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VENTURA COUNTY AGRICULTURAL
IRRIGATED LANDS GROUP

2020 Annual Monitoring Report

Submitted to

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Submitted by

VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP (VCAILG)

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science | policy | solutions

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Acronyms

AMR	Annual Monitoring Report
BMP	Best Management Practice
CC	Calleguas Creek
CCW	Calleguas Creek Watershed
CCWTMP	Calleguas Creek Watershed TMDL Monitoring Program
DNQ	Detected Not Quantified
EST	Estimated
LA	Load Allocation
LARWQCB	Los Angeles Regional Water Quality Control Board (Regional Board)
MDL	Method Detection Limit
MRP	Monitoring and Reporting Plan
NA	Not Applicable
ND	Not Detected
NM	Not Measured
NOA	Notice of Applicability
NOI	Notice of Intent
NR	Not Required
NS	Not Sampled
NV	Not Visited
OC	Organochlorine
OP	Organophosphorus
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
SCR	Santa Clara River
SCRW	Santa Clara River Watershed
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
VCAILG	Ventura County Agricultural Irrigated Lands Group
VR	Ventura River
VRW	Ventura River Watershed
WQMP	Water Quality Management Plan

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Introduction

On April 14, 2016, the Los Angeles Regional Water Quality Control Board adopted the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region* ("*Conditional Waiver*", Order No. R4-2016-0143). The purpose of the *Conditional Waiver* is to assess the effects of, and control discharges from, irrigated agricultural lands in Los Angeles and Ventura Counties, including irrigation return flows, flows from tile drains, and storm water runoff. These discharges can affect water quality by transporting nutrients, pesticides, sediment, salts, and other pollutants from cultivated fields into surface waters, potentially impairing designated beneficial uses. Owners and operators of agricultural lands in Ventura and Los Angeles Counties must comply with provisions contained in the *Conditional Waiver* or be regulated under other Regional Board programs. This was the third iteration of the *Conditional Waiver* adopted for the Los Angeles Region.

The *Conditional Waiver* allows individual landowners and growers to comply with its provisions by working collectively as a Discharger Group, or as an individual. A Discharger Group is defined by the *Conditional Waiver* as "any group of dischargers and/or organizations that forms to comply with this Order. Discharger Groups can be, but are not limited to, organizations formed on a geographic basis or formed with other factors in common such as commodities." The primary purpose of allowing Discharger Groups is to encourage collaboration on monitoring and reporting and to increase the effectiveness of management practices throughout a watershed to attain water quality standards. Those landowners and growers choosing to comply with the *Conditional Waiver* as a Discharger Group must signify by submitting a Group Notice of Intent and by developing a Discharger Group monitoring program.

To assist agricultural landowners and growers that farm within the boundaries of Ventura County, various agricultural organizations, water districts and individual farmers joined together in 2006 to form the Ventura County Agricultural Irrigated Lands Group (VCAILG), which is intended to act as one unified "Discharger Group" for those agricultural landowners and growers that wish to participate. A Notice of Intent (NOI) to comply was submitted to the Regional Board by the VCAILG under the two previous *Conditional Waivers* and on October 14, 2016 an NOI for compliance with the 2016 *Conditional Waiver* was submitted. The NOI included the VCAILG membership roster, as well as the required Quality Assurance Project Plan (QAPP) and Monitoring and Reporting Program Plan (MRP), which detail the water quality monitoring and reporting procedures being conducted in compliance with the terms of the *Conditional Waiver*.

This report covers the period from July 2019 to June 2020 during which monitoring was conducted according to the requirements and MRP approved under the 2016 *Conditional Waiver*.

Group Membership and Setting

VCAILG was formed in 2006 to act as one unified "Discharger Group" in Ventura County for the purpose of compliance with the *Conditional Waiver*. VCAILG oversight is provided by a 16-member Steering Committee which includes a 5-member Executive Committee. Steering Committee membership consists of agricultural organization representatives, agricultural water district representatives, landowners and growers from the three primary watersheds in Ventura County (Calleguas Creek, Santa Clara River, and Ventura River). Steering Committee membership also represents the major commodities grown in Ventura County (strawberries, nursery stock, citrus, vegetables, and avocados). The Steering Committee roster is presented in Table 1.

Because VCAILG is an unincorporated organization, the Farm Bureau of Ventura County acts as the responsible entity for the collection of funds, contracting with consultants, and other fiscal and/or business matters that require an organization with some form of tax status; the Farm Bureau is a non-profit 501(c)(5) organization.

A list of VCAILG members and associated parcels is included as Appendix A. The membership list includes the following information:

- Assessor Parcel Number
- Parcel Owner Name(s)
- Parcel Irrigated Acres
- Parcel Watershed
- Parcel Owner Mailing Address

In addition to Appendix A, VCAILG is required to provide a list of enrolled and non-enrolled parcels for each monitoring site. This list is included as Appendix I and is current as of December 8, 2020.

Table 2 contains a summary of VCAILG membership statistics, including the number of landowners and parcels enrolled, as well as irrigated acreage enrolled in each watershed. All membership statistics in the text of this report represent group status on December 3, 2020. Per the December 2020 membership rolls, VCAILG represents 1,423 Ventura County agricultural landowners and 81,907 irrigated acres. According to the Ventura County Assessor's records, there are an estimated 454 landowners in the county with irrigated agricultural acreage not enrolled in VCAILG. Therefore, the current VCAILG membership represents 77 percent of agricultural landowners in Ventura County, accounting for approximately 89 percent of the estimated irrigated acreage.

Table 1. VCAILG Steering Committee Membership

Member, Organization [1]	Crop(s) Represented	Watershed(s) Represented
Edgar Terry, Terry Farms, Inc. (Committee Chair)	Strawberries, Vegetables	Calleguas Creek, Santa Clara River
Jared Bouchard, Pleasant Valley Co. Water District*	N/A	N/A
Jonathan Chase, Hailwood, Inc.	Strawberries, Vegetables	Calleguas Creek
Robert Crudup, BrightView Tree Co.	Nursery Stock	Santa Clara River
Paul DeBusschere, DeBusschere Ranch	Strawberries, Avocados	Calleguas Creek
Mike Friel, Laguna Grove Service	Citrus	Calleguas Creek
Jurgen Gramckow, Southland Sod Farms	Sod, Hay, Oats, Vegetables	Calleguas Creek, Santa Clara River, Ventura River
Gus Gunderson, Limoneira Company	Avocado, Citrus	Santa Clara River
Craig Held, Rancho Gemelos/Held Ranches	Avocado, Citrus	Santa Clara River
John Krist, Farm Bureau of Ventura County*	N/A	N/A
John Mathews, Arnold, Bleuel, LaRochelle, et al.*	N/A	N/A
Doug O'Hara, Somis Pacific Ag Management Company	Avocado, Citrus	Calleguas Creek, Santa Clara River
Kelle Pistone, Assoc. of Water Agencies of Ventura County*	N/A	N/A
Rob Roy, Ventura County Agricultural Association*	N/A	N/A
Mike Sullivan, Essick Farm Management	Avocado, Citrus	Ventura River
Craig Underwood, Underwood Ranches	Avocado, Citrus, Vegetables	Calleguas Creek, Santa Clara River

N/A = Not Applicable

1. An asterisk denotes Executive Committee membership

Table 2. VCAILG Membership Statistics as of December 3, 2020

Watershed	Landowner Count	Parcel Count	Irrigated Acres
Calleguas Creek	705	1,517	43,897
Santa Clara River	515	1,246	29,168
Oxnard Coastal	64	119	4,036
Ventura River	201	405	4,806
Total	*1,485*	*3,287*	*81,907*

1. There are 1,423 unique landowners enrolled, a number of whom own property in more than one watershed.

IRRIGATED AGRICULTURE IN VENTURA COUNTY

Ventura County covers 1,843 square miles (approximately 1.2 million acres) with 43 miles of coastline (Figure 1). 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 293,549 acres of agricultural land in the county, there are approximately 92,000 acres of irrigated cropland. The Calleguas Creek Watershed contains the highest number of irrigated acres (approximately 50,000), followed by the Santa Clara River Watershed (approximately 32,000), Ventura River Watershed (approximately 5,400), and finally the Oxnard Plain and Coastal Watersheds (approximately 4,800).[1]

Agriculture is a major industry in Ventura County, generating over $1.9 billion in gross sales for 2019, placing the county 10th in a statewide ranking of California's 58 counties.[2] This gross value is a 5% decrease over 2018.[3] Strawberries were the number one grossing crop type, celery was the second highest grossing crop, and lemons were the third highest grossing crop in Ventura County in 2019. Table 3 lists the ten leading crops in the county by gross value for 2019. Hemp, a crop that was reintroduced into Ventura County in 2018, replaced cabbage on the list. Characteristics of each of the three main watersheds in Ventura County are discussed in more detail in the following sections.

Table 3. Ventura County's Leading Agricultural Commodities–2019

	Commodity	Gross Value ($)
1.	Strawberries	$508,371,000
2.	Celery	$243,455,000
3.	Lemons	$211,104,000
4.	Raspberries	$203,538,000
5.	Nursery Stock	$187,467,000
6.	Avocados	$116,981,000
7.	Tomatoes	$46,485,000
8.	Cut Flowers	$46,153,000
9.	Peppers	$42,880,000
10.	Hemp	$35,460,000

Source: Ventura County Agricultural Commissioner. *Ventura County's Crop and Livestock Report 2019*. July 28, 2020.

[1] Estimates of irrigated agricultural acreage by watershed are based on the VCAILG membership database and also includes estimated irrigated acreage for parcels not enrolled in VCAILG.

[2] California Department of Food and Agriculture. *California Agricultural Statistics Review 2018-2019.* Agricultural Statistics Overview.

[3] Ventura County Agricultural Commissioner. *Ventura County's Crop and Livestock Report 2019.* July 28, 2020.

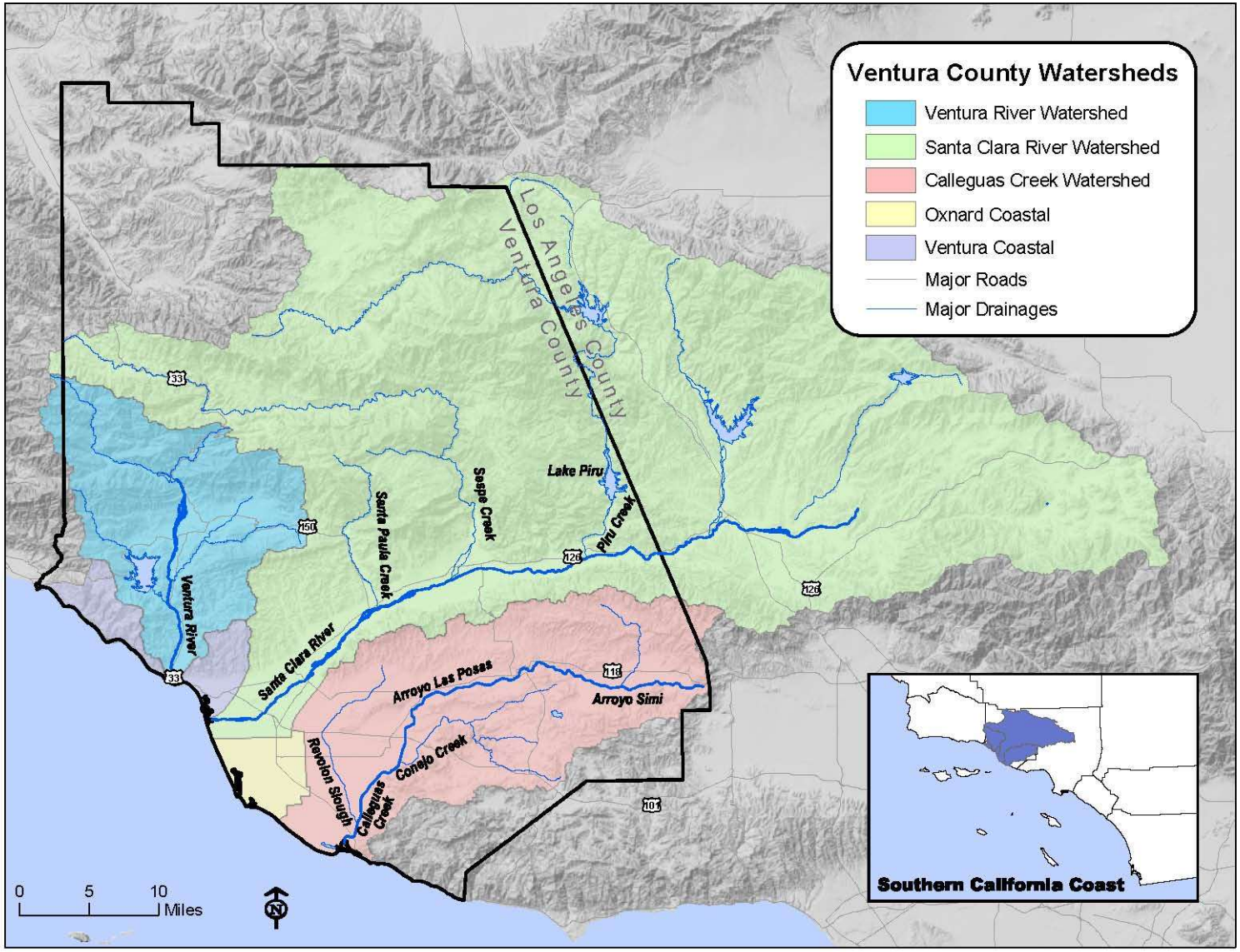


Figure 1. Ventura County Watersheds

Calleguas Creek Watershed and Oxnard Plain

The Calleguas Creek Watershed (CCW; see Figure 2) is approximately 30 miles long, 14 miles wide, and drains an area of approximately 343 square miles or 219,520 acres. Cities within the watershed include Camarillo, Thousand Oaks, Moorpark, and Simi Valley. The main surface water system drains from the mountains in the northeast part of the watershed toward the southwest, where it flows through the Oxnard Plain before emptying into the Pacific Ocean through Mugu Lagoon. The main waterbodies in the watershed include Calleguas Creek, Revolon Slough, Beardsley Channel, Conejo Creek, Arroyo Santa Rosa, Arroyo Las Posas and Arroyo Simi. All of these waterbodies appear on the federal 303(d) list of impaired waterbodies, triggering the requirement to develop Total Maximum Daily Loads (TMDLs) for specified pollutants identified as causing impairments. To date, TMDLs have been adopted for the CCW for Nitrogen Compounds, Trash, Organochlorine Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation, Toxicity, Metals and Selenium, and Salts. Runoff from irrigated agricultural lands has been identified as one of the sources of the water quality impairments addressed by these TMDLs.

Three TMDLs apply to portions of the Oxnard Plain. A TMDL for pesticides, PCBs, and sediment toxicity, developed by the United States Environmental Protection Agency (USEPA), is in effect for Oxnard Drain #3, a drainage channel that discharges to the western arm of Mugu Lagoon. At the northwest end of the Oxnard Plain lies a small coastal watershed that drains to McGrath Lake. A second TMDL has been adopted to address pesticides and PCBs impairments in this lake. This TMDL applies to the area within the Oxnard Coastal watershed that drains to the Central Ditch at Harbor Boulevard. Another portion of the Oxnard Plain drains to the Channel Islands Harbor in the City of Oxnard. A third TMDL has been adopted to address a bacteria impairment in the harbor.

Avocados and citrus crops such as lemons and oranges are typically grown in flat or gently sloping foothill areas in the watershed. Agricultural land located on the Oxnard Plain is planted predominantly in a wide variety of row crops, including strawberries, raspberries, peppers, celery, and onions, as well as sod farms and nurseries. Many farms located in the watershed grow multiple crops during a single calendar year. This multi-cropping technique is most common in the lower parts of the watershed, adjacent to Revolon Slough and Lower Calleguas Creek. Figure 2 shows the distribution of crop types throughout the Calleguas Creek and Oxnard Coastal Watersheds.

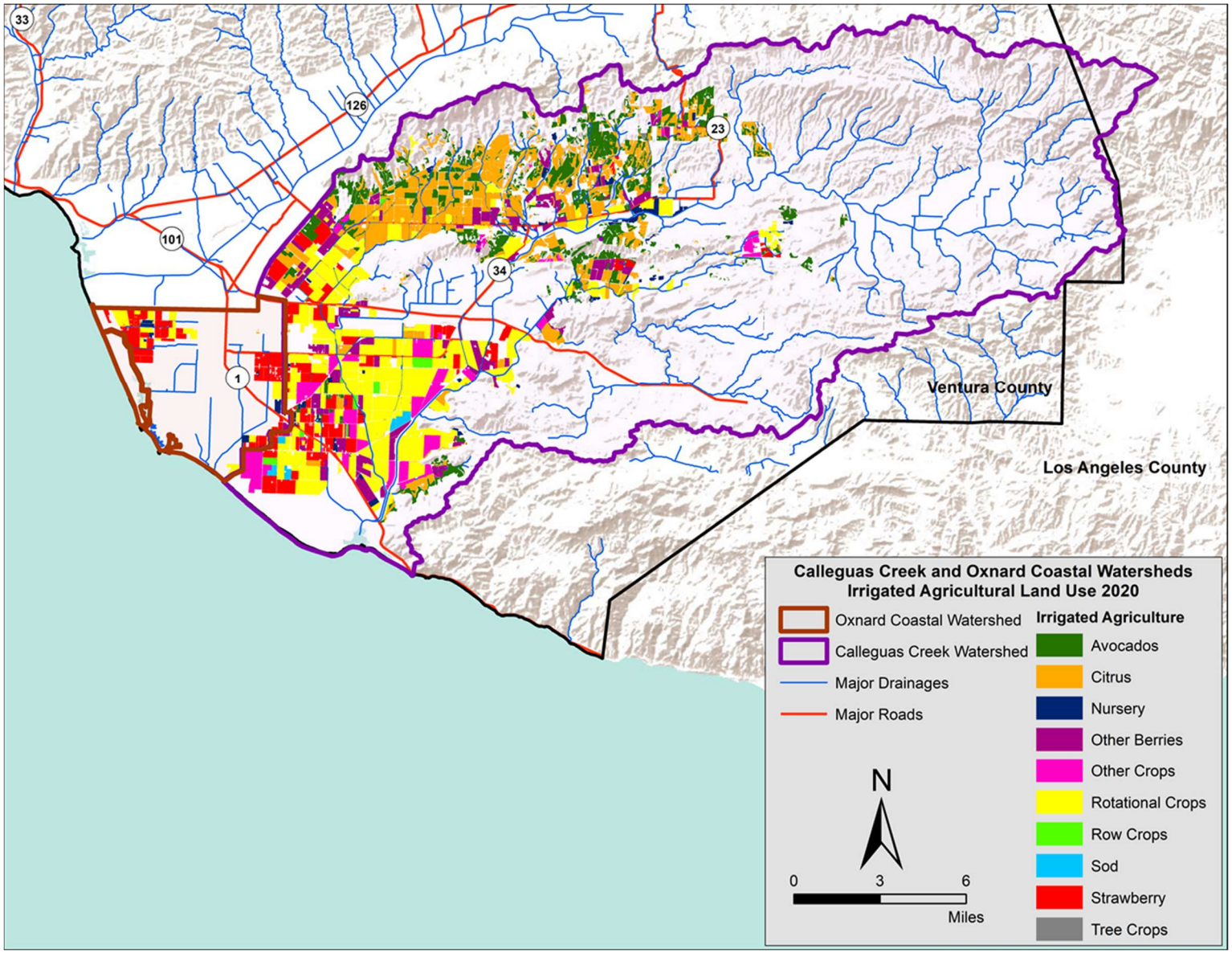


Figure 2. Calleguas Creek and Oxnard Coastal Watersheds Agricultural Land Use

Santa Clara River Watershed

The Santa Clara River is the largest river system in southern California remaining in a relatively natural state. The river originates in the northern slope of the San Gabriel Mountains in Los Angeles County, traverses Ventura County, and flows into the Pacific Ocean halfway between the cities of San Buenaventura and Oxnard. The Santa Clara River and tributary system has a watershed area of about 1,634 square miles (Figure 3). Cities within the watershed include Ventura, Santa Paula, Fillmore, Piru, Santa Clarita, and Newhall. Within Ventura County, major tributaries include the Sespe, Piru, and Santa Paula Creeks. Approximately 60 percent of the watershed is located in Ventura County. The most prevalent land use in the 500-year flood plain of the Santa Clara River is agriculture (62 percent), followed by industry (22 percent). Row crops and orchards are planted across the valley floor primarily in Ventura County and extend up adjacent slopes.

Several Santa Clara River reaches and tributaries appear on the federal 303(d) list of impaired waterbodies due to salts, nitrogen compounds, bacteria, and pesticides. TMDLs have been adopted for Nitrogen Compounds (upper and lower Santa Clara River reaches), Chloride (Reach 4B) and Bacteria (Estuary and Reaches 3, 5, 6, and 7). A TMDL for toxaphene in the Santa Clara River Estuary was incorporated in the 2010 *Conditional Waiver* as a single regulatory action and is also included in the 2016 *Conditional Waiver*.

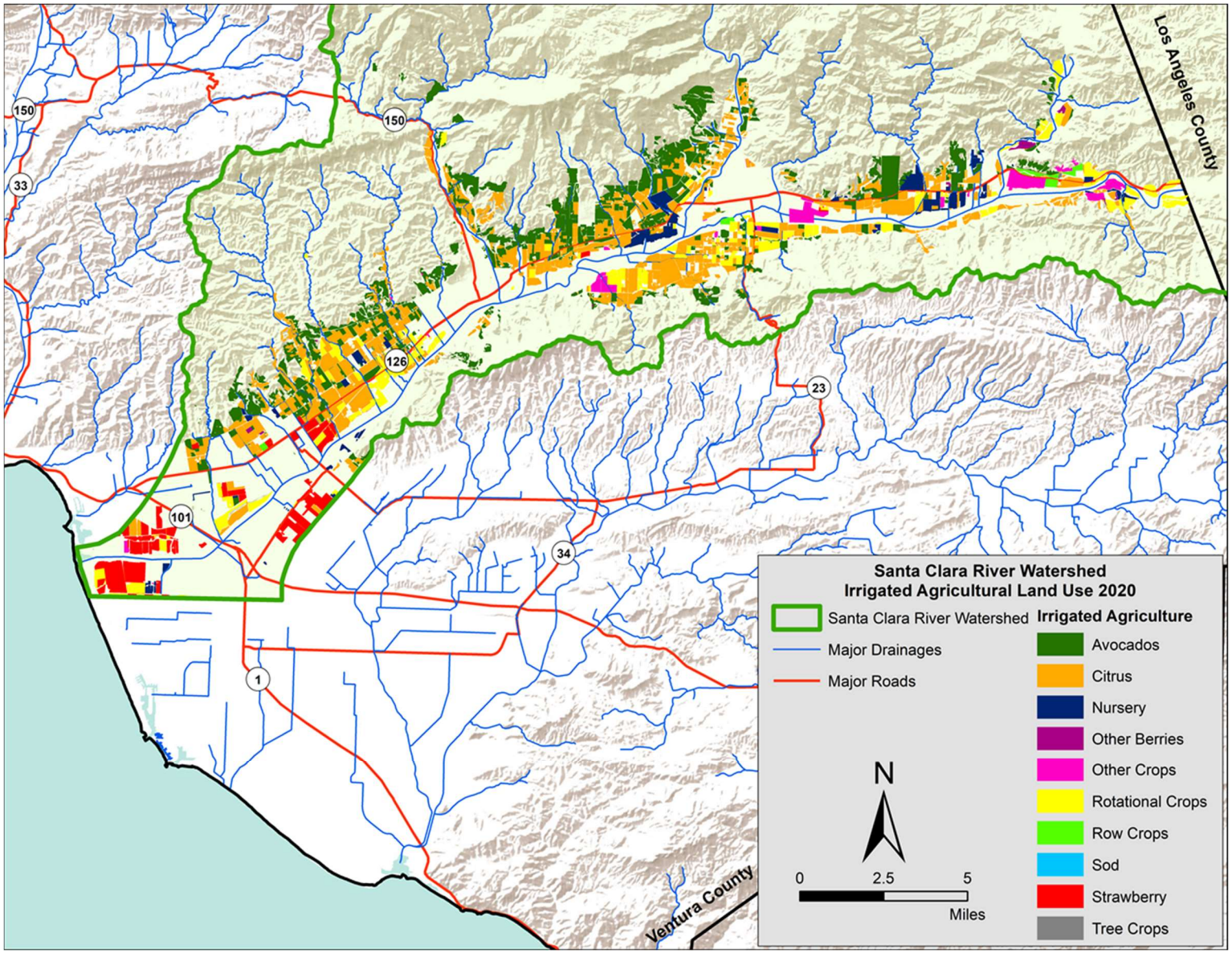


Figure 3. Santa Clara River Watershed Agricultural Land Use

Ventura River Watershed

The Ventura River and its tributaries drain a coastal watershed in western Ventura County. The watershed covers a fan-shaped area of 235 square miles, which is located within the western Transverse Ranges and is 31 miles long from upper Matilija Canyon to the Pacific Ocean (Figure 4). From the upper slopes of the Transverse Ranges, the surface water system in the Ventura River Watershed generally flows in a southerly direction to the estuary, located at the mouth of the Ventura River. Major tributaries in the watershed include Matilija Creek, Coyote Creek and San Antonio Creek. The City of Ojai and the communities of Meiners Oaks, Oak View and Casitas Springs are located in the watershed, with the surrounding suburban and agricultural areas comprising the Ventura River, Santa Ana, and Upper Ojai Valleys. Portions of the City of San Buenaventura border the lower reaches of the Ventura River. Irrigated agriculture constitutes approximately five percent of land uses in the watershed, with avocado and citrus being the predominant crops grown.

Several Ventura River reaches and tributaries appear on the federal 303(d) list of impaired waterbodies due to Algae/Eutrophic Conditions, Indicator Bacteria, Toxicity, Benthic Community Effects, Pumping/Water Diversion, and/or Trash. The Ventura River Estuary Trash TMDL became effective in 2008. A TMDL for algae, eutrophic conditions, and nutrients became effective in July 2013 (Algae TMDL). In its approval notice for the Algae TMDL, the USEPA determined that the Algae TMDL addresses the beneficial use impairments on the 303(d) list identified as being caused by pumping and water diversions. Consequently, a separate TMDL for pumping and water diversions is not expected to be developed in the future.

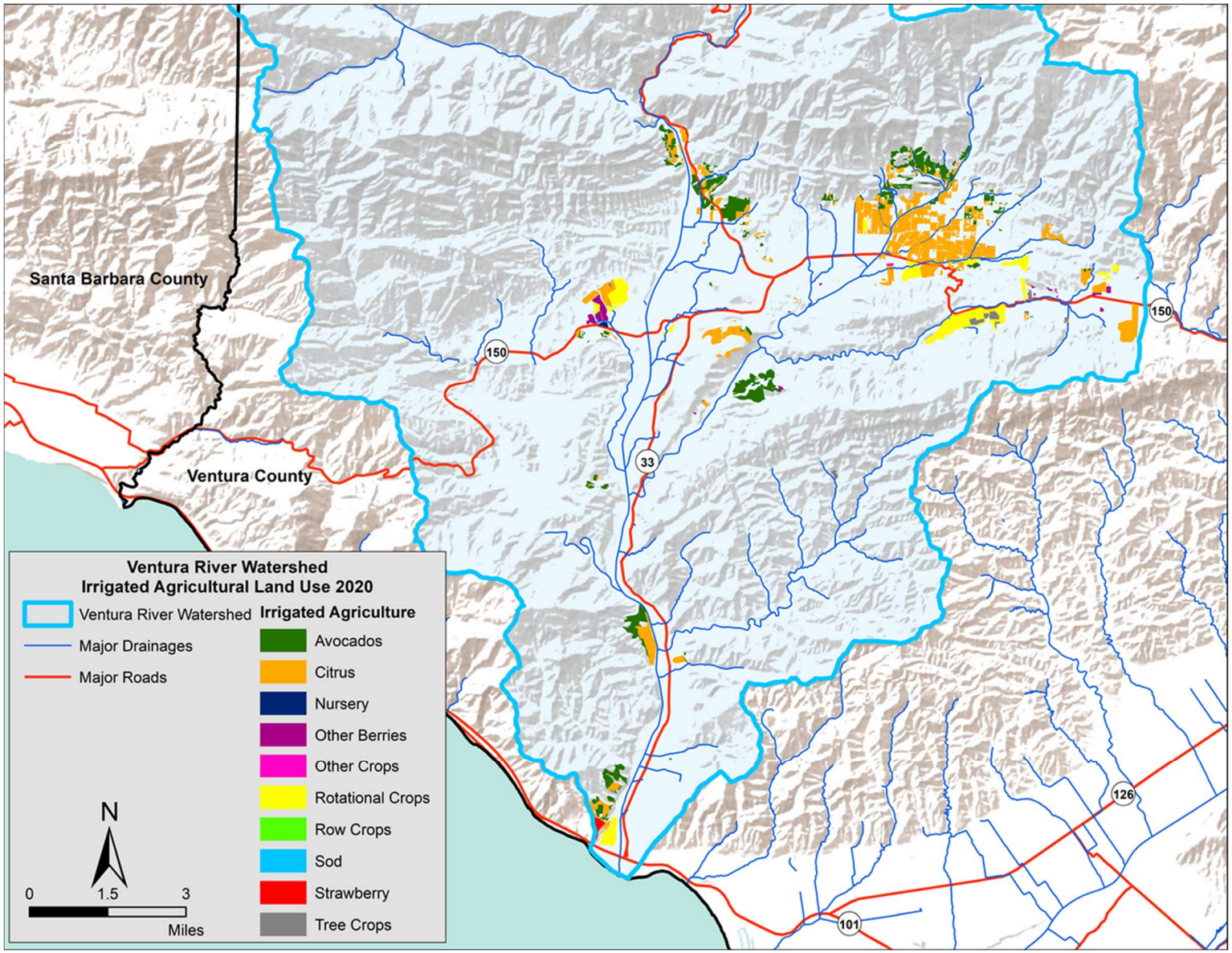


Figure 4. Ventura River Watershed Agricultural Land Use

VCAILG PARTICIPATION IN TMDLS

Within Ventura County, VCAILG plays an active role in facilitating the participation of agriculture in TMDL development and implementation processes. Acting on behalf of its members, VCAILG representatives participate in stakeholder meetings, provide comments, and contribute to cooperative agreements. For example, VCAILG is a participant and funding partner of the Calleguas Creek Watershed TMDL implementation effort and collaborates with the other responsible parties in implementing the two effective trash TMDLs within the county.

