

DECEMBER 15, 2022

VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP (VCAILG)

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## 2022 Annual Monitoring Report

PREPARED BY:



SUBMITTED BY:



SUBMITTED TO:

Los Angeles Regional Water Quality Control Board



## TABLE OF CONTENTS

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Section	Page
ACRONYMS .....	IX
INTRODUCTION .....	1
CONCLUSIONS .....	2
GROUP MEMBERSHIP AND SETTING .....	2
Irrigated Agriculture in Ventura County .....	4
Calleguas Creek Watershed and Oxnard Plain .....	7
Santa Clara River Watershed .....	9
Ventura River Watershed .....	11
VCAILG Participation in TMDLs .....	13
WATER QUALITY MONITORING .....	13
Monitoring Objectives .....	13
Monitoring Site Selection .....	13
Parameters Monitored and Monitoring Frequency .....	24
Conditional Waiver Monitoring Constituents and Frequency .....	24
TMDL Monitoring Constituents and Frequency .....	27
Sampling Methods .....	30
Analytical Methods .....	31
Data Quality .....	33
Water Quality Benchmarks and Other Objectives .....	33
Water Quality Monitoring Results .....	38
Calleguas Creek Watershed .....	40
Oxnard Coastal Watershed .....	58
Santa Clara River Watershed .....	61
Ventura River Watershed .....	79
Chronic Toxicity Test Results .....	84
Event 51: TIE Results .....	85

Event 53: TIE Results.....	86
TMDL Load Allocations and Monitoring Results .....	86
Calleguas Creek Watershed .....	86
Santa Clara River Watershed .....	91
Ventura River Watershed .....	98
Oxnard Plain .....	101
Malibu Creek Watershed .....	106
WQMP PROGRESS REPORT .....	107
Outreach Materials .....	107
Survey Completion .....	108
Education Requirements .....	108

## LIST OF TABLES

Table 1. VCAILG Steering Committee Membership .....	3
Table 2. VCAILG Membership Statistics as of December 13, 2022 .....	4
Table 3. Ventura County’s Leading Agricultural Commodities–2021 .....	5
Table 4. VCAILGMP Monitoring Locations for <i>Conditional Waiver</i> Constituents .....	15
Table 5. Monitoring Locations for TMDL-related Constituents Addressed in the 2016 <i>Conditional Waiver</i> VCAILG MRP .....	16
Table 6. Estimated Irrigated Acreage Represented at <i>Conditional Waiver</i> VCAILG MRP Monitoring Sites	23
Table 7. Constituents and Monitoring Frequency for the <i>Conditional Waiver</i> VCAILG-MP .....	25
Table 8. VCAILG Sites Monitored and Constituents Sampled in 2021-2022.....	26
Table 9. Constituents and Frequency for TMDL Monitoring Performed Under the <i>Conditional Waiver</i> VCAILGMP .....	28
Table 10. TMDL Sites Monitored and Constituents Sampled in 2021-2022 .....	29
Table 11. Analytical Methods for <i>Conditional Waiver</i> Constituents.....	32
Table 12. Analytical Methods for TMDL Constituents .....	33
Table 13. <i>Conditional Waiver</i> Standard Water Quality Benchmarks Derived from Narrative Objectives.....	35
Table 14. <i>Conditional Waiver</i> Standard Water Quality Benchmarks for Salts and Nutrients (Basin Plan Table 3-8 Numeric Water Quality Objectives) .....	36
Table 15. <i>Conditional Waiver</i> Standard Water Quality Benchmarks for Copper.....	37
Table 16. <i>Conditional Waiver</i> Standard Water Quality Benchmarks for Organophosphorus Pesticides .....	37
Table 17. <i>Conditional Waiver</i> Water Quality Benchmarks for Organochlorine Pesticides .....	37
Table 18. <i>Conditional Waiver</i> Water Quality Benchmark for Bifenthrin .....	37
Table 19. <i>Conditional Waiver</i> Water Quality Benchmark for <i>E. coli</i> .....	38
Table 20. Organochlorine Pesticides Monitored by the VCAILGMP with CTR Water Quality Criteria .....	38
Table 21. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 01T_ODD3_EDI .....	41
Table 22. 2021-2022 Trash Observations for 01T_ODD3_EDI .....	42
Table 23. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_ETTG .....	44
Table 24. 2021-2022 Trash Observations for 04D_ETTG .....	45
Table 25. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 04D_LAS.....	47
Table 26. 2021–2022 Trash Observations for 04D_LAS.....	48
Table 27. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: 05D_LAVD .....	50
Table 28. 2021–2022 Trash Observations for 05D_LAVD .....	51
Table 29. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 05T_HONDO .....	53

Table 30. 2021–2022 Trash Observations for 05T_HONDO .....	54
Table 31. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: 06T_LONG2 .....	56
Table 32. 2021–2022 Trash Observations for 06T_LONG2.....	57
Table 33. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: OXD_CENTR .....	59
Table 34. 2021–2022 Trash Observations for OXD_CENTR .....	60
Table 35. 2021– 2022 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_ELLS.....	62
Table 36. 2021–2022 Trash Observations for S02T_ELLS .....	63
Table 37. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S02T_TODD .....	65
Table 38. 2021–2022 Trash Observations for S02T_TODD.....	66
Table 39. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_TIMB.....	68
Table 40. 2021–2022 Trash Observations for S03T_TIMB.....	69
Table 41. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S03T_BOULD .....	71
Table 42. 2021–2022 Trash Observations for S03T_BOULD.....	72
Table 43. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S03D_BARDS .....	74
Table 44. 2021–2022 Trash Observations for S03D_BARDS.....	75
Table 45. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S04T_TAPO.....	77
Table 46. 2021–2022 Trash Observations for S04T_TAPO .....	78
Table 47. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_THACH.....	80
Table 48. 2021–2022 Trash Observations for VRT_THACH .....	81
Table 49. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: VRT_SANTO.....	83
Table 50. 2021–2022 Trash Observations for VRT_SANTO .....	84
Table 51. Chronic Toxicity Results 2021-2022 .....	85
Table 52: Exceedance Evaluation Results for Toxicity and Nitrogen TMDLs .....	88
Table 53: Exceedance Evaluation Results for Interim OC Pesticides, Salts and Metals and Selenium TMDL Benchmarks.....	89
Table 54. Exceedance Evaluation Results for Final Metals and Selenium TMDL Benchmarks .....	90
Table 55. Load Allocations for Nitrogen Compounds .....	91
Table 56. Nitrogen Load Allocations Compared to SCR VCAILGMP Site Data .....	92
Table 57. Load Allocation for Chloride.....	92
Table 58. Chloride Load Allocation Compared to S04T_TAPO Site Data .....	93
Table 59. Load Allocations for Toxaphene.....	94
Table 60. Santa Clara River Estuary Toxaphene TMDL Monitoring Data: Water and Suspended Sediment .....	95
Table 61. Santa Clara River Bacteria TMDL, Numeric Targets .....	96

Table 62. Santa Clara River Bacteria TMDL, Interim Allowable Exceedance Days <sup>1</sup> .....	97
Table 63. Dry Weather Load Allocations for the Ventura River Algae TMDL .....	99
Table 64. Wet Weather Load Allocations for the Ventura River Algae TMDL .....	99
Table 65. Dry Weather Ventura River Algae TMDL Site Data .....	100
Table 66. Wet Weather Ventura River Algae TMDL Site Data .....	100
Table 67. Harbor Beaches of Ventura County Bacteria TMDL Monitoring Data .....	101
Table 68. McGrath Lake Central Ditch Load Allocations .....	102
Table 69. McGrath Lake TMDL Central Ditch Monitoring Data in Water: OXD_CENTR .....	103
Table 70. McGrath Lake TMDL Central Ditch Monitoring Data in Suspended Sediment: OXD_CENTR .....	103
Table 71. Oxnard Drain No. 3 TMDL Load Allocations .....	104
Table 72. Oxnard Drain No. 3 TMDL Monitoring Data in Water: 01T_ODD3_EDl .....	105
Table 73. Oxnard Drain No. 3 TMDL Monitoring Data in Sediment: 01T_ODD3_EDl .....	105
Table 74. 2013 Benthic TMDL Load Allocations .....	106
Table 75. 2003 Nutrient TMDL Load Allocations .....	106
Table 76. 2013 Benthic TMDL Monitoring Data: 05T_HONDO .....	107
Table 77. 2003 Nutrient TMDL Monitoring Data: 05T_HONDO .....	107
Table 78. Courses for Education Credit – December 1, 2021 through November 30, 2022 .....	109

## LIST OF FIGURES

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Figure 1. Ventura County Watersheds.....	6
Figure 2. Calleguas Creek and Oxnard Coastal Watersheds Agricultural Land Use.....	8
Figure 3. Santa Clara River Watershed Agricultural Land Use .....	10
Figure 4. Ventura River Watershed Agricultural Land Use .....	12
Figure 5. VCAILG Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds .....	17
Figure 6. VCAILG Monitoring Sites Located in the Santa Clara River Watershed .....	18
Figure 7. VCAILG Monitoring Sites Located in the Ventura River Watershed .....	19
Figure 8. Channel Islands Harbor Bacteria TMDL Monitoring Site .....	20
Figure 9. Santa Clara River Estuary Toxaphene TMDL Monitoring Sites .....	21
Figure 10. Ventura River Algae TMDL Monitoring Sites .....	22

## LIST OF APPENDICES

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- Appendix A. VCAILG Membership List
- Appendix B. 2021-22 Field Logbooks
- Appendix C. 2021-22 Field Measured Data
- Appendix D. 2021-22 Photo Documentation
- Appendix E. 2021-22 Chain-of-Custody Forms
- Appendix F. 2021-22 Monitoring Data
- Appendix G. 2021-22 Chronic Toxicity Data
- Appendix H. Laboratory Quality Assurance/Quality Control Results and Discussion
- Appendix I. List of Enrolled and Non-Enrolled Parcels for Each Monitoring Site Drainage
- Appendix J. WQMP Progress Report: Copies of Outreach Materials
- Appendix K. *WQMP Progress Report: VCAILG Membership Status and BMP Survey Completion – submitted December 15, 2020 (no new surveys to report)*
- Appendix L. WQMP Progress Report: VCAILG Members’ Status in Completing Education Requirements

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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 8, 2021, 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* (Order No. R4-2021-0045) as a one-year extension of the 2016 *Conditional Waiver* (Order No. R4-2016-0143). Subsequently, in April 2022, the Conditional Waiver was extended again through December 31, 2022, via Order No. R4-2021-0045-A01. For simplicity, the term “Conditional Waiver” herein refers to the 2016 Conditional Waiver and its subsequent extensions; the requirements in the 2016 Conditional Waiver were not changed by the extension in 2021, which covers this reporting period.

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.

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 2021 to June 2022 during which monitoring was conducted according to the requirements and MRP approved under the 2016 *Conditional Waiver* and subsequent extensions.

## CONCLUSIONS

Submittal of this report fulfills the Annual Monitoring Report requirements specified in Appendix 3 of the *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*.

The submittal of this Annual Monitoring Report, along with the Groundwater Management Practice Evaluation Report and Groundwater Quality Trends 2022 Annual Monitoring Report, completes the reporting requirements of the *Conditional Waiver*. VCAILG looks forward to continuing conversations with Regional Board staff and providing recommendations for a program that is effective, equitable, and efficient for all parties with responsibility to implement and enforce the program.

## 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 and Responsibility Area
- 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 13, 2022.

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 13, 2022. Per the December 2022 membership rolls, VCAILG represents 1,451 Ventura County agricultural landowners and 80,257 irrigated acres. According to the Ventura County Assessor's records, there are an estimated 370 landowners in the county with irrigated agricultural acreage not enrolled in VCAILG. Therefore, the current VCAILG membership represents 81 percent of agricultural landowners in Ventura County, accounting for approximately 92 percent of the estimated irrigated acreage.

**Table 1. VCAILG Steering Committee Membership**

Member, Organization <sup>1</sup>	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
Jason Cole, Cole Ranch	Orchard	Santa Clara River
Paul DeBusschere, DeBusschere Ranch	Strawberries, Avocados	Calleguas Creek
Mike Friel, Laguna Grove Service	Citrus	Calleguas Creek
Jesse Gomez, FivePoint	Citrus, Hay, Nursery, Vegetables, Sod	Santa Clara River
Jurgen Gramckow, Southland Sod Farms	Sod, Hay, Oats, Vegetables	Calleguas Creek, Santa Clara River, Ventura River
Edgar Gutiérrez, Limoneira Company	Avocado, Citrus	Santa Clara River
Craig Held, Rancho Gemelos/Held Ranches	Avocado, Citrus	Santa Clara River
Scott Klittich, Otto and Sons Nursery	Orchard, Nursery	Santa Clara River
Maureen McGuire, Farm Bureau of Ventura County*	N/A	N/A
John Mathews, Arnold, Bleuel, LaRochelle, et al.*	N/A	N/A
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 13, 2022**

Watershed	Landowner Count <sup>1</sup>	Parcel Count	Irrigated Acres
Calleguas Creek	722	1,560	42,731
Santa Clara River	514	1,252	28,634
Oxnard Coastal	72	131	4,293
Ventura River	200	401	4,599
<i>Total</i>	<i>1,508</i>	<i>3,344</i>	<i>80,257</i>

1. There are 1,451 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 260,102 acres of agricultural land in the county, there are approximately 87,800 acres of irrigated cropland. The Calleguas Creek Watershed contains the highest number of irrigated acres (approximately 47,400), followed by the Santa Clara River Watershed (approximately 31,000), Ventura River Watershed (approximately 4,900), and finally the Oxnard Plain and Coastal Watersheds (approximately 4,600).<sup>1</sup>

Agriculture is a major industry in Ventura County, generating over \$2.09 billion in gross sales for 2021, placing the county 10<sup>th</sup> in a statewide ranking of California's 58 counties.<sup>2</sup> This gross value is a 5% increase over 2020.<sup>3</sup> Strawberries were the number one grossing crop type, lemons was the second highest grossing crop, and nursery stock was the third highest grossing crop in Ventura County in 2021. Table 3 lists the ten leading crops in the county by gross value for 2021. Characteristics of each of the three main watersheds in Ventura County are discussed in more detail in the following sections.

<sup>1</sup> Estimates of irrigated agricultural acreage by watershed are based on the VCAILG membership database and include estimated irrigated acreage for parcels not enrolled in VCAILG.

<sup>2</sup> California Department of Food and Agriculture. *California Agricultural Statistics Review 2020-2021*. Agricultural Statistics Overview.

<sup>3</sup> Ventura County Agricultural Commissioner. *Ventura County's Crop and Livestock Report 2021*. July 2022.

**Table 3. Ventura County's Leading Agricultural Commodities—2021**

Commodity	Gross Value (\$)
1. Strawberries	\$712,022,000
2. Lemons	\$253,708,000
3. Nursery Stock	\$213,939,000
4. Raspberries	\$168,712,000
5. Avocados	\$125,839,000
6. Celery	\$113,358,000
7. Blueberries	\$46,028,000
8. Peppers	\$41,515,000
9. Blackberries	\$39,664,000
10. Cabbage	\$35,145,000

Source: Ventura County Agricultural Commissioner. *Ventura County's Crop and Livestock Report 2021* (July 2022)

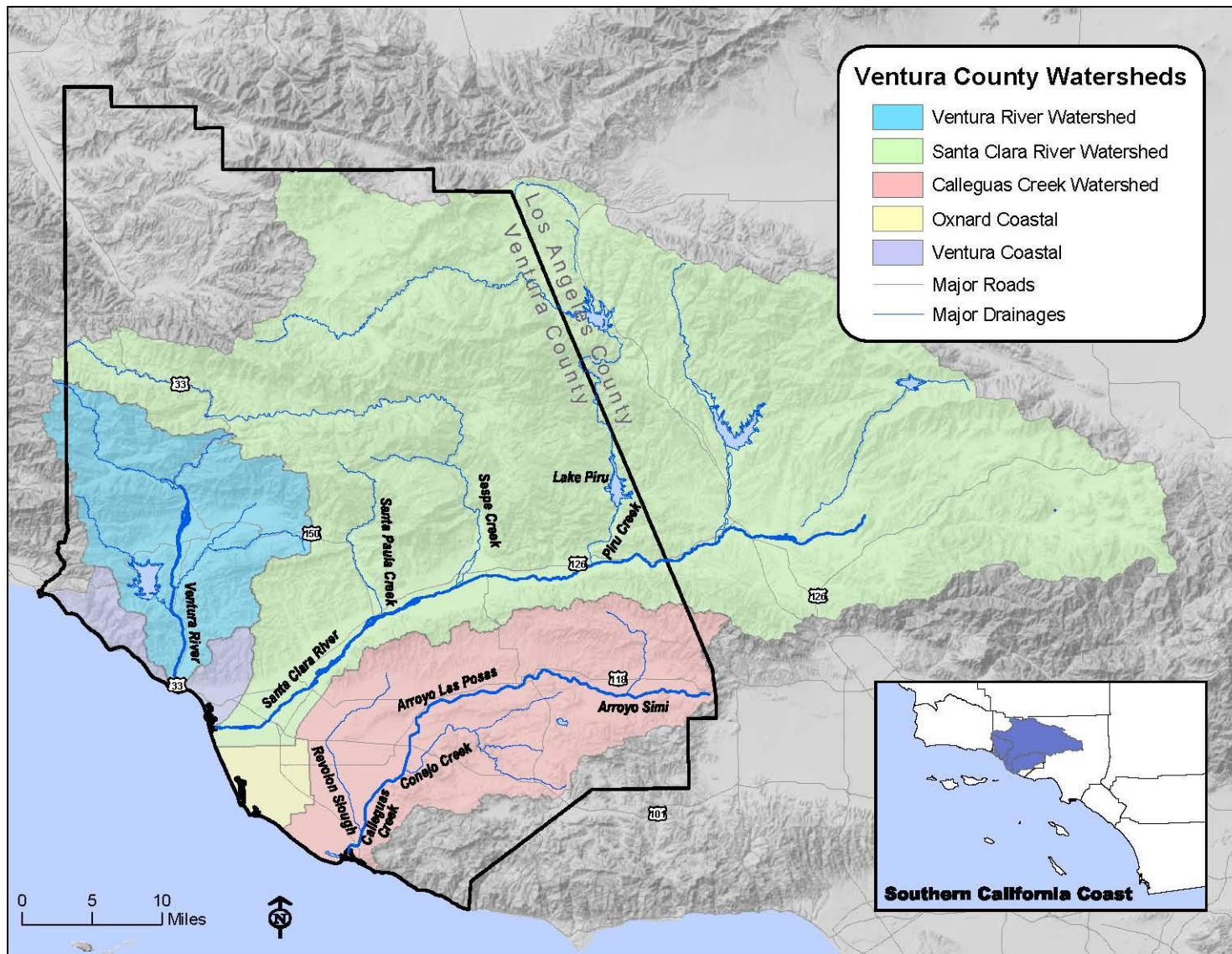


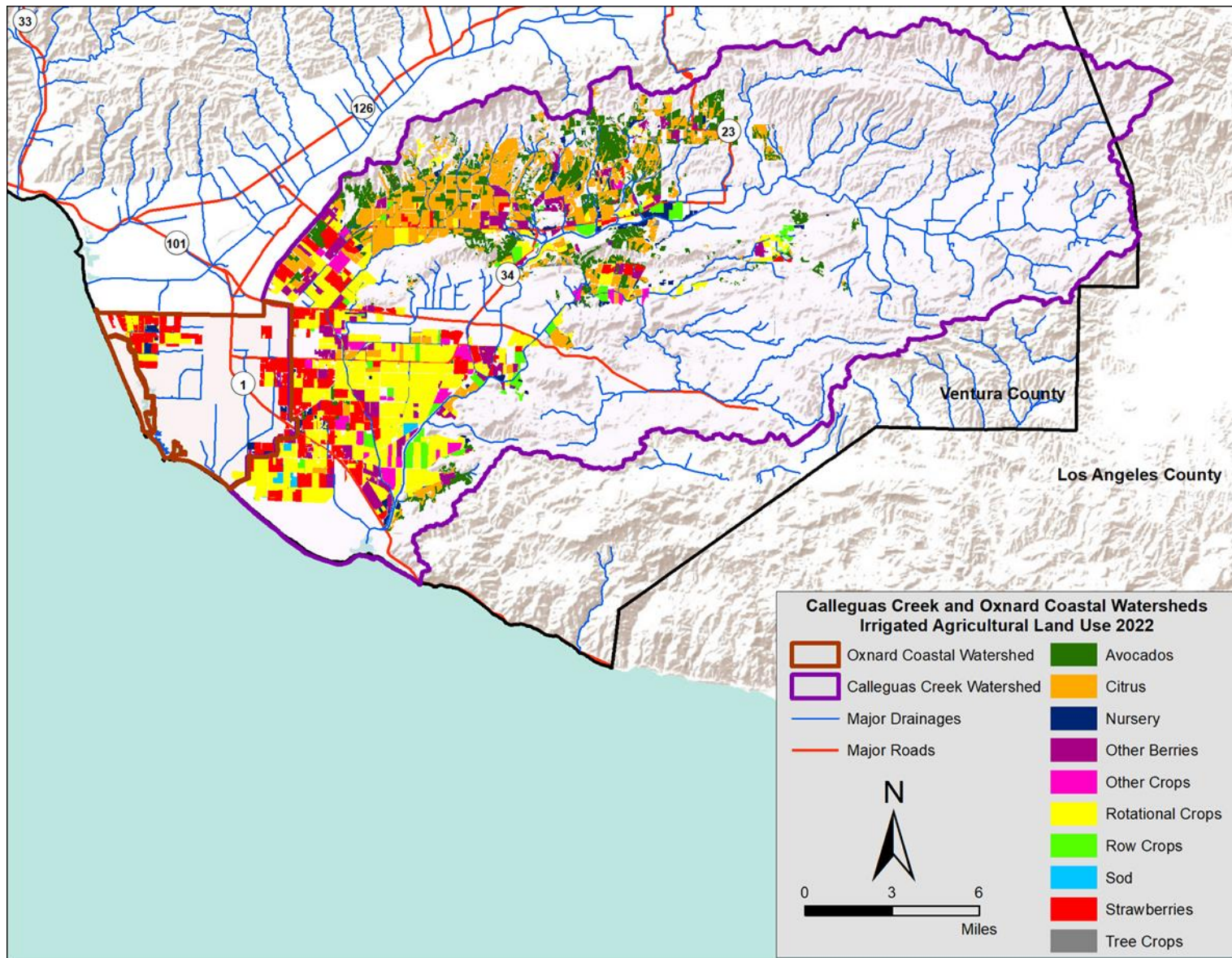
Figure 1. Ventura County Watersheds

## 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 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 included in all subsequent Conditional Waivers.

