Ventura Countywide Stormwater Quality Management Program

2016-2017 Permit Year

Ventura Countywide Stormwater Quality Management Program Annual Report

Attachment E1 - TMDL Reports (part I)

Camarillo
County of Ventura
Fillmore
Moorpark
Ojai
Oxnard
Port Hueneme
Santa Paula
Simi Valley
Thousand Oaks
Ventura
Ventura County Watershed Protection District

December 15, 2017

DECEMBER 15, 2016

Calleguas Creek Watershed TMDL Compliance Monitoring Program

Eighth Year Annual Monitoring Report – July 2015 to June 2016

Monitoring and Reporting Program for the Nitrogen and Related Effects; Organochlorine Pesticides, Polychlorinated Biphenyls and Siltation; Toxicity; Salts; and Metals and Selenium Total Maximum Daily Loads

submitted to:

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

prepared by:

LARRY WALKER ASSOCIATES

on behalf of the:

STAKEHOLDERS IMPLEMENTING TMDLS IN THE CALLEGUAS CREEK WATERSHED

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Acronyms

Ag Waiver	Conditional Waiver for Irrigated Agricultural Lands
AMR	Annual Monitoring Report
AWQMP	Agriculture Water Quality Management Plan
BPAs	Basin Plan Amendments
BMP	Best Management Practice
Caltrans	California Department of Transportation
CCW	Calleguas Creek Watershed
CCWTMP	Calleguas Creek Watershed TMDL Compliance Monitoring Program
DNQ	Detected Not Quantified
EC	Electrical Conductivity
EST	Estimated
GSQC	General Sediment Quality Constituents
GWQC	General Water Quality Constituents
LA	Load Allocation
MOA	Memorandum of Agreement
MDL	Method Detection Limit
NA	Not Applicable
ND	Not Detected
NS	Not Sampled
OC	Organochlorine

OP	Organophosphorus
PCBs	Polychlorinated Biphenyls
POTWs	Publically-Owned Treatment Works
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
SOPs	Standard Operating Procedures
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjehdahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSS	Total Suspended Solids
VCAILG	Ventura County Agricultural Irrigated Lands Group
WLA	Wasteload Allocation

Executive Summary

The purpose of this annual report is to document the eighth-year monitoring (July 2015 to June 2016) efforts and results of the Calleguas Creek Watershed (CCW) Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP) for the five TMDLs covered by the Quality Assurance Project Plan (QAPP). This annual report includes summaries of the sampling events, data summaries, and a compliance comparison.

TOTAL MAXIMUM DAILY LOADS

There are six TMDLs currently effective and being implemented in the Calleguas Creek Watershed. They include:

- 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)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL)[1]
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the CCWTMP was established and a QAPP developed and approved by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. Over time the original QAPP has been revised to incorporate newly adopted TMDLs, reflect changing field conditions, and include changes recommended in previous annual monitoring reports. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The Trash TMDL is addressed through a separate monitoring plan and annual monitoring report.

PROJECT ORGANIZATION

The CCWTMP is a coordinated effort with the various responsible parties that make up the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed (Stakeholders). Stakeholders identified in the TMDLs have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP.

The stakeholders to the MOA, for which this report fulfills the TMDL monitoring requirements, are as follows:

[1] Information related to the Revolon Slough and Beardsley Wash Trash TMDL is not part of this report. The Trash TMDL annual report is also submitted to the Regional Water Board on December 15th, annually.

- **POTWs**: consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;
- **Urban Dischargers**: consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers**: consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers**: consisting of the U.S. Department of Navy and Caltrans.

MONITORING EVENT SUMMARIES

Sampling events required by the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs during the eighth year of TMDL monitoring included four dry-weather events (Events 50, 51, 54, 55) and two wet weather events (Events 52 and 53). Grab samples for salts were obtained during these events, but were not used directly to determine compliance at receiving water sites.[2] A summary of Events 50 through 55 is included in Table ES-1.

Table ES - 1. Summary of Year 8 Monitoring Events

Event	Type	Date	Mugu Lagoon			Freshwater Sites		
			Water Quality	Sediment Quality & Toxicity[1]	Tissue[1]	Water Quality & Toxicity	Sediment Quality & Toxicity	Tissue
50	Dry	Aug 2015	X			X	X	
51	Dry	Nov 2015	X			X		
52	Wet	Jan 2016	X			X		
53	Wet	Jan 2016	X			X		
54	Dry	Feb 2016	X			X		
55	Dry	May 2016	X			X		X[2]

1. Mugu Lagoon sediment quality, sediment toxicity, and tissue samples are collected every three years. During year 10 is the next time these types of samples will be collected.
2. Fish tissue collected in May 2016 as part of Event 55.

SUMMARY OF COMPARISON TO TMDL ALLOCATIONS AND TARGETS

This report provides a comparison of water quality monitoring results to applicable TMDL allocations and targets, but does not reflect an assessment of compliance with individual permit or conditional waiver TMDL requirements for the responsible parties. For the most part, the CCW is meeting the applicable interim or final waste load allocations (WLAs) and load allocations (LAs) currently in effect for the Nutrients, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The following observations summarize the comparison of monitoring results with applicable TMDL allocations:

[2] Grab samples for salts at receiving water compliance sites are used to develop statistical relationships between specific conductivity (EC) and salt constituents, which are in turn used to convert high-density EC data from continuous monitors in the field to time series of salt concentrations.

- No exceedances of the interim wasteload allocations or load allocations for OCs or PCBs were observed at any location in the watershed.
- Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed in Mugu Lagoon, Revolon Slough, Beardsley Wash, Calleguas Creek, and Arroyo Simi. Most of the exceedances occurred during dry events, but there were 12 wet weather exceedances in Mugu Lagoon, Calleguas Creek, and Beardsley Wash. No exceedances of final nutrient WLAs were measured at any POTW.
- Two exceedances of the final MS4 wasteload allocations for chlorpyrifos were measured at receiving water sites during the dry weather; however, there were no exceedances of the interim load allocations. There were six exceedances of the final MS4 chlorpyrifos wasteload allocation during wet weather, but there were no instances where the chlorpyrifos concentration was above the interim load allocation. In addition, there was one instance where the diazinon final MS4 wasteload allocation was exceeded during wet weather and no instances where the interim load allocation was exceeded. These exceedances were considered in concert with MS4 outfall monitoring data and MS4 outfalls only exceeded the final allocations during 1 of these monitoring events. There were no exceedances of the final WLAs for chlorpyrifos or diazinon at any POTW.
- There were four exceedances of the interim load allocation or final MS4 wasteload allocation for total selenium measured during the four dry weather sampling events of 2015-2016 at the 04_WOOD site. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context. Additionally, there was one wet weather exceedance of the interim LA and interim WLA for total nickel at the 04_WOOD site.
- Although toxicity was observed at some locations in the watershed, toxicity events did not meet the TIE triggering requirements as detailed in the QAPP. As a result, the Stakeholders are in compliance with the toxicity WLAs and LAs per the requirements of the TMDL.
- In general, receiving water sites were in compliance with interim LAs and MS4 WLAs established by the Salts TMDL; the only exception being exceedances in TDS, sulfate, and boron measured at 04_WOOD in the Revolon Slough watershed, and two exceedances in chloride at 03_UNIV. POTWs are in compliance with interim salts WLAs, with the exception of Camarillo Water Reclamation Plant (WRP), which experienced exceedances of chloride, sulfate, and TDS. The exceedances of interim salts WLAs for the Camarillo WRP have resulted from increased influent salt concentrations due to water conservation and a shift in the composition of the water supplied within the service area. Because the process for addressing salts is a watershed effort involving significant capital investments, the Camarillo WRP received an amended Time Schedule Order in 2015 with adjusted interim limits for TDS, sulfate and chloride. As a result, the interim limits in the TMDL are not the currently applicable interim limits for the Camarillo WRP discharge.

MONITORING PROGRAM CHANGES

A revised QAPP was submitted to the Los Angeles Regional Water Quality Control Board (Regional Water Board) in December 2014. Although official approval of the revised QAPP has not yet been received by the Stakeholders, monitoring for the Year 8 2015-2016 monitoring year was conducted per the revised QAPP under the assumption that no response from the Regional Water Board indicated there were no requested changes to the revised QAPP. The QAPP was updated to incorporate the Salts TMDL monitoring approach. The QAPP was also updated for all constituents to reflect the recommendations identified in prior annual reports and reflect monitoring adjustments that have been implemented due to field conditions.

The revised QAPP details the replacement of two monitoring sites in Reach 7 with new locations, and the reduction of monitoring requirements at certain locations taking into consideration TMDL compliance status. In addition to the updates identified in the 2014 revised QAPP, access to 06_SOMIS in Arroyo Los Posas has been revoked by the landowner. Therefore, the site was only visited during the first two monitoring events. A replacement site has been identified and is being sampled in the current monitoring year (Year 9).

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Introduction and Program Background

INTRODUCTION

In the Calleguas Creek Watershed (CCW), the following six total maximum daily loads (TMDLs) are currently effective and include monitoring requirements in the implementation plans:

- 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)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL) [1]
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the CCWTMP was established and a QAPP developed and approved by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. Over time the original QAPP has been revised to incorporate newly adopted TMDLs, reflect changing field conditions, and include changes recommended in previous annual monitoring reports. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The Trash TMDL is addressed through a separate monitoring plan and annual monitoring report.

A monitoring approach (Salts Plan) for the Salts TMDL was submitted by the Stakeholders to the Regional Water Board in June 2009, which was conditionally approved in September 2011. Compliance monitoring for the Salts TMDL was required starting September 9, 2012.

The primary purpose of this report is to document the eighth year monitoring efforts (July 2015 to June 2016) and results of the CCWTMP for the five TMDLs included in the QAPP. The report includes summaries of the sampling events, data summaries, and a comparison to applicable TMDL allocations and targets. The report is divided into the following sections:

- Introduction and Program Background
- Monitoring Program Structure
- Monitoring Data Summary
- Exceedance Evaluation and Discussion
- Revisions and Recommendations

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[1] Information related to the Revolon Slough and Beardsley Wash Trash TMDL is not part of this report. The Trash TMDL annual report is submitted to the Regional Water Board annually on December 15th.

In addition, there are several appendices included with this report and several attachments (electronic data files) associated with this report, including:

- Appendices (text documents)
  - Appendix A: Monitoring Event Summaries for Toxicity, OC Pesticides, Nutrients, Metals, and Salts TMDLs
  - Appendix B: Calibration Event Summary for Salts TMDL
  - Appendix C: Salts Rating Curves and Surrogate Relationships
  - Appendix D: Toxicity Testing and Toxicity Identification Evaluations Summary
  - Appendix E: Laboratory Quality Assurance/Quality Control Results and Discussion
- Attachments (electronic data files)
  - Attachment 1: Toxicity Data
  - Attachment 2: Monitoring Data
  - Attachment 3: Salts Mean Daily Flows: July 2015 to June 2016
  - Attachment 4: Chain-of-Custody Forms

PROJECT ORGANIZATION

The CCWTMP is a coordinated effort where the various responsible parties identified in the TMDLs have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP. The responsible parties identified in the organizational structure have formally joined together to fulfill their monitoring requirements as outlined in the Basin Plan Amendments (BPAs) for the five TMDLs included in the QAPP.

The CCWTMP is intended to fulfill the monitoring requirements for only those stakeholders that are part of the MOA and/or identified by the participants of the MOA. The stakeholders to the MOA for which this report fulfills the TMDL monitoring requirements are as follows:

- **POTWs**: consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;
- **Urban Dischargers**: consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers**: consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers**: consisting of the U.S. Department of the Navy and the California Department of Transportation (Caltrans).

Per the MOA, a Management Committee, consisting of one representative each from the POTWs, Urban Dischargers and Other Dischargers groups, and two representatives from the Agricultural Dischargers group, oversees the CCWTMP and makes decisions to assure the CCWTMP is carried out in a timely, accountable fashion.

Prior to the initiation of the first required sampling event in 2008, the Stakeholders contracted the day-to-day management of the CCWTMP activities and field sampling activities. The following contractors performed the following tasks during the sixth year monitoring effort:

- **General Project Management** - Larry Walker Associates, Inc. (LWA)
- **Field Monitoring Activities**
  - **Mugu Lagoon Water Quality Sampling** - MBC Applied Environmental Sciences (MBC)
  - **Freshwater Water Quality/Sediment Sampling** - Kinnetic Laboratories, Inc. (KLI), Fugro West, Inc. (Fugro), LWA
  - **Freshwater Fish Tissue** – Cardno ENTRIX
  - **Bird Egg Collection** – Naval Base Ventura County Environmental Staff
- **Water, Sediment, and Tissue Chemistry Analysis** - Physis Environmental Laboratories, Inc. (Physis)
- **Salts Chemistry Analysis** - Fruit Growers Laboratory, Inc. (FGL) and Physis
- **Toxicity Analysis** - Pacific Eco Risk Laboratories (PacEco)

The aforementioned contractors performed all the management activities and sampling efforts covered by this annual report. All field contractors are the same as used in last year's sampling efforts. As the monitoring program moves forward this list of contractors may continue to be amended to reflect new contractors hired on to perform required or new duties per the decision of the Stakeholders in the CCW.

WATERSHED BACKGROUND

Calleguas Creek drains an area of approximately 343 square miles from the Santa Susana Pass in the east to Mugu Lagoon in the southwest. 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 watershed, which is elongated along an east-west axis, is approximately thirty miles long and fourteen miles wide. The Santa Susana Mountains, South Mountain, and Oak Ridge form the northern boundary of the watershed; the southern boundary is formed by the Simi Hills and Santa Monica Mountains. Figure 1 depicts the CCW and Table 1 presents the reaches of the CCW as identified in the TMDLs covered by the CCWTMP.

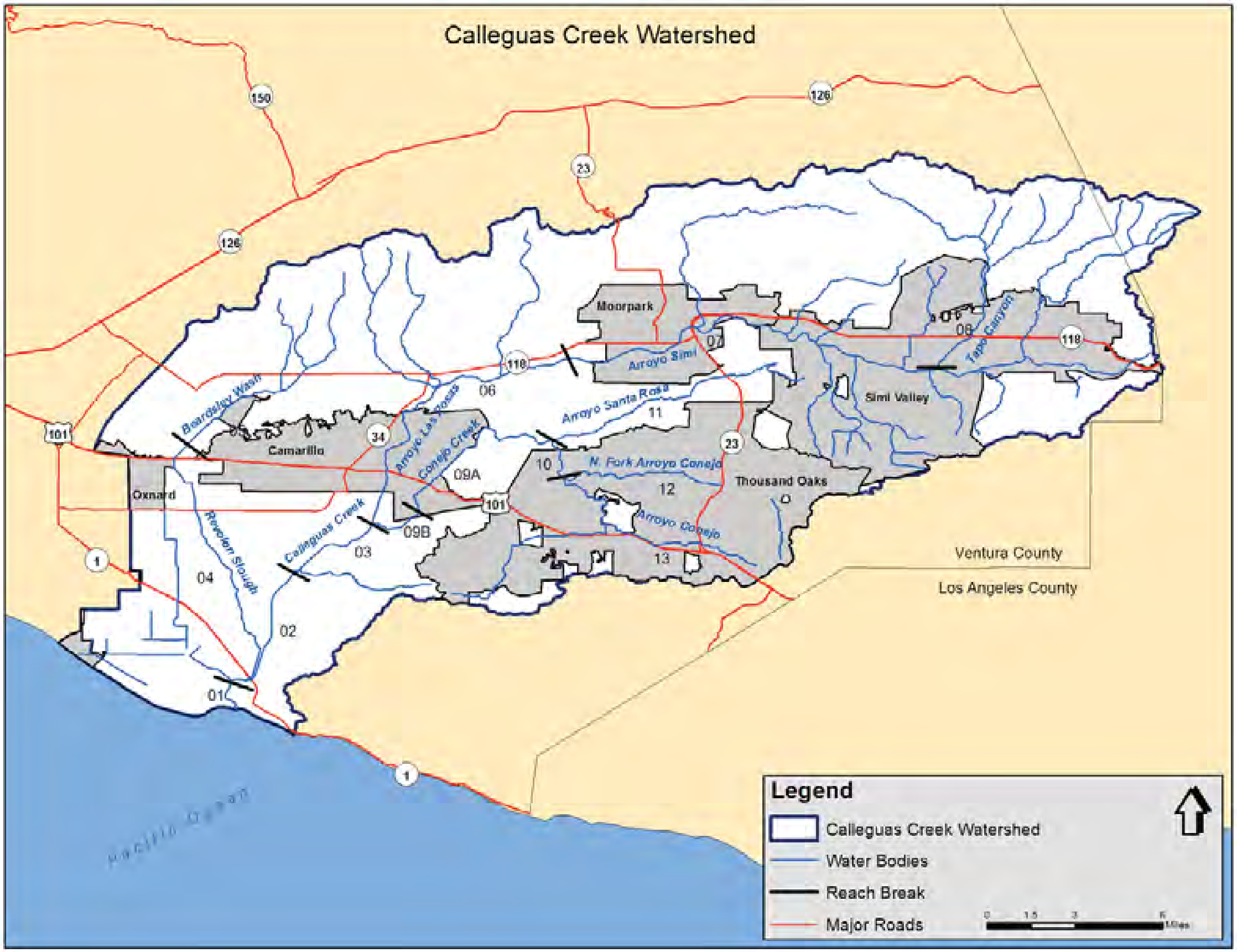


Figure 1. Calleguas Creek Watershed

Table 1. Description of Calleguas Creek Watershed Reaches

Reach No.	Reach Name	Subwatershed	Geographic Description
1	Mugu Lagoon	Mugu	Lagoon fed by Calleguas Creek
2	Calleguas Creek (Estuary to Potrero Rd.)	Calleguas	Downstream (south) of Potrero Rd
3	Calleguas Creek (Potrero Rd. to Conejo Creek)	Calleguas	Potrero Rd. upstream to confluence with Conejo Creek
4	Revolon Slough	Revolon	Revolon Slough from confluence with Calleguas Creek to Central Ave
5	Beardsley Channel	Revolon	Revolon Slough upstream of Central Ave.
6	Arroyo Las Posas	Las Posas	Confluence with Calleguas Creek to Hitch Road
7	Arroyo Simi	Arroyo Simi	End of Arroyo Las Posas (Hitch Rd) to headwaters in Simi Valley.
8	Tapo Canyon Creek	Arroyo Simi	Confluence w/ Arroyo Simi up Tapo Canyon to headwaters
9B [1]	Conejo Creek (Camrosa Diversion to Arroyo Santa Rosa)	Conejo	Extends from the confluence with Arroyo Santa Rosa downstream to the Conejo Creek Diversion.
9A [1]	Conejo Creek (Calleguas Creek to Camrosa Diversion)	Conejo	Extends from Conejo Creek Diversion to confluence with Calleguas Creek.
10	Hill Canyon reach of Conejo Creek	Conejo	Confluence with Arroyo Santa Rosa to confluence with N. Fork; and N. Fork to just above Hill Canyon WTP
11	Arroyo Santa Rosa	Conejo	Confluence with Conejo Creek to headwaters
12	North Fork Conejo Creek	Conejo	Confluence with Conejo Creek to headwaters
13	Arroyo Conejo (South Fork Conejo Creek)	Conejo	Confluence with N. Fork to headwaters —two channels

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched.

MONITORING QUESTIONS

The purpose of the CCWTMP is to direct the monitoring activities conducted to meet the requirements of the TMDLs effective for the CCW, excluding the Trash TMDL. The goals of the CCWTMP include:

- To determine compliance with numeric targets, waste load and load allocations, and interim load reduction milestones.
- To test for sediment toxicity at sediment monitoring stations.
- To identify causes of unknown toxicity.
- To generate additional land use runoff data to better understand pollutant sources and proportional contributions from various land use types.

- To monitor the effect of implementation actions by urban, POTW, and agricultural dischargers on in-stream water, sediment, fish tissue quality, and watershed balances (salts).
- To implement the program consistent with other regulatory actions within the CCW.

In addition, the CCWTMP is intended to answer the following monitoring questions to meet the goals of the program:

- Are numeric targets and allocations met at the locations indicated in the TMDLs?
- Are conditions improving?
- What is the contribution of constituents of concern from various land use types?

MONITORING PROGRAM DESCRIPTION

The CCWTMP was developed to address all necessary TMDL monitoring requirements and answer the monitoring questions mentioned previously using the following monitoring elements.

Required Monitoring Elements

The following environmental monitoring elements are required by the TMDLs' BPAs and are included in the CCWTMP:

- General water and sediment quality constituents;
- Water column and sediment toxicity;
- Metals and selenium in water, sediment, fish tissue, and bird eggs;
- Organic compounds in water, sediment, and fish tissue; and,
- Nitrogen and phosphorus compounds in water.
- Salt compounds in water and continuous flow in dry weather (the latter only at Salts TMDL receiving water compliance sites)

Table 2 lists the constituents for which analyses are conducted. Table 2 also provides a summary of sampled constituent groups and sampling frequency. The QAPP outlines, in detail, the justification of the process design, specific methodologies (both field and analytical), and quality assurance/quality control (QA/QC) procedures.

Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site)

Constituent	Frequency
Chronic Aquatic Toxicity	Quarterly + Two wet events
General Water Quality Constituents (GWQC)	Quarterly based on location + Two wet events
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Total Suspended Solids (TSS), Hardness (at freshwater sites where metals samples are collected), and Dissolved Organic Carbon (at saltwater sites where metals samples are collected)	
Nutrients	Quarterly + Two wet events
Ammonia Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Organic Nitrogen, Total Kjehdahl Nitrogen (TKN), Total Phosphorus, Orthophosphate-P	
Organic Constituents In Water	Quarterly + Two wet events
OC Pesticides [1] and PCBs [2], OP [3], Triazine [4], and Pyrethroid [5] Pesticides	
Metals and Selenium In Water [6]	Quarterly + Two wet events [7]
Copper, Mercury, Nickel, Zinc, and Selenium [8]	
Salts	
Electrical Conductivity (EC) and Discharge	Receiving water: Continuous (via in-situ sensors for EC and depth) plus monthly grabs for EC and discharge for sensor calibration
Total Dissolved Solids (TDS), Sulfate, Chloride, Boron	Receiving water: Continuous (derived from EC/salt relationships) Other sites: Quarterly + Two wet events
Chronic Sediment Toxicity	Annually (Every three years in Lagoon)
General Sediment Quality Constituents (GSQC)	Annually (Every three years in Lagoon)
Total Ammonia, Percent Moisture, Grain Size Analysis, Total Organic Carbon (TOC)	
Organic Constituents In Sediment	Annually (Every three years in Lagoon)
OC Pesticides[1] and PCBs[2], OP Pesticides[3], and Pyrethroids[5]	

Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site) - continued

Additional Constituents For Mugu Lagoon Sediment	Every three years
Metals[9]	
Tissue	Annually (Every three years in Lagoon)
Percent Lipids, OC Pesticides[1] and PCBs[10], OP Pesticides[3], and Metals[11]	

1. OC Pesticides considered: aldrin, alpha-BHC, beta-BHC, gamma-BHC (lindane), delta-BHC, chlordane-alpha, chlordane-gamma, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene
2. PCBs in water and sediment considered: Aroclors identified in the CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).
3. OP Pesticides considered: chlorpyrifos, diazinon, and malathion. Chlorpyrifos is the only OP pesticide that will be measured in tissue, as it is the only OP listed in tissue.
4. Triazine Pesticides considered: atrazine, prometryn, and simazine. Analysis of triazines ceased during year 3 following the recommendation being included in the Revisions and Recommendations section of both the year 1 and year 2 annual reports.
5. Pyrethroid Pesticides considered: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, and permethrin
6. Copper, mercury, nickel, selenium and zinc will be measured as dissolved and total recoverable.
7. Per the Metals TMDL BPA requires that "In-stream water column samples will be collected monthly for analysis of general water quality constituents (GWQC) and, copper, mercury, nickel, selenium, and zinc for the first year. After the first year, the Executive Officer will review the monitoring report and revise the monitoring frequency as appropriate." Monthly monitoring will be suspended until such time as the Executive Officer has reviewed the monitoring report and considered revisions to the monitoring frequency. Until the Executive Officer has considered the frequency, metals will be collected quarterly in conjunction with the other TMDLs.
8. Monitoring at sites in Mugu Lagoon other than at the Ronald Reagan Street Bridge Site (01_RR_BR) for metals is an optional element.
9. Includes arsenic, cadmium, copper, lead, mercury, nickel, selenium and zinc. Arsenic, lead, and cadmium are included in addition to constituents required in the Metals TMDL as they have been found in previous sediment studies conducted in Mugu Lagoon to exceed guideline values used to interpret the relationship between sediment chemistry and biological impacts.
10. PCBs in tissue considered: individual congers.
11. Total mercury and selenium will be measured in bird eggs and methyl mercury and total selenium will be measured in fish tissue.

Optional Monitoring Elements

The QAPP outlines the optional monitoring efforts, all of which are considered above and beyond what is necessary to meet the requirements of the BPAs and answer the monitoring questions.

Table 3 lists the constituents and analyses that are considered optional for the CCWTMP. Monitoring for the constituents and conducting the analyses are not BPA requirements but are important to meeting general program goals and answering program questions. Table 3 also provides a general sampling frequency for each constituent group.

Table 3. Optional Constituents and Monitoring Frequency for CCWTMP (varies by site)

Constituent	Frequency
Organic Constituents in Water – Grain Size Fractions [1]	One wet event annually
OC Pesticides and PCBs, OP, and Pyrethroid Pesticides	
Organic Constituents in Sediment – Grain Size Fractions [1]	Annually (Every three years in Mugu Lagoon)
OC Pesticides and PCBs, OP, and Pyrethroid Pesticides	
Additional Constituents for Mugu Lagoon Sediment	Every three years [2]
Macrobenthic community assessment	
Sediment Toxicity – *Eohaustorius estuaries and Mytilus galloprovincialis*	
PCBs[3] and PAHs[4]	

1. Please see Table 2 for a list of individual constituents in each suite.
2. Mugu Lagoon assessments were conducted during the first, fourth, and seventh monitoring years.
3. PCBs considered: 2,4'-Dichlorobiphenyl, 2,2',5-Trichlorobiphenyl, 2,4,4'-Trichlorobiphenyl, 2,2',3,5'-Tetrachlorobiphenyl, 2,2',5,5'-Tetrachlorobiphenyl, 2,3',4,4'-Tetrachlorobiphenyl, 2,2',4,5,5'-Pentachlorobiphenyl, 2,3,3',4,4-Pentachlorobiphenyl, 2,3',4,4',5-Pentachlorobiphenyl, 2,2',3,3',4,4'-Hexachlorobiphenyl, 2,2',3,4,4',5'-Hexachlorobiphenyl, 2,2',4,4',5,5'-Hexachlorobiphenyl, 2,2',3,3',4,4',5-Heptachlorobiphenyl, 2,2',3,4,4',5,5'-Heptachlorobiphenyl, 2,2',3,4',5,5',6-Heptachlorobiphenyl, 2,2',3,3',4,4',5,6-Octachlorobiphenyl, 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, Decachlorobiphenyl
4. PAHs considered: 1-Methylnaphthalene, 1-Methylphenanthrene, 2,6-Dimethylnaphthalene, 2-Methylnaphthalene, Acenaphthene, Anthracene, Biphenyl, Fluorene, Naphthalene, Phenanthrene, Benz(a)anthracene, Benzo(a)pyrene, Benzo(e)pyrene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Perylene, Pyrene.

Special Studies

The Nitrogen, Toxicity, OC Pesticides, Salts, and Metals TMDL Implementation Plans identify required and optional special studies to investigate a range of issues. No specific special studies results are incorporated into this annual report summary at this time as the results of all special studies conducted to date have been submitted as separate reports. Data gathered during special study specific sampling may also be utilized to further answer not only the special studies questions, but also be applied to the overall CCWTMP goals and questions identified previously in this report.

Monitoring Program Structure

As outlined previously, the CCWTMP covers a broad range of TMDL monitoring requirements, including both required and optional efforts. The overall structure of these requirements per each event can be broken down into two categories: (1) compliance monitoring and (2) investigation monitoring. Compliance monitoring sites are typically located in receiving water bodies where 303(d) listings occur, and are considered points of compliance measurements. The investigational sites are located throughout the watershed, and include monitoring of drain outfalls. The purpose of these sites is not to measure compliance, but to assist with evaluating land use-specific contributions of various constituents to the watershed.

The CCWTMP effort is also divided into two monitoring efforts: (1) dry weather monitoring and (2) wet weather storm water monitoring. The following sections describe, in detail, the basis for each monitoring effort, starting with the definitions of the compliance monitoring sites and investigation monitoring sites. Specific monitoring efforts associated with each sample site are included, including the frequency of sampling by site for both dry weather and wet weather events. The sampling frequency and the constituents monitored for at the sites covered by the CCWTMP vary. A more detailed description of each topic covered can be found in the appropriate element of the QAPP, including standard operating procedures (SOPs) for field collection and sample handing techniques, and analytical procedures and protocols including minimum detection limit (MDL) and reporting limit (RL) requirements.

COMPLIANCE MONITORING

Compliance Monitoring for Toxicity, OC Pesticides, Metals, Nitrogen, and Salts TMDLs

For compliance monitoring to address the Toxicity, OC Pesticides, Metals and Nitrogen TMDLs, dry weather in-stream water column samples were collected quarterly for water column toxicity, general water quality constituents (GWQC), target organic constituents, metals, and nutrients. Target organic constituents for the OC Pesticides TMDL include the OC Pesticides and PCBs listed as a footnote in Table 2. Target organic constituents for the Toxicity TMDL include the OP and pyrethroid pesticides listed as a footnote in Table 2. Target metals for the Metals and Selenium TMDL are listed as a footnote in Table 2.

In-stream water column samples to measure compliance for the Toxicity, OC Pesticides, and Metals TMDLs are generally collected at the base of each of the subwatersheds used to assign waste load and load allocations, per the BPAs.[1] In-stream water column samples to measure compliance for the Nitrogen TMDL are generally collected at the base of each listed reach. Toxicity Identification Evaluations (TIEs) are conducted on toxic samples as outlined in the Toxicity Testing and TIE section of the QAPP and results of these are discussed in the Toxicity Testing and TIE Evaluations Summary section of this report.

In-stream water column grab samples for salts were also collected quarterly during dry weather and twice during wet weather at the base of each of the subwatersheds specified in the Salts TMDL. The grab sample results are used to develop statistical relationships between salt

[1] The QAPP includes an optional metals monitoring element to monitor additional sites in Mugu Lagoon.

constituents and EC. These relationships are used to convert high frequency EC-sensor data to time-series of salt concentrations. Compliance with interim dry weather salt allocations is determined using monthly mean salt concentrations for dry weather developed from the time-series of data.

Additionally, POTW effluent was monitored for compliance with the effluent limits presented in the Toxicity, OC Pesticides, Metals, and Salts TMDL BPAs. Currently, POTWs collect data required by each of their individual monitoring requirements. For additional TMDL constituents not currently sampled by the plants, CCWTMP crews perform sampling as necessary (efforts vary by plant and constituent group). All CCWTMP-required data for POTWs are compiled in this report.

All efforts are made to include two wet weather water sampling events for compliance monitoring for the OC Pesticides, Toxicity, Metals, and Salts TMDLs during targeted storm events between October and April. Two wet weather events were completed in January 2016.

Streambed sediment samples, collected annually in the freshwater portion of the watershed, were collected during the first event of this monitoring year and analyzed for sediment toxicity, general sediment quality constituents (GSQC), and target organics. Sediment samples in Mugu Lagoon are collected every three years per the approved QAPP, and were not collected during year eight.

Similar to the sediment sampling frequency, fish tissue samples were only collected in the freshwater portions of the watershed during year eight in May 2016, and will continue to be collected annually for the CCWTMP. As tissue samples are collected every three years in Mugu Lagoon, samples will be collected again in year 10.

INVESTIGATION MONITORING

Investigation monitoring focuses on identifying the contribution of constituents of concern from various land uses in the watershed and areas where toxicity has been observed to occur in the past that are not addressed by compliance monitoring. These sites are meant to compliment compliance monitoring efforts, fill data gaps where identified, and assist in identification of sources of constituents that may be leading to non-compliant conditions. The following describes the various types of investigation sites sampled during this reporting period.

Land Use Discharge Investigation

Land use discharge samples are generally collected concurrently (on the same day when possible) with compliance monitoring at representative agricultural and urban discharge sites generally located in each of the subwatersheds and analyzed for selected GWQC, metals, and target organic constituents (constituents monitored per site varies based upon sub-watershed).

Toxicity Investigation

As significant mortality had not occurred at the two sediment toxicity investigation sites during the first three years of the CCWTMP, ceasing investigation monitoring was recommended in the third year annual report. Toxicity testing at the investigation sites ceased until Event 38, when it was resumed to support delisting of the identified reaches. The normal annual sampling frequency for this investigation is provided in Table 6.

Sediment toxicity investigation monitoring for delisting occurred during Event 50. Water column toxicity sampling occurred during all events. In addition, the year eight samples were analyzed for a suite of constituents (general chemistry, general nutrients, metals, PCBs, OC pesticides, OP pesticides, and pyrethroid pesticides), particle size distribution, and total organic carbon.

SAMPLING SITES

The QAPP details the justification and rationale for each of the sites sampled via the CCWTMP. Information on compliance monitoring sites and land use sites sample collection frequency is presented in Table 4 and Table 5, respectively. The general locations of the receiving water compliance monitoring sites (excluding Mugu Lagoon) for water, sediment, and fish tissue are presented in Figure 2 through Figure 4. The POTW effluent discharge sites are presented in Figure 5. The sampling sites in each figure are designated by sampled constituent group. The compliance monitoring sampling zones for sediment sampling and tissue sampling in Mugu Lagoon are shown in Figure 6 and Figure 7, respectively.

The non-Mugu Lagoon water and sediment toxicity investigation sampling sites coincide with current and previous sampling programs in the CCW. Water and sediment toxicity investigation sampling sites and sampling frequency are presented in Table 6, while the general locations of the water and sediment toxicity investigation sampling sites in the CCW are presented in Figure 8. Land use monitoring sites are shown in Figure 9.

The salt monitoring sites correspond with compliance sites or land use sites used for monitoring related to other TMDLs (Figure 2) with two exceptions:

1. One of the salt compliance points is only used for salt monitoring (Conejo Creek at Baron Brothers Nursery).
2. The continuous monitoring equipment (and the location of monthly salt grab samples) for the Simi subwatershed was installed just downstream of the Tierra Rejada bridge, and is referred to as “07_TIERRA”.

The CCWTMP efforts summarized in the annual report correspond to the sites and locations listed below. As this program progresses, the number and location of sites may be revised if existing sites become inaccessible, if it is determined that alternative locations are needed, or if the number of land use stations needed to appropriately characterize discharges needs modification.