Effective TMDL monitoring requirements have been incorporated into both the 2010 and 2016 *Conditional Waivers* (Order No. R4-2010-0186 and R4-2016-0143, respectively). VCAILG coordinates with established TMDL monitoring programs or conducts additional monitoring where necessary in order to meet TMDL requirements. Where coordinated efforts to meet TMDL requirements are not in place, this annual report includes information regarding agriculture's monitoring and compliance. Separate annual monitoring reports are produced for some TMDL monitoring programs; rather than duplicate these efforts those reports are incorporated herein by reference, where appropriate.

Several TMDLs became effective during the 2010 waiver period and were added to the 2016 *Conditional Waiver*. Monitoring approaches to meet the requirements of these TMDLs are included in the 2016 VCAILG MRP.

Water Quality Monitoring

MONITORING OBJECTIVES

The objectives of the VCAILG Monitoring Program (VCAILGMP) required under the *Conditional Waiver* include the following:

- Assess the impacts of waste discharges from irrigated agricultural lands on waters of the state,
- Evaluate the effectiveness of management practices to control waste discharges,
- Track progress in reducing the amount of waste discharged to waters of the state to improve water quality and protect beneficial uses, and
- Assess compliance with discharge limitations, where applicable.

MONITORING SITE SELECTION

The first step toward fulfilling monitoring program objectives was selecting appropriate monitoring sites. Because the focus of the program is on impacts to surface waterbodies from discharges from irrigated agricultural lands, 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 primarily with agricultural activity. Sites selected for the VCAILGMP in the CCW supplement monitoring performed under the CCW TMDL Monitoring Program (CCWTMP) and retain consistency with previous VCAILG sampling. Monitoring sites in the Santa Clara River and Ventura River Watersheds were selected to

continue building on existing data previously collected by VCAILG and meet TMDL requirements, where applicable.

The specific criteria for selection of monitoring sites are as follows:

- Land use (primarily agricultural drainages);
- Subwatershed representation;
- Acres of agricultural irrigated lands represented;
- Proximity to agricultural operations;
- Previous or existing monitoring locations under the *2005 Conditional Waiver* or TMDL monitoring programs;
- Drainage into waterbodies included on or proposed for the federal Clean Water Act 303(d) list of impaired waterbodies;
- Size and complexity of watershed;
- Size and flow of waterbodies; and,
- Safe access during dry and wet weather.

Table 4 lists monitoring sites selected in each watershed and associated global positioning system (GPS) coordinates for sampling 2016 *Conditional Waiver* Appendix 1, Table 1 constituents. Table 5 lists monitoring sites and GPS coordinates for effective TMDL monitoring locations.

Figure 5 through Figure 9 show site locations for all monitoring sites within each watershed and include drainage areas and HUC-12 boundaries.

The format for the monitoring site ID/code is XXXA_YYYY_ZZZZ, where:

- "XXX" is a 2- or 3-character code that identifies the mainstem receiving water reach (where applicable) into which the monitored waterbody drains;
- "A" identifies the monitored waterbody as an agricultural drain (D) or a tributary (T) to the receiving water;
- "YYYY" is a 3-, 4-, or 5-character abbreviation for the site location;
- "ZZZZ" is an optional 3-, 4-, or 5-character abbreviation that provides additional site location information (*e.g.*, "BKGD" indicates a background site).

Examples:

S03D_BARDS signifies that the monitoring site is an agricultural drain that discharges to Santa Clara River Reach 3. The site is located along Bardsdale Avenue.

S04T_TAPO signifies that the monitoring site is located on Tapo Creek, which is a tributary to the Santa Clara River, Reach 4.

Table 4. VCAILGMP Monitoring Locations for *Conditional Waiver* Constituents

Watershed / Subwatershed	Station ID	Reach	Waterbody Type [1]	Station Location	GPS Coordinates [2]	
					Latitude	Longitude
Calleguas Creek / Mugu Lagoon	01T_ODD3_EDI	1	T	Rio de Santa Clara/Oxnard Drain #3 downstream of Edison Dr.	34.132631	-119.160666
Calleguas Creek / Revolon Slough	04D_ETTG	4	D	Discharge to Revolon Slough at Etting Rd.	34.161797	-119.091419
	04D_LAS	4	D	Discharge to Revolon Slough at S. Las Posas Rd.	34.134208	-119.079767
Calleguas Creek / Beardsley Channel	05D_LAVD	5	T	La Vista Drain at La Vista Ave.	34.265950	-119.093589
	05T_HONDO	5	T	Hondo Barranca at Hwy. 118	34.263608	-119.057431
Calleguas Creek / Arroyo Las Posas	06T_LONG2	6	T	Long Canyon at Balcom Canyon Rd. crossing	34.281721	-118.958565
Oxnard Coastal	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.220555	-119.254983
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	34.370172	-119.020939
	S03T_ BOULD	3	T	Boulder Creek at Hwy. 126	34.389578	-118.958738
	S03D_BARDS	3	D	Discharge along Bardsdale Ave. upstream of confluence with Santa Clara River	34.371535	-118.964470
	S04T_TAPO	4	T	Tapo Canyon Creek	34.401717	-118.723706
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

1. T = Tributary to receiving water; D = agricultural drain.
2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).

Table 5. Monitoring Locations for TMDL-related Constituents Addressed in the 2016 *Conditional Waiver* VCAILG MRP

Watershed/ Subwatershed	Site ID	Reach	Waterbody Type [1]	Site Location	GPS Coordinates [2]	
					Latitude	Longitude
Calleguas Creek/ Mugu Lagoon	01T_ODD3_EDI	1	T	Rio de Santa Clara/Oxnard Drain #3 downstream of Edison Dr.	34.132631	-119.160666
Santa Clara River	S01D_MONAR	1	D	Drain entering SCR Estuary at Monarch Lane between Harbor Blvd. and Victoria Ave.	34.2333	-119.2413
	S02T_ELLS	2	T	Ellsworth Barranca at Telegraph Rd.	34.3068	-119.1413
Oxnard Coastal/ McGrath Lake	OXD_CENTR	--	D	Central Ditch at Harbor Blvd.	34.2206	-119.2550
Oxnard Coastal/ Channel Islands Harbor	CIHD_VICT	--	D	Discharge to Doris Drain at S. Victoria Ave.	34.2099	-119.2207
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
	V02D_SPM	2	D	Drainage channel to Ventura River at SP Milling Rd. crossing	34.2892	-118.3090

1. T = Tributary to receiving water; D = agricultural Drain
2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).

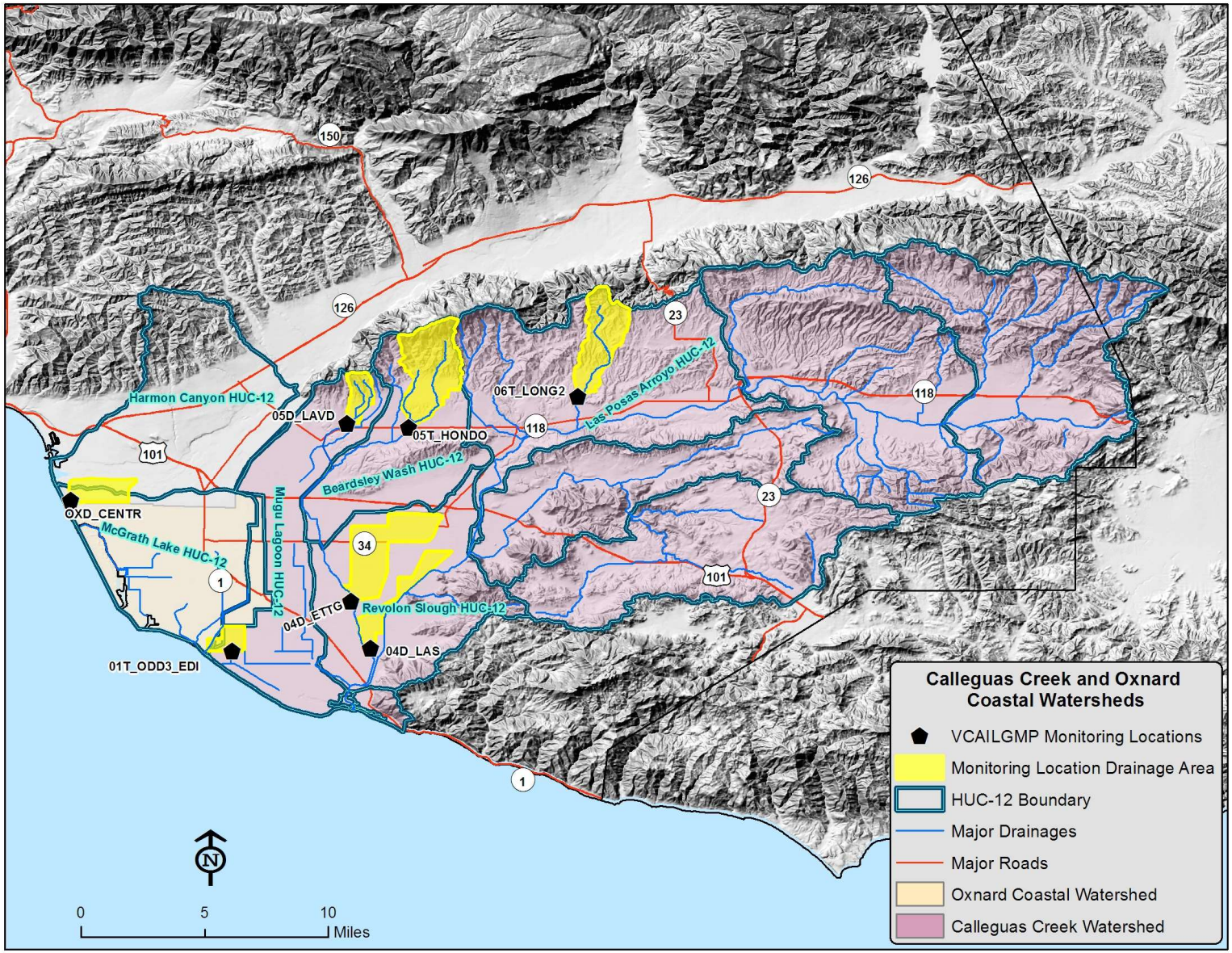


Figure 5. VCAILG Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds

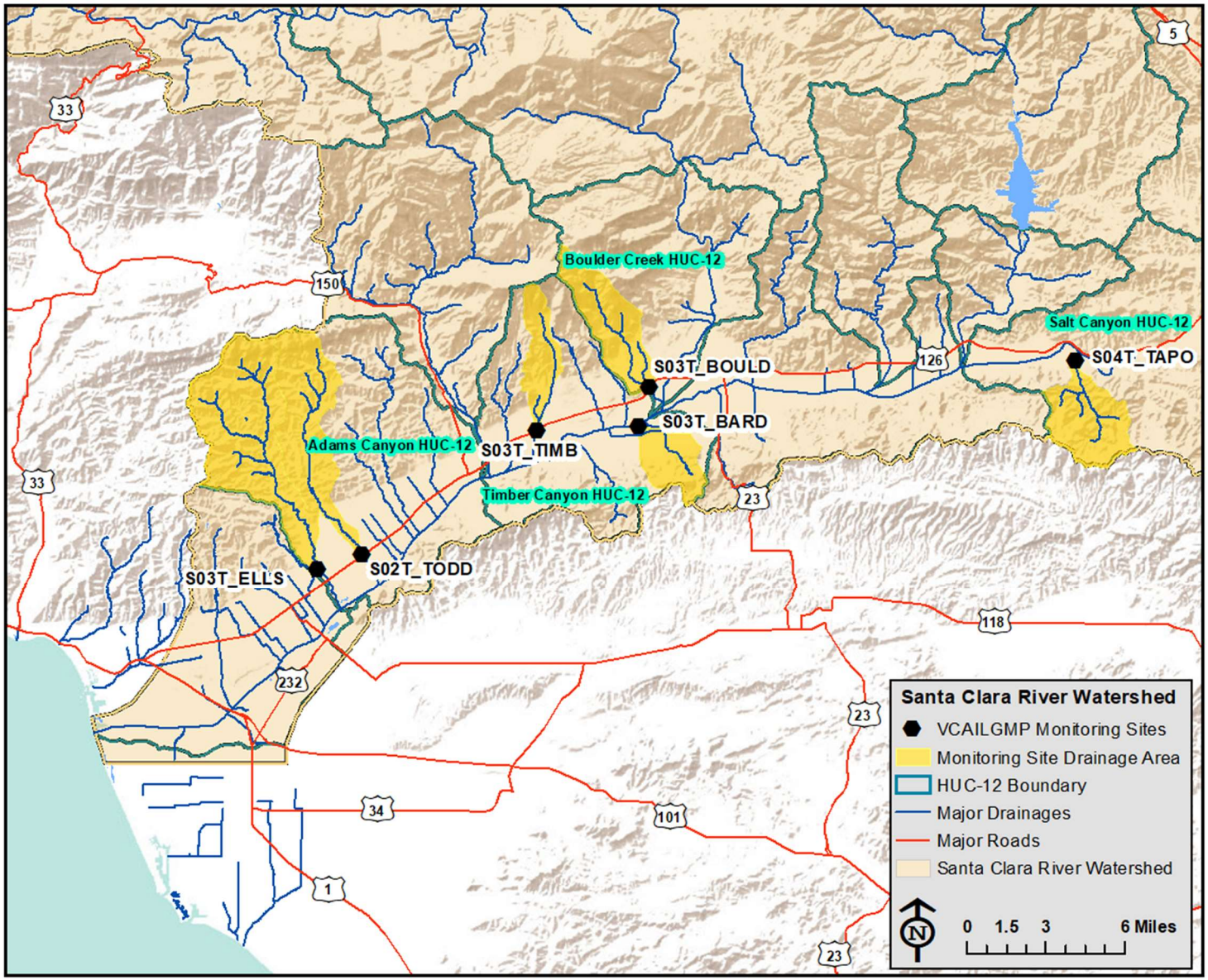


Figure 6. VCAILG Monitoring Sites Located in the Santa Clara River Watershed

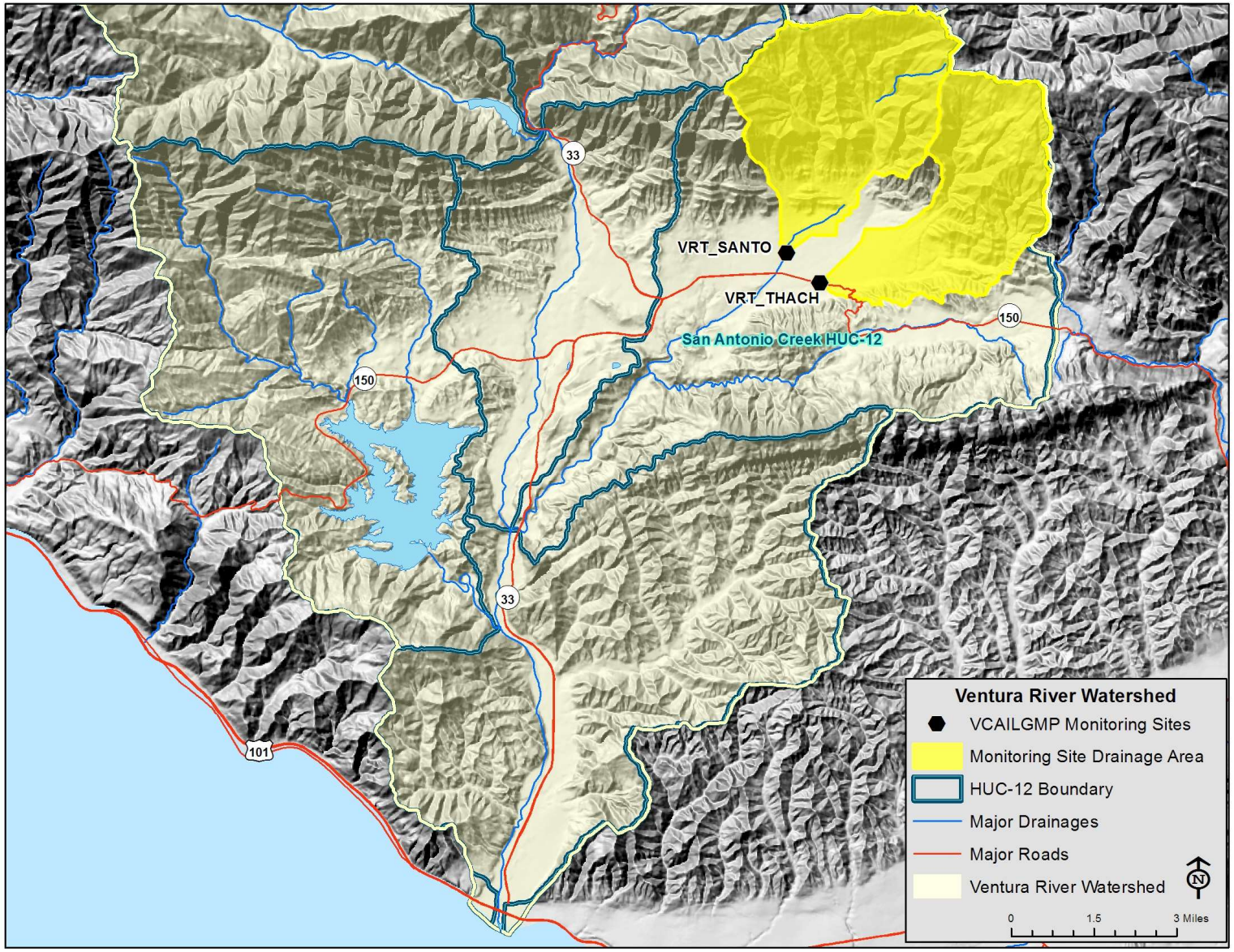


Figure 7. VCAILG Monitoring Sites Located in the Ventura River Watershed

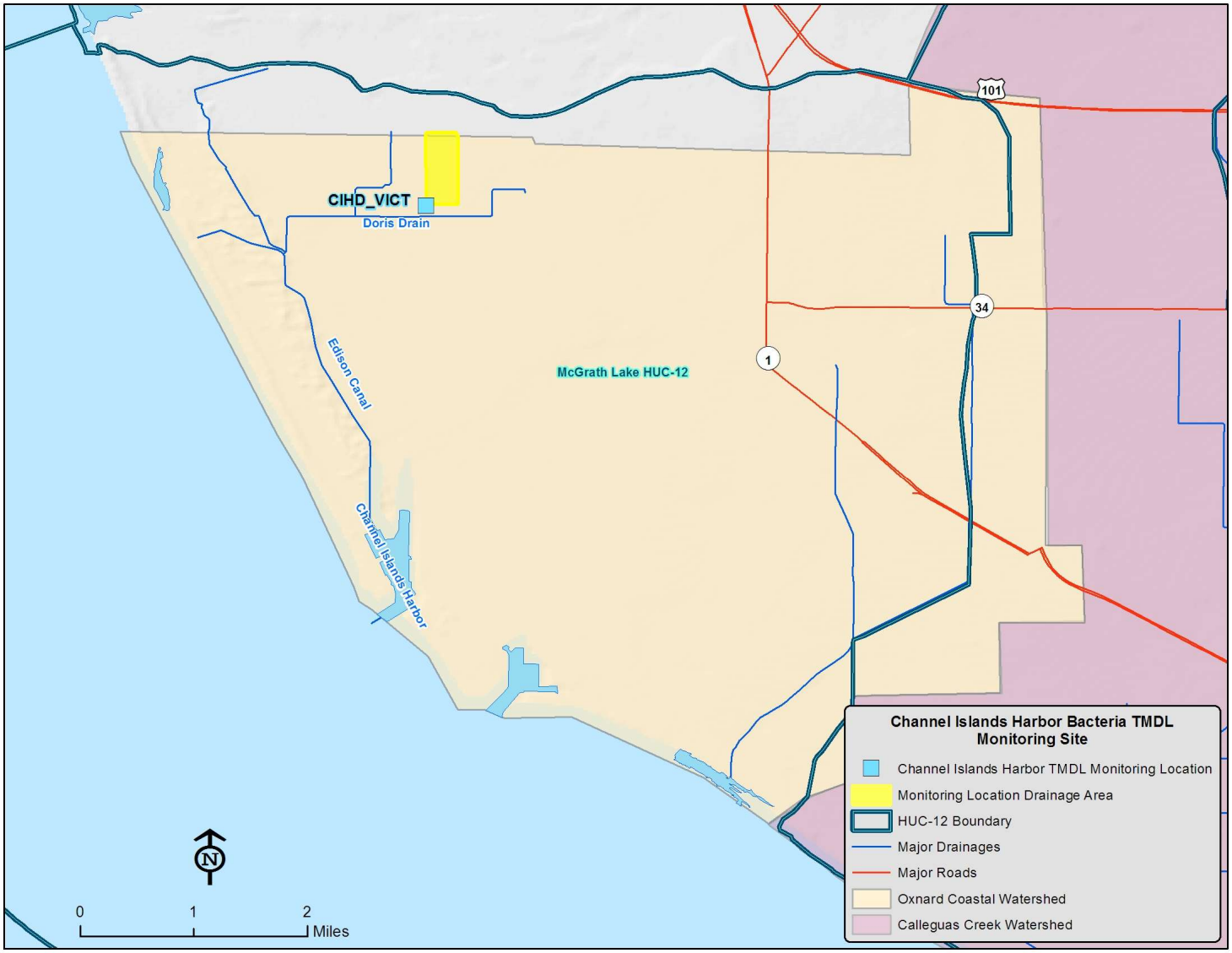


Figure 8. Channel Islands Harbor Bacteria TMDL Monitoring Site

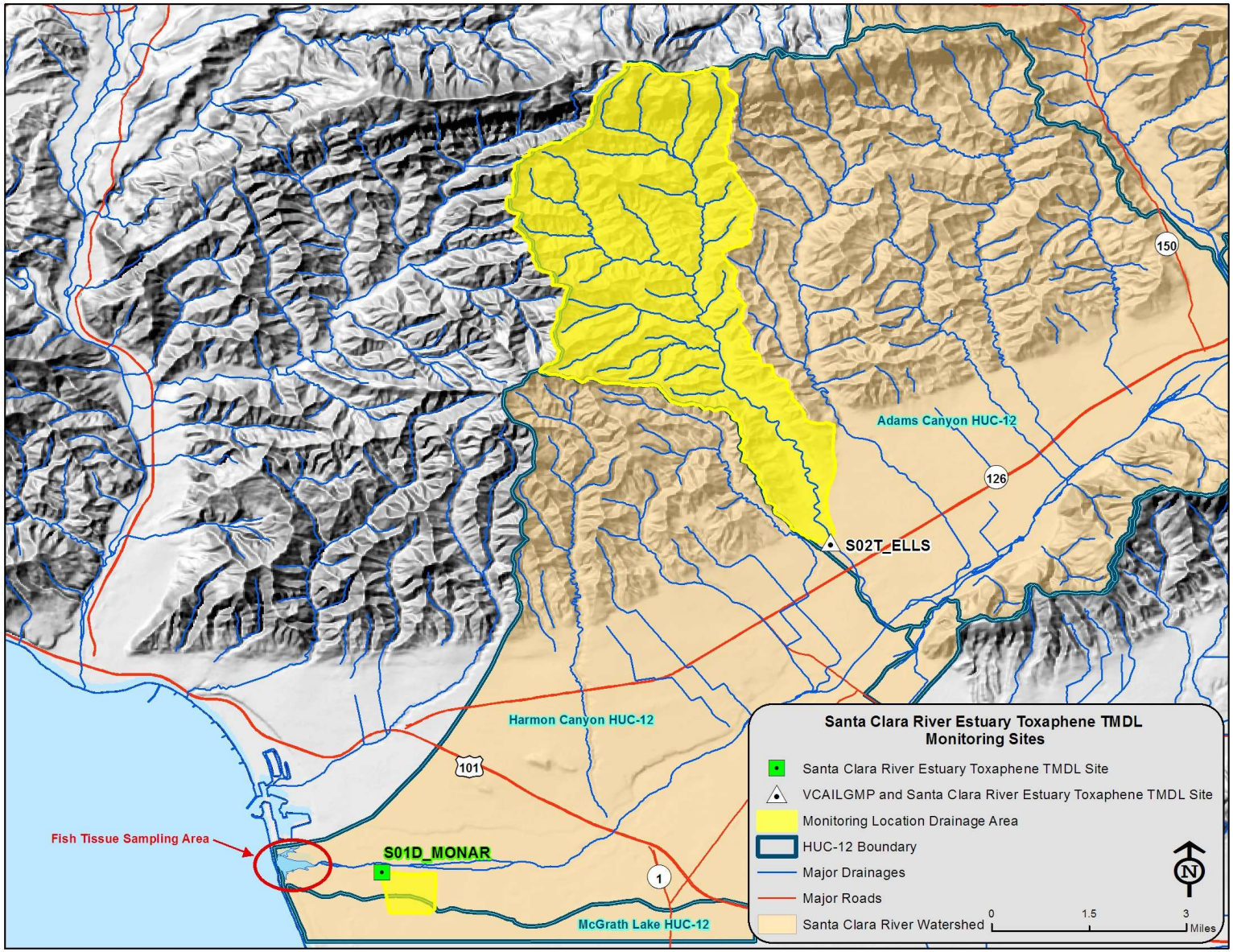


Figure 9. Santa Clara River Estuary Toxaphene TMDL Monitoring Sites

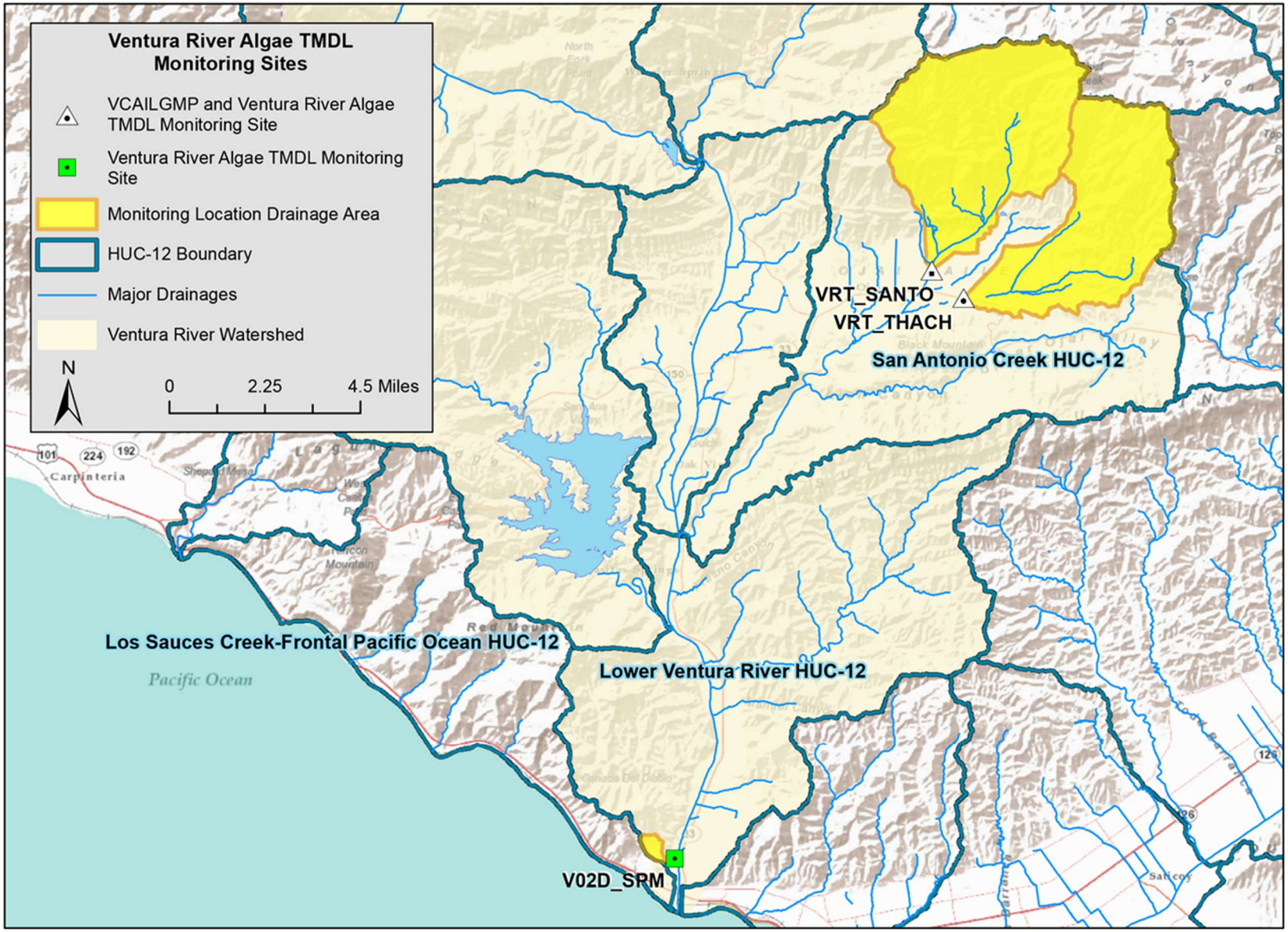


Figure 10. Ventura River Algae TMDL Monitoring Sites

Table 6. Estimated Irrigated Acreage Represented at 2016 *Conditional Waiver* VCAILG MRP Monitoring Sites

Station ID	Irrigated Agricultural Acreage [1, 2]										Drainage Area Acres
	Row Crops	Rotational Crops	Citrus	Avocados	Tree Crops	Strawberries	Other Berries	Sod	Nursery	Other Crops	
01T_ODD3_EDI[3]		564						448		472	643
04D_ETTG	65	3,081	214				210		1	593	3,309
04D_LAS		1,042				11	194	2		445	1,339
05D_LAVD	21	27	226	265			73				877
05T_HONDO		16	1,120	605			19		19		3,928
06T_LONG2		4	461	765			106		39		2,813
OXD_CENTR[3]		1,309				905			80	5	1,243
S02T_ELLS[3]		78	449	402			3				9,015
S02T_TODD		73	201	134	4				47		5,748
S03D_BARDS		24	694	187						19	2,214
S03T_BOULD			290	730					172		3,764
S03T_TIMB		8	98	531	1		1				2,183
S04T_TAPO		67	34				1		19		3,686
VRT_SANTO[3]			297	246	10						7,220
VRT_THACH[3]		104	478	44	1						6,003
V02D_SPM[4]			45	26		35					137
S01D_MONAR[4]		237				241					209
CIHD_VICT[4]		41				93					99

1. Data Source: Ventura County Agricultural Commissioner's Office, June 2020.
2. Some acreage is double or triple counted due to multi-cropping practices.
3. This site is monitored for 2016 *Conditional Waiver* Appendix 1, Table 1 constituents and for an applicable TMDL.
4. This is a TMDL specific monitoring site that is sampled according to the VCAILG MRP approved under the 2016 *Conditional Waiver*.