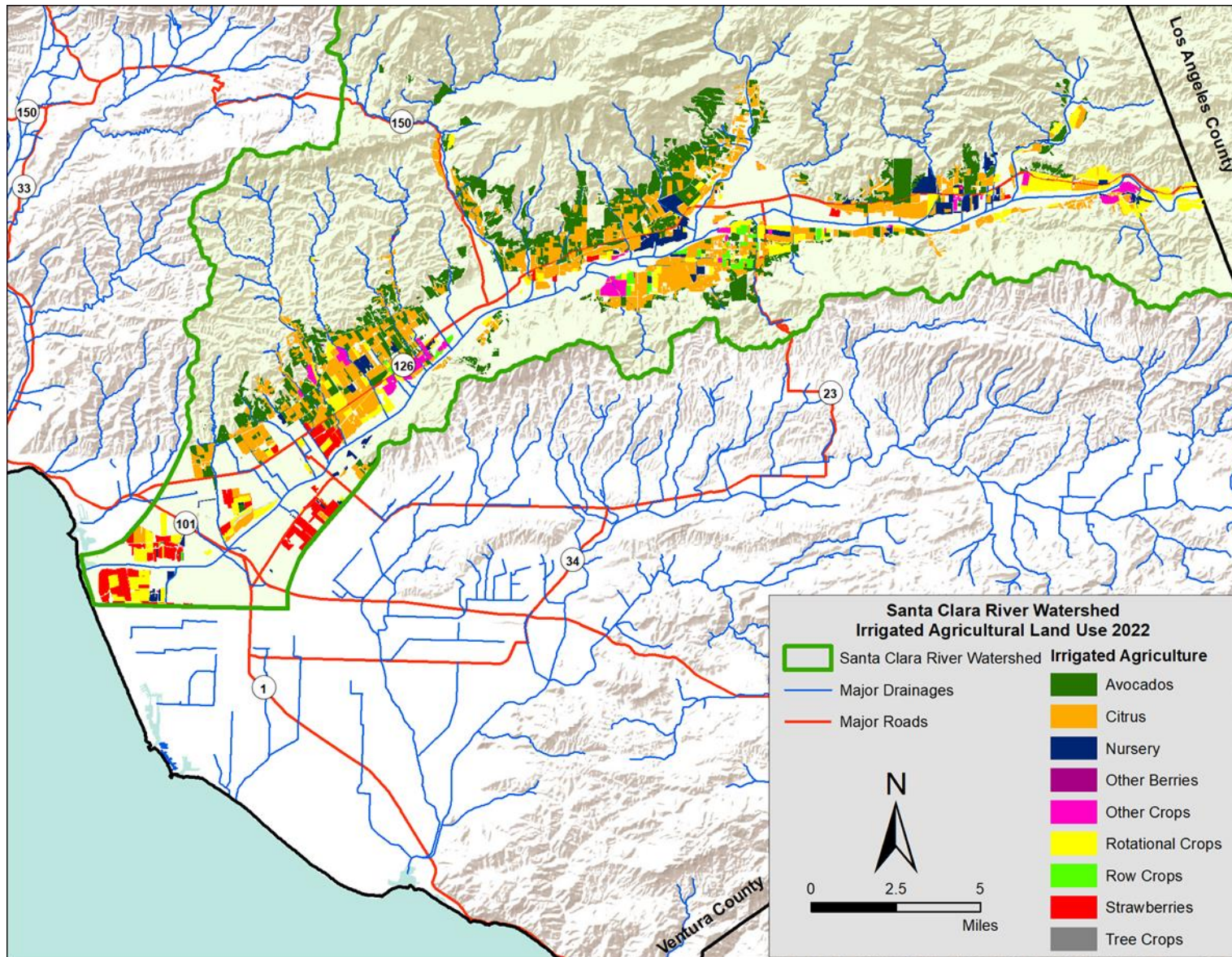
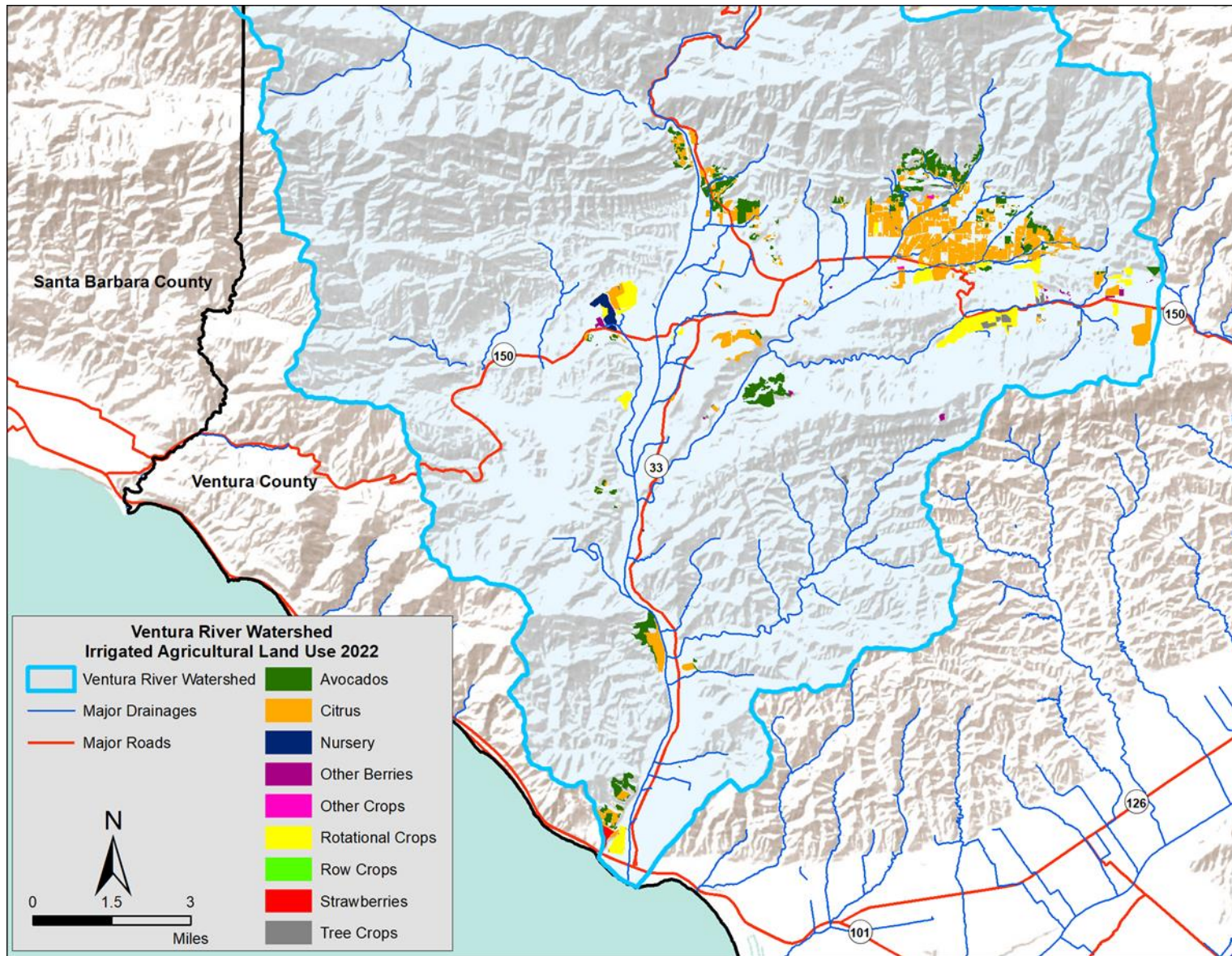


Figure 3. Santa Clara River Watershed Agricultural Land Use

## 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 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 the 2010 *Conditional Waiver*, and all subsequent Orders (Order No. R4-2010-0186, R4-2016-0143, R4-2021-0045, and R4-2021-0045-A01 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 *Conditional Waiver* Appendix 1, Table 1 constituents. Table 5 lists monitoring sites and GPS coordinates for effective TMDL monitoring locations.

Figure 5 through Figure 10 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 <sup>1</sup>	Station Location	GPS Coordinates <sup>2</sup>	
					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.

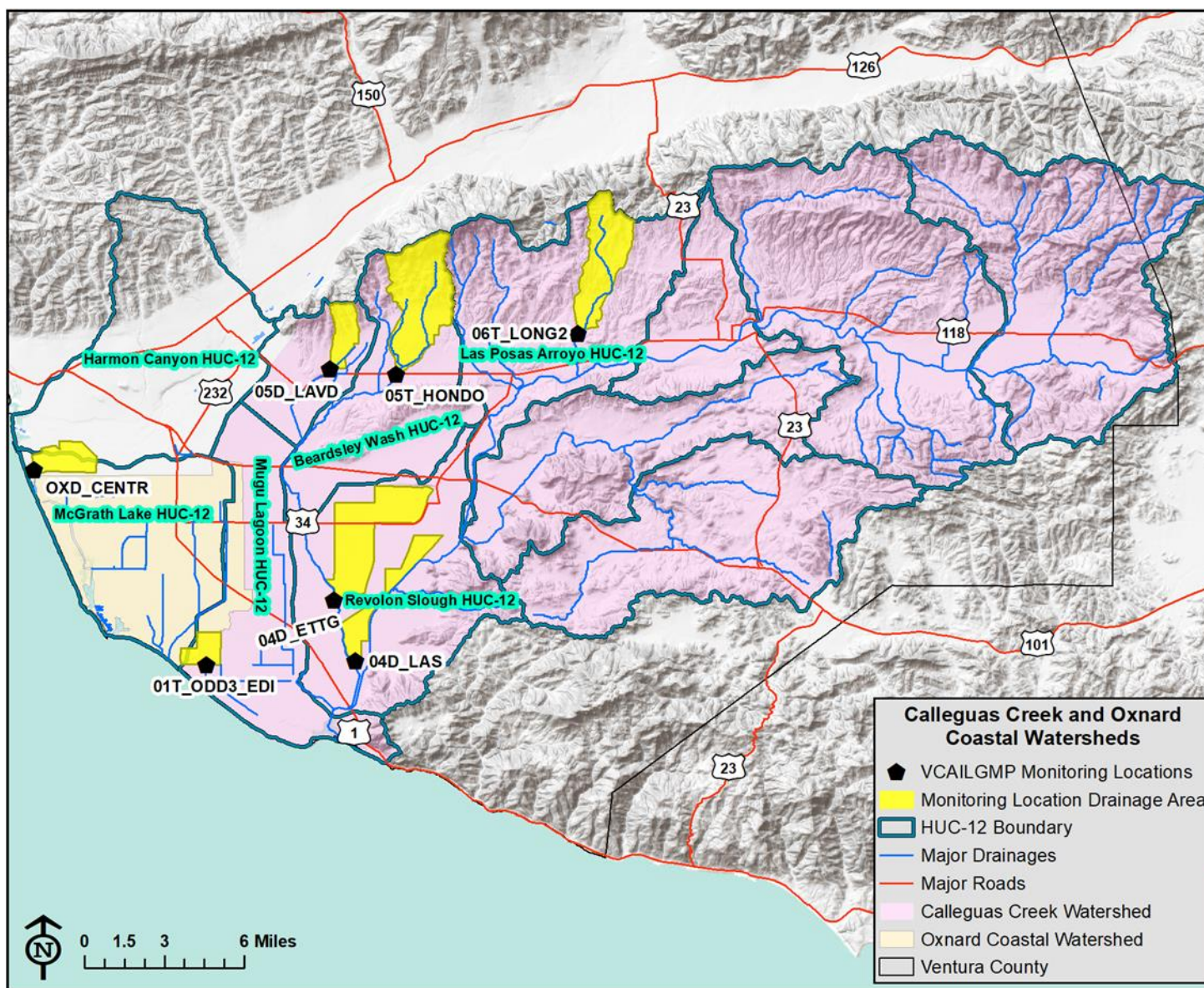
2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).

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

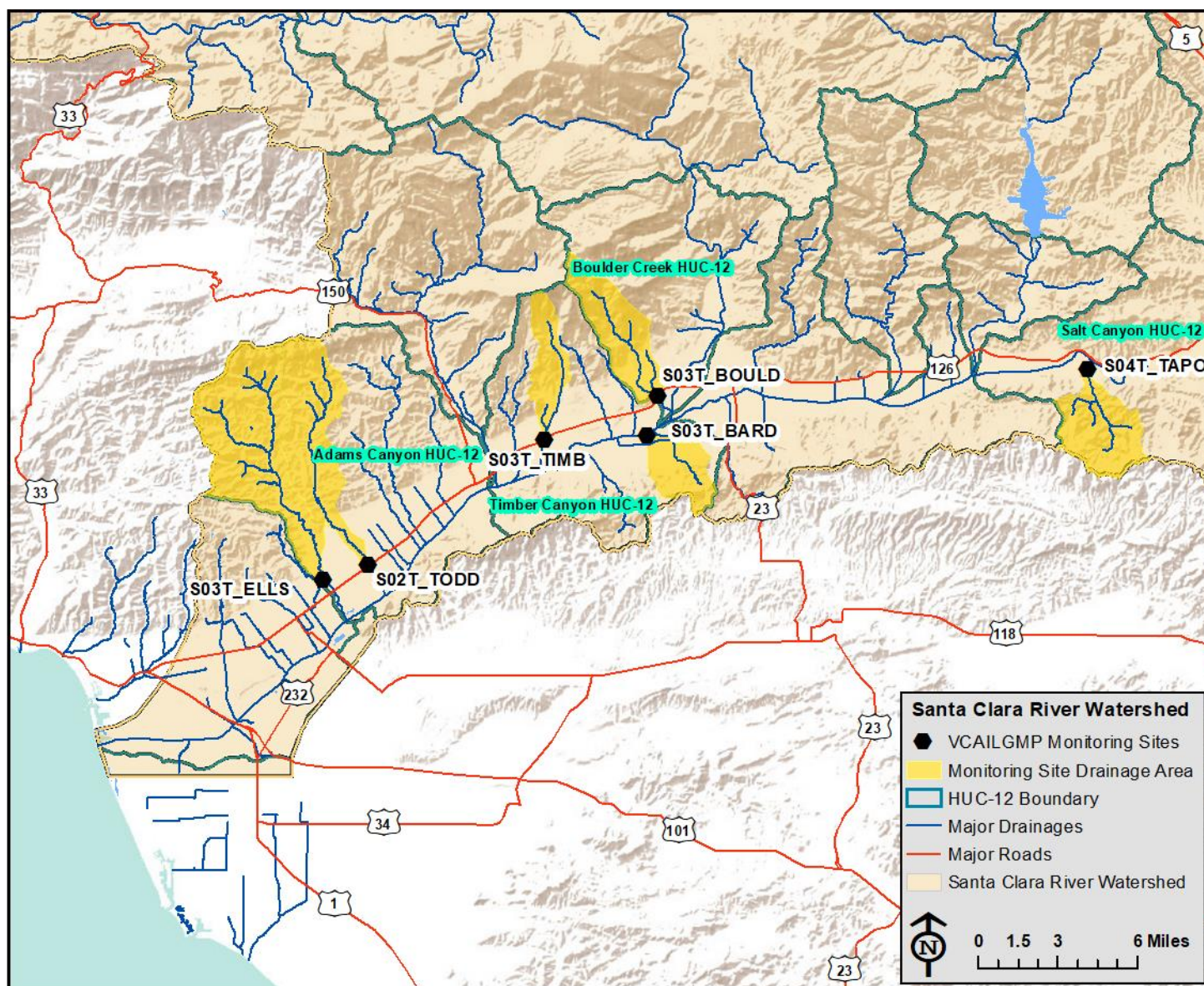
Watershed/ Subwatershed	Site ID	Reach	Waterbody Type <sup>1</sup>	Site Location	GPS Coordinates <sup>2</sup>	
					Latitude	Longitude
Calleguas Creek/ Mugu Lagoon	01T_ODD3_EDI	1	T	Rio de Santa Clara/Oxnard Drain #3 downstream of Edison Dr.	34.132631	-119.160666
Santa Clara River	S01D_MONAR	1	D	Drain 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	-119.3090

1. T = Tributary to receiving water; D = agricultural Drain

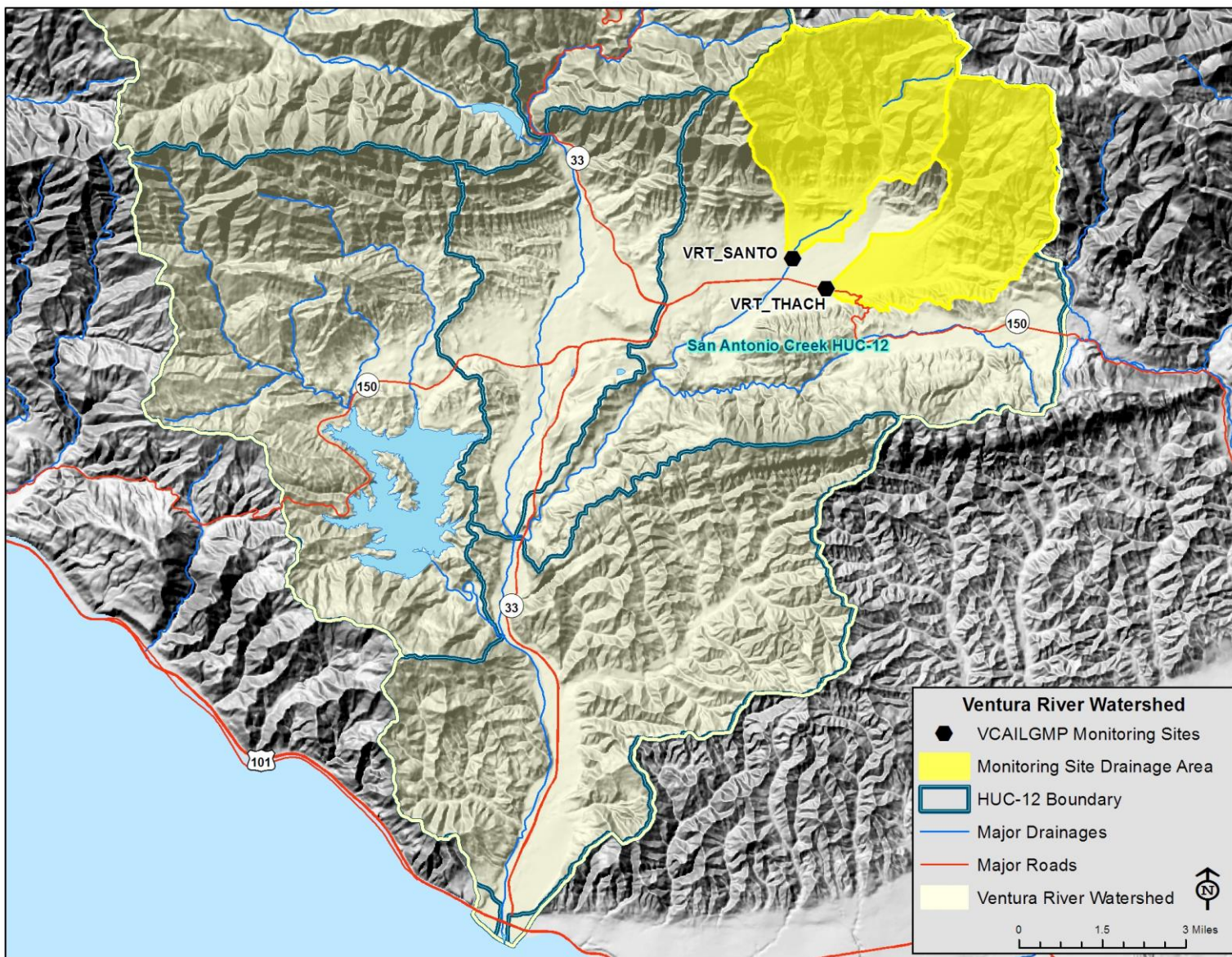
2. All GPS coordinates presented in decimal degrees latitude and longitude in North American Datum 1983 (NAD83).