Table 4. CCWTMP Compliance Monitoring and Nutrient Investigation Sites Annual Sampling Frequency

Sub-Wat.	Site Id	Reach	Site Location	GPS Coordinates		Water [1, 2]						Sediment			Tissue [3]	
				Lat	Long	Tox	Pests/ PCBs	Nut	Metal	Salts	GWQC	Tox	Pests /PCBs	Metal	Pests/ PCBs	Metal [4]
Mugu Lagoon	01_RR_BR	1	Ronald Reagan St Bridge	34.1090	-119.0916	6	6	6	6	NA	6	NA	NA	NA	NA	NA
	01_BPT_3	1	Located In Eastern Arm	General site locations are provided as each site represents a generalized sample collection zone in which a sample will be collected.		NA	NA	NA	NA	NA	NA	Once Every Three Years				
	01_BPT_6	1	Located In Eastern Part Of Western Arm			NA	NA	NA	NA	NA	NA					
	01_BPT_14	1	Located In The Central Part Of The Western Arm			NA	NA	NA	NA	NA	NA					
	01_BPT_15	1	Located Between Estuary and Mouth of Lagoon			NA	NA	NA	NA	NA	NA					
	01_SG_74	1	Located In Western Part of Central Lagoon			NA	NA	NA	NA	NA	NA					
	Central Lagoon	1	Sampled In Central Lagoon			NA	NA	NA	NA	NA	NA				Once Every Three Years	
	Western Arm	1	Sampled In Western Arm Of The Lagoon			NA	NA	NA	NA	NA	NA					
Revolon Slough	04_WOOD [5]	4	Revolon Slough East Side Of Wood Road	34.1698	-119.0958	6	6	6	6	6	6	1	1	NA	1	1
	05_CENTR	5	Beardsley Wash at Central Avenue	34.2300	-119.1128	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA
Calleguas	02_PCH	2	Calleguas Creek NE Side of Hwy 1 Bridge	34.1119	-119.0818	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA
	03_UNIV	3	Calleguas Creek At Camarillo Street	34.1795	-119.0399	6	6	6	6	6	6	1	1	NA	1	NA
	03D_CAMR [6]	3	Camrosa Water Reclamation Plant	34.1679	-119.0530	4	4	4	4	4	4	NA	NA	NA	NA	NA
	9A_HOWAR [7]	9B [7]	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	NA	NA	6	NA	6	NA	NA	NA	NA	NA	NA
	9AD_CAMA [7]	9B [7]	Camarillo Water Reclamation Plant	34.1938	-119.0017	4	4	4	4	4	4	NA	NA	NA	NA	NA
Conejo	9B_ADOLF [7]	9A [7]	Conejo Creek At Adolfo Road	34.2137	-118.9894	6	6	6	NA	NA	6	NA	1	NA	1	NA
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below N Fork	34.2178	-118.9281	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA

Sub-Wat.	Site Id	Reach	Site Location	GPS Coordinates		Water [1, 2]						Sediment			Tissue [3]	
				Lat	Long	Tox	Pests/ PCBs	Nut	Metal	Salts	GWQC	Tox	Pests /PCBs	Metal	Pests/ PCBs	Metal [4]
	10D_HILL	10	Hill Canyon Wastewater Treatment Plant	34.2113	-118.9218	4	4	4	4	4	4	NA	NA	NA	NA	NA
	12_PARK	12	Conejo Creek North Fork above Hill Canyon	34.2144	-118.915	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA
	13_BELT	13	Conejo Creek S Fork Behind Belt Press Building	34.2078	-118.9194	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA
	9B_BARON [7]	9A [7]	Conejo Creek at Baron Brothers Nursery	34.2365	-118.9643	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA
Las Posas	06_SOMIS[8]	6	Arroyo Las Posas off Somis Road	34,2540	-118.9925	6	6	6	NA	NA	6	NA	1	NA	1	NA
	06D_MOOR [6]	6	Ventura County Wastewater Treatment Plant	34.2697	-118.9357	4	4	4	4	4	4	NA	NA	NA	NA	NA
Arroyo Simi	07_HITCH	7	Arroyo Simi East Of Hitch Boulevard	34.2716	-118.9234	6	6	6	NA	NA	6	NA	1	NA	1	NA
	07_TIERRA	7	Arroyo Simi downstream from Tierra Rejada Blvd.	34.2701	-118.9058	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA
	07_MADER	7	Arroyo Simi at Madera Ave.	34.2778	-118.7958	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA
	07D_SIMI	7	Simi Valley Water Quality Control Plant	34.2848	-118.8128	4	4	4	4	4	4	NA	NA	NA	NA	NA

NA – Not Analyzed
Tox – Samples will be analyzed for toxicity and OP and pyrethroid pesticides as listed in Table 2. Toxicity in water will not be analyzed at 01_RR_BR or at the POTWs.
Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2. Chlorpyrifos will be analyzed in tissue at 04_WOOD as it is on the 303(d) list for this reach.
Nut – Samples will be analyzed for Nutrients as listed in Table 2.
Metal – Samples will be analyzed for Metals as listed in Table 2.
GWQC – Samples will be analyzed for General Water Quality Constituents as listed in Table 2.

1. Sites listed for 6 sampling events per monitoring year refers to 4 quarterly dry events and the attempt to sample 2 additional wet events.
2. Grab samples for salts at compliance sites are not directly used to determine compliance with salts WQOs, but are used to develop statistical relationships between EC and salt constituents (Appendix C).
3. Tissue samples will be collected in the same location as water and sediment samples. Samples may be collected elsewhere if no fish are found at pre-established sample stations.
4. Bird egg samples will be collected and analyzed for mercury and selenium in the Mugu Lagoon subwatershed.
5. TIEs will not be performed at 04_WOOD.
6. The Camrosa Water Reclamation Plant and the Ventura County Wastewater Treatment Plant are not currently discharging. However, these sites are included in case they must be sampled at a later date.
7. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
8. In Year 8, sampling crews were no not able to access the 06_SOMIS site for the majority of the year. An alternative site downstream has been chosen to replace the 06_SOMIS site.

Table 5. CCWTMP Land Use Monitoring Sites and Sample Frequency

Sub-Wat.	Site ID	Reach	Site Type [1]	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Pests/ PCBs	Nutrients	Metal	Salts	GWQC
Mugu Lagoon	01T_ODD2_DCH	1	Ag	Duck Pond/Mugu/Oxnard Drain #2 S. of Hueneme Rd	34.1395	-119.1185	6	6	6	NA	6
Revolon Slough	04D_WOOD	4	Ag	Agricultural Drain on E. Side of Wood Rd N. of Revolon	34.1708	-119.0963	6	6	6	6	6
	05D_SANT_ VCWPD	5	Ag	Santa Clara Drain at VCWPD Gage 781 prior to confluence with Beardsley Channel	34.2426	-119.1137	6	6	6	NA	6
	04D_VENTURA	4	Urban	Camarilo Hills Drain at Ventura Blvd and Las Posas Rd at VCWPD Gage 835	34.2162	-119.0685	6	NA	6	6	6
Calleguas	02D_BROOM	2	Ag	Discharge to Calleguas Creek at Broome Ranch Rd.	34.1433	-119.0713	6	6	6	NA	6
Conejo	9BD_GERRY [2]	9A [2]	Ag	Drainage ditch crossing Santa Rosa Rd at Gerry Rd	34.2358	-118.9446	6	6	6	6	6
	9BD_ADOLF [2]	9A [2]	Urban	Urban storm drain passing under N. side of Adolfo Rd approximately 300 meters from Reach 9B	34.2148	-118.9951	6	NA	6	6	6
	13_SB_HILL	13	Urban	South Branch Arroyo Conejo on S. Side of W Hillcrest	34.1849	-118.9075	6	NA	NA	6	6
Las Posas	06T_FC_BR	6	Ag	Fox Canyon at Bradley Rd - just north of Hwy 118	34.2646	-119.0111	6	6	NA	NA	6
Arroyo Simi	07D_HITCH_ LEVEE_2	7	Ag	2nd corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd just beyond 1st power pole.	34.2716	-118.9219	6	6	NA	6	6
	07D_MPK [3]	7	Urban	Gabbert Canyon Drain, N. side of 118	34.2790	-118.9056	6	NA	NA	6	6
	07D_SIM_BUS [4]	7	Urban	Bus Canyon Dr N. of 5th St and LA Ave intersection	34.2719	-118.7837	6	NA	NA	NA	6

Ag = Agricultural Land Use Site Urban = Urban Land Use Site NA – Not Analyzed

1. Specific constituents analyzed under each category are listed in Table 2.
2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
3. Site 07D_MPK replaces 07D_CTP to correspond with the Moorpark MS4 outfall sampling location.
4. Site 07D_SIM_BUS replaces 07T_DC_H to correspond with the Simi Valley MS4 outfall sampling location.

Table 6. Toxicity Investigation Monitoring Sites and Sampling Frequency

Subwatershed	Site ID	Reach	Site Location	GPS Coordinates Lat	GPS Coordinates Long	Tox	Pests/PCBs	GWQC
Sediment Toxicity Investigation [1]								
Calleguas	02_PCH	2	Calleguas Creek Northeast Side Of Highway 1 Bridge	34.1119	-119.0818	1	1	1
Calleguas	9A_HOWAR [2]	9B [2]	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	1	1	1
Water Toxicity Investigation [1, 3]								
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below North Fork Of Conejo Creek	34.2178	-118.9281	6	6	6
Conejo	13_BELT	13	Conejo Creek South Fork Behind Hill Canyon Belt Press Building	34.2078	-118.9194	6	6	6

Tox – Samples will be analyzed for toxicity, OP, and pyrethroid pesticides in water and toxicity, OP, and pyrethroid pesticides in sediment as listed in Table 2.

Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2.

GWQC – Samples will be analyzed for General Water Quality Constituents as listed in Table 2.

1. This table depicts the normal toxicity investigation sampling frequency. During year 5, this investigation was put on hold and then re-started as described in text.
2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
3. Includes two wet events per site; except during years when there is insufficient rainfall to trigger sampling.

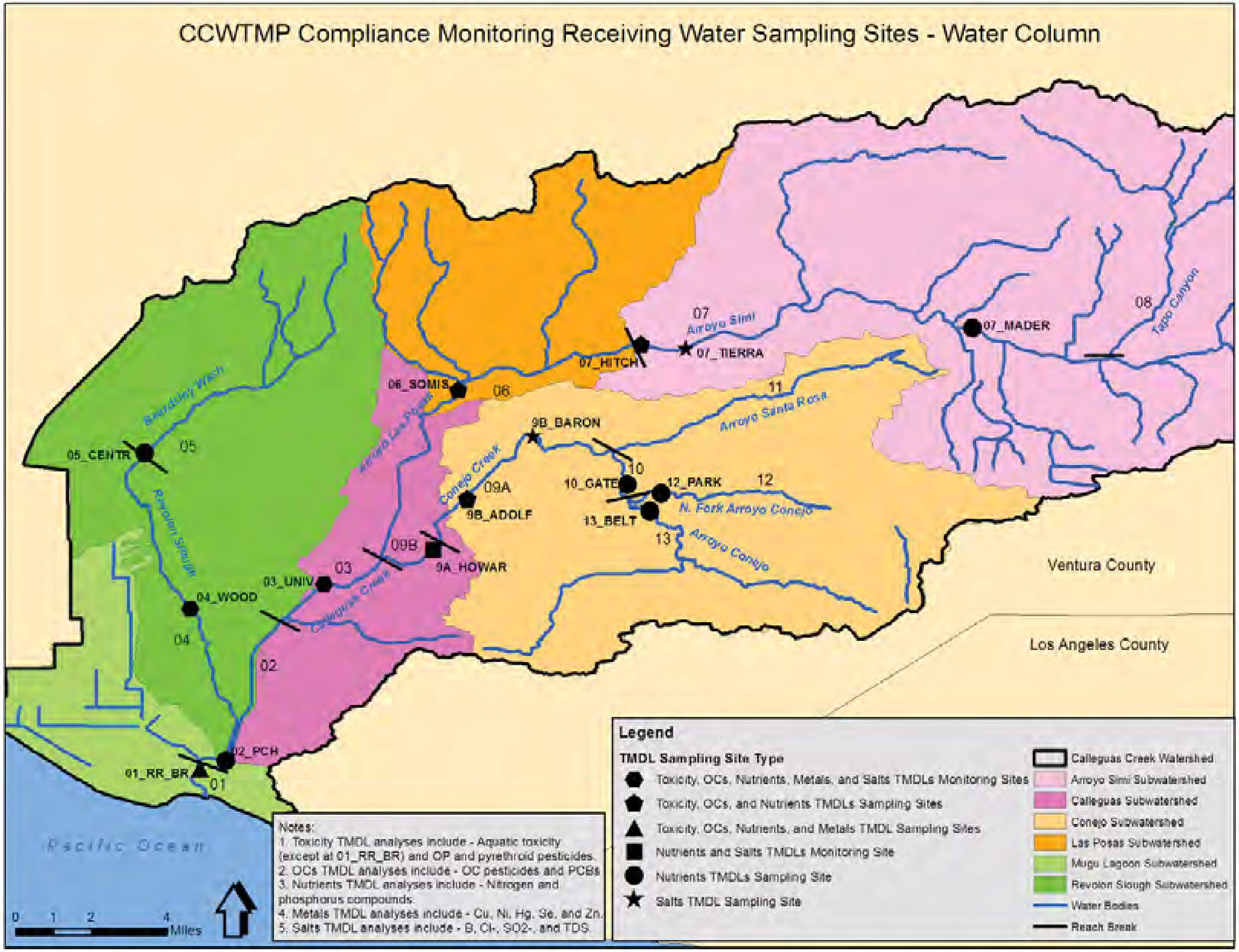


Figure 2. CCWTMP Compliance Monitoring Sampling Sites – Receiving Water

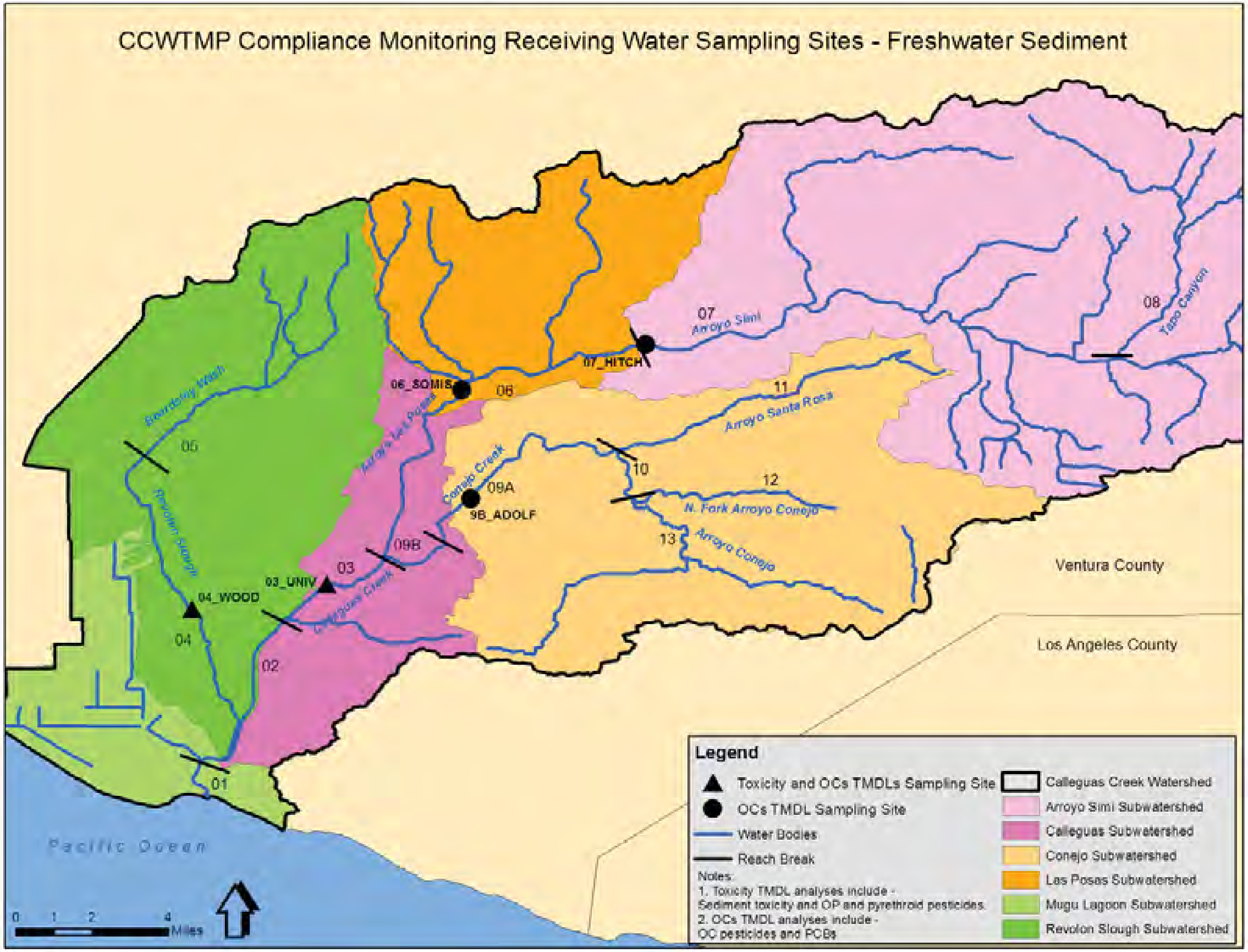


Figure 3. CCWMTP Compliance Monitoring Receiving Water Sampling Sites – Freshwater Sediment

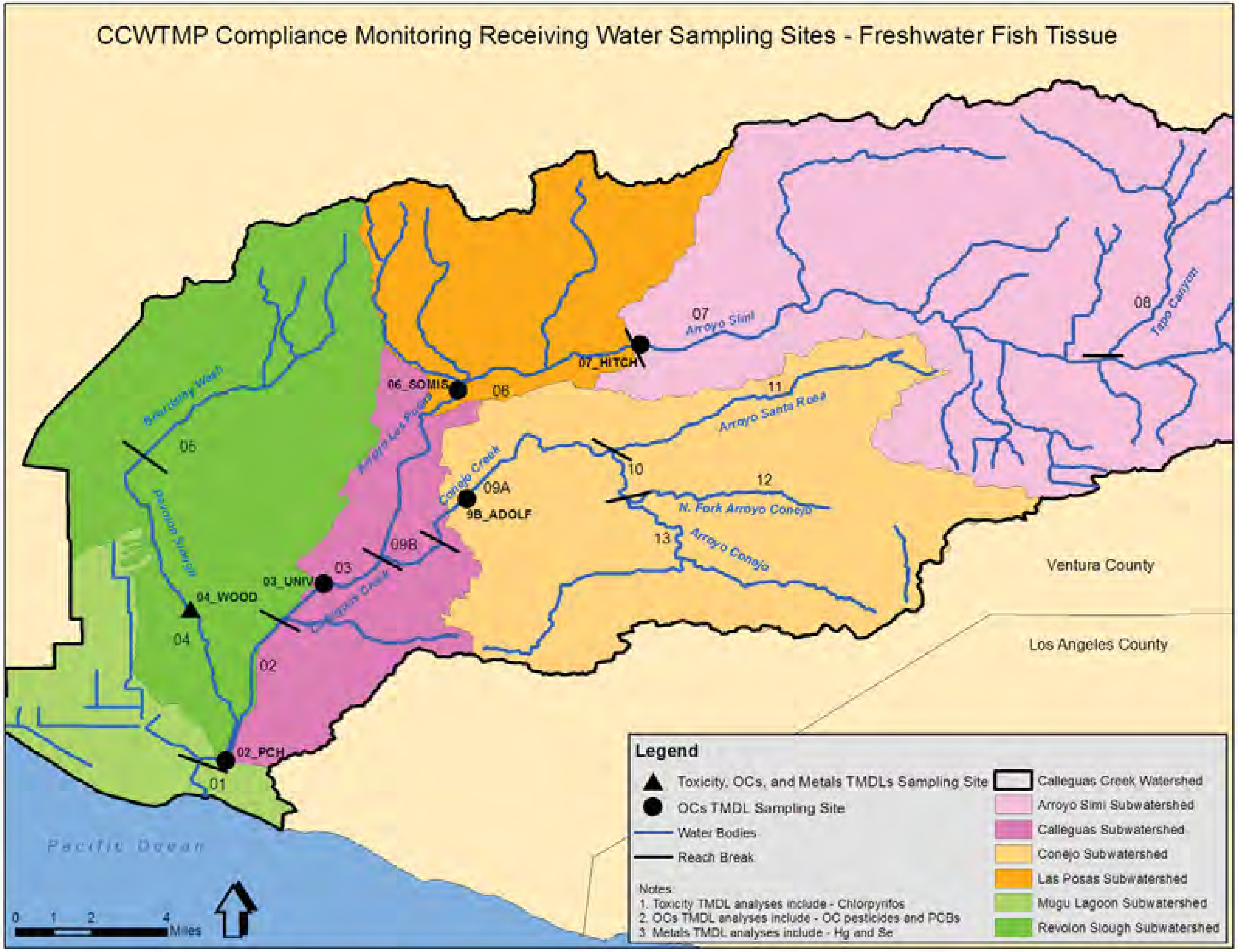


Figure 4. CCWMTP Compliance Monitoring Sampling Sites – Freshwater Fish Tissue

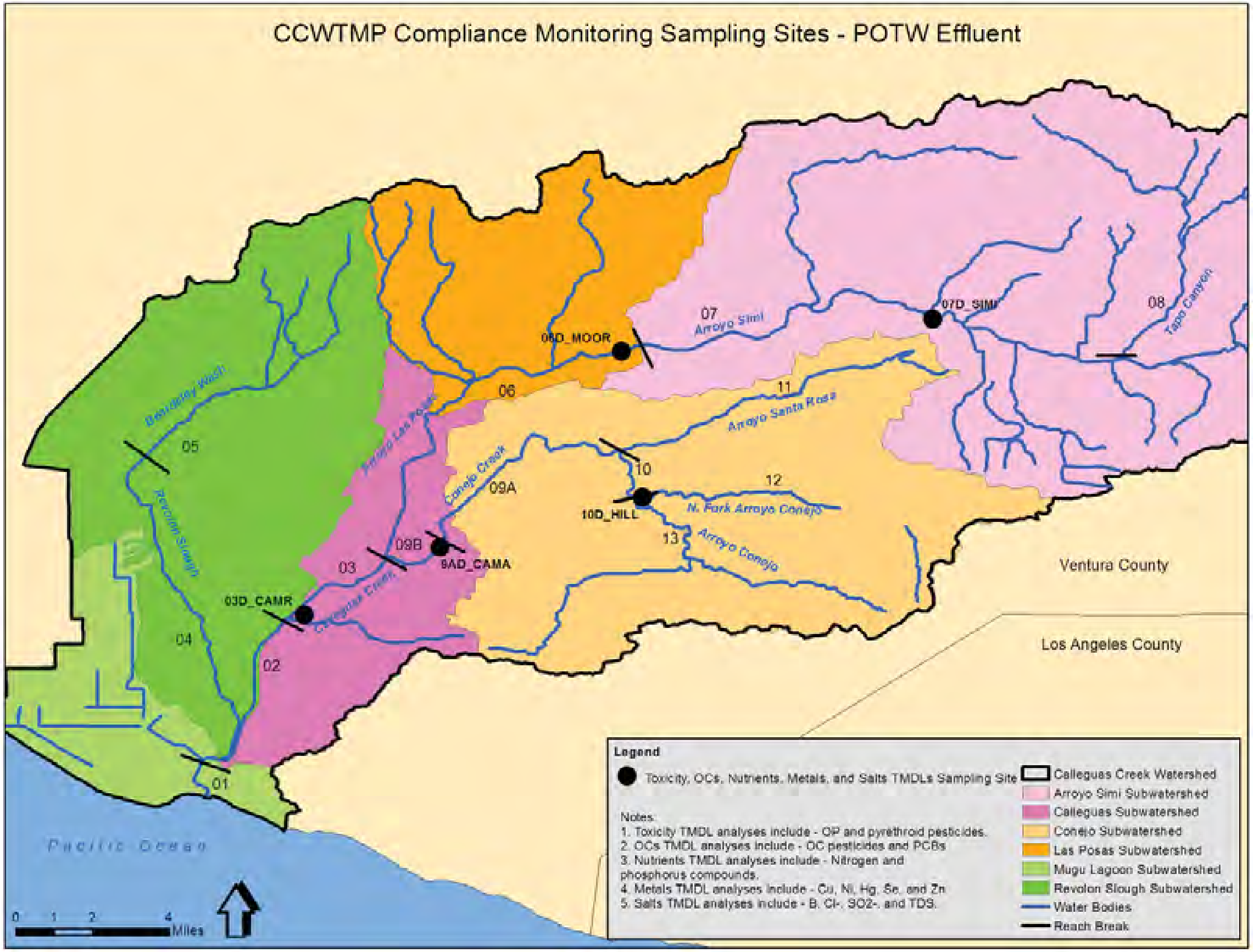


Figure 5. CCWMTP Compliance Monitoring Sampling Sites – POTW Effluent

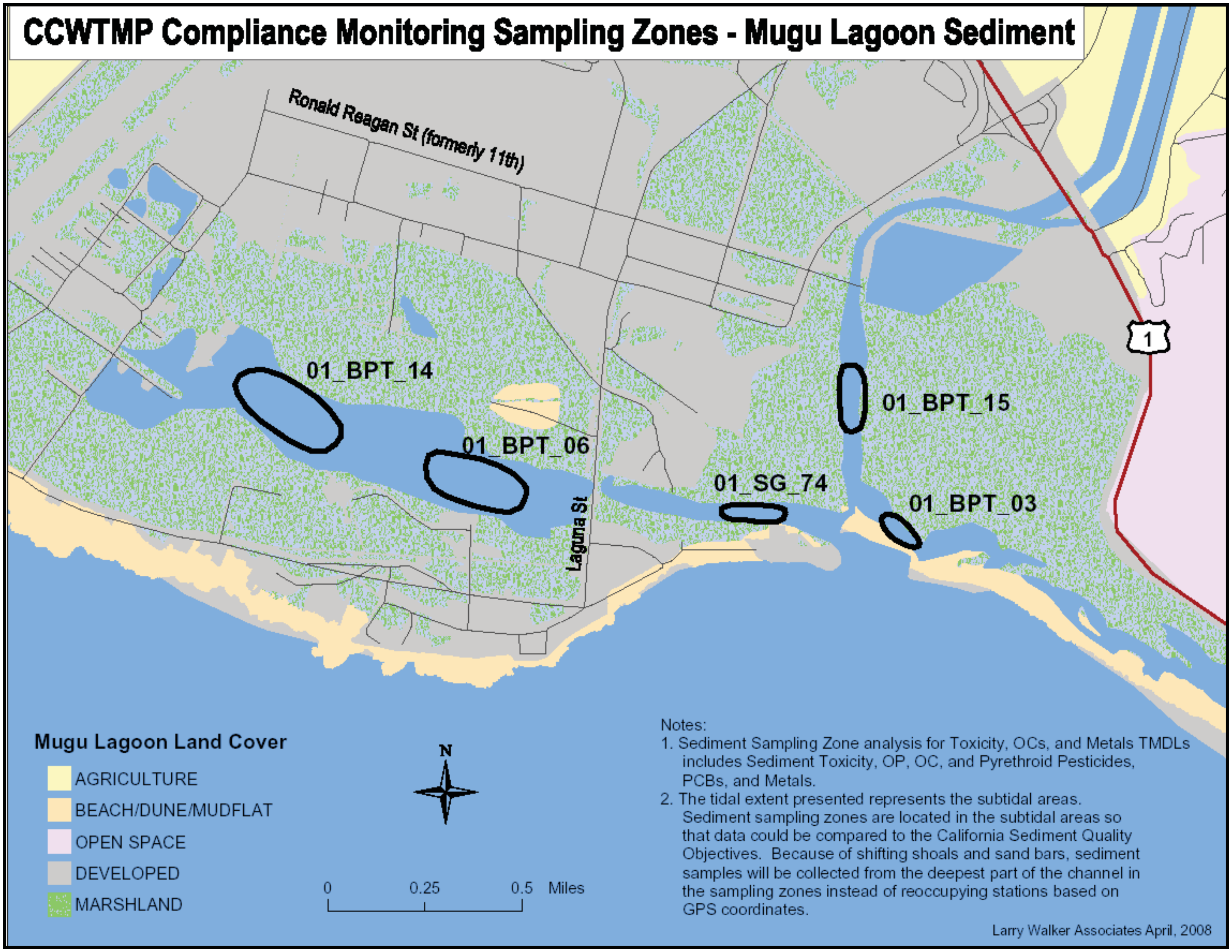


Figure 6. CCWMTP Compliance Monitoring Sampling Zones – Mugu Lagoon Sediment

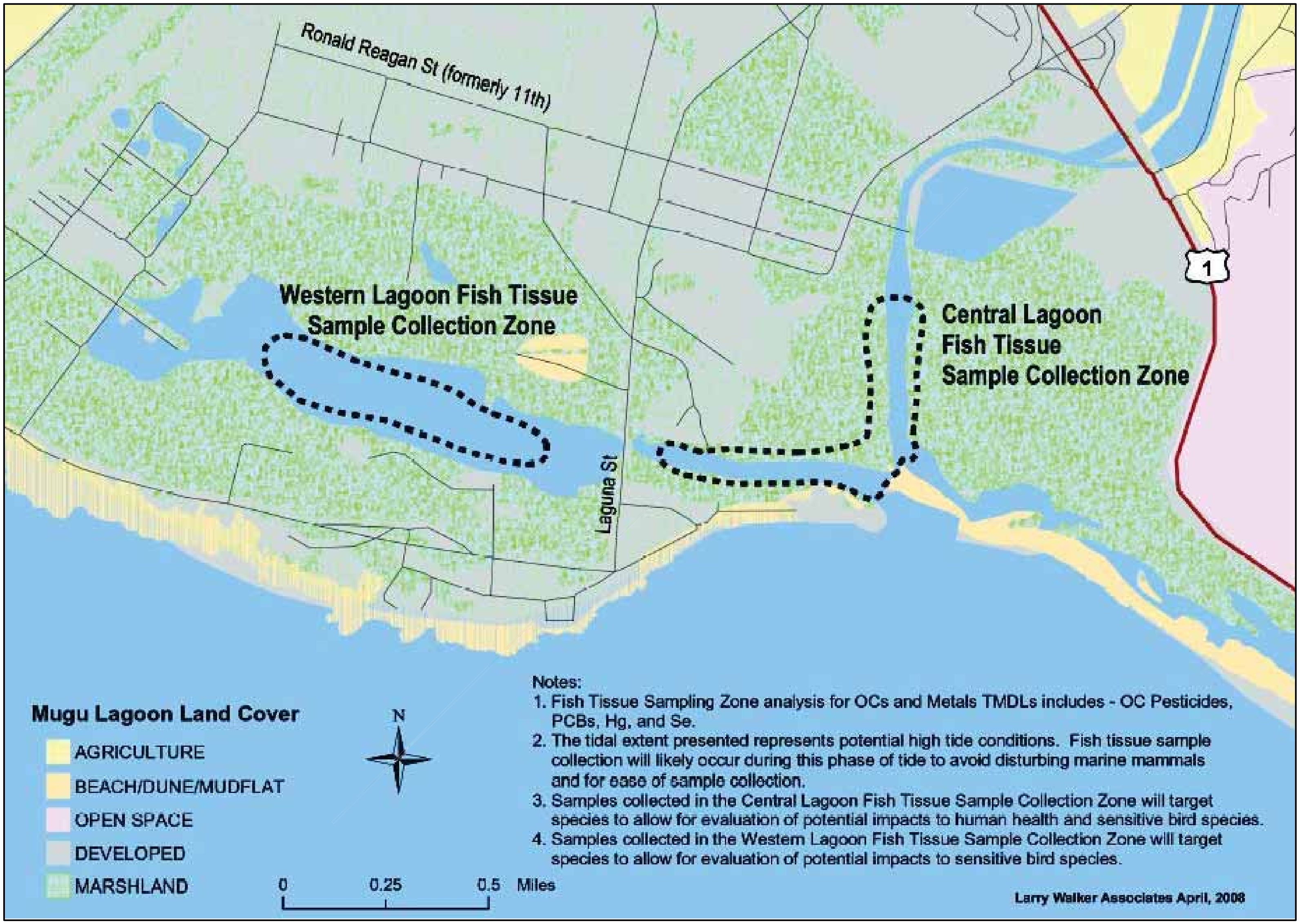


Figure 7. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Tissue

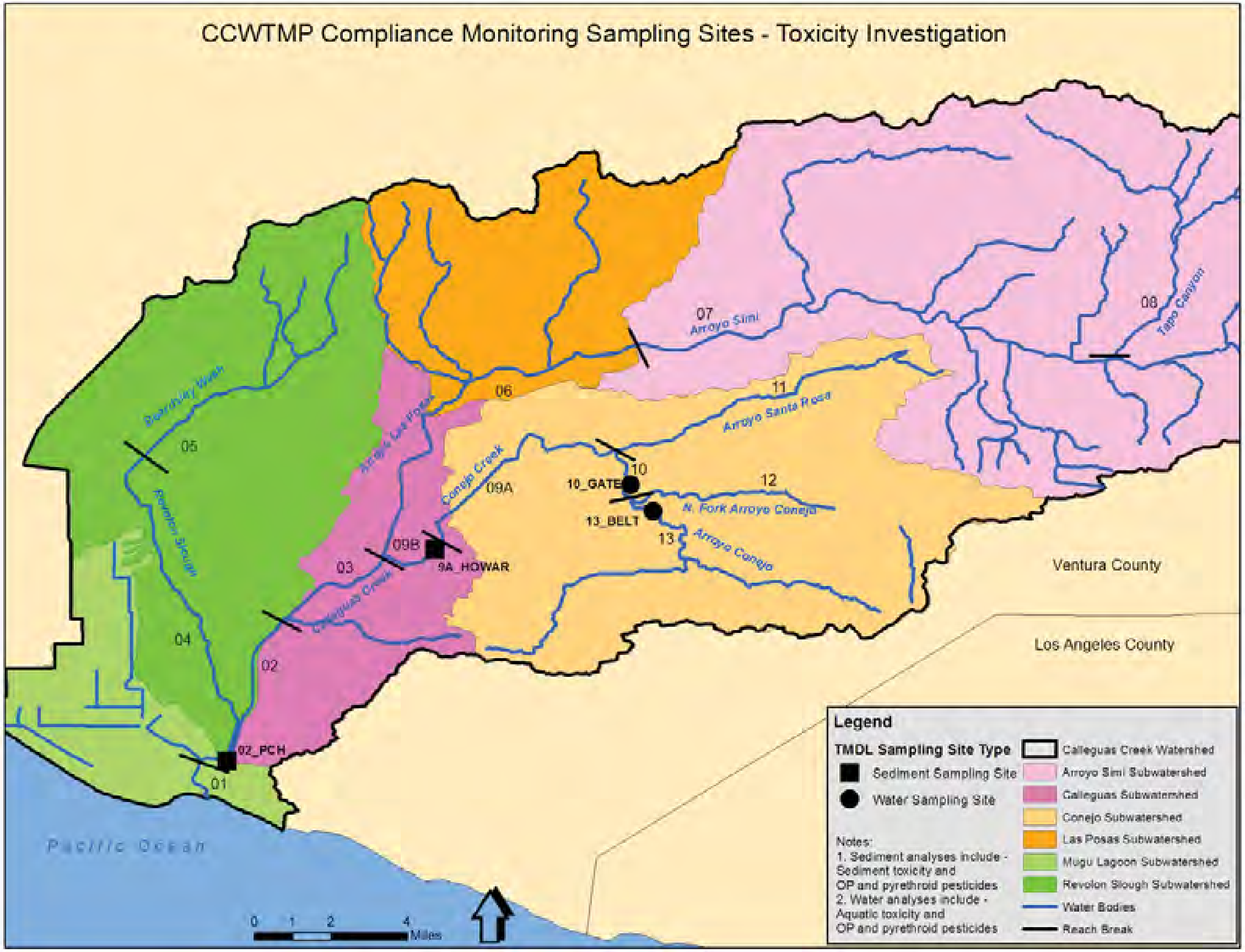


Figure 8. CCWTMP Toxicity Investigation Receiving Water Sampling Sites – Water and Sediment