PARAMETERS MONITORED AND MONITORING FREQUENCY

Conditional Waiver Monitoring Constituents and Frequency

The *Conditional Waiver* specifies the constituents to be monitored during each monitoring event (Table 7) as well as the monitoring frequency. Per the *Conditional Waiver*, monitoring is required twice during the wet season and twice during the dry season. In addition, toxicity monitoring is required during one wet event and once during the dry season each year. The wet season is October 15th through May 15th and the dry season is from May 16th through October 14th. Per the *Conditional Waiver*, wet season samples are collected within 24 hours of a storm occurring with precipitation totals greater than 0.5 inch. The initial dry weather monitoring event is conducted after the application of pesticides or fertilizers during the period when irrigation is required.

In 2019-2020, storm monitoring occurred on December 4, 2019 and March 17, 2020. Dry weather monitoring occurred on August 7, 2019 and June 2, 2020. Wet weather toxicity samples were collected during Event 43 on December 4, 2019. Dry weather toxicity samples were collected during the second dry weather event on June 2, 2020.

Table 8 provides a summary of monitoring sites and constituents that were monitored during the wet and dry weather monitoring events in 2019 and 2020. Field measurements were also collected at the sites where samples were collected.

Table 7. Constituents and Monitoring Frequency for the 2016 Conditional Waiver VCAILG-MP

Constituent	Frequency[1]
Field Measurements	2 dry events; 2 wet events
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Turbidity	
General Water Quality Constituents (GWQC)	
Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Hardness, Chloride, Sulfate, Turbidity[2]	
Nutrients	
Total Ammonia-N, Nitrate-N, Nitrite-N, Total Nitrogen, Orthophosphate, Total Phosphorus	
Pesticides	
Organochlorine Pesticides[3,4], Organophosphorus Pesticides[5], Pyrethroid Pesticides[6]	
Metals	
Total and Dissolved Copper	
Trash	
Trash observations	
Bacteria	
E. coli	
Aquatic Chronic Toxicity	First wet event; second dry event
Ceriodaphnia dubia[6]	

1. The "wet" season is defined as October 15th through May 15th; the "dry" season is defined as May 16th through Ocober 14th each year.
2. Turbidity was measured by the lab because the field meter range was exceeded during storm Events 39 and 40.
3. Organochlorine pesticides include: 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, adrin, BHC-alpha, BHC-beta, BHC-delta, BHC-gamma, chlordane-alpha, chlordane-gamma, dieldrin, endosulfan sulfate, endosulfan I, endosulfan II, endrin, endrin aldehyde, endrin ketone, and toxaphene.
4. Total Chlordane is calculated as the sum of chlordane-alpha and chlordane-gamma
5. Organophosphorus pesticides include: bolstar, chlorpyrifos, demeton, diazinon, dichlorvos, dimethoate, disulfoton, ethoprop, fenchlorphos, fensulfothion, fenthion, malathion, merphos, methyl parathion, mevinphos, phorate, tetrachlorvinphos, tokuthion, and trichloronate. Merphos is no longer included in the laboratory OP suite and because there is no water quality benchmark for merphos and it has not been detected in the past, it will not be reported in the future.
6. Pyrethroid pesticides include: allethrin, bifenthrin, cyfluthrin, cypermethrin, danitol, deltamethrin, esfenvalerate, fenvalerate, lambda-cyhalothrin, permethrin, and prallethrin.
7. If sample conductivity exceeded 3000 µS/cm, *Hyalella azteca* was used for toxicity testing.

Table 8. VCAILG Sites Monitored and Constituents Sampled in 2019-2020

Watershed / Subwatershed	Site ID	Reach	Monitoring Events[1]			
			Dry 8/07/2019	Wet 12/04/2019	Wet 03/16 - 03/17/2020	Dry 06/02/2020
Calleguas Creek / Mugu Lagoon	01T_ODD3_EDI	1	WQ	WQ, TOX	WQ	WQ, TOX
Calleguas Creek / Revolon Slough	04D_ETTG	4	WQ	WQ, TOX	WQ	WQ, TOX
	04D_LAS	4	WQ	WQ, TOX	WQ	WQ, TOX
Calleguas Creek / Beardsley Channel	05D_LAVD	5	WQ[2]	WQ, TOX	WQ	WQ, TOX[2]
	05T_HONDO	5	WQ[2]	WQ, TOX	WQ[2]	WQ, TOX[2]
Calleguas Creek / Arroyo Las Posas	06T_LONG2	6	WQ[2]	WQ, TOX[2]	WQ[2]	WQ, TOX[2]
Oxnard Coastal	OXD_CENTR	--	WQ	WQ, TOX	WQ	WQ, TOX
Santa Clara River	S02T_ELLS	2	WQ	WQ, TOX	WQ	WQ, TOX[2]
	S02T_TODD	2	WQ	WQ, TOX	WQ	WQ, TOX
	S03T_TIMB	3	WQ[2]	WQ, TOX[2]	WQ	WQ, TOX[2]
	S03T_BOULD	3	WQ[2]	WQ, TOX	WQ	WQ, TOX[2]
	S03D_BARDS	3	WQ	WQ, TOX	WQ[2]	WQ, TOX[2]
	S04T_TAPO	4	WQ	WQ, TOX	WQ	WQ, TOX
Ventura River	VRT_THACH	--	WQ[2]	WQ, TOX	WQ[2]	WQ, TOX[2]
	VRT_SANTO	--	WQ[2]	WQ, TOX	WQ	WQ, TOX[2]

TOX = Toxicity

WQ = All water quality constituents listed in Table 7, excluding toxicity, which is noted separately

1. Toxicity testing was performed during the first wet event and the second dry event.
2. No samples collected due to insufficient flow/dry conditions.

TMDL Monitoring Constituents and Frequency

Monitoring for TMDL compliance is either prescribed in the adopted Basin Plan Amendment, or performed according to a TMDL Monitoring Plan, approved by the Regional Board Executive Officer (Table 9). Table 10 summarizes the TMDL monitoring that was performed under the VCAILGMP. When appropriate, TMDL monitoring events were conducted at the same time as *Conditional Waiver* monitoring.

Calleguas Creek Watershed TMDL monitoring was completed per the 2014 revised CCWTMP QAPP. CCWTMP monitoring is conducted quarterly during dry conditions and during two storm events each year. The *Calleguas Creek Watershed TMDL Compliance Monitoring Program Twelfth Year Annual Monitoring Report* describes the TMDL monitoring program and results in detail for the 2019-2020 monitoring year.[4] All efforts have been made to coordinate the timing of the sampling events in the VCAILG monitoring program and the CCWTMP.

[4] Larry Walker Associates. 2020. Calleguas Creek Watershed TMDL Compliance Monitoring Program Twelfth Year Annual Monitoring Report. December 15, 2020.

Table 9. Constituents and Frequency for TMDL Monitoring Performed Under the 2016 Conditional Waiver VCAILGMP

TMDL	SITE ID	CONSTITUENT[1,2]	FREQUENCY
Santa Clara River Estuary Toxaphene TMDL	S01D_MONAR S02T_ELLS	TSS, toxaphene, chlordane, dieldrin (water)	2 dry events; 2 wet events
		Toxaphene, chlordane, dieldrin (filtered sediment)	2 wet events
	Santa Clara River Estuary	Toxaphene, chlordane, dieldrin (fish tissue)	Every three years[3]
Channel Islands Harbor Bacteria TMDL	CIHD_VICT	*E. coli*, enterococcus, total coliform, fecal coliform	2 dry events; 2 wet events
Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL	01T_ODD3_EDI	Bifenthrin, total chlordane, chlorpyrifos, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene (water)	2 dry events; 2 wet events
		TOC, total chlordane, 4,4'-DDT, 4.4'-DDE, 4,4'-DDD, dieldrin, total PCBs, toxaphene, sediment toxicity[4] (sediment)	First Dry event of the year
Malibu Creek Watershed Sedimentation and Nutrients TMDLs	05T_HONDO[5]	Total nitrogen, total phosphorus	2 dry events; 2 wet events
		Nitrate-N and nitrite-N	2 wet events
Ventura River Algae TMDL	VRT_THACH VRT_SANTO V02D_SPM	Total nitrogen, total phosphorus	2 dry events
		Nitrate-N and nitrite-N	2 wet events
McGrath Lake Pesticides, PCBs, and Sediment Toxicity TMDL	OXD_CENTR	Total organic carbon (TOC), TSS, total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (water)	2 dry events; 2 wet events
		TOC, Total PCBs, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, total chlordane (suspended sediment)	2 wet events

1. This table lists constituents necessary to evaluate compliance with TMDL load allocations for irrigated agriculture; some of the constituents are already required to be monitored region-wide under the *Conditional Waiver.*
2. Required TMDL constituents not listed in this table are accounted for in the VCAILGMP as part of the monitoring described in Table 7.
3. Continuing the current fish tissue sampling schedule, the next collection will be in spring/summer 2021.
4. Bulk sediment toxicity testing is performed on either *Hyalella azteca* or urchin fertilization, depending on sample conditions. Testing *Hyalella azteca* is appropriate when pore water is in the range of 0-15 ppt salinity. Urchin testing would be appropriate for higher salinities.
5. This site selected as a proxy site to assess compliance with the Malibu Creek Watershed Nutrients TMDL and Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impairments. Data will only be compared to the LAs from these TMDLs if VCAILG has members farming within the Malibu Creek Watershed.

Table 10. TMDL Sites Monitored and Constituents Sampled in 2019-2020

TMDL	Site ID	Monitoring Events in 2019-2020			
		Event 42 Dry 08/07/2019	**Event 43 Wet 12/04/2019**	**Event 44 Wet 03/16 - 03/17/2020**	**Event 45 Dry 06/02/2020**
Santa Clara River Estuary Toxaphene TMDL	S01D_MONAR	OC-W TSS [1]	OC-W OC-S TSS	OC-W OC-S TSS	OC-W TSS
	S02T_ELLS	OC-W TSS	OC-W OC-S TSS	OC-W OC-S TSS	OC-W TSS [1]
	Santa Clara River Estuary	NA	NA	NA	NA
Channel Islands Harbor Bacteria TMDL	CIHD_VICT	Bact[1]	Bact	Bact	Bact[1]
Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL	01T_ODD3_EDI	PP-W, PP-S	PP-W	PP-W	PP-W
Malibu Creek Watershed Sedimentation and Nutrients TMDL	05T_HONDO	TN, TP [1]	TN, TP, NO_3, NO_2	TN, TP, NO_3, NO_2 [1]	TN, TP [1]
McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL	OXD_CENTR	OC-PCB-W TOC TSS	OC-PCB-W OC-PCB-S TOC TSS	OC-PCB-W OC-PCB-S TOC TSS	OC-PCB-W TOC TSS
Ventura River Algae TMDL	VRT_THACH	TN, TP [1]	NO_3, NO_2	NO_3, NO_2	TN, TP [1]
	VRT_SANTO	TN, TP [1]	NO_3, NO_2	NO_3, NO_2	TN, TP [1]
	V02D_SPM	TN, TP [1]	NO_3, NO_2	NO_3, NO_2 [1]	TN, TP [1]

OC-W = OC pesticides toxaphene, chlordane, and dieldrin in water
OC-S = OC pesticides toxaphene, chlordane, and dieldrin in filtered sediment
Bact = *E. coli*, enterococcus, total coliform, fecal coliform
PP-W = Pesticides and PCBs bifenthrin, total chlordane, chlorpyrifos, DDT and derivatives, dieldrin, total PCBs, toxaphene in water
PP-S = Pesticides and PCBs TOC, total chlordane, DDT and derivatives, dieldrin, total PCBs, toxaphene, sediment toxicity in sediment
OC-PCB-W = OC pesticides chlordane, dieldrin, DDT and derivatives, total PCBs in water
OC-PCB-S = OC pesticides chlordane, dieldrin, DDT and derivatives, total PCBs, TOC in filtered sediment
TOC = Total Organic Carbon
TSS = Total Suspended Solids
TN, TP = Total nitrogen, Total phosphorus
NO_3, NO_2 = Nitrate, Nitrite
NA – Tissue samples are only required once every three years.
1. Site not sampled during the event due to insufficient or absent flow.

SAMPLING METHODS

The VCAILG QAPP contains requirements for sampling procedures that are designed to ensure that high-quality data are generated through the VCAILGMP. Field crews are trained to adhere strictly to standard operating procedures for all aspects of monitoring, including use of sample containers that are appropriate for each constituent or constituent group analyzed, avoiding potential sources of contamination, and accurately completing field log sheets and chain-of-custody forms, among other procedures.

Samples were collected either by the direct immersion technique or by using a secondary container; filled sample containers were immediately put on ice in an ice chest. Notes regarding sample bottle fill method and sample collection depth for specific samples can be found in the field log sheets (Appendix B).

Flow measurements were performed according to the standard operating procedure included in Appendix C-1 of the QAPP using either current-meter, float measurements, or bucket fill techniques. During wet events, the float method of measuring flow is most practical and safe. At some sites, channel depth was estimated using a reference photo, painted gauge, or other appropriate tool. Estimated flows are qualified as such in the field data (Appendix C) and site summary tables. *Flow estimates made during wet events should be regarded as rough estimates and used with discretion.*

During all monitoring events, an In-Situ SmarTROLL MP Data Sonde was used to measure *in situ* field parameters, including temperature, pH, dissolved oxygen, and conductivity. Either a Hach Turbidimeter 2100P or 2100Q was used to measure turbidity in the field. In cases when turbidity exceeded the meter's range (1000 NTUs), turbidity was added to the COCs for analysis to be done by the lab. Field data and information collected at each monitoring site were recorded on a field log sheet. The completed field log sheets for each event are included with this Annual Report as Appendix B. Information recorded on the field log sheet at each monitoring site includes the following:

- Field crew initials;
- Date and time samples were collected;
- Water quality results for constituents measured using field probes (pH, temperature, conductivity, etc.);
- Measurements supporting flow calculations (channel width, depth, water velocity);
- Observations regarding the weather, water color and odor, contact and non-contact recreation, instream activity, the presence of foreign matter, trash counts and types, wildlife, etc.; and
- Vegetation and channel substrate (*i.e.*, concrete, cobble, sand, etc.) observations.

Information entered on field log sheets is ultimately entered into the VCAILGMP database for reporting. Field data are included with this Annual Report in Appendix C. Photo documentation of each monitoring site for all four events is included as Appendix D.

Samples were transported to FGL Environmental Laboratory in Santa Paula, where chain-of-custody (COC) documentation was completed and toxicity samples were prepared for overnight delivery to the toxicity testing laboratory, Pacific EcoRisk (PER). A courier picked up samples to be analyzed by Physis Environmental Laboratories and delivered them according to the

requirements of the QAPP. The completed COC forms are included in this Annual Report as Appendix E.

ANALYTICAL METHODS

Table 11 provides a summary of analytical methods used by contract laboratories for analyzing samples collected for 2016 *Conditional Waiver* constituents during the 2019-2020 monitoring year. Table 12 lists analytical methods for TMDL constituents monitored as part of the VCAILGMP. Refer to the CCWTMP QAPP for methods used on samples collected for that monitoring program.

Table 11. Analytical Methods for *Conditional Waiver* Constituents

Constituent	Analytical Method
Aquatic Chronic Toxicity [1]	
Ceriodaphnia dubia (water flea) [2]	EPA-821-R-02-013
General Water Quality Constituents (WQ)	
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Turbidity	Field Measurement
TDS	SM 2540 C
TSS	SM 2540 D
Chloride	EPA 300.0
Sulfate	EPA 300.0
Hardness	SM 2340 B
Turbidity	EPA 180.1
Nutrients	
Total Ammonia-N	SM 4500-NH_3 D
Nitrate-N	EPA 300.0
Total Nitrogen	SM 5310 B-N Module
Phosphate (Total Orthophosphate as P)	SM 4500-P E
Total Phosphorus	SM 4500-P E
Metals	
Total and Dissolved Copper	EPA 200.8
Organic Constituents [3]	
Organochlorine Pesticides [4]	EPA 625
Organophosphorus Pesticides	EPA 625
Pyrethroid Pesticides	EPA 625-NCI
PCB Congeners/Aroclors	EPA 625
Bacteria	
E. coli	SM 9223 B

1. The 2017 MRP/QAPP calls for use of *Ceriodaphnia dubia* for chronic toxicity testing at all sites.
2. If sample conductivity exceeded 3000 µS/cm, *Hyalella azteca* was used for toxicity testing.
3. See Table 7 for the list of constituents in each pesticide group.
4. Toxaphene is analyzed using EPA 625-NCI.

Table 12. Analytical Methods for TMDL Constituents

Constituent [1]	Analytical Method
General Water Quality Constituents	
Total organic carbon (TOC) (water)	SM 5310 B
Total organic carbon (TOC) (sediment)	EPA 9060
Nutrients	
Nitrite-N	EPA 300.0
PCB Aroclors and Organochlorine Pesticides	
PCBs (water)	EPA 625
PCBs (sediment)	EPA 8270 D
OC Pesticides (filtered sediment)[2]	EPA 8270 D
OC Pesticides (fish tissue)	EPA 8270 D
OC Pesticides (sediment)	EPA 8270 D
Bacteria	
Enterococcus	SM 9230 D
Total coliform	SM 9223 B
Fecal coliform	SM 9221 B

1. Listed constituents are those that are required by a TMDL and not already listed in the previous table.
2. Toxaphene is analyzed using EPA 8270 D-NCI

Data Quality

The VCAILG QAPP specifies monitoring program requirements and procedures designed to ensure that the quality of data generated through the VCAILGMP are such that data can be used to 1) accurately assess environmental conditions and 2) make environmentally-sound decisions. Appendix H provides a summary of the data quality evaluation performed on the data collected during the 2019-2020 monitoring year. An evaluation of the data quality for the CCWTMP is included as Appendix D as part of the twelfth-year annual monitoring report for that program.[5]

WATER QUALITY BENCHMARKS AND OTHER OBJECTIVES

This section presents the standard water quality benchmarks as specified in the 2010 and 2016 *Conditional Waivers* (R4-2010-0186 and R4-2016-0143) used to evaluate monitoring data collected at VCAILG monitoring sites during the 2019-2020 monitoring year. These benchmarks are the same for both waivers aside from the addition of bifenthrin and *E. coli* in the 2016 *Conditional Waiver.* Bifenthrin data are available through the inclusion of bifenthrin in the pyrethroid pesticides analysis suite; these data are compared to the new benchmark. *E. coli* data are also available and are compared to the applicable benchmark.

"Standard water quality benchmarks" in the 2010 and 2016 *Conditional Waivers* include numeric and narrative water quality objectives and include several narrative and numeric Basin Plan objectives and water quality standards from the California Toxics Rule (CTR). In cases where

[5] Larry Walker Associates. "Calleguas Creek Watershed TMDL Compliance Monitoring Program Twelfth Year Annual Monitoring Report." December 15, 2020.

the *Conditional Waiver* references the Basin Plan or CTR, without specifying a benchmark number, the lowest applicable standard was selected for each watershed. CTR water quality criteria are available for several OC pesticides that are analyzed as part of the VCAILGMP; although these criteria are not listed as benchmarks in the *Conditional Waivers,* they are provided in a separate table in this section of the AMR for reference. In addition to benchmarks, the *Conditional Waiver* also includes LAs from effective TMDLs as additional water quality benchmarks. Due to the complexity of appropriately comparing TMDL LAs to data obtained for the proper locations, site types, sample media, and sampling conditions, TMDL-related benchmarks and the applicable monitoring results are presented and discussed separately in the report section titled "TMDL Load Allocations and Monitoring Results".

Several of the narrative water quality objectives contained in the Basin Plan specify that discharges of wastes to receiving waters cannot alter "natural" or "ambient" conditions above or below a stated level. Many of the VCAILG monitoring sites are located on agricultural drains that discharge to receiving waters. Because "natural" and "ambient" conditions have not been established in receiving waters, or are non-existent in agricultural drains and ephemeral streams, monitoring data from sites located in agricultural drains are evaluated based on the assumption that if benchmarks are not exceeded in the agricultural drain, it is unlikely that the discharge from that drain will cause benchmark exceedances in the receiving water.

Table 13. *Conditional Waiver* Standard Water Quality Benchmarks Derived from Narrative Objectives

Constituent	Watershed [1]	Narrative Objective [2]	Applicable Benchmark
pH	CC, OXD, SCR, VR	The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed by more than 0.5 pH units from natural conditions as a result of waste discharges.	6.5 ≤ pH ≤ 8.5 Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
Temperature	CC, OXD, SCR, VR	For waters designated WARM, water temperature shall not be altered by more than 5°F above the natural temperature. At no time shall WARM-designated waters be raised above 80°F as a result of waste discharges.	WARM: ≤ 80°F Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
	SCR, VR	For waters designated COLD, water temperature shall not be altered by more than 5°F above the natural temperature.	COLD: No numeric benchmark. Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
Dissolved Oxygen	OXD	No single dissolved oxygen determination shall be less than 5 mg/L, except when natural conditions cause lesser concentrations.	≥ 5 mg/L
	CC, SCR, VR	The dissolved oxygen content of all surface waters designated as WARM shall not be depressed below 5 mg/L as a result of waste discharges.	WARM: ≥ 5 mg/L
	SCR, VR	The dissolved oxygen content of all surface waters designated as COLD and SPWN shall not be depressed below 7 mg/L as a result of waste discharges.	COLD, SPWN: ≥ 7 mg/L
Turbidity	CC, OXD, SCR, VR	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributable to controllable water quality factors shall not exceed the following limits: ▪ Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%; ▪ Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%.	No numeric benchmarks. Changes to ambient receiving water conditions are not assessed; "ambient" or "natural" conditions have not been established
Total Suspended Solids (TSS)	CC, OXD, SCR, VR	Wastes shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	No numeric benchmarks.
Toxicity	CC, OXD, SCR, VR	All waters shall be free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal or aquatic life. There shall be no chronic toxicity in ambient waters outside mixing zones.	≤ 1.0 TUc [3] Benchmarks for specific potentially toxic constituents are listed in Tables 16 through 20.

1. CC = Calleguas Creek Watershed OXD = Oxnard Coastal Watershed SCR = Santa Clara River Watershed VR = Ventura River Watershed
2. Source: Water Quality Control Plan, Los Angeles Region (Basin Plan), 1994.
3. Source: "*Conditional Waiver* of Waste Discharge Requirements for Discharges from Irrigated Lands," Order No. R4-2016-0143, Los Angeles Regional Water Quality Control Board, adopted April 14, 2016.

Table 14. *Conditional Waiver* Standard Water Quality Benchmarks for Salts and Nutrients (Basin Plan Table 3-8 Numeric Water Quality Objectives)

Watershed / Reach	Reach Description	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrogen (mg/L)	Ammonia [1] (mg/L)	Phosphate (mg/L)
CC below Potrero Rd.	-----	-----	-----	-----	10 [2]	pH, temperature dependent	-----
CC above Potrero Rd.	-----	150	250	850	10 [3]	pH, temperature dependent	-----
OXD	-----	-----	-----	-----	10 [2]	pH, temperature dependent	-----
SCR Reach 1	Tidally-influenced mouth of Santa Clara River upstream to 101 Bridge	-----	-----	-----	10 [2]	pH, temperature dependent	-----
SCR Reach 2	Upstream of Hwy 101 Bridge to Freeman Diversion	150	600	1200	10 [2]	pH, temperature dependent	-----
SCR Reach 3	Upstream of Freeman Diversion to A Street Bridge in Fillmore	100 [4]	650	1300	5 [3]	pH, temperature dependent	-----
SCR Reach 4	Upstream of A Street Bridge in Fillmore to Blue Cut Gaging Station	100	600	1300	5 [3]	pH, temperature dependent	-----
VR Reach 4	Between Camino Cielo Rd. and Casitas Vista Rd.	60	300	800	5 [3]	pH, temperature dependent	-----

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

1. Ammonia benchmarks are based on 1) freshwater ammonia objectives as calculated according to LARWQCB Resolutions 2002-011 and 2005-014, and 2) saltwater ammonia objectives as calculated according to LARWQCB Resolution 2004-022. Ammonia objectives are calculated based on the pH and temperature of the receiving water measured at the time of sample collection for ammonia analysis. Ammonia objectives used as benchmarks are chronic, 30-day averages.
2. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L Nitrate-N was used for comparison with VCAILG data collected at monitoring sites infsalt this reach.
3. The Nitrogen benchmark listed is for Nitrate-N plus Nitrite-N.
4. The 100 mg/L benchmark for chloride is the revised water quality objective adopted by the Regional Board in Resolution 2003-015.

Table 15. *Conditional Waiver* Standard Water Quality Benchmarks for Copper

Constituent	Freshwater [1, 2]		Brackish or Saltwater [1]	
	Benchmark (µg/L)	Benchmark Source	Benchmark (µg/L)	Benchmark Source
Copper	$= 0.96e^{[0.8545(\ln hardness)+(-1.702)]}$	CTR CCC [3]	3.1	CTR CCC [3]

1. Freshwater benchmark applies to discharges to waters with salinities <1 ppt at least 95% of the time. Saltwater benchmark applies when salinities are ≥10 ppt at least 95% of the time. For discharges between these categories, or tidally influenced freshwater that supports EST beneficial uses, the lower criterion of the two shall be used; which is the saltwater benchmark.
2. As per footnote "m" to the Table in Paragraph (b)(1) of the CTR; "The freshwater criteria for metals are expressed in terms of the dissolved fraction of the metal in the water column." In instances where the measured hardness is >400 mg/L as $CaCO_3$, a hardness of 400 is used to calculate the benchmark. This was done in accordance with CTR §31692, f. Hardness.
3. CTR = California Toxics Rule (USEPA, May 18, 2000).
   CCC = Criterion Continuous Concentration

Table 16. *Conditional Waiver* Standard Water Quality Benchmarks for Organophosphorus Pesticides

Constituent	CC, OXD, SCR, VR Watersheds
	Benchmark (µg/L)
Chlorpyrifos	0.025
Diazinon	0.10

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

Table 17. *Conditional Waiver* Water Quality Benchmarks for Organochlorine Pesticides

Constituent	CC Watershed		OXD, SCR Watersheds		VR Watershed	
	Benchmark (µg/L)	Benchmark Source [1]	Benchmark (µg/L)	Benchmark Source [1]	Benchmark (µg/L)	Benchmark Source [1]
Chlordane, sum	0.00059	CTR HHO	0.00059	CTR HHO	0.00059	CTR HHO
4,4'-DDD	0.00084	CTR HHO	0.00084	CTR HHO	0.00084	CTR HHO
4,4'-DDE	0.00059	CTR HHO	0.00059	CTR HHO	0.00059	CTR HHWO
4,4'-DDT	0.00059	CTR HHO	0.00059	CTR HHO	0.00059	CTR HHWO
Dieldrin	0.00014	CTR HHO	0.00014	CTR HHO	0.00014	CTR HHWO
Toxaphene	0.00075	CTR HHO	0.00075	CTR HHO	0.00075	CTR HHO

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

1. CTR = California Toxics Rule (USEPA, May 18, 2000).
   HHO = Human Health for Consumption of Organisms Only (30-day average)
   HHWO = Human Health for Consumption of Water and Organisms (MUN-designation) (30-day average)

Table 18. *Conditional Waiver* Water Quality Benchmark for Bifenthrin

Constituent	CC, OXD, SCR, VR Watersheds	
	Unit	Benchmark
Bifenthrin	µg/L	0.0006

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

Table 19. *Conditional Waiver* Water Quality Benchmark for *E. coli*

Constituent	CC, OXD, SCR, VR Watersheds	
	Unit	Benchmark
E. coli	MPN/100mL	235

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

Table 20. Organochlorine Pesticides Monitored by the VCAILGMP with CTR Water Quality Criteria

Constituent	CC Watershed		OXD, SCR Watersheds		VR Watershed	
	Benchmark (µg/L)	Benchmark Source [1]	Benchmark (µg/L)	Benchmark Source [1]	Benchmark (µg/L)	Benchmark Source [1]
Aldrin	0.00014	CTR HHO	0.00014	CTR HHO	0.00013	CTR HHWO
Alpha-BHC	0.013	CTR HHO	0.013	CTR HHO	0.0039	CTR HHWO
Beta-BHC	0.046	CTR HHO	0.046	CTR HHO	0.014	CTR HHWO
Gamma-BHC (Lindane)	0.063	CTR HHO	0.063	CTR HHO	0.019	CTR HHWO
Endosulfan I	0.056	CTR AFWC	0.056	CTR AFWC	0.056	CTR AFWC
Endosulfan II	0.056	CTR AFWC	0.056	CTR AFWC	0.056	CTR AFWC
Endosulfan Sulfate	240	CTR HHO	240	CTR HHO	110	CTR HHWO
Endrin	0.036	CTR AFWC	0.036	CTR AFWC	0.036	CTR AFWC
Endrin Aldehyde	0.81	CTR HHO	0.81	CTR HHO	0.76	CTR HHWO

Watersheds: CC = Calleguas Creek OXD = Oxnard Coastal SCR = Santa Clara River VR = Ventura River

1. CTR = California Toxics Rule (USEPA, May 18, 2000).
   HHO = Human Health for Consumption of Organisms Only (30-day average)
   HHWO = Human Health for Consumption of Water and Organisms (MUN-designation) (30-day average)
   AFWC = Aquatic Life, Freshwater Chronic (4-day average)

WATER QUALITY MONITORING RESULTS

This section contains a summary of water quality monitoring data collected at VCAILG sites where flow was present during the four monitoring events conducted in 2019-2020. Information presented for each VCAILG monitoring site includes the corresponding receiving water for each drainage monitored, a site location map, a site photo, and a narrative summary describing which events were monitored. The predominant crop types potentially contributing to the flow at each monitoring site, previously listed in Table 6, are also described. Exceedances of standard water quality benchmarks and unusual occurrences, if observed, are noted.