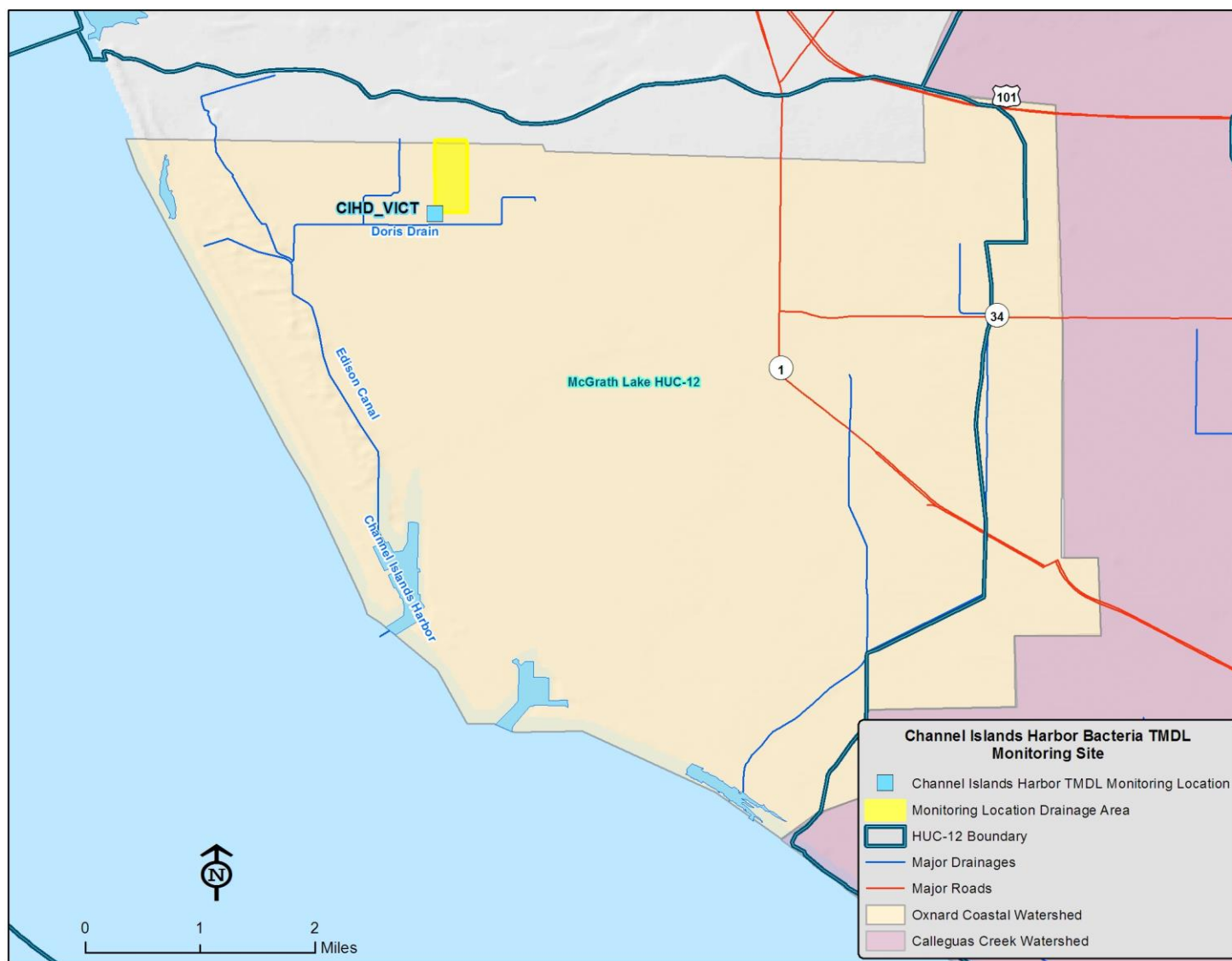
**Figure 5. VCAILG Monitoring Sites in the Calleguas Creek/Oxnard Coastal Watersheds**



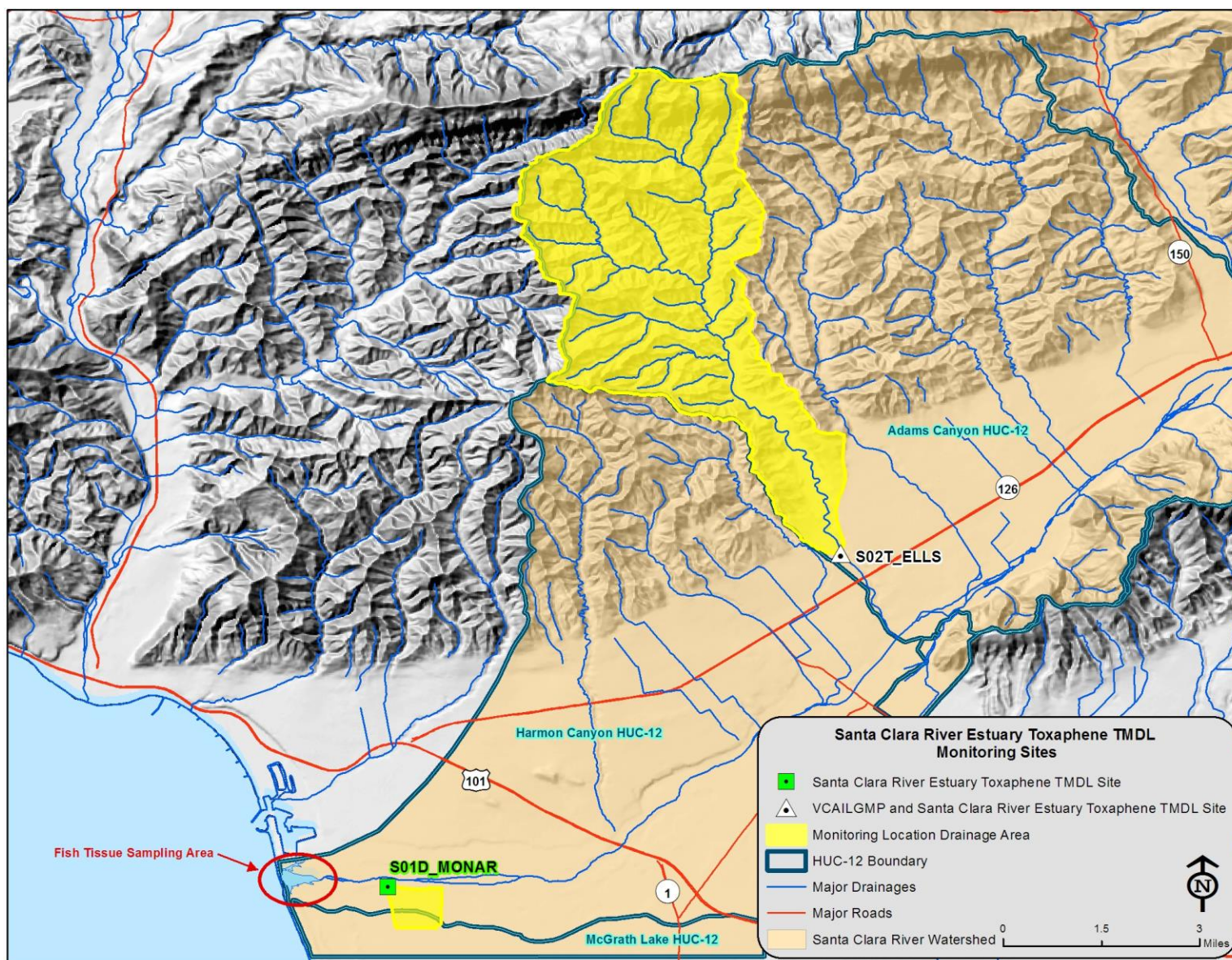
**Figure 6. VCAILG Monitoring Sites Located in the Santa Clara River Watershed**



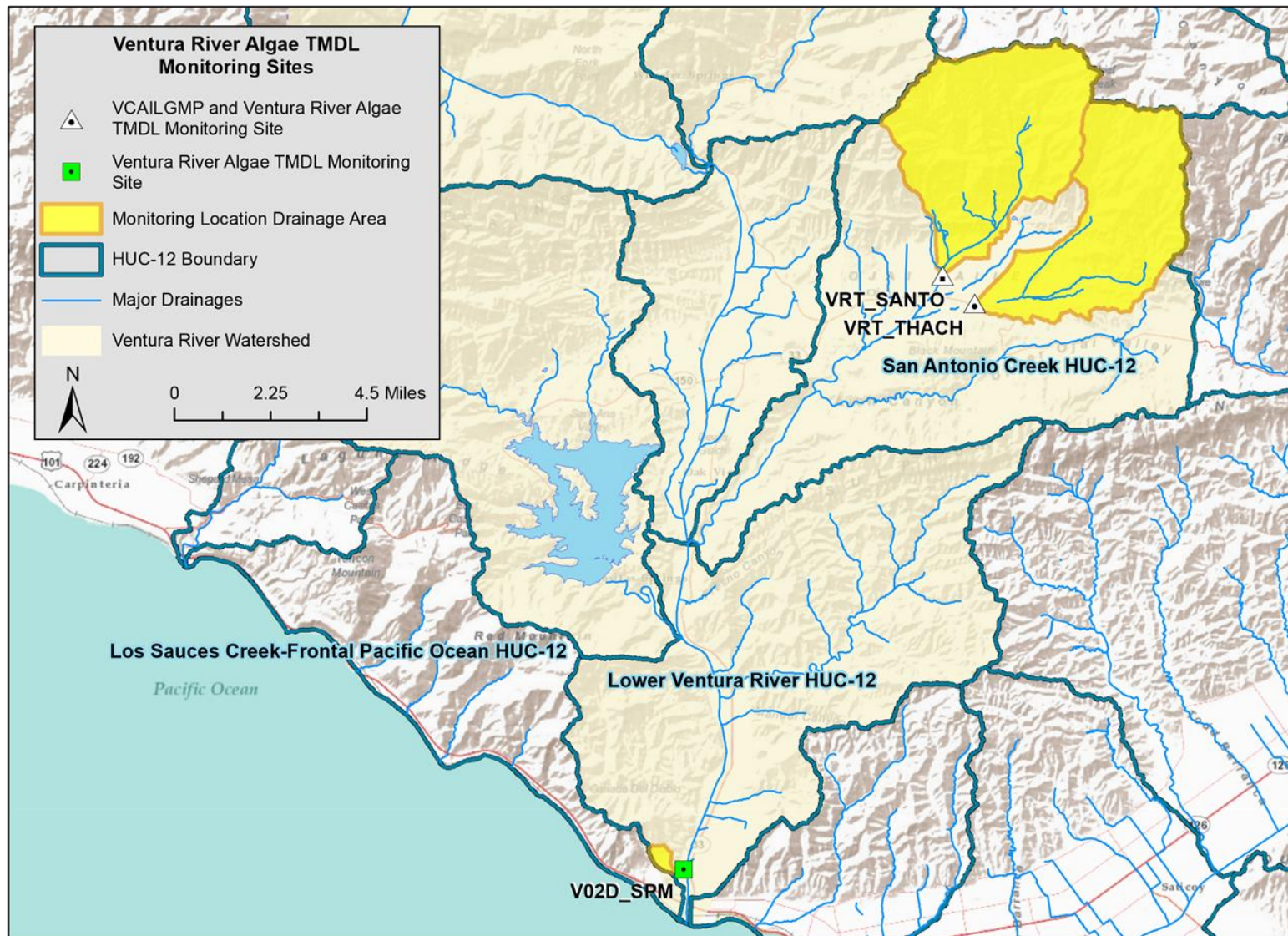
**Figure 7. VCAILG Monitoring Sites Located in the Ventura River Watershed**



**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 *Conditional Waiver* VCAILG MRP Monitoring Sites**

Station ID	Irrigated Agricultural Acreage <sup>1, 2</sup>										Drainage Area Acres
	Row Crops	Rotational Crops	Citrus	Avocados	Tree Crops	Strawberries	Other Berries	Sod	Nursery	Other Crops	
01T_ODD3_EDI <sup>3</sup>		1,220				60		448		472	643
04D_ETTG	491	6,087	363			637	443			329	3,377
04D_LAS	418	2,420				312	194	2	2	700	1,339
05D_LAVD	45	149	231	267			217				877
05T_HONDO		100	1,160	647		19	34		19		3,928
06T_LONG2		114	578	1,084			262		75	1	2,813
OXD_CENTR <sup>3</sup>		1,692				636			59	5	1,003
S02T_ELLS <sup>3</sup>		290	485	486	0		3			61	9,015
S02T_TODD	16	216	288	145	4		88		92	35	5,748
S03D_BARDS	2	59	1,079	240					57	19	2,214
S03T_BOULD		8	326	898					172		3,764
S03T_TIMB		17	110	484	1		1				2,183
S04T_TAPO		219	34				1		19		3,686
VRT_SANTO <sup>3</sup>			356	313	17					5	7,220
VRT_THACH <sup>3</sup>		16	703	148	1				2		6,003
V02D_SPM <sup>4</sup>			45	26		35					137
S01D_MONAR <sup>4</sup>		410				241					242
CIHD_VICT <sup>4</sup>		206				206					94

1. Data Source: Ventura County Agricultural Commissioner's Office, October/November 2022.

2. Some acreage is double- or triple counted due to multi-cropping practices.

3. This site is monitored for *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 *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 15<sup>th</sup> through May 15<sup>th</sup>, and the dry season is from May 16<sup>th</sup> through October 14<sup>th</sup>. 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 2021-2022, storm monitoring occurred on October 25 & 26, 2021, and December 14, 2021. Due to the timing of the storm, three sites had to be visited on October 26, 2021, to meet hold times. Dry weather monitoring occurred on August 5, 2021, and May 24, 2022. Wet weather toxicity samples were collected during Event 51 on October 25 & 26, 2021. Dry weather toxicity samples were collected during the second dry weather event on May 24, 2022.

Table 8 provides a summary of monitoring sites and constituents that were monitored during the wet and dry weather monitoring events in 2021 and 2022. Field measurements were also collected at the sites where samples were collected.

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

Constituent	Frequency <sup>1</sup>
<b>Field Measurements</b>	
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Turbidity	
<b>General Water Quality Constituents (GWQC)</b>	
Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Hardness, Chloride, Sulfate, Turbidity <sup>2</sup>	
<b>Nutrients</b>	
Total Ammonia-N, Nitrate-N, Nitrite-N, Total Nitrogen, Orthophosphate, Total Phosphorus	
<b>Pesticides</b>	
Organochlorine Pesticides <sup>3,4</sup> , Organophosphorus Pesticides <sup>5</sup> , Pyrethroid Pesticides <sup>6</sup>	2 dry events; 2 wet events
<b>Metals</b>	
Total and Dissolved Copper	
<b>Trash</b>	
Trash observations	
<b>Bacteria</b>	
<i>E. coli</i>	
<b>Aquatic Chronic Toxicity</b>	
<i>Ceriodaphnia dubia</i> <sup>7</sup>	First wet event; second dry event

1. The “wet” season is defined as October 15<sup>th</sup> through May 15<sup>th</sup>; the “dry” season is defined as May 16<sup>th</sup> through October 14<sup>th</sup> each year.
2. Turbidity was measured by the lab at some sites because the field meter range was exceeded during Events 51 and 52.
3. Organochlorine pesticides include: 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, 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, fensulfathion, 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 3,000 µS/cm, *Hyalella azteca* was used for toxicity testing.

**Table 8. VCAILG Sites Monitored and Constituents Sampled in 2021-2022**

Watershed / Subwatershed	Site ID	Reach	Monitoring Events <sup>1</sup>			
			Dry 08/05/2021	Wet 10/25 & 26/ 2021	Wet 12/14/2021	Dry 05/24/2022
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 <sup>2</sup>	WQ, TOX	WQ	WQ, TOX <sup>2</sup>
	05T_HONDO	5	WQ <sup>2</sup>	WQ, TOX <sup>2</sup>	WQ	WQ, TOX <sup>2</sup>
Calleguas Creek / Arroyo Las Posas	06T_LONG2	6	WQ <sup>2</sup>	WQ, TOX <sup>2</sup>	WQ	WQ, TOX <sup>2</sup>
Oxnard Coastal	OXD_CENTR	--	WQ	WQ, TOX	WQ	WQ, TOX
	S02T_ELLS	2	WQ <sup>2</sup>	WQ, TOX	WQ	WQ, TOX <sup>2</sup>
	S02T_TODD	2	WQ	WQ, TOX	WQ	WQ, TOX
	S03T_TIMB	3	WQ <sup>2</sup>	WQ, TOX <sup>2</sup>	WQ	WQ, TOX <sup>2</sup>
	S03T_BOULD	3	WQ <sup>2</sup>	WQ, TOX	WQ	WQ, TOX <sup>2</sup>
	S03D_BARDS	3	WQ	WQ, TOX	WQ	WQ, TOX
	S04T_TAPO	4	WQ <sup>2</sup>	WQ, TOX <sup>2</sup>	WQ	WQ, TOX
Santa Clara River	VRT_THACH	--	WQ <sup>2</sup>	WQ, TOX <sup>2</sup>	WQ	WQ, TOX <sup>2</sup>
	VRT_SANTO	--	WQ <sup>2</sup>	WQ, TOX <sup>2</sup>	WQ	WQ, TOX <sup>2</sup>
Ventura River						

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 2020 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 Annual Monitoring Report describes the TMDL monitoring program and results in detail for the 2021-2022 monitoring year.<sup>4</sup> All efforts have been made to coordinate the timing of the sampling events in the VCAILG monitoring program and the CCWTMP.

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<sup>4</sup> Larry Walker Associates. 2022. Calleguas Creek Watershed TMDL Compliance Monitoring Program -Annual Monitoring Report - Year 14: July 2021 to June 2022. December 15, 2022.

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

TMDL	SITE ID	CONSTITUENT <sup>1,2</sup>	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
Channel Islands Harbor Bacteria TMDL	CIHD_VICT	<i>E. coli</i> , 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 <sup>3</sup> (sediment)	First Dry event of the year
Malibu Creek Watershed Sedimentation and Nutrients TMDLs	05T_HONDO <sup>4</sup>	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. 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.
4. 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 2021-2022**

TMDL	Site ID	Monitoring Events in 2021-2022			
		Event 50 Dry 8/5/2021	Event 51 Wet 10/25 & 26/ 2021	Event 52 Wet 12/14/2021	Event 53 Dry 5/24/2022
Santa Clara River Estuary Toxaphene TMDL	S01D_MONAR	OC-W TSS <sup>1</sup>	OC-W OC-S TSS	OC-W OC-S TSS	OC-W TSS <sup>1</sup>
	S02T_ELLS	OC-W TSS <sup>1</sup>	OC-W OC-S TSS	OC-W OC-S TSS	OC-W TSS <sup>1</sup>
Channel Islands Harbor Bacteria TMDL	CIHD_VICT	Bact	Bact	Bact	Bact <sup>1</sup>
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 <sup>1</sup>	TN, TP, NO <sub>3</sub> , NO <sub>2</sub> <sup>1</sup>	TN, TP, NO <sub>3</sub> , NO <sub>2</sub>	TN, TP <sup>1</sup>
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 <sup>1</sup>	NO <sub>3</sub> , NO <sub>2</sub> <sup>1</sup>	NO <sub>3</sub> , NO <sub>2</sub>	TN, TP <sup>1</sup>
	VRT_SANTO	TN, TP <sup>1</sup>	NO <sub>3</sub> , NO <sub>2</sub> <sup>1</sup>	NO <sub>3</sub> , NO <sub>2</sub>	TN, TP <sup>1</sup>
	V02D_SPM	TN, TP <sup>1</sup>	NO <sub>3</sub> , NO <sub>2</sub>	NO <sub>3</sub> , NO <sub>2</sub>	TN, TP <sup>1</sup>

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<sub>3</sub>, NO<sub>2</sub> = Nitrate, Nitrite

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. A Hach Turbidimeter 2100Q was used to measure turbidity in the field. In cases where turbidity exceeded the meter's range (1,000 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, watercolor, 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 *Conditional Waiver* constituents during the 2021-2022 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
<b>Aquatic Chronic Toxicity<sup>1</sup></b>	
<i>Ceriodaphnia dubia</i> (water flea) <sup>2</sup>	EPA-821-R-02-013
<b>General Water Quality Constituents (WQ)</b>	
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	SM 2130 B
<b>Nutrients</b>	
Total Ammonia-N	SM 4500-NH <sub>3</sub> 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
<b>Metals</b>	
Total and Dissolved Copper	EPA 200.8
<b>Organic Constituents<sup>3</sup></b>	
Organochlorine Pesticides <sup>4</sup>	EPA 625.1
Organophosphorus Pesticides	EPA 625.1
Pyrethroid Pesticides	EPA 625.1-MRM
PCB Congeners/Aroclors	EPA 625.1
<b>Bacteria</b>	
<i>E. coli</i>	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* (EPA 600/R-99-064) was used for toxicity testing.
3. See Table 7 for the list of constituents in each pesticide group.
4. Toxaphene is analyzed using EPA 625.1-NCI.

**Table 12. Analytical Methods for TMDL Constituents**

Constituent <sup>1</sup>	Analytical Method
<b>General Water Quality Constituents</b>	
Total organic carbon (TOC) (water)	SM 5310 C
Total organic carbon (TOC) (sediment)	EPA 9060
<b>Nutrients</b>	
Nitrite-N	EPA 300.0
<b>PCB Aroclors and Organochlorine Pesticides</b>	
PCBs (water)	EPA 625.1
PCBs (sediment)	EPA 8270 E
OC Pesticides (filtered sediment) <sup>2</sup>	EPA 8270 E
OC Pesticides (sediment)	EPA 8270 E
<b>Bacteria</b>	
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 E-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 2021-2022 monitoring year. An evaluation of the data quality for the CCWTMP is included as Appendix D as part of the fourteenth-year annual monitoring report for that program.<sup>5</sup>

## WATER QUALITY BENCHMARKS AND OTHER OBJECTIVES

This section presents the standard water quality benchmarks as specified in the *Conditional Waiver* used to evaluate monitoring data collected at VCAILG monitoring sites during the 2021-2022 monitoring year.