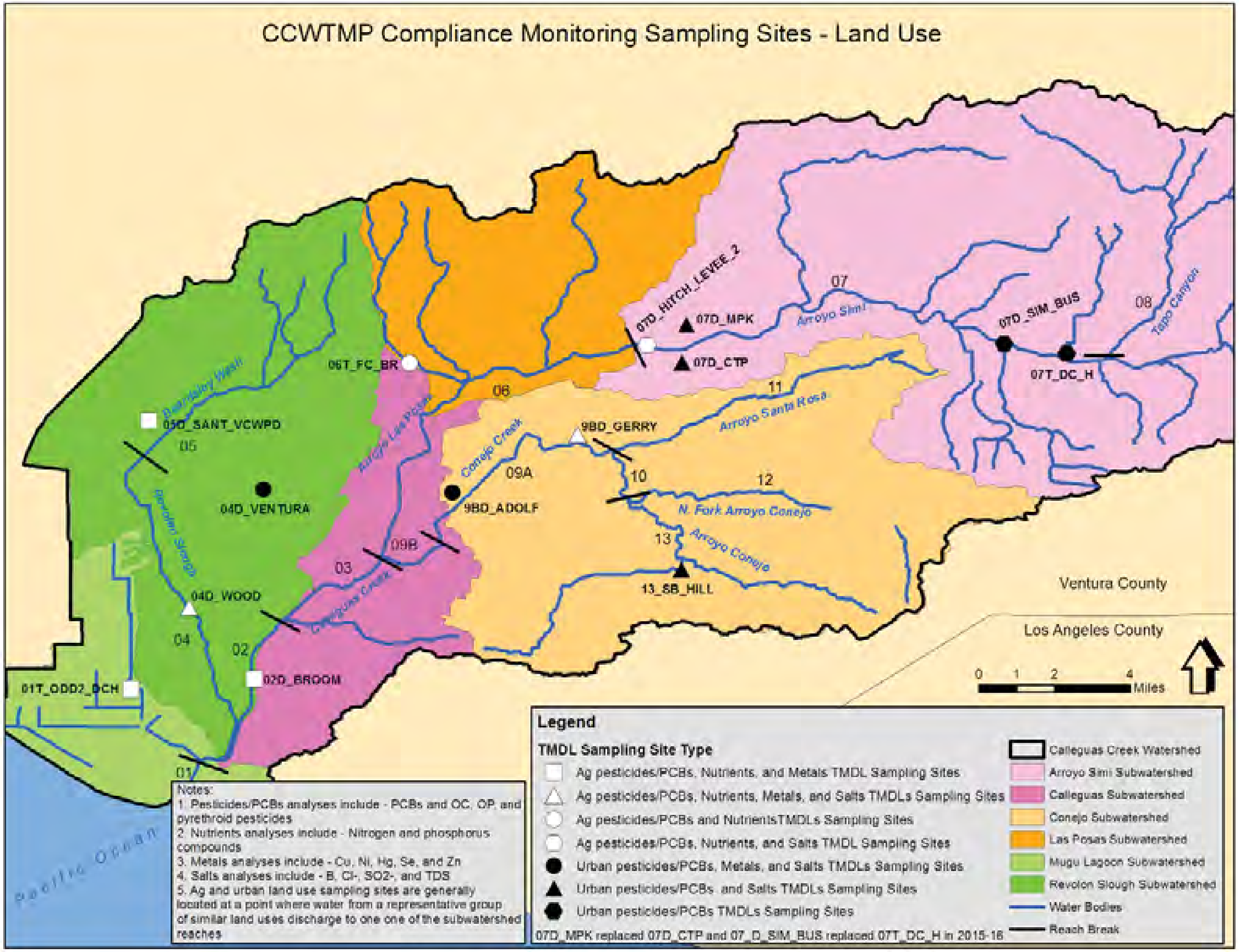


Figure 9. CCWTMP Land Use Sampling Sites

Monitoring Data Summary

To summarize the CCW TMDL monitoring data, box plots have been created for site and constituent combinations representing the data gathered over the entire monitoring program. The data presented includes all constituents with TMDL limits for water or sediment at the sites where the constituents were analyzed. Where TMDL limits are effective, those thresholds have been identified for the sites where they apply. As appropriate, data for constituents with specific dry or wet weather limits are presented separately. Data collected during year eight, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2016). This was done to allow for easy comparison between recent data and what have been collected overall. The eighth year data are presented in tabular form below each box plot. Each figure of box plots presents data from either receiving water sites or land use sites. The receiving water sites are color coded by subwatershed as shown in Table 7. Land use and POTW sites are displayed together and grouped by type as presented in Table 8.

Fish tissue data are not displayed as box plots. Fish tissue data are presented in tables due to the small number of samples and to preserve the species information associated with each sample.

Toxicity data and TIE results are summarized in Appendix D. Summaries of the 2015-16 monitoring events are included as Appendix A.

Some TMDL constituents were never, or rarely detected (less than 2 percent detection rate) and therefore, did not warrant a data summary. The constituents, which were never detected, include:

In Water:

- Endosulfan II
- Endrin

In Sediment:

- Endrin
- BHC, gamma

Rarely detected constituents in water are as follows:

- Aldrin (four detects, none this year)
- Dieldrin (eight detects, two this year)
- Endosulfan I (three detects, none this year)
- BHC, gamma (three detects, none this year)
- Total PCBs (five detects, three this year)

Rarely detected constituents in sediment are as follows:

- Dieldrin (one detect, none this year)

Table 7. Receiving Water Sites Color Coded by Subwatershed

Subwatershed	Reach	Site ID
Mugu Lagoon	Reach 1	01_BPT_14
		01_BPT_15
		01_BPT_3
		01_BPT_6
		01_RR_BR
		01_SG_74
Calleguas	Reach 2	02_PCH
	Reach 3	03_UNIV
	Reach 9B[1]	9A_HOWAR
Revolon Slough	Reach 4	04_WOOD
	Reach 5	05_CENTR
Las Posas	Reach 6[2]	06_SOMIS
Arroyo Simi	Reach 7	07_HITCH
		07_MADER
		07_TIERRA
Conejo	Reach 9A[1]	9B_ADOLF
	Reach 9A[1]	9B_BARON
	Reach 10	10_GATE
	Reach 12	12_PARK
	Reach 13	13_BELT

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
2. In Year 8, sampling crews were denied access to the 06_SOMIS site for four out of six sampling events. The site has been moved downstream where crews can access the receiving water without needing private landowner permissions.

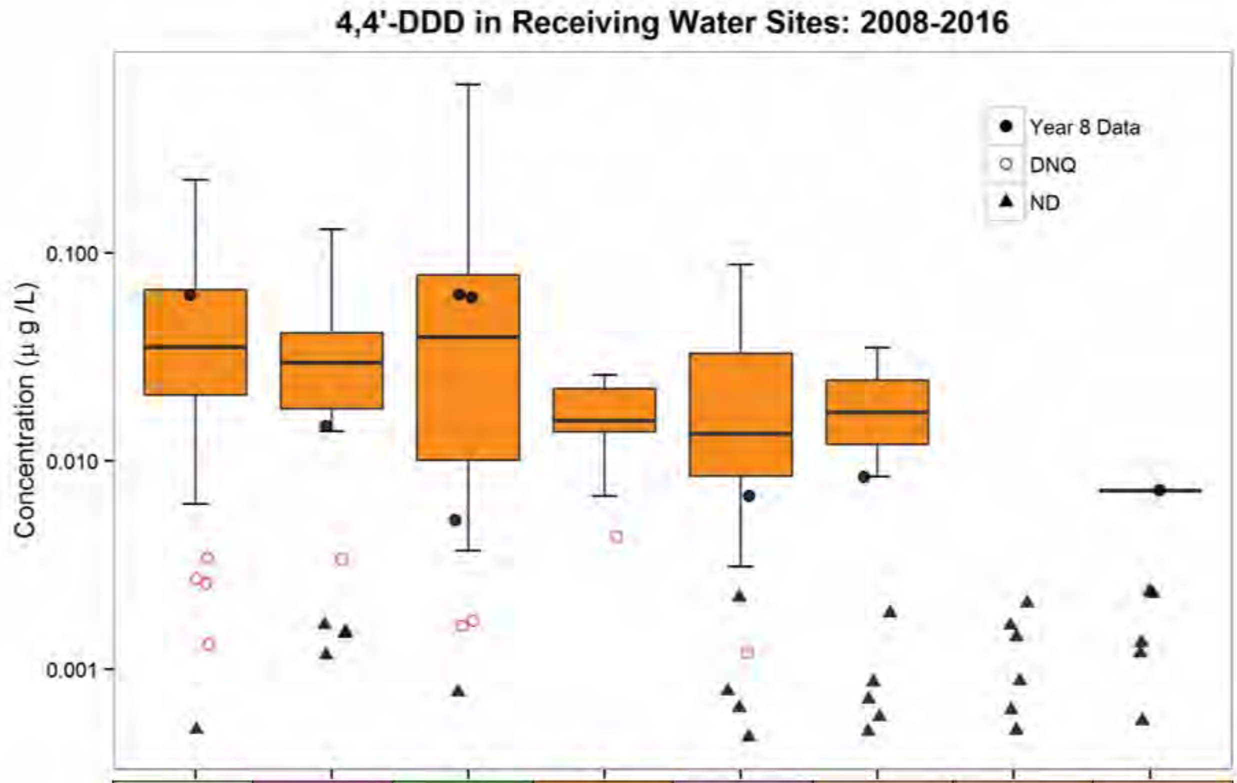
Table 8. Land Use and POTW Sites Color Coded by Type

Urban Land Use (MS4) Sites:	
Reach 4	04D_VENTURA
Reach 7	07D_CTP
Reach 7[1]	07D_MPK[1]
Reach 7	07T_DC_H
Reach 7[1]	07D_SIM_BUS[1]
Reach 9A [2]	9BD_ADOLF [2]
Reach 13	13_SB_HILL
Ag Land Use Sites:	
Reach 1	01T_ODD2_DCH
Reach 2	02D_BROOM
Reach 4	04D_WOOD
Reach 5	05D_SANT_VCWPD
Reach 6	06T_FC_BR
Reach 7	07D_HITCH_LEVEE_2
Reach 9A [2]	9BD_GERRY [2]
POTW Sites:	
Reach 7	07D_SIMI
Reach 9B [2]	9AD_CAMA [2]
Reach 10	10D_HILL

1. In the 2014 updates to the QAPP, the 07D_MPK replaced the 07D_CTP site to be consistent with the Moorpark MS4 monitoring site and the 07D_SIM_BUS site replaced the 07T_DC_H site to be consistent with the Simi Valley MS4 monitoring site. For this transition monitoring year, past data from the original sites and current data from the new sites are both provided in the plots within the following sections
2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

OC PESTICIDES TMDL DATA SUMMARY

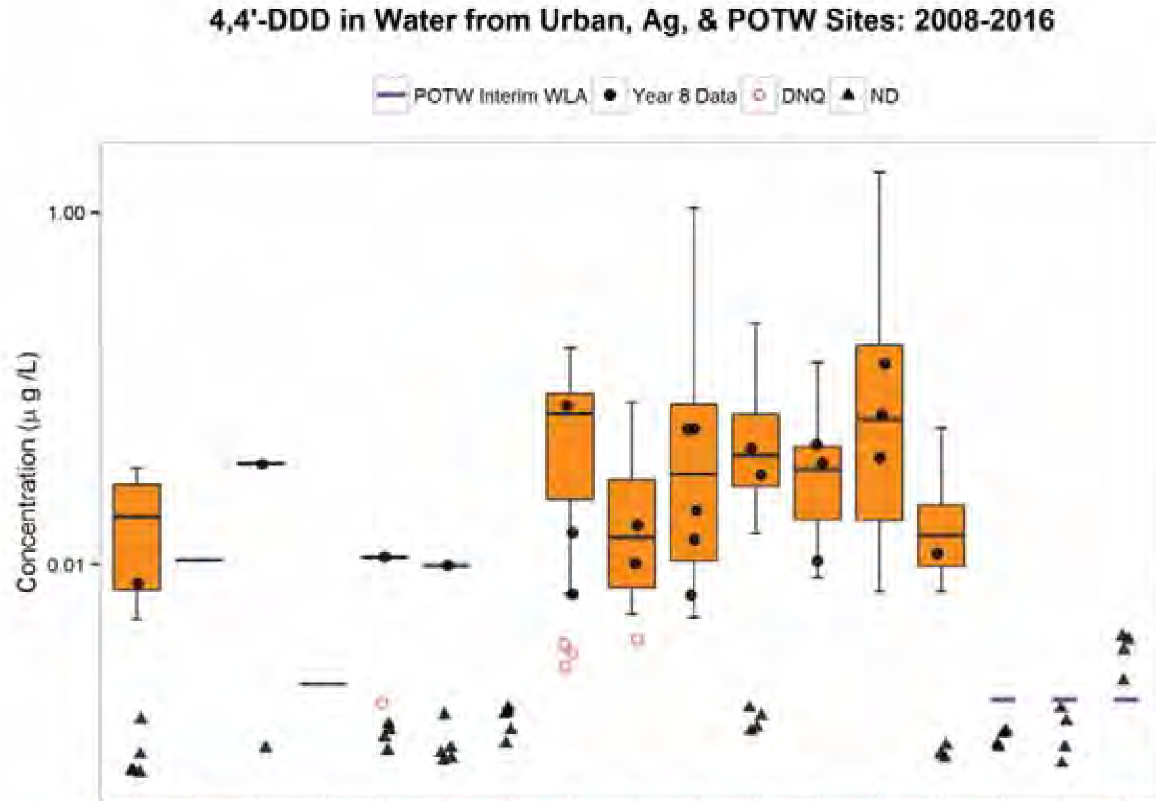
The following figures present OC pesticides data in both water and sediment. Presently, only the POTWs have effective final limits in water, but data for all sites is provided since the TMDL specifies final targets for OC pesticides in water. Effective interim allocations for agriculture and waste load allocations for urban dischargers are provided in the appropriate OC pesticides in sediment figures. Data collected during year eight, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2016). This was done to allow for easy comparison between recent data and what have been collected overall. The eighth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was detected but not quantifiable (DNQ). Values in the tables within each figure with a "<" preceding it, indicate the constituent was not detected (ND) at MDL for that constituent. Values identified as "--" in the tables indicate no samples were collected at those sites for those events.



Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS[1]	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	*0.0027*	<0.001	*0.0016*	--	*0.0012*	<0.001	<0.001	<0.001
Nov-15	Dry	51	*0.0013*	<0.001	*0.0017*	*0.0043*	<0.001	<0.001	<0.001	<0.001
Jan-16	Storm	52	0.0629	0.0147	0.0611	--	0.0068	0.0084	<0.001	0.0072
Jan-16	Storm	53	<0.001	*0.0034*	0.0632	--	<0.001	<0.001	<0.001	<0.001
Feb-16	Dry	54	*0.0026*	<0.001	0.0052	--	<0.001	<0.001	<0.001	<0.001
May-16	Dry	55	*0.0034*	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001

1. Access to this site was revoked during Year 8. Site was dry during Event 50 and final samples were collected during Event 51. This note applies to all boxplots which include 06_SOMIS that follow.

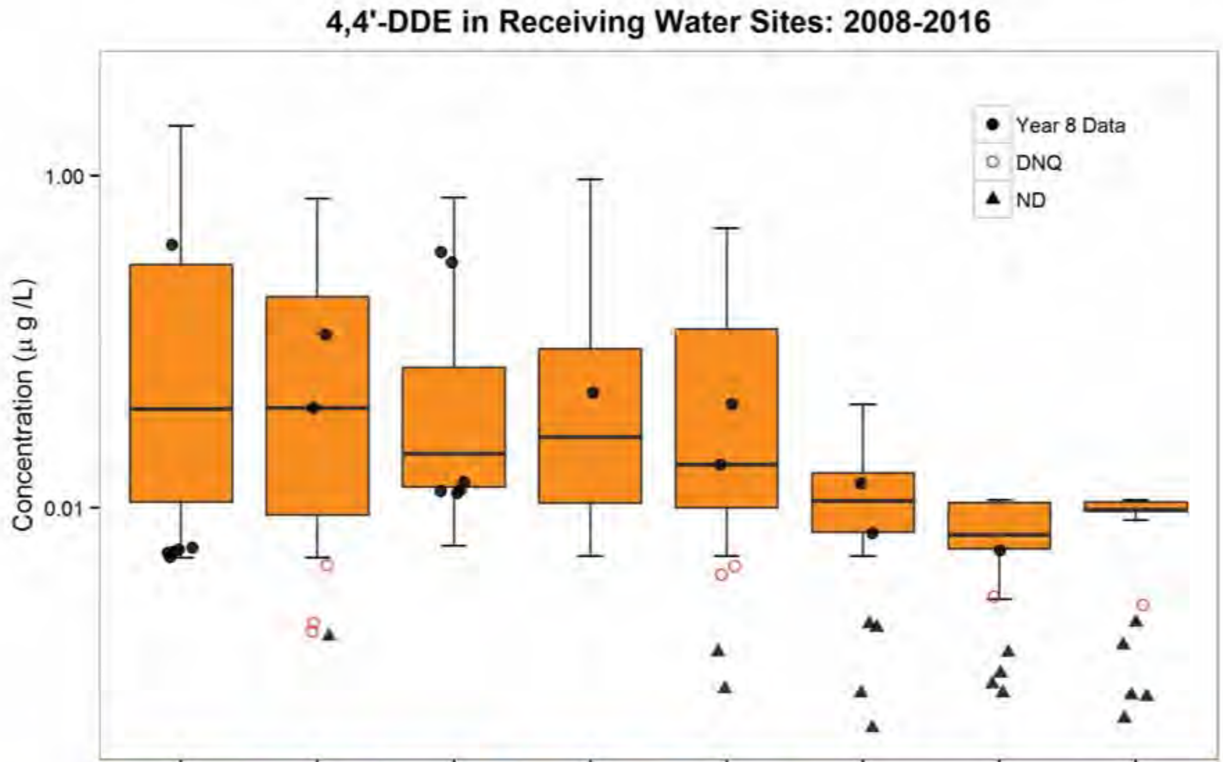
Figure 10. 4,4'-DDD Water Column Concentrations in Receiving Water Sites: 2008-2016



Date	Type	Event	04D_VENTURA	07D_CTP1	07D_MPK	07_T_DC_H1	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.001	–	–	–	<0.001	<0.001	<0.001	*0.0026*	–	–	<0.001	0.0105	–	–	<0.001	<0.001	<0.003
Nov-15	Dry	51	0.0078	–	–	–	<0.001	<0.001	<0.001	*0.0031*	–	0.0067	<0.001	–	0.0404	<0.001	<0.001	<0.001	<0.003
Jan-16	Storm	52	<0.001	–	0.0373	–	0.011	0.0099	<0.001	0.0799	–	0.059	0.0324	0.0476	0.0713	<0.001	–	–	–
Jan-16	Storm	53	<0.001	–	<0.001	–	*0.0016*	<0.001	<0.001	0.0152	*0.0038*	0.0587	0.0456	0.0379	0.1377	0.0115	–	–	–
Feb-16	Dry	54	<0.001	–	–	–	<0.001	<0.001	<0.001	*0.0036*	0.0167	0.0203	<0.001	–	–	<0.001	<0.001	<0.001	<0.003
May-16	Dry	55	<0.001	–	–	–	<0.001	<0.001	<0.001	0.0068	0.0101	0.0138	<0.001	–	–	–	<0.001	<0.001	<0.003

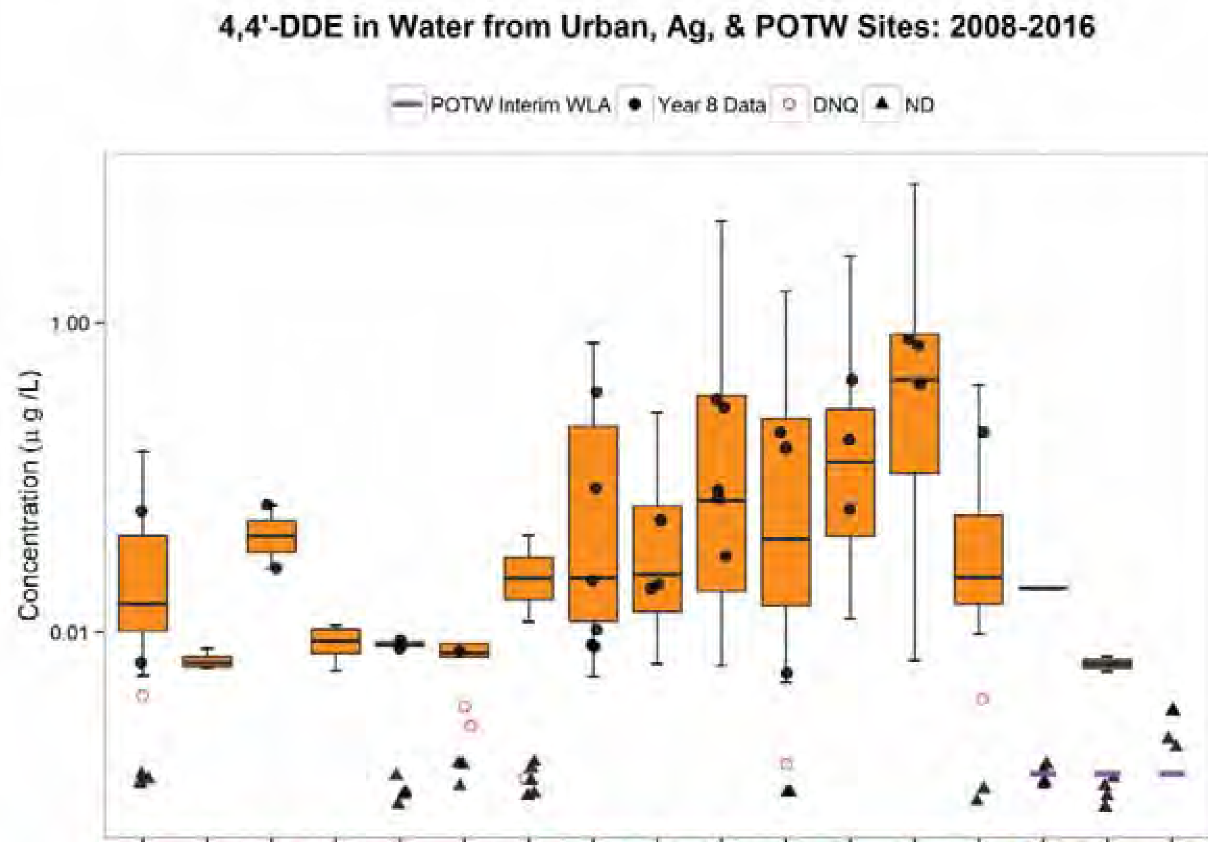
1. These sites were not sampled during the 2015-2016 monitoring year, but are presented here for a historical comparison with replacement sites for all relevant constituents that follow.

Figure 11. 4,4'-DDD Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2016



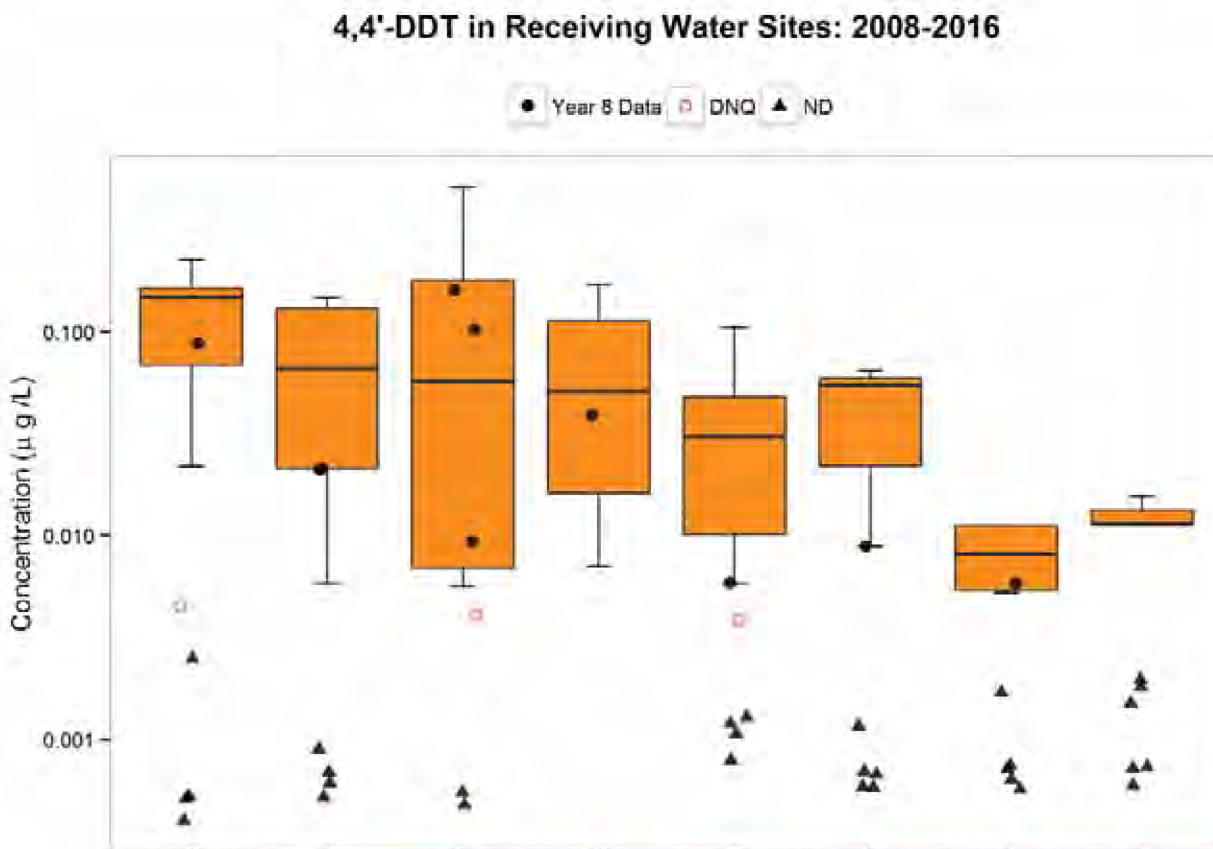
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	0.0057	*0.0018*	0.0126	--	*0.0044*	<0.001	<0.001	<0.001
Nov-15	Dry	51	0.0053	*0.0045*	0.0122	0.0492	*0.0039*	<0.001	<0.001	<0.001
Jan-16	Storm	52	0.3819	0.1104	0.3477	--	0.0418	0.007	0.0055	*0.0026*
Jan-16	Storm	53	0.005	0.0397	0.302	--	0.0181	0.014	*0.0029*	<0.001
Feb-16	Dry	54	0.0056	*0.002*	0.0142	--	<0.001	<0.001	<0.001	<0.001
May-16	Dry	55	0.0054	<0.001	0.0127	--	<0.001	<0.001	<0.001	<0.001

Figure 12. 4,4’-DDE Water Column Concentrations in Receiving Water Sites: 2008-2016



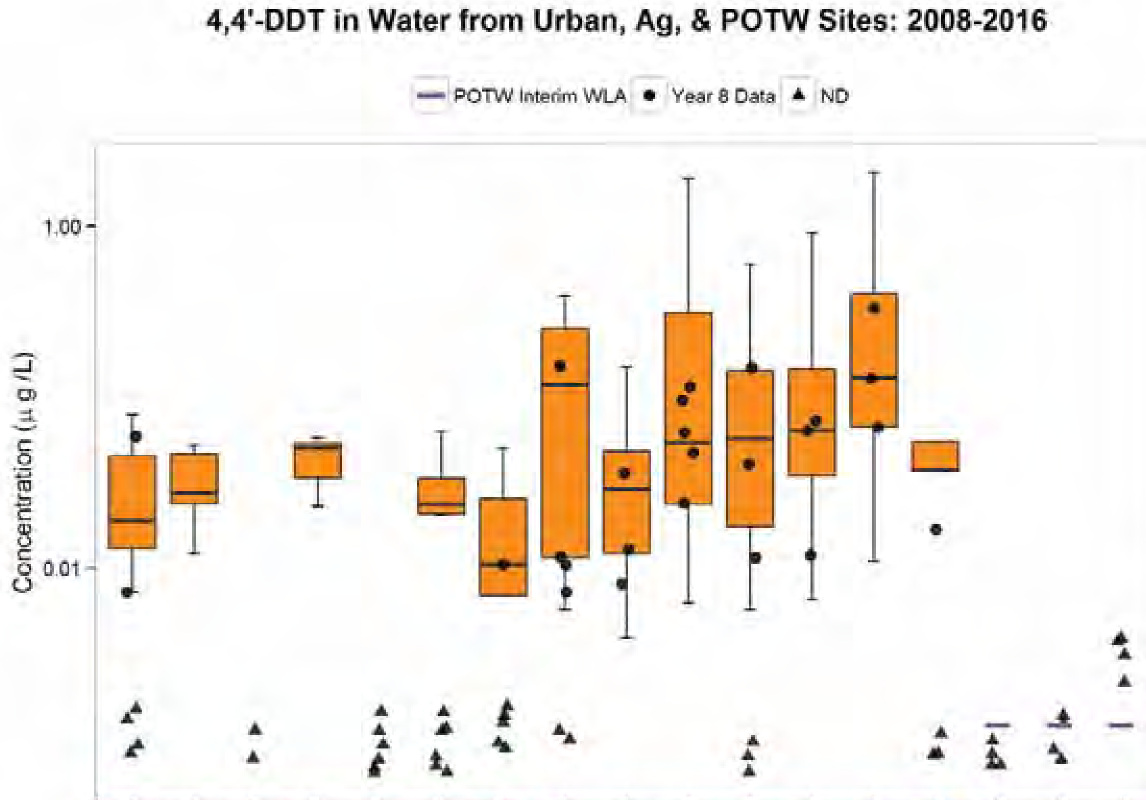
Date	Type	Event	04D_VENTURA	07D_CTP	07D_MPK	07_T_DC_H	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.001	–	–	–	<0.001	*0.0024*	<0.001	0.0214	–	–	0.0054	0.0615	–	–	<0.001	<0.001	<0.0025
Nov-15	Dry	51	0.0599	–	–	–	<0.001	<0.001	<0.001	0.0082	–	0.0825	<0.001	–	0.7844	*0.0036*	<0.001	<0.001	<0.0025
Jan-16	Storm	52	<0.001	–	0.0657	–	0.0078	0.0075	*0.0011*	0.3546	–	0.3195	0.1546	0.4267	0.4024	<0.001	–	–	–
Jan-16	Storm	53	*0.0038*	–	0.0257	–	0.0088	*0.0033*	<0.001	0.0846	0.0202	0.2843	0.1951	0.1738	0.7141	0.1961	–	–	–
Feb-16	Dry	54	<0.001	–	–	–	<0.001	<0.001	<0.001	0.008	0.0523	0.0728	*0.0024*	–	–	<0.001	<0.001	<0.001	<0.0025
May-16	Dry	55	0.0063	–	–	–	<0.001	<0.001	<0.001	0.0103	0.0189	0.0304	<0.001	–	–	–	<0.001	<0.001	<0.0025

Figure 13. 4,4'-DDE Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2016



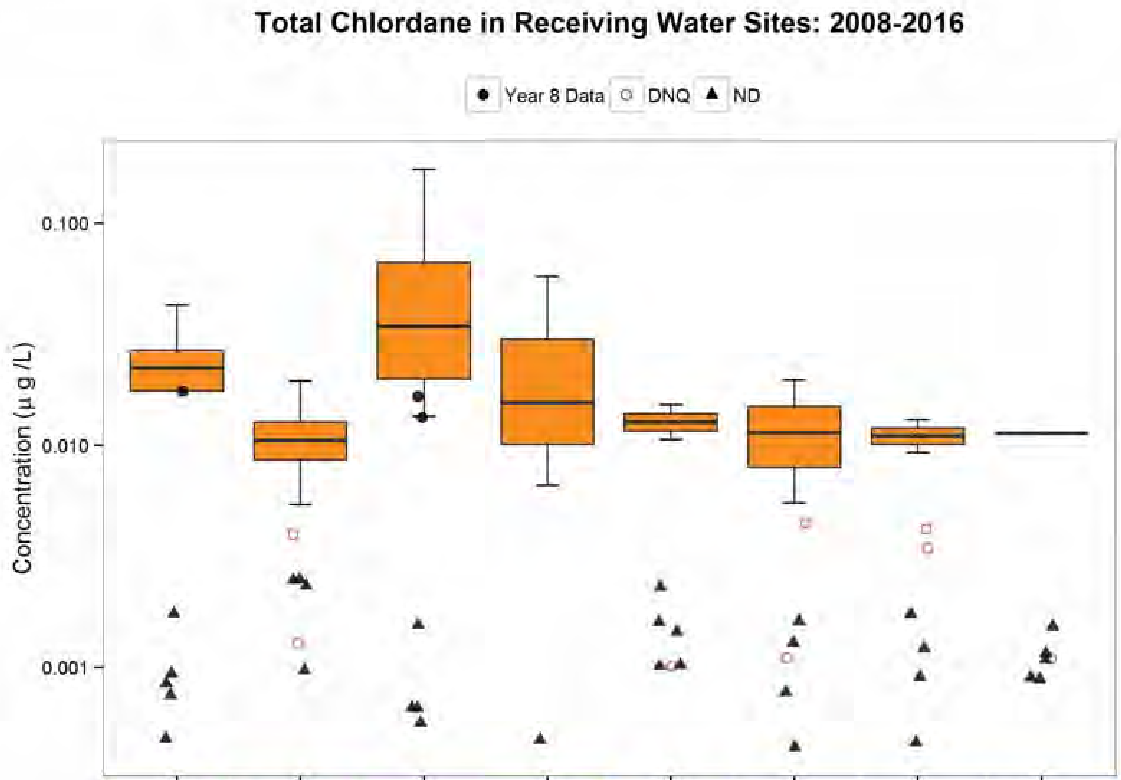
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS[1]	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Nov-15	Dry	51	<0.001	<0.001	*0.0042*	0.0392	<0.001	<0.001	<0.001	<0.001
Jan-16	Storm	52	0.0877	0.0211	0.1027	--	0.0058	0.0088	<0.001	<0.001
Jan-16	Storm	53	<0.001	0.0213	0.1603	--	*0.0038*	<0.001	0.0058	<0.001
Feb-16	Dry	54	*0.0046*	<0.001	0.0093	--	<0.001	<0.001	<0.001	<0.001
May-16	Dry	55	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001