Following the narrative description, results are presented in a tabular format for all constituents listed in Appendix 4 of the 2016 *Conditional Waiver*. Constituents not listed in Appendix 4 of the 2016 *Conditional Waiver* are listed only if they have been detected at a particular site. Non-detect results are included with all of the water quality monitoring data for 2019-2020 as Appendix F – Monitoring Data. All hard copy laboratory reports are also provided. Water quality results presented in this section are compared with the water quality benchmarks from Appendix 4 of the 2016 *Conditional Waiver*, which were previously described in Table 13 through Table 20. Water quality results exceeding benchmarks are indicated with **bold type**.

Results reported by the laboratory in units of ng/L were converted to µg/L for comparison with benchmarks expressed in units of µg/L. Results reported by the laboratory as "Total Orthophosphate as P" were converted to "Total Orthophosphate" by multiplying the result by the molecular weight of phosphate (95 g/mol) and dividing the product by the molecular weight of phosphorus (31 g/mol). The converted result is reported as "Total Orthophosphate" on data tables presented in this section. The electronic data file remains unconverted and is labeled "Total Orthophosphate-P."

Results of toxicity tests conducted during the 2019-2020 monitoring year are discussed separately in a subsequent section of the report.

All analyses included in this report were conducted at a laboratory certified for such analyses by the California Department of Health Services – Environmental Laboratory Accreditation Program (ELAP) or the National Environmental Laboratory Accreditation Program (NELAP), and in accordance with current USEPA guidance procedures and/or the provisions of the VCAILG QAPP.

Calleguas Creek Watershed

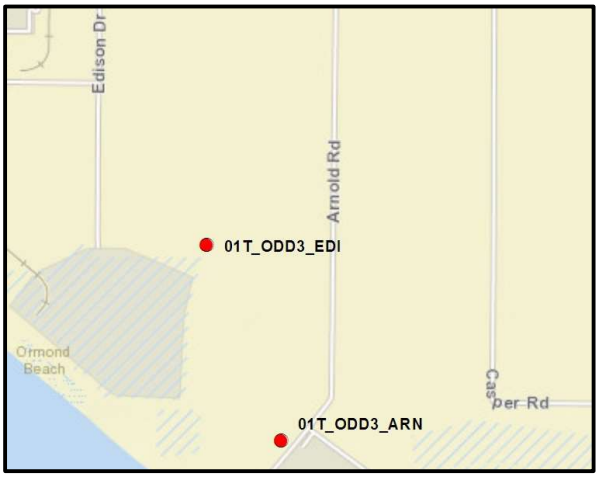
The CCW contains six VCAILG monitoring sites. Monitoring sites are discussed below in order of the Calleguas Creek reach into which they drain.

01T_ODD3_EDI

This site is located in Oxnard Drain No. 3. Per approval of the 2017 QAPP, monitoring site 01T_ODD3_EDI replaced 01T_ODD3_ARN following Event 31. The 01T_ODD3_ARN monitoring site was located on an agricultural drain just upstream from the Arnold Road Bridge. Relocation of monitoring upstream to 01T_ODD3_EDI ensures access during wet weather events and the ability to collect sediment samples required by the Oxnard Drain No. 3 TMDL. The 01T_ODD3_EDI site is located on an agricultural drain just downstream of Edison Drive. Flow from this drain eventually discharges into the western arm of Mugu Lagoon (Calleguas Creek Reach 1).

View downstream at 01T_ODD3_EDI

Site Map



Flow was observed and samples were collected at 01T_ODD3_EDI during all four 2019-2020 monitoring events. Table 21 summarizes the concentrations recorded for select constituents and provides a comparison of results to applicable water quality benchmarks.

Exceedances of nitrate-N and dissolved copper benchmarks were observed during Events 42, 43 and 45. The 4,4'-DDE benchmark was exceeded during all four 2019-2020 events. Exceedances of the benchmarks for 4,4'-DDD and 4,4'-DDT occurred during both wet weather Events 43 and 44 and during dry weather Event 45. The *E. coli* benchmark was exceeded during both wet weather Events 43 and 44 and during dry weather Event 42. Exceedances of the benchmarks for bifenthrin and total chlordane only occurred during the two wet weather events, Event 43 and Event 44. Exceedances of the toxaphene benchmark were observed during wet weather Event 44 and dry weather Event 45.

The primary crops in the vicinity of this site are sod and some rotational crops. Table 22 summarizes the trash observations for each event. This area is frequently used by bird watchers and others participating in non-contact recreation. The trash found near the monitoring site included, but is not limited to, agriculture related trash.

Table 21. 2019-2020 VCAILG Monitoring Data v. Waiver Benchmarks: 01T_ODD3_EDI

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		0.9	10.8	10.0	0.3
pH		6.5≤ pH ≤ 8.5	7.0	7.4	7.6	7.2
Temperature	°C		21.3	13.5	11.4	20.1
Dissolved Oxygen	mg/L	≥ 5	5.6	8.9	7.5	6.5
Turbidity	NTU		10.3	237.0	86.0	12.6
Conductivity	µS/cm		4,190.8	535.0	1,471.8	3,986.2
General Water Quality						
TDS	mg/L		3,700	370	940	3,650
TSS	mg/L		7	191	80	19
Total Hardness as $CaCO_3$	mg/L		2,010	185	551	1,990
Chloride	mg/L		232	24	58	199
Sulfate	mg/L		1,680	144	390	1,580
Nutrients						
Ammonia-N	mg/L	6.90/ 4.43/ 3.79/ 4.34 [1]	1.96	0.40	0.17	0.20
Nitrate-N	mg/L	10[2]	**73.1**	4.9	**21.5**	**73.1**
Total Nitrogen	mg/L		85.3	6.1	12.0	84.9
Total Orthophosphate	mg/L		0.54	2.62	1.65	0.71
Total Phosphorus	mg/L		0.20	1.22	0.79	0.28
Metals						
Dissolved Copper	µg/L	3.1[3]	**3.5**	2.3	**7.5**	**4.4**
Total Copper	µg/L		3.8	8.8	7.5	4.8
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	ug/L		ND	DNQ	DNQ	ND
trans-Nonachlor	µg/L		ND	0.00545	DNQ	ND
Chlordane-alpha	µg/L		ND	0.0074	0.00254	ND
Chlordane-gamma	µg/L		ND	0.00614	0.00202	ND
Total Chlordane	µg/L	0.00059	ND	**0.01354**	**0.00456**	ND
2,4'-DDD	µg/L		ND	0.00802	0.00494	0.00235
2,4'-DDE	µg/L		ND	ND	DNQ	ND
2,4'-DDT	µg/L		ND	DNQ	0.00784	DNQ
4,4'-DDD	µg/L	0.00084	ND	**0.0395**	**0.0345**	**0.0142**
4,4'-DDE	µg/L	0.00059	**0.00605**	**0.0968**	**0.0448**	**0.0136**
4,4'-DDT	µg/L	0.00059	ND	**0.0125**	**0.0439**	**0.0219**
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	ND	ND	**0.246**	**0.0345**
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Malathion	µg/L		ND	ND	0.153	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	**0.0104**	**0.0029**	DNQ
Lamda-cyhalothrin	µg/L		ND	ND	0.0152	ND
Bacteria						
E. coli	MPN/100 mL	235	**310**	**630**	**1,090**	200

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

1. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the Basin Plan Amendment to Update Saltwater Ammonia Objectives (LARWQCB Resolution No. 2004-022). The benchmarks are based on the chronic saltwater equation and are dependent upon the pH, temperature, and salinity of the water at the time of sample collection.
2. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
3. The copper benchmark for saltwater (shown in Table 15) applies at this site.

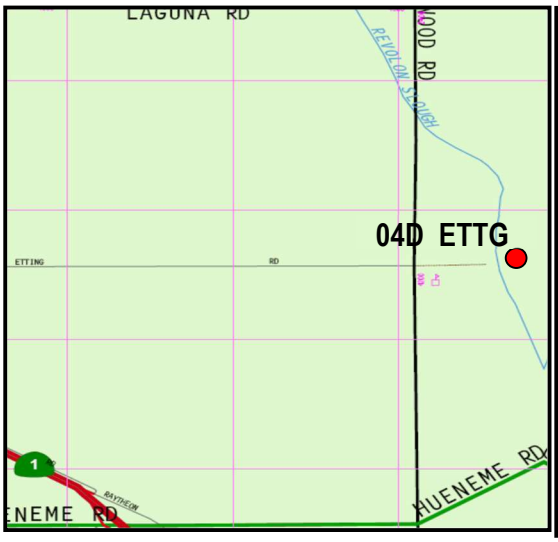
Table 22. 2019-2020 Trash Observations for 01T_ODD3_EDI

Event	Count	Types
Event 42	5-10	Agriculture trash, plastic glove, mesh netting
Event 43	25+	Cans, baggies, paper, Styrofoam, wrappers
Event 44	10	Agriculture trash
Event 45	10	Urban refuse, Styrofoam, agriculture refuse

04D_ETTG

This monitoring site is located on an agricultural drain just upstream from its confluence with Revolon Slough. The site is located just east of the intersection of Wood Road and Etting Road. Flow from this drain eventually discharges into Calleguas Creek Reach 4 (Revolon Slough).

Site Map



View toward SW looking downstream in the ag drain before its confluence with Revolon Slough

Flow was present and samples were collected at 04D_ETTG during all four 2019-2020 monitoring events. Table 23 summarizes the concentrations recorded for select constituents and provides a comparison of results to applicable water quality benchmarks.

Exceedances of the benchmarks for dissolved copper, 4,4'-DDE, toxaphene, and *E. coli* occurred during all four monitoring events. The benchmark for 4-4'-DDD was exceeded during both wet weather Events 43 and 44 and during dry weather Event 45. The benchmarks for 4,4'-DDT and bifenthrin occurred only during the two wet weather Events 43 and 44. The benchmark for total chlordane benchmark was only exceeded during the first wet weather event, Event 43. The benchmark for nitrate-N was exceeded during both dry weather events, Event 42 and 45, and during the second wet weather event, Event 44.

Rotational crops are the most common crops grown within this site drainage area. Additional crop types include strawberries, other berries (such as raspberries or blueberries), and citrus. The approximate amount and types of trash observed at this site are listed in Table 24**Error! Reference source not found.**.

Table 23. 2019-2020 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_ETTG

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		1.1	117.6	7.3	2.5
pH		6.5 < pH < 8.5	8.0	8.0	7.8	7.8
Temperature	°C	≤ 26.67°C [1]	23.8	14.1	16.1	20.8
Dissolved Oxygen	mg/L	≥ 5	10.4	8.7	9.9	8.6
Turbidity	NTU		5.5	>1000	39.0	2.3
Conductivity	µS/cm		3,917.0	470.1	4,732.6	4,534.0
General Water Quality						
TDS	mg/L		1,970	360	4,140	4,030
TSS	mg/L		14	6,500	72	5
Total Hardness as $CaCO_3$	mg/L		1,870	533	2,180	2,020
Chloride	mg/L		320	26	361	324
Sulfate	mg/L		1,380	124	1,710	1,660
Nutrients						
Ammonia-N	mg/L	1.44/ 2.50/ 2.91/ 2.01 [2]	0.04	0.56	0.05	0.10
Nitrate-N	mg/L	10 [3]	**57.5**	7.5	**74.2**	**73.2**
Total Nitrogen	mg/L		65.2	9.31	72.1	81.4
Total Orthophosphate	mg/L		2.69	34.02	1.47	5.52
Total Phosphorus	mg/L		1.03	30.30	0.67	1.95
Metals						
Dissolved Copper	µg/L	3.1[4]	**7.0**	**5.6**	**6.2**	**9.3**
Total Copper	µg/L		6.3	62.0	9.3	8.8
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	µg/L		ND	0.0158	ND	ND
trans-Nonachlor	µg/L		ND	0.0308	ND	ND
Chlordane-alpha	µg/L		ND	0.0358	DNQ	ND
Chlordane-gamma	µg/L		ND	0.0285	ND	ND
Total Chlordane	µg/L	0.00059	ND	**0.0643**	DNQ	ND
2,4'-DDD	µg/L		DNQ	0.136	0.00261	ND
2,4'-DDE	µg/L		ND	0.0499	DNQ	ND
2,4'-DDT	µg/L		ND	0.113	0.0057	ND
4,4'-DDD	µg/L	0.00084	DNQ	**0.684**	**0.014**	**0.00611**
4,4'-DDE	µg/L	0.00059	**0.012**	**2.72**	**0.0427**	**0.00509**
4,4'-DDT	µg/L	0.00059	ND	**0.404**	**0.0434**	ND
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	**0.132**	**6.56**	**0.271**	**0.0927**
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	ND	0.001	ND
Diazinon	µg/L	0.1	ND	ND	0.005	ND
Dichlorvos	µg/L		ND	0.911	ND	ND
Dimethoate	µg/L		0.017	0.135	ND	ND
Malathion	µg/L		ND	0.427	0.104	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	**0.103**	**0.0025**	DNQ
Cyfluthrin	µg/L		ND	0.0107	ND	ND
Cypermethrin	µg/L		ND	0.0169	ND	ND
Danitol	µg/L		ND	0.0020	ND	ND
cis-Permethrin	µg/L		ND	0.0369	DNQ	ND
trans-Permethrin	µg/L		ND	0.0579	0.0030	ND
Bacteria						
E. coli	MPN/100 mL	235	**850**	**2260**	**410**	**310**

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 a list of benchmarks applicable to this site.

DNQ = Detected, not qualified

ND = Not detected at the applicable reporting limit.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
4. The copper benchmark for saltwater (shown in Table 15) applies at this site.

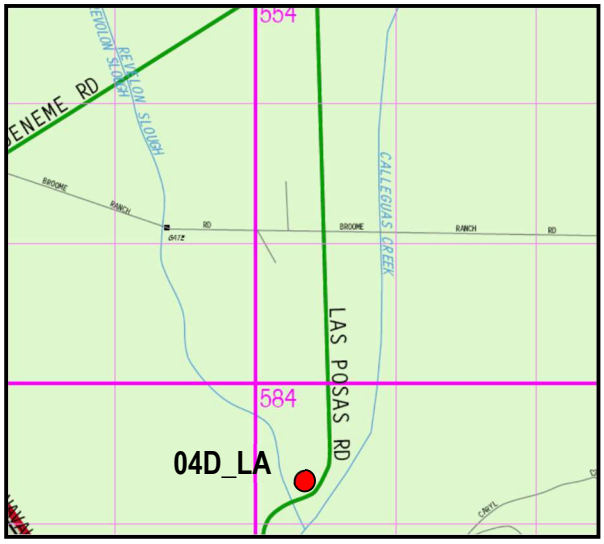
Table 24. 2019-2020 Trash Observations for 04D_ETTG

Event	Count	Types
Event 42	<5	Bottles, glove, food container
Event 43	25+	Cups, Styrofoam, farm tools, bottles
Event 44	50+	Agriculture refuse, urban trash
Event 45	1	Beer can

04D_LAS

This monitoring site is located on an agricultural drain just upstream of its confluence with Revolon Slough and just upstream of South Las Posas Road. A tile drain discharge is intermittently pumped into this agricultural drain upstream of the monitoring site. Flow from this drain eventually flows into Calleguas Creek Reach 4 (Revolon Slough).

Site Map



View toward S looking downstream in ag drain before the culvert draining into Revolon Slough

Flow was observed and samples were collected at this site during all four 2019-2020 monitoring events. Table 25 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. Exceedances of the benchmarks for nitrate-N, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and toxaphene occurred during all four monitoring events. The benchmark for dissolved copper was exceeded during both wet weather Events 43 and 44 and during dry weather Event 45. The benchmark *E. coli* was exceeded during both wet weather events, Events 43 and 44. Exceedances of the total chlordane and bifenthrin benchmarks occurred only during the first wet weather event, Event 43.

Rotational crops are the primary crop type grown in the vicinity of this site. Table 26 quantifies and describes trash found at this site.

Table 25. 2019-2020 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_LAS

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		2.3	28.8	8.7	1.5
pH		6.5 < pH < 8.5	7.9	7.8	7.6	8.1
Temperature	°C	≤ 26.67°C [1]	22.4	14.6	13.4	22.2
Dissolved Oxygen	mg/L	≥ 5	11.5	8.6	8.3	15.6
Turbidity	NTU		18.1	711.0	150.0	13.0
Conductivity	µS/cm		4,065.0	1,435.2	3,035.7	3,523.7
General Water Quality						
TDS	mg/L		1930	1040	2390	2810
TSS	mg/L		26	546	170	17
Total Hardness as $CaCO_3$	mg/L		1760	512	1200	1370
Chloride	mg/L		440	135	299	369
Sulfate	mg/L		1250	366	887	984
Nutrients						
Ammonia-N	mg/L	1.68 /3.36/ 4.40/ 1.22 [2]	0.07	0.63	0.24	0.08
Nitrate-N	mg/L	10[3]	**51.8**	**16.1**	**50.1**	**46.6**
Total Nitrogen	mg/L		57.1	18.8	54.1	52.9
Total Orthophosphate	mg/L		1.52	3.77	2.91	1.68
Total Phosphorus	mg/L		0.53	2.55	1.20	0.63
Metals						
Dissolved Copper	µg/L	3.1 [4]	2.7	**5.0**	**4.5**	**3.13**
Total Copper	µg/L		3.3	18.9	9.6	3.6
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	µg/L		ND	DNQ	ND	ND
trans-Nonachlor	µg/L		ND	0.0116	DNQ	ND
Chlordane-alpha	µg/L		DNQ	0.0135	DNQ	DNQ
Chlordane-gamma	µg/L		ND	0.00975	DNQ	ND
Total Chlordane	µg/L	0.00059	DNQ	**0.02325**	DNQ	DNQ
2,4'-DDD	µg/L		DNQ	0.0258	0.00321	0.00324
2,4'-DDE	µg/L		ND	0.00831	ND	ND
2,4'-DDT			ND	0.00695	0.00711	DNQ
4,4'-DDD	µg/L	0.00084	**0.0076**	**0.0768**	**0.0258**	**0.0188**
4,4'-DDE	µg/L	0.00059	**0.0225**	**0.296**	**0.0518**	**0.0146**
4,4'-DDT	µg/L	0.00059	**0.0064**	**0.0263**	**0.048**	**0.014**
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	**0.143**	**0.57**	**0.207**	**0.141**
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.008	0.022	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Dichlorvos	µg/L		ND	0.026	ND	ND
Dimethoate	µg/L		ND	0.226	ND	ND
Malathion	µg/L		ND	0.043	0.230	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	**0.0061**	DNQ	DNQ
Cypermethrin	µg/L		ND	DNQ	0.0028	ND
cis-Permethrin	µg/L		ND	DNQ	ND	ND
trans-Permethrin	µg/L		ND	0.0036	ND	ND
Bacteria						
E. coli	MPN/100 mL	235	ND	**2,850**	**6,630**	200

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.
DNQ = Detected, not qualified
ND = Not detected at the applicable reporting limit.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
4. The copper benchmark for saltwater (shown in Table 15) applies at this site.

Table 26. 2019–2020 Trash Observations for 04D_LAS

Event	Count	Types
Event 42	0	
Event 43	15	Agriculture refuse, plastic
Event 44	10+	Urban waste
Event 45	2	Paper

05D_LAVD

This monitoring site is located on the La Vista Drain just east of La Vista Avenue, north of Hwy 118. Flow from this drain eventually discharges into Calleguas Creek Reach 5 (Beardsley Channel). The Ventura County Watershed Protection District maintains a stormwater monitoring station just downstream of the VCAILG monitoring site. A portion of this monitoring site drainage area burned during the Maria fire. The event took place between October 31st and November 6, 2019, prior to both VCAILG storm events.

Site Map

View upstream (NE) from sampling location

Flow was observed and samples were collected at this site during both wet weather monitoring events. The site was dry, and no samples were collected during the two dry weather monitoring events. Table 27 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. During both wet weather Events 43 and 44, the benchmarks for 4,4'-DDD 4,4'-DDE, chlorpyrifos, bifenthrin, and *E. coli* were exceeded. Benchmarks for TDS, sulfate, 4,4'-DDT and toxaphene were only exceeded during the second wet weather event, Event 44.

Citrus, avocados, and other crops are the major crop types that drain to this monitoring location. Table 28 quantifies and describes trash found at this site.

Table 27. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: 05D_LAVD

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS			0.5	NM[1]	
pH		6.5≤ pH ≤ 8.5		8.4	8.5	
Temperature	°C	≤ 26.67°C[2]		17.1	8.4	
Dissolved Oxygen	mg/L	≥ 5		9.1	11.9	
Turbidity	NTU			467	>1,000	
Conductivity	µS/cm			1,044.9	1,005.3	
General Water Quality						
TDS	mg/L	850		730	**910**	
TSS	mg/L			440	272	
Total Hardness as $CaCO_3$	mg/L			340	401	
Chloride	mg/L	150		64	65	
Sulfate	mg/L	250		224	**353**	
Nutrients						
Ammonia-N	mg/L	NS/ 1.15/ 1.59/ NS [3]		0.26	0.22	
Nitrate-N	mg/L	10[4]		3.6	3.6	
Total Nitrogen	mg/L			4.57	4.91	
Total Orthophosphate	mg/L			1.00	1.21	
Total Phosphorus	mg/L			0.96	1.26	
Metals			NS			NS
Dissolved Copper	µg/L	NS/ 25.48/ 29.28/ NS [5]		16.8	18.0	
Total Copper	µg/L			38.2	31.3	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	
BHC-alpha	µg/L	0.013		ND	ND	
BHC-beta	µg/L	0.046		ND	ND	
BHC-gamma	µg/L	0.063		ND	ND	
trans-Nonachlor	µg/L			DNQ	ND	
Chlordane-alpha	µg/L			DNQ	ND	
Chlordane-gamma	µg/L			ND	ND	
Total Chlordane	µg/L	0.00059		DNQ	ND	
2,4'-DDD	µg/L			ND	0.0034	
2,4'-DDE	µg/L			ND	DNQ	
2,4'-DDT	µg/L			ND	0.0231	
4,4'-DDD	µg/L	0.00084		**0.00602**	**0.0461**	
4,4'-DDE	µg/L	0.00059		**0.0238**	**0.123**	
4,4'-DDT	µg/L	0.00059		ND	**0.151**	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endosulfan-II	µg/L	0.056		ND	ND	
Endosulfan Sulfate	µg/L	240		ND	ND	
Endrin	µg/L	0.036		ND	ND	
Endrin Aldehyde	µg/L	0.81		ND	ND	
Toxaphene	µg/L	0.00075		ND	**0.531**	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		**0.249**	**0.031**	
Diazinon	µg/L	0.1		ND	0.012	
Malathion	µg/L			ND	0.035	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		**0.0907**	**0.0134**	
Cyfluthrin	µg/L			DNQ	0.0068	
Cypermethrin	µg/L			ND	DNQ	
Danitol	µg/L			DNQ	0.0064	
Permethrin, cis-	ug/L			0.0052	0.0202	
Permethrin, trans-	ug/L			0.0105	0.0152	
Bacteria						
E. coli	MPN/100 mL	235		**6,970**	**1,340**	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.
NM = Not measured
NS = No samples were collected due to lack of flow.

1. No flow measurement was taken. Sheet flow was noted during sample collection, followed by rainfall and increase in flow making it unsafe to enter the box channel.
2. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
3. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
4. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
5. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

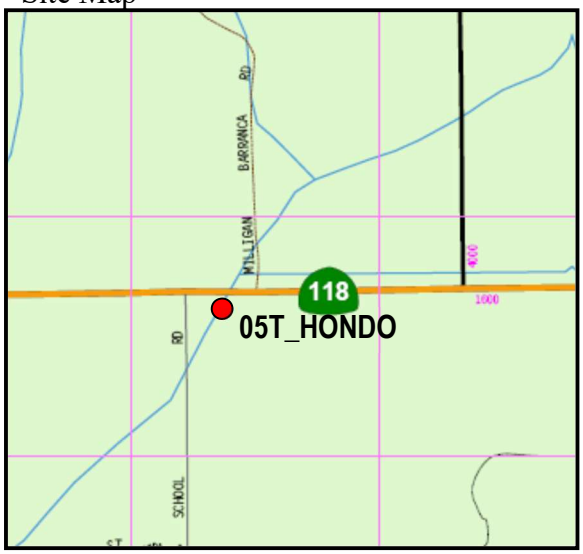
Table 28. 2019–2020 Trash Observations for 05D_LAVD

Event	Count	Types
Event 42	0	
Event 43	0	
Event 44	0	
Event 45	2	Cup, juice box

05T_HONDO

This monitoring site is located on Hondo Barranca just downstream of the Hwy 118 Bridge. Hondo Barranca is a tributary to Calleguas Creek Reach 5 (Beardsley Channel). A portion of this monitoring site drainage area burned during the Maria fire. The event took place between October 31st and November 6, 2019, prior to both VCAILG storm events.

Site Map



View downstream (S) at sampling location

Flow was sufficient for sample collection only during wet weather Event 43. The site was dry, and samples were not collected during both dry Events 42 and 45 and wet weather Event 44. Table 29 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. During wet weather Event 43, benchmarks for 4,4'-DDD, 4,4'-DDE, and *E. coli* were exceeded.

The site is located directly adjacent to Hwy 118 and drains land planted primarily with citrus, avocados, and other crops.

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS			0.4		
pH		6.5≤ pH ≤8.5		8.2		
Temperature	°C	≤ 26.67°C [1]		14.6		
Dissolved Oxygen	mg/L	≥ 5	NS	8.8	NS	NS
Turbidity	NTU			859		
Conductivity	µS/cm			344.8		
General Water Quality						
TDS	mg/L	850		280		
TSS	mg/L			2,400		

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Total Hardness as CaCO3	mg/L			262		
Chloride	mg/L	150		9		
Sulfate	mg/L	250		79		
Nutrients						
Ammonia-N	mg/L	NS/ 1.73/ NS/ NS [2]		0.27		
Nitrate-N	mg/L	10		2.12		
Total Nitrogen	mg/L			3.14		
Total Orthophosphate	mg/L			5.18		
Total Phosphorus	mg/L			5.57		
Metals						
Dissolved Copper	µg/L	NS/ 20.40/ NS/ NS [3]		12.3		
Total Copper	µg/L			47.5		
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND		
BHC-alpha	µg/L	0.013		ND		
BHC-beta	µg/L	0.046		ND		
BHC-gamma	µg/L	0.063		ND		
trans-Nonachlor	µg/L			DNQ		
Chlordane-alpha	µg/L			DNQ		
Chlordane-gamma	µg/L			DNQ		
Total Chlordane	µg/L	0.00059		DNQ		
4,4'-DDD	µg/L	0.00084		**0.00558**		
4,4'-DDE	µg/L	0.00059		**0.0231**		
4,4'-DDT	µg/L	0.00059		ND		
Dieldrin	µg/L	0.00014		ND		
Endosulfan-I	µg/L	0.056		ND		
Endosulfan-II	µg/L	0.056		ND		
Endosulfan Sulfate	µg/L	240		ND		
Endrin	µg/L	0.036		ND		
Endrin Aldehyde	µg/L	0.81		ND		
Toxaphene	µg/L	0.00075		ND		
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		ND		
Diazinon	µg/L	0.1		ND		
Malathion	µg/L			0.185		
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		DNQ		
Danitol	µg/L			0.0122		
Bacteria						
E. coli	MPN/100 mL	235		**11,370**		

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

NS = No samples were collected due to lack of flow.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

Table 30 quantifies and describes trash found at this site.

Table 29. 2019-2020 VCAILG Monitoring Data v. Waiver Benchmarks: 05T_HONDO

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS			0.4		
pH		6.5≤ pH ≤8.5		8.2		
Temperature	°C	≤ 26.67°C [1]		14.6		
Dissolved Oxygen	mg/L	≥ 5		8.8		
Turbidity	NTU			859		
Conductivity	µS/cm			344.8		
General Water Quality						
TDS	mg/L	850		280		
TSS	mg/L			2,400		
Total Hardness as $CaCO_3$	mg/L			262		
Chloride	mg/L	150		9		
Sulfate	mg/L	250		79		
Nutrients						
Ammonia-N	mg/L	NS/ 1.73/ NS/ NS [2]		0.27		
Nitrate-N	mg/L	10		2.12		
Total Nitrogen	mg/L			3.14		
Total Orthophosphate	mg/L			5.18		
Total Phosphorus	mg/L			5.57		
Metals			NS		NS	NS
Dissolved Copper	µg/L	NS/ 20.40/ NS/ NS [3]		12.3		
Total Copper	µg/L			47.5		
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND		
BHC-alpha	µg/L	0.013		ND		
BHC-beta	µg/L	0.046		ND		
BHC-gamma	µg/L	0.063		ND		
trans-Nonachlor	µg/L			DNQ		
Chlordane-alpha	µg/L			DNQ		
Chlordane-gamma	µg/L			DNQ		
Total Chlordane	µg/L	0.00059		DNQ		
4,4'-DDD	µg/L	0.00084		**0.00558**		
4,4'-DDE	µg/L	0.00059		**0.0231**		
4,4'-DDT	µg/L	0.00059		ND		
Dieldrin	µg/L	0.00014		ND		
Endosulfan-I	µg/L	0.056		ND		
Endosulfan-II	µg/L	0.056		ND		
Endosulfan Sulfate	µg/L	240		ND		
Endrin	µg/L	0.036		ND		

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endrin Aldehyde	µg/L	0.81		ND		
Toxaphene	µg/L	0.00075		ND		
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		ND		
Diazinon	µg/L	0.1		ND		
Malathion	µg/L			0.185		
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		DNQ		
Danitol	µg/L			0.0122		
Bacteria						
E. coli	MPN/100 mL	235		**11,370**		

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

NS = No samples were collected due to lack of flow.

4. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
5. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
6. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

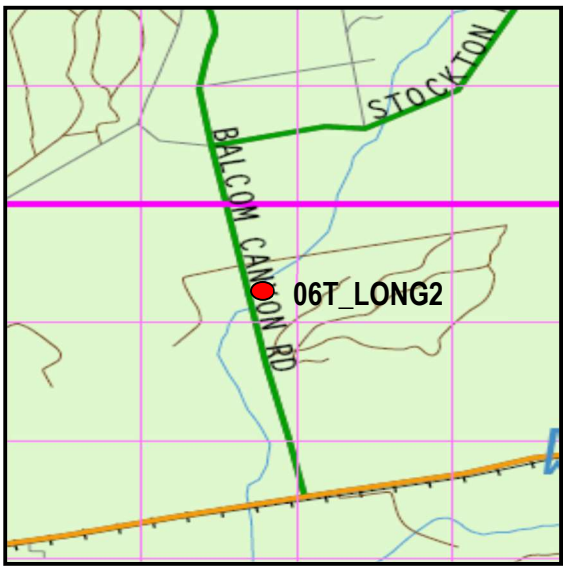
Table 30. 2019–2020 Trash Observations for 05T_HONDO

Event	Count	Types
Event 42	5-10	Can, plastic bag, cups, newspaper
Event 43	50+	Farm, agriculture, and urban refuse
Event 44	5	Toilet seats, cans, Styrofoam
Event 45	20-25	Wrappers, urban trash, cans, boxes

06T_LONG2

This monitoring site is located on Long Canyon where it crosses Balcom Canyon Road north of Highway 118. Long Canyon is a tributary to Calleguas Creek Reach 6 (Arroyo Las Posas).

Map of Site



View upstream from sampling location

The site was dry during all 2019-20 monitoring events and therefore no samples were collected. Table 31 summarizes the constituents that would have been sampled had there been sufficient flow and presents the benchmarks associated with these constituents.

Table 32 quantifies and describes trash found at this site. The drainage area for this monitoring site consists mostly of citrus and avocado orchards, with small portions used for growing cane berries.

Table 31. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: 06T_LONG2

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS					
pH		6.5≤ pH ≤8.5				
Temperature	°C	≤ 26.67°C [1]				
Dissolved Oxygen	mg/L	≥ 5				
Turbidity	NTU					
Conductivity	µS/cm					
General Water Quality						
TDS	mg/L	850				
TSS	mg/L					
Total Hardness as $CaCO_3$	mg/L					
Chloride	mg/L	150				
Sulfate	mg/L	250				
Nutrients						
Ammonia-N	mg/L	NS/ NS/ NS/ NS[2]				
Nitrate-N	mg/L	10				
Total Nitrogen	mg/L					
Total Orthophosphate	mg/L					
Total Phosphorus	mg/L					
Metals			NS	NS	NS	NS
Dissolved Copper	µg/L	NS/ NS/ NS/ NS[3]				
Total Copper	µg/L					
Organochlorine Pesticides						
Aldrin	µg/L	0.00014				
BHC-alpha	µg/L	0.013				
BHC-beta	µg/L	0.046				
BHC-gamma	µg/L	0.063				
Chlordane-alpha	µg/L					
Chlordane-gamma	µg/L					
Total Chlordane	µg/L	0.00059				
4,4'-DDD	µg/L	0.00084				
4,4'-DDE	µg/L	0.00059				
4,4'-DDT	µg/L	0.00059				
Dieldrin	µg/L	0.00014				
Endosulfan-I	µg/L	0.056				
Endosulfan-II	µg/L	0.056				
Endosulfan Sulfate	µg/L	240				
Endrin	µg/L	0.036				
Endrin Aldehyde	µg/L	0.81				

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Toxaphene	µg/L	0.00075				
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025				
Diazinon	µg/L	0.1				
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006				
Bacteria						
E. coli	MPN/100 mL	235				

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through for a list of benchmarks applicable to this site.

NS = No samples were collected due to lack of flow.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

Table 32. 2019–2020 Trash Observations for 06T_LONG2

Event	Count	Types
Event 42	0	
Event 43	2	Plastic pipe
Event 44	0	
Event 45	0	

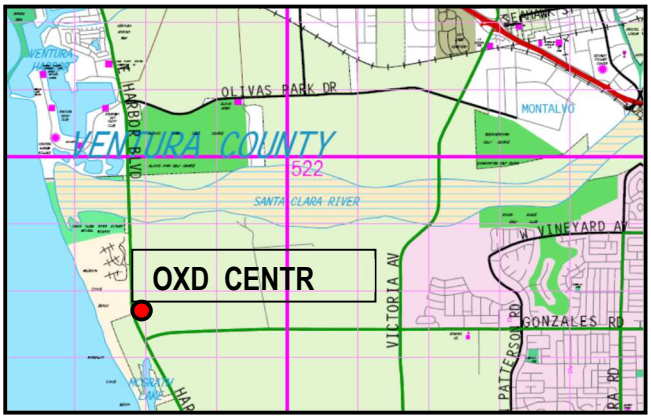
Oxnard Coastal Watershed

The Oxnard Coastal Watershed contains only one VCAILG monitoring site. The site is located on a drain used primarily for irrigated agriculture.

OXD_CENTR

OXD_CENTR is the only VCAILG monitoring site in the Oxnard Coastal Watershed. The site is located on the Central Ditch, which flows under Harbor Boulevard and into McGrath Lake. Water from McGrath Lake is pumped periodically into the ocean to prevent the Central Ditch from backing up and flooding Harbor Boulevard.

Site Map



View looking upstream

Flow was present at this site and samples were collected during all four of the 2019-2020 monitoring events. Table 33 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks.

Exceedances of benchmarks for nitrate-N, dissolved copper, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, toxaphene, and bifenthrin occurred during all four of the 2019-2020 monitoring events. The total chlordane benchmark was only exceeded during both wet weather Events 43 and 44. The benchmark for dieldrin was only exceeded during wet weather Event 44. Exceedances of the benchmark for *E. coli* occurred only during dry weather Event 42 and wet weather Event 43.

Rotational crops and strawberries are the predominant crop types draining to this monitoring location.

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/16/2020	Event 45 Dry 6/02/2020
Flow	CFS		0.1	40.2	2.6	0.7
pH		6.5≤ pH ≤8.5	8.0	7.4	7.6	7.5
Temperature	°C		18.6	12.3	13.7	17.6
Dissolved Oxygen	mg/L	≥ 5	6.0	9.7	9.5	3.7
Turbidity	NTU		31.5	>1000	676.0	1.6
Conductivity	µS/cm		3,214.2	981.8	2,993.8	2,946.7
General Water Quality						
TDS	mg/L		2,890	730	2,810	2,650
TSS	mg/L		34	2,040	717	4

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/16/2020	Event 45 Dry 6/02/2020
Total Hardness as CaCO3	mg/L		1,750	553	1,330	1,390
Chloride	mg/L		124	33	174	111
Sulfate	mg/L		1,510	358	1,300	1,220
Nutrients						
Ammonia-N	mg/L	1.95/ 5.59/ 4.02/ 3.701	0.44	0.37	0.63	0.84
Nitrate-N	mg/L	10 [2]	**25.9**	**11.2**	**55.3**	**36.1**
Total Nitrogen	mg/L		30.8	15.6	41.1	40.7
Total Orthophosphate	mg/L		0.74	16.49	12.44	0.54
Total Phosphorus	mg/L		0.24	10.50	1.63	0.25
Total Organic Carbon	mg/L		2.8	15.8	3.4	2.2
Metals						
Dissolved Copper	µg/L	3.1 [3]	**3.7**	**7.5**	**10.8**	**4.0**
Total Copper	µg/L		4.5	86.3	24.9	4.1
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	µg/L		ND	0.0121	0.00227	ND
trans-Nonachlor	µg/L		DNQ	0.0272	0.00488	ND
Chlordane-alpha	µg/L		DNQ	0.0478	0.00937	ND
Chlordane-gamma	µg/L		DNQ	0.038	0.00897	ND
Total Chlordane	µg/L	0.00059	DNQ	**0.0858**	**0.01834**	ND
2,4'-DDD	µg/L		0.00875	0.326	0.0353	0.00216
2,4'-DDE	µg/L		ND	0.0564	0.012	ND
2,4'-DDT	µg/L		0.0147	0.294	0.192	ND
4,4'-DDD	µg/L	0.00084	**0.0215**	**1.29**	**0.16**	**0.0128**
4,4'-DDE	µg/L	0.00059	**0.0684**	**2.51**	**0.551**	**0.00559**
4,4'-DDT	µg/L	0.00059	**0.0487**	**0.803**	**0.671**	**0.0119**
Dieldrin	µg/L	0.00014	ND	ND	**0.0105**	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Hexachlorobenzene	µg/L		ND	DNQ	DNQ	ND
Toxaphene	µg/L	0.00075	**0.454**	**9.45**	**4.3**	**0.095**
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.014	0.006	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Dichlorvos	µg/L		ND	0.111	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/16/2020	Event 45 Dry 6/02/2020
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	**0.0046**	**4.22**	**0.0185**	**0.0028**
Danitol	µg/L		ND	2.84	0.0039	DNQ
Deltamethrin/Tralomethrin	ug/L		ND	0.0162	ND	ND
Permethrin, cis-	µg/L		ND	DNQ	ND	ND
Permethrin, trans-	µg/L		ND	0.0024	ND	ND
Bacteria						
E. coli	MPN/100 mL	235	**520**	**1,200**	200	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.
DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.

1. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
2. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
3. The copper benchmark for saltwater (shown in Table 15) applies at this site.

Table 34 quantifies and describes trash found at this site.

Table 33. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: OXD_CENTR

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/16/2020	Event 45 Dry 6/02/2020
Flow	CFS		0.1	40.2	2.6	0.7
pH		6.5≤ pH ≤8.5	8.0	7.4	7.6	7.5
Temperature	°C		18.6	12.3	13.7	17.6
Dissolved Oxygen	mg/L	≥ 5	6.0	9.7	9.5	3.7
Turbidity	NTU		31.5	>1000	676.0	1.6
Conductivity	µS/cm		3,214.2	981.8	2,993.8	2,946.7
General Water Quality						
TDS	mg/L		2,890	730	2,810	2,650
TSS	mg/L		34	2,040	717	4
Total Hardness as $CaCO_3$	mg/L		1,750	553	1,330	1,390
Chloride	mg/L		124	33	174	111
Sulfate	mg/L		1,510	358	1,300	1,220
Nutrients						
Ammonia-N	mg/L	1.95/ 5.59/ 4.02/ 3.70[1]	0.44	0.37	0.63	0.84
Nitrate-N	mg/L	10 [2]	**25.9**	**11.2**	**55.3**	**36.1**
Total Nitrogen	mg/L		30.8	15.6	41.1	40.7
Total Orthophosphate	mg/L		0.74	16.49	12.44	0.54
Total Phosphorus	mg/L		0.24	10.50	1.63	0.25
Total Organic Carbon	mg/L		2.8	15.8	3.4	2.2
Metals						
Dissolved Copper	µg/L	3.1 [3]	**3.7**	**7.5**	**10.8**	**4.0**
Total Copper	µg/L		4.5	86.3	24.9	4.1
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	µg/L		ND	0.0121	0.00227	ND
trans-Nonachlor	µg/L		DNQ	0.0272	0.00488	ND
Chlordane-alpha	µg/L		DNQ	0.0478	0.00937	ND
Chlordane-gamma	µg/L		DNQ	0.038	0.00897	ND
Total Chlordane	µg/L	0.00059	DNQ	**0.0858**	**0.01834**	ND
2,4'-DDD	µg/L		0.00875	0.326	0.0353	0.00216
2,4'-DDE	µg/L		ND	0.0564	0.012	ND
2,4'-DDT	µg/L		0.0147	0.294	0.192	ND
4,4'-DDD	µg/L	0.00084	**0.0215**	**1.29**	**0.16**	**0.0128**
4,4'-DDE	µg/L	0.00059	**0.0684**	**2.51**	**0.551**	**0.00559**
4,4'-DDT	µg/L	0.00059	**0.0487**	**0.803**	**0.671**	**0.0119**
Dieldrin	µg/L	0.00014	ND	ND	**0.0105**	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/16/2020	Event 45 Dry 6/02/2020
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Hexachlorobenzene	µg/L		ND	DNQ	DNQ	ND
Toxaphene	µg/L	0.00075	**0.454**	**9.45**	**4.3**	**0.095**
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	0.014	0.006	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Dichlorvos	µg/L		ND	0.111	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	**0.0046**	**4.22**	**0.0185**	**0.0028**
Danitol	µg/L		ND	2.84	0.0039	DNQ
Deltamethrin/Tralomethrin	ug/L		ND	0.0162	ND	ND
Permethrin, cis-	µg/L		ND	DNQ	ND	ND
Permethrin, trans-	µg/L		ND	0.0024	ND	ND
Bacteria						
E. coli	MPN/100 mL	235	**520**	**1,200**	200	ND

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

4. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS absent) and are dependent upon the pH and temperature of the water at the time of sample collection.
5. There is no site-specific nitrogen objective in the Basin Plan (Table 3-8) applicable to this reach. The Basin Plan objective of 10 mg/L nitrate-N was used for comparison with VCAILG data for this site.
6. The copper benchmark for saltwater (shown in Table 15) applies at this site.

Table 34. 2019–2020 Trash Observations for OXD_CENTR

Event	Count	Types
Event 42	>20	Gloves, plastic bags, cups, shoes
Event 43	50+	Agriculture dump refuse
Event 44	50+	Illegal dumping, food containers, agricultural waste
Event 45	N/A	N/A

N/A= Trash observations could not be made due to vegetation

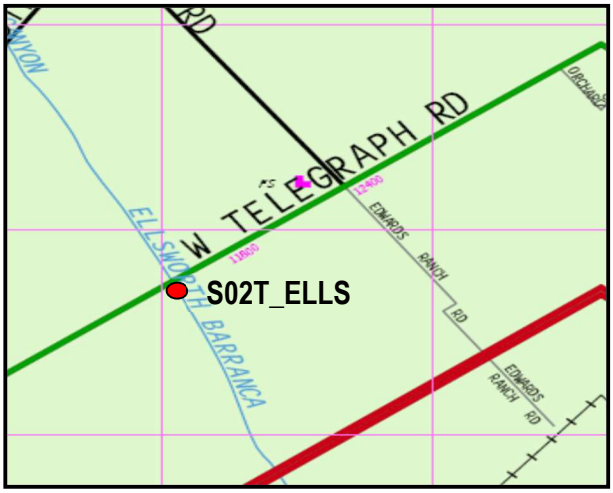
Santa Clara River Watershed

The Santa Clara River Watershed contains six VCAILG monitoring sites. Five of the sites are located on tributaries to the Santa Clara River. S03D_BARDS is the only monitoring site located on a drain used primarily for irrigated agriculture. Monitoring sites are discussed below in order of the Santa Clara River reach into which they drain.

S02T_ELLS

This monitoring site is located on Ellsworth Barranca just downstream of the Telegraph Road Bridge. Ellsworth Barranca drains the Aliso Canyon area and is a tributary to Santa Clara River Reach 2.

Site Map



View upstream at the bridge

Sufficient flow was present at S02T_ELLS to allow for sample collection during three of the four 2019-2020 monitoring events. During wet weather Event 45, the site was dry, and no samples were collected. Table 35 contains summarizes concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks.

Exceedances of the benchmarks for bifenthrin and *E. coli* occurred during all three sampled monitoring events, including dry weather Event 42 and wet weather Events 43 and 44. The benchmark for chloride was exceeded during both wet weather Events 43 and 44. Benchmarks for total chlordane and 4,4'-DDE were exceeded during dry weather Event 42 and wet weather Event 43. The benchmark for chlorpyrifos was only exceeded during the wet weather Event 42, while the benchmarks for pH and sulfate were only exceeded during wet weather Event 43. Exceedance of the benchmarks for 4,4'-DDD and 4,4'-DDT occurred only during dry weather Event 42. Exceedances of the TDS benchmark were observed during dry weather Event 42 and wet weather Event 44.

Citrus and avocados are the primary crop types associated with this site. Table 36 describes trash found at this site.

Table 35. 2019– 2020 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_ELLS

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		<0.1	2.9	1.6	
pH		6.5≤ pH ≤8.5	7.5	8.1	**8.6**	
Temperature	°C	≤ 26.67°C [1]	20.2	13.5	9.0	
Dissolved Oxygen	mg/L	≥ 5	6.2	10.0	11.4	
Turbidity	NTU		94.0	>1,000	>1,000	
Conductivity	µS/cm		1,666.7	1,328.0	26.0	
General Water Quality						
TDS	mg/L	1,200	**1,290**	970	**2,020**	
TSS	mg/L		280	960	1,160	
Total Hardness as $CaCO_3$	mg/L		743	371	819	
Chloride	mg/L	150	64	**164**	**272**	
Sulfate	mg/L	600	596	287	**854**	
Nutrients						
Ammonia-N	mg/L	2.92/ 2.18/ 1.38/ NS[2]	0.78	1.85	0.11	
Nitrate-N	mg/L	10	7.56	1.53	1.69	
Total Nitrogen	mg/L		8.03	3.65	2.45	
Total Orthophosphate	mg/L		2.39	3.31	1.23	
Total Phosphorus	mg/L		1.05	3.71	1.28	
Metals						NS
Dissolved Copper	µg/L	29.28/ 27.46/ 29.28/ NS[3]	7.71	9.89	4.40	
Total Copper	µg/L		12.2	34.4	16.4	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	
BHC-alpha	µg/L	0.013	ND	ND	ND	
BHC-beta	µg/L	0.046	ND	ND	ND	
BHC-gamma	µg/L	0.063	ND	ND	ND	
cis-Nonachlor	µg/L		DNQ	ND	ND	
Trans-Nonachlor	µg/L		DNQ	DNQ	ND	
Chlordane-alpha	µg/L		0.00565	0.00586	ND	
Chlordane-gamma	µg/L		DNQ	DNQ	ND	
Total Chlordane	µg/L	0.00059	**0.00565**	**0.00586**	ND	
2,4'-DDD	µg/L		0.00524	ND	ND	
2-4'-DDT	µg/L		0.00867	ND	ND	
4,4'-DDD	µg/L	0.00084	**0.0342**	ND	ND	
4,4'-DDE	µg/L	0.00059	**0.149**	**0.0239**	ND	
4,4'-DDT	µg/L	0.00059	**0.0353**	ND	ND	
Dieldrin	µg/L	0.00014	ND	ND	ND	
Endosulfan-I	µg/L	0.056	ND	ND	ND	

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endosulfan-II	µg/L	0.056	ND	ND	ND	
Endosulfan Sulfate	µg/L	240	ND	ND	ND	
Endrin	µg/L	0.036	ND	ND	ND	
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	
Toxaphene	µg/L	0.00075	ND	ND	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	**0.027**	ND	
Diazinon	µg/L	0.1	ND	ND	ND	
Methidathion	µg/L		ND	ND	0.196	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	**0.016**	**0.0022**	**0.0113**	
Cypermethrin	µg/L		DNQ	0.0097	ND	
Danitol	µg/L		ND	0.0093	ND	
Permethrin, cis-	µg/L		0.0228	0.0355	ND	
Permethrin, trans-	µg/L		0.0327	0.0678	ND	
Bacteria						
E. coli	MPN/100 mL	235	**1,190**	**68,670**	**17,220**	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 a list of benchmarks applicable to this site.
DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.
NS = Not sampled.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmarks are listed in order of monitoring event and were calculated using the formula shown in Table 15.

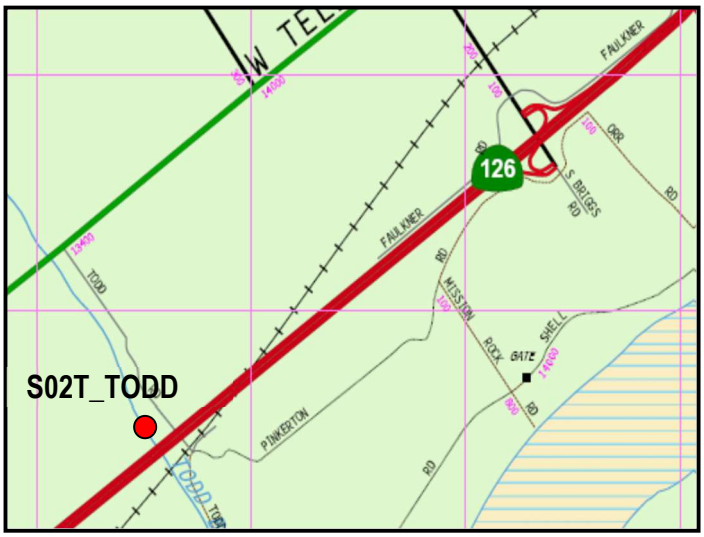
Table 36. 2019–2020 Trash Observations for S02T_ELLS

Event	Count	Types
Event 42	4	Bucket, styrofoam cup, paper, plastic bag
Event 43	0	
Event 44	8	Styrofoam, bottles
Event 45	7	Wrappers, plastic, cans

S02T_TODD

This monitoring site is located on Todd Barranca upstream of Hwy 126. Todd Barranca drains the Wheeler Canyon area and is a tributary to Santa Clara River Reach 2.

Site Map



View upstream of the sampling site

Sufficient flow was present, and samples were collected during all four 2019-2020 monitoring events. Table 37 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. The benchmark for *E. coli* was exceeded during all four monitoring events. The benchmarks for TDS and sulfate were exceeded during both dry weather events, Events 42 and 45. The benchmarks for nitrate-N, 4,4'-DDT, and bifenthrin were only exceeded during dry weather Event 42.

Citrus and avocados are the primary crop types associated with this site, along with portions used for rotational crops. Table 38 lists trash observations made at the site.

Table 37. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_TODD

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		0.2	2.3	3.1	<0.1
pH		6.5≤ pH ≤8.5	7.8	7.9	8.0	8.0
Temperature	°C	≤ 26.67°C [1]	20.8	13.4	14.2	24.4
Dissolved Oxygen	mg/L	≥ 5	8.5	9.4	9.5	8.5
Turbidity	NTU		109.0	>1,000	142.0	0.8
Conductivity	µS/cm		2,382.0	1,065.0	1,636.5	244.3
General Water Quality						
TDS	mg/L	1,200	**1,940**	760	1,200	**2,050**
TSS	mg/L		65	2840	70	58
Total Hardness as $CaCO_3$	mg/L		1,160	358	642	1,100
Chloride	mg/L	150	97	58	65	97
Sulfate	mg/L	600	**919**	294	502	**924**
Nutrients						
Ammonia-N	mg/L	2.12/ 3.04/ 2.35/ 1.27 [2]	0.07	1.03	DNQ	0.03
Nitrate-N	mg/L	10	**10.2**	2.3	1.9	8.7
Total Nitrogen	mg/L		10.0	4.0	1.9	10.2
Total Orthophosphate	mg/L		1.01	5.61	ND	0.06
Total Phosphorus	mg/L		0.32	5.75	0.27	0.07
Metals						
Dissolved Copper	µg/L	29.28/ 26.63/ 29.28/ 29.28 [3]	4.56	9.25	6.17	2.54
Total Copper	µg/L		6.96	37.30	19.10	3.65
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
Trans-Nonachlor	µg/L		DNQ	ND	ND	ND
Chlordane-alpha	µg/L		DNQ	ND	DNQ	ND
Chlordane-gamma	µg/L		DNQ	ND	DNQ	ND
Total Chlordane	µg/L	0.00059	DNQ	ND	DNQ	ND
4,4'-DDD	µg/L	0.00084	DNQ	ND	ND	ND
4,4'-DDE	µg/L	0.00059	DNQ	ND	ND	ND
4,4'-DDT	µg/L	0.00059	**0.00778**	ND	ND	ND
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND
Endrin	µg/L	0.036	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Perthane	µg/L		ND	ND	0.239	ND
Toxaphene	µg/L	0.00075	ND	ND	ND	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	**0.092**	ND	ND	DNQ
Cypermethrin	µg/L		0.0027	ND	ND	ND
Permethrin, cis-	µg/L		0.111	ND	ND	ND
Permethrin, trans-	µg/L		0.302	ND	ND	ND
Bacteria						
E. coli	MPN/100 mL	235	**4,870**	**241,960**	**1,850**	**300**

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event, were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

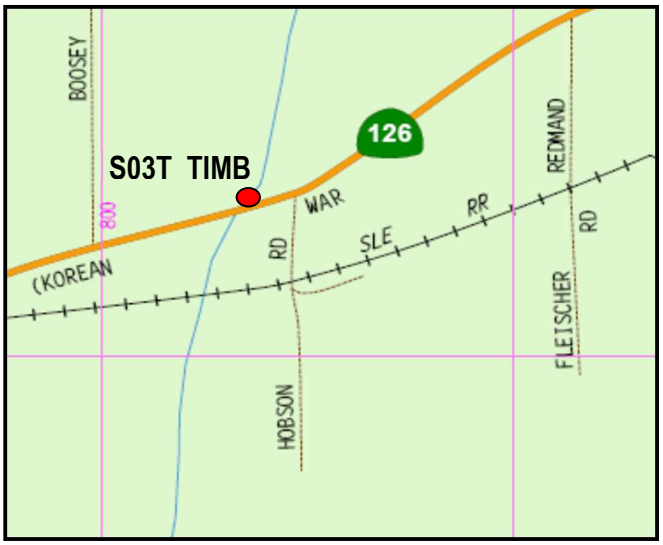
Table 38. 2019–2020 Trash Observations for S02T_TODD

Event	Count	Types
Event 42	0	
Event 43	<5	Styrofoam, aluminum can, plastic bag
Event 44	0	
Event 45	1	Can

S03T_TIMB

This monitoring site is located on Timber Canyon Creek just upstream of Hwy 126, east of Santa Paula. Timber Creek is a tributary to Santa Clara River Reach 3.

Site Map



View of site (S) toward Hwy 126

The site was dry and no samples were collected during both dry weather events, Event 42 and 43. Samples were also not collected during the first wet weather event, Event 45, because the site was inaccessible. The only samples collected at this site during the 2019-20 monitoring year were collected during the second wet weather event, Event 44. Table 39 summarizes concentrations recorded for select constituents during this event and compares measured concentrations to applicable water quality benchmarks. Benchmarks for TDS, sulfate, bifenthrin and *E. coli* were exceeded during wet weather Event 44.

The drainage area for this site consists mostly of avocado and citrus orchards. Trash observations are provided in Table 40.

Table 39. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_TIMB

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS				<0.1	
pH		6.5≤ pH ≤8.5			8.3	
Temperature	°C	≤ 26.67°C [1]			9.2	
Dissolved Oxygen	mg/L	≥ 5			11.4	
Turbidity	NTU				>1,000	
Conductivity	µS/cm				1,916.1	
General Water Quality						
TDS	mg/L	1,300			**1,570**	
TSS	mg/L				1,560	
Total Hardness as $CaCO_3$	mg/L				413	
Chloride	mg/L	100			94	
Sulfate	mg/L	650			**861**	
Nutrients						
Ammonia-N	mg/L	NS/ NS/ 2.30/ NS [2]			0.20	
Nitrate-N	mg/L	5			4.55	
Total Nitrogen	mg/L				4.29	
Total Orthophosphate	mg/L				1.07	
Total Phosphorus	mg/L				1.29	
Metals			NS	N/A		NS
Dissolved Copper	µg/L	NS/ NS/ 29.28/ NS [3]			5.12	
Total Copper	µg/L				27.80	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014			ND	
BHC-alpha	µg/L	0.013			ND	
BHC-beta	µg/L	0.046			ND	
BHC-gamma	µg/L	0.063			ND	
Chlordane-alpha	µg/L				ND	
Chlordane-gamma	µg/L				ND	
Total Chlordane	µg/L	0.00059			ND	
4,4'-DDD	µg/L	0.00084			ND	
4,4'-DDE	µg/L	0.00059			ND	
4,4'-DDT	µg/L	0.00059			ND	
Dieldrin	µg/L	0.00014			ND	
Endosulfan-I	µg/L	0.056			ND	
Endosulfan-II	µg/L	0.056			ND	
Endosulfan Sulfate	µg/L	240			ND	
Endrin	µg/L	0.036			ND	
Endrin Aldehyde	µg/L	0.81			ND	

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Toxaphene	µg/L	0.00075			ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025			0.004	
Diazinon	µg/L	0.1			ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006			**0.02**	
Danitol	µg/L				0.0137	
Bacteria						
E. coli	MPN/100 mL	235			**15,530**	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

ND = Not detected at the applicable reporting limit.

NS = No samples were collected due to lack of flow.

N/A = Site inaccessible due to a car accident. The site was visited twice; each time sampling was not possible due to emergency crews on the scene and access to the site was blocked.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event , were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

Table 40. 2019–2020 Trash Observations for S03T_TIMB

Event	Count	Types
Event 42	50+	Urban debris, auto debris, bags, cardboard, wrappers, hubcaps, plastic
Event 43	NM	N/A[1]
Event 44	0	None
Event 45	75+	Wrappers, automotive, plastic, cups, bottles, glass, bags

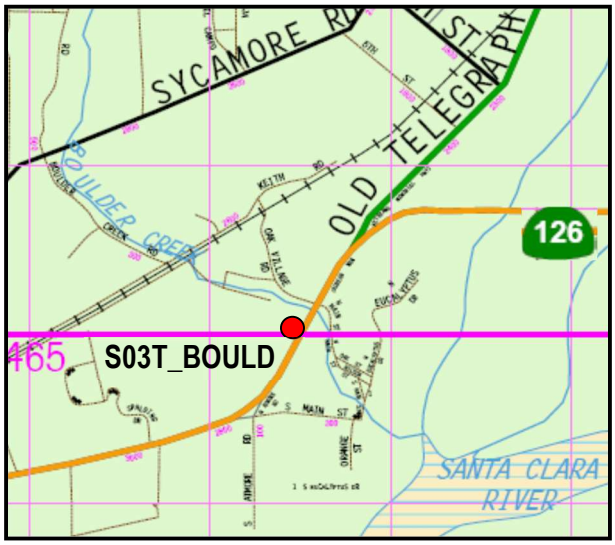
NM = Not measured

N/A = Site inaccessible due to traffic accident.

S03T_BOULD

This monitoring site is located on Boulder Creek just upstream of Hwy 126, west of Fillmore. Boulder Creek is a tributary to Santa Clara River Reach 3.

Site Map



View of sampling location (upstream)

The site was dry during both dry weather Events 42 and 45, but flow was observed and samples were collected during both wet weather Events 43 and 44. Table 41 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. Exceedances of the benchmark for *E. coli* occurred during both wet weather Events 43 and 44. The benchmarks for TDS, sulfate, nitrate-N, total chlordane, and bifenthrin were only exceeded during wet weather Event 43.