“Standard water quality benchmarks” in the *Conditional Waiver* 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 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 Waiver*, they are provided in a separate table in this

<sup>5</sup> Larry Walker Associates. 2022. Calleguas Creek Watershed TMDL Compliance Monitoring Program -Annual Monitoring Report - Year 14: July 2021 to June 2022. December 15, 2022

section of the AMR for reference. In addition to benchmarks, the *Conditional Waiver* also includes water quality benchmarks based upon LAs from effective TMDLs. 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 <sup>1</sup>	Narrative Objective <sup>2</sup>	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.	$6.5 \leq \text{pH} \leq 8.5$ 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: $\leq 80^{\circ}\text{F}$ 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.	$\geq 5 \text{ mg/L}$
	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: $\geq 5 \text{ mg/L}$
	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: $\geq 7 \text{ mg/L}$
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%; and 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.	$\leq 1.0 \text{ TUc}^3$ 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 <sup>1</sup> (mg/L)	Phosphate (mg/L)
CC below Potrero Rd.	-----	-----	-----	-----	10 <sup>2</sup>	pH, temperature dependent	-----
CC above Potrero Rd.	-----	150	250	850	10 <sup>3</sup>	pH, temperature dependent	-----
OXD	-----	-----	-----	-----	10 <sup>2</sup>	pH, temperature dependent	-----
SCR Reach 1	Tidally influenced mouth of Santa Clara River upstream to 101 Bridge	-----	-----	-----	10 <sup>2</sup>	pH, temperature dependent	-----
SCR Reach 2	Upstream of Hwy 101 Bridge to Freeman Diversion	150	600	1200	10 <sup>2</sup>	pH, temperature dependent	-----
SCR Reach 3	Upstream of Freeman Diversion to A Street Bridge in Fillmore	100 <sup>4</sup>	650	1300	5 <sup>3</sup>	pH, temperature dependent	-----
SCR Reach 4	Upstream of A Street Bridge in Fillmore to Blue Cut Gaging Station	100	600	1300	5 <sup>3</sup>	pH, temperature dependent	-----
VR Reach 4	Between Camino Cielo Rd. and Casitas Vista Rd.	60	300	800	5 <sup>3</sup>	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 in 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 <sup>1, 2</sup>		Brackish or Saltwater <sup>1</sup>	
	Benchmark (µg/L)	Benchmark Source	Benchmark (µg/L)	Benchmark Source
Copper	$= 0.96e^{[0.8545(\ln hardness) + (-1.702)]}$	CTR CCC <sup>3</sup>	3.1	CTR CCC <sup>3</sup>

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<sub>3</sub>, 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 <sup>1</sup>	Benchmark (µg/L)	Benchmark Source <sup>1</sup>	Benchmark (µg/L)	Benchmark Source <sup>1</sup>
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
<i>E. coli</i>	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 <sup>1</sup>	Benchmark (µg/L)	Benchmark Source <sup>1</sup>	Benchmark (µg/L)	Benchmark Source <sup>1</sup>
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 2021-2022.

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 *Conditional Waiver*. Constituents not listed in Appendix 4 of the *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 2021-2022 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 *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 2021-2022 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).

#### Site Map



#### View downstream at 01T\_ODD3\_EDI



Flow was observed and samples were collected at 01T\_ODD3\_EDI during all four 2021-2022 monitoring events. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements.

Table 21 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

The nitrate-N, dissolved copper, 4,4'-DDE, and *E. coli* benchmarks were exceeded during all four monitoring events. Exceedances of the benchmarks for toxaphene and 4,4'-DDT were observed during the two wet weather Events 51 and 52, and dry weather Event 53. Ammonia-N exceeded the benchmark during dry weather Event 50 and wet weather Event 52. Exceedances of the benchmarks for 4,4'-DDD occurred during dry weather Event 50 and wet weather Event 51. Exceedance of the benchmark for total chlordane occurred during wet weather Event 52.

The primary crops in the vicinity of this site are rotational crops. Table 22 summarizes the trash observations for each event.

**Table 21. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 01T\_ODD3\_EDI**

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
			8/5/2021	10/26/2021	12/14/2021	5/24/2022
<b>Field Measurements</b>						
Flow	CFS		0.6	0.8	NR <sup>1</sup>	0.4
pH		6.5 ≤ pH ≤ 8.5	7.5	7.7	7.8	7.2
Temperature	°C		22.5	13.5	12.9	18.3
Dissolved Oxygen	mg/L	≥ 5	14.1	5.9	10.4	6.9
Turbidity	NTU		2.4	72.4	16.2 <sup>2</sup>	6.4
Conductivity	µS/cm		3,114.5	2,775	899	4,562
<b>General Water Quality</b>						
TDS	mg/L		2,750	1,950	700	3,930
TSS	mg/L		8	77	210	9
Total Hardness as CaCO <sub>3</sub>	mg/L		1,430	1,070	334	2,000
Chloride	mg/L		110	41	ND	49
Sulfate	mg/L		1,040	732	230	1,450
<b>Nutrients</b>						
Ammonia-N	mg/L	2.06/ 2.43/ 2.15/ 4.98 <sup>3</sup>	<b>11.90</b>	1.20	<b>2.80</b>	0.17
Nitrate-N	mg/L	10 <sup>4</sup>	<b>74.5</b>	<b>54.8</b>	<b>16.1</b>	<b>65.2</b>
Total Nitrogen	mg/L		81.3	62.7	4.0	6.7
Total Orthophosphate	mg/L		0.69	2.59	3.77	1.59
Total Phosphorus	mg/L		0.30	1.18	1.93	0.54
<b>Metals</b>						
Dissolved Copper	µg/L	3.1 <sup>5</sup>	<b>4.68</b>	<b>5.78</b>	<b>3.43</b>	<b>3.36</b>
Total Copper	µg/L		4.61	8.37	10.60	3.96
<b>Organochlorine Pesticides</b>						
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	ND	0.00311	ND
trans-Nonachlor	µg/L		DNQ	DNQ	0.00466	ND
Chlordane-alpha	µg/L		DNQ	DNQ	0.00633	ND
Chlordane-gamma	µg/L		DNQ	DNQ	0.00479	ND
Total Chlordane	µg/L	0.00059	DNQ	DNQ	<b>0.01112</b>	ND
2,4'-DDD	µg/L		ND	0.0086	0.01630	ND
2,4'-DDT	µg/L		ND	0.0107	ND	0.00278
4,4'-DDD	µg/L	0.00084	<b>0.00372</b>	<b>0.0269</b>	ND	ND
4,4'-DDE	µg/L	0.00059	<b>0.0136</b>	<b>0.0323</b>	<b>0.1130</b>	<b>0.00861</b>
4,4'-DDT	µg/L	0.00059	ND	<b>0.0646</b>	<b>0.2010</b>	<b>0.00228</b>

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/26/2021	12/14/2021	5/24/2022
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
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	ND	0.110	1.47	0.194
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Pyrethroid Pesticides						
Allethrin	µg/L	0.0006	ND	ND	ND	0.0878
Bifenthrin	µg/L		ND	DNQ	ND	ND
Cyhalothrin, lambda-	µg/L		DNQ	0.00285	0.0015	0.00145
Danitol	µg/L		ND	ND	ND	0.00155
Bacteria						
E. coli	MPN/100 mL	235	310	6,270	860	520

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.

NR = Not recorded.

1. Measurement unavailable. Field log was lost in the wind.
2. Recorded value reflects analysis conducted using laboratory sample.
3. 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.
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 copper benchmark for saltwater (shown in Table 15) applies at this site.

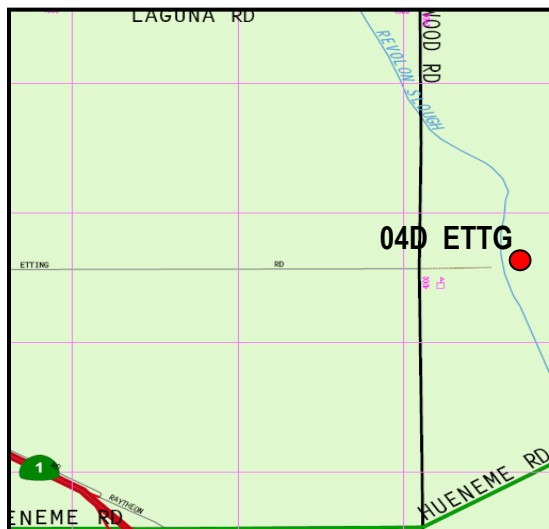
**Table 22. 2021-2022 Trash Observations for 01T\_ODD3\_EDI**

Event	Count	Types
50	>10	Urban trash, Styrofoam, cups, cans, plastic
51	10	Agricultural trash
52	0	
53	3	Styrofoam cup

## 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 2021-2022 monitoring events. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements. Table 23 summarizes the concentrations recorded for each constituents and provides a comparison of results to applicable water quality benchmarks.

Exceedances of the benchmarks for nitrate-N, 4,4'-DDE, and dissolved copper occurred during all four monitoring events. The benchmark for toxaphene was exceeded during both wet weather Events 51 and 52, and dry weather Event 53. The benchmarks for 4,4'-DDD, bifenthrin, and *E. coli* were exceeded during both wet weather Events 51 and 52. The benchmark for 4,4'-DDT was exceeded during wet weather Event 52 and dry weather Event 53. The total chlordane benchmark was only exceeded during wet weather Event 52.

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), row crops, and citrus. The approximate amount and types of trash observed at this site are listed in

Table 24.

**Table 23. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 04D\_ETTG**

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
			8/5/2021	10/26/2021	12/14/2021	5/24/2022
<b>Field Measurements</b>						
Flow	CFS		1.1	1.3	NR <sup>1</sup>	2.4
pH		6.5 < pH < 8.5	8.0	7.8	7.9	8.1
Temperature	°C	≤ 26.67°C <sup>2</sup>	22.2	14.1	13.2	18.5
Dissolved Oxygen	mg/L	≥ 5	8.7	6.9	8.1	9.1
Turbidity	NTU		24.5	43	76.1 <sup>3</sup>	9.8
Conductivity	µS/cm		3,740.5	3,825	1,198	4,389
<b>General Water Quality</b>						
TDS	mg/L		3,260	3,260	910	3,930
TSS	mg/L		19	94	4,200	16
Total Hardness as CaCO <sub>3</sub>	mg/L		1,570	1,550	681	2,030
Chloride	mg/L		280	236	80	310
Sulfate	mg/L		1,370	1,290	317	1,580
<b>Nutrients</b>						
Ammonia-N	mg/L	1.57/ 3.18/ 3.13/ 1.65 <sup>4</sup>	0.07	0.58	1.43	0.13
Nitrate-N	mg/L	10 <sup>5</sup>	<b>47.7</b>	<b>45.1</b>	<b>18.0</b>	<b>59.0</b>
Total Nitrogen	mg/L		55.1	51.7	4.0	6.6
Total Orthophosphate	mg/L		1.26	3.52	31.56	0.85
Total Phosphorus	mg/L		0.56	1.08	19.1	0.37
<b>Metals</b>						
Dissolved Copper	µg/L	3.1 <sup>6</sup>	<b>3.67</b>	<b>6.83</b>	<b>4.05</b>	<b>4.16</b>
Total Copper	µg/L		3.87	12.6	158	5.46
<b>Organochlorine Pesticides</b>						
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	ND	0.00549	ND
trans-Nonachlor	µg/L		ND	ND	0.0102	ND
Chlordane-alpha	µg/L		ND	DNQ	0.0108	ND
Chlordane-gamma	µg/L		ND	ND	0.00867	ND
Total Chlordane	µg/L	0.00059	ND	DNQ	<b>0.01947</b>	ND
2,4'-DDD	µg/L		ND	0.00885	0.0536	ND
2,4'-DDE	µg/L		ND	ND	0.0194	ND
2,4'-DDT	µg/L		ND	ND	0.26	0.00233
4,4'-DDD	µg/L	0.00084	DNQ	<b>0.0257</b>	<b>0.391</b>	ND
4,4'-DDE	µg/L	0.00059	<b>0.00501</b>	<b>0.0425</b>	<b>1.66</b>	<b>0.00994</b>
4,4'-DDT	µg/L	0.00059	ND	ND	<b>1.51</b>	<b>0.00258</b>
Dieldrin	µg/L	0.00014	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry 8/5/2021	Wet 10/26/2021	Wet 12/14/2021	Dry 5/24/2022
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
Toxaphene	µg/L	0.00075	ND	<b>0.128</b>	<b>5.39</b>	<b>0.149</b>
<b>Organophosphorus Pesticides</b>						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	0.00481	ND	ND
Dimethoate	µg/L		DNQ	ND	ND	ND
Malathion	µg/L		ND	0.568	0.0607	ND
<b>Pyrethroid Pesticides</b>						
Allethrin	µg/L		ND	ND	ND	0.0143
Bifenthrin	µg/L	0.0006	ND	<b>0.00268</b>	<b>0.154</b>	ND
Cyfluthrin	µg/L		ND	ND	0.0107	ND
Cyhalothrin, lambda-	µg/L		ND	ND	0.00895	DNQ
Danitol	µg/L		ND	ND	ND	DNQ
Fenvalerate	µg/L		ND	ND	0.00811	ND
<b>Bacteria</b>						
<i>E. coli</i>	MPN/100 mL	235	100	<b>1,600</b>	<b>1,580</b>	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.

NR = Not recorded.

1. Measurement unavailable. Field log was lost in the wind.
2. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
3. Recorded value reflects analysis conducted using laboratory sample.
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.

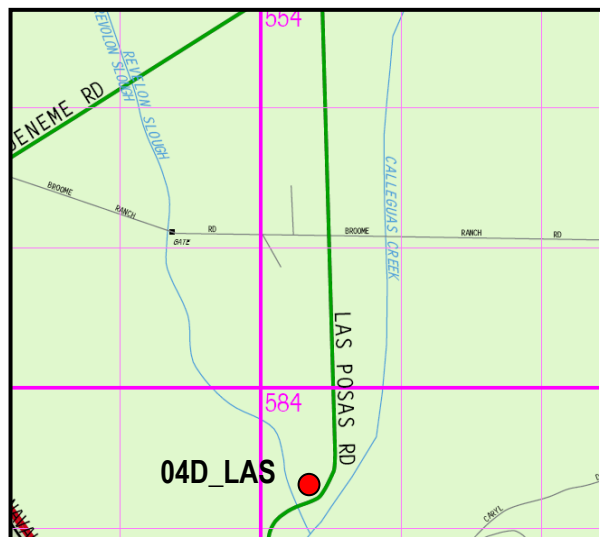
**Table 24. 2021-2022 Trash Observations for 04D\_ETTG**

Event	Count	Types
50	>50	Agricultural and urban trash
51	0	
52	0	
53	0	

## 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 2021-2022 monitoring events. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements and trash observations. Table 25 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

Exceedances of the benchmarks for nitrate-N, dissolved copper, and 4,4'-DDE occurred during all four monitoring events. The 4,4'-DDD benchmark was exceeded during dry weather Event 50 and both wet weather Events 51 and 52. Exceedance of the toxaphene benchmark occurred during both wet weather Events 51 and 52, and dry weather Event 53. The benchmark for 4,4'-DDT was exceeded during wet weather Event 52 and dry weather Event 53. Exceedances of the benchmark for *E. coli* occurred during both wet weather Events 51 and 52. The benchmark for water temperature was exceeded once during dry weather Event 50, and the benchmark for total chlordane was exceeded once during wet weather Event 52.

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. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 04D\_LAS**

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
			8/5/2021	10/26/2021	12/14/2021	5/24/2022
<b>Field Measurements</b>						
Flow	CFS		1.5	1.2	NR <sup>1</sup>	1.6
pH		6.5 < pH < 8.5	8.3	7.9	7.9 <sup>2</sup>	7.9
Temperature	°C	≤ 26.67°C <sup>3</sup>	<b>26.8</b>	13.2	NR <sup>1</sup>	17.8
Dissolved Oxygen	mg/L	≥ 5	22.8	10.5	NR <sup>1</sup>	9.5
Turbidity	NTU		NM	13	8.2 <sup>2</sup>	20.8
Conductivity	µS/cm		4,128.2	3,635	NR <sup>1</sup>	4,047
<b>General Water Quality</b>						
TDS	mg/L		3,500	2,850	1,730	3,300
TSS	mg/L		26	19	190	26
Total Hardness as CaCO <sub>3</sub>	mg/L		1,490	1,210	720	1,540
Chloride	mg/L		450	348	210	387
Sulfate	mg/L		1,330	938	489	1,180
<b>Nutrients</b>						
Ammonia-N	mg/L	0.66/ 2.96/ NC <sup>4</sup> / 2.29 <sup>5</sup>	0.07	0.20	0.46 <sup>6</sup>	0.22
Nitrate-N	mg/L	10 <sup>7</sup>	<b>44.2</b>	<b>37.0</b>	<b>21.8</b>	<b>47.5</b>
Total Nitrogen	mg/L		51.4	40.0	4.2	5.1
Total Orthophosphate	mg/L		1.20	2.90	4.60	1.83
Total Phosphorus	mg/L		0.54	1.05	1.51	0.62
<b>Metals</b>						
Dissolved Copper	µg/L	3.1 <sup>8</sup>	<b>3.67</b>	<b>4.80</b>	<b>4.11</b>	<b>2.88</b>
Total Copper	µg/L		4.11	5.49	12.5	4.07
<b>Organochlorine Pesticides</b>						
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	ND	0.00276	ND
trans-Nonachlor	µg/L		DNQ	ND	0.00384	ND
Chlordane-alpha	µg/L		DNQ	ND	0.00468	DNQ
Chlordane-gamma	µg/L		DNQ	ND	0.00348	ND
Total Chlordane	µg/L	0.00059	DNQ	ND	<b>0.00816</b>	DNQ
2,4'-DDD	µg/L		ND	ND	0.0112	DNQ
2,4'-DDE	µg/L		ND	ND	0.00347	ND
2,4'-DDT			ND	ND	ND	0.00409
4,4'-DDD	µg/L	0.00084	<b>0.0041</b>	<b>0.00958</b>	<b>0.0549</b>	ND
4,4'-DDE	µg/L	0.00059	<b>0.0167</b>	<b>0.00914</b>	<b>0.131</b>	<b>0.0196</b>
4,4'-DDT	µg/L	0.00059	ND	ND	<b>0.157</b>	<b>0.00568</b>

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry 8/5/2021	Wet 10/26/2021	Wet 12/14/2021	Dry 5/24/2022
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
Endrin Aldehyde	µg/L	0.81	ND	ND	ND	ND
Toxaphene	µg/L	0.00075	ND	<b>0.0266</b>	<b>1.14</b>	<b>0.192</b>
<b>Organophosphorus Pesticides</b>						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L		ND	0.116	0.0427	0.013
Malathion	µg/L		ND	0.0209	0.162	ND
<b>Pyrethroid Pesticides</b>						
Allethrin	µg/L		ND	ND	ND	0.0155
Bifenthrin	µg/L	0.0006	ND	ND	ND	ND
Cypermethrin	µg/L		0.0315	ND	ND	ND
Danitol	µg/L		ND	ND	ND	0.00148
Permethrin, cis-	µg/L		DNQ	ND	ND	ND
Permethrin, trans-	µg/L		0.00248	ND	ND	ND
<b>Bacteria</b>						
<i>E. coli</i>	MPN/100 mL	235	ND	<b>5,460</b>	<b>3,990</b>	100

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.

NR = Not recorded.

NC = Not calculated.

NM = Not measured.

1. Measurement unavailable. Field log was lost in the wind.
2. Recorded value reflects analysis conducted using laboratory sample.
3. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
4. Temperature and pH dependent objective not calculated due to missing temperature observation.
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. No benchmark could be calculated due to missing temperature data, but the sample result is highly unlikely to be an exceedance. Temperature would have to be > 42 °C for the observed ammonia-N value to exceed the benchmark.
7. 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.
8. The copper benchmark for saltwater (shown in Table 15) applies at this site.

**Table 26. 2021–2022 Trash Observations for 04D\_LAS**

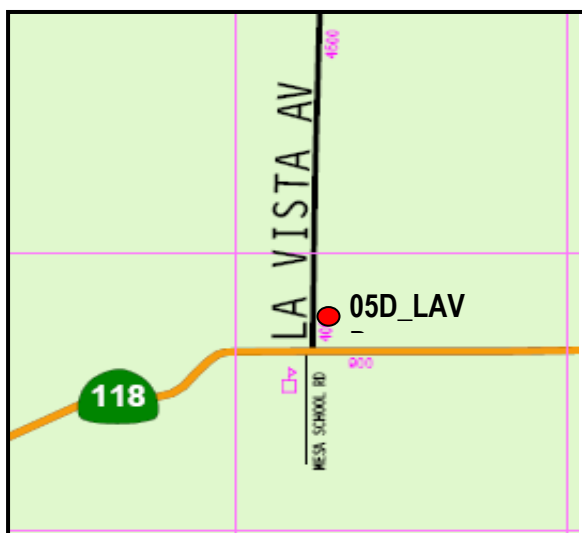
Event	Count	Types
50	>10	Urban trash, bottles, paper, agricultural plastic
51	>10	Agricultural trash
52	N/A <sup>1</sup>	
53	0	

1. Observation unavailable. Field log lost in the wind.

## 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 31<sup>st</sup> and November 6, 2019.

### 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. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements and trash observations. Table 27 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

During both wet weather Events 51 and 52, the benchmarks for 4,4'-DDE and *E. coli* were exceeded. The benchmark for bifenthrin was exceeded during the first wet weather Event 51. Benchmarks for total chlordane, 4,4'-DDD, and toxaphene were exceeded during the second wet weather Event 52.