Figure 14. 4,4'-DDT Water Column Concentrations in Receiving Water Sites: 2008-2016



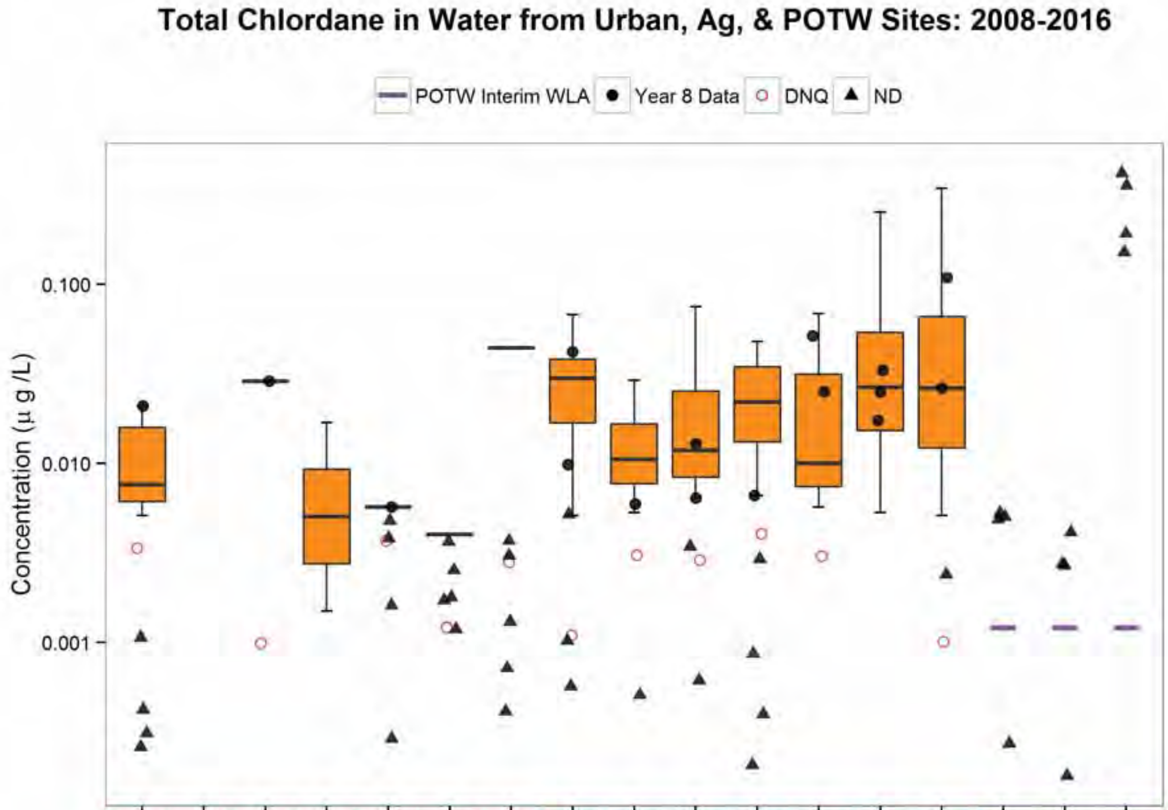
Date	Type	Event	04D_VENTURA	07D_CTP	07D_MPK	07_T_DC_H	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	03T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.001	–	–	–	<0.001	<0.001	<0.001	<0.001	–	–	<0.001	0.0118	–	–	<0.001	<0.001	<0.0031
Nov-15	Dry	51	0.0591	–	–	–	<0.001	<0.001	<0.001	0.0072	–	0.0619	<0.001	–	0.3276	<0.001	<0.001	<0.001	<0.0031
Jan-16	Storm	52	<0.001	–	<0.001	–	<0.001	<0.001	0.0105	0.1507	–	0.0958	0.0402	0.0634	0.0662	<0.001	–	–	–
Jan-16	Storm	53	0.0072	–	<0.001	–	<0.001	<0.001	<0.001	<0.001	0.0128	0.1149	0.1484	0.0721	0.1276	0.0168	–	–	–
Feb-16	Dry	54	<0.001	–	–	–	<0.001	<0.001	<0.001	0.0116	0.0862	0.0472	0.0114	–	–	<0.001	<0.001	<0.001	<0.0031
May-16	Dry	55	<0.001	–	–	–	<0.001	<0.001	<0.001	0.0104	0.0081	0.0239	<0.001	–	–	–	<0.001	<0.001	<0.0031

Figure 15. 4,4’-DDT Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2016



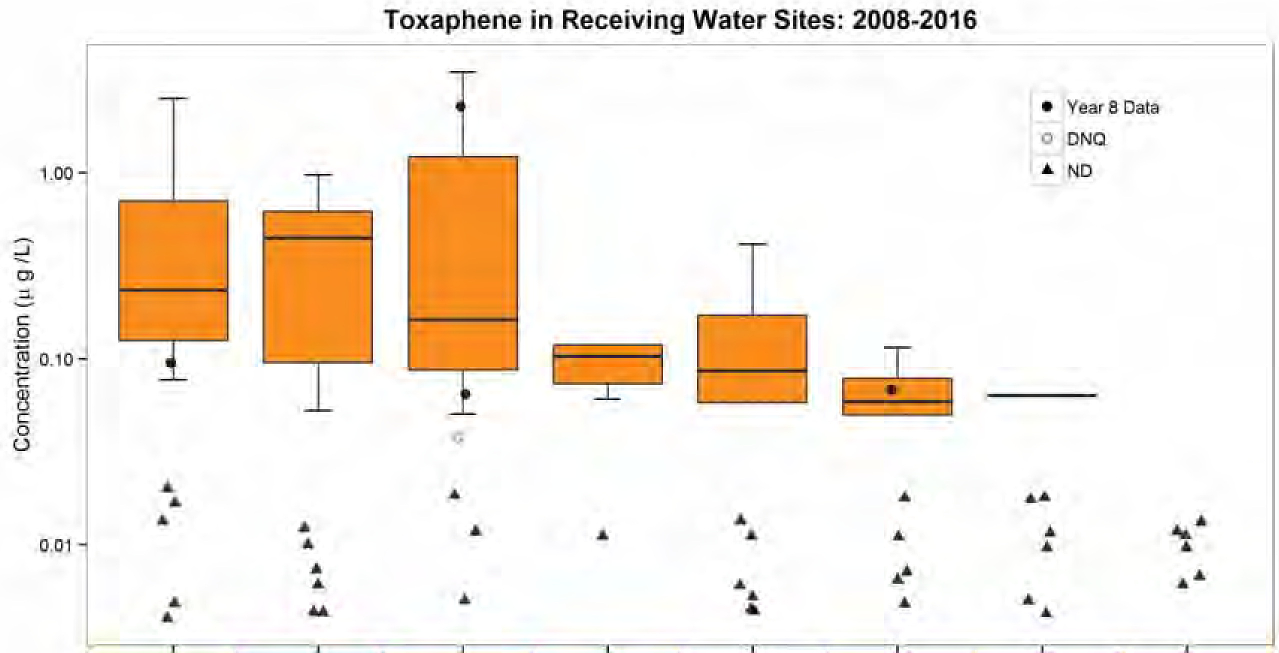
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Nov-15	Dry	51	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Jan-16	Storm	52	0.0176	*0.004*	0.0166	--	<0.001	*0.0011*	*0.0042*	*0.0011*
Jan-16	Storm	53	<0.001	*0.0013*	0.0135	--	*0.001*	*0.0044*	*0.0034*	<0.001
Feb-16	Dry	54	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
May-16	Dry	55	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001

Figure 16. Total Chlordane Water Column Concentrations in Receiving Water Sites: 2008-2016



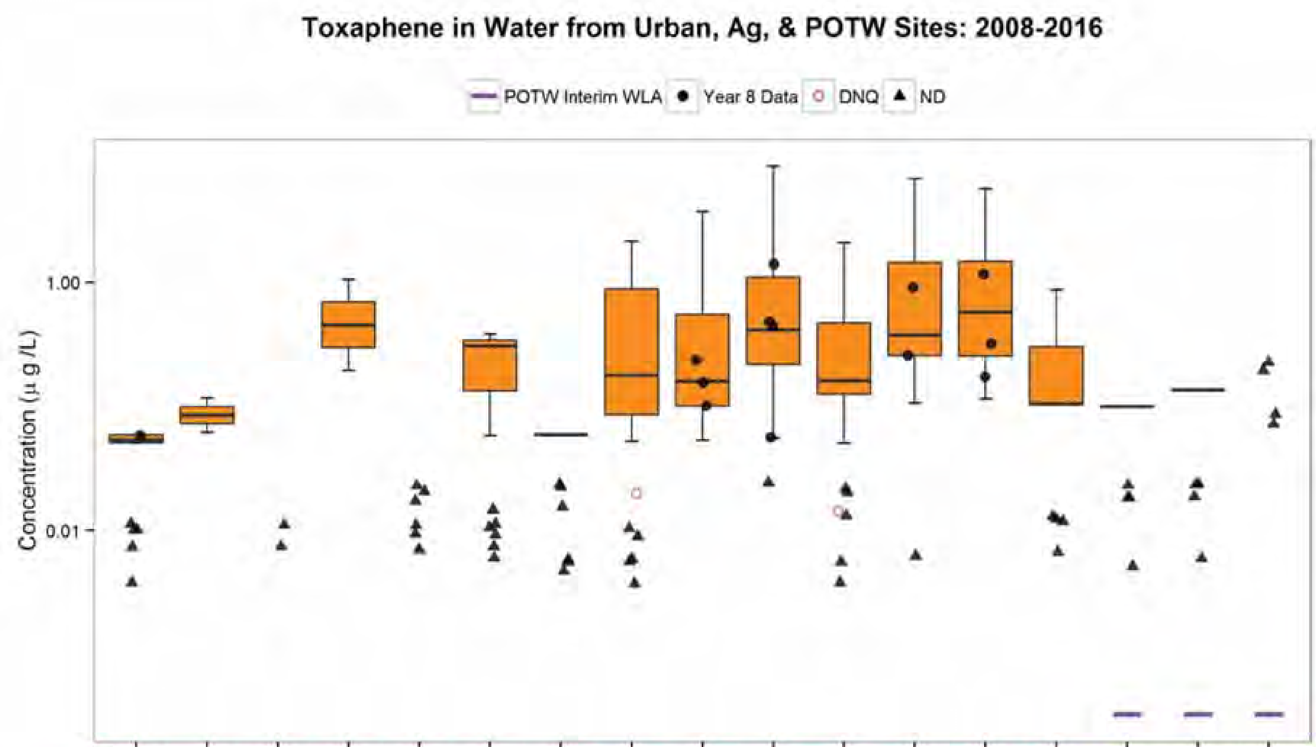
Date	Type	Event	04D_VENTURA	07D_CTP	07D_MPK	07_T_DC_H	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.001	--	--	--	<0.001	<0.001	<0.001	<0.001	--	--	<0.001	*0.003*	--	--	<0.001	<0.001	<0.08
Nov-15	Dry	51	0.0208	--	--	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	0.033	<0.001	<0.001	<0.001	<0.08
Jan-16	Storm	52	*0.0034*	--	0.0287	--	*0.0037*	*0.0012*	<0.001	0.0418	--	0.0064	0.0066	0.0511	0.0173	0.0262	--	--	--
Jan-16	Storm	53	<0.001	--	*0.001*	--	0.0057	<0.001	*0.0028*	0.0098	*0.0031*	0.0128	0.004	0.0251	0.0249	0.1081	--	--	--
Feb-16	Dry	54	<0.001	--	--	--	<0.001	<0.001	<0.001	*0.0011*	0.0059	*0.0029*	<0.001	--	--	*0.001*	<0.001	<0.001	<0.08
May-16	Dry	55	<0.001	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.08

Figure 17. Total Chlordane Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2016



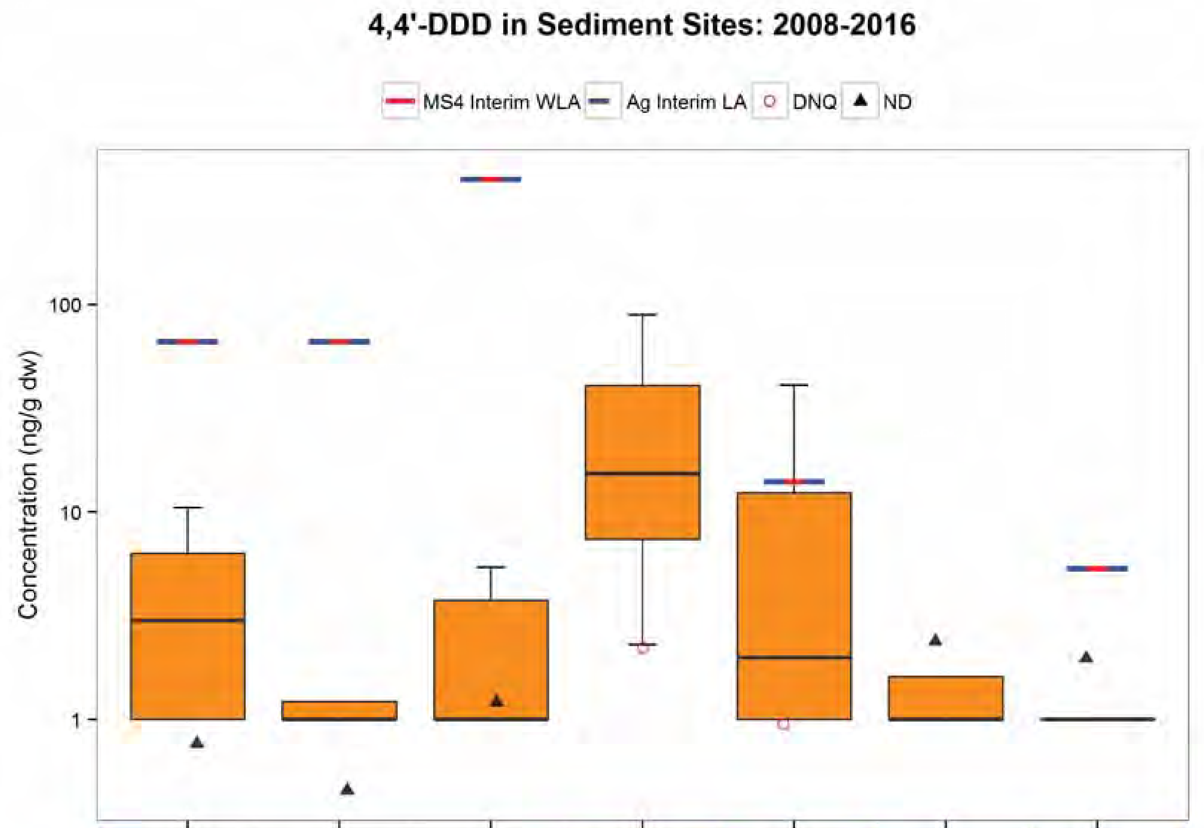
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01
Nov-15	Dry	51	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Jan-16	Storm	52	0.0961	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01
Jan-16	Storm	53	<0.01	<0.01	2.2509	--	<0.01	<0.01	<0.01	<0.01
Feb-16	Dry	54	<0.01	<0.01	*0.0334*	--	<0.01	0.0692	<0.01	<0.01
May-16	Dry	55	<0.01	<0.01	0.0656	--	<0.01	<0.01	<0.01	<0.01

Figure 18. Toxaphene Water Column Concentrations in Receiving Water Sites: 2008-2016



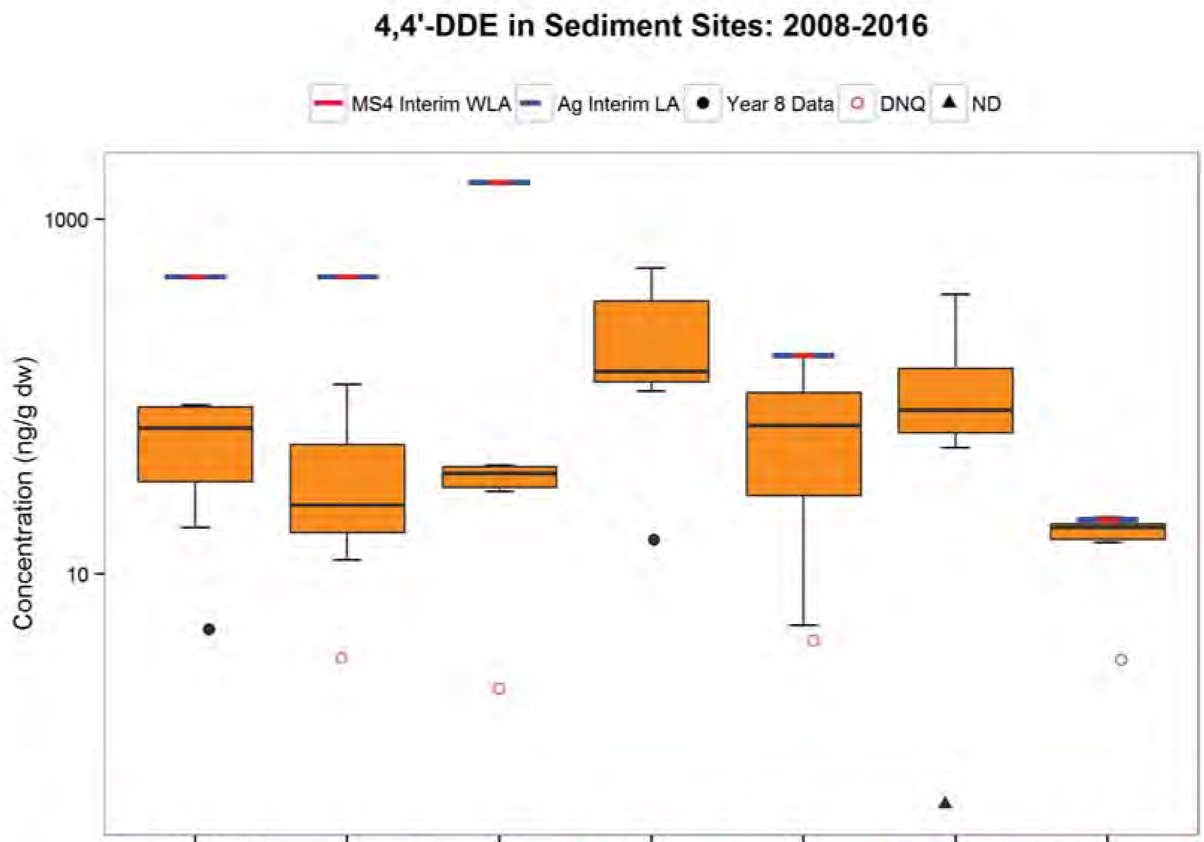
Date	Type	Event	04D_VENTURA	07D_CTP	07D_MPK	07_T_DC_H	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.01	--	--	--	<0.01	<0.01	<0.01	<0.01	--	--	<0.01	0.8952	--	--	<0.01	<0.01	<0.12
Nov-15	Dry	51	0.0592	--	--	--	<0.01	<0.01	<0.01	<0.01	--	0.0561	<0.01	--	0.1703	<0.01	<0.01	<0.01	<0.12
Jan-16	Storm	52	<0.01	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	--	0.4795	*0.0145*	0.2557	0.3253	<0.01	--	--	--
Jan-16	Storm	53	<0.01	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	0.1037	1.3837	<0.01	<0.01	1.1636	<0.01	--	--	--
Feb-16	Dry	54	<0.01	--	--	--	<0.01	<0.01	<0.01	*0.0232*	0.2357	0.4429	<0.01	--	--	<0.01	<0.01	<0.01	<0.12
May-16	Dry	55	<0.01	--	--	--	<0.01	<0.01	<0.01	<0.01	0.1558	<0.01	<0.01	--	--	--	<0.01	<0.01	<0.12

Figure 19. Toxaphene Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2016



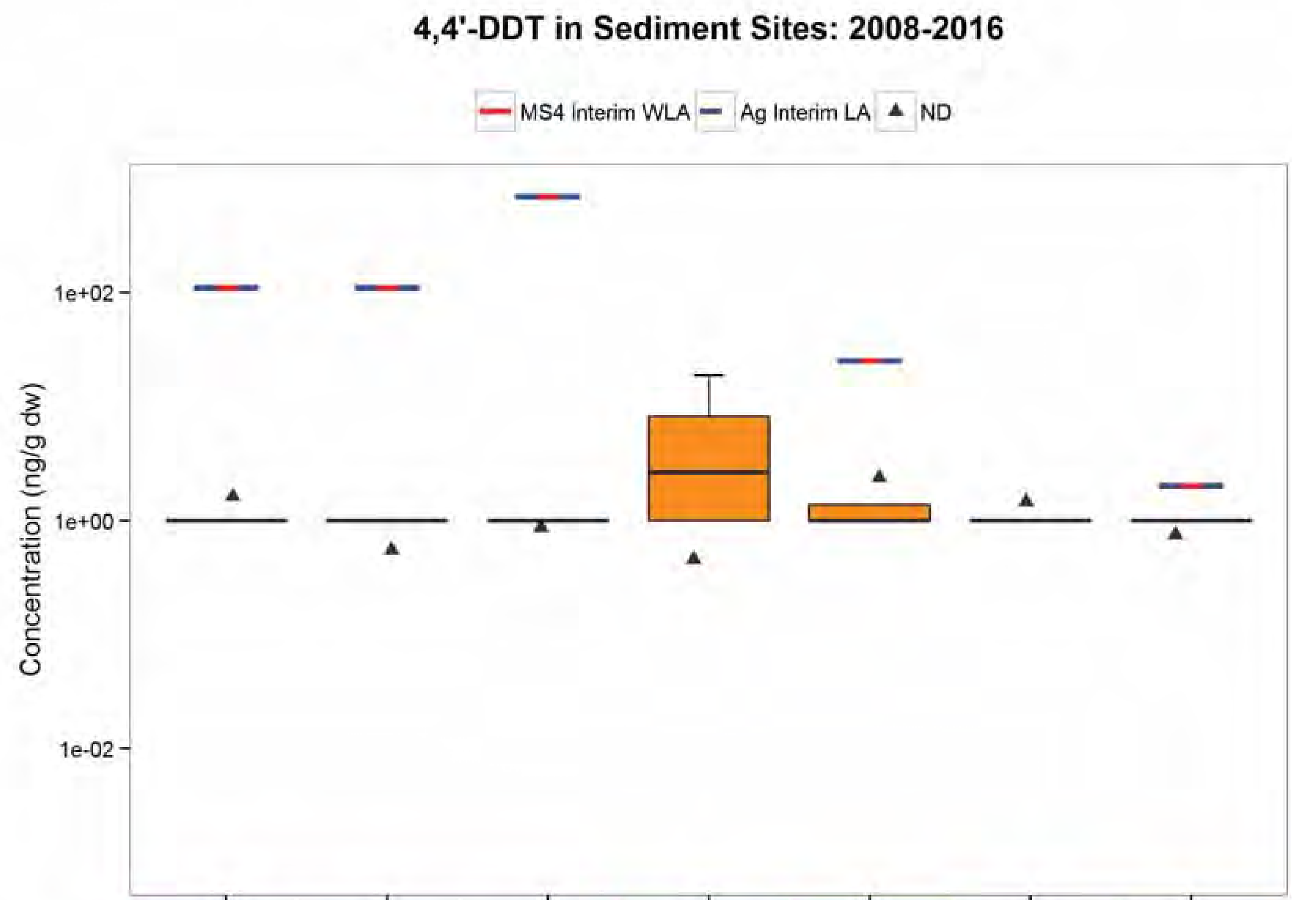
Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	<1	<1	<1	*3*	*1.2*	<1	<1

Figure 20. 4,4'-DDD Sediment Concentrations in Receiving Water Sites: 2008-2016



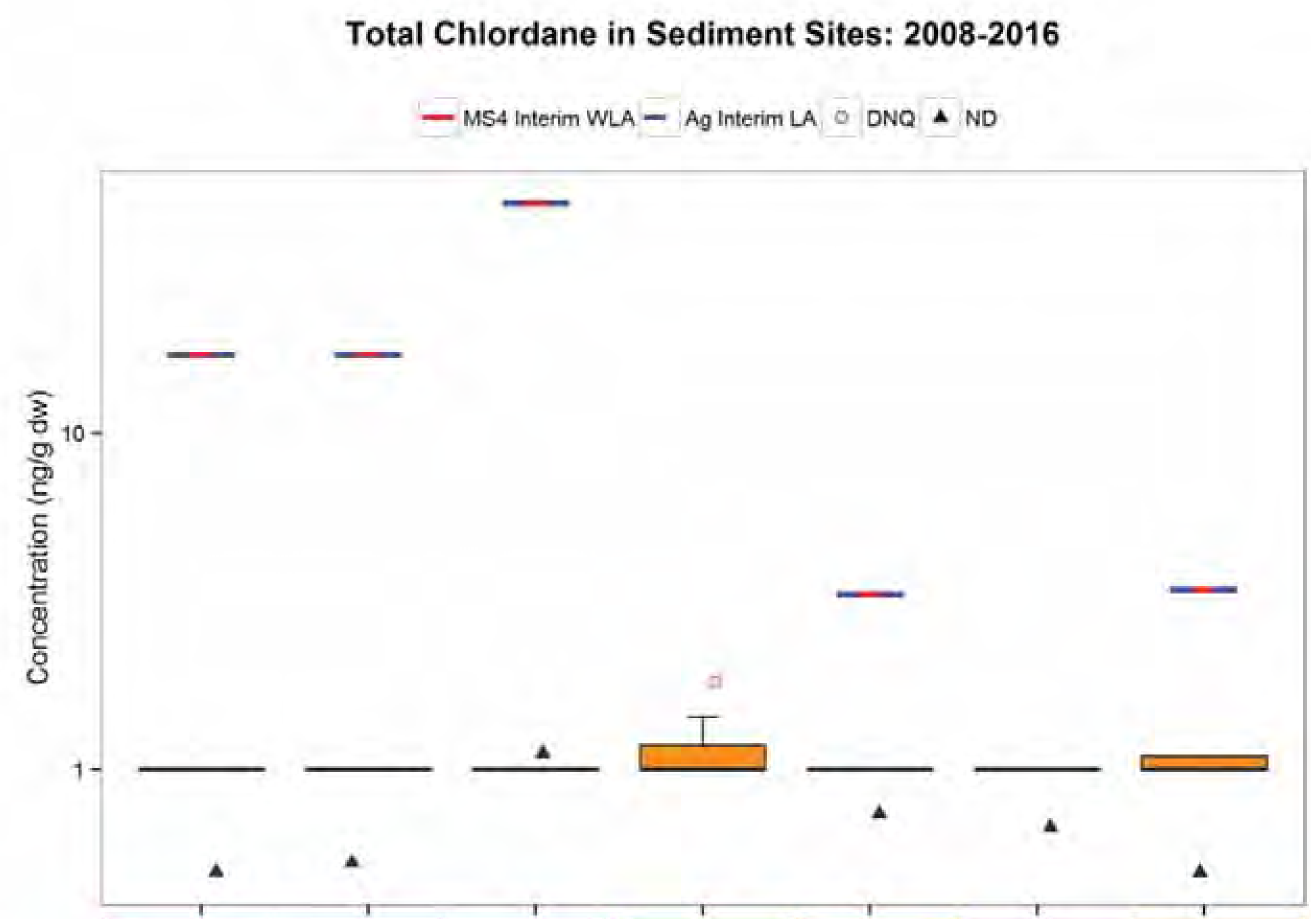
Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	5.8	*3.5*	*2.2*	23.5	*4*	<1	*3.1*

Figure 21. 4,4'-DDE Sediment Concentrations in Receiving Water Sites: 2008-2016



Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	<1	<1	<1	<1	<1	<1	<1

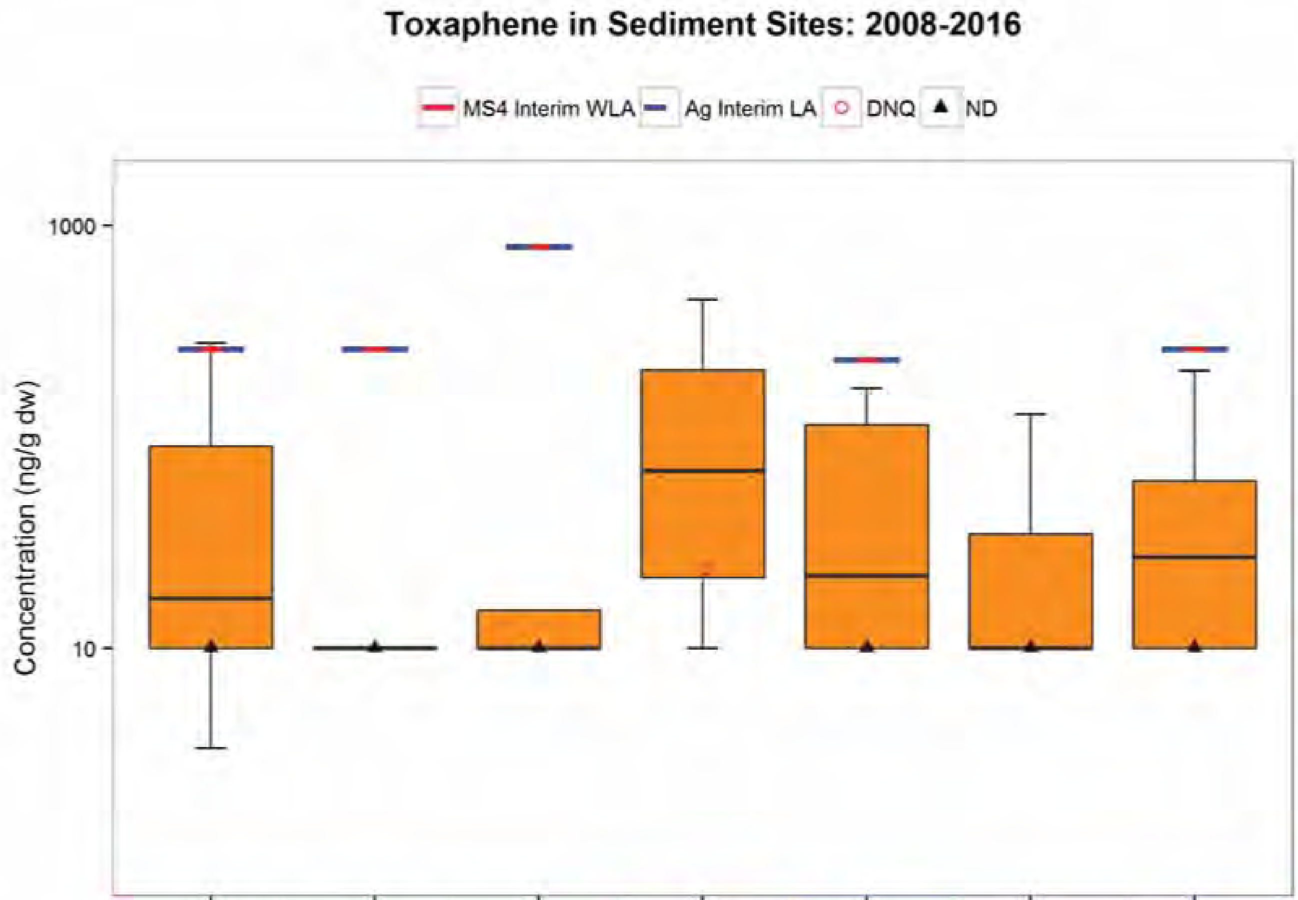
Figure 22. 4,4'-DDT Sediment Concentrations in Receiving Water Sites: 2008-2016



02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF

Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	<1	<1	<1	*1.1*	<1	<1	<1

Figure 23. Total Chlordane Sediment Concentrations in Receiving Water Sites: 2008-2016

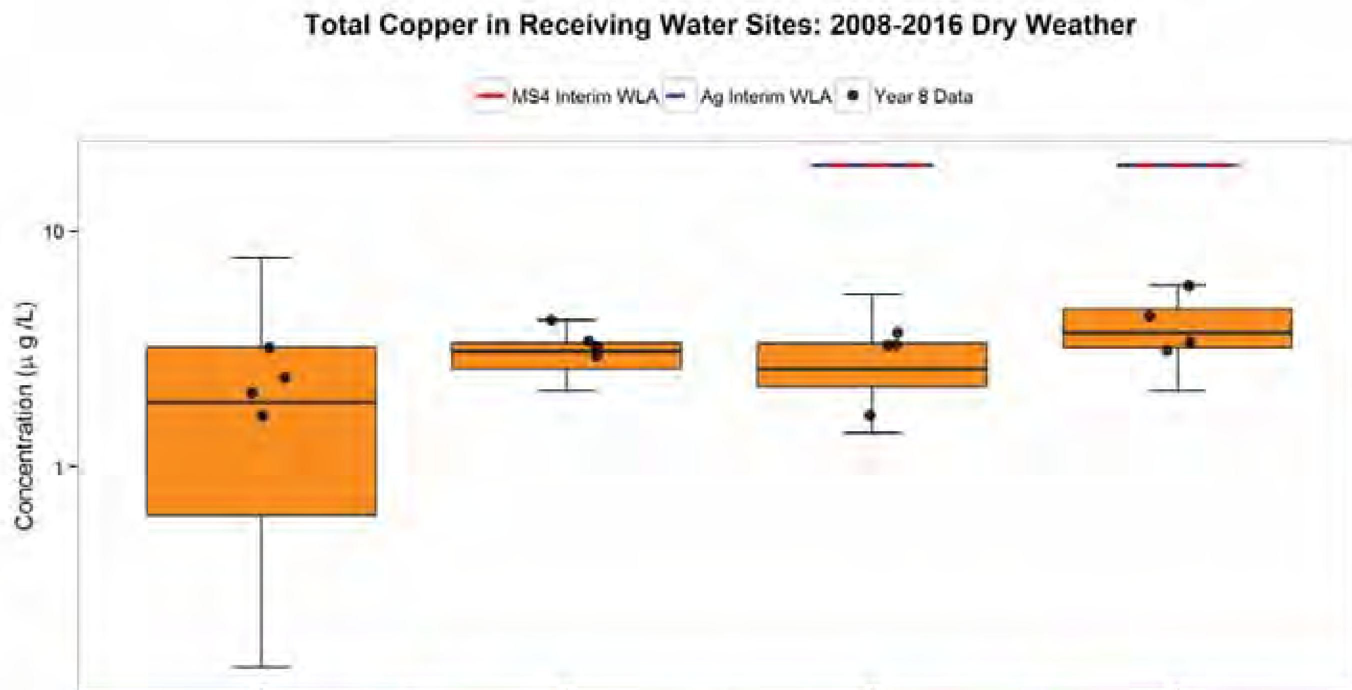


Date	Type	Event	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	<10	<10	<10	*20.99*	<10	<10	<10

Figure 24. Toxaphene Sediment Concentrations in Receiving Water Sites: 2008-2016

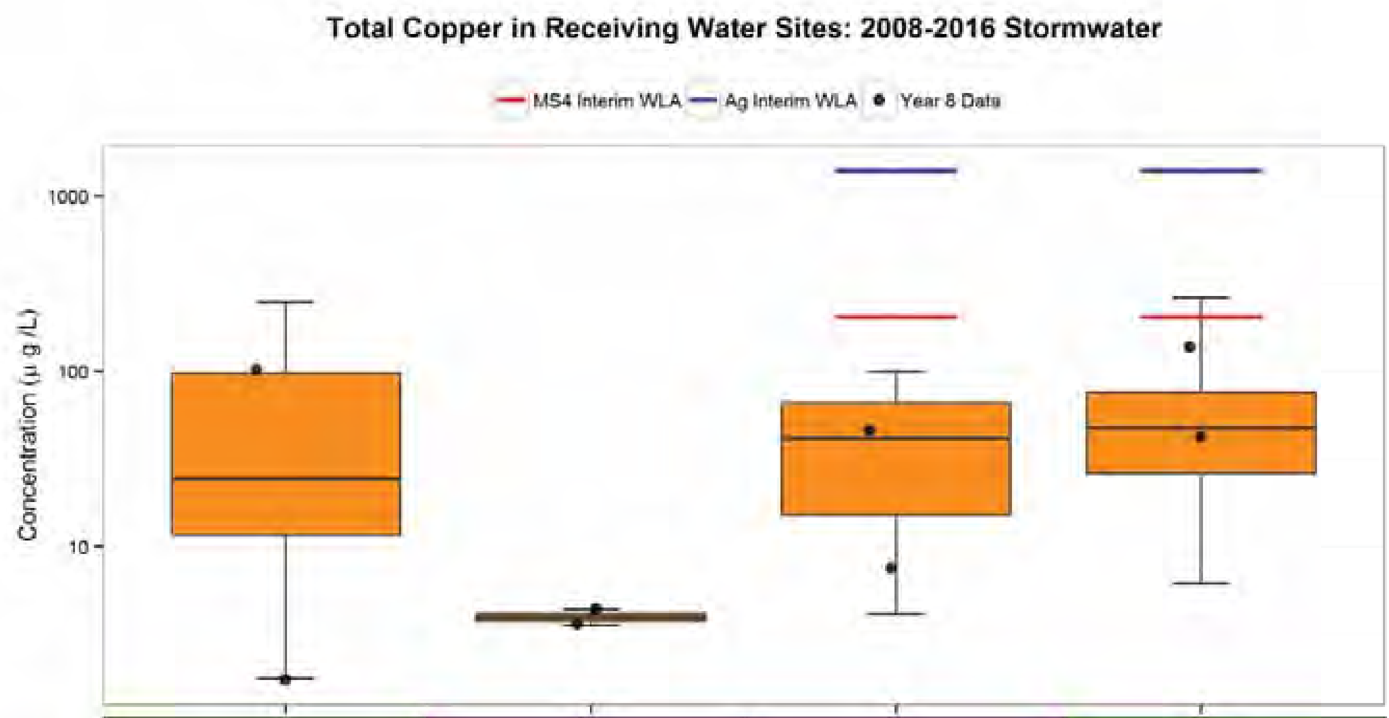
METALS TMDL DATA SUMMARY

The following figures present metals water quality data from receiving water, agricultural, urban, and POTW monitoring sites. Currently effective total metals interim load allocations and waste load allocations differ for wet and dry weather, therefore the data for each of these conditions is provided separately. Interim POTW waste load allocations for total mercury are in load form and are therefore calculated and presented in the compliance section of the report. The Metals TMDL specifies final targets for both dissolved copper and zinc. Dissolved concentrations for these two metals have been plotted for reference. Data collected during year eight, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2016). This was done to allow for easy comparison between recent data and what have been collected overall. The eighth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a "<" preceding them, indicate the constituent was ND at the MDL for that constituent. Values identified as "--" in the tables indicate no samples were collected at those sites for those events.