Avocados, some citrus, and nurseries are the primary crop types associated with this site. Trash observations for this site can be found in Table 42.

Table 41. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_BOULD

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS			5.0	4.7	
pH		6.5≤ pH ≤8.5		8.1	8.5	
Temperature	°C	≤ 26.67°C [1]		11.4	8.6	
Dissolved Oxygen	mg/L	≥ 5		10.7	11.5	
Turbidity	NTU			331.0	66.4	
Conductivity	µS/cm			1,541.0	581.0	
General Water Quality						
TDS	mg/L	1,300		**1,320**	390	
TSS	mg/L			271	63	
Total Hardness as $CaCO_3$	mg/L			764	214	
Chloride	mg/L	100		46	12	
Sulfate	mg/L	650		**671**	164	
Nutrients						
Ammonia-N	mg/L	NS/ 2.57/ 1.52/ NS [2]		1.15	0.08	
Nitrate-N	mg/L	5		**13.4**	1.0	
Total Nitrogen	mg/L			16.2	0.9	
Total Orthophosphate	mg/L			2.79	0.17	
Total Phosphorus	mg/L			1.86	0.12	
Metals			NS			NS
Dissolved Copper	µg/L	NS/ 29.28/ 17.16/ NS [3]		17.3	1.3	
Total Copper	µg/L			39.4	2.7	
Organochlorine Pesticides						
Aldrin	µg/L	0.00014		ND	ND	
BHC-alpha	µg/L	0.013		ND	ND	
BHC-beta	µg/L	0.046		ND	ND	
BHC-gamma	µg/L	0.063		ND	ND	
cis-Nonachlor	µg/L			DNQ	ND	
trans-Nonachlor	µg/L			0.00915	ND	
Chlordane-alpha	µg/L			0.0113	ND	
Chlordane-gamma	µg/L			0.00855	ND	
Total Chlordane	µg/L	0.00059		**0.01985**	ND	
4,4'-DDD	µg/L	0.00084		ND	ND	
4,4'-DDE	µg/L	0.00059		ND	ND	
4,4'-DDT	µg/L	0.00059		ND	ND	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	
Endosulfan-II	µg/L	0.056		ND	ND	
Endosulfan Sulfate	µg/L	240		ND	ND	

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endrin	µg/L	0.036		ND	ND	
Endrin Aldehyde	µg/L	0.81		ND	ND	
Toxaphene	µg/L	0.00075		ND	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		ND	ND	
Diazinon	µg/L	0.1		ND	ND	
Malathion	µg/L			0.080	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		**0.0685**	ND	
Cyfluthrin	µg/L			DNQ	ND	
Danitol	µg/L			0.0129	ND	
Fluvalinate	µg/L			0.029	ND	
Permethrin, cis-	µg/L			0.0229	ND	
Permethrin, trans-	µg/L			0.0424	ND	
Bacteria						
E. coli	MPN/100 mL	235		**3,230**	**310**	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.
DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.
NS = No samples were collected due to lack of flow.
1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event, were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

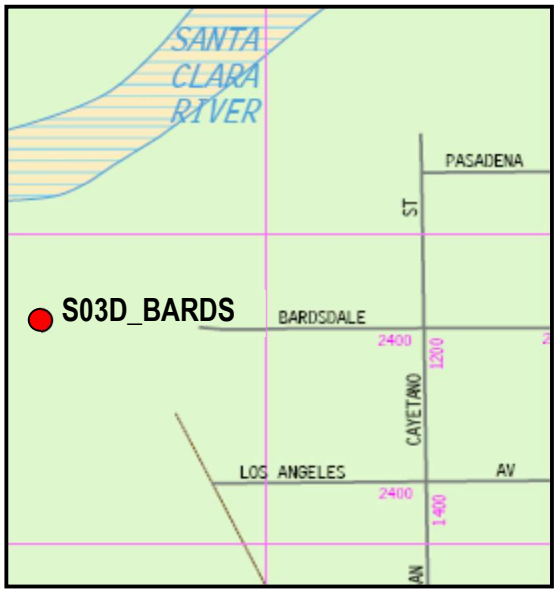
Table 42. 2019–2020 Trash Observations for S03T_BOULD

Event	Count	Types
Event 42	4	Napkin, Styrofoam cup, plastic wrapper
Event 43	10-15	Bottles, cardboard, styrofoam
Event 44	>10	Wrapper, cup, bottle
Event 45	9	Wrappers, bags, paper, cups, bottles, hubcap

S03D_BARDS

This monitoring site is located near the end of the agricultural drain that runs parallel to Bardsdale Avenue in Bardsdale. The drain is located on the south side of the Santa Clara River and eventually discharges into Santa Clara River Reach 3.

Site Map



View of site looking upstream

The site was dry, and no samples were collected during wet weather Event 44 and dry weather Event 45. Flow was observed, and samples were collected during dry weather Event 42 and wet weather Event 43. Table 43 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. The benchmark for *E. coli* was exceeded during both dry weather Event 42 and wet weather Event 43. Benchmarks for pH, total chlordane, 4,4'-DDD, 4,4'-DDE, toxaphene, chlorpyrifos, and bifenthrin only occurred during wet weather Event 43.

The drainage area for this site drains consists mostly of citrus and avocado orchards. Trash observations for S03D_BARDS are provided below in Table 44.

Table 43. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: S03D_BARDS

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		0.4	16.2		
pH		6.5≤ pH ≤8.5	8.5	**8.6**		
Temperature	°C	≤ 26.67°C [1]	19.7	11.0		
Dissolved Oxygen	mg/L	≥ 5	9.5	10.5		
Turbidity	NTU		12.0	>1,000		
Conductivity	µS/cm		1,321.0	250.2		
General Water Quality						
TDS	mg/L	1,300	950	260		
TSS	mg/L		29	19,500		
Total Hardness as $CaCO_3$	mg/L		565	791		
Chloride	mg/L	100	59	6		
Sulfate	mg/L	650	423	57		
Nutrients						
Ammonia-N	mg/L	0.81/ 1.08/ NS/ NS [2]	DNQ	0.46		
Nitrate-N	mg/L	5	4.79	1.51		
Total Nitrogen	mg/L		5.33	3.73		
Total Orthophosphate	mg/L		0.25	32.48		
Total Phosphorus	mg/L		0.09	35.40	NS	NS
Metals						
Dissolved Copper	µg/L	29.28/ 29.28/ NS/ NS [3]	0.62	3.23		
Total Copper	µg/L		1.4	39.6		
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND		
BHC-alpha	µg/L	0.013	ND	ND		
BHC-beta	µg/L	0.046	ND	ND		
BHC-gamma	µg/L	0.063	ND	ND		
cis-Nonachlor	µg/L		ND	0.0211		
trans-Nonachlor	µg/L		ND	0.0543		
Chlordane-alpha	µg/L		ND	0.0315		
Chlordane-gamma	µg/L		ND	0.0262		
Total Chlordane	µg/L	0.00059	ND	**0.0577**		
4,4'-DDD	µg/L	0.00084	ND	**0.0331**		
4,4'-DDE	µg/L	0.00059	DNQ	**0.222**		
4,4'-DDT	µg/L	0.00059	ND	ND		
Dieldrin	µg/L	0.00014	ND	ND		
Endosulfan-I	µg/L	0.056	ND	ND		
Endosulfan-II	µg/L	0.056	ND	ND		

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endosulfan Sulfate	µg/L	240	ND	ND		
Endrin	µg/L	0.036	ND	ND		
Endrin Aldehyde	µg/L	0.81	ND	ND		
Hexachlorobenzene	µg/L		ND	DNQ		
Toxaphene	µg/L	0.00075	ND	**0.104**		
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	0.004	**0.038**		
Diazinon	µg/L	0.1	ND	ND		
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	**0.0134**		
Cyfluthrin	µg/L		ND	0.021		
Cypermethrin	µg/L		ND	0.0501		
Fenvalerate	µg/L		ND	0.0023		
cis-Permethrin	µg/L		ND	0.0541		
trans-Permethrin	µg/L		ND	0.0761		
Bacteria						
E. coli	MPN/100 mL	235	**520**	**17,820**		

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

NS = No samples were collected due to lack of flow.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

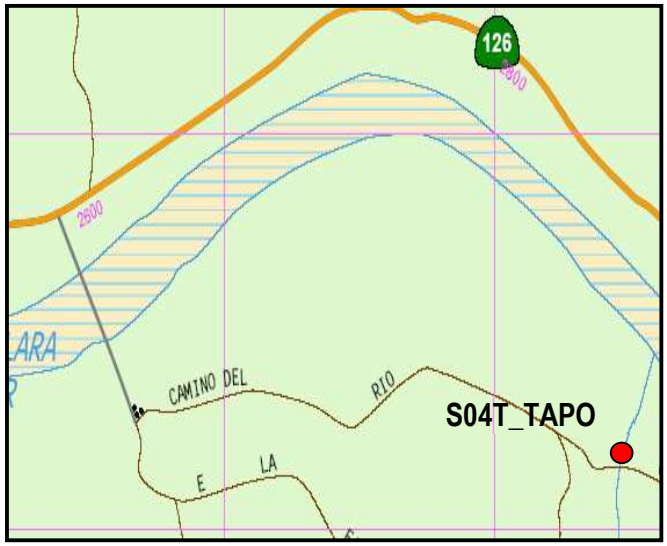
Table 44. 2019–2020 Trash Observations for S03D_BARDS

Event	Count	Types
Event 42	3	Agricultural plastic, bags
Event 43	<5	Pipes, plastic, trash bags
Event 44	0	
Event 45	7	Bucket, gloves, plastic, cups

S04T_TAPO

This monitoring site is located on Tapo Creek near the Ventura / Los Angeles County line, south of Hwy 126 and the Santa Clara River. Tapo Creek is a tributary to Santa Clara River Reach 4.

Site Map



View upstream toward the sample site (at culvert)

Sufficient flow was present to sample during all four 2019-2020 monitoring events. Table 45 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks.

Exceedance of the *E. coli* benchmark occurred during all four monitoring events. The TDS, chloride, and sulfate benchmarks were exceeded during both dry weather Events 42 and 45, and during wet weather Event 44. The benchmark for nitrate-N was only exceeded during the two dry weather events, Events 42 and 45. Benchmarks for 4,4'-DDD and 4,4'-DDE, total chlordane, and bifenthrin were exceeded only during the first wet weather event, Event 43. The pH benchmark was exceeded only during the second wet weather event, Event 44.

Row crops, citrus, and nursery stock are grown in the vicinity of this monitoring site. Table 46 summarizes trash observations for this site.

Table 45. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: S04T_TAPO

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS		0.3	2.0	0.8	0.1
pH		6.5≤ pH ≤8.5	8.1	8.2	**8.6**	8.2
Temperature	°C	≤ 26.67°C [1]	18.2	12.5	7.9	18.1
Dissolved Oxygen	mg/L	≥ 5	8.9	10.2	11.0	9.0
Turbidity	NTU		6.0	>1,000	36.0	0.7
Conductivity	µS/cm		3,251.4	1,081.0	4,185.2	2,498.2
General Water Quality						
TDS	mg/L	1,300	**2,590**	1,130	**3,400**	**2,020**
TSS	mg/L		9	2,140	61	ND
Total Hardness as $CaCO_3$	mg/L		1,320	588	1360	916
Chloride	mg/L	100	**230**	94	**223**	**173**
Sulfate	mg/L	600	**1,090**	420	**1,420**	**771**
Nutrients						
Ammonia-N	mg/L	1.70/ 2.21/ 1.51/ 1.49 [2]	DNQ	0.15	0.04	0.07
Nitrate-N	mg/L	5	**17.1**	1.6	3.9	**7.5**
Total Nitrogen	mg/L		15.1	3.0	4.4	8.1
Total Orthophosphate	mg/L		0.26	1.29	0.48	0.11
Total Phosphorus	mg/L		0.11	3.14	0.35	0.07
Metals						
Dissolved Copper	µg/L	29.28/ 29.28/ 29.28/ 29.28[3]	2.39	5.35	5.91	6.69
Total Copper	µg/L		2.6	36.0	6.3	7.8
Organochlorine Pesticides						
Aldrin	µg/L	0.00014	ND	ND	ND	ND
BHC-alpha	µg/L	0.013	ND	ND	ND	ND
BHC-beta	µg/L	0.046	ND	ND	ND	ND
BHC-gamma	µg/L	0.063	ND	ND	ND	ND
cis-Nonachlor	µg/L		ND	DNQ	ND	ND
trans-Nonachlor	µg/L		ND	0.0134	ND	ND
Chlordane-alpha	µg/L		ND	0.012	ND	ND
Chlordane-gamma	µg/L		ND	0.00979	ND	ND
Total Chlordane	µg/L	0.00059	ND	**0.02179**	ND	ND
4,4'-DDD	µg/L	0.00084	ND	**0.0778**	ND	ND
4,4'-DDE	µg/L	0.00059	DNQ	**0.207**	ND	ND
4,4'-DDT	µg/L	0.00059	ND	ND	ND	ND
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Endosulfan-I	µg/L	0.056	ND	ND	ND	ND
Endosulfan-II	µg/L	0.056	ND	ND	ND	ND
Endosulfan Sulfate	µg/L	240	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Endrin	µg/L	0.036	ND	ND	ND	ND
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	ND	ND	ND	ND
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006	ND	**0.0234**	DNQ	ND
Danitol	µg/L		ND	0.0071	ND	ND
Bacteria						
E. coli	MPN/100 mL	235	**410**	**7,330**	**1,690**	**630**

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.
DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for this site using the formula in Table 15. It was the same for all four events.

Table 46. 2019–2020 Trash Observations for S04T_TAPO

Event	Count	Types
Event 42	3	Cardboard, plastic, pipe
Event 43	<5	Trash bag, cups, Styrofoam
Event 44	0	
Event 45	3	Plastic, bags, paper

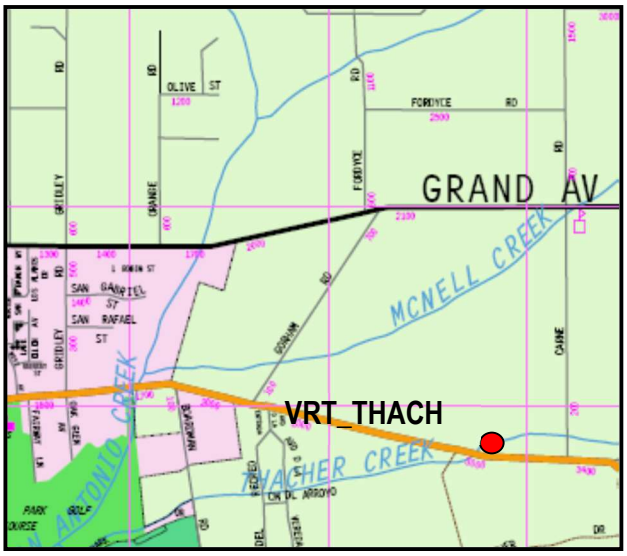
Ventura River Watershed

There are two VCAILG monitoring sites located in this watershed, and both are located on tributaries to the Ventura River on the east end of the City of Ojai.

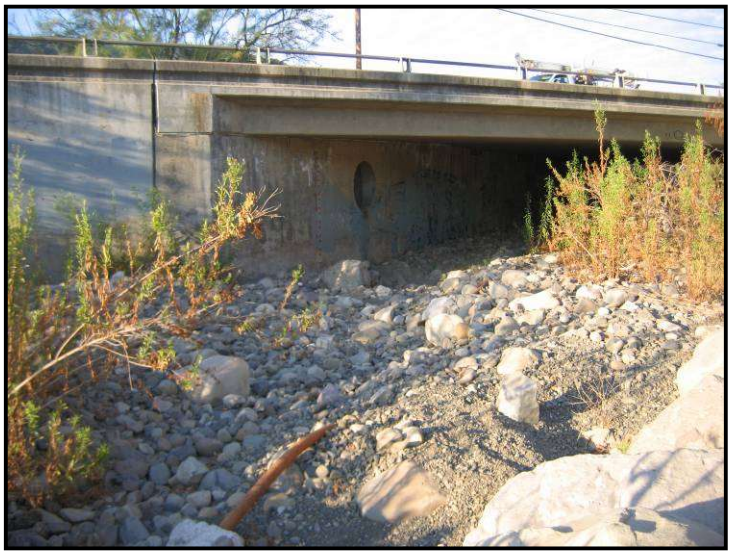
VRT_THACH

This monitoring site is located on Thacher Creek just upstream of Ojai Avenue in Ojai. Thacher Creek is a tributary of San Antonio Creek, which is a tributary of the Ventura River.

Site Map



View downstream from site looking towards Ojai Ave. bridge



This site was only sampled during wet weather Event 43 during the 2019-20 monitoring season. The site was dry during and no samples were collected during the remaining events. Table 47 summarizes the concentrations recorded for select constituents and compares measured concentrations with applicable water quality benchmarks. The benchmarks for dissolved copper, 4,4'-DDD, 4,4'-DDE and *E. coli* were exceeded during Event 43.

Citrus and rotational crops are the predominant crop types associated with this site. The approximate amount and types of trash observed at this site is recorded in Table 48.

Table 47. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_THACH

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS			<0.1		
pH		6.5≤ pH ≤8.5		8.3		
Temperature	°C	≤ 26.67°C [1]		17.7		
Dissolved Oxygen	mg/L	≥ 7		9.1		
Turbidity	NTU			509		
Conductivity	µS/cm			196.7		
General Water Quality						
TDS	mg/L	800		160		
TSS	mg/L			193		
Total Hardness as $CaCO_3$	mg/L			55.9		
Chloride	mg/L	60		8		
Sulfate	mg/L	300		19		
Nutrients						
Ammonia-N	mg/L	NS/ 1.30/ NS / NS [2]		0.96		
Nitrate-N	mg/L	5		1.5		
Total Nitrogen	mg/L			2.82		
Total Orthophosphate	mg/L			1.31		
Total Phosphorus	mg/L			0.94		
Metals			NS		NS	NS
Dissolved Copper	µg/L	NS/ 5.45/ NS/ NS [3]		**16.2**		
Total Copper	µg/L			29.9		
Organochlorine Pesticides						
Aldrin	µg/L	0.00013		ND		
BHC-alpha	µg/L	0.0039		ND		
BHC-beta	µg/L	0.014		ND		
BHC-gamma	µg/L	0.019		ND		
Chlordane-alpha	µg/L			ND		
Chlordane-gamma	µg/L			ND		
Total Chlordane	µg/L	0.00059		ND		
4,4'-DDD	µg/L	0.00084		**0.0169**		
4,4'-DDE	µg/L	0.00059		**0.207**		
4,4'-DDT	µg/L	0.00059		ND		
Dieldrin	µg/L	0.00014		ND		
Endosulfan-I	µg/L	0.056		ND		
Endosulfan-II	µg/L	0.056		ND		
Endosulfan Sulfate	µg/L	110		ND		
Endrin	µg/L	0.036		ND		
Endrin Aldehyde	µg/L	0.76		ND		

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Toxaphene	µg/L	0.00075		ND		
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.005		
Diazinon	µg/L	0.1		ND		
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		ND		
Cyfluthrin	µg/L			DNQ		
Cypermethrin	µg/L			0.0020		
Danitol	µg/L			0.0033		
Permethrin, cis-	µg/L			DNQ		
Permethrin, trans-	µg/L			0.0058		
Bacteria						
E. coli	MPN/100 mL	235		**5,040**		

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.
DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.
NS = No samples were collected due to lack of flow.
1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present), and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for at this site using the formula in Table 15.

Table 48. 2019–2020 Trash Observations for VRT_THACH

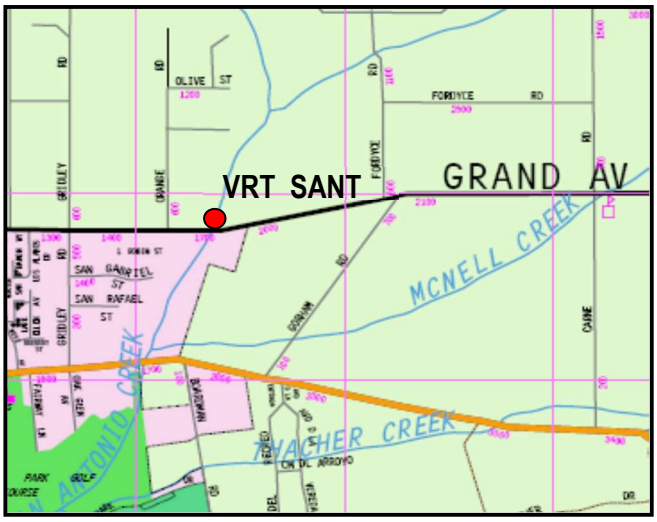
Event	Count	Types
Event 42	0	
Event 43	<5	NR
Event 44	NR	NR
Event 45	4	Bags, gloves, wrappers

NR= Not recorded.

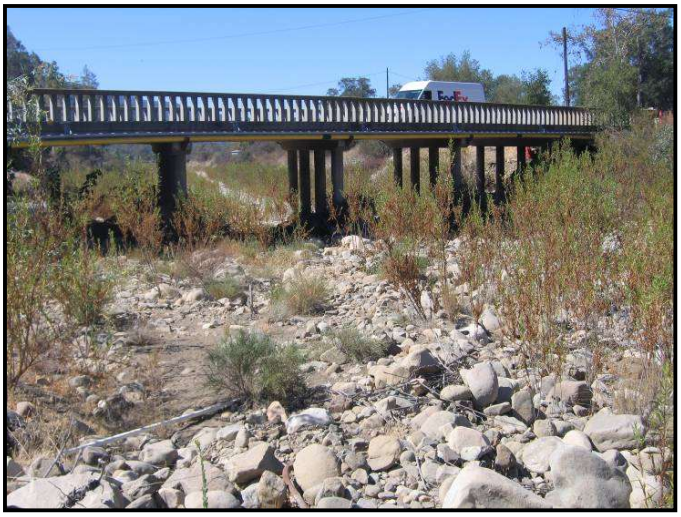
VRT_SANTO

This monitoring site is located on San Antonio Creek just upstream of Grand Avenue in Ojai. San Antonio Creek is a tributary of the Ventura River.

Site Map



View downstream at the Grand Ave. bridge



This site was sampled during both wet weather Events 43 and 44, but was dry and no samples were collected during the two dry weather Events 42 and 45. Table 49 summarizes the concentrations recorded for select constituents and compares measured concentrations to applicable water quality benchmarks. The benchmarks for 4,4'-DDE and *E. coli* were exceeded during both wet weather Events 43 and 44. Exceedances of the benchmarks for 4,4'-DDD and 4,4'-DDT only occurred during the second wet weather event, Event 44.

Citrus and avocado orchards are the primary crop types that drain to this monitoring site. Table 50 includes the number and types of trash observed at the monitoring site.

Table 49. 2019–2020 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_SANTO

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Field Measurements						
Flow	CFS			3.7	0.7	
pH		6.5≤ pH ≤8.5		8.1	8.3	
Temperature	°C	≤ 26.67°C [1]		16.6	12.0	
Dissolved Oxygen	mg/L	≥ 7		9.3	10.4	
Turbidity	NTU			630	435	
Conductivity	µS/cm			891	629.9	
General Water Quality						
TDS	mg/L	800		700	400	
TSS	mg/L			854	320	
Total Hardness as $CaCO_3$	mg/L			425	243	
Chloride	mg/L	60		25	13	
Sulfate	mg/L	300		287	171	
Nutrients						
Ammonia-N	mg/L	NS/ 1.75/ 1.73/ NS [2]		0.29	0.04	
Nitrate-N	mg/L	5		0.91	0.77	
Total Nitrogen	mg/L			2.00	0.79	
Total Orthophosphate	mg/L			0.12	0.17	
Total Phosphorus	mg/L			1.07	0.57	
Metals			NS			NS
Dissolved Copper	µg/L	NS/ 29.28/ 19.13/ NS [3]		0.44	3.30	
Total Copper	µg/L			17.7	18.4	
Organochlorine Pesticides						
Aldrin	µg/L	0.00013		ND	ND	
BHC-alpha	µg/L	0.0039		ND	ND	
BHC-beta	µg/L	0.014		ND	ND	
BHC-gamma	µg/L	0.019		ND	ND	
Chlordane-alpha	µg/L			ND	ND	
Chlordane-gamma	µg/L			ND	ND	
Total Chlordane	µg/L	0.00059		ND	ND	
4,4'-DDD	µg/L	0.00084		ND	**0.00482**	
4,4'-DDE	µg/L	0.00059		**0.00686**	**0.0305**	
4,4'-DDT	µg/L	0.00059		ND	**0.0308**	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	
Endosulfan-II	µg/L	0.056		ND	ND	
Endosulfan Sulfate	µg/L	110		ND	ND	
Endrin	µg/L	0.036		ND	ND	
Endrin Aldehyde	µg/L	0.76		ND	ND	

Constituent	Units	Benchmark	Event 42 Dry 8/07/2019	Event 43 Wet 12/04/2019	Event 44 Wet 3/17/2020	Event 45 Dry 6/02/2020
Toxaphene	µg/L	0.00075		ND	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		ND	ND	
Diazinon	µg/L	0.1		ND	ND	
Dichlorvos	µg/L			ND	0.038	
Methidathion	µg/L			ND	0.221	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		ND	ND	
Danitol	µg/L			0.056	0.106	
Bacteria						
E. coli	MPN/100 mL	235		**7,890**	**13,010**	

Concentrations in **bold** indicate an exceedance of a water quality benchmark applicable to this site for the specified constituent. See Table 13 through Table 20 for a list of benchmarks applicable to this site.
DNQ = Detected, not qualified.
ND = Not detected at the applicable reporting limit.
NS = No samples were collected due to lack of flow.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. The benchmarks for Ammonia-N are listed in order of monitoring event and were calculated based on the April 2002 Basin Plan Amendment chronic equation (ELS present) and are dependent upon the pH and temperature of the water at the time of sample collection.
3. The freshwater copper benchmark was calculated for at this site using the formula in Table 15.

Table 50. 2019–2020 Trash Observations for VRT_SANTO

Event	Count	Types
Event 42	15+	Clothing, wrappers, cans, paper, tape
Event 43	0	None
Event 44	50+	Urban, homeless camp
Event 45	4	Paper, wrappers, cigarettes

CHRONIC TOXICITY TEST RESULTS

During the 2019-2020 monitoring year, PER performed single-species short-term chronic toxicity tests for samples collected during the first wet weather event (Event 43) and second dry weather event (Event 45).

Following the QAPP and MRP procedures, toxicity monitoring occurred at all VCAILGMP sites. Single-species toxicity testing was conducted using the appropriate invertebrate species, either *C. dubia* or *Hyalella*, based on the conductivity of the sample. The *C. dubia* chronic test consisted of the 3-brood (6- to 8-day) survival and reproduction test, and the *Hyalella* test consisted of a 10-day survival test. Table 51. Chronic Toxicity Results 2019-2020

	Site	*Ceriodaphnia dubia* [1]			*Hyalella* [2]	TIE? Triggered
		Survival Toxicity	Reprod. Toxicity	Reprod. % Red.	Survival Toxicity	
43: 12/04/19	S02T_TODD	NO	YES	84.9% [3]		--
	S02T_ELLS	NO	NO	--		--
	S03D_BARDS	NO	YES	63.4% [3]		--
	S03T_BOULD	NO	NO	--		--
	S04T_TAPO	NO	YES	31.8% [3]		--
	01T_ODD3_EDI	NO	NO	--		--
	04D_LAS	NO	YES	25.3 [3]		--
	04D_ETTG	YES	YES	100% [3]		YES
	05D_LAVD	NO	YES	13.2% [3]		--
	05T_HONDO	NO	NO	--		--
	OXD_CENTR	YES	YES	100% [3]		YES
	VRT_SANTO	NO	NO	--		--
	VRT_THACH	NO	YES	22.3% [3]		--
45: 6/02/20	S02T_TODD	NO	YES	60.1% [3]		--
	S04T_TAPO	YES	YES	64.8% [3]		NO
	01T_ODD3_EDI				NO	--
	04D_LAS				NO	--
	04D_ETTG				NO	--
	OXD_CENTR				YES	YES

summarizes the chronic toxicity results from wet Event 43 and dry weather Event 45. PER submitted two types of reports, an electronic data deliverable (EDD), which has been configured to California Environmental Data Exchange Network (CEDEN) format, and a narrative report. The toxicity data are included as Appendix G and the narrative lab reports are also provided for download from Dropbox.

Table 51. Chronic Toxicity Results 2019-2020

	Site	*Ceriodaphnia dubia* [1]			*Hyalella* [2]	TIE? Triggered
		Survival Toxicity	Reprod. Toxicity	Reprod. % Red.	Survival Toxicity	
43: 12/04/19	S02T_TODD	NO	YES	84.9% [3]		--
	S02T_ELLS	NO	NO	--		--
	S03D_BARDS	NO	YES	63.4% [3]		--
	S03T_BOULD	NO	NO	--		--
	S04T_TAPO	NO	YES	31.8% [3]		--
	01T_ODD3_EDI	NO	NO	--		--
	04D_LAS	NO	YES	25.3 [3]		--
	04D_ETTG	YES	YES	100% [3]		YES
	05D_LAVD	NO	YES	13.2% [3]		--
	05T_HONDO	NO	NO	--		--
	OXD_CENTR	YES	YES	100% [3]		YES
	VRT_SANTO	NO	NO	--		--
	VRT_THACH	NO	YES	22.3% [3]		--
45: 6/02/20	S02T_TODD	NO	YES	60.1% [3]		--
	S04T_TAPO	YES	YES	64.8% [3]		NO
	01T_ODD3_EDI				NO	--
	04D_LAS				NO	--
	04D_ETTG				NO	--
	OXD_CENTR				YES	YES

1. *Ceriodaphnia dubia* (invertebrate – water flea) is evaluated for the survival and reproduction endpoints.
2. *Hyalella azteca* (invertebrate – crustacean) is evaluated for the survival endpoint.
3. The response at this test treatment was significantly less than the Lab Control treatment response ($p < 0.05$).

Event 43: TIE Results

Complete mortality occurred in the 04D_ETTG sample and a TIE was performed. There was removal of toxicity with the centrifugation + C_{18} SPE treatment. These results suggest that a dissolved non-polar organic compound(s) was responsible for the toxicity.