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

**Table 27. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: 05D\_LAVD**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS			NS
Flow	CFS			0.004	NR <sup>1</sup>	
pH		6.5≤ pH ≤ 8.5		8.1	7.3 <sup>2</sup>	
Temperature	°C	≤ 26.67°C <sup>3</sup>		17.7	NR <sup>1</sup>	
Dissolved Oxygen	mg/L	≥ 5		9.4	NR <sup>1</sup>	
Turbidity	NTU			5,455	167 <sup>2</sup>	
Conductivity	µS/cm			558	NR <sup>1</sup>	
General Water Quality						
TDS	mg/L	850		570	340	
TSS	mg/L			5,300	730	
Total Hardness as CaCO <sub>3</sub>	mg/L			640	144	
Chloride	mg/L	150		29	17	
Sulfate	mg/L	250		164	95	
Nutrients						
Ammonia-N	mg/L	NS/ 1.79/ NC <sup>4</sup> / NS <sup>5</sup>		1.14	0.47 <sup>6</sup>	
Nitrate-N	mg/L	10 <sup>7</sup>		8.87	5.9	
Total Nitrogen	mg/L			12.1	6.47	
Total Orthophosphate	mg/L			0.34	8.95	
Total Phosphorus	mg/L			16.6	2.41	
Metals						
Dissolved Copper	µg/L	NS/ 29.28/ 12.23/ NS <sup>8</sup>		24.8	10.0	
Total Copper	µg/L			112	52.1	
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	DNQ	
trans-Nonachlor	µg/L			ND	0.00301	
Chlordane-alpha	µg/L			DNQ	0.00385	
Chlordane-gamma	µg/L			DNQ	0.00243	
Total Chlordane	µg/L	0.00059		DNQ	0.00628	
2,4'-DDT	µg/L			ND	0.0123	
4,4'-DDD	µg/L	0.00084		ND	0.0245	
4,4'-DDE	µg/L	0.00059		0.00683	0.078	
4,4'-DDT	µg/L	0.00059		ND	ND	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
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	0.816	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		0.00184	ND	
Diazinon	µg/L	0.1		0.2250	0.0923	
Malathion	µg/L			0.0466	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.00626	ND	
Cyhalothrin, lambda-	µg/L			ND	0.00189	
Cypermethrin	µg/L			ND	0.0102	
Permethrin, trans-	µg/L			DNQ	ND	
Bacteria						
E. coli	MPN/100 mL	235		198,630	7,710	

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.

NR = Not recorded.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

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

NC = Not calculated.

1. Measurement unavailable. Field log lost in the wind.
2. Recorded value reflects analysis conducted using laboratory sample.
3. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
4. Temperature and pH dependent objective not calculated due to missing temperature observation.
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. No benchmark could be calculated due to missing temperature data, but the sample result is highly unlikely to be an exceedance. Temperature would have to be > 51 °C for the observed ammonia-N value to exceed the benchmark.
7. 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.
8. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

**Table 28. 2021–2022 Trash Observations for 05D\_LAVD**

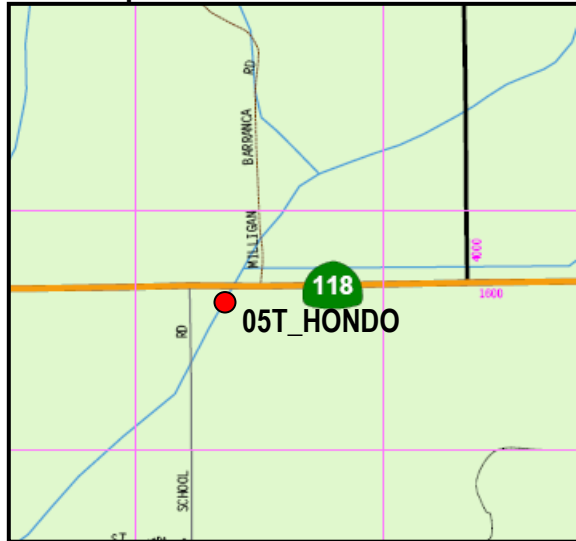
Event	Count	Types
50	3	Cans, cup
51	0	
52	N/A <sup>1</sup>	
53	0	

1. Observation unavailable. Field log lost in the wind.

## 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 31<sup>st</sup> and November 6, 2019.

Site Map



View downstream (S) at sampling location



Flow was sufficient for sample collection only during wet weather Event 52. The site was dry, and samples were not collected, during both dry Events 50 and 53, and wet weather Event 51. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements and trash observations. Table 29 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

During wet weather Event 52, benchmarks for total chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, toxaphene, and *E. coli* were exceeded.

The site is located directly adjacent to Hwy 118 and drains land planted primarily with citrus, avocados, and rotational crops. Table 30 quantifies and describes trash found at this site.

**Table 29. 2021-2022 VCAILG Monitoring Data v. Waiver Benchmarks: 05T\_HONDO**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS	NS		NS
Flow	CFS				NR <sup>1</sup>	
pH		6.5≤ pH ≤8.5			7.6 <sup>2</sup>	
Temperature	°C	≤ 26.67°C <sup>3</sup>			NR <sup>1</sup>	
Dissolved Oxygen	mg/L	≥ 5			NR <sup>1</sup>	
Turbidity	NTU				113 <sup>2</sup>	
Conductivity	µS/cm				NR <sup>1</sup>	
General Water Quality						
TDS	mg/L	850			470	
TSS	mg/L				3,200	
Total Hardness as CaCO <sub>3</sub>	mg/L				449	
Chloride	mg/L	150			28	
Sulfate	mg/L	250			117	
Nutrients						
Ammonia-N	mg/L	NS/ NS/ NC <sup>4</sup> / NS <sup>5</sup>			0.56 <sup>6</sup>	
Nitrate-N	mg/L	10			9.76	
Nitrite-N	mg/L				0.119	
Total Nitrogen	mg/L				2.10	
Total Orthophosphate	mg/L				11.4	
Total Phosphorus	mg/L				9.79	
Metals						
Dissolved Copper	µg/L	NS/ NS/ 32.32 / NS <sup>7</sup>			17.1	
Total Copper	µg/L				132	
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	
cis-Nonachlor	µg/L				0.00234	
trans-Nonachlor	µg/L				0.00424	
Chlordane-alpha	µg/L				0.00490	
Chlordane-gamma	µg/L				0.00431	
Total Chlordane	µg/L	0.00059			0.00921	
2,4'-DDT	µg/L				0.0180	
4,4'-DDD	µg/L	0.00084			0.0323	
4,4'-DDE	µg/L	0.00059			0.1070	
4,4'-DDT	µg/L	0.00059			0.2160	
Dieldrin	µg/L	0.00014			ND	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
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			3.93	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025			ND	
Diazinon	µg/L	0.1			ND	
Malathion	µg/L				6.85	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006			ND	
Cyhalothrin, lambda-	µg/L				0.00228	
Cypermethrin	µg/L				0.00877	
Bacteria						
E. coli	MPN/100 mL	235			20,140	

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.

NR = Not recorded.

ND = Not detected at the applicable reporting limit.

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

NC = Not calculated.

1. Measurement unavailable. Field log lost in the wind.
2. Recorded value reflects analysis conducted using laboratory sample.
3. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
4. Temperature and pH dependent objective not calculated due to missing temperature observation.
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. No benchmark could be calculated due to missing temperature data, but the sample result is highly unlikely to be an exceedance. Temperature would have to be > 45 °C for the observed ammonia-N value to exceed the benchmark.
7. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

**Table 30. 2021–2022 Trash Observations for 05T\_HONDO**

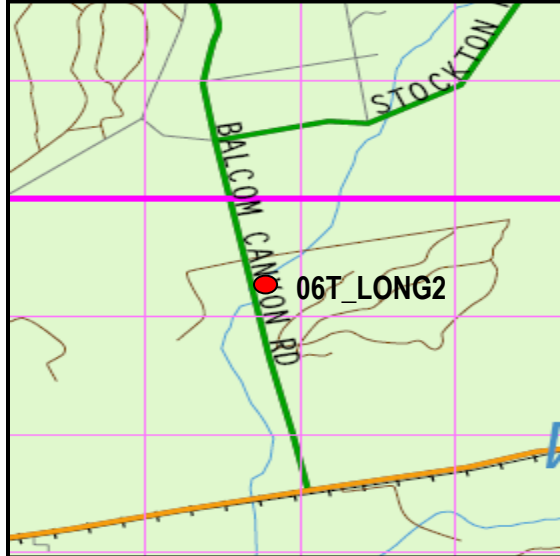
Event	Count	Types
50	>30	Urban trash, bottles, masks, plastic bags
51	>100	Agricultural and urban trash
52	N/A <sup>1</sup>	
53	20	Bottles, papers, plastic, tire, Styrofoam

1. Observation unavailable. Field log lost in the wind.

## 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).

Site Map



View upstream from sampling location



Flow was sufficient for sample collection only during wet weather Event 52. The site was dry, and samples were not collected, during both dry Events 50 and 53, and wet weather Event 51. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements and trash observations. Table 31 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

During wet weather Event 52, benchmarks for total chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, toxaphene, diazinon, and *E. coli* were exceeded.

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

**Table 31. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: 06T\_LONG2**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS	NS		NS
Flow	CFS				NR <sup>1</sup>	
pH		6.5≤ pH ≤8.5			7.7 <sup>2</sup>	
Temperature	°C	≤ 26.67°C <sup>3</sup>			NR <sup>1</sup>	
Dissolved Oxygen	mg/L	≥ 5			NR <sup>1</sup>	
Turbidity	NTU				133 <sup>2</sup>	
Conductivity	µS/cm				NR <sup>1</sup>	
General Water Quality						
TDS	mg/L	850			420	
TSS	mg/L				14,000	
Total Hardness as CaCO <sub>3</sub>	mg/L				689	
Chloride	mg/L	150			17	
Sulfate	mg/L	250			78.9	
Nutrients						
Ammonia-N	mg/L	NS/ NS/ NC <sup>4</sup> / NS <sup>5</sup>			0.62 <sup>6</sup>	
Nitrate-N	mg/L	10			6.42	
Total Nitrogen	mg/L				1.47	
Total Orthophosphate	mg/L				0.78	
Total Phosphorus	mg/L				17.8	
Metals						
Dissolved Copper	µg/L	NS/ NS/ 46.60/ NS <sup>7</sup>			9.91	
Total Copper	µg/L				155	
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	
cis-Nonachlor	µg/L				0.0137	
trans-Nonachlor	µg/L				0.0315	
Chlordane-alpha	µg/L				0.0359	
Chlordane-gamma	µg/L				0.036	
Total Chlordane	µg/L	0.00059			0.0719	
2,4'-DDT					0.0223	
4,4'-DDD	µg/L	0.00084			0.0564	
4,4'-DDE	µg/L	0.00059			0.0768	
4,4'-DDT	µg/L	0.00059			0.271	
Dieldrin	µg/L	0.00014			ND	
Endosulfan-I	µg/L	0.056			ND	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
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			0.142	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025			ND	
Diazinon	µg/L	0.1			1.74	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006			ND	
Cyhalothrin, lambda-	µg/L				0.00843	
Bacteria						
E. coli	MPN/100 mL	235			77,010	

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.

NR = Not recorded.

ND = Not detected at the applicable reporting limit.

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

NC = Not calculated.

1. Measurement unavailable. Field log lost in the wind.
2. Recorded value reflects analysis conducted using laboratory sample.
3. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
4. Temperature and pH dependent objective not calculated due to missing temperature observation.
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. No benchmark could be calculated due to missing temperature data, but the sample result is highly unlikely to be an exceedance. Temperature would have to be > 41 °C for the observed ammonia-N value to exceed the benchmark.
7. The benchmarks for copper are listed in order of monitoring event and were calculated for freshwater using the formula in Table 15.

**Table 32. 2021–2022 Trash Observations for 06T\_LONG2**

Event	Count	Types
50	1	Bottle
51	12	Plant pots, bottles, wrappers
52	N/A <sup>1</sup>	
53	>30	Urban trash, plastic

1. Observation unavailable. Field log lost in the wind.

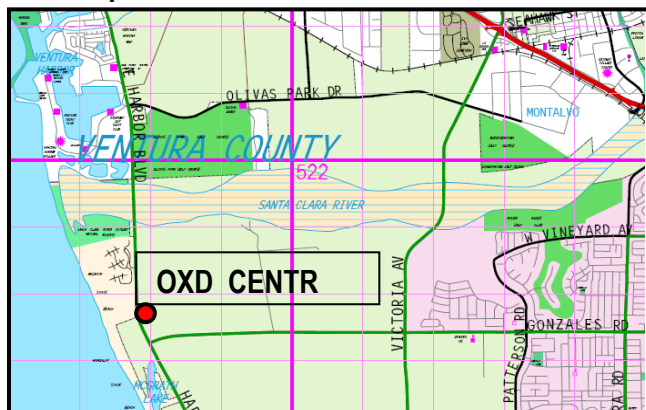
## Oxnard Coastal Watershed

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 2021-2022 monitoring events. During wet weather Event 52, several field logs were lost in the wind, resulting in missing field measurements and trash observations. Table 33 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

Exceedances of benchmarks for 4,4'-DDE, 4,4'-DDT, and toxaphene occurred during all four of the 2021-2022 monitoring events. Exceedance of the nitrate-N benchmark occurred during both wet weather Events 51 and 52, and dry weather Event 53. The total chlordane and 4,4'-DDD benchmarks were exceeded during dry weather Event 50 and both wet weather Events 51 and 52. The benchmark for bifenthrin was exceeded during dry weather Event 50 and wet weather Event 51. Exceedances of the *E. coli* benchmark occurred during the first wet weather Events 51. The benchmark for ammonia-N was exceeded only during wet weather Event 51, and the benchmark for dissolved copper was exceeded once during dry weather Event 50.

Rotational crops and strawberries are the predominant crop types draining to this monitoring location. Table 34 quantifies and describes trash found at this site.

**Table 33. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: OXD\_CENTR**

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
			8/5/2021	10/25/2021	12/14/2021	5/24/2022
Flow	CFS		1.0	24.8	NR <sup>1</sup>	0 <sup>2</sup>
pH		6.5 ≤ pH ≤ 8.5	8.38	8.16	7.2 <sup>3</sup>	7.23
Temperature	°C		18.1	16.6	NR <sup>1</sup>	18.9
Dissolved Oxygen	mg/L	≥ 5	9.4	9.0	NR <sup>1</sup>	7.5
Turbidity	NTU		258	1,249	24.4 <sup>3</sup>	0.9
Conductivity	µS/cm		1,771	1,521	NR <sup>1</sup>	3,623
<b>General Water Quality</b>						
TDS	mg/L		1,510	1,620	1,380	3,320
TSS	mg/L		220	2,400	270	16
Total Hardness as CaCO <sub>3</sub>	mg/L		645	962	613	1,790
Chloride	mg/L		80	94	97	140
Sulfate	mg/L		717	618	503	1,420
<b>Nutrients</b>						
Ammonia-N	mg/L	1.06/ 1.67/ NC <sup>4</sup> / 4.00 <sup>5</sup>	0.03	<b>1.68</b>	0.64 <sup>6</sup>	0.09
Nitrate-N	mg/L	10 <sup>7</sup>	3.34	<b>34.4</b>	<b>21.8</b>	<b>34.6</b>
Total Nitrogen	mg/L		4.03	44.6	4.85	3.64
Total Orthophosphate	mg/L		2.22	34.0	8.37	0.23
Total Phosphorus	mg/L		1.26	17.2	2.96	0.0465
Total Organic Carbon	mg/L		2.20	72.6	20.9	1.10
<b>Metals</b>						
Dissolved Copper	µg/L	3.1 <sup>8</sup>	<b>3.22</b>	2.04	0.708	1.72
Total Copper	µg/L		22.6	112	19.4	2.09
<b>Organochlorine Pesticides</b>						
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		DNQ	0.00346	0.00240	ND
trans-Nonachlor	µg/L		0.00312	0.00787	0.00272	ND
Chlordane-alpha	µg/L		0.00437	0.01190	0.00586	ND
Chlordane-gamma	µg/L		0.00326	0.01250	0.00525	ND
Total Chlordane	µg/L	0.00059	<b>0.00763</b>	<b>0.0244</b>	<b>0.01111</b>	ND
2,4'-DDD	µg/L		0.0186	0.108	0.0522	ND
2,4'-DDE	µg/L		0.00812	0.0244	0.0112	ND
2,4'-DDT	µg/L		0.0649	0.484	0.1590	DNQ
4,4'-DDD	µg/L	0.00084	<b>0.0416</b>	<b>0.245</b>	<b>0.108</b>	ND
4,4'-DDE	µg/L	0.00059	<b>0.328</b>	<b>0.977</b>	<b>0.268</b>	<b>0.0100</b>
4,4'-DDT	µg/L	0.00059	<b>0.304</b>	<b>1.42</b>	<b>0.796</b>	<b>0.0036</b>
Dieldrin	µg/L	0.00014	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry 8/5/2021	Wet 10/25/2021	Wet 12/14/2021	Dry 5/24/2022
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	ND	ND
Toxaphene	µg/L	0.00075	<b>1.2</b>	<b>7.3</b>	<b>3.77</b>	<b>0.0982</b>
<b>Organophosphorus Pesticides</b>						
Chlorpyrifos	µg/L	0.025	0.0012	0.0016	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
<b>Pyrethroid Pesticides</b>						
Allethrin	µg/L		ND	ND	ND	0.00778
Bifenthrin	µg/L	0.0006	<b>0.00451</b>	<b>0.024</b>	ND	ND
Danitol	µg/L		DNQ	0.00428	ND	DNQ
Deltamethrin/Tralomethrin	µg/L		ND	0.00518	ND	ND
<b>Bacteria</b>						
<i>E. coli</i>	MPN/100 mL	235	200	<b>520</b>	200	100

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.

NR = Not recorded.

DNQ = Detected, not qualified.

ND = Not detected at the applicable reporting limit.

NC = Not calculated.

1. Measurement unavailable. Field log lost in the wind.
2. Water was stagnant and no flow was detected.
3. Recorded value reflects analysis conducted using laboratory sample.
4. Temperature and pH dependent objective not calculated due to missing temperature observation.
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. No benchmark could be calculated due to missing temperature data, but the sample result is highly unlikely to be an exceedance. Temperature would have to be > 47 °C for the observed ammonia-N value to exceed the benchmark.
7. 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.
8. The copper benchmark for saltwater (shown in Table 15) applies at this site.

**Table 34. 2021–2022 Trash Observations for OXD\_CENTR**

Event	Count	Types
50	>10	Styrofoam, paper cups, cans, plastic, aluminum, paper
51	>25	Agricultural and roadside trash
52	N/A <sup>1</sup>	
53	6	Agricultural trash

1. Observation unavailable. Field log lost in the wind.

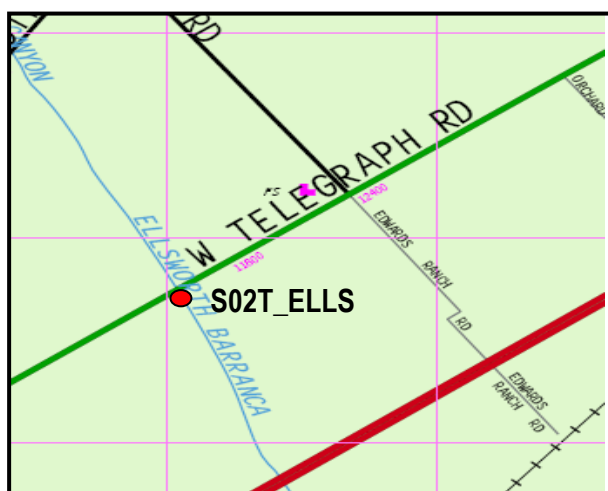
## Santa Clara River Watershed

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 the two wet events during the 2021-2022 monitoring year. During dry weather Events 50 and 53, the site was dry, and no samples were collected. Table 35 contains summarizes concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

Exceedance of the benchmark for *E. coli* occurred during the two sampled monitoring events, wet weather Events 51 and 52. The benchmarks for total chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, toxaphene, nitrate, and bifenthrin were exceeded during wet weather Event 51. The benchmarks for TDS, chloride and sulfate were exceeded during wet weather Event 52.

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

**Table 35. 2021– 2022 VCAILG Monitoring Data v. Waiver Benchmarks: S02T\_ELLS**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS			NS
Flow	CFS			1.9	10.0	
pH		6.5≤ pH ≤8.5		7.9	8.0	
Temperature	°C	≤ 26.67°C <sup>1</sup>		15.0	12.4	
Dissolved Oxygen	mg/L	≥ 5		9.7	10.5	
Turbidity	NTU			1,000	53.1 <sup>2</sup>	
Conductivity	µS/cm			941.4	1,824.1	
General Water Quality						
TDS	mg/L	1,200		730	1,870	
TSS	mg/L			870	24,400	
Total Hardness as CaCO <sub>3</sub>	mg/L			397	2,130	
Chloride	mg/L	150		34	210	
Sulfate	mg/L	600		283	705	
Nutrients						
Ammonia-N	mg/L	NS/ 2.79/ 2.83/ NS <sup>3</sup>		0.84	1.68	
Nitrate-N	mg/L	10		10.2	4.41	
Total Nitrogen	mg/L			14.5	6.72	
Total Orthophosphate	mg/L			5.27	6.47	
Total Phosphorus	mg/L			4.04	63.7	
Metals						
Dissolved Copper	µg/L	NS/ 29.09/ 29.28/ NS <sup>4</sup>		19.4	5.59	
Total Copper	µg/L			97.7	38.7	
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			0.00211	ND	
Chlordane-alpha	µg/L			0.00263	ND	
Chlordane-gamma	µg/L			0.00213	ND	
Total Chlordane	µg/L	0.00059		0.00476	ND	
2,4'-DDT	µg/L			0.0314	ND	
4,4'-DDD	µg/L	0.00084		0.0394	ND	
4,4'-DDE	µg/L	0.00059		0.0552	ND	
4,4'-DDT	µg/L	0.00059		0.316	ND	
Dieldrin	µg/L	0.00014		ND	ND	
Endosulfan-I	µg/L	0.056		ND	ND	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
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		0.183	ND	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025		DNQ	ND	
Diazinon	µg/L	0.1		ND	ND	
Malathion	µg/L			0.625	ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006		0.00714	ND	
Cypermethrin	µg/L			0.00169	ND	
Permethrin, trans-	µg/L			DNQ	ND	
Bacteria						
E. coli	MPN/100 mL	235		68,670	57,940	

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 = Not sampled due to site being dry.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. Recorded value reflects analysis conducted using laboratory sample.
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 present) and are dependent upon the pH and temperature of the water at the time of sample collection.
4. The freshwater copper benchmarks are listed in order of monitoring event and were calculated using the formula shown in Table 15.