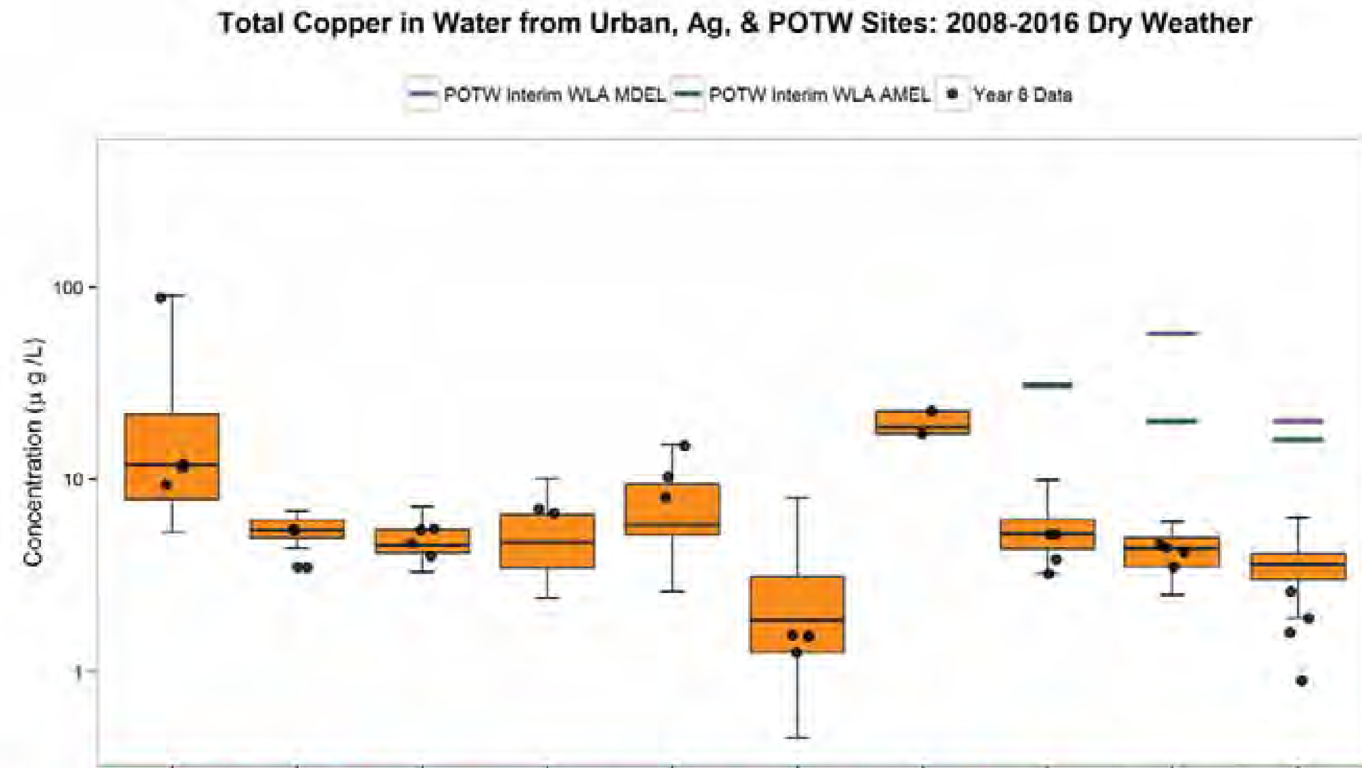
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	2.394	2.952	1.656	3.115
Nov-15	Dry	51	1.652	3.218	3.279	3.383
Feb-16	Dry	54	3.205	3.411	3.29	5.864
May-16	Dry	55	2.064	4.201	3.712	4.379

Figure 25. Total Copper Dry Weather Concentrations in Receiving Water Sites: 2008-2016



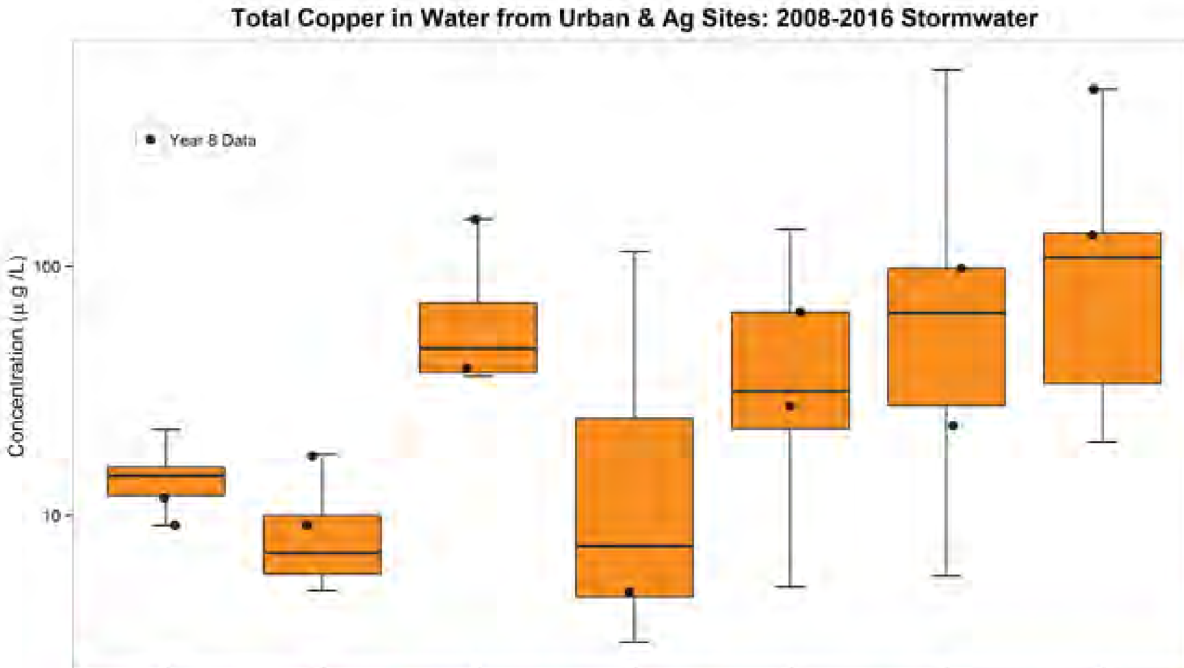
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Jan-16	Storm	52	102.105	4.363	45.68	138.42
Jan-16	Storm	53	1.756	3.531	7.586	42.287

Figure 26. Total Copper Stormwater Concentrations in Receiving Water Sites: 2008-2016



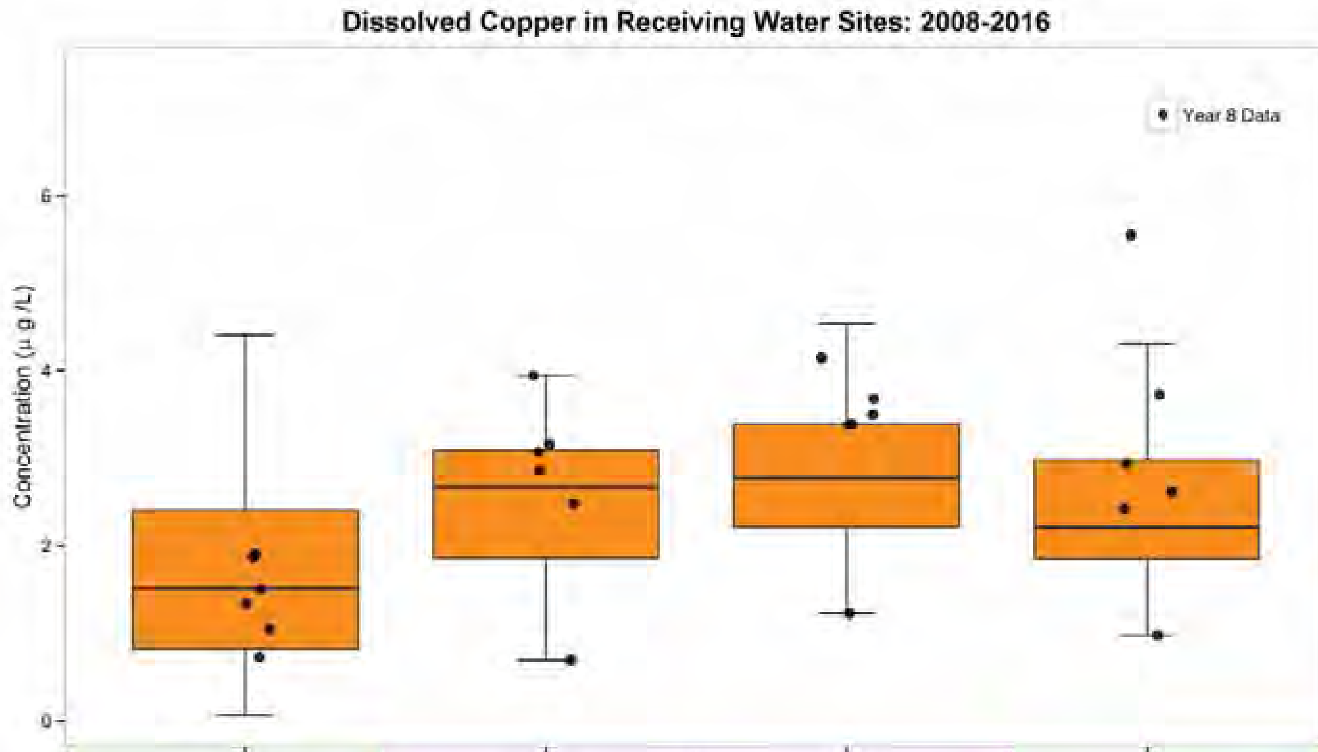
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	87.551	3.454	3.964	--	--	1.516	--	5.171	3.486	1.9
Nov-15	Dry	51	11.895	3.486	4.647	--	8.059	1.259	22.505	5.145	4.592	0.9
Feb-16	Dry	54	9.318	5.392	5.418	6.64	14.927	1.553	17.185	3.832	4.404	2.6
May-16	Dry	55	11.503	5.472	5.524	7.001	10.287	1.535	--	3.219	4.16	1.6

Figure 27. Total Copper Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2016



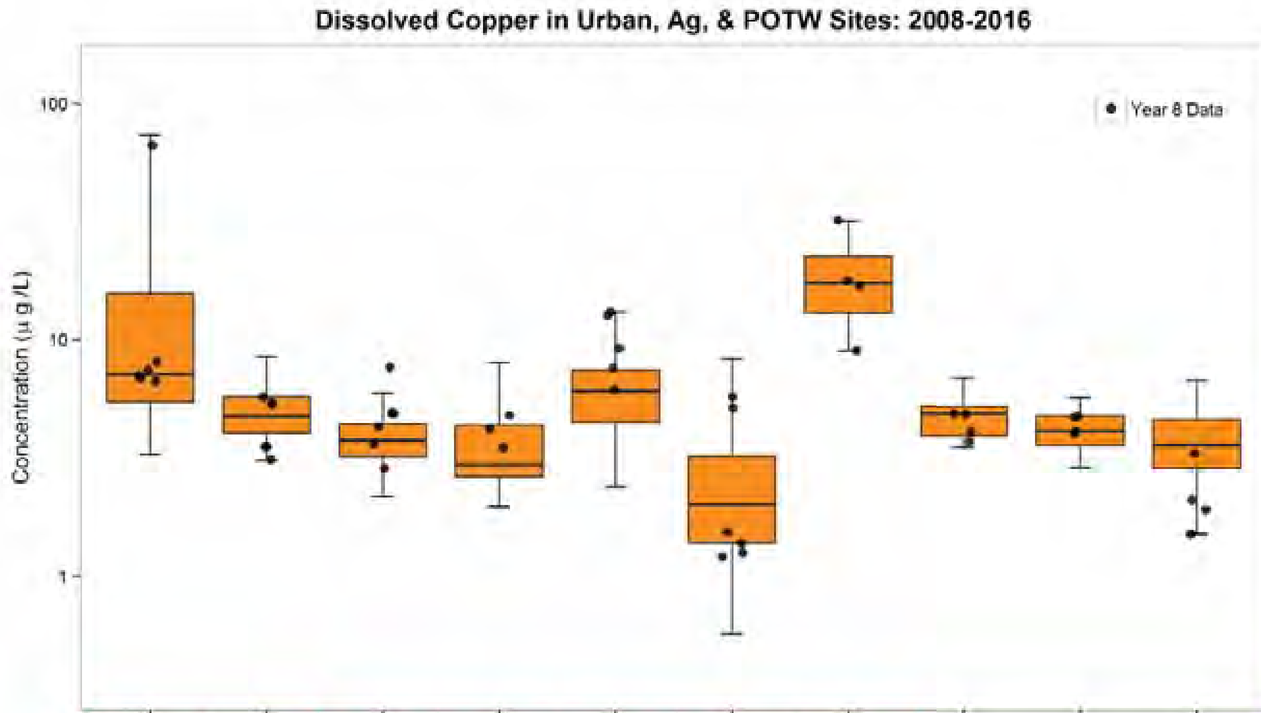
Date	Type	Event	04D_VENTURA	98D_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	98D_GERRY
Jan-16	Storm	52	11.72	17.279	154.112	--	65.424	97.51	511.948
Jan-16	Storm	53	9.128	9.171	38.917	4.942	27.438	22.971	133.179

Figure 28. Total Copper Wet Weather Concentrations in Urban and Ag Sites: 2008-2016



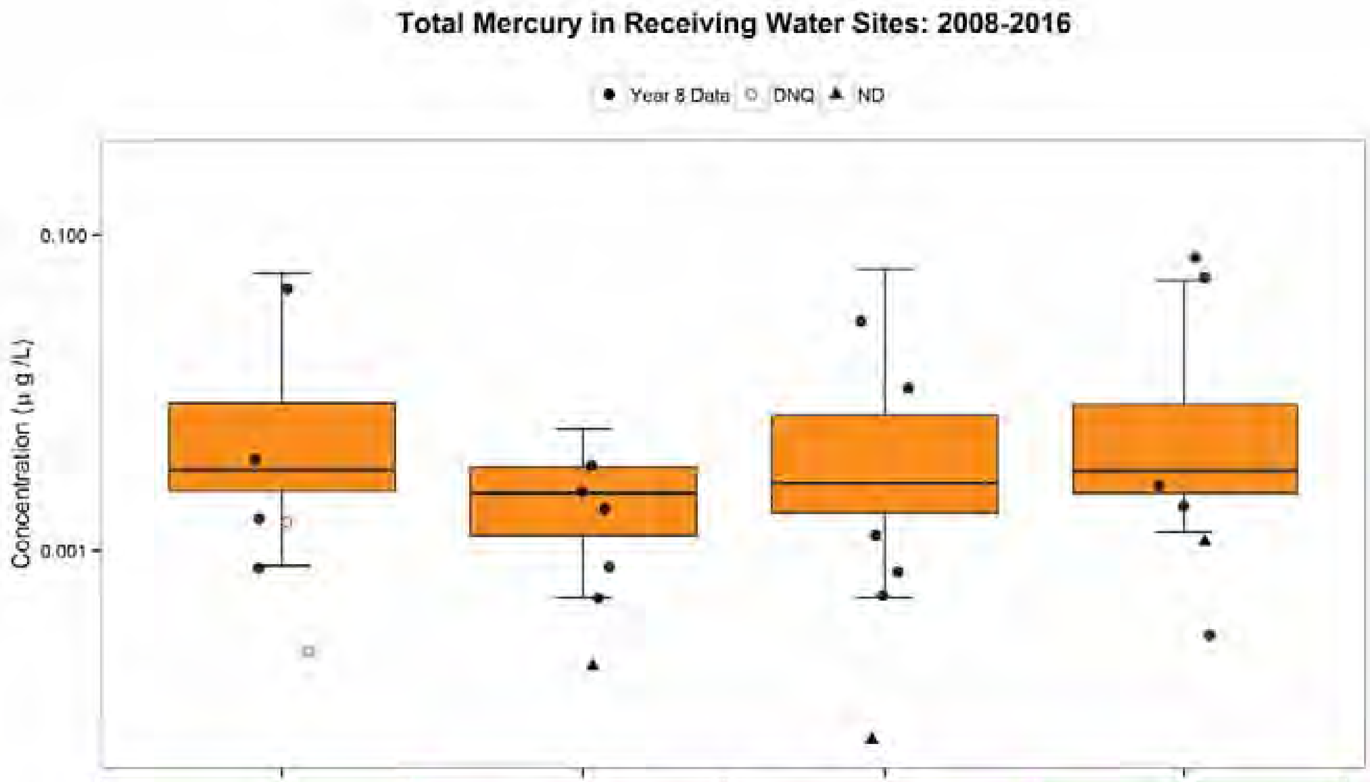
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	1.34	0.695	1.231	0.974
Nov-15	Dry	51	0.722	2.473	3.379	2.413
Jan-16	Storm	52	1.047	3.153	3.673	2.61
Jan-16	Storm	53	1.509	3.061	4.138	5.545
Feb-16	Dry	54	1.893	2.851	3.491	2.932
May-16	Dry	55	1.862	3.937	3.382	3.724

Figure 29. Dissolved Copper Concentrations in Receiving Water Sites: 2008-2016



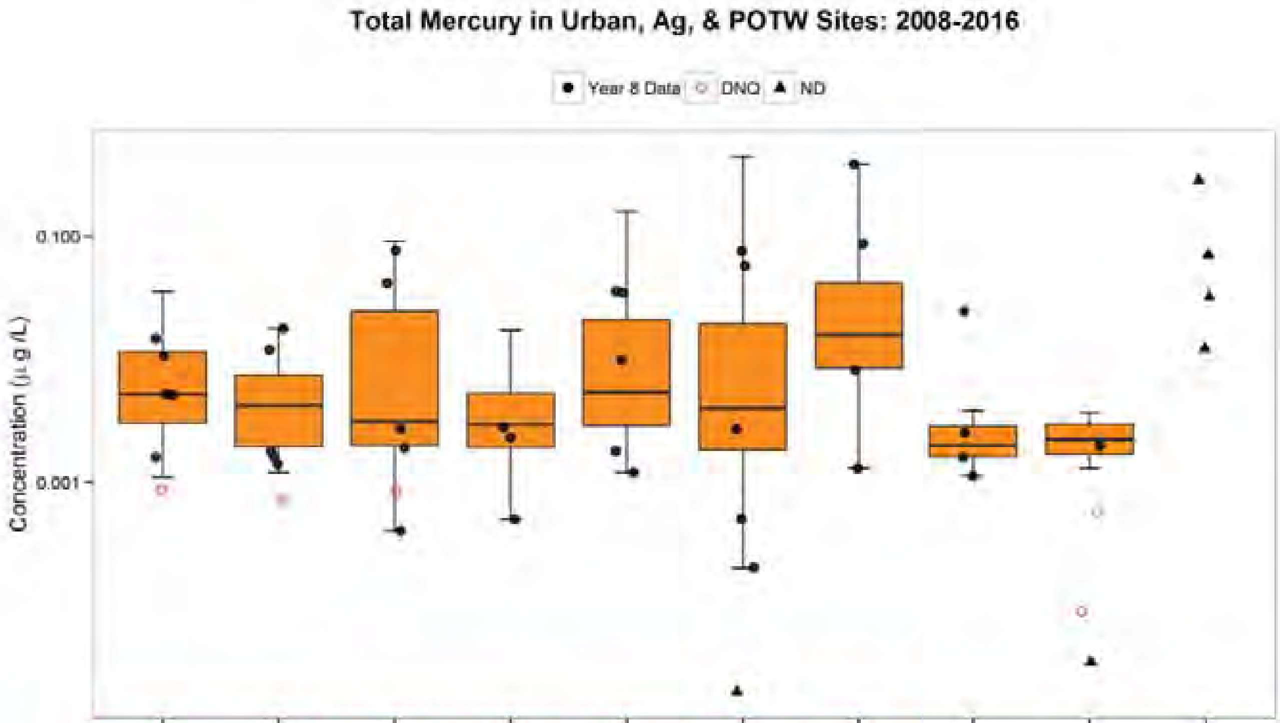
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	66.442	3.1	4.876	--	--	1.253	--	4.859	4.015	1.9
Nov-15	Dry	51	6.86	3.507	3.606	--	6.134	1.202	8.982	4.832	4.739	3.3
Jan-16	Storm	52	7.426	3.519	2.848	--	13.107	5.132	31.963	--	--	--
Jan-16	Storm	53	7.03	5.396	7.629	4.195	12.634	5.708	17.701	--	--	--
Feb-16	Dry	54	6.656	5.297	4.278	3.486	7.546	1.367	16.835	4.055	4.7	2.1
May-16	Dry	55	8.059	5.707	4.854	4.775	9.169	1.526	--	3.691	4.08	1.5

Figure 30. Dissolved Copper Concentrations in Urban, Ag, and POTW Sites: 2008-2016



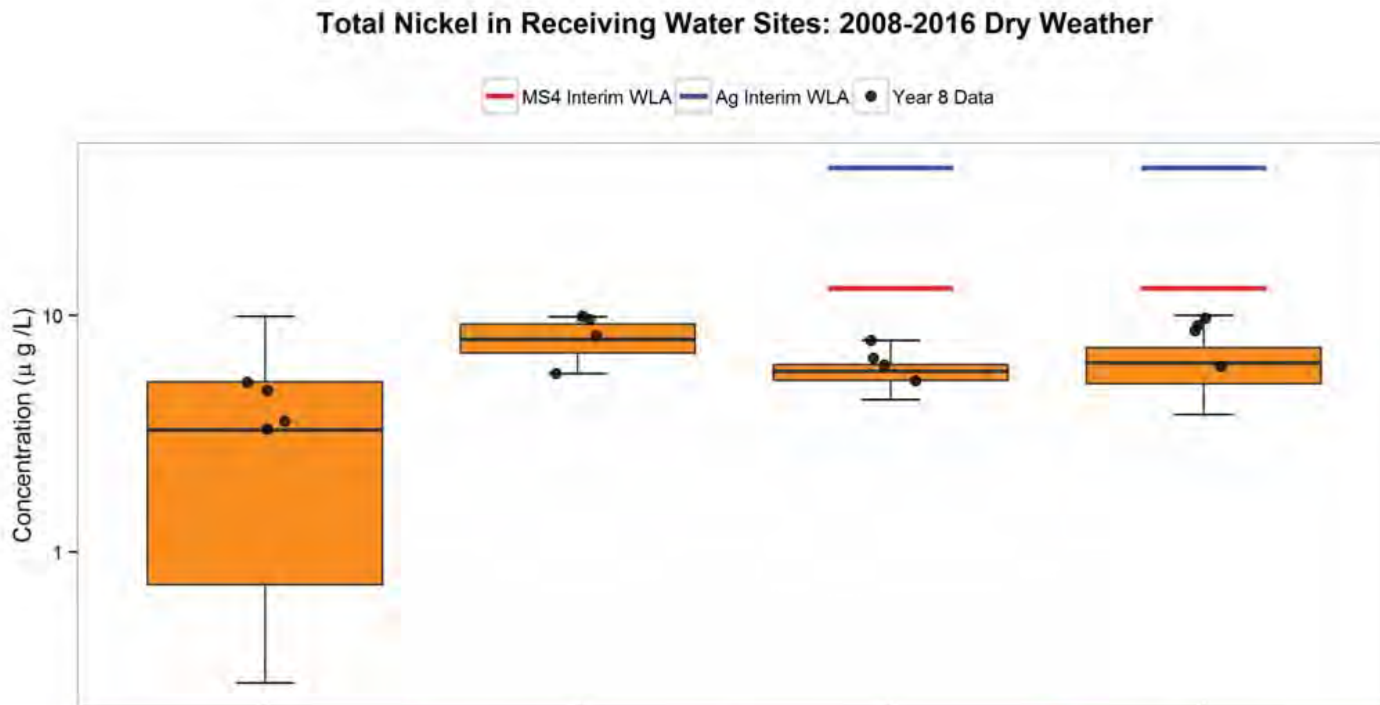
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	0.0016	0.0033	0.0013	0.0019
Nov-15	Dry	51	*0.0008*	<0.0005	0.0005	<0.0005
Jan-16	Storm	52	0.0457	0.0019	0.0281	0.0708
Jan-16	Storm	53	0.0038	0.0023	0.0104	0.0513
Feb-16	Dry	54	0.0008	0.0008	0.0007	0.0026
May-16	Dry	55	*0.0001*	0.0005	<0.00004	0.0003

Figure 31. Total Mercury Concentrations in Receiving Water Sites: 2008-2016



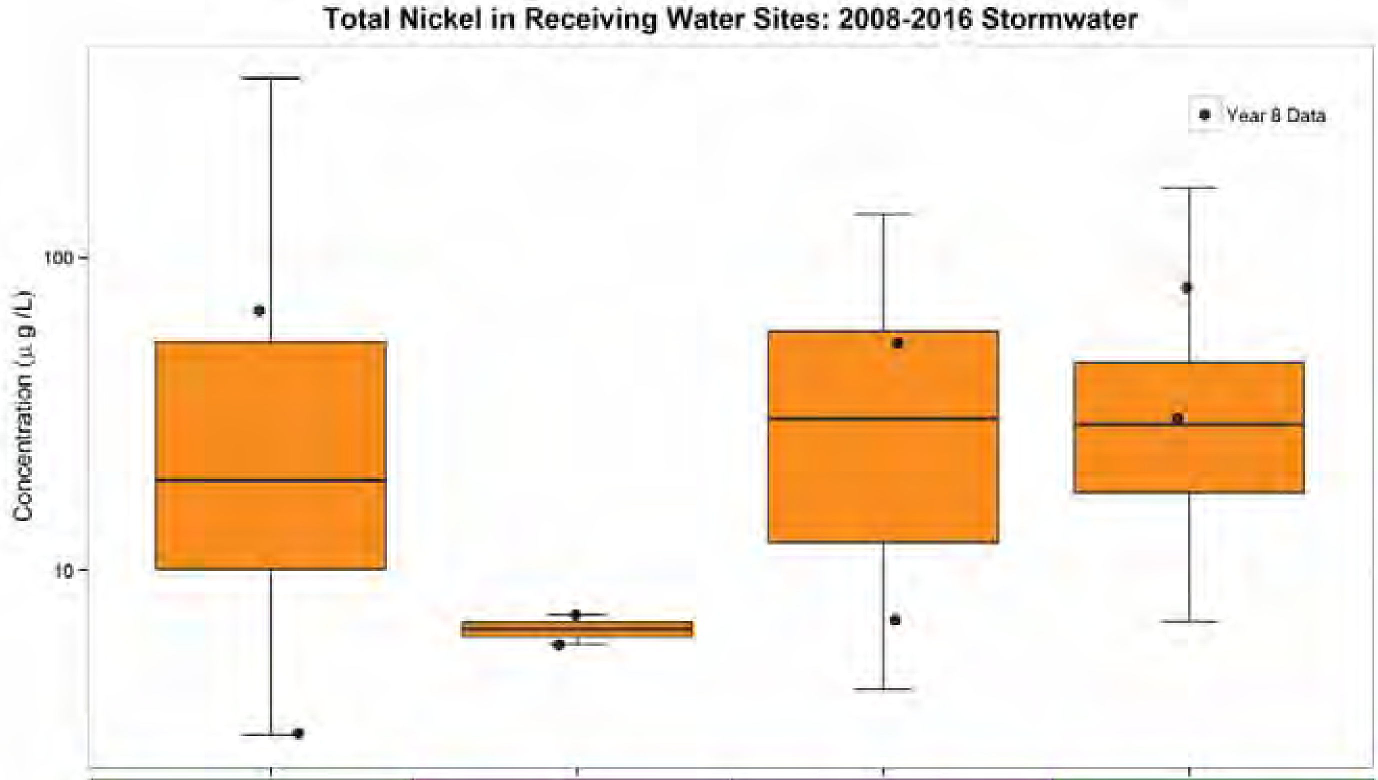
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	0.0052	0.0016	0.0027	--	--	0.0027	--	0.0016	*0.0006*	<0.025
Nov-15	Dry	51	*0.0009*	*0.0007*	*0.0008*	--	0.0012	0.0005	0.0013	0.0025	0.0020	<0.025
Jan-16	Storm	52	0.0106	0.0178	0.0765	--	0.0359	0.0572	0.3875	--	--	--
Jan-16	Storm	53	0.0147	0.0119	0.0416	0.0028	0.0346	0.0761	0.0873	--	--	--
Feb-16	Dry	54	0.0051	0.0018	0.0019	0.0023	0.0099	0.0002	0.0082	0.00112	*0.00009*	<0.025
May-16	Dry	55	0.0016	0.0014	0.0004	0.0005	0.0018	<0.00004	--	0.0247	<0.00004	<0.025

Figure 32. Total Mercury Concentrations in Urban and Ag Sites: 2008-2016



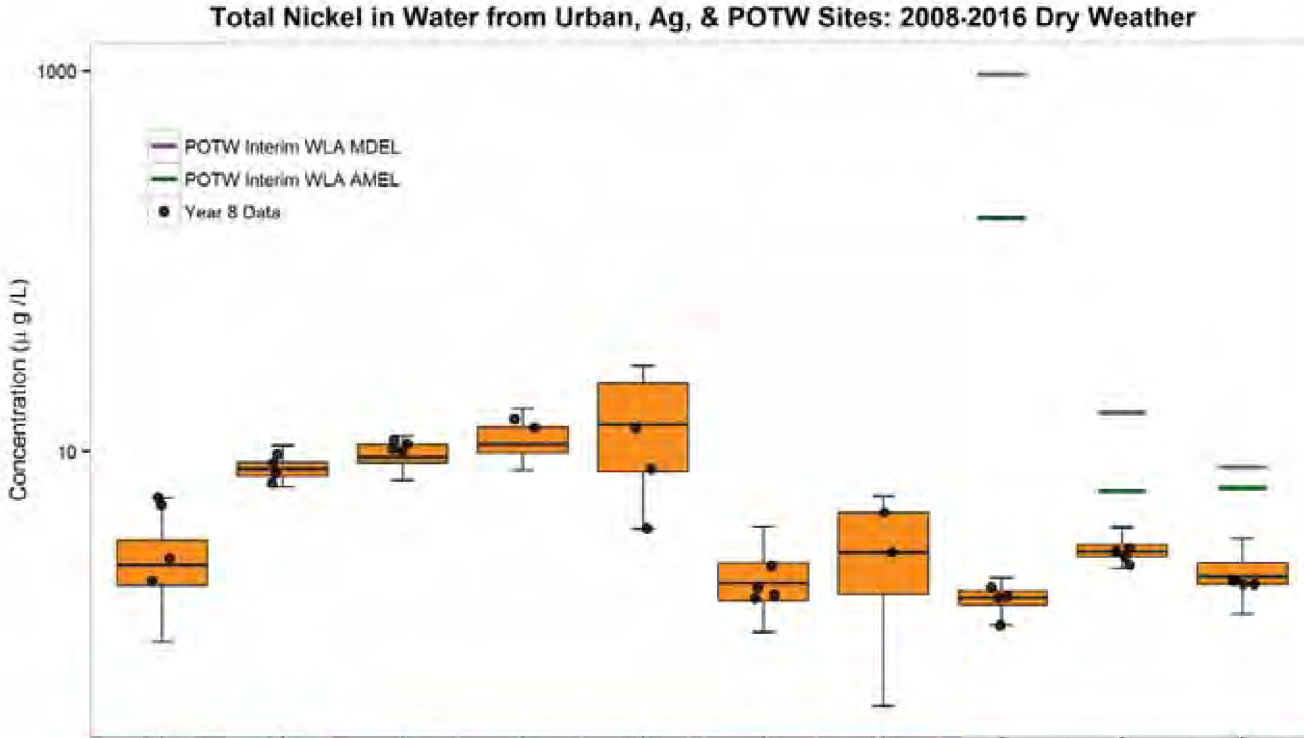
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	5.2261	9.55	6.16	6.07
Nov-15	Dry	51	3.286	8.2	5.29	8.64
Feb-16	Dry	54	4.8143	5.65	6.61	9.66
May-16	Dry	55	3.5713	9.86	7.84	9.1

