water's surface, up-stream from your sample location that you estimate to be occupied by aquatic vegetation. This is a percent of the total water surface that is occupied by aquatic vegetation.

Other Notes

Visually assess the stream corridor and comment on anything that you feel may directly affect or contribute to changes in water quality. Some standard comments and categories of observations follow.

a) Recent/Current Weather Events: heavy rains, cold front or heat spells

b) Water Color: black, brown, yellow, white, green, etc.

c) Site Odors: sulfides, sewage, petroleum, unidentifiable odor or none.

d) In stream Activities: construction, major erosion events, recent scour or other

e) Other Foreign Matter: suspended matter, oily sheen, foam or other debris.

f) Biological Activity: Note the presence of fish, birds, mammals or invertebrates observed and record one of the following categories: True count up to 25, then estimate > 25, > 50 or >100.

g) Trash : Bank and in stream debris such as fertilizer bags, aerosol cans, batteries human wastes, homeless encampments, dumping of furniture or appliances. Record the true number of paper and recyclable trash items up to 10 items (count 1-10 items of trash), greater than 10 items should be recorded as >10 items of trash.

h) Tidal Influences: evidence of recent tidal surge (i.e. kelp or driftwood) or of possible salt-water influence.

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Lab ID:

[illegible]