Complete mortality occurred in the OXD_CENTR sample and a TIE was performed. There was removal of toxicity with the centrifugation + C_{18} SPE treatment. These results suggest that a dissolved non-polar organic compound(s) was responsible for the toxicity.

Event 45: TIE Results

The TIE performed on the OXD_CENTR sample that was initiated June 3, 2020 failed to meet test acceptability criteria with <90% survival in the laboratory control water. Based on the observation of a >50% reduction in survival in the initial June 3, 2020 test, a TIE targeted for organics was performed. Toxicity was persistent but reduced in the Baseline TIE treatment ambient water. This toxicity profile suggested that some of the toxicity observed in the initial test was due to a contaminant that is volatile or subject to rapid degradation. Toxicity was

potentiated in the PBO (piperonyl butoxide) treatment and reduced via centrifugation, centrifugation + C_{18} SPE, and centrifugation + LC-WCX SPE treatments. These results are generally consistent with the toxicity of pyrethroid pesticides.

TMDL LOAD ALLOCATIONS AND MONITORING RESULTS

Calleguas Creek Watershed

The Stakeholders Implementing TMDLs in the Calleguas Creek Watershed submit an annual monitoring report on December 15th of each year. This year's report, "Calleguas Creek Watershed TMDL Compliance Monitoring Program Twelfth Year Annual Monitoring Report – July 2019 to June 2020" is being provided with the VCAILG AMR for download from Dropbox. The report includes summaries of the sampling events, data summaries, and a compliance comparison to the allocations for five of the six of the currently effective TMDLs in the watershed:

- Nitrogen Compounds and Related Effects in Calleguas Creek (Nitrogen or Nutrients TMDL)
- Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (OC Pesticides TMDL)
- Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon (Toxicity TMDL)
- Metals and Selenium in Calleguas Creek, its Tributaries, and Mugu Lagoon (Metals TMDL)
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

The Revolon Slough and Beardsley Wash Trash TMDL is addressed through a separate monitoring and reporting program. For additional information, refer to the "2021 Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC Annual Report", which is also being submitted in December 2020.

Santa Clara River Watershed

Effective TMDLs for the Santa Clara River Watershed are discussed below. Monitoring data and a comparison to the Santa Clara River TMDL benchmarks are included below as part of this AMR.

Santa Clara River Nitrogen Compounds TMDL

Load Allocations

The LA for the Santa Clara River Nitrogen Compounds TMDL applicable to VCAILG monitoring sites is listed in Table 52. Levels of Nitrite-N are typically insignificant compared to the other nitrogen compounds that are measured and are not monitored as part of the VCAILGMP.

Table 52. Load Allocations for Nitrogen Compounds

Constituent	Load Allocation (mg/L) [1]
Ammonia-N + Nitrate-N + Nitrite-N	10

1. The specified load allocation applies to all Santa Clara River reaches within Ventura County.

Monitoring Results

Table 53 lists the data collected at the VCAILGMP monitoring sites located within the Santa Clara River Watershed for comparison to the nitrogen LA. The LA was exceeded at three monitoring sites, S02T_TODD, S03T_BOULD and S04T_TAPO. The S02T_TODD site was sampled during all four monitoring events with the concentration from the first dry event exceeding the LA. The S03T_BOULD site was only sampled during the two wet events, with the first wet event exceeding the LA. The S04T_TAPO site was sampled during all four monitoring events with the concentration from the first dry event exceeding the LA.

Table 53. Nitrogen Load Allocations Compared to SCR VCAILGMP Site Data

Site	Constituent	LA [1] (mg/L)	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
S02T_ELLS	Ammonia-N + Nitrate-N	10	8.34	3.38	1.80	NS
S02T_TODD	Ammonia-N + Nitrate-N	10	**10.27**	3.29	1.90	8.73
S03T_TIMB	Ammonia-N + Nitrate-N	10	NS	NS	4.75	NS
S03T_BOULD	Ammonia-N + Nitrate-N	10	NS	**14.55**	1.06	NS
S03D_BARDS	Ammonia-N + Nitrate-N	10	4.79	1.97	NS	NS
S04T_TAPO	Ammonia-N + Nitrate-N	10	**17.10**	1.72	3.93	7.54

Bold numbers indicate the value is greater than the Load Allocation.

NS = Not Sampled; lack of flow.

1. Nitrite-N concentrations are not monitored as part of the VCAILGMP, however, levels of nitrite are typically insignificant compared to the other nitrogen compounds that are measured.

Upper Santa Clara River Chloride TMDL Revisions

Load Allocations

The chloride LA applies to reaches 4B, 5, and 6 of the Santa Clara River. There is one VCAILG monitoring site, S04T_TAPO, which drains to reach 4B. The remaining reaches are located within Los Angeles County.

Table 54. Load Allocation for Chloride

Constituent	Load Allocation (mg/L) [1]
Chloride	100

1. Allocation applies as a 3-month rolling average.

Monitoring Results

According to the Upper Santa Clara River Chloride TMDL source analysis, nonpoint sources are not a major chloride source. Site S04T_TAPO was monitored during all four events, with exceedances occurring during both dry events and the second wet event; however, the load allocation is a 3-month rolling average benchmark. The following table includes the results for samples collected during the requisite two wet and two dry weather VCAILG monitoring events.

Table 55. Chloride Load Allocation Compared to S04T_TAPO Site Data

Site	Constituent	LA [1] (mg/L)	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
S04T_TAPO	Chloride	100	**230**	94	**223**	**173**

Bold numbers indicate the value is greater than the Load Allocation.

1. While the load allocation is a 3-month rolling average, the data provided in this table consists of single samples.

TMDL Deadline and Natural Source Determination

The *Conditional Waiver* compliance date for the Upper Santa Clara River Chloride TMDL is October 14, 2020. In anticipation of this deadline during the upcoming 2020-21 monitoring reporting year, chloride exceedances and compliance options were evaluated by VCAILG. In the first iterations of the *Conditional Waiver*, sampling took place at the background site TAPO_BKGD to evaluate background conditions relative to the S04T_TAPO site. Sampling at TAPO_BKGD was dropped from the monitoring program in the VCAILG QAPP and MRP to comply with the 2016 *Conditional Waiver* in order to offset other increased monitoring costs and because the site is inaccessible during wet weather. Results for sampling at S04T_TAPO and S04T_TAPO_BKGD during regularly scheduled VCAILG monitoring events are shown in Figure 11. Please note that the last time the S04T_TAPO_BKGD site was visited during a VCAILG monitoring event was May 26, 2016. The additional data collected from S04T_TAPO is provided to show the typical chloride concentrations at the site and their relation to what had been collected at the background site. In response to the elevated background levels shown in Figure 11, VCAILG decided to investigate the possibility that the high levels of chloride, as well as sulfate and total dissolved solids at the S04T_TAPO site are a result of natural background conditions due to the local geology.

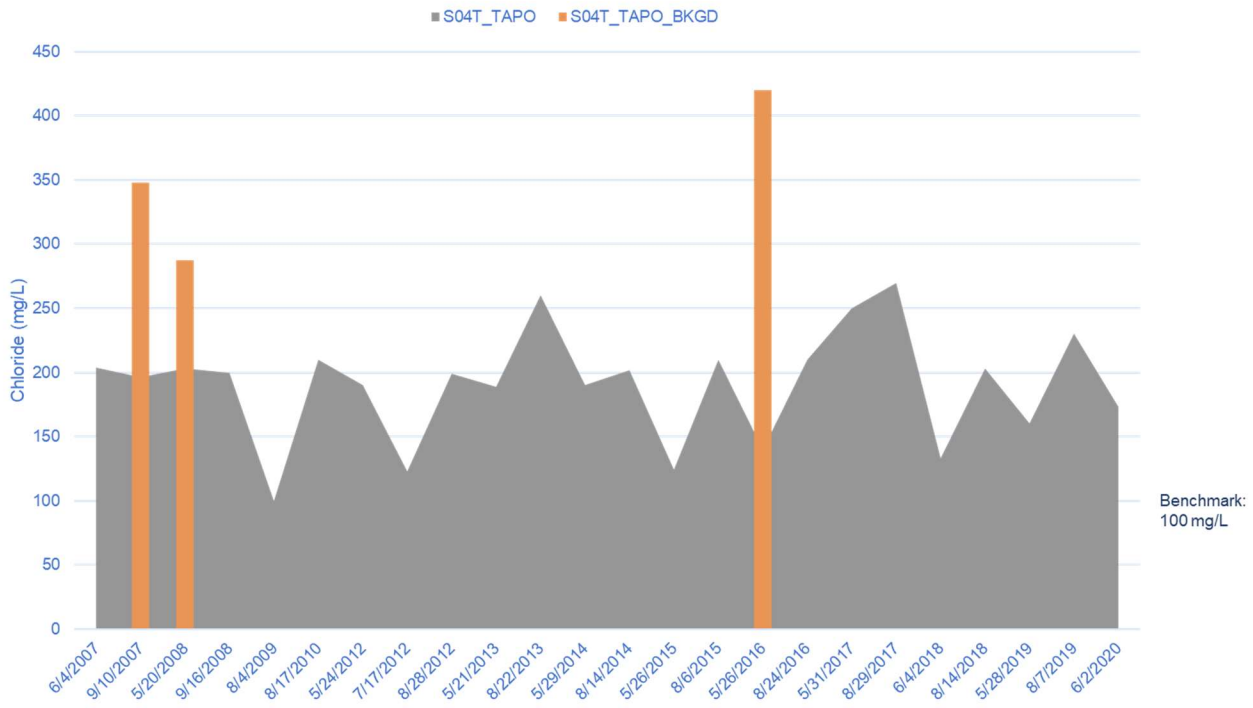


Figure 11. Scheduled VCAILG Dry Weather Monitoring Results at S04T_TAPO and S04T_TAPO_BKGD

The geology that encompasses the Tapo Creek watershed consists mainly of Pliocene and late Miocene marine sedimentary rock.[6] These formations are very similar to Modelo/Monterey formations (Miocene marine sedimentary rock) that are located to the south in the Santa Monica Mountains. In the northern Malibu Creek Watershed, Miocene marine sedimentary rock is the dominant geology. Elevated chloride and selenium levels have been observed in upper reaches of Cheseboro Creek and Las Virgenes Creek, which are located in the northern section of Malibu Creek Watershed. Median chloride concentrations in undeveloped areas of Las Virgenes Creek and Cheseboro Creek were 266 and 125 mg/L, respectively. The median selenium concentration recorded in Las Virgenes Creek was 25 mg/L[7]. Additionally, the streams in the Monterey formation had specific conductivity values between 2500-4000 µs/cm, which was substantially higher than the coastal streams that had differing geology. The Water Quality in the Malibu Creek Watershed, 1971 – 2010 Report demonstrated that poor water quality was associated with the Monterey formation. Since Pliocene and Miocene marine sedimentary rock are very similar, it was hypothesized that Tapo Canyon Creek Watershed would show similar water quality trends experienced in the Upper Malibu Creek Watershed.

In spring 2020, VCAILG approached the member landowner regarding the performance of background monitoring to confirm the natural geological source hypothesis for elevated salts and chloride levels at S04T_TAPO. Discussions between VCAILG representatives and the VCAILG

[6] Yerkes, R. F., Campbell, R. H., Alvarez, R. M., & Bovard, K. R. (2005). Preliminary geologic map of the Los Angeles 30′× 60′ Quadrangle, southern California. US Geological Survey Open File Report, 1019.

[7] Water Quality in the Malibu Creek Watershed, 1971 – 2010. Submitted March 30, 2011

member took place regarding potential background site locations. Background sites were chosen in accordance with site selection criteria developed by the Southern California Coastal Water Research Project for the purpose of assessing water quality from natural landscapes[8]. Criteria for site selection included: sites in a relatively homogenous geological setting, locations where the contributing drainage area was at least 95% undeveloped, sites with year-round or prolonged dry weather flow (flow persisted at one of the background locations through the beginning of August), sites should not have burned within the last three years, sites should not be on the 303(d) list, there should be no evidence of anthropogenic effects such as septic tanks, isolated residences, and/or excessive wildlife or human use, and site should be safely accessible. The locations of monitoring sites selected for background salts monitoring are shown in Figure 12 and Figure 13. The entire drainage area shown (both grey and blue areas) are reflected in the monitoring at S04T_TAPO. The blue shaded drainage area is for TAPO Background sites 5 and 8.

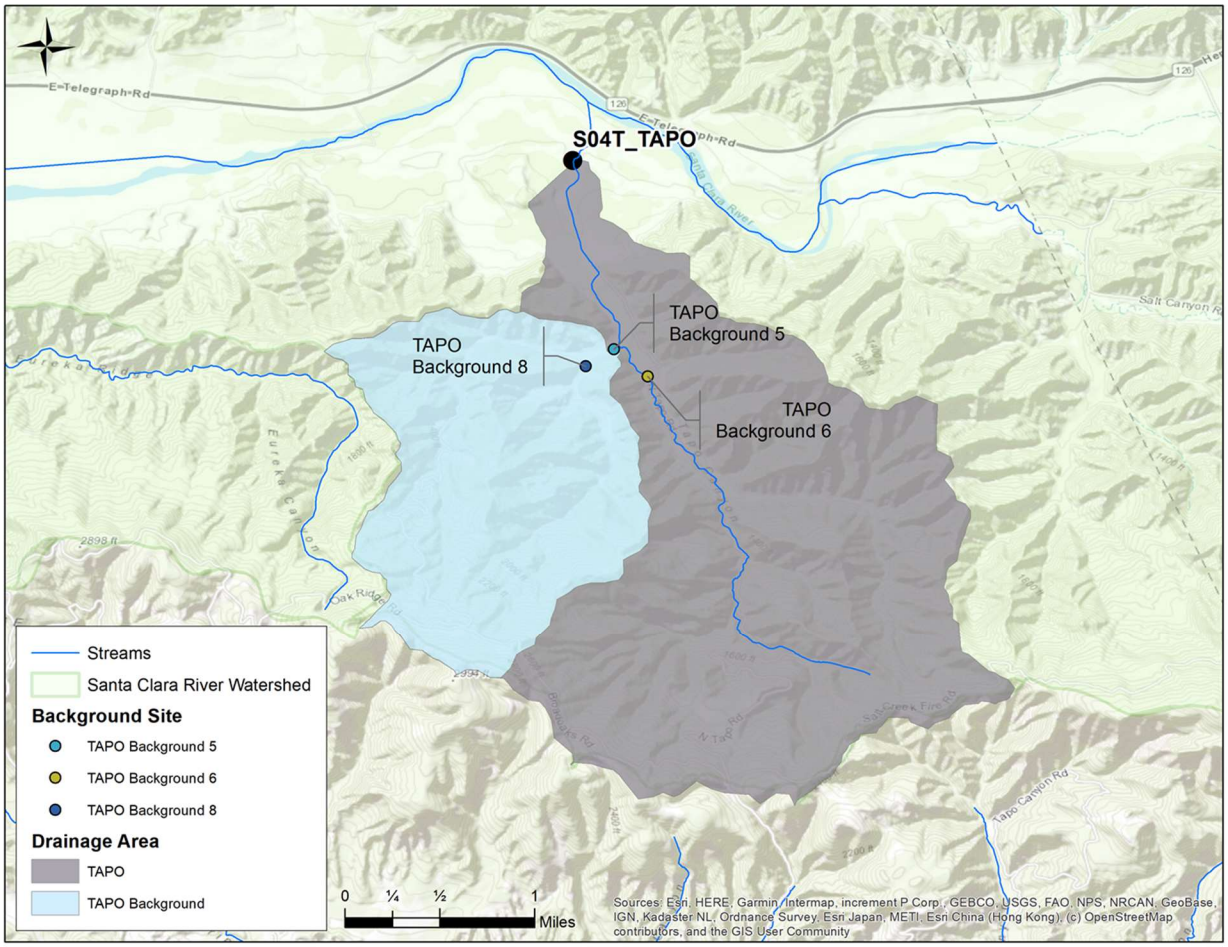


Figure 12. Map of S04T_TAPO and TAPO Background Sites

[8] Stein, E. D., & Yoon, V. K. 2007. Assessment of water quality concentrations and loads from natural landscapes. Technical Report 500. Southern California Coastal Water Research Project. Costa Mesa, CA.

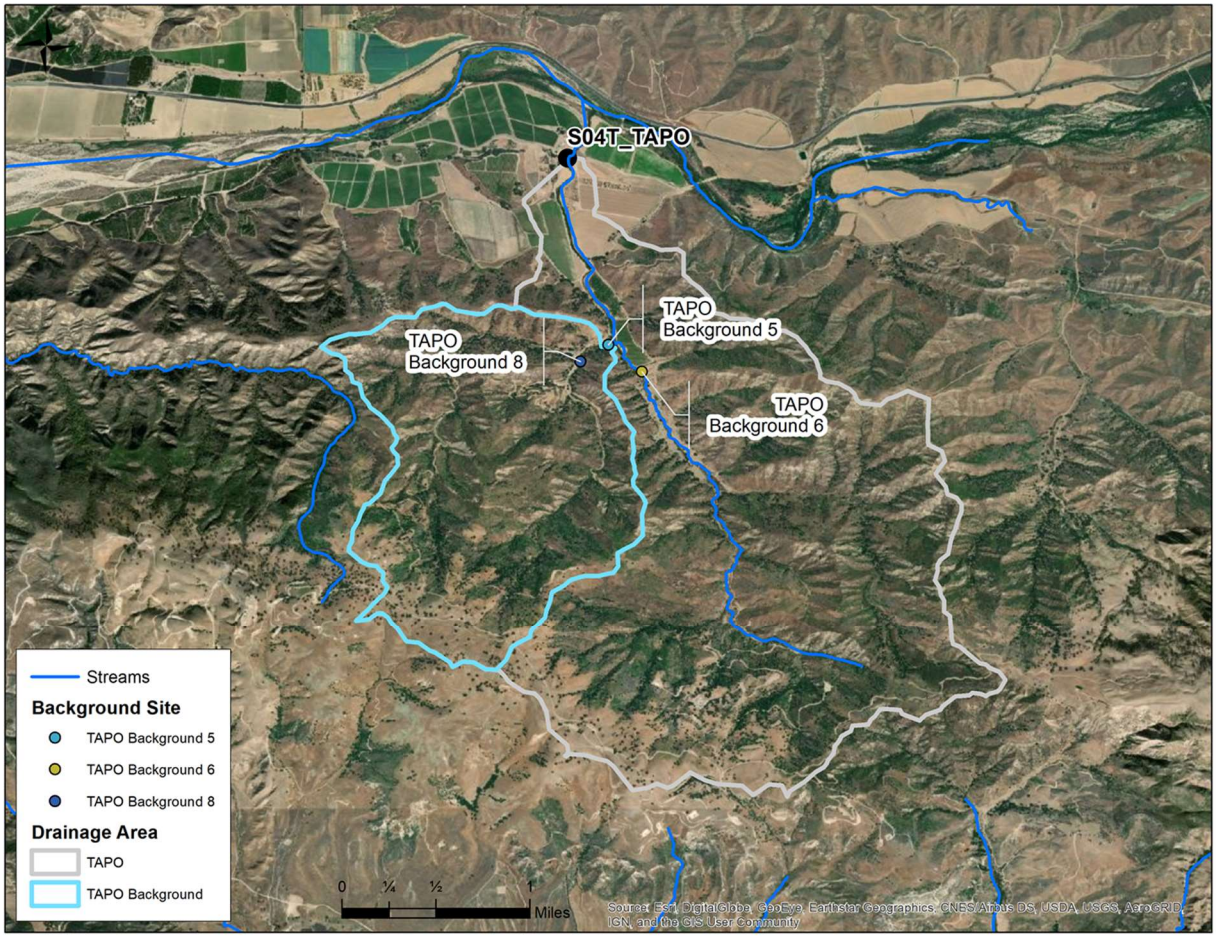


Figure 13. Satellite Map of S04T_TAPO and TAPO Background Sites

As part of their field reconnaissance, the VCAILG member and their consultants collected preliminary samples in mid-March 2020. Background salts monitoring by VCAILG was planned to begin in late March and continue through the summer, however, the COVID-19 Shelter-in-Place restrictions hindered VCAILG's ability to sample and coordinate with landowners until the start of June while appropriate protocols were developed and appropriate PPE was obtained.

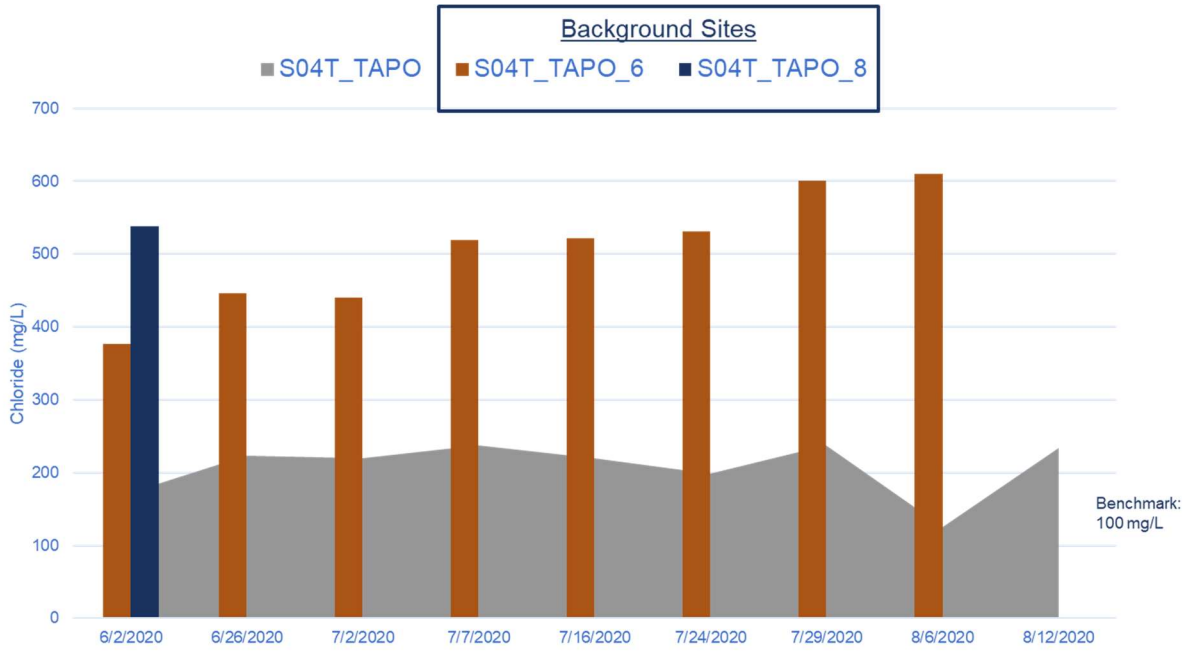


Figure 14. VCAILG-Collected S04T_TAPO Chloride Results Compared to TAPO Background Sites

Following proper COVID social distancing guidelines, samples were collected at S04T_TAPO and flowing background sites by VCAILG representatives accompanied by one of the VCAILG member's consultants. Chloride sampling results collected by VCAILG are shown in Figure 14. Background monitoring results for total dissolved solids (Figure 15) and sulfate (Figure 16) displayed similarly elevated patterns as shown for chloride. While these constituents are not part of the Upper Santa Clara River Chloride TMDL, *Conditional Waiver* benchmarks and deadlines apply and these constituents following the same pattern of elevated background levels further supporting the natural geological source. For all three constituents, chloride, TDS, and sulfate, the background levels are typically twice the concentrations of the downstream S04T_TAPO site. Laboratory data files for the VCAILG collected data are provided with Appendix F.

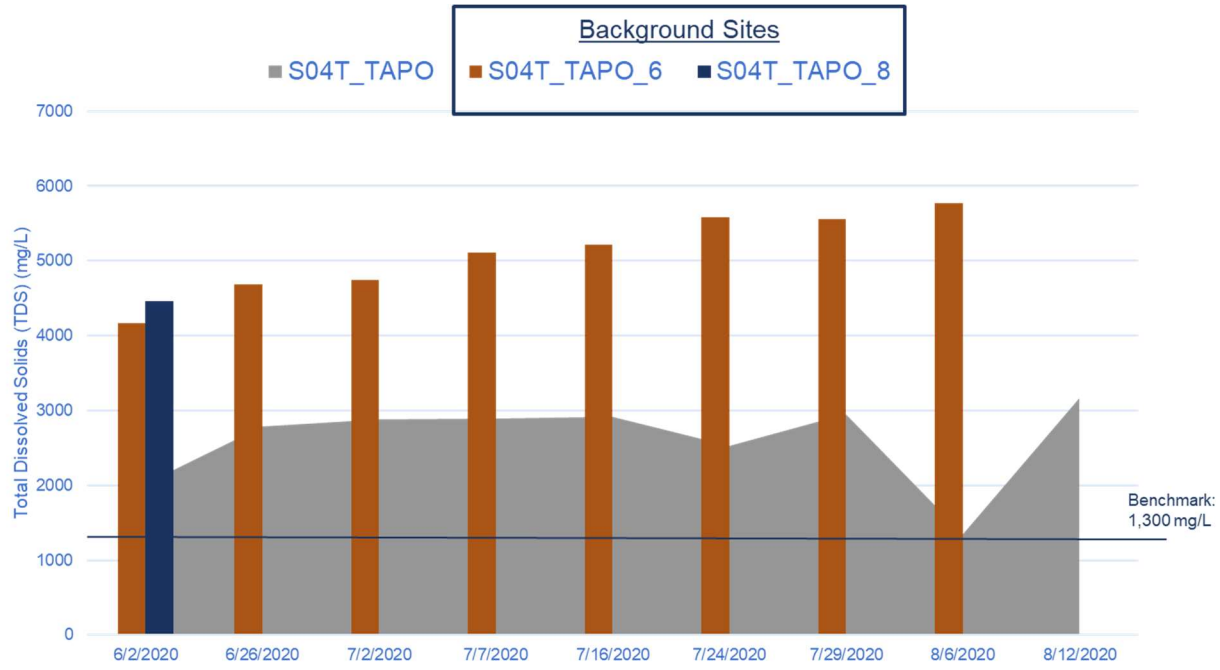


Figure 15. VCAILG-Collected S04T_TAPO TDS Samples Compared to TAPO Background Sites

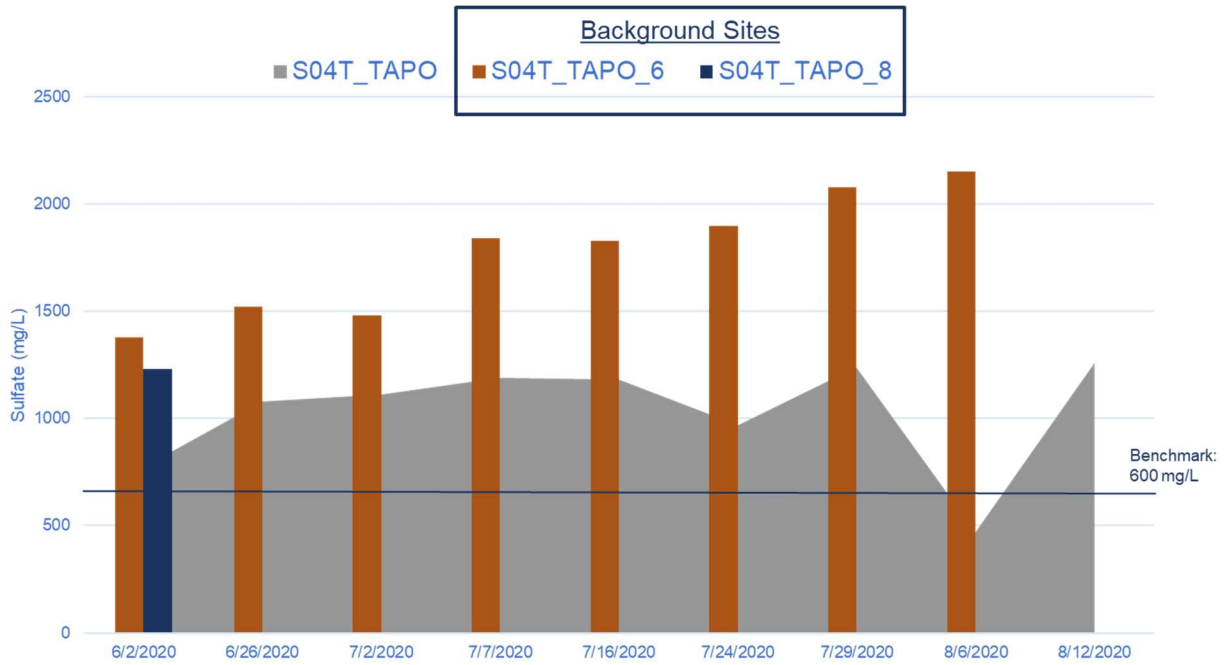


Figure 16. VCAILG-Collected S04T_TAPO Sulfate Samples Compared to TAPO Background Sites

On November 3, 2020, VCAILG representatives presented the results of the TAPO background monitoring to Regional Board staff. This information, along with the Appendix F supplemental data file, has been included in this AMR at the request of Regional Board staff. In addition to the collected data, information regarding the S04T_TAPO drainage area crops and irrigation was

requested. That information is provided in summary below and can also be found in the VCAILG 2020 WQMP.

According to the 2020 BMP Survey results, orchards make up the majority (46%) of crops grown in the S04T_TAPO drainage area with the remainder falling in the "other" crop type category (clarified by the VCAILG member to be irrigated pasture). Irrigation methods employed in the drainage area of S04T_TAPO are split between overhead sprinklers (56%) and micro-sprinklers (46%), which corresponds to the orchard acreage. Some additional BMP responses pertinent to dry weather discharge and salts include: 100% of irrigation systems are tested for distribution uniformity at least once every three years and soil moisture is used to determine irrigation practices. While the acreage may at times have irrigation runoff, 100% of that runoff is treated or detained. Per communications with the VCAILG member, irrigation runoff is highly unlikely from the orchard acreage but they answered the survey question with a "yes" because it is possible.

As the previous figures and tables indicate, samples collected at background sites consistently contained chloride concentrations two to three times greater than samples collected at VCAILG monitoring site S04T_TAPO and up to six times greater than the 100 mg/L TMDL load allocation. These background sample results confirm that exceedances at the S04T_TAPO monitoring site are not caused by agricultural discharges, and thus do not trigger edge-of-field monitoring by VCAILG members in the Tapo Canyon Responsibility Area.