Figure 33. Total Nickel Dry Weather Concentrations in Receiving Water Sites: 2008-2016



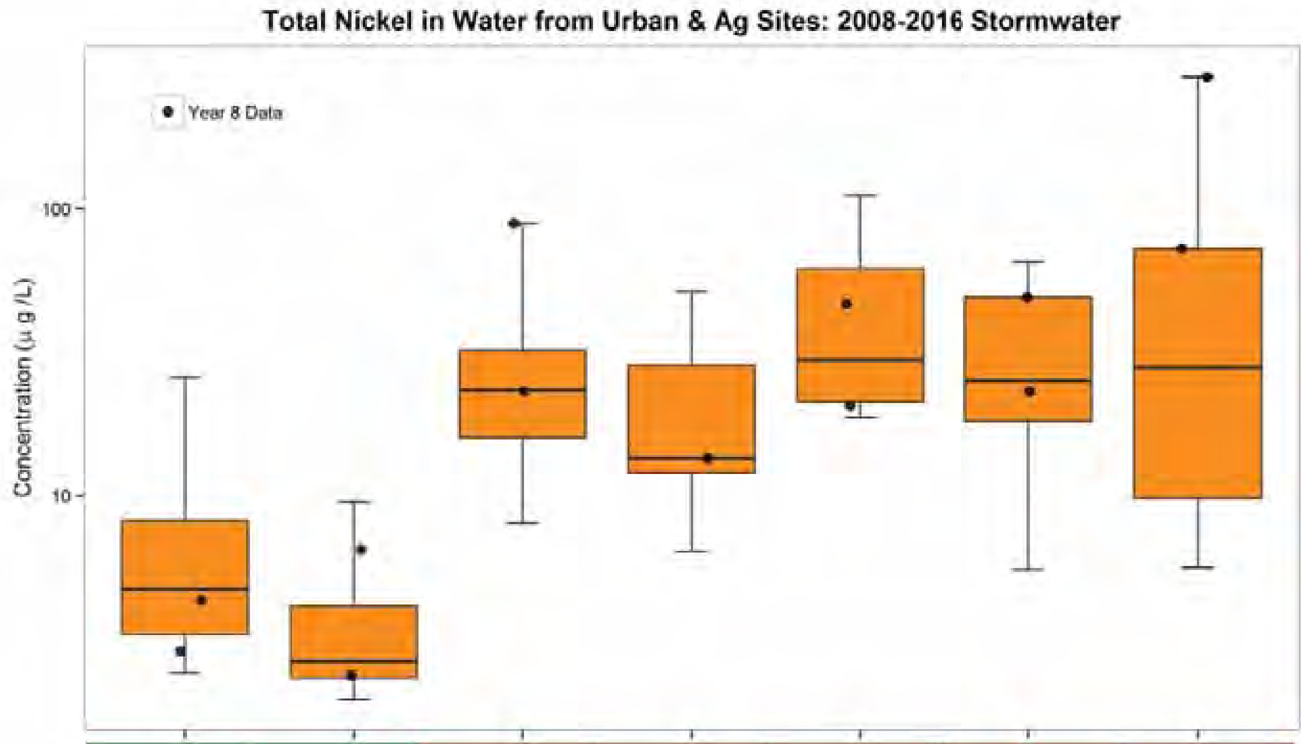
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Jan-16	Storm	52	67.57	5.79	53.21	78.71
Jan-16	Storm	53	2.9667	7.22	6.97	30.93

Figure 34. Total Nickel Stormwater Concentrations in Receiving Water Sites: 2008-2016



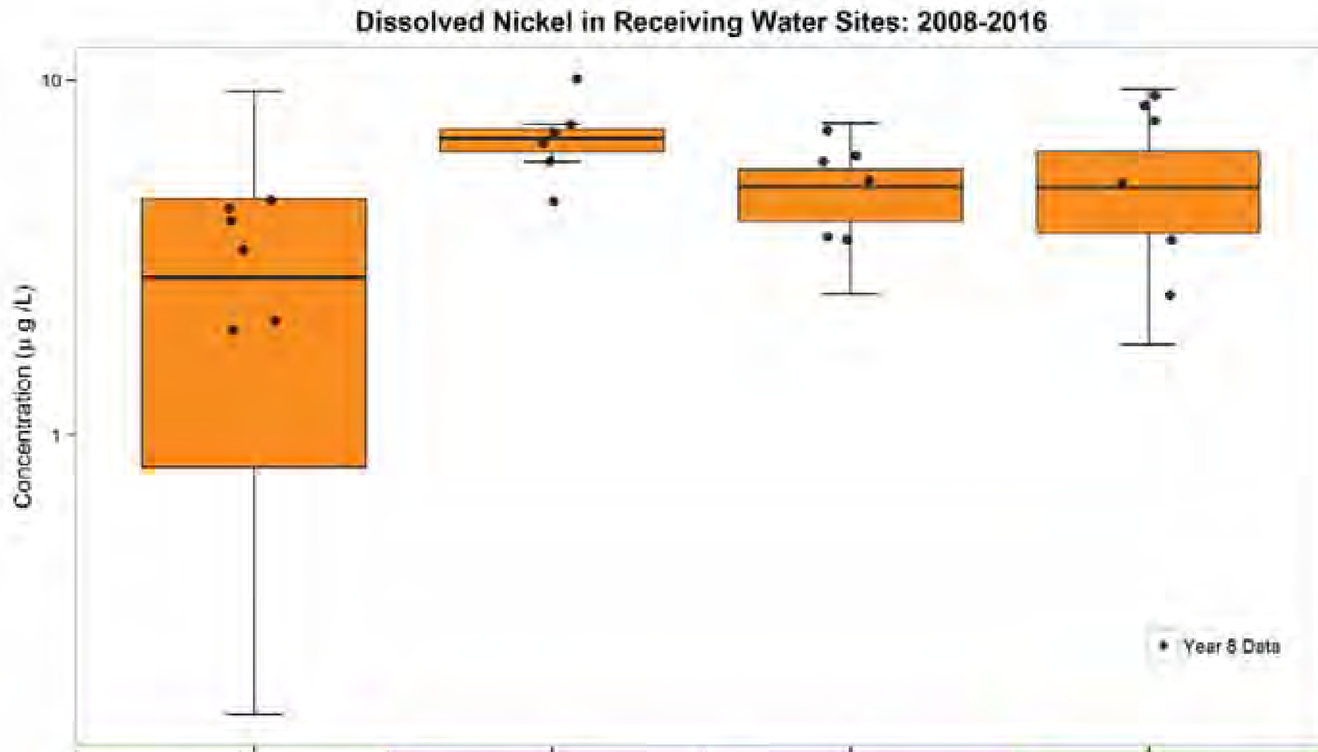
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	5.25	7.66	10.33	--	--	1.76	--	1.93	2.98	2.1
Nov-15	Dry	51	5.73	9.64	10	--	3.93	1.7	2.95	1.7	3.09	2.1
Feb-16	Dry	54	2.09	8.73	11.46	14.84	13.24	1.93	4.79	1.22	2.8	2
May-16	Dry	55	2.75	6.8	10.93	13.35	8.08	2.51	--	1.73	2.52	2

Figure 35. Total Nickel Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2016



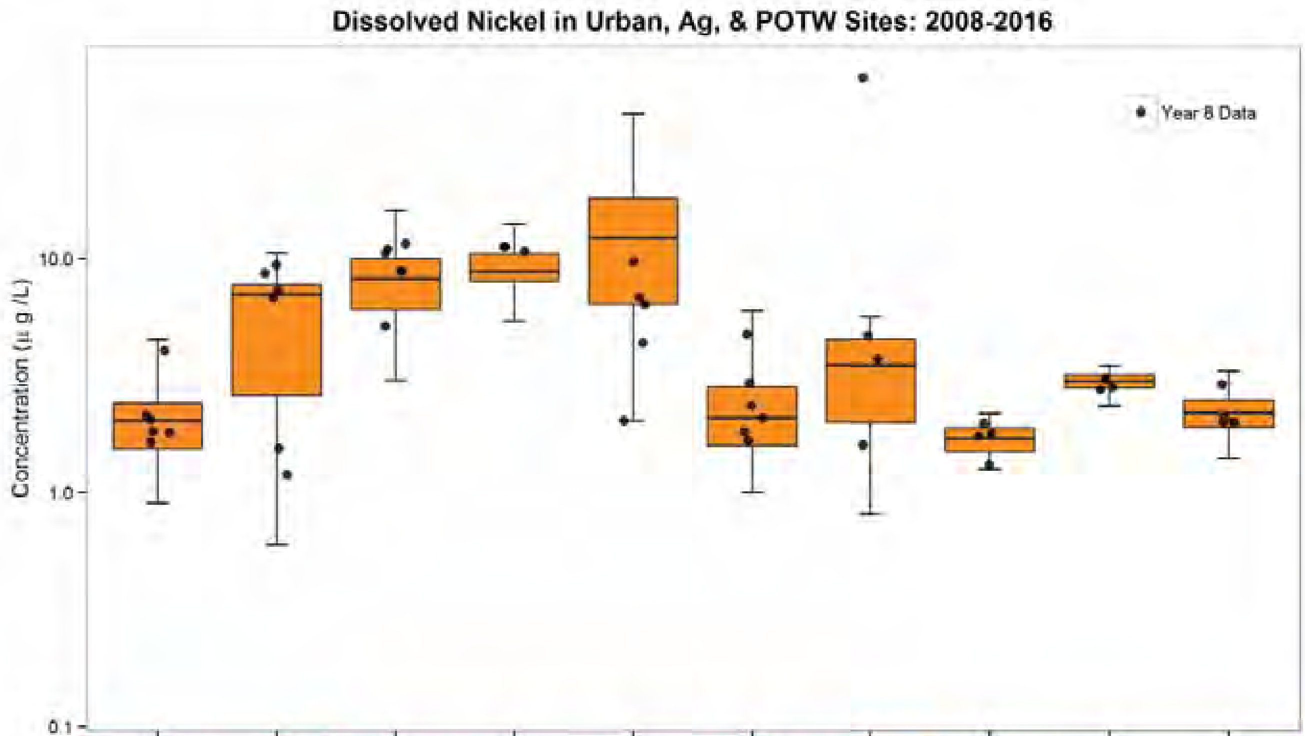
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY
Jan-16	Storm	52	4.31	6.46	88.83	--	46.65	49.23	287.9
Jan-16	Storm	53	2.86	2.36	23.08	13.48	20.6	23.06	72.55

Figure 36. Total Nickel Stormwater Concentrations in Urban and Ag Sites: 2008-2016



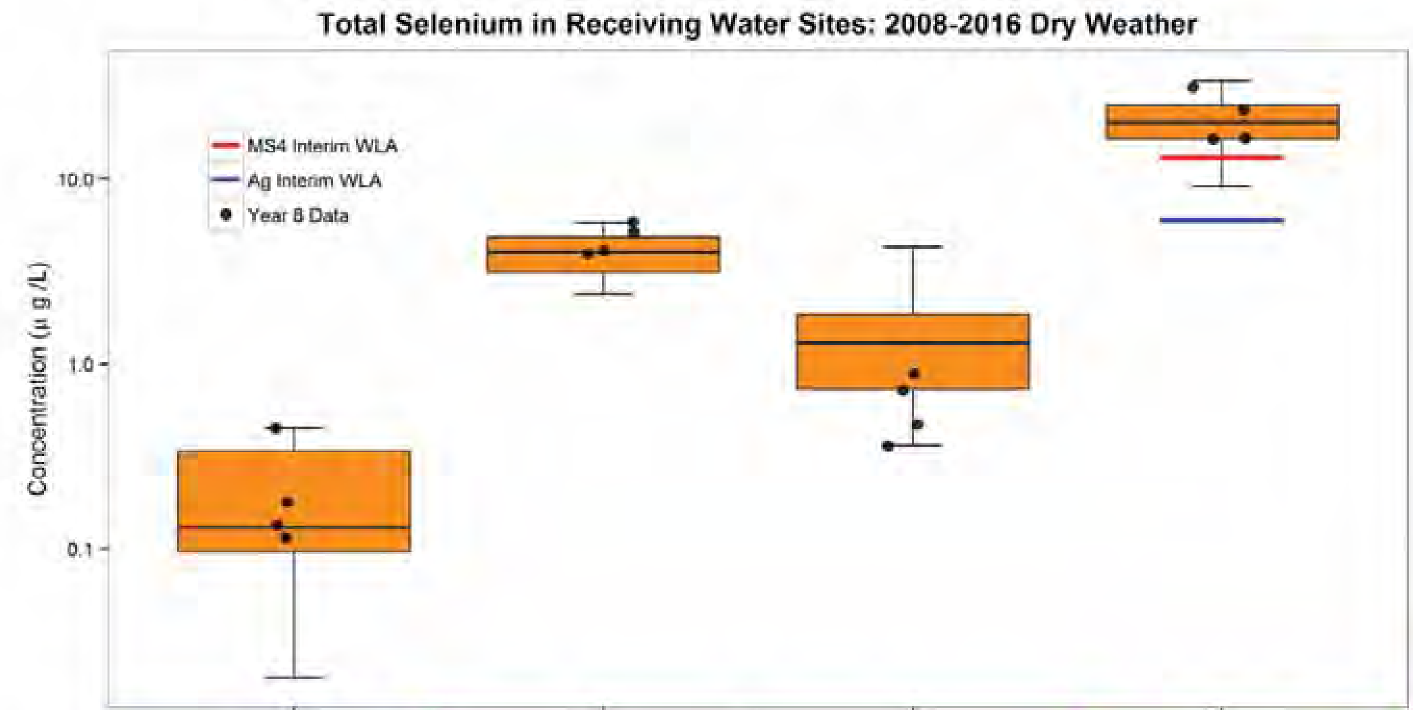
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	4.5796	7.49	5.89	5.12
Nov-15	Dry	51	1.974	7.1	5.19	8.46
Jan-16	Storm	52	4.34	4.54	3.54	2.48
Jan-16	Storm	53	2.0984	6.62	3.61	3.53
Feb-16	Dry	54	4.005	5.89	6.11	7.67
May-16	Dry	55	3.3093	10.06	7.19	9.03

Figure 37. Dissolved Nickel Concentrations in Receiving Water Sites: 2008-2016



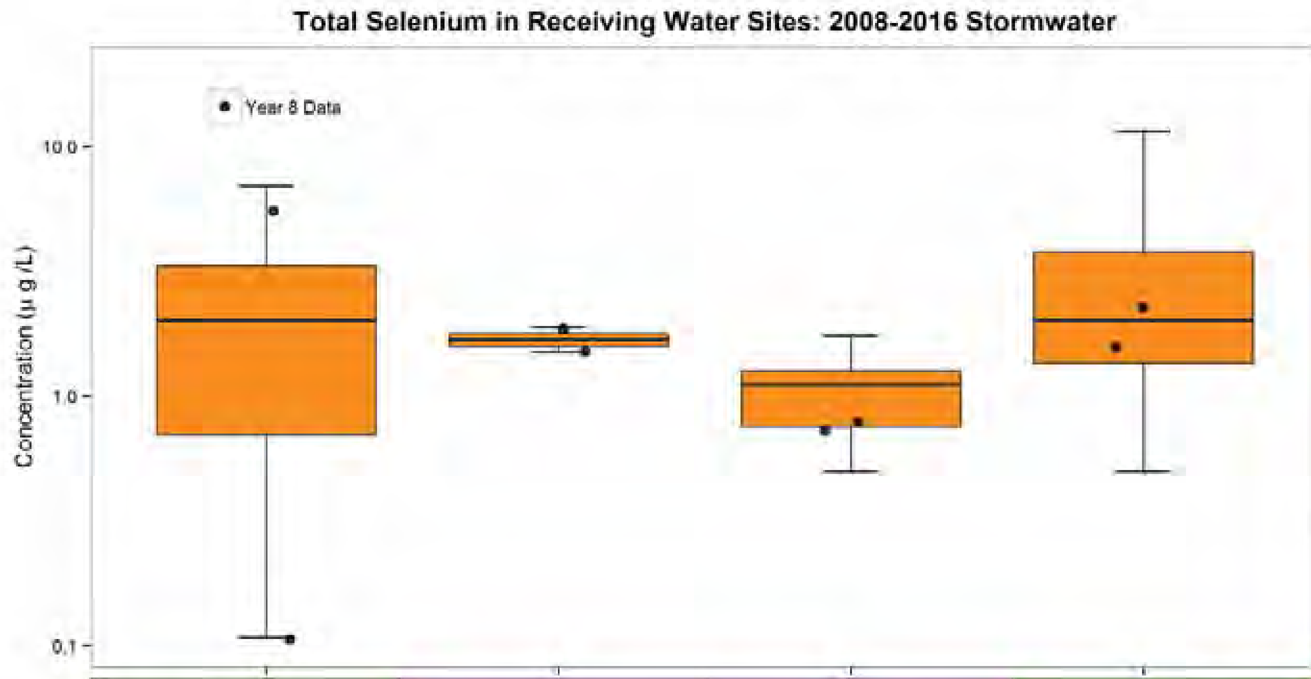
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	4.05	7.3	10.57	--	--	1.66	--	1.97	3.08	2.9
Nov-15	Dry	51	2.14	9.4	8.81	--	2.03	1.82	1.6	1.78	2.82	2
Jan-16	Storm	52	1.8	1.19	5.15	--	4.37	2.94	59.54	--	--	--
Jan-16	Storm	53	1.64	1.54	8.86	10.73	6.37	4.73	3.72	--	--	--
Feb-16	Dry	54	1.83	8.65	11.58	11.23	9.72	2.09	4.68	1.32	2.75	2.1
May-16	Dry	55	2.06	6.82	10.94	11.23	6.86	2.34	--	1.74	3.03	2

Figure 38. Dissolved Nickel Concentrations in Urban, Ag, and POTW Sites: 2008-2016



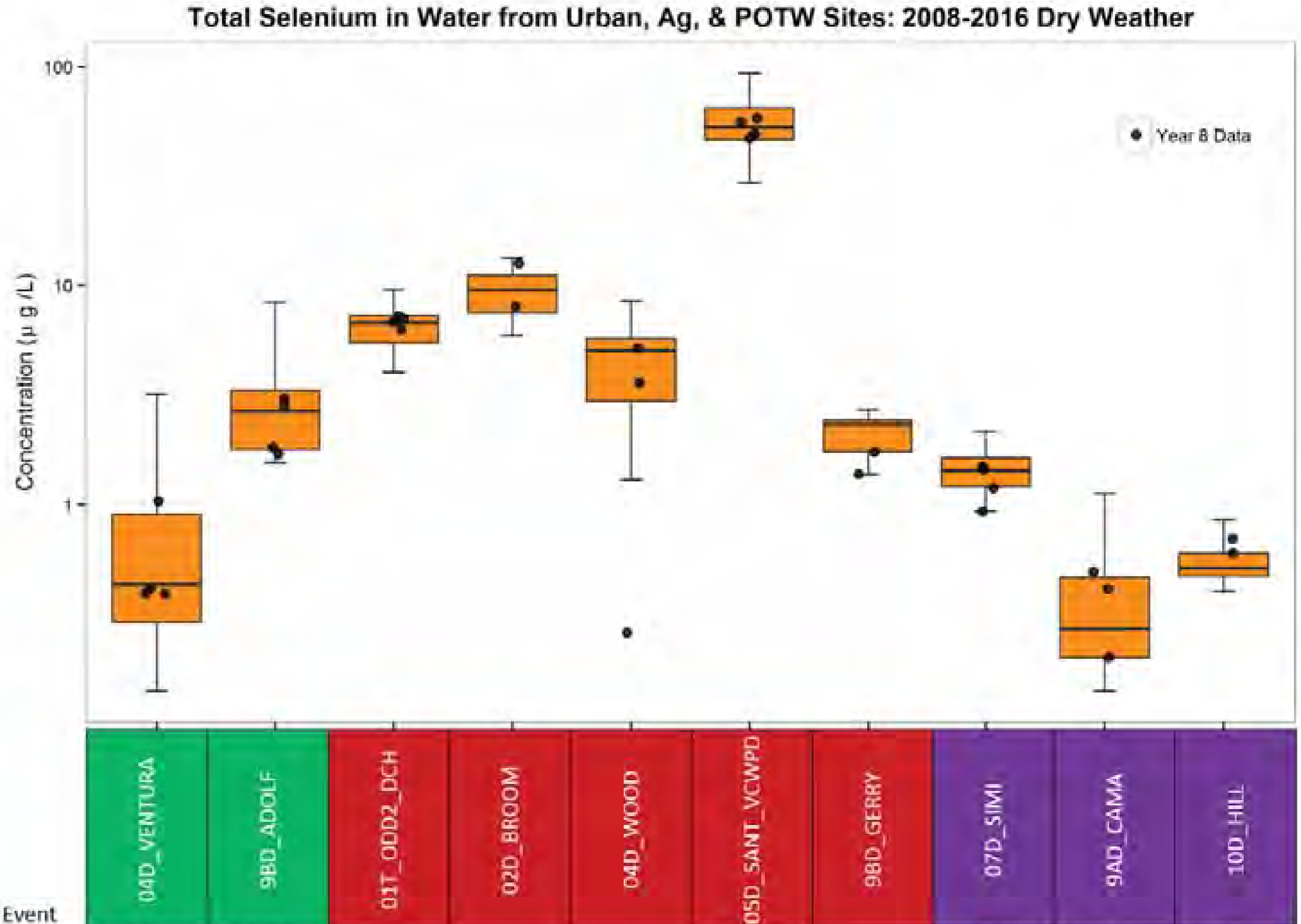
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	0.448	4.09	0.72	31.16
Nov-15	Dry	51	0.178	5.11	0.47	16.34
Feb-16	Dry	54	0.114	3.95	0.88	16.49
May-16	Dry	55	0.134	5.83	0.36	23.56

Figure 39. Total Selenium Dry Weather Concentrations in Receiving Water Sites: 2008-2016



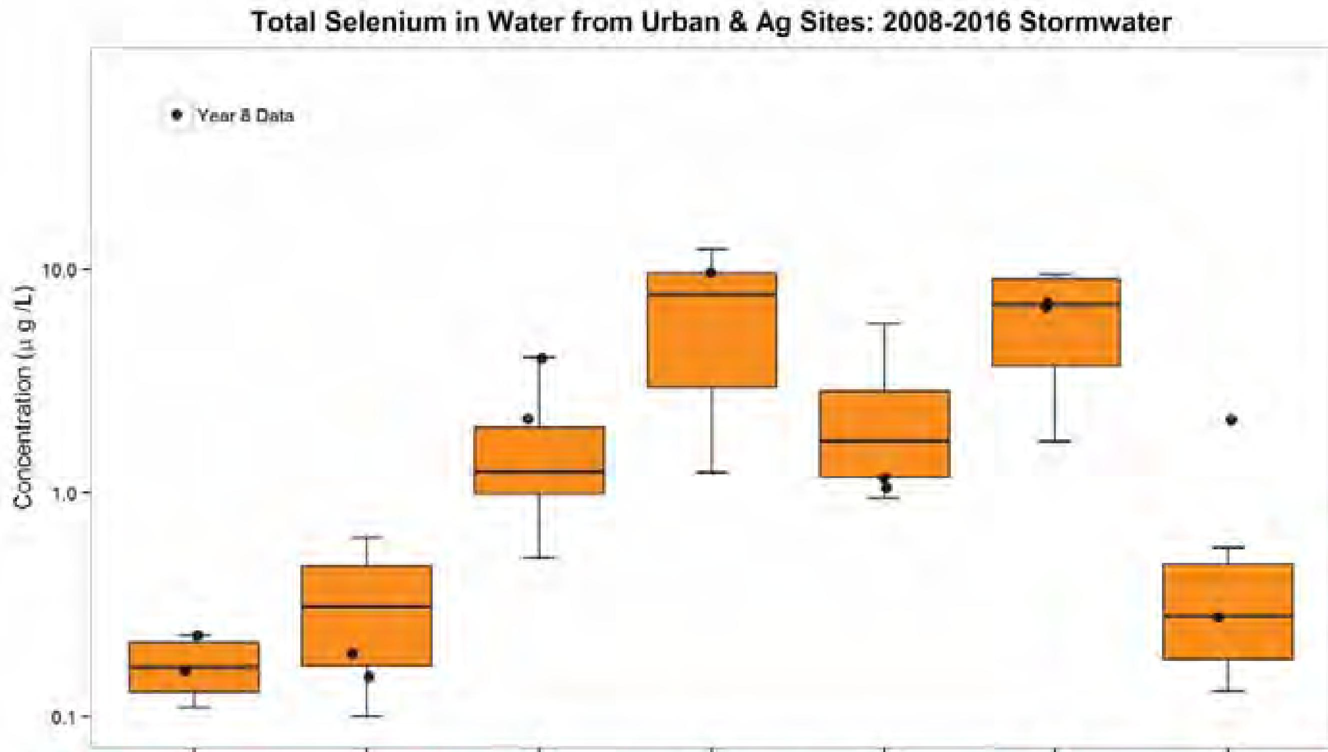
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Jan-16	Storm	52	5.62	1.49	0.8	2.26
Jan-16	Storm	53	0.108	1.89	0.74	1.56

Figure 40. Total Selenium Stormwater Concentration in Receiving Water Sites: 2008-2016



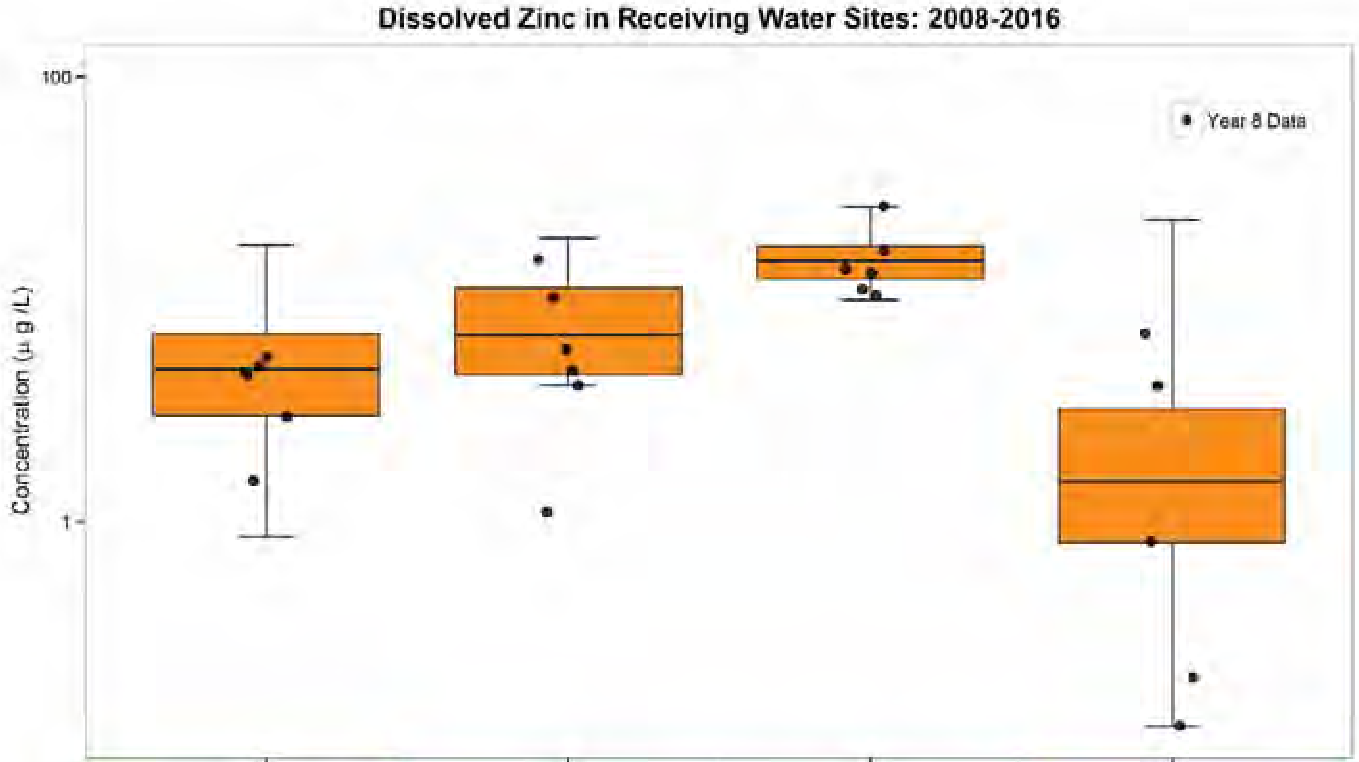
Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	1.03	1.83	7.23	--	--	55.98	--	1.19	0.41	0.6
Nov-15	Dry	51	0.41	2.83	6.34	--	0.26	57.95	1.74	0.93	0.2	--
Feb-16	Dry	54	0.39	3.03	6.79	8.02	5.21	47.19	1.37	1.48	0.49	0.7
May-16	Dry	55	0.39	1.71	7.07	12.61	3.56	48.95	--	1.45	<0.02	--

Figure 41. Total Selenium Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2016



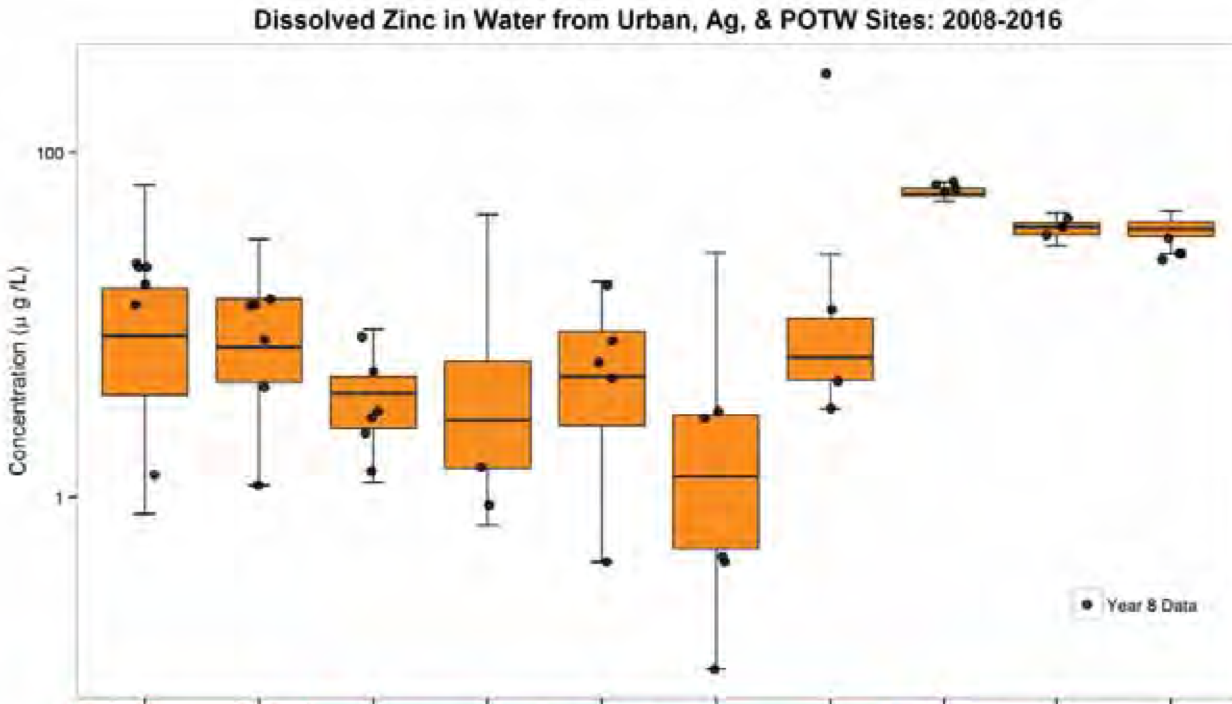
Date	Type	Event	04D_VENTURA	98D_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	98D_GERRY
Jan-16	Storm	52	0.23	0.19	2.14	--	1.05	7.08	2.1
Jan-16	Storm	53	0.16	0.15	4.02	9.64	1.17	6.77	0.28

Figure 42. Total Selenium Stormwater Concentrations in Urban and Ag Sites: 2008-2016



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD
Aug-15	Dry	50	5.44	4.75	16.57	0.2
Nov-15	Dry	51	1.51	4.06	26.15	0.12
Jan-16	Storm	52	4.95	15	10.31	4.06
Jan-16	Storm	53	4.50	10.16	13.61	6.98
Feb-16	Dry	54	2.96	5.92	12.97	0.81
May-16	Dry	55	4.64	1.1	11.01	<0.02

Figure 43. Dissolved Zinc Concentrations in Receiving Water Sites: 2008-2016

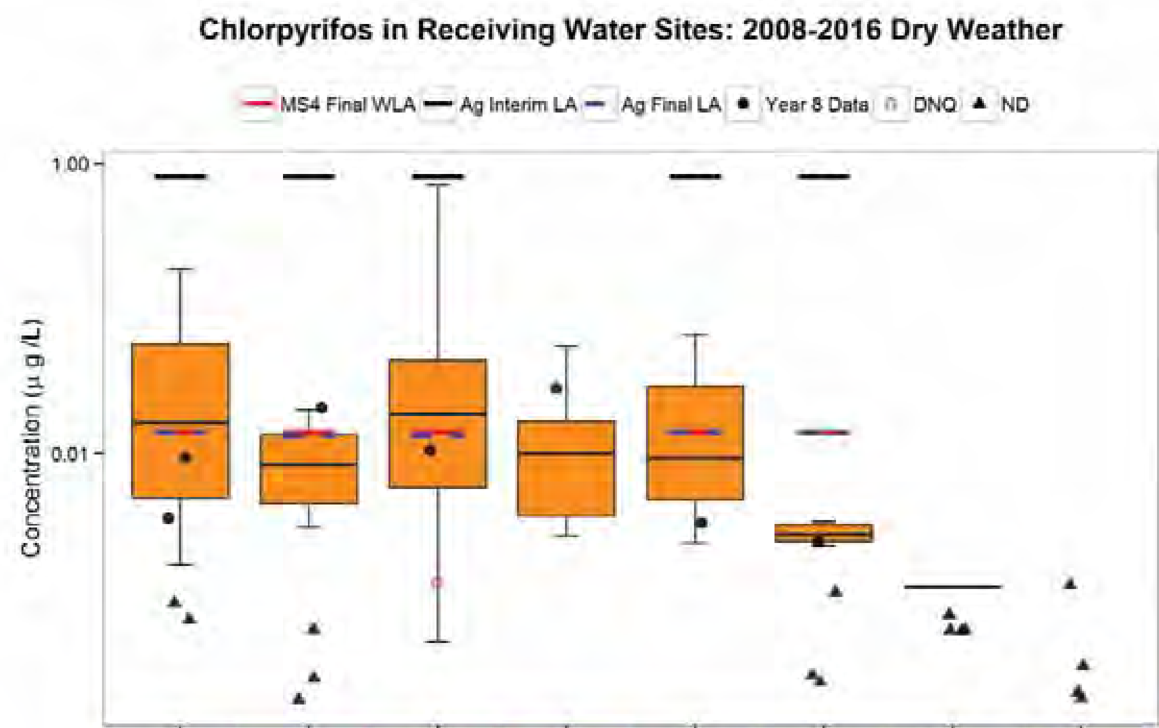


Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	1.34	8.17	3.15	--	--	0.42	--	61.97	37.41	26
Nov-15	Dry	51	21.69	1.17	1.41	--	6.05	0.1	4.7	65.18	41.65	24
Jan-16	Storm	52	21.58	13	5.34	--	8.07	3.15	289.09	--	--	--
Jan-16	Storm	53	22.73	14.15	8.48	1.49	16.96	2.86	12.28	--	--	--
Feb-16	Dry	54	13.07	4.33	2.9	0.9	4.9	0.45	3.27	59.43	37.06	26
May-16	Dry	55	17.13	13.08	2.35	<0.02	0.42	<0.02	--	67.72	33.3	32