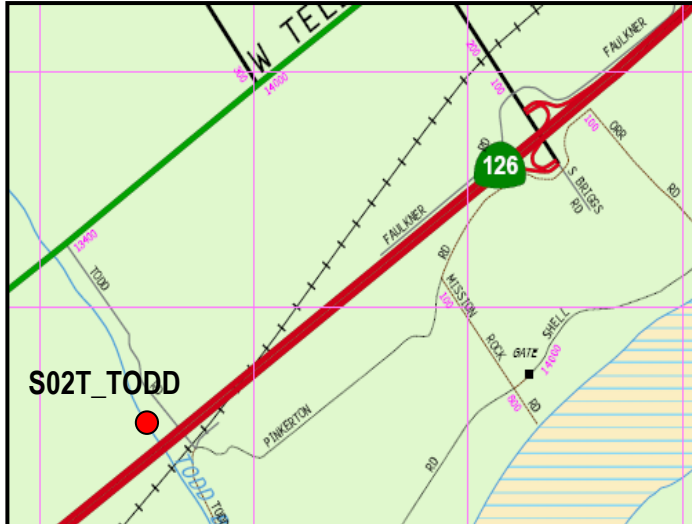
**Table 36. 2021–2022 Trash Observations for S02T\_ELLS**

Event	Count	Types
50	0	
51	6	Cups, bottles
52	6	Beer cans
53	0	

## 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 2021-2022 monitoring events. Table 37 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

The benchmark for *E. coli* was exceeded during all four monitoring events. Exceedances for TDS occurred during both dry weather Events 50 and 53, and wet weather Event 51. The benchmark for sulfate was exceeded during both dry weather Events 50 and 53. The benchmark for 4,4'-DDE was exceeded during dry weather Event 50 and wet weather Event 51. Exceedance of the benchmark for nitrate-N occurred only during the dry weather Event 53. The benchmarks for total chlordane, 4,4'-DDD, 4,4'-DDT, and toxaphene were exceeded once during wet weather Event 51.

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

**Table 37. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S02T\_TODD**

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
			8/5/2021	10/25/2021	12/14/2021	5/24/2022
<b>Field Measurements</b>						
Flow	CFS		0.2	1.5	11.8	0.1
pH		$6.5 \leq \text{pH} \leq 8.5$	7.6	7.8	7.7	7.5
Temperature	°C	$\leq 26.67^{\circ}\text{C}^1$	21.8	14.7	11.9	19.1
Dissolved Oxygen	mg/L	$\geq 5$	8.5	8.8	9.6	8.4
Turbidity	NTU		2.4	272	36.8 <sup>2</sup>	NM
Conductivity	µS/cm		2,378.6	1,697.2	1,005.3	3,150.1
<b>General Water Quality</b>						
TDS	mg/L	1,200	<b>2,070</b>	<b>1,290</b>	1,030	<b>2,880</b>
TSS	mg/L		3	200	5,300	5
Total Hardness as CaCO <sub>3</sub>	mg/L		1,000	665	700	1,520
Chloride	mg/L	150	98	72	60	130
Sulfate	mg/L	600	<b>841</b>	530	410	<b>1,270</b>
<b>Nutrients</b>						
Ammonia-N	mg/L	2.56/ 3.00/ 4.05/ 3.25 <sup>3</sup>	0.07	0.20	0.99	0.07
Nitrate-N	mg/L	10	7.40	6.45	3.63	<b>13.2</b>
Total Nitrogen	mg/L		7.92	8.52	2.46	7.20
Total Orthophosphate	mg/L		0.11	1.25	30.5	0.17
Total Phosphorus	mg/L		0.07	0.96	3.61	0.02
<b>Metals</b>						
Dissolved Copper	µg/L	29.28/ 29.28/ 29.28/ 29.28 <sup>4</sup>	1.92	11.9	4.1	2.74
Total Copper	µg/L		2.07	38.6	91.7	3.26
<b>Organochlorine Pesticides</b>						
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	0.00488	ND	ND
Chlordane-alpha	µg/L		DNQ	0.00529	ND	ND
Chlordane-gamma	µg/L		ND	0.00492	ND	ND
Total Chlordane	µg/L	0.00059	ND	<b>0.01021</b>	ND	ND
2,4'-DDD	µg/L		ND	0.00453	ND	ND
2,4'-DDT	µg/L		ND	0.0276	ND	ND
4,4'-DDD	µg/L	0.00084	ND	<b>0.033</b>	ND	ND
4,4'-DDE	µg/L	0.00059	<b>0.002</b>	<b>0.0402</b>	ND	ND
4,4'-DDT	µg/L	0.00059	ND	<b>0.257</b>	ND	ND
Dieldrin	µg/L	0.00014	ND	ND	ND	ND

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry 8/5/2021	Wet 10/25/2021	Wet 12/14/2021	Dry 5/24/2022
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
Toxaphene	µg/L	0.00075	ND	<b>0.151</b>	ND	ND
<b>Organophosphorus Pesticides</b>						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Malathion	µg/L		ND	0.667	ND	ND
<b>Pyrethroid Pesticides</b>						
Allethrin	µg/L		ND	ND	ND	0.00818
Bifenthrin	µg/L	0.0006	ND	ND	DNQ	ND
Danitol	µg/L		ND	ND	ND	0.00112
Permethrin, cis-	µg/L		DNQ	0.138	ND	ND
Permethrin, trans-	µg/L		ND	0.141	ND	ND
<b>Bacteria</b>						
<i>E. coli</i>	MPN/100 mL	235	<b>1,220</b>	<b>6,380</b>	<b>29,090</b>	<b>1,450</b>

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.

1. The temperature limit for waterbodies designated as WARM is 80°F (26.7°C).
2. Recorded value reflects analysis conducted using laboratory sample.
3. 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.
4. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

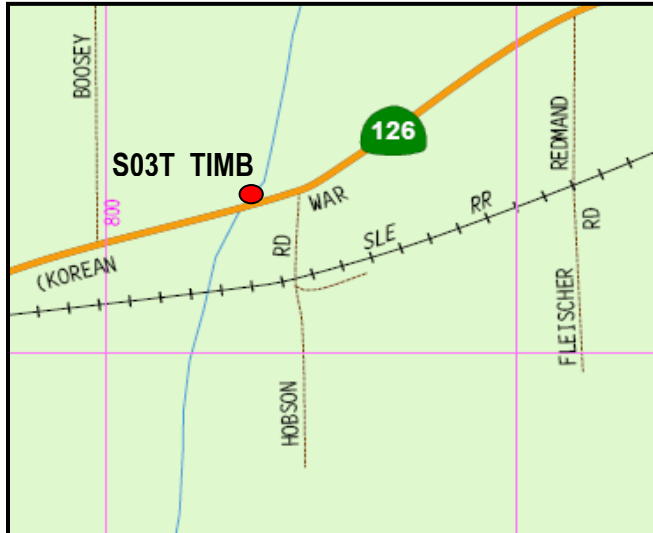
**Table 38. 2021–2022 Trash Observations for S02T\_TODD**

Event	Count	Types
50	0	
51	0	
52	2	Wrapper, cup
53	>10	Agricultural trash, paper, plastic

### 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 50 and 53, and wet weather Event 51. The only samples collected at this site during the 2021-2022 monitoring year were collected during wet weather Event 52. Table 39 summarizes concentrations recorded for each constituent during this event and provides a comparison of results to applicable water quality benchmarks. Benchmarks for TDS, chloride, nitrate, 4,4'-DDT, and *E. coli* were exceeded during wet weather Event 52.

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

**Table 39. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S03T\_TIMB**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS	NS		NS
Flow	CFS				0.6	
pH		6.5≤ pH ≤8.5			8.2	
Temperature	°C	≤ 26.67°C <sup>1</sup>			11.1	
Dissolved Oxygen	mg/L	≥ 5			10.9	
Turbidity	NTU				14.9 <sup>2</sup>	
Conductivity	µS/cm				1,977.9	
General Water Quality						
TDS	mg/L	1,300			1,380	
TSS	mg/L				12,000	
Total Hardness as CaCO <sub>3</sub>	mg/L				676	
Chloride	mg/L	100			153	
Sulfate	mg/L	650			506	
Nutrients						
Ammonia-N	mg/L	NS/ NS/ 2.24/ NS <sup>3</sup>			0.77	
Nitrate-N	mg/L	5			6.05	
Total Nitrogen	mg/L				1.52	
Total Orthophosphate	mg/L				25.7	
Total Phosphorus	mg/L				11.5	
Metals						
Dissolved Copper	µg/L	NS/ NS/ 29.28/ NS <sup>4</sup>			10.6	
Total Copper	µg/L				132	
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	0.116			
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			

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Endrin Aldehyde	µg/L	0.81			ND	
Toxaphene	µg/L	0.00075			ND	
<i>Organophosphorus Pesticides</i>						
Chlorpyrifos	µg/L	0.025			ND	
Diazinon	µg/L	0.1			ND	
<i>Pyrethroid Pesticides</i>						
Bifenthrin	µg/L	0.0006			ND	
<i>Bacteria</i>						
<i>E. coli</i>	MPN/100 mL	235			15,150	

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. Recorded value reflects analysis conducted using laboratory sample.
3. 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.
4. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

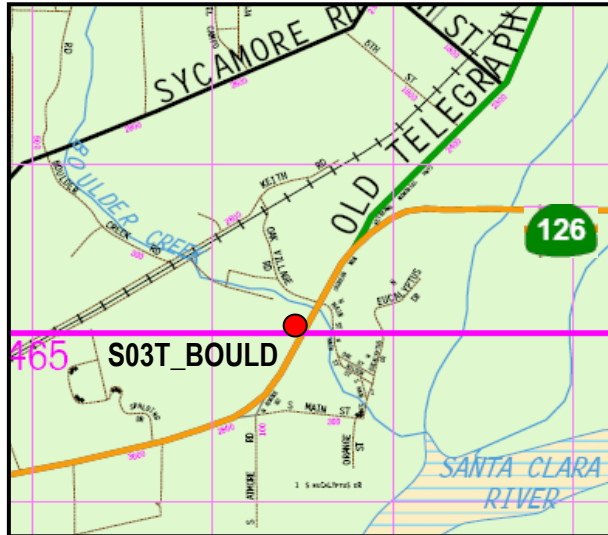
**Table 40. 2021–2022 Trash Observations for S03T\_TIMB**

Event	Count	Types
50	>50	Plastic, bags, bottles, paper, cardboard, Styrofoam cups
51	10	Bags, cups, Styrofoam, wrapper
52	0	
53	>50	Automotive and urban trash, plastic, cans

## 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, and no samples were collected, during both dry weather Events 50 and 53. The only samples collected at this site during the 2021-2022 monitoring year were collected during wet weather Events 51 and 52. Table 41 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

Exceedances of the benchmarks for nitrate-N and *E. coli* occurred during both wet weather Events 51 and 52. The benchmarks for TDS, sulfate, chloride, and bifenthrin were exceeded only during wet weather Event 51. Exceedance of the benchmark for 4,4'-DDT occurred during wet weather Event 52.

Avocados, 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. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S03T\_BOULD**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS			NS
Flow	CFS			0.06	NM <sup>1</sup>	
pH		6.5≤ pH ≤8.5		8.0	8.5	
Temperature	°C	≤ 26.67°C <sup>2</sup>		15.0	11.2	
Dissolved Oxygen	mg/L	≥ 5		9.9	11.1	
Turbidity	NTU			53.4	997	
Conductivity	µS/cm			2,859	491.2	
General Water Quality						
TDS	mg/L	1,300		2,520	530	
TSS	mg/L			49	850	
Total Hardness as CaCO <sub>3</sub>	mg/L			1,260	328	
Chloride	mg/L	100		118	22	
Sulfate	mg/L	650		1,020	232	
Nutrients						
Ammonia-N	mg/L	NS/ 2.47/ 1.42/ NS <sup>3</sup>		2.3	0.61	
Nitrate-N	mg/L	5		43.0	5.38	
Total Nitrogen	mg/L			55.1	7.89	
Total Orthophosphate	mg/L			2.26	4.05	
Total Phosphorus	mg/L			1.200	0.961	
Metals						
Dissolved Copper	µg/L	NS/ 29.28/ 24.71/ NS <sup>4</sup>		23.0	3.50	
Total Copper	µg/L			26.8	20.9	
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			DNQ	ND	
Total Chlordane	µg/L	0.00059		DNQ	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	0.0933	
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	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Endrin	µg/L	0.036		ND	ND	
Endrin Aldehyde	µg/L	0.81		ND	ND	
Toxaphene	µg/L	0.00075		ND	ND	
<b>Organophosphorus Pesticides</b>						
Chlorpyrifos	µg/L	0.025		ND	ND	
Diazinon	µg/L	0.1		ND	ND	
<b>Pyrethroid Pesticides</b>						
Bifenthrin	µg/L	0.0006		<b>0.0024</b>	ND	
Permethrin, cis-	µg/L			0.0144	ND	
Permethrin, trans-	µg/L			0.0152	ND	
<b>Bacteria</b>						
<i>E. coli</i>	MPN/100 mL	235		<b>18,600</b>	<b>4,100</b>	

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 sample taken as it was unsafe to enter the 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, 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.
4. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

**Table 42. 2021–2022 Trash Observations for S03T\_BOULD**

Event	Count	Types
50	8	Cardboard, plastic, straw, paper, bottles
51	4	Bag, cup, cans
52	1	Bag
53	4	Plastic, cups, paper

### 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**



Sufficient flow was present, and samples were collected during all four 2021-2022 monitoring events. Table 43 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

The benchmarks for 4,4'-DDE and E. coli were exceeded during all four 2021-2022 monitoring events. Exceedances of the benchmark for nitrate-N occurred during both wet weather Events 51 and 52. The benchmark for 4,4'-DDT was exceeded during wet weather Event 52 and dry weather Event 53. The benchmark for toxaphene was exceeded once during dry weather Event 53 and the benchmark for bifenthrin was only exceeded during wet weather Event 51.

The drainage area for this site consists mostly of citrus and avocado orchards. Trash observations for S03D\_BARDS are provided below in Table 44.

**Table 43. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S03D\_BARDS**

Constituent	Units	Benchmark	Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
			8/5/2021	10/25/2021	12/14/2021	5/24/2022
<b>Field Measurements</b>						
Flow	CFS		1.2	0.7	1.4	0.2
pH		6.5 ≤ pH ≤ 8.5	7.6	7.8	8.2	8.5
Temperature	°C	≤ 26.67°C <sup>1</sup>	22.4	16.4	11.5	20.9
Dissolved Oxygen	mg/L	≥ 5	8.7	8.0	10.3	8.9
Turbidity	NTU		30.1	402	13.5 <sup>2</sup>	55.9
Conductivity	µS/cm		1,148.4	927.4	504.4	1,345.3
<b>General Water Quality</b>						
TDS	mg/L	1,300	1,050	710	470	970
TSS	mg/L		42	290	6,400	93
Total Hardness as CaCO <sub>3</sub>	mg/L		491	331	446	526
Chloride	mg/L	100	61	32	21	52
Sulfate	mg/L	650	413	270	206	382
<b>Nutrients</b>						
Ammonia-N	mg/L	2.40/ 2.76/ 2.29/ 0.76 <sup>3</sup>	0.06	0.81	0.43	DNQ
Nitrate-N	mg/L	5	2.94	<b>11.0</b>	<b>5.96</b>	3.18
Total Nitrogen	mg/L		3.36	14.5	3.85	3.57
Total Orthophosphate	mg/L		0.29	4.17	24.06	0.88
Total Phosphorus	mg/L		0.236	2.08	5.35	0.364
<b>Metals</b>						
Dissolved Copper	µg/L	29.28/ 24.91/ 29.28/ 29.28 <sup>4</sup>	1.08	12.3	4.96	1.13
Total Copper	µg/L		2.30	22.3	52.0	4.64
<b>Organochlorine Pesticides</b>						
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	DNQ	DNQ	DNQ
Chlordane-alpha	µg/L		ND	DNQ	ND	DNQ
Chlordane-gamma	µg/L		ND	DNQ	ND	ND
Total Chlordane	µg/L	0.00059	ND	DNQ	ND	DNQ
4,4'-DDD	µg/L	0.00084	ND	ND	ND	ND
4,4'-DDE	µg/L	0.00059	<b>0.00463</b>	<b>0.00733</b>	<b>0.0131</b>	<b>0.0132</b>
4,4'-DDT	µg/L	0.00059	ND	ND	<b>0.159</b>	<b>0.00919</b>
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 50	Event 51	Event 52	Event 53
			Dry 8/5/2021	Wet 10/25/2021	Wet 12/14/2021	Dry 5/24/2022
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	<b>0.0938</b>
<b>Organophosphorus Pesticides</b>						
Chlorpyrifos	µg/L	0.025	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
<b>Pyrethroid Pesticides</b>						
Allethrin	µg/L		ND	ND	ND	0.0157
Bifenthrin	µg/L	0.0006	ND	<b>0.0157</b>	ND	ND
Cyfluthrin	µg/L		0.00203	0.00177	ND	0.00299
Cyhalothrin, lambda-	µg/L		ND	ND	ND	DNQ
Cypermethrin	µg/L		0.0062	ND	ND	ND
Danitol	µg/L		ND	ND	ND	DNQ
Esfenvalerate	µg/L		ND	ND	ND	0.00228
Fenvalerate	µg/L		ND	ND	ND	DNQ
Permethrin, cis-	µg/L		ND	0.0142	ND	DNQ
Permethrin, trans-	µg/L		ND	0.0099	ND	ND
<b>Bacteria</b>						
<i>E. coli</i>	MPN/100 mL	235	<b>16,160</b>	<b>92,080</b>	<b>5,200</b>	<b>10,860</b>

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. Recorded value reflects analysis conducted using laboratory sample.

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 present) and are dependent upon the pH and temperature of the water at the time of sample collection.

4. The freshwater copper benchmark was calculated for this site using the formula in Table 15.

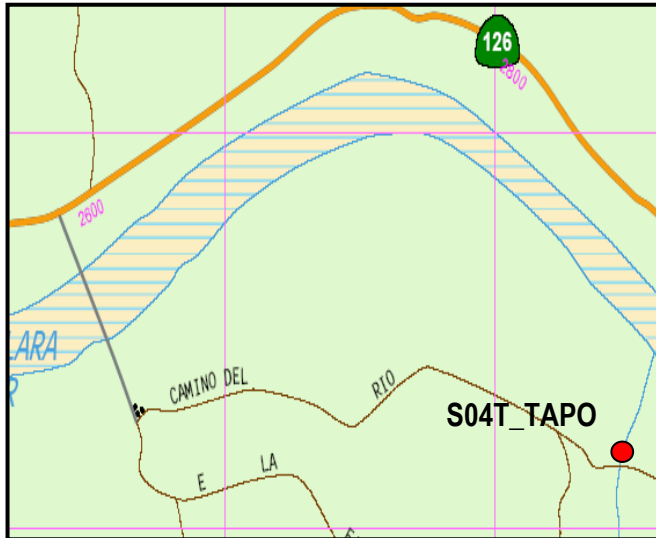
**Table 44. 2021–2022 Trash Observations for S03D\_BARDS**

Event	Count	Types
50	0	
51	0	
52	1	Cup
53	<5	Agricultural trash, plastic, bottles

## 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 two 2021-2022 monitoring events, wet weather Event 52 and dry weather Event 53. The site was dry, and no samples were collected, during dry weather Event 50 and wet weather Event 51. Table 45 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality benchmarks.

Exceedance of the TDS and sulfate benchmarks occurred during all two of the monitoring events that were sampled, wet weather Event 52 and dry weather Event 53. The benchmarks for total chlordane, *E. coli*, and 4,4'-DDE were exceeded during wet weather Event 52. The benchmark for chloride was exceeded during dry weather Event 53.