Santa Clara River Estuary Toxaphene TMDL

The Santa Clara River Estuary Toxaphene TMDL was adopted as a single regulatory action in the 2010 *Conditional Waiver*. The 2016 *Conditional Waiver* and Appendix 3, Monitoring and Reporting Requirements, specifies the following constituents be monitored as part of this TMDL: chlordane, dieldrin, and toxaphene. The constituents are also required to be analyzed in various media: fish tissue (every three years in the Estuary), water, and suspended sediment (during wet weather events). Two sites were selected to meet the TMDL requirement, with one water quality monitoring site representing agricultural discharges directly to the Estuary, and one site representing discharge to the Santa Clara River upstream of the Estuary. The VCAILGMP site S02T_ELLS is monitored as the upstream TMDL site by collecting additional sample volume for suspended sediment analysis, which is not part of normal *Conditional Waiver* monitoring. Site S01D_MONAR was selected to represent agricultural discharges to the Estuary. A description of S02T_ELLS was provided above. Analogous information regarding S01D_MONAR is provided below.

S01D_MONAR

This monitoring site is located on an agricultural drain that discharges directly to the Santa Clara River Estuary between Harbor Boulevard and Victoria Avenue.

Site Map

View downstream towards Estuary

Load Allocations

The 2010 and 2016 *Conditional Waivers* incorporated toxaphene LAs for suspended sediment and fish tissue as Water Quality Benchmarks, shown in the table below.

Table 56. Load Allocations for Toxaphene

Reach	Toxaphene in Fish Tissue (µg/kg)	Toxaphene in Suspended Sediment (µg/kg)
Santa Clara River Estuary	6.1	0.1

Monitoring Results

LAs for the Santa Clara River Estuary Toxaphene TMDL were established for toxaphene measured in fish tissue and suspended sediment. Additionally, monitoring of chlordane and dieldrin is required; however, these constituents do not have LAs. In the VCAILG QAPP, it was specified that, if possible, targeted fish should be those that are commonly consumed by humans but based on the results of other studies in the estuary, that may not be feasible. Fish were last collected in summer 2018 and results were reported in the 2017-18 AMR; fish collection and analysis was not required for the 2019-20 monitoring year. The next fish sampling will be in spring/summer 2021.

The results of water and suspended sediment monitoring for the Santa Clara River Estuary Toxaphene TMDL are presented in Table 57. The suspended sediment load allocation for toxaphene was exceeded twice at site S01D_MONAR during Events 43 and 44.

Table 57. Santa Clara River Estuary Toxaphene TMDL Monitoring Data: Water and Suspended Sediment

Site	Constituent	Units	Load Allocation	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
S02T_ELLS	***Water***						
	TSS	mg/L	---	280	960	1,160	NS
	Chlordane [1]	µg/L	---	0.0057	0.0059	ND	NS
	Dieldrin	µg/L	---	ND	ND	ND	NS
	Toxaphene	µg/L	---	ND	ND	ND	NS
	Suspended Sediment						
	Chlordane [1]	µg/dry kg	---	NR	1.51	1.49	NR
	Dieldrin	µg/dry kg	---	NR	ND	ND	NR
	Toxaphene	µg/dry kg	0.1	NR	ND	ND	NR
S01D_MONAR	***Water***						
	TSS	mg/L	---	NS	940	500	83
	Chlordane [1]	µg/L	---	NS	0.070	0.011	ND
	Dieldrin	µg/L	---	NS	ND	ND	ND
	Toxaphene	µg/L	---	NS	1.84	0.285	0.153
	Suspended Sediment						
	Chlordane [1]	µg/dry kg	---	NR	13.6	28.1	NR
	Dieldrin	µg/dry kg	---	NR	ND	ND	NR
	Toxaphene	µg/dry kg	0.1	NR	**426**	**1,420**	NR

NS = Not Sampled; site dry.
ND = Not detected at the applicable reporting limit.
NR = Not Required; filtered sediment sampling is only required during wet weather sampling events.
1. Reported total chlordane is the sum of alpha- and gamma-chlordane.

Santa Clara River Bacteria TMDL

The Santa Clara River Bacteria TMDL includes monitoring and reporting requirements as well as TMDL numeric targets and allowable exceedance days, which were included in the 2016 *Conditional Waiver* as water quality benchmarks. The TMDL identifies two different sets of targets: those applicable to the Santa Clara River Estuary which is monitored at site S01D_MONAR, and those for Reaches 3, 5, 6 & 7 which is monitored on Reach 3 at site S03D_BARDS (Reaches 5, 6, & 7 are located in Los Angeles County). Table 58 provides the numeric targets for bacteria. Table 59 provides the allowable number of exceedance days.[9] In accordance with the MRP approved under the 2016 *Conditional Waiver*, the monitoring requirements for agriculture for the Santa Clara River Bacteria TMDL were addressed through baseline monitoring during the 2016-2017 and 2017-2018 monitoring years. Monitoring for this TMDL was not required during the 2019-2020 monitoring year.

Table 58. Santa Clara River Bacteria TMDL, Numeric Targets

Objective	Constituent	Numeric Target: S01D_MONAR[1]	Numeric Target: S03D_BARDS[2]
Single sample	*E. coli*	NA	235/100 mL
	Fecal Coliform	400/100 mL	NA
	Enterococcus	104/100 mL	NA
	Total coliform[3]	10,000/100 mL	NA
Geometric Mean[4]	*E. coli*	NA	126/100 mL
	Fecal Coliform	200/100 mL	NA
	Enterococcus	35/100 mL	NA
	Total coliform	1,000/100 mL	NA

NA = Not Applicable
1. S01D_MONAR sampling location discharges to the Santa Clara River Estuary.
2. S03D_BARDS sampling location discharges to Santa Clara River Reach 3.
3. Total coliform density shall not exceed 1,000/100 mL, if the ratio of fecal-to-total coliform exceeds 0.1.
4. Geometric mean targets are not in effect until 2023 (dry) and 2029 (wet).

[9] As noted in Appendix 5 of the 2016 *Conditional Waiver*, the calculated number of exceedance days assumes that daily sampling is conducted. A ratio is used to determine the number of allowable exceedances for less frequent sampling.

Table 59. Santa Clara River Bacteria TMDL, Interim Allowable Exceedance Days[1]

	Santa Clara River Estuary	Santa Clara River Reaches 3,5,6, & 7
Time Period	**S01D_MONAR**	**S03D_BARDS**
Dry Weather	Not Applicable	17 allowable exceedance days of single sample objectives
Wet Weather [2]	62 allowable exceedance days of single sample objectives	61 allowable exceedance days of single sample objectives
Summer Dry Weather (April 1 – October 31)	150 allowable exceedance days of single sample objectives	Not Applicable
Winter Dry Weather (November 1 – March 31)	49 allowable exceedance days of single sample objectives	Not Applicable

1. The calculated number of exceedance days assumes that daily sampling is conducted. To determine the number of allowable exceedances for less frequent sampling, a ratio is used.
2. Wet weather is defined as days of 0.1 inch of rain or more plus three days following the rain event.

Ventura River Watershed

Effective TMDLs for the Ventura River Watershed are discussed below.

Ventura River Algae TMDL

The Ventura River Algae TMDL became effective on June 28, 2013. Load allocations for this TMDL have been added to the 2016 *Conditional Waiver* as water quality benchmarks. This AMR covers the 2019-2020 monitoring year, which is the fourth year of ag monitoring conducted for this TMDL. Monitoring is performed at the two VCAILGMP sites located in the upper watershed (VRT_SANTO and VRT_THACH; both drain to Reach 4 of the Ventura River) and the lower watershed TMDL site V02D_SPM (Reach 2 of the Ventura River, drainage channel to Ventura River).[10]

Dry weather LAs are provided in Table 60, and wet weather LAs are provided in Table 61. Monitoring results for the Ventura River Algae TMDL are presented in Table 62 and

Site	Constituent	Load Allocation (lbs/day/acre)	Event 42 Dry Aug-2019	Event 45 Dry Jun-2020
VRT_THACH	Total Nitrogen	0.008	NS	NS
	Total Phosphorus	0.000063		
VRT_SANTO	Total Nitrogen	0.008	NS	NS
	Total Phosphorus	0.000063		
V02D_SPM	Total Nitrogen	0.008	NS	NS
	Total Phosphorus	0.000063		

NS = Not sampled, site dry.

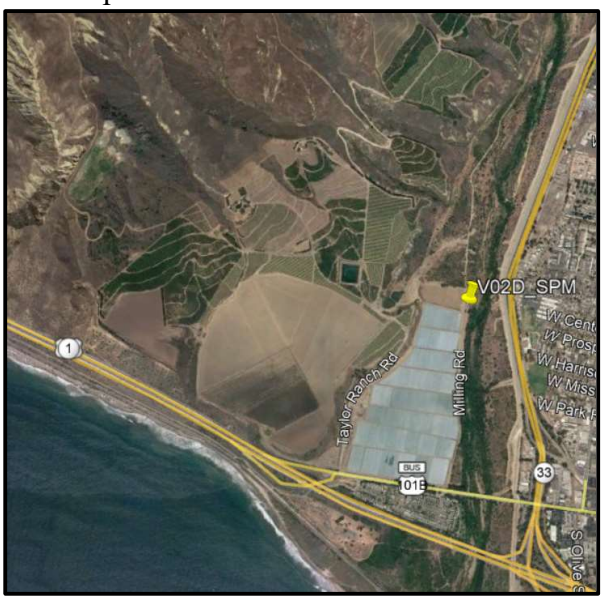
[10] Receiving water monitoring for the Algae TMDL is conducted separately by the TMDL responsible parties (of which VCAILG is a member) in accordance with the Oct. 20, 2014 Algae TMDL Comprehensive Monitoring Plan.

Table 63. Flow was not present at sites during dry weather sampling. No exceedances occurred during wet weather sampling.

V02D_SPM

This site is an agricultural drainage channel that discharges to reach 2 of the Ventura River at the SP Milling Road crossing.

Site Map



View Upstream

Load Allocations

Table 60. Dry Weather Load Allocations for the Ventura River Algae TMDL

	Load Allocation	
Constituent	**(lbs/day) [1]**	**(lbs/day/acre) [2]**
Total Nitrogen	16	0.008
Total Phosphorus	0.12	0.000063

1. Daily load applies to the aggregate irrigated agricultural acreage in the watershed.
2. Values are translators provided on p. 12 of the Algae TMDL BPA. Monitoring results are weighted by irrigated agricultural acreage draining to a monitoring site.

Table 61. Wet Weather Load Allocations for the Ventura River Algae TMDL

Site	Constituent	Load Allocation (mg/L)
VRT_THACH[1]	Nitrate-N + Nitrite-N	5
VRT_SANTO[1]	Nitrate-N + Nitrite-N	5
V02D_SPM[2]	Nitrate-N + Nitrite-N	10

1. Sampling site drains to Reach 4
2. Sampling site drains to Reach 2

Monitoring Results

Table 62. Dry Weather Ventura River Algae TMDL Site Data

Site	Constituent	Load Allocation (lbs/day/acre)	Event 42 Dry Aug-2019	Event 45 Dry Jun-2020
VRT_THACH	Total Nitrogen	0.008	NS	NS
	Total Phosphorus	0.000063		
VRT_SANTO	Total Nitrogen	0.008	NS	NS
	Total Phosphorus	0.000063		
V02D_SPM	Total Nitrogen	0.008	NS	NS
	Total Phosphorus	0.000063		

NS = Not sampled, site dry.

Table 63. Wet Weather Ventura River Algae TMDL Site Data

Site	Constituent	Units	Load Allocation	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020
VRT_THACH	Nitrate-N + Nitrite-N	mg/L	5	1.69	NS
VRT_SANTO	Nitrate-N + Nitrite-N	mg/L	5	1.05	0.94
V02D_SPM	Nitrate-N + Nitrite-N	mg/L	10	8.09	8.34

Ventura River Estuary Trash TMDL

The Ventura River Estuary Trash TMDL is addressed through a separate monitoring and reporting program, with the annual report submitted on January 30th. For additional information, please refer to the "2019-2020 Ventura River Estuary Trash TMDL TMRP/MFAC Annual Report". The next annual report is due January 30, 2021.

Harbor Beaches of Ventura County Bacteria TMDL

The Harbor Beaches of Ventura County Bacteria TMDL does not specify LAs for agricultural dischargers but does include a provision for monitoring. The 2017 QAPP specified a site, monitoring frequency, and constituents to comply with the implementation actions specified for

agricultural dischargers in the TMDL. A site description, map, and photo are provided below for the site used to evaluate agricultural discharges upstream of the Channel Islands Harbor.

CIHD_VICT

The monitoring site is located along Victoria Avenue, just north of Doris Avenue and the Doris Drain.

Site Map

View at sampling point looking upstream

Monitoring Data

As specified in the 2016 QAPP, the CIHD_VICT site is visited at the same frequency as *Conditional Waiver* monitoring sites. At each event, flow and field meter parameters are measured in addition to water samples collected for bacteria testing. Flow was present at this site during Events 43 and 44. Table 64 provides monitoring information results.

Table 64. Harbor Beaches of Ventura County Bacteria TMDL Monitoring Data

	Bacteria Concentrations (MPN/100mL)			
Event	***E. coli***	**Fecal Coliform**	**Total Coliform**	**Enterococcus**
42: 8/07/2019	NS			
43: 12/04/2019	520	790	>241,960	3,180
44: 3/16/2020	310	490	1,700,000	3,990
45: 6/02/2020	NS			

NS = Not sampled due to lack of flow

McGrath Lake PCBs, Pesticides, and Sediment Toxicity TMDL

The TMDL for PCBs, Pesticides, and Sediment Toxicity in McGrath Lake became effective June 30, 2011; after the adoption of the 2010 *Conditional Waiver*. To comply with the 2016 *Conditional Waiver* the VCAILG QAPP and MRP were written to include the Phase 1 Central Ditch monitoring specified in the McGrath Lake TMDL. Inclusion of monitoring data within this AMR also fulfills the TMDL requirement for annual reporting. The existing VCAILGMP site, OXD_CENTR, is located at the Central Ditch, which drains into McGrath Lake. Information and *Conditional Waiver* monitoring results related to this site can be found in the previous data compilation section. Water quality data collected at the OXD_CENTR site that pertains to this TMDL is summarized below and compared to the load allocation benchmarks.

TMDL Monitoring and Load Allocations

The McGrath Lake PCBs, Pesticides, and Sediment Toxicity TMDL includes the following LAs (Table 65).

Table 65. McGrath Lake Central Ditch Load Allocations

Constituent	Water Column Load Allocation (µg/L)	Suspended Sediment Load Allocation (µg/dry kg)
Chlordane	0.00059	0.5
Dieldrin	0.00014	0.02
4,4'-DDD	0.00084	2
4,4'-DDE	0.00059	2.2
4,4'-DDT	0.00059	1
Total DDT	---	1.58
Total PCBs	0.00017	22.7

Monitoring Results

Water sampling occurred concurrently with VCAILG monitoring and included the addition of total organic carbon (TOC) and PCBs. Water quality data and suspended sediment data are presented in Table 66 and Table 67, respectively. Per the QAPP, water column sampling is to occur during every monitoring event and sampling for suspended sediment is to take place during wet weather.

Exceedances of the 4,4'-DDD; 4,4'-DDE; and 4,4'-DDT water column LAs occurred during all events. A dieldrin exceedance occurred during wet weather Event 44, and total chlordane exceedances occurred during wet weather Events 43 and 44. Suspended sediment samples were collected during wet weather Events 43 and 44. Exceedances of the 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Total Chlordane, and Total DDT suspended sediment LAs occurred during wet weather Events 43 and 44. The dieldrin suspended sediment LA was exceeded during wet weather Event 44.

Table 66. McGrath Lake TMDL Central Ditch Monitoring Data in Water: OXD_CENTR

Constituents in Water	Units	Water LA	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
TOC	mg/L	---	2.8	15.8	3.4	2.2
TSS	mg/L	---	34	2,040	717	4
Total PCBs [1]	µg/L	0.00017	ND	ND	ND	ND
4,4'-DDD	µg/L	0.00084	**0.0215**	**1.29**	**0.16**	**0.0128**
4,4'-DDE	µg/L	0.00059	**0.0684**	**2.51**	**0.551**	**0.00559**
4,4'-DDT	µg/L	0.00059	**0.0487**	**0.803**	**0.671**	**0.0119**
Dieldrin	µg/L	0.00014	ND	ND	**0.0105**	ND
Total Chlordane [2]	µg/L	0.00059	DNQ	**0.0858**	**0.01834**	ND

Bold numbers indicate the value is greater than the Load Allocation.
NS = Not Sampled; site dry.
ND = Not detected at the applicable reporting limit.
DNQ = Detected, not qualified
1. Total PCBs include the 7 aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, 1260).
Total chlordane is considered the sum of alpha- and gamma-chlordane.

Table 67. McGrath Lake TMDL Central Ditch Monitoring Data in Suspended Sediment: OXD_CENTR

Constituents in Sediment	Units	Sediment LA	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
TOC	% Dry Weight	---	NR[3]	2.17	1.73	NR[3]
Total PCBs[1]	µg/dry kg	22.7		ND	ND	
4,4'-DDD	µg/dry kg	2		**146**	**100**	
4,4'-DDE	µg/dry kg	2.2		**164**	**342**	
4,4'-DDT	µg/dry kg	1		**153**	**395**	
Dieldrin	µg/dry kg	0.02		ND	**4.85**	
Total Chlordane[2]	µg/dry kg	0.5		**5.09**	**10.77**	
Total DDT	µg/dry kg	1.58		**539**	**962**	

NR = Not Required
ND = Not detected at the applicable reporting limit.
1. Total PCBs include the 7 aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, 1260).
2. Total chlordane is considered the sum of alpha- and gamma-chlordane.
3. Sampling for suspended sediments is only required during wet weather.

Oxnard Drain #3 Subwatershed

The USEPA established the Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL, which became effective October 6, 2011. TMDL load allocations were incorporated into the 2016 *Conditional Waiver* as water quality benchmarks. To evaluate agricultural discharges progress in attaining this TMDL, the 2017 MRP and QAPP include a monitoring site as well as specifics regarding monitoring frequency and constituents for comparison to the LAs. This TMDL includes LAs for water and sediment, which are presented in Table 68. Sampling is conducted during four monitoring events for the water allocations, and during one monitoring event for the sediment allocation.

Table 68. Oxnard Drain No. 3 TMDL Load Allocations

Constituents	Water Allocations (µg/L)	Sediment (µg/dry kg) [1,2]	Alternate Sediment (µg/dry kg) [1,3]
Bifenthrin[4]	0.0006	-	-
Chlordane, total	0.00059	0.5	3.3
Chlorpyrifos[4]	0.0056	-	-
4,4'-DDT	0.00059	1	0.3
4,4'-DDE	0.00059	2.2	2.2
4,4'-DDD	0.00084	2	2
Dieldrin	0.00014	0.02	4.3
PCBs, total[5]	0.00017	22.7	180
Toxaphene	0.0002	0.1	360
Sediment Toxicity	-	No significant chronic sediment toxicity	-

Note: Footnotes 1 through 4 are taken directly from Appendix 5 of the *Conditional Waiver.* Fish monitoring was not required of VCAILG and has not been performed in Oxnard Drain #3; therefore, it is the "sediment" allocations that apply to the VCAILG monitoring data.

1. Sediment concentrations associated with suspended sediment and Oxnard Drain #3 bottom sediment.
2. Sediment allocations apply if there are fish tissue or sediment toxicity exceedances. All sediment allocations are ERLs, except toxaphene. Toxaphene does not have an ERL, so the TEL concentration was selected.
3. The alternate sediment allocation applies when the fish tissue target and the sediment toxicity allocation are achieved in Oxnard Drain 3. The alternate sediment allocation concentrations match the Mugu Lagoon TMDL allocations.
4. Bifenthrin and chlorpyrifos allocations included to address the sediment toxicity impairment.
5. Total PCBs include the 7 aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, 1260).

Monitoring Results

Monitoring data for water quality are provided in Table 69. Exceedances of water allocations for 4,4'-DDE occurred during all four monitoring events. Exceedances of the 4,4'-DDT and 4,4'-DDD water allocations occurred during Events 43, 44, and 45. The toxaphene water allocation was exceeded during Event 44 and 45. The bifenthrin and total chlordane water allocations were exceeded during the two wet events. Sediment monitoring results are provided in Table 70, the results show exceedances of total chlordane, toxaphene, and DDT compounds. There was no significant survival toxicity, but the sample did exhibit growth toxicity for *Hyalella*.

Table 69. Oxnard Drain No. 3 TMDL Monitoring Data in Water: 01T_ODD3_EDI

Constituents	Water Allocations (µg/L)	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
Bifenthrin	0.0006	ND	**0.0104**	**0.0029**	DNQ
Chlordane, total	0.00059	ND	**0.01354**	**0.00456**	ND
Chlorpyrifos	0.0056	ND	ND	ND	ND
4,4'-DDT	0.00059	ND	**0.0125**	**0.0439**	**0.0219**
4,4'-DDE	0.00059	**0.00605**	**0.0968**	**0.0448**	**0.0136**
4,4'-DDD	0.00084	ND	**0.0395**	**0.0345**	**0.0142**
Dieldrin	0.00014	ND	ND	ND	ND
PCBs, total[1]	0.00017	ND	ND	ND	ND
Toxaphene	0.0002	ND	ND	**0.246**	**0.0345**

Bold numbers indicate the value is greater than the Load Allocation.
ND = Not Detected at the applicable reporting limit.
DNQ = Detected, not qualified.
1. Total PCBs include the 7 aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, 1260).

Table 70. Oxnard Drain No. 3 TMDL Monitoring Data in Sediment: 01T_ODD3_EDI

Constituents	Sediment Allocations (µg/dry kg)	Event 42 Dry Aug-2019	Event 43 Wet Dec-2019	Event 44 Wet Mar-2020	Event 45 Dry Jun-2020
Chlordane, total	0.5	**9.63**			
4,4'-DDT	1	**17.7**			
4,4'-DDE	2.2	**159**			
4,4'-DDD	2	**30.3**			
Dieldrin	0.02	ND			
PCBs, total[1]	22.7	ND	NR	NR	NR
Toxaphene	0.1	**243**			
Sediment Toxicity	No significant chronic sediment toxicity	No survival toxicity; yes significant growth reduction [2]			

Bold numbers indicate the value is greater than the Load Allocation.
ND = Not Detected at the applicable reporting limit.
NR = Not Required; sediment monitoring is done annually.
DNQ = Detected, not qualified
1. Total PCBs include the 7 aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, 1260)
2. No significant reduction in survival, however, a significant reduction in growth was observed.

Malibu Creek Watershed

Two TMDLs exist for the Malibu Creek Watershed: the Malibu Creek and Lagoon TMDLs for Sedimentation and Nutrients to Address Benthic Community Impairments (Benthic TMDLs), and the Malibu Creek Watershed Nutrients TMDL (Nutrients TMDL).

TMDL Monitoring and Load Allocations

Load allocations for the Malibu Creek Watershed TMDLs were incorporated into the 2016 *Conditional Waiver*. At this time, a very small number Ventura County farmers operate in the Malibu Creek Watershed, and no monitoring site for VCAILG purposes has been designated in the watershed. Instead, monitoring results from site 05T_HONDO are used as "proxy" results to compare with Malibu Creek Watershed TMDLs LAs. LAs for the Benthic and Nutrients TMDLs are provided in Table 71 and Table 72, respectively.

Table 71. Malibu Creek and Lagoon TMDLs for Sedimentation and Nutrients Load Allocations

Constituent	Season	Load Allocation (mg/L)
Total Nitrogen	Summer	0.65
	Winter	1.00
Total Phosphorus	Summer	0.10
	Winter	0.10

Table 72. Malibu Creek Watershed Nutrients TMDL Load Allocations

Constituent	Season	Load Allocation	Units
Total Nitrogen	Summer	3	lbs/day
Total Phosphorus		0.2	lbs/day
Nitrogen (nitrate-N + nitrite-N)	Winter	8	mg/L

Monitoring Results

Monitoring results for the Benthic TMDL are provided in Table 73. Exceedances of the concentration-based total nitrogen and total phosphorus LAs occurred during wet weather Event 43. Monitoring results for the Nutrients TMDL are presented in Table 74. No exceedances for the Nutrients TMDL occurred during 2019-20 monitoring.

Table 73. Malibu Creek and Lagoon Benthic TMDLs Monitoring Data: 05T_HONDO

Constituent	Event	Season	Load Allocation (mg/L)	Result (mg/L)
Total Nitrogen	42: 8/07/2019	Summer	0.65	NS
	43: 12/04/2019	Winter	1.00	**3.14**
	44: 3/17/2020	Winter	1.00	NS
	45: 6/02/2020	Summer	0.65	NS
Total Phosphorus	42: 8/07/2019	Summer	0.10	NS
	43: 12/04/2019	Winter	0.10	**5.57**
	44: 3/17/2020	Winter	0.10	NS
	45: 6/02/2020	Summer	0.10	NS

Bold numbers indicate the value is greater than the Load Allocation.
NS = Not Sampled; site dry.

Table 74. Malibu Creek Watershed Nutrients TMDL Monitoring Data: 05T_HONDO

Constituent	Event	Season	Load Allocation	Units	Result
Total Nitrogen	42: 8/07/2019	Summer	3	lbs/day	NS
	45: 6/02/2020	Summer	3	lbs/day	NS
Total Phosphorus	42: 8/07/2019	Summer	0.2	lbs/day	NS
	45: 6/02/2020	Summer	0.2	lbs/day	NS
Nitrogen (nitrate-N + nitrite-N)	43: 12/04/2019	Winter	8	mg/L	2.27
	44: 3/17/2020	Winter	8	mg/L	NS

NS = Not Sampled; site dry.

Conclusions

Submittal of this report fulfills the Annual Monitoring Report requirements specified in Appendix 3 of the 2016 *Conditional Waiver*. All required elements are included in this narrative report and in the accompanying appendices.

This report presents monitoring data for evaluating agricultural discharges as compared to standard water quality benchmarks and LAs for irrigated agriculture in effective TMDLs that were incorporated in the 2016 *Conditional Waiver* as benchmarks.

The submittal of this Annual Monitoring Report, along with the Groundwater Management Practice Evaluation Report and Groundwater Quality Trends 2020 Annual Monitoring Report, completes the reporting requirements of the 2016 *Conditional Waiver*. In the VCAILG Water Quality Management Plan submitted October 31, 2020, a summary of program progress and recommendations for the next *Conditional Waiver* were provided. VCAILG looks forward to continuing to implement the existing program requirements and working with the Regional Board on waiver renewal.

WQMP Progress Report

The 2016 *Conditional Waiver* specifies that a WQMP Progress Report include the following components:

- Copies of outreach materials
- Report on members who have and have not completed surveys
- Report on members who have and have not completed education requirements
- *Report on individual discharge monitoring results, if chosen (not applicable since none of the benchmarks with effective compliance deadlines have had exceedances)*

OUTREACH MATERIALS

During the reporting period for this annual report, VCAILG members have been sent mailed and electronic communications informing them of their responsibilities to comply with the 2016 *Conditional Waiver* and keep them apprised of the overall program activities. Communications can be summarized as follows:

- Notifications of the requirement to complete a management practice survey as well as reminders and updates on the survey process.
- Education meeting notices and handouts
- VCAILG newsletters
- Website updates
- Targeted outreach for those growers located in source investigation study areas identified as contributing to a water quality benchmark exceedance, or having a high mobility and concentration potential for legacy pesticides.

VCAILG has been implementing the Outreach Plan outlined in the 2018 Water Quality Management Plan (WQMP) and updated in the 2020 WQMP. Copies of the mailings and emails are included as Appendix J. Detailed information regarding VCAILG, links to past reports, and information regarding the next management practice survey can be accessed from the Farm Bureau website here: http://www.farmbureauvc.com/issues/water-issues/water-quality/vcailg. The website also includes a special section dedicated to the WQMP, detailing the responsibility areas and including maps and a lookup file for farmers to determine the correct responsibility area for their farm: http://www.farmbureauvc.com/issues/water-issues/water-quality/management. This is also where VCAILG members may download or print the compliance summary for their specific responsibility area. The compliance summaries have been updated to include the 2020 WQMP versions. The rest of the WQMP content will be updated from the 2018 WQMP upon approval of the 2020 WQMP. Education opportunities have their own dedicated section of the website here: http://www.farmbureauvc.com/issues/water-issues/water-quality/education. This page is continuously updated as additional classes become available.

SURVEY COMPLETION

The 2016 *Conditional Waiver* requires that the third WQMP be based on completion of a third set of surveys to begin June 2020. The online management practice survey was open in June and July 2020, and the list of VCAILG members that did, or did not, complete that survey is included as Appendix K in this report.

EDUCATION REQUIREMENTS

The 2016 *Conditional Waiver* requires that dischargers obtain a minimum of two hours of educational training every year. Using the approach confirmed by the Regional Board on September 23, 2016, education hours are tallied for specific AMR progress reports between December 1 of the preceding year and November 30 of the AMR submittal year. The number of education credit classes for the fourth Waiver year is much less than normal due to complications caused by COVID-19 and transitioning to online webinars. On May 5, 2020 VCAILG submitted a "Remote Education and Outreach Plan in Response to COVID-19". Though formal approval of the plan approach to remote education has not been received, Regional Board staff have given verbal support to the approach and all online classes have been conducted following this plan. On November 11, 2020, VCAILG submitted to the Regional Board Executive Officer a request for approval of the remote education plan and education courses that have been offered remotely in 2020.

Appendix L lists the number of education hours each VCAILG member has obtained between December 1, 2019 and November 30, 2020. Seven education classes were offered during the fourth year of implementation. Table 75 lists the education classes and the hours of credit for each class.

Table 75. Courses for Education Credit – December 1, 2019 through November 30, 2020

Date	Course Title	Education Hours
6/23-25/2020	Nitrogen Management Plan Self-Certification Training Program	6
7/8/2020	Water Quality BMP Workshop	2
7/15/2020	CropManage Hands-On Webinar	2.5
9/3/2020	Water Management Tactics Through Inputs	2
11/05/2020	Water Quality BMP Webinar	2
11/13/2020	Water Quality BMP Webinar	2
11/17-18/2020	Nitrogen Management Plan Self-Certification Training Program	6