Figure 44. Dissolved Zinc Concentrations in Urban, Ag, and POTW Sites: 2008-2016

TOXICITY TMDL

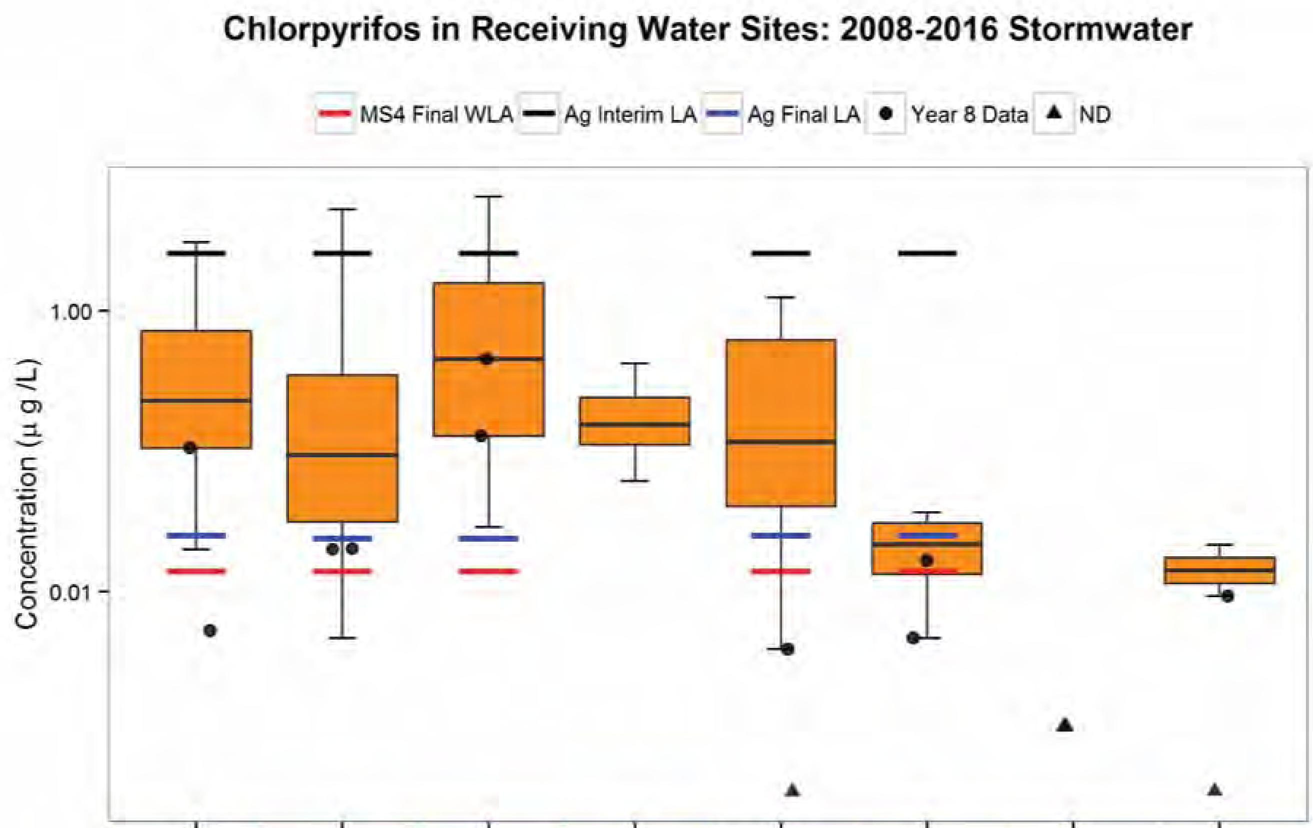
For the Toxicity TMDL, urban dischargers' and POTWs' final wasteload allocations are effective. For agricultural dischargers, interim load allocations were in effect until March 24, 2016, at which point final allocations became effective. The compliance points for these allocations are in the receiving waters at the base of the subwatersheds and are shown on the box plots for the appropriate site locations. Data for chlorpyrifos and diazinon has been separated into dry weather and stormwater since the allocations differ for the two conditions. Data collected during year eight, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2016). This was done to allow for easy comparison between recent data and what have been collected overall. The eighth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a "<" preceding them, indicate the constituent was ND at the MDL for that constituent. Values identified as "--" in the tables indicate no samples were collected at those sites for those events.



Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	0.0037	<0.0005	<0.0005	–	0.0033	<0.0005	<0.0005	<0.0005
Nov-15	Dry	51	<0.0005	<0.0005	<0.0005	0.0272	<0.0005	<0.0005	<0.0005	<0.0005
Feb-16	Dry	54	0.0093	0.0201	0.0103	–	<0.0005	0.0024	<0.0005	<0.0005
May-16	Dry	55[1]	<0.0005	<0.0005	*0.0006*	–	<0.0005	<0.0005	<0.0005	<0.0005

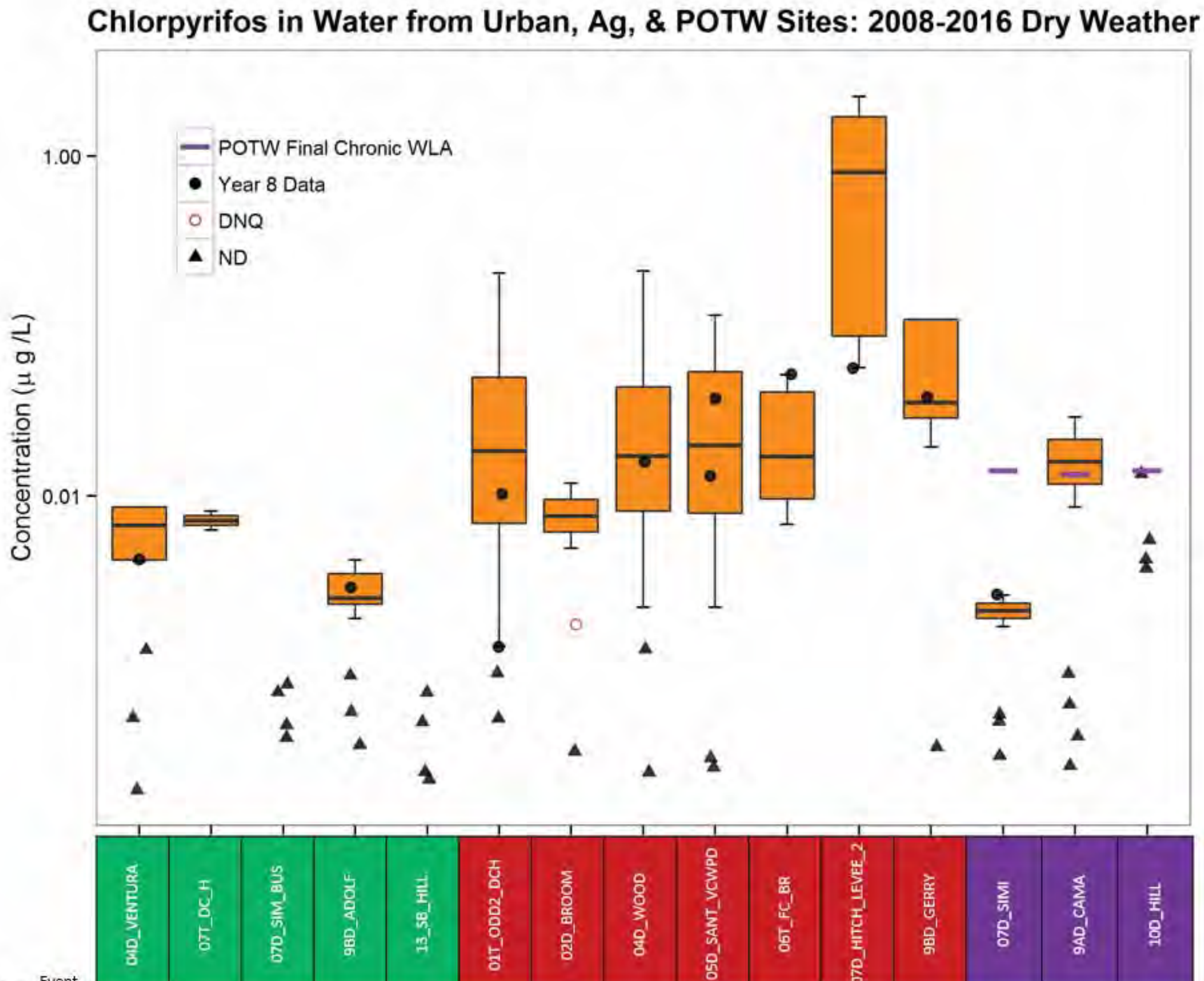
1. Final allocations for agricultural dischargers became effective after March 24, 2016, and apply to Event 55, the final event of the year. This note applies to all Toxicity TMDL boxplots with Final LAs for agricultural dischargers.

Figure 45. Chlorpyrifos Dry Weather Concentrations in Receiving Water Sites: 2008-2016



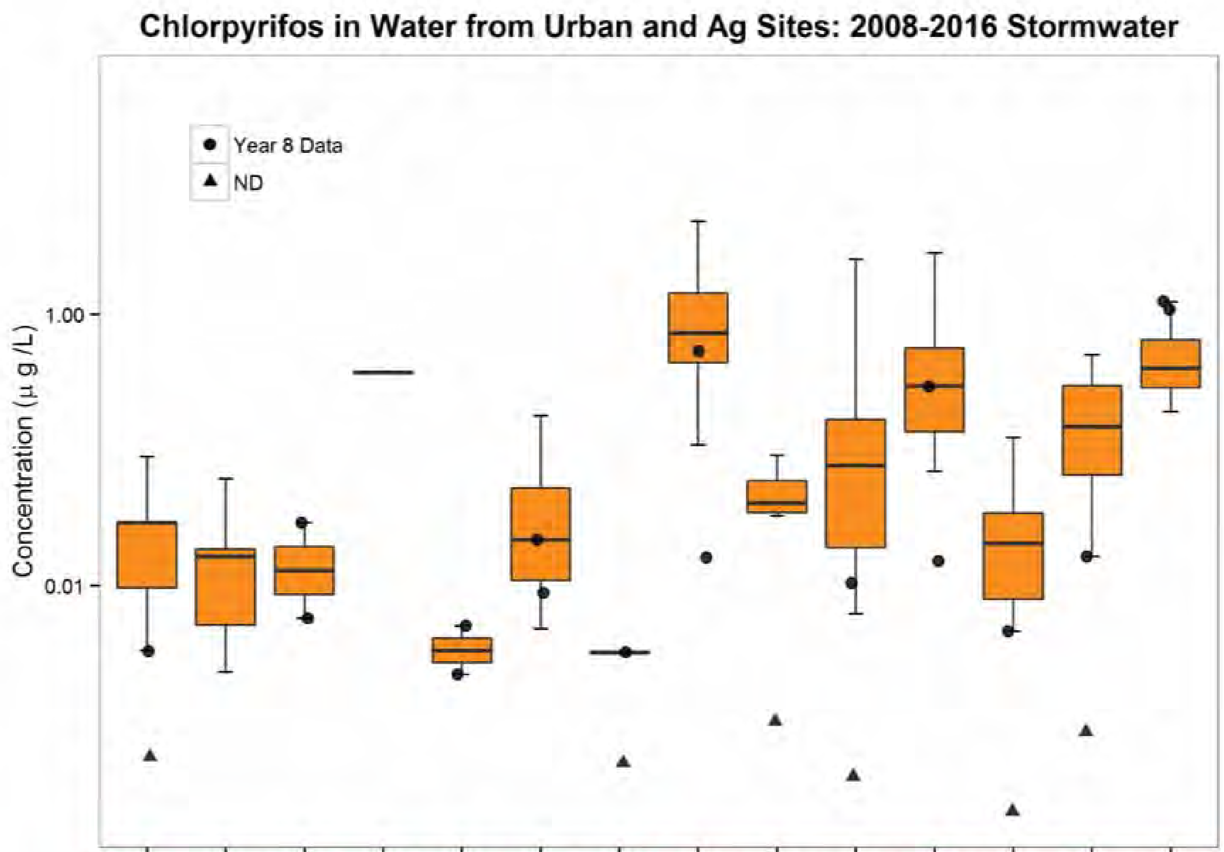
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Jan-16	Storm	52	0.1058	0.0202	0.4536	–	<0.0005	0.0167	<0.0005	0.0093
Jan-16	Storm	53	0.0053	0.0201	0.1286	–	0.0039	0.0047	<0.0005	<0.0005

Figure 46. Chlorpyrifos Stormwater Concentrations in Receiving Water Sites: 2008-2016



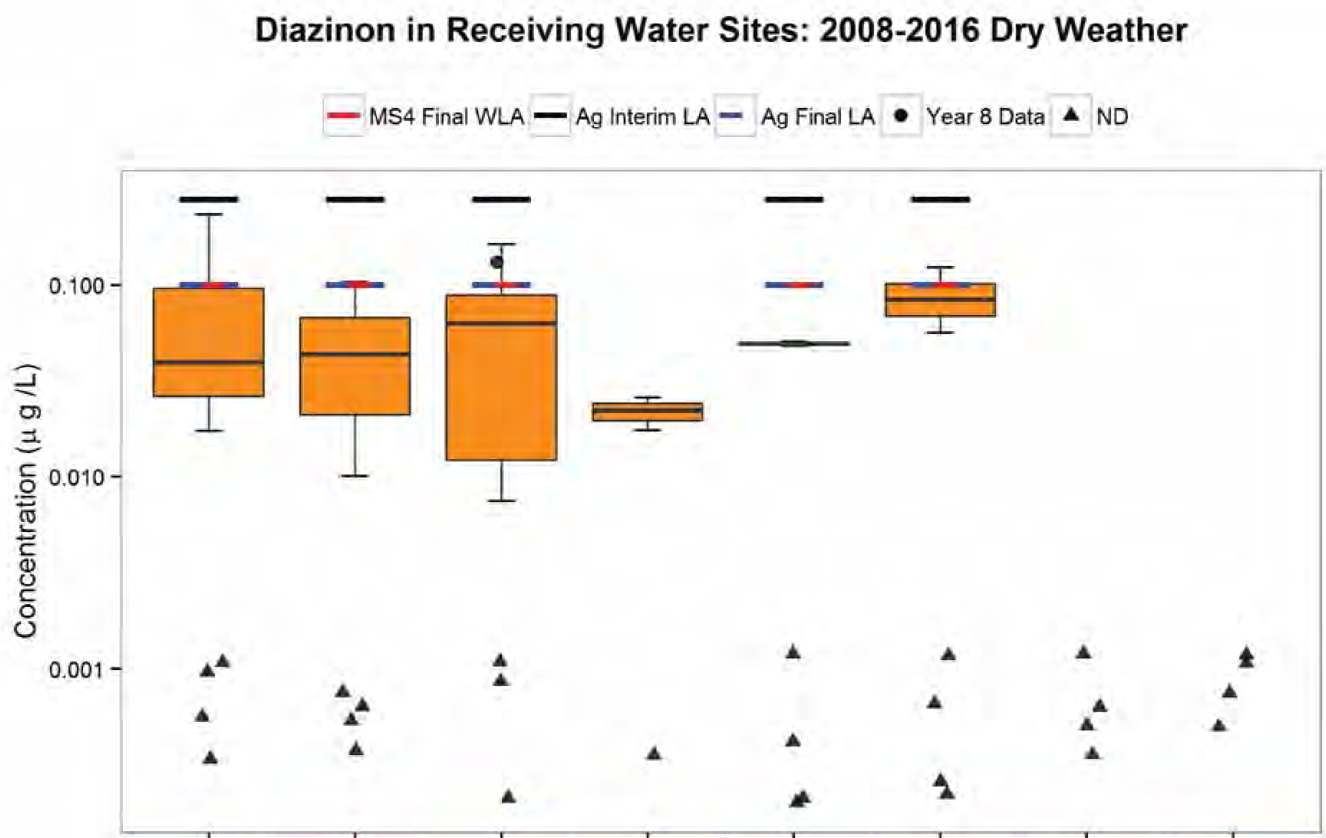
Date	Type	Event	04D_VENTURA	07T_DC_H	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.0005	--	<0.0005	0.0029	<0.0005	<0.0005	--	--	<0.0005	0.0517	--	--	0.0026	<0.0005	<0.0069
Nov-15	Dry	51	0.0042	--	<0.0005	<0.0005	<0.0005	<0.0005	--	0.0158	0.0374	--	0.0567	0.0381	<0.0005	<0.0005	<0.0069
Feb-16	Dry	54	<0.0005	--	<0.0005	<0.0005	<0.0005	0.0103	<0.0005	<0.0005	0.0130	--	--	<0.0005	<0.0005	<0.0005	<0.0069
May-16	Dry	55	<0.0005	--	<0.0005	<0.0005	<0.0005	0.0013	*0.0007*	<0.0005	<0.0005	--	--	--	<0.0005	<0.0005	<0.0069

Figure 47. Chlorpyrifos Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2016



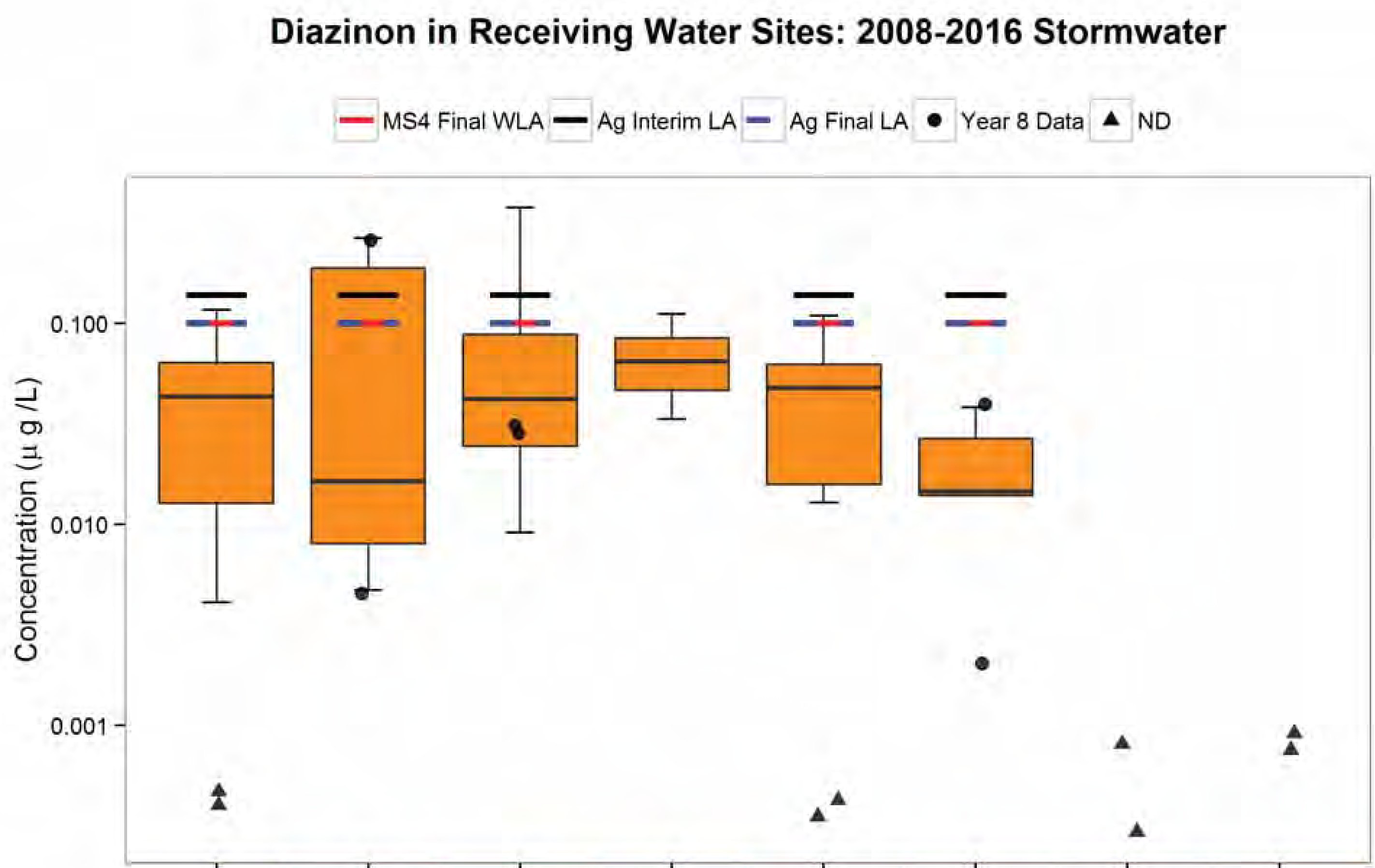
Date	Type	Event	04D_VENTURA	07D_CTP	07D_MPK	07T_DC_H	07D_SIM_BUS	98D_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	98D_GERRY
Jan-16	Storm	52	<0.0005	--	0.0290	--	0.0022	0.0216	<0.0005	0.5337	--	<0.0005	0.2949	<0.0005	<0.0005	1.0924
Jan-16	Storm	53	0.0033	--	0.0057	--	0.0050	0.0088	0.0032	0.0159	<0.0005	0.0104	0.0150	0.0046	0.0163	1.2358

Figure 48. Chlorpyrifos Stormwater Concentrations in Urban and Ag Sites: 2008-2015



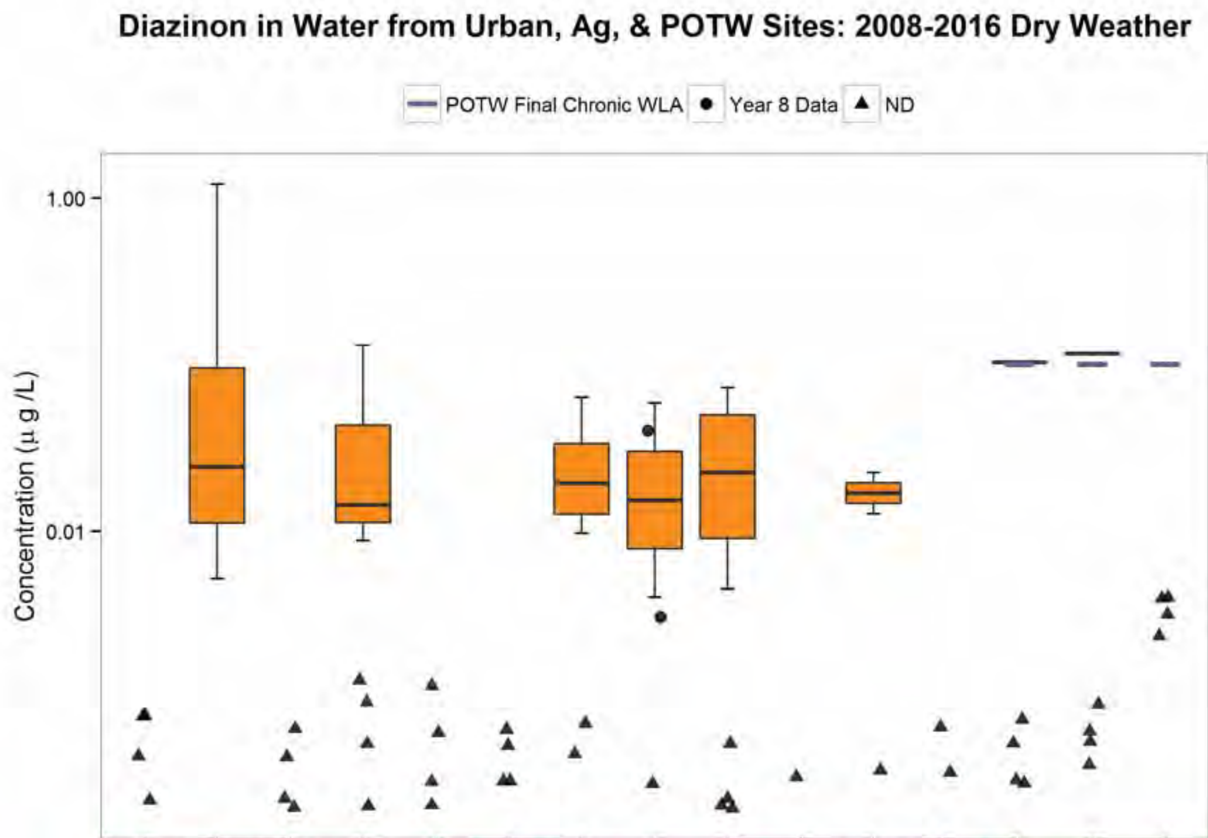
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-15	Dry	50	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005
Nov-15	Dry	51	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Feb-16	Dry	54	<0.0005	<0.0005	0.0631	--	<0.0005	<0.0005	<0.0005	<0.0005
May-16	Dry	55	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005

Figure 49. Diazinon Dry Weather Concentrations in Receiving Water Sites: 2008-2016



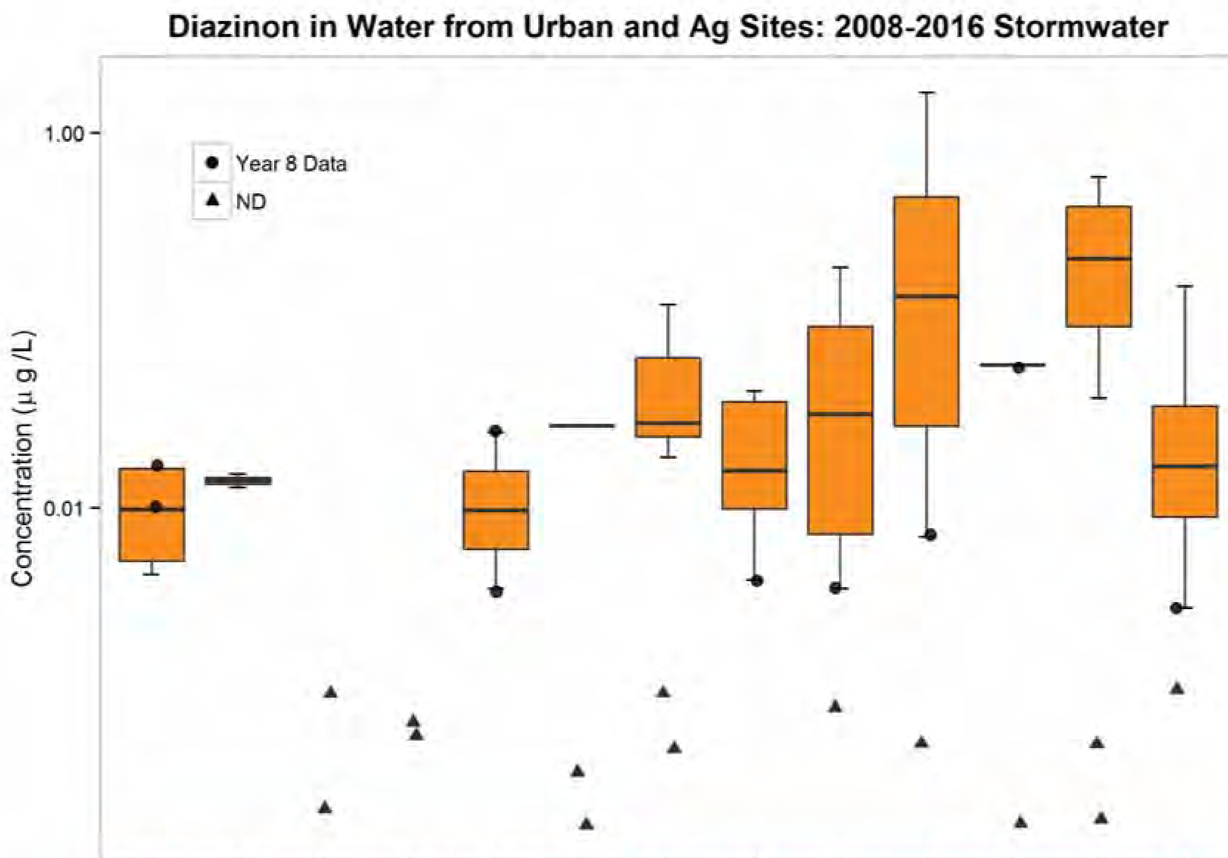
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Jan-16	Storm	52	<0.0005	0.2674	0.0320	--	<0.0005	0.0384	<0.0005	<0.0005
Jan-16	Storm	53	<0.0005	0.0047	0.0287	--	<0.0005	0.0020	<0.0005	<0.0005

Figure 50. Diazinon Stormwater Concentrations in Receiving Water Sites: 2008-2016



Date	Type	Event	04D_VENTURA	07T_DC_H	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	<0.0005	<0.0005	--	--	<0.0005	<0.0005	<0.0052
Nov-15	Dry	51	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0005	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0052
Feb-16	Dry	54	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0040	<0.0005	--	--	<0.0005	<0.0005	<0.0005	<0.0052
May-16	Dry	55	<0.0005	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0588	<0.0005	--	--	--	<0.0005	<0.0005	<0.0052

Figure 51. Diazinon Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2016

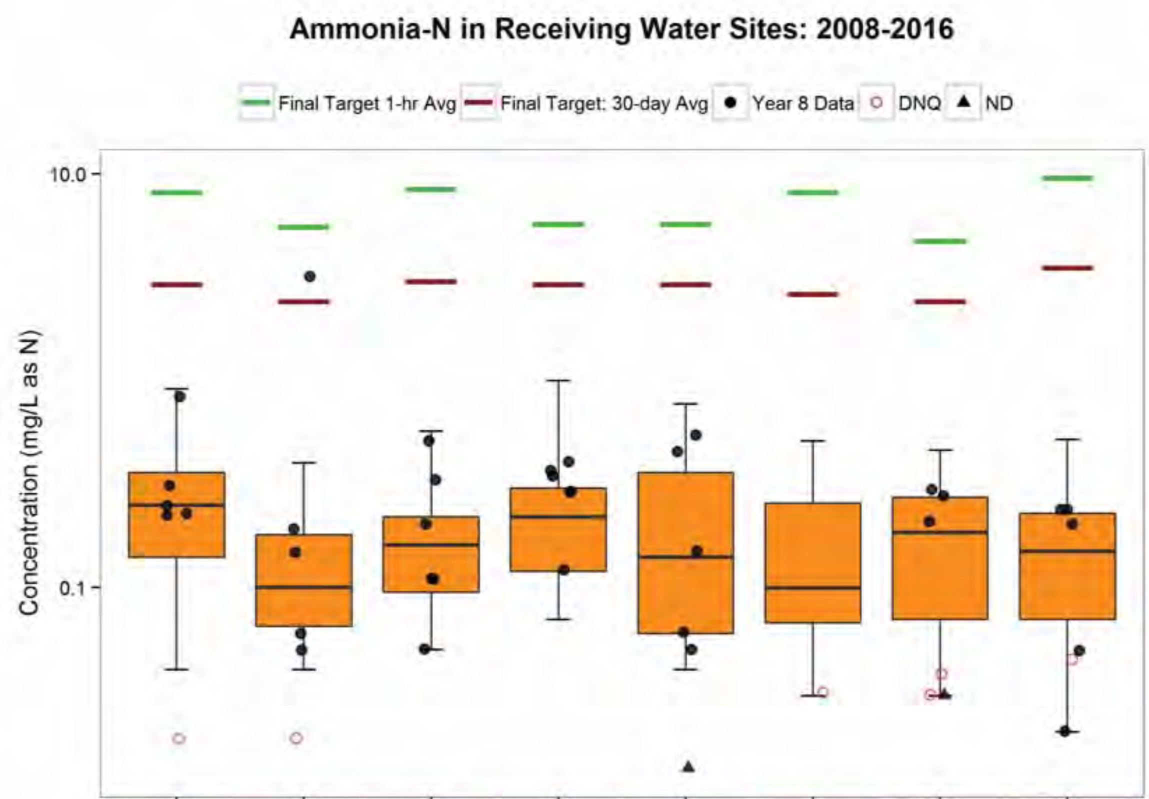


Date	Type	Event	04D_VENTURA	07D_CTP	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Jan-16	Storm	52	0.0162	–	<0.0005	<0.0005	0.0252	<0.0005	<0.0005	–	<0.0005	<0.0005	0.0576	<0.0005	<0.0005
Jan-16	Storm	53	0.0098	–	<0.0005	<0.0005	0.0037	<0.0005	<0.0005	0.0041	0.0037	0.0070	<0.0005	<0.0005	0.0029

Figure 52. Diazinon Stormwater Concentrations in Urban and Ag Sites: 2008-2016

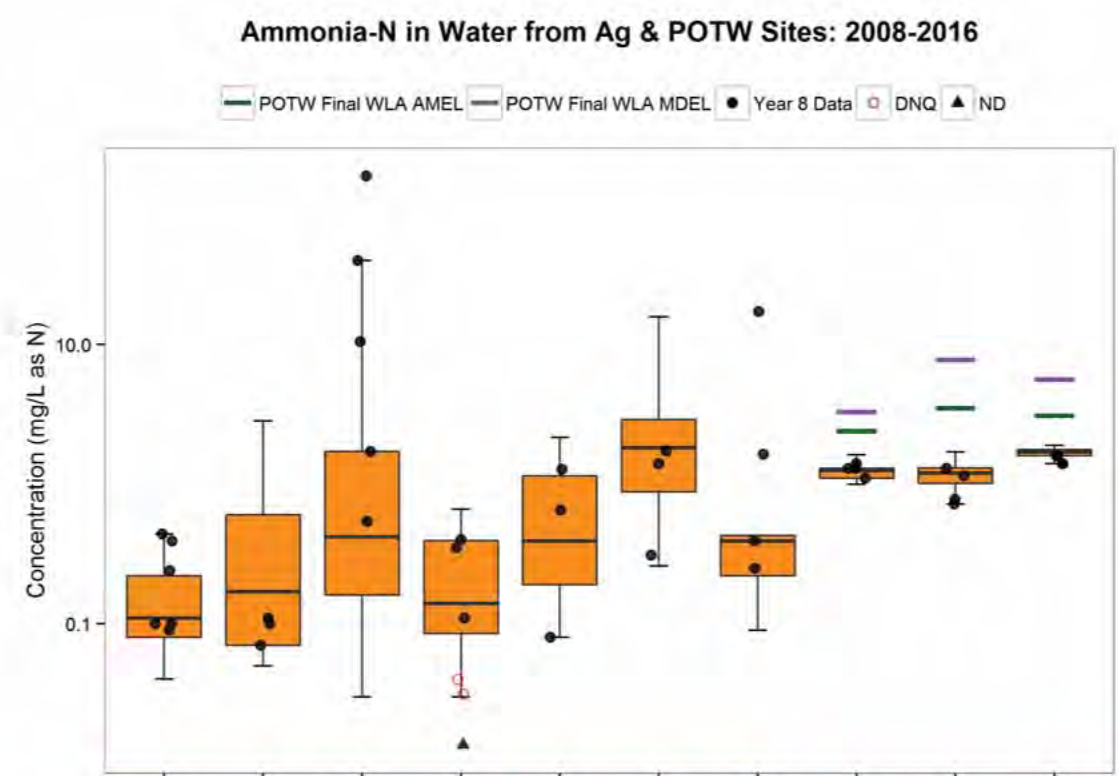
NUTRIENTS TMDL

Final targets and allocations are effective for the Nutrients TMDL. The applicable targets for each monitoring site are presented in the figures below. Data collected during year eight, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program (2008-2016). This was done to allow for easy comparison between recent data and what have been collected overall. The eighth year data are presented in tabular form below each box plot. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a "<" preceding them, indicate the constituent was ND at the MDL for that constituent. Values identified as "--" in the tables indicate no samples were collected at those sites for those events.