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

**Table 45. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: S04T\_TAPO**

			Event 50	Event 51	Event 52	Event 53	
			Dry	Wet	Wet	Dry	
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022	
Field Measurements							
Flow	CFS				7.0	0.01	
pH		6.5≤ pH ≤8.5			8.3	8.1	
Temperature	°C	≤ 26.67°C <sup>1</sup>			11.8	16.4	
Dissolved Oxygen	mg/L	≥ 5			10.3	9.7	
Turbidity	NTU				161 <sup>2</sup>	2.5	
Conductivity	µS/cm				2,403.9	4,887.4	
General Water Quality							
TDS	mg/L	1,300				1,770	4,530
TSS	mg/L					3,600	7
Total Hardness as CaCO <sub>3</sub>	mg/L			933	1,860		
Chloride	mg/L	100		100	280		
Sulfate	mg/L	600		698	1,900		
Nutrients							
Ammonia-N	mg/L	NS/ NS/ 1.84/ 1.77 <sup>3</sup>			0.58	0.35	
Nitrate-N	mg/L	5			2.14	ND	
Total Nitrogen	mg/L				1.78	0.613	
Total Orthophosphate	mg/L				9.90	DNQ	
Total Phosphorus	mg/L				9.27	ND	
Metals			NS	NS			
Dissolved Copper	µg/L	NS/ NS/ 29.28/ 29.28 <sup>4</sup>			11.1	0.952	
Total Copper	µg/L				147	1.39	
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					0.00254	ND
trans-Nonachlor	µg/L					0.00519	ND
Chlordane-alpha	µg/L					0.00510	ND
Chlordane-gamma	µg/L					0.00223	ND
Total Chlordane	µg/L	0.00059				0.00733	ND
4,4'-DDD	µg/L	0.00084				ND	ND
4,4'-DDE	µg/L	0.00059				0.0709	DNQ
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

			Event 50	Event 51	Event 52	Event 53	
			Dry	Wet	Wet	Dry	
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022	
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	ND	
<b>Organophosphorus Pesticides</b>							
Chlorpyrifos	µg/L	0.025			ND	ND	
Diazinon	µg/L	0.1			ND	ND	
<b>Pyrethroid Pesticides</b>							
Allenthtrin	µg/L	0.0006				ND	0.0155
Bifenthrin	µg/L					ND	ND
Danitol	µg/L					ND	DNQ
<b>Bacteria</b>							
<i>E. coli</i>	MPN/100 mL	235					<b>4,500</b>

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. Recorded value reflects analysis conducted using laboratory sample.
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 present) and are dependent upon the pH and temperature of the water at the time of sample collection.
4. 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. 2021–2022 Trash Observations for S04T\_TAPO**

Event	Count	Types
50	6	Balloon, paper, gloves, cans
51	0	
52	2	Cup, foil
53	0	

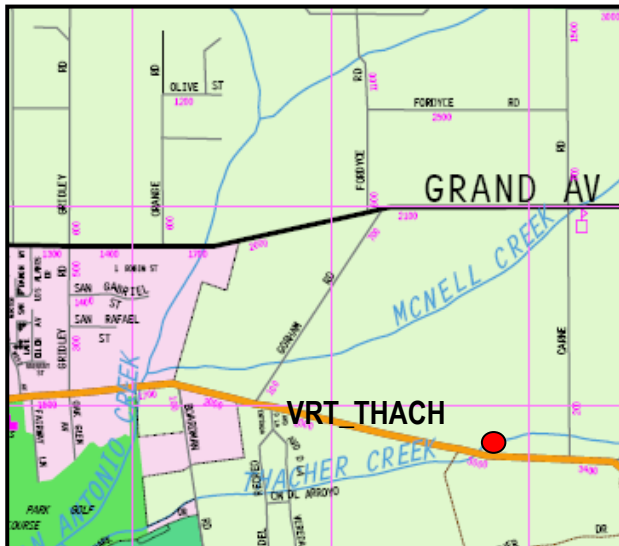
## Ventura River Watershed

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



Sufficient flow was present to sample during one 2021-2022 monitoring event, wet weather Event 52. The site was dry, and thus no samples were collected, during dry weather Events 50 and 53, and wet weather Event 51. Table 47 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality objectives.

The benchmarks for toxaphene and *E. coli* were exceeded during wet weather Event 52.

Citrus and avocado 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. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: VRT\_THACH**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS	NS		NS
Flow	CFS				1.9	
pH		6.5≤ pH ≤8.5			8.0	
Temperature	°C	≤ 26.67°C <sup>1</sup>			11.4	
Dissolved Oxygen	mg/L	≥ 7			10.6	
Turbidity	NTU				289 <sup>2</sup>	
Conductivity	µS/cm				392.4	
General Water Quality						
TDS	mg/L	800			500	
TSS	mg/L				1,800	
Total Hardness as CaCO <sub>3</sub>	mg/L				181	
Chloride	mg/L	60			24	
Sulfate	mg/L	300			82.6	
Nutrients						
Ammonia-N	mg/L	NS/ NS/ 3.01/ NS <sup>3</sup>			0.89	
Nitrate-N	mg/L	5			2.87	
Nitrite-N	mg/L				0.262	
Total Nitrogen	mg/L				4.42	
Total Orthophosphate	mg/L				4.87	
Total Phosphorus	mg/L				3.05	
Metals						
Dissolved Copper	µg/L	NS/ NS/ 14.87/ NS <sup>4</sup>			6.14	
Total Copper	µg/L				26.5	
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			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	110			ND	
Endrin	µg/L	0.036			ND	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Endrin Aldehyde	µg/L	0.76			ND	
Toxaphene	µg/L	0.00075			1.39	
Organophosphorus Pesticides						
Chlorpyrifos	µg/L	0.025			ND	
Diazinon	µg/L	0.1			ND	
Pyrethroid Pesticides						
Bifenthrin	µg/L	0.0006			ND	
Cyhalothrin, lambda-	µg/L				0.00865	
Bacteria						
E. coli	MPN/100 mL	235			111.990	

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. Recorded value reflects analysis conducted using laboratory sample.
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 present) and are dependent upon the pH and temperature of the water at the time of sample collection.
4. The freshwater copper benchmark was calculated for at this site using the formula in Table 15.

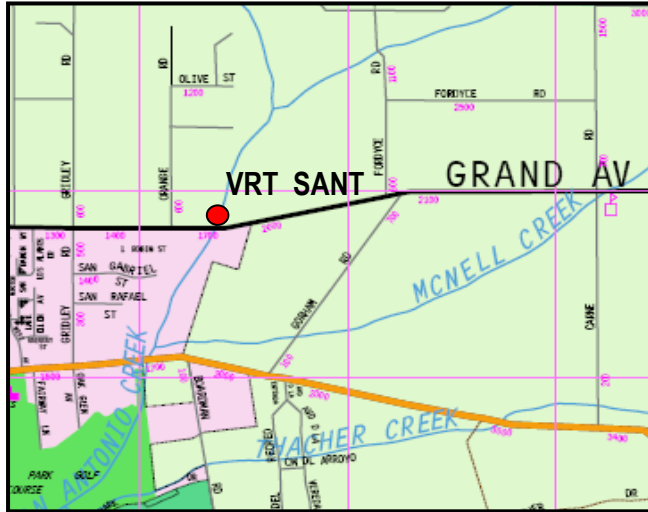
**Table 48. 2021–2022 Trash Observations for VRT\_THACH**

Event	Count	Types
50	4	Bag, paper, bottle
51	0	
52	0	
53	4	Paper, cardboard, plastic bottle

## 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



Sufficient flow was present to sample during one 2021-2022 monitoring event, wet weather Event 52. The site was dry, and no samples were collected, during dry weather Events 50 and 53, and wet weather Event 51. Table 49 summarizes the concentrations recorded for each constituent and provides a comparison of results to applicable water quality objectives.

The benchmark for *E. coli* was exceeded during wet weather Event 52.

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. 2021–2022 VCAILG Monitoring Data v. Waiver Benchmarks: VRT\_SANTO**

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Field Measurements			NS	NS		NS
Flow	CFS				33.7	
pH		6.5≤ pH ≤8.5			8	
Temperature	°C	≤ 26.67°C <sup>1</sup>			12.1	
Dissolved Oxygen	mg/L	≥ 7			10.6	
Turbidity	NTU				58 <sup>2</sup>	
Conductivity	µS/cm				769.3	
General Water Quality						
TDS	mg/L	800			650	
TSS	mg/L				5,500	
Total Hardness as CaCO <sub>3</sub>	mg/L				555	
Chloride	mg/L	60			19	
Sulfate	mg/L	300			275	
Nutrients						
Ammonia-N	mg/L	NS/ NS/ 2.85/ NS <sup>3</sup>			0.40	
Nitrate-N	mg/L	5			3.12	
Nitrite-N	mg/L				0.062	
Total Nitrogen	mg/L				1.81	
Total Orthophosphate	mg/L				11.8	
Total Phosphorus	mg/L				9.32	
Metals						
Dissolved Copper	µg/L	NS/ NS/ 29.28/ NS <sup>4</sup>			2.42	
Total Copper	µg/L				110	
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			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	110			ND	
Endrin	µg/L	0.036			ND	

			Event 50	Event 51	Event 52	Event 53
			Dry	Wet	Wet	Dry
Constituent	Units	Benchmark	8/5/2021	10/25/2021	12/14/2021	5/24/2022
Endrin Aldehyde	µg/L	0.76			ND	
Toxaphene	µg/L	0.00075			ND	
<i>Organophosphorus Pesticides</i>						
Chlorpyrifos	µg/L	0.025			ND	
Diazinon	µg/L	0.1			ND	
<i>Pyrethroid Pesticides</i>						
Bifenthrin	µg/L	0.0006			ND	
Cyhalothrin, lambda-	µg/L				0.00604	
<i>Bacteria</i>						
<i>E. coli</i>	MPN/100 mL	235			13,540	

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. Recorded value reflects analysis conducted using laboratory sample.
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 present) and are dependent upon the pH and temperature of the water at the time of sample collection.
4. The freshwater copper benchmark was calculated for at this site using the formula in Table 15.

**Table 50. 2021–2022 Trash Observations for VRT\_SANTO**

Event	Count	Types
50	0	
51	<5	Trash wrappers
52	0	
53	4	Plastic, can, banana peel

## CHRONIC TOXICITY TEST RESULTS

During the 2021-2022 monitoring year, PER performed single-species short-term chronic toxicity tests for samples collected during the first wet weather event (Event 51) and second dry weather event (Event 53).

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 azteca*, 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 summarizes the chronic toxicity results from wet weather Event 51 and dry weather Event 53. 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 included in this report submittal.

**Table 51. Chronic Toxicity Results 2021-2022**

Event	Site	<i>Ceriodaphnia dubia</i> <sup>1</sup>			<i>Hyalella</i> <sup>2</sup>	TIE? Triggered
		Survival Toxicity	Reprod. Toxicity	Reprod. % Red.	Survival Toxicity	
51: 10/26/21 (wet weather)	S02T_TODD	YES	YES	100% <sup>3</sup>		YES
	S02T_ELLS	YES	YES	100% <sup>3</sup>		YES
	S03D_BARDS	YES	YES	100% <sup>3</sup>		YES
	S03T_BOULD	NO	NO	--		--
	05D_LAVD	YES	YES	100% <sup>3</sup>		YES
	01T_ODD3_EDI	NO	YES	39.6% <sup>3</sup>		--
	OXD_CENTR	YES	YES	100% <sup>3</sup>		YES
	04D_LAS				NO	--
	04D_ETTG				YES	YES
53: 5/25/22 (dry weather)	S03D_BARDS	NO	NO	--		--
	01T_ODD3_EDI				NO	--
	04D_LAS				NO	--
	04D_ETTG				NO	--
	OXD_CENTR				NO <sup>4</sup>	YES <sup>4</sup>
	S02T_TODD				NO <sup>4</sup>	YES <sup>4</sup>
	S04T_TAPO				NO <sup>4</sup>	YES <sup>4</sup>

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 ( $p < 0.05$ ).

4. Initial test (5/25/22) had ~50% or greater mortality observed on Day 4 of testing. Prior to test termination, the concurrent Lab Control failed to meet test acceptability criteria for survival. The retest performed on this sample (6/2/22) did not result in the observation of statistically significant toxicity.

## Event 51: TIE Results

Complete mortality of *Ceriodaphnia dubia* occurred in the S02T\_ELLS sample and a TIE was performed. Toxicity removal was observed in the C<sub>18</sub> treatment. These results suggest that a dissolved non-polar organic compound(s) was responsible for the toxicity.

Complete mortality of *Ceriodaphnia dubia* occurred in the S02T\_TODD sample and a TIE was performed. Toxicity removal was observed in the C<sub>18</sub> treatment. These results suggest that a dissolved non-polar organic compound(s) was responsible for the toxicity.

Complete mortality of *Ceriodaphnia dubia* occurred in the 05D\_LAVD sample and a TIE was performed. Survival and reproduction toxicity removal was observed in the C<sub>18</sub> treatment. A 24-hr delay in the onset of toxicity was observed in the Centrifugation and PBO 25 µg/L treatments. A greater delay in the onset of survival toxicity and a slight reduction in reproduction toxicity was observed in the LC-WCX and Piperonyl Butoxide (PBO) 100 µg/L treatments. These results suggest that a combination of dissolved non-polar organic compound(s), metals, and a metabolically activated substance (e.g., OP pesticides) were responsible for at least some of the toxicity.

Complete mortality of *Ceriodaphnia dubia* occurred in the OXD\_CENTR sample and a TIE was performed. A 24-hr delay in the onset of toxicity and a slight reduction in toxicity overall was observed in the C<sub>18</sub> treatment. These results suggest that a dissolved non-polar organic compound(s) was at least partially responsible for the toxicity and may have occurred at a concentration great enough to ultimately overwhelm the Solid Phase Extraction (SPE) column.

Complete mortality of *Ceriodaphnia dubia* occurred in the S03D\_BARDS sample and a TIE was performed. Survival toxicity removal was observed in the C<sub>18</sub> and LC-WCX treatments. Reproduction toxicity was removed in the C<sub>18</sub> treatment. These results suggest that a combination of dissolved non-polar organic compound(s) and metals were responsible for at least some of the toxicity. Alternatively, a highly non-polar organic could be sorbing onto both the C<sub>18</sub> and LC-WCX columns, which could account for this TIE profile.

There was a significant reduction (>50%) in *Hyalella azteca* survival in the 04D\_ETTG sample and TIE targeted for pesticides and metals was performed. Toxicity was persistent but reduced in the Baseline TIE treatment. This may indicate a contaminant that was volatile or transient in nature. Toxicity was slightly reduced via centrifugation and LC-WCX (which includes centrifugation) and removed in the C<sub>18</sub> treatment (which includes centrifugation). These results suggest that a particulate-associated contaminant as well as a dissolved non-polar organic compound(s) were responsible for the toxicity.

### Event 53: TIE Results

Based on the observation of a ~50% reduction in *Hyalella azteca* survival on Day 4 of the initial May 25 test, a TIE targeted for pesticides and metals was performed on the OXD\_CENTR, S02T\_TODD, and S04T\_TAPO samples.

However, prior to test termination, the concurrent Lab Control failed to meet test acceptability criteria for survival (>90%). The retest performed on these samples did not result in statistically significant toxicity, which may indicate that the initial test toxicity was due to a contaminant that is volatile or subject to rapid degradation.

## 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 15<sup>th</sup> of each year. This year's report, "Calleguas Creek Watershed TMDL Compliance Monitoring Program Annual Monitoring Report Year 14 – July 2021 to June 2022" (CCW TMDLs AMR) is being provided with the VCAILG AMR. The report includes summaries of the sampling events, data summaries, and progress towards meeting TMDL targets 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 “2022 Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC Annual Report”, which is also submitted in December 2022.

Table 52 shows the summary of the results of the comparison to benchmarks for the Toxicity and Nitrogen TMDLs. Only constituents and events where exceedances were observed are shown in the tables. The final water quality benchmarks based upon TMDL LAs for the Toxicity TMDL is to be met by March 24, 2022. The water quality benchmark for the Nitrogen TMDL is to be met by October 14, 2025.

Table 53 shows the summary of the results of the comparison to benchmarks for the interim benchmarks of the OC Pesticides, Salts and Metals and Selenium TMDLs. Table 54 shows the summary of the results of the comparison to benchmarks for the final benchmarks of the Metals and Selenium TMDL. Only constituents and events where exceedances were observed in receiving waters are shown in the tables. Final water quality benchmarks based upon TMDL LAs for the OC Pesticides TMDL shall be met no later than March 24, 2026; for the Salts TMDL shall be met no later than December 23, 2023; and for the Metals TMDL shall be met no later than March 26, 2022. For complete results of CCW TMDLs monitoring, please refer to the CCW TMDLs AMR provided with this report.

**Table 52: Exceedance Evaluation Results for Toxicity and Nitrogen TMDLs**

TMDL	Station ID	Site Type	Sample Date	Weather Condition	Constituent	Exceedance Results	Benchmark
Toxicity	05D_SANT_VCWPD	Ag	3/28/2022	Wet	Diazinon	0.12 ug/L	0.1 ug/L Final LA
Nutrients	01T_ODD2_DCH	Ag	8/19/2021	Dry	Nitrate-N + Nitrite-N	49.01 mg/L	9 mg/L Final Limit (Applicable October 2025)
Nutrients	05D_SANT_VCWPD	Ag	8/19/2021	Dry	Nitrate-N + Nitrite-N	42.90 mg/L	
Nutrients	05D_SANT_VCWPD	Ag	10/25/2021	Wet	Nitrate-N + Nitrite-N	15.98 mg/L	
Nutrients	06T_FC_BR	Ag	10/25/2021	Wet	Nitrate-N + Nitrite-N	10.49 mg/L	
Nutrients	07D_HITCH_LEVEE_2	Ag	10/25/2021	Wet	Nitrate-N + Nitrite-N	42.20 mg/L	
Nutrients	01T_ODD2_DCH	Ag	11/9/2021	Dry	Nitrate-N + Nitrite-N	69.95 mg/L	
Nutrients	05D_SANT_VCWPD	Ag	2/1/2022	Dry	Nitrate-N + Nitrite-N	45.46 mg/L	
Nutrients	01T_ODD2_DCH	Ag	2/2/2022	Dry	Nitrate-N + Nitrite-N	79.03 mg/L	
Nutrients	01T_ODD2_DCH	Ag	3/28/2022	Wet	Nitrate-N + Nitrite-N	26.77 mg/L	
Nutrients	06T_FC_BR	Ag	3/28/2022	Wet	Nitrate-N + Nitrite-N	11.73 mg/L	
Nutrients	07D_HITCH_LEVEE_2	Ag	3/28/2022	Wet	Nitrate-N + Nitrite-N	36.42 mg/L	
Nutrients	9BD_GERRY	Ag	3/28/2022	Wet	Nitrate-N + Nitrite-N	19.89 mg/L	
Nutrients	01T_ODD2_DCH	Ag	5/10/2022	Dry	Nitrate-N + Nitrite-N	62.50 mg/L	
Nutrients	05D_SANT_VCWPD	Ag	5/10/2022	Dry	Nitrate-N + Nitrite-N	22.78 mg/L	

**Table 53: Exceedance Evaluation Results for Interim OC Pesticides, Salts and Metals and Selenium TMDL Benchmarks**

TMDL	RW Site	Sample Date	Weather Condition	Constituent	RW Site Exceedance Results	Associated Ag Land Use Site				Applicable Benchmark	
						02D_BROOM	04D_WOOD	05D_SANT_VCWPD	09BD_GERRY	RW Site	Land Use Site
OC Pest	9B_ADOLF	8/18/2021	Dry	4,4'-DDT	12.20 ng/dry g				Site Dry	2.0 ng/dry g Interim	1 ng/L TMDL Water Column Target
Metals	04_WOOD	8/18/2021	Dry	Selenium	20.8 ug/L		Site Dry	48.7 ug/L		6.7 ug/L Interim	6.7 ug/L Interim
Metals	04_WOOD	11/9/2021	Dry	Selenium	21.8 ug/L		Site Dry	9.42 ug/L		6.7 ug/L Interim	6.7 ug/L Interim
Metals	04_WOOD	2/2/2022	Dry	Selenium	22.1 ug/L		0.244	59.1 ug/L		6.7 ug/L Interim	6.7 ug/L Interim
Salts	03_UNIV	3/2022	Dry	Chloride	236 mg/L	Site Dry <sup>a</sup>				230 mg/L Interim	230 mg/L Interim

**Green** = Associated Land use site results are under applicable benchmark. No exceedance identified.

**Gray** = Not Applicable. Land use site is not associated with the receiving water monitoring location.

<sup>a</sup> = Chloride is not collected at this land use location

**Table 54. Exceedance Evaluation Results for Final Metals and Selenium TMDL Benchmarks**

TMDL	RW Site	Sample Date	Weather Condition	Constituent	RW Site Exceedance Results	Associated Ag Land Use Site			Applicable Benchmark	
						04D_WOOD	05D_SANT_VCWPD	Agricultural Load to 04_WOOD	RW Site	Land Use Site
Metals	04_WOOD	5/10/2022	Dry	Selenium	21.7 ug/L	Site Dry	31.5 ug/L		5 ug/L TMDL Target	5 ug/L TMDL Target
					0.44 lbs/day		0.008 lbs/day (0.000007 lbs/acre)	0.045 lbs/day	0.19 lbs/day Critical Condition TMDL Loading Capacity	0.008 lbs/day TMDL Ag Load Allocation

Because two agricultural land use sites are located in the drainage area to the 04\_WOOD monitoring location, an additional step was taken to calculate the agricultural load for comparison to the agricultural benchmark. Special studies in the Revolon Slough subwatershed have identified areas with higher concentrations of naturally occurring selenium that have a higher potential to be mobilized by agricultural activities. Based on the study, the loading per acre from the 05D\_SANT\_VCWPD site was applied to the areas with higher potential to mobilize the natural selenium. The 04D\_WOOD site was used to represent the agricultural drainage from the remainder of the drainage area.

## 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 55. 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 55. Load Allocations for Nitrogen Compounds**

Constituent	Load Allocation (mg/L) <sup>1</sup>
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 56 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 four monitoring sites, S02T\_ELLS, S02T\_TODD, S03T\_BOULD and S03D\_BARDS. The S02T\_ELLS site was sampled during the two wet monitoring events with the concentration from the first wet event exceeding the LA. The S02T\_TODD site was sampled during all four events, with the concentration during the second dry event exceeding the LA. The S03T\_BOULD site was sampled during the two wet events, with the concentration during the first wet event exceeding the LA. The S03D\_BARDS site was sampled during all events, with the concentration from the first wet event exceeding the LA.