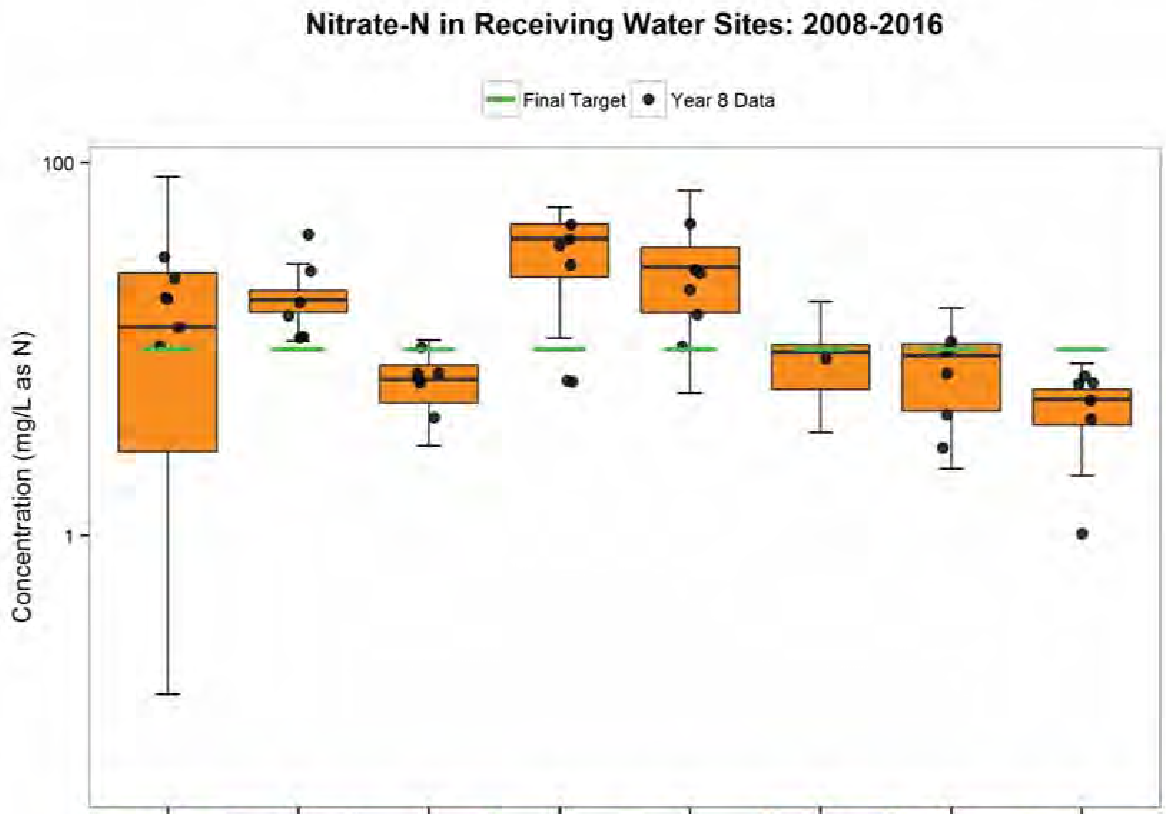
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	0.22	0.19	0.11	0.35	0.06	--	*0.04*	0.05
Nov-15	Dry	51	0.31	0.15	0.2	0.12	<0.02	*0.03*	*0.03*	0.02
Jan-16	Storm	52	0.84	0.05	0.33	0.37	0.45	--	0.3	0.24
Jan-16	Storm	53	0.25	3.19	0.51	0.4	0.55	--	0.28	0.24
Feb-16	Dry	54	*0.02*	*0.02*	0.11	0.29	0.05	--	<0.02	*0.04*
May-16	Dry	55	0.23	0.06	0.05	0.29	0.15	--	0.21	0.2

Figure 53. Ammonia-N Concentrations in Receiving Water Sites: 2008-2016



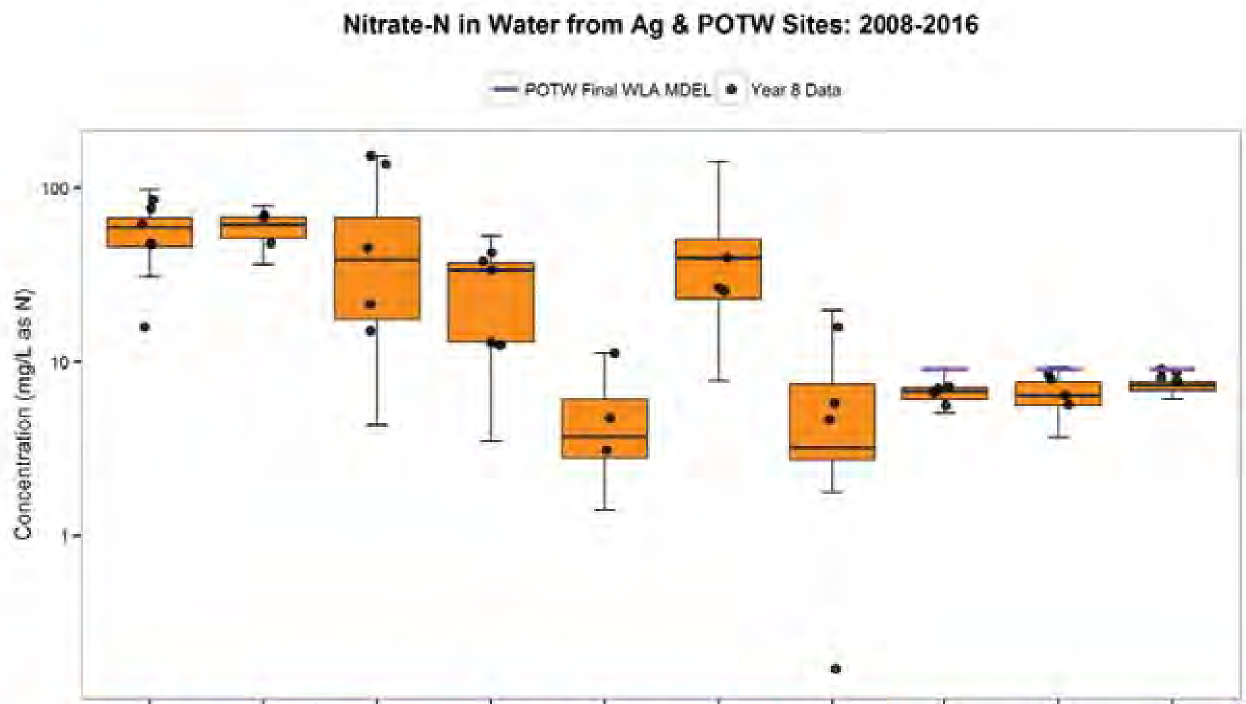
Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	0.1	--	--	0.11	0.08	--	--	1.1	1.3	1.6
Nov-15	Dry	51	0.09	--	10.5	<0.02	--	0.31	1.64	1.4	1.15	1.6
Jan-16	Storm	52	0.39	--	40.1	0.4	1.28	1.41	17.2	--	--	--
Jan-16	Storm	53	0.44	0.1	161.5	0.35	0.65	1.73	0.39	--	--	--
Feb-16	Dry	54	0.1	0.11	1.72	*0.03*	--	--	0.25	1.3	0.72	1.4
May-16	Dry	55	0.24	0.07	0.54	*0.04*	--	--	--	1.3	0.78	1.4

Figure 54. Ammonia-N Concentrations in Ag and POTW Sites: 2008-2016



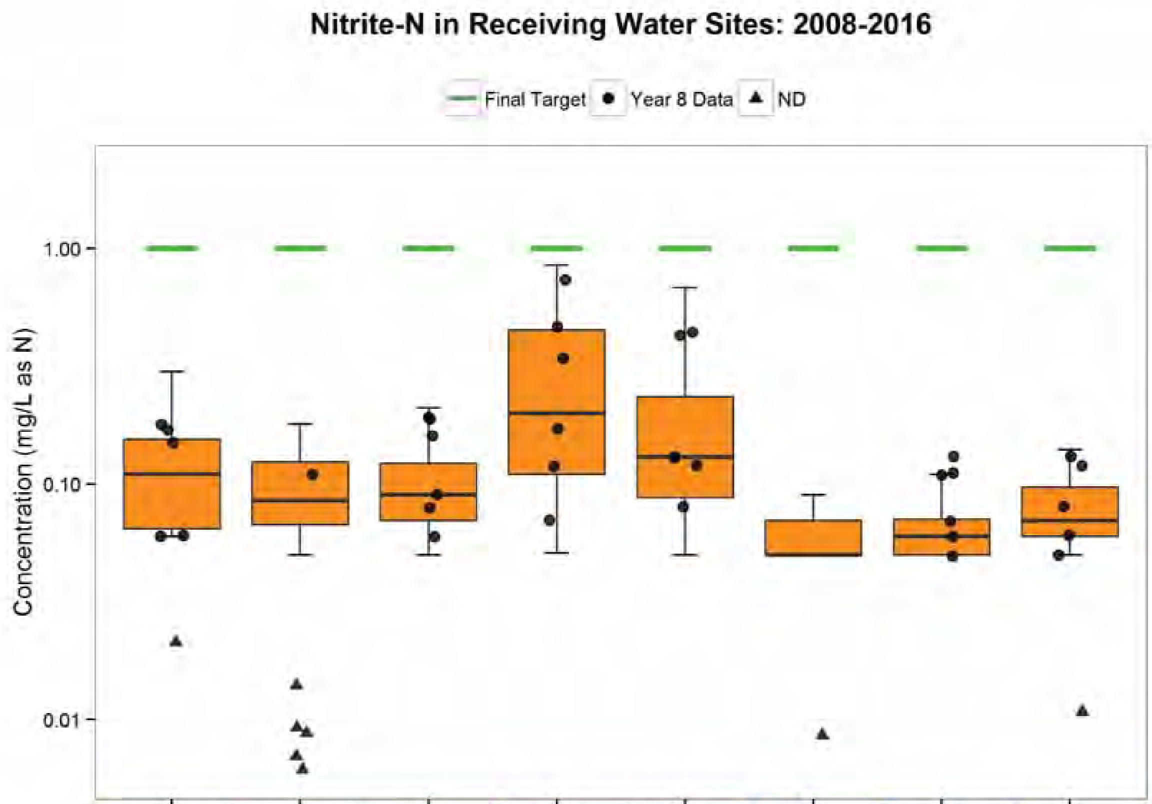
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	**13.1**	**11.65**	6.82	**28.3**	**20.84**	--	9.72	5.3
Nov-15	Dry	51	**18.89**	**26.15**	6.6	**36.08**	**25.48**	8.82	7.4	6.53
Jan-16	Storm	52	**18.61**	**11.54**	4.3	6.68	**15.25**	--	2.96	4.22
Jan-16	Storm	53	**10.35**	**15.06**	7.4	6.74	**10.34**	--	4.46	1.02
Feb-16	Dry	54	**31.28**	**17.81**	7.45	**46.6**	**47.1**	--	**10.95**	7.18
May-16	Dry	55	**23.85**	**41.22**	**10.2**	**38.82**	**26.7**	--	9.95	6.6

Figure 55. Nitrate-N Concentrations in Receiving Water Sites: 2008-2016



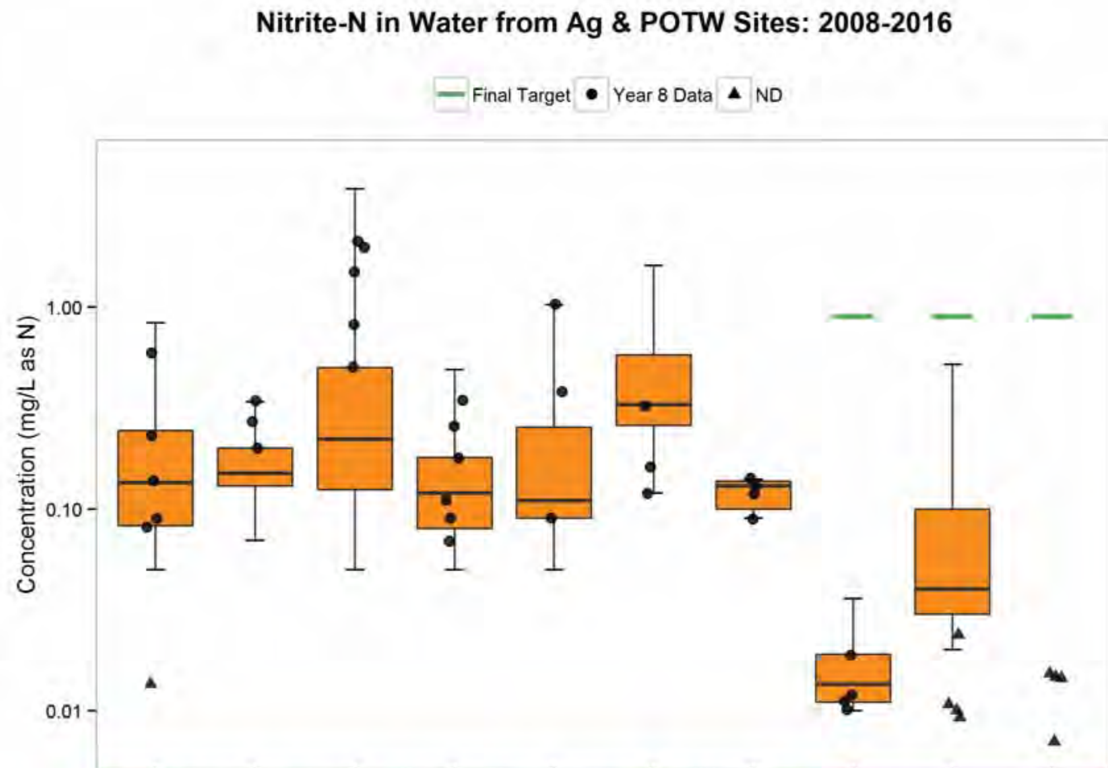
Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	46.94	--	--	12.47	4.72	--	--	5.6	7.9	8.7
Nov-15	Dry	51	75.75	--	15.03	42.2	--	39.55	15.75	6.6	5.63	9
Jan-16	Storm	52	15.78	--	136.9	12.85	11.18	26.65	5.76	--	--	--
Jan-16	Storm	53	47.5	67.5	152.6	12.42	3.08	25.34	4.64	--	--	--
Feb-16	Dry	54	85.15	47.8	44.88	37.7	--	--	0.17	7.2	8.41	7.7
May-16	Dry	55	61.5	69.15	21.33	33.58	--	--	--	7	6.4	8.1

Figure 56. Nitrate-N Concentrations in Ag and POTW Sites: 2008-2016



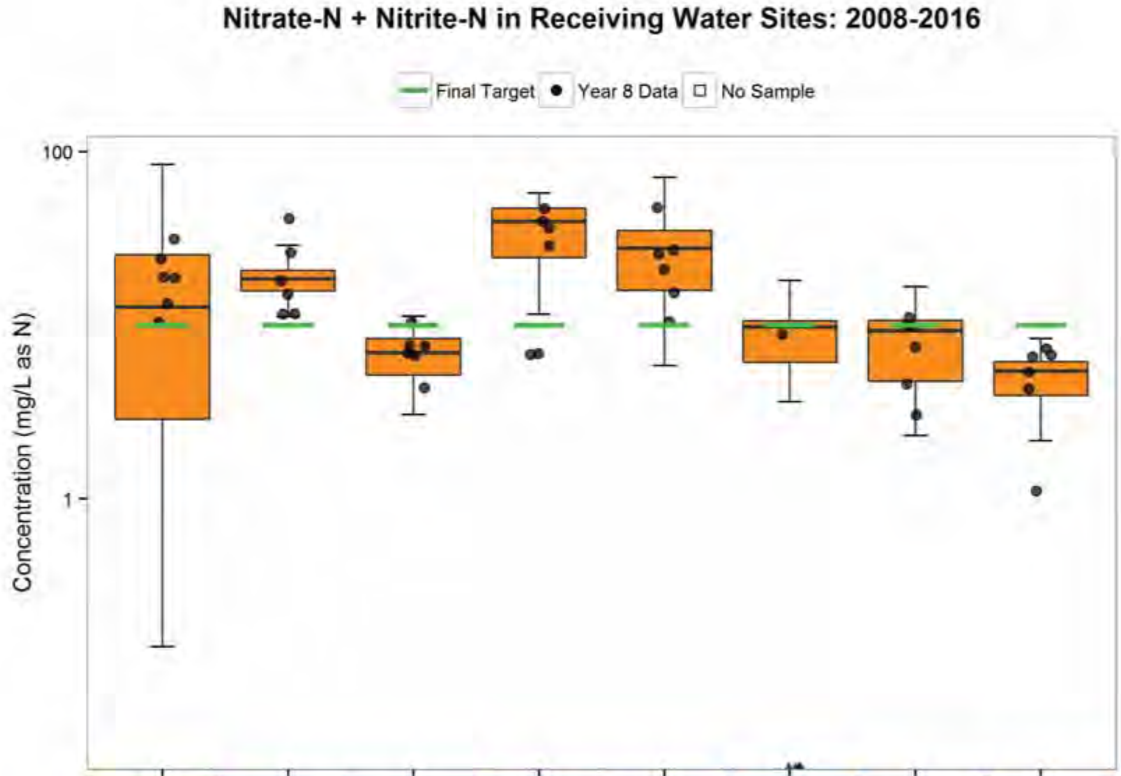
Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	0.17	<0.01	0.08	0.46	0.13	--	0.05	0.05
Nov-15	Dry	51	0.06	<0.01	0.09	0.17	0.12	<0.01	0.06	<0.01
Jan-16	Storm	52	<0.01	<0.01	0.06	0.07	0.08	--	0.07	0.06
Jan-16	Storm	53	0.06	<0.01	0.16	0.12	0.13	--	0.11	0.08
Feb-16	Dry	54	0.15	0.11	0.19	0.34	0.44	--	0.11	0.12
May-16	Dry	55	0.18	<0.01	0.19	0.74	0.43	--	0.13	0.13

Figure 57. Nitrite-N Concentrations in Receiving Water Sites: 2008-2016



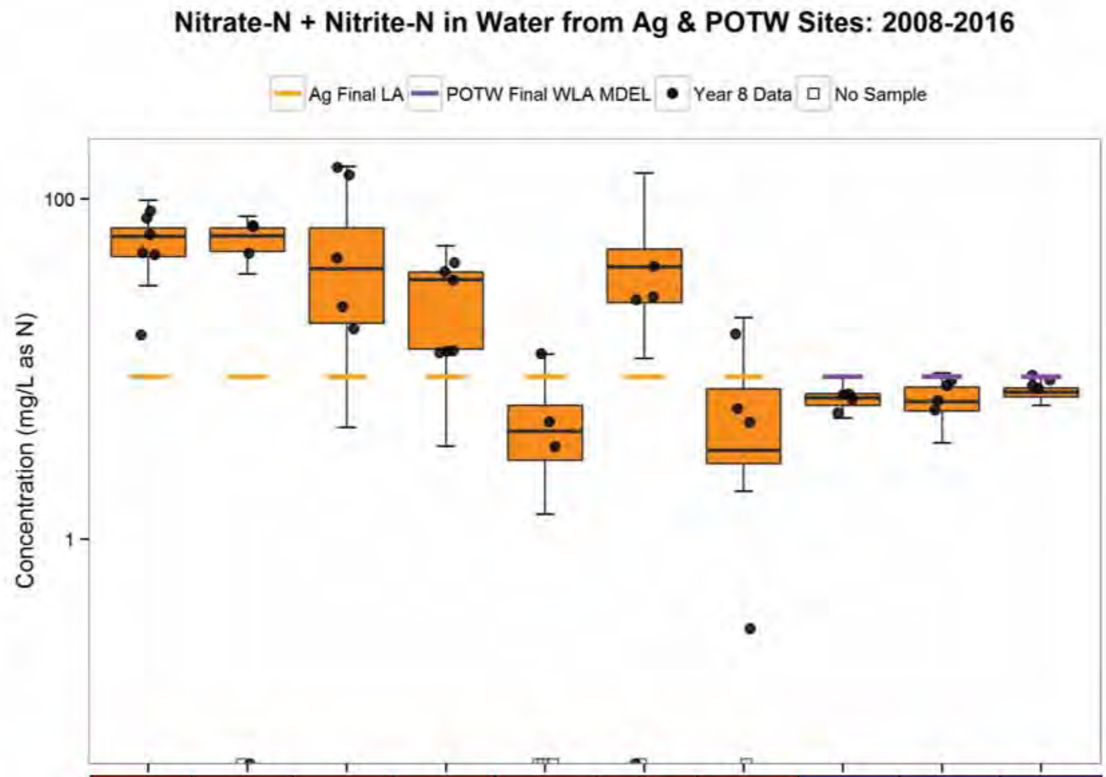
Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	<0.01	--	--	0.07	0.09	--	--	0.01	<0.01	<0.01
Nov-15	Dry	51	0.08	--	2.09	0.11	--	0.12	0.09	0.019	<0.01	<0.01
Jan-16	Storm	52	0.09	--	0.83	0.09	1.03	0.16	0.14	--	--	--
Jan-16	Storm	53	0.14	0.2	1.96	0.18	0.38	0.32	0.12	--	--	--
Feb-16	Dry	54	0.23	0.27	0.51	0.26	--	--	0.13	0.012	<0.01	<0.01
May-16	Dry	55	0.6	0.34	1.5	0.34	--	--	--	0.011	<0.01	<0.01

Figure 58. Nitrite-N Concentrations in Ag and POTW Sites: 2008-2016



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	9B_ADOLF
Aug-15	Dry	50	**13.27**	**11.65**	6.9	**28.76**	**20.97**	--	9.77	5.35
Nov-15	Dry	51	**18.95**	**26.15**	6.69	**36.25**	**25.6**	8.82	7.46	6.53
Jan-16	Storm	52	**18.61**	**11.54**	4.36	6.75	**15.33**	--	3.03	4.28
Jan-16	Storm	53	**10.41**	**15.06**	7.56	6.86	**10.47**	--	4.57	1.1
Feb-16	Dry	54	**31.43**	**17.92**	7.64	**46.94**	**47.54**	--	**11.06**	7.3
May-16	Dry	55	**24.03**	**41.22**	**10.39**	**39.56**	**27.13**	--	**10.08**	6.73

Figure 59. Nitrate-N + Nitrite-N Concentrations in Receiving Water Sites: 2008-2016

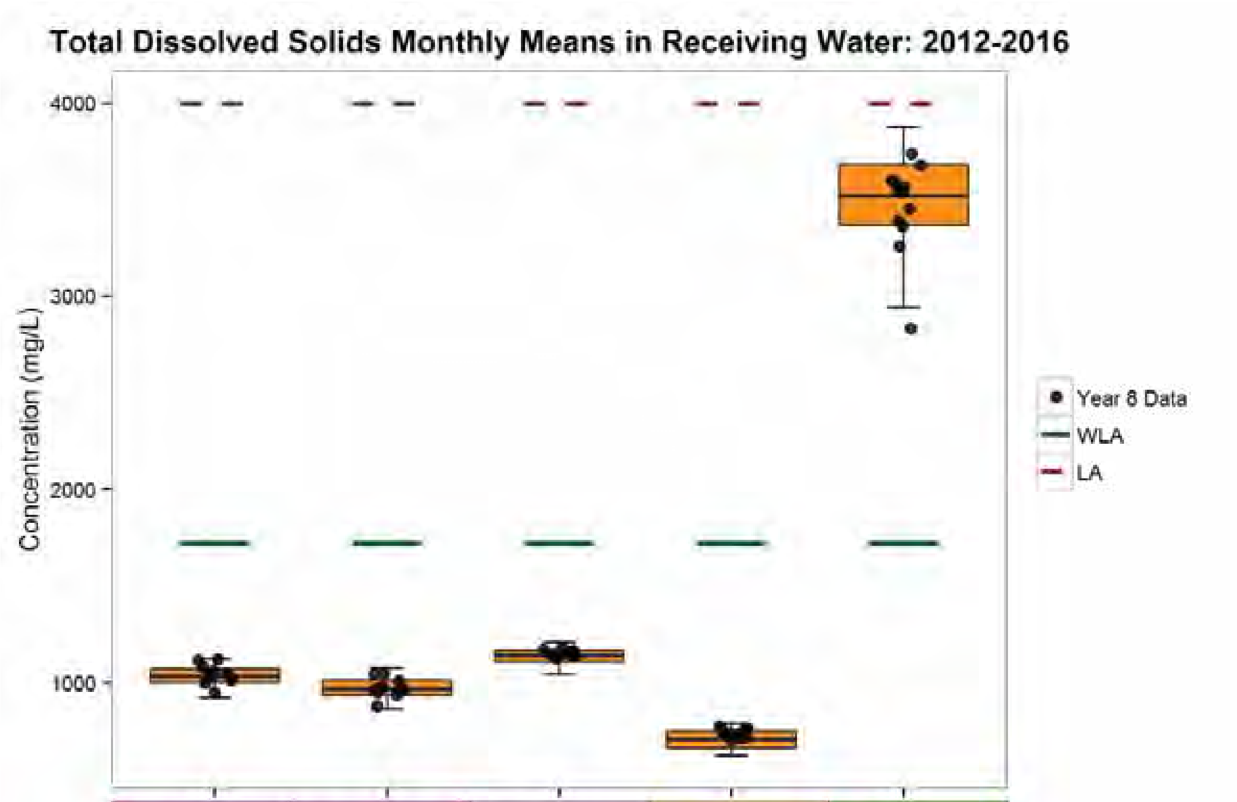


Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-15	Dry	50	**46.94**	--	--	**12.54**	4.81	--	--	5.61	7.9	8.7
Nov-15	Dry	51	**75.83**	--	**17.12**	**42.31**	--	**39.67**	**15.84**	6.619	5.63	9
Jan-16	Storm	52	**15.87**	--	**137.73**	**12.94**	**12.21**	**26.81**	5.9	--	--	--
Jan-16	Storm	53	**47.64**	**67.7**	**154.56**	**12.6**	3.46	**25.66**	4.76	--	--	--
Feb-16	Dry	54	**85.38**	**48.07**	**45.39**	**37.96**	--	--	0.3	7.212	8.41	7.7
May-16	Dry	55	**62.1**	**69.49**	**22.83**	**33.92**	--	--	--	7.011	6.4	8.1

Figure 60. Nitrate-N + Nitrite-N Concentrations in Ag and POTW Sites: 2008-2016

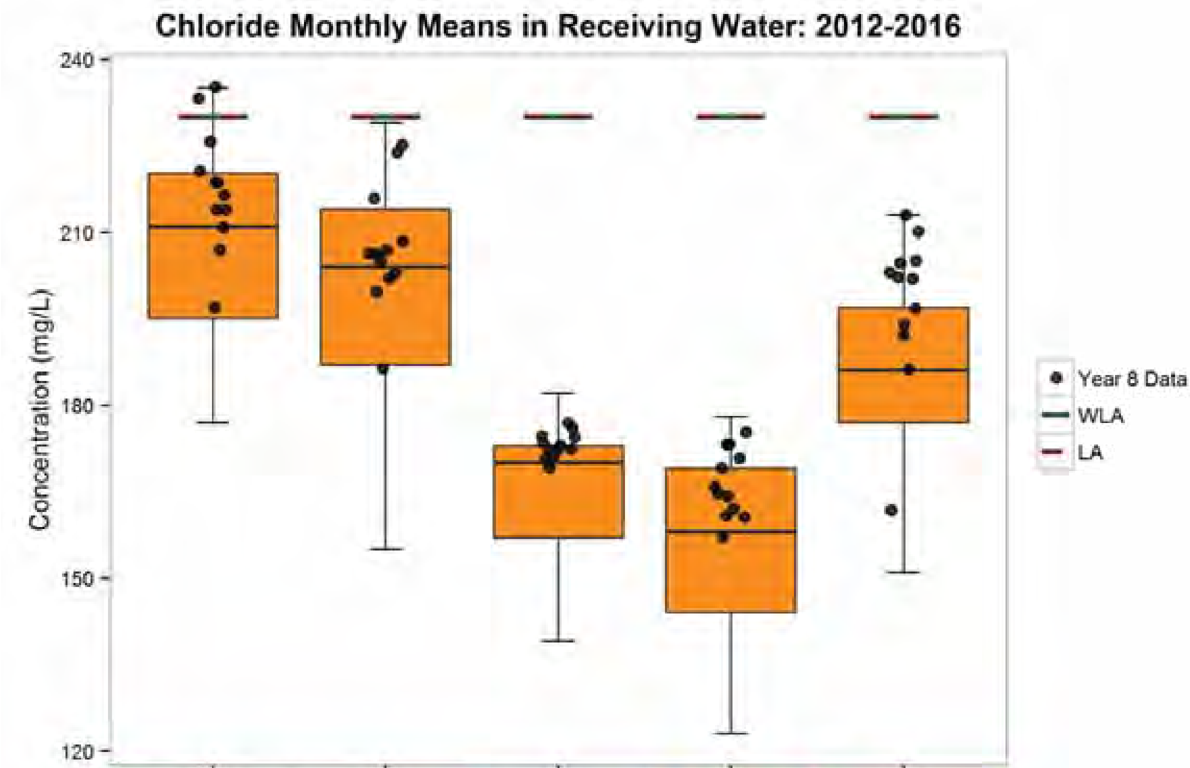
SALTS TMDL

For the Salts TMDL, compliance with interim dry weather salt allocations is determined using monthly mean salt concentrations for dry weather developed from the time-series of data collected at receiving water sites. Bolded values in the tables within each figure indicate the concentration was above the interim MS4 wasteload allocation and the interim load allocation for that constituent. Italicized values in the tables within each figure indicate the concentration was above the interim MS4 wasteload allocation for that constituent.



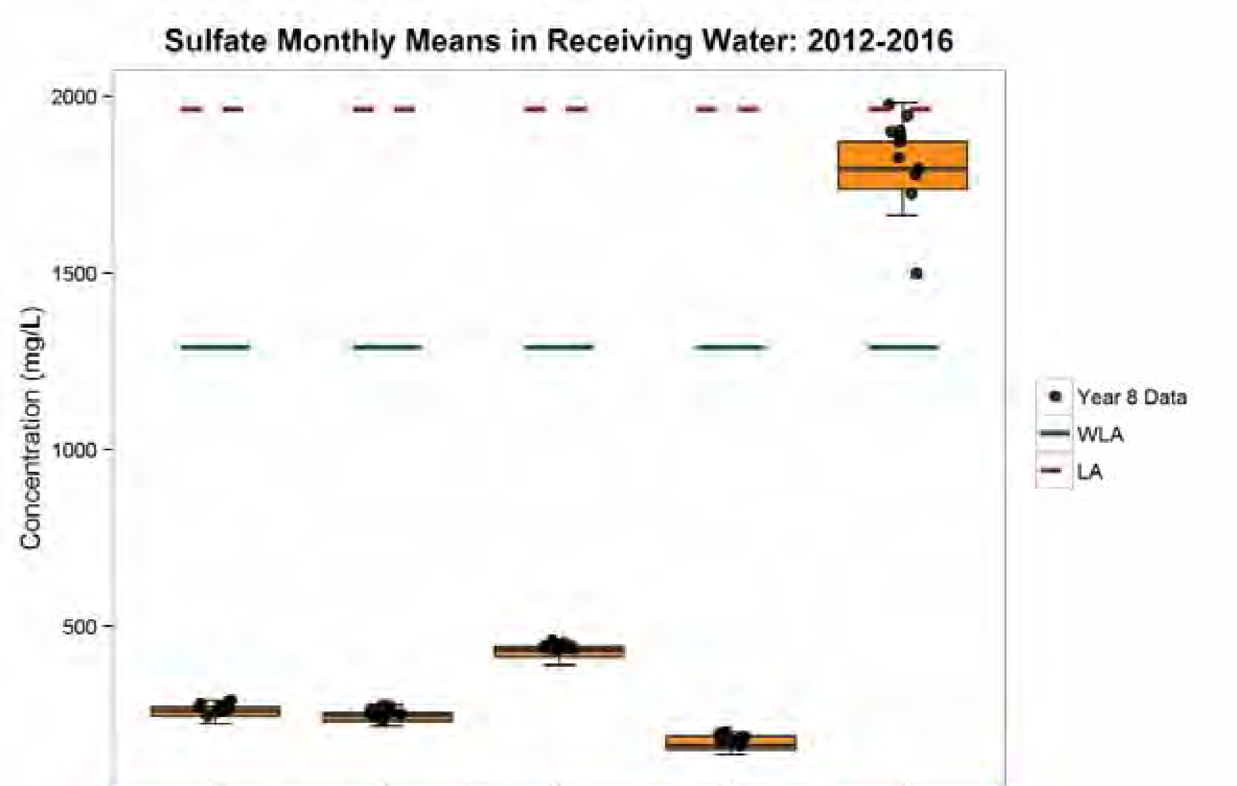
Date	03_UNIV	9A_HOWAR	07_TIERRA	9B_BARON	04_WOOD
Jul-15	1027	963	1164	734	*3537*
Aug-15	1024	947	1140	737	*3676*
Sep-15	1046	962	1146	756	*3587*
Oct-15	1113	1044	1139	764	*2829*
Nov-15	1058	968	1157	773	*3359*
Dec-15	949	877	1135	749	*3594*
Jan-16	995	935	1171	766	*3733*
Feb-16	1011	951	1124	722	*3564*
Mar-16	1047	974	1149	731	*3538*
Apr-16	1032	961	1143	716	*3450*
May-16	1082	1007	1150	700	*3389*
Jun-16	1121	1047	1175	715	*3256*

Figure 61. TDS Monthly Means for Receiving Water Sites Collected During Dry Weather