**Table 56. Nitrogen Load Allocations Compared to SCR VCAILGMP Site Data**

Site	Constituent	LA <sup>1</sup> (mg/L)	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
S02T_ELLS	Ammonia-N + Nitrate-N	10	NS <sup>2</sup>	<b>11.04</b>	6.09	NS <sup>2</sup>
S02T_TODD	Ammonia-N + Nitrate-N	10	7.47	6.65	4.62	<b>13.27</b>
S03T_TIMB	Ammonia-N + Nitrate-N	10	NS <sup>2</sup>	NS <sup>2</sup>	6.82	NS <sup>2</sup>
S03T_BOULD	Ammonia-N + Nitrate-N	10	NS <sup>2</sup>	<b>45.30</b>	5.99	NS <sup>2</sup>
S03D_BARDS	Ammonia-N + Nitrate-N	10	3.00	<b>11.81</b>	6.39	3.19
S04T_TAPO	Ammonia-N + Nitrate-N	10	NS <sup>2</sup>	NS <sup>2</sup>	2.72	0.35

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

NS = Not Sampled

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.
2. Not sampled due to lack of flow or site was dry.

### **Revised Upper Santa Clara River Chloride TMDL**

#### *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 57. Load Allocation for Chloride**

Constituent	Load Allocation (mg/L) <sup>1</sup>
Chloride	100

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

#### *Monitoring Results and Compliance*

According to the Upper Santa Clara River Chloride TMDL source analysis, nonpoint sources are not a major chloride source. Additionally, in the 2020 AMR<sup>6</sup>, VCAILG submitted monitoring data and geologic evidence that elevated chloride levels at the S04T\_TAPO monitoring site are due to natural sources and not the result of irrigated agricultural discharges. The *Conditional Waiver* compliance date for the Chloride TMDL was October 14, 2020. While site S04T\_TAPO exceeded the Chloride TMDL load allocation during one event conducted during the 2021-2022 monitoring year, the exceedance is not a violation of the *Conditional Waiver* due to irrigated agriculture not being the source of the exceeding chloride concentrations.

Table 58 includes the results for samples collected during VCAILG monitoring events. The site was sampled and had flow during the second wet and second dry monitoring events.

<sup>6</sup> Larry Walker Associates. 2020. Ventura County Agricultural Irrigated Lands Group (VCAILG) 2020 Annual Monitoring Report. Submitted to Los Angeles Regional Water Quality Control Board. December 15, 2020.

**Table 58. Chloride Load Allocation Compared to S04T\_TAPO Site Data**

Site	Constituent	LA <sup>1</sup> (mg/L)	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
S04T_TAPO	Chloride	100	NS	NS	100	<b>280<sup>2</sup></b>

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

NS = Not Sampled, site dry

1. While the load allocation is a 3-month rolling average, the data provided in this table consists of single samples.
2. Samples collected after Chloride TMDL deadline, elevated concentrations caused by natural sources and not a violation of the *Conditional Waiver*.

### ***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 *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 previously. 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 *Conditional Waiver* incorporated toxaphene LAs for suspended sediment and fish tissue as Water Quality Benchmarks, shown in the table below.

**Table 59. 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 previously collected in summer 2021 and results were reported in the 2020-21 AMR; therefore, fish collection and analysis were not required for the 2021-2022 monitoring year. The next fish sampling will be in the spring/summer 2024.

The results of water and suspended sediment monitoring for the Santa Clara River Estuary Toxaphene TMDL are presented in Table 60, which lists an exceedance of the toxaphene suspended sediment LA during the October 2021 event at sites S02T\_ELLS and S01D\_MONAR, and during the December 2021 event at site S01D\_MONAR.

**Table 60. Santa Clara River Estuary Toxaphene TMDL Monitoring Data: Water and Suspended Sediment**

Site	Constituent	Units	Load Allocation	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
S02T_ELLS	<b>Water</b>						
	TSS	mg/L	---	NS <sup>3</sup>	870	24,400	NS <sup>3</sup>
	Chlordane <sup>1</sup>	µg/L	---	NS <sup>3</sup>	0.00476	ND	NS <sup>3</sup>
	Dieldrin	µg/L	---	NS <sup>3</sup>	ND	ND	NS <sup>3</sup>
	Toxaphene	µg/L	---	NS <sup>3</sup>	0.183	ND	NS <sup>3</sup>
	<b>Suspended Sediment</b>						
	Chlordane <sup>1</sup>	µg/dry kg	---	NR	14.6	ND	NR
	Dieldrin	µg/dry kg	---	NR	ND	ND	NR
	Toxaphene	µg/dry kg	0.1	NR	<b>1,320</b>	ND	NR
S01D_MONAR	<b>Water</b>						
	TSS	mg/L	---	NS <sup>3</sup>	1,300	510	NS <sup>2</sup>
	Chlordane <sup>1</sup>	µg/L	---	NS <sup>3</sup>	0.0029	0.045	NS <sup>2</sup>
	Dieldrin	µg/L	---	NS <sup>3</sup>	ND	ND	NS <sup>2</sup>
	Toxaphene	µg/L	---	NS <sup>3</sup>	ND	4.05	NS <sup>2</sup>
	<b>Suspended Sediment</b>						
	Chlordane <sup>1</sup>	µg/dry kg	---	NR	5.74	57.7	NR
	Dieldrin	µg/dry kg	---	NR	ND	ND	NR
	Toxaphene	µg/dry kg	0.1	NR	<b>1,880</b>	<b>3,300</b>	NR

DNQ = Detected, not qualified

NS = Not Sampled.

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.

2. Site not sampled due to site being ponded.

3. Site not sampled due to site being dry.

## 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 61 provides the numeric targets for bacteria. Table 62 provides the allowable number of exceedance days.<sup>7</sup> 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 2021-2022 monitoring year.

**Table 61. Santa Clara River Bacteria TMDL, Numeric Targets**

Objective	Constituent	Numeric Target: S01D_MONAR <sup>1</sup>	Numeric Target: S03D_BARDS <sup>2</sup>
Single sample	<i>E. coli</i>	NA	235/100 mL
	Fecal Coliform	400/100 mL	NA
	Enterococcus	104/100 mL	NA
	Total coliform <sup>3</sup>	10,000/100 mL	NA
Geometric Mean <sup>4</sup>	<i>E. coli</i>	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).

<sup>7</sup> 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 62. Santa Clara River Bacteria TMDL, Interim Allowable Exceedance Days<sup>1</sup>**

Time Period	Santa Clara River Estuary	Santa Clara River Reaches 3,5,6, & 7
	S01D_MONAR	S03D_BARDS
Dry Weather	Not Applicable	17 allowable exceedance days of single sample objectives
Wet Weather <sup>2</sup>	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.

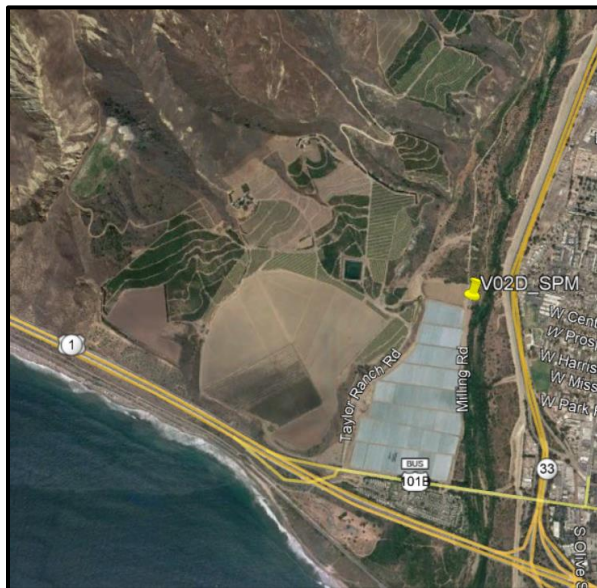
### Ventura River Algae TMDL

The Ventura River Algae TMDL became effective on June 28, 2013. Load allocations for this TMDL were added to the 2016 *Conditional Waiver* as water quality benchmarks. Monitoring is performed to evaluate compliance with the Algae TMDL at the two VCAILGMP sites located in the upper watershed, VRT\_SANTO and VRT\_THACH, which both drain to Reach 4 of the Ventura River. Site descriptions and images were provided above for VRT\_SANTO and VRT\_THACH. The Algae TMDL specified that monitoring in the watershed should be updated to represent agricultural discharges in the lower watershed, as well. This directive was incorporated into the 2016 *Conditional Waiver*. To meet this requirement, site V02D\_SPM was added to the VCAILG MRP to be sampled for Algae TMDL constituents. This site is located in a drainage channel that discharges to Reach 2 of the Ventura River.<sup>8</sup> V02D\_SPM site information is provided below.

#### 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



The Algae TMDL compliance date specified in the *Conditional Waiver* is June 28, 2019. Dry weather LAs are provided in Table 63, and wet weather LAs are provided in Table 64. Monitoring results for the Ventura River Algae TMDL are presented in Table 65 and Table 66.

<sup>8</sup> 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.

## Load Allocations

**Table 63. Dry Weather Load Allocations for the Ventura River Algae TMDL**

Constituent	Load Allocation	
	(lbs/day) <sup>1</sup>	(lbs/day/acre) <sup>2</sup>
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 64. Wet Weather Load Allocations for the Ventura River Algae TMDL**

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

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

## Monitoring Results and Compliance

Flow was not present at any of the three TMDL monitoring sites during dry weather sampling. An exceedance at site V02D\_SPM occurred during the second wet weather event. Sites VRT\_THACH and VRT\_SANTO remained dry during the first wet event and no exceedances occurred during the second wet event.

**Table 65. Dry Weather Ventura River Algae TMDL Site Data**

Site	Constituent	Load Allocation (lbs/day/acre)	Event 50 Dry Aug-2021	Event 53 Dry May-2022
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 66. Wet Weather Ventura River Algae TMDL Site Data**

Site	Constituent	Units	Load Allocation	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021
VRT_THACH	Nitrate-N + Nitrite-N	mg/L	5	NS	3.1
VRT_SANTO	Nitrate-N + Nitrite-N	mg/L	5	NS	3.2
V02D_SPM	Nitrate-N + Nitrite-N	mg/L	10	9.1	17.1

NS = Not sampled, site dry

### ***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 December 15<sup>th</sup>. For additional information, please refer to the “2021-2022 Ventura River Estuary Trash TMDL TMRP/MFAC Annual Report”. The next annual report is due December 15, 2022.

## Oxnard Plain

### 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. During 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 50, 51, and 52. Table 67 provides monitoring information results.

**Table 67. Harbor Beaches of Ventura County Bacteria TMDL Monitoring Data**

Event	Bacteria Concentrations (MPN/100mL)			
	<i>E. coli</i>	Fecal Coliform	Total Coliform	<i>Enterococcus</i>
50: 8/5/2021	1,850	AE	17,930	100
51: 10/25/2021	3,590	4,900	>241,960	133
52: 12/14/2021	ND	490	>241,960	1,550
53: 5/24/2022	NS			

AE = Analysis error; sample analysis not completed due to laboratory error.

NS = Not sampled due to site being dry.

ND = Not detected

## ***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 Water Quality Monitoring Results 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. The final compliance date for the McGrath Lake TMDL in the *Conditional Waiver* is June 30, 2021.

### ***TMDL Monitoring and Load Allocations***

The McGrath Lake PCBs, Pesticides, and Sediment Toxicity TMDL includes the following LAs (Table 68).

**Table 68. McGrath Lake Central Ditch Load Allocations**

<b>Constituent</b>	<b>Water Column Load Allocation (µg/L)</b>	<b>Suspended Sediment Load Allocation (µg/dry kg)</b>
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 69 and Table 70, 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, except for 4,4'-DDD that was not detected during the second dry event. Exceedances of total chlordane water column LAs occurred during all events, except the second dry event. Suspended sediment samples were collected during wet weather Events 51 and 52. Exceedances of the 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, total chlordane, and total DDT suspended sediment LAs occurred during both wet weather events.

**Table 69. McGrath Lake TMDL Central Ditch Monitoring Data in Water: OXD\_CENTR**

Constituents in Water	Units	Water LA	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
TOC	mg/L	---	2.2	72.6	20.9	1.1
TSS	mg/L	---	220	2,400	270	16
Total PCBs <sup>1</sup>	µg/L	0.00017	ND	ND	ND	ND
4,4'-DDD	µg/L	0.00084	<b>0.0416</b>	<b>0.245</b>	<b>0.108</b>	ND
4,4'-DDE	µg/L	0.00059	<b>0.328</b>	<b>0.977</b>	<b>0.268</b>	<b>0.0100</b>
4,4'-DDT	µg/L	0.00059	<b>0.304</b>	<b>1.42</b>	<b>0.796</b>	<b>0.0036</b>
Dieldrin	µg/L	0.00014	ND	ND	ND	ND
Total Chlordane <sup>2</sup>	µg/L	0.00059	<b>0.0076</b>	<b>0.0244</b>	<b>0.0111</b>	ND

**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).

2. Total chlordane is considered the sum of alpha- and gamma-chlordane.

**Table 70. McGrath Lake TMDL Central Ditch Monitoring Data in Suspended Sediment: OXD\_CENTR**

Constituents in Sediment	Units	Sediment LA	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
TOC	% Dry Weight	---	NR <sup>3</sup>	3.33	4.83	NR <sup>3</sup>
Total PCBs <sup>1</sup>	µg/dry kg	22.7		ND	ND	
4,4'-DDD	µg/dry kg	2		<b>40</b>	<b>299</b>	
4,4'-DDE	µg/dry kg	2.2		<b>333</b>	<b>1,450</b>	
4,4'-DDT	µg/dry kg	1		<b>305</b>	<b>1,190</b>	
Dieldrin	µg/dry kg	0.02		ND	ND	
Total Chlordane <sup>2</sup>	µg/dry kg	0.5		<b>10.4</b>	<b>13.7</b>	
Total DDT	µg/dry kg	1.58		<b>806</b>	<b>3,531</b>	

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 Pesticides, PCBs and Sediment Toxicity TMDL

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 71. Sampling is conducted during four monitoring events for comparison to the water allocations, and during one dry weather event for the sediment allocations.

**Table 71. Oxnard Drain No. 3 TMDL Load Allocations**

Constituents	Water Allocations (µg/L)	Sediment (µg/dry kg) <sup>1,2</sup>	Alternate Sediment (µg/dry kg) <sup>1,3</sup>
Bifenthrin <sup>4</sup>	0.0006	-	-
Chlordane, total <sup>6</sup>	0.00059	0.5	3.3
Chlorpyrifos <sup>4</sup>	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 <sup>5</sup>	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).
6. Total chlordane is considered the sum of alpha- and gamma-chlordane.

## Monitoring Results

Monitoring data for water quality are provided in Table 72. Exceedances of water allocations for 4,4'-DDT and 4,4'-DDE occurred during events 51, 52, and 53 with 4,4'-DDE also exceeding during event 50. Exceedances of 4,4'-DDD were observed during events 50 and 51. Total chlordane exceeded LAs during wet Event 52. Toxaphene exceeded LAs during Events 51, 52, and 53. Sediment monitoring results are provided in Table 73, with the results showing exceedances of total chlordane and DDT compounds. With regards to sediment toxicity, there was a significant reduction in survival for *Hyalella*.

**Table 72. Oxnard Drain No. 3 TMDL Monitoring Data in Water: 01T\_ODD3\_EDI**

Constituents	Water Allocations (µg/L)	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
Bifenthrin	0.0006	ND	DNQ	ND	ND
Chlordane, total <sup>2</sup>	0.00059	DNQ	DNQ	<b>0.01112</b>	ND
Chlorpyrifos	0.0056	ND	ND	ND	ND
4,4'-DDT	0.00059	ND	<b>0.0646</b>	<b>0.201</b>	<b>0.0023</b>
4,4'-DDE	0.00059	<b>0.0136</b>	<b>0.0323</b>	<b>0.113</b>	<b>0.0086</b>
4,4'-DDD	0.00084	<b>0.0037</b>	<b>0.0269</b>	ND	ND
Dieldrin	0.00014	ND	ND	ND	ND
PCBs, total <sup>1</sup>	0.00017	ND	ND	ND	ND
Toxaphene	0.0002	ND	<b>0.11</b>	<b>1.47</b>	<b>0.194</b>

**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).

2. Total chlordane is considered the sum of alpha- and gamma-chlordane.

**Table 73. Oxnard Drain No. 3 TMDL Monitoring Data in Sediment: 01T\_ODD3\_EDI**

Constituents	Sediment Allocations (µg/dry kg)	Event 50 Dry Aug-2021	Event 51 Wet Oct-2021	Event 52 Wet Dec-2021	Event 53 Dry May-2022
Chlordane, total <sup>2</sup>	0.5	<b>5.20</b>	NR	NR	NR
4,4'-DDT	1	<b>26.3</b>			
4,4'-DDE	2.2	<b>84.6</b>			
4,4'-DDD	2	<b>13.5</b>			
Dieldrin	0.02	ND			
PCBs, total <sup>1</sup>	22.7	ND			
Toxaphene	0.1	ND			
Sediment Toxicity	No significant chronic sediment toxicity	Significant reduction in survival; no significant reduction in growth			

**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.

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.

## Malibu Creek Watershed

Two TMDLs exist for the Malibu Creek Watershed: the 2013 Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impairments (2013 Benthic TMDL), and the 2003 Malibu Creek Watershed Nutrients TMDL (2003 Nutrient 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 74 and Table 75, respectively.

**Table 74. 2013 Benthic TMDL 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 75. 2003 Nutrient 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 76. Exceedances of the concentration-based total nitrogen and total phosphorus LAs occurred during wet weather Event 52. Monitoring results for the Nutrients TMDL are presented in Table 77. The nitrogen (nitrate-N + nitrite-N) LA was exceeded during wet weather Event 52.

**Table 76. 2013 Benthic TMDL Monitoring Data: 05T\_HONDO**

Constituent	Event	Season	Load Allocation (mg/L)	Result (mg/L)
Total Nitrogen	50: 8/5/2021	Summer	0.65	NS
	51: 10/25/2021	Winter	1.00	NS
	52: 12/14/2021	Winter	1.00	<b>2.10</b>
	53: 5/24/2022	Summer	0.65	NS
Total Phosphorus	50: 8/5/2021	Summer	0.10	NS
	51: 10/25/2021	Winter	0.10	NS
	52: 12/14/2021	Winter	0.10	<b>9.79</b>
	53: 5/24/2022	Summer	0.10	NS

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

NS = Not sampled due to lack of flow.

**Table 77. 2003 Nutrient TMDL Monitoring Data: 05T\_HONDO**

Constituent	Event	Season	Load Allocation	Units	Result
Total Nitrogen	50: 8/5/2021	Summer	3	lbs/day	NS
	53: 5/24/2022	Summer	3	lbs/day	NS
Total Phosphorus	50: 8/5/2021	Summer	0.2	lbs/day	NS
	53: 5/24/2022	Summer	0.2	lbs/day	NS
Nitrogen (nitrate-N + nitrite-N)	51: 10/25/2021	Winter	8	mg/L	NS

NS = Not sampled due to lack of flow.

## WQMP PROGRESS REPORT

The *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

## 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 *Conditional Waiver* and keep them apprised of the overall program activities including the adoption of the waiver extension. Communications can be summarized as follows:

- Education meeting notices and handouts

- VCAILG newsletters
- Website updates
- Updates regarding the waiver renewal process and opportunities to comment

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: [www.farmbureauvc.com/vcailg/](http://www.farmbureauvc.com/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: [www.farmbureauvc.com/vcailg/water-quality-management-plan/](http://www.farmbureauvc.com/vcailg/water-quality-management-plan/). 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: [www.farmbureauvc.com/vcailg/education/](http://www.farmbureauvc.com/vcailg/education/). This page is continuously updated as additional classes become available. Additionally, VCAILG has developed a BMP Resources page with videos in English and Spanish covering topics important for training farm staff on *Conditional Waiver* requirements and best practices: [www.farmbureauvc.com/vcailg/bmp-resources/](http://www.farmbureauvc.com/vcailg/bmp-resources/).

## SURVEY COMPLETION

Management Practice Surveys were completed in June and July 2020, providing the implementation information necessary for reporting in the third VCAILG WQMP under the 2016 *Conditional Waiver*. The list of VCAILG members that did, or did not, complete that survey was included as Appendix K of the 2020 Annual Monitoring Report. A subsequent survey was not required during this reporting period and therefore a new Appendix K is not provided with this report.

## EDUCATION REQUIREMENTS

The *Conditional Waiver* requires that dischargers obtain a minimum of two hours of educational training every year. Appendix L lists the number of education hours each VCAILG member has obtained between December 1, 2021, and November 30, 2022. Six education classes were offered during the sixth year of implementation. Table 78 lists the education classes and the hours of credit for each class.

**Table 78. Courses for Education Credit – December 1, 2021 through November 30, 2022**

<b>Date</b>	<b>Course Title</b>	<b>Education Hours</b>
3/2/2022	UCNFA Ask the Advisor: Nitrogen Management	1
3/3/2022	Virtual Soil Health and Water Quality Field Day	2
5/6/2022	Fumigants and Non-Fumigant Alternatives: Regulatory and Research Updates	2
8/9/2022	UCNFA Fertilizers & Plant Nutrition Workshop (Ventura)	8
8/31/2022	UCCE Irrigation and Nutrient Management Meeting for Berry and Vegetable Crops	3
11/18/2022	VCAILG Workshop: Program Updates and Pesticide BMPs	2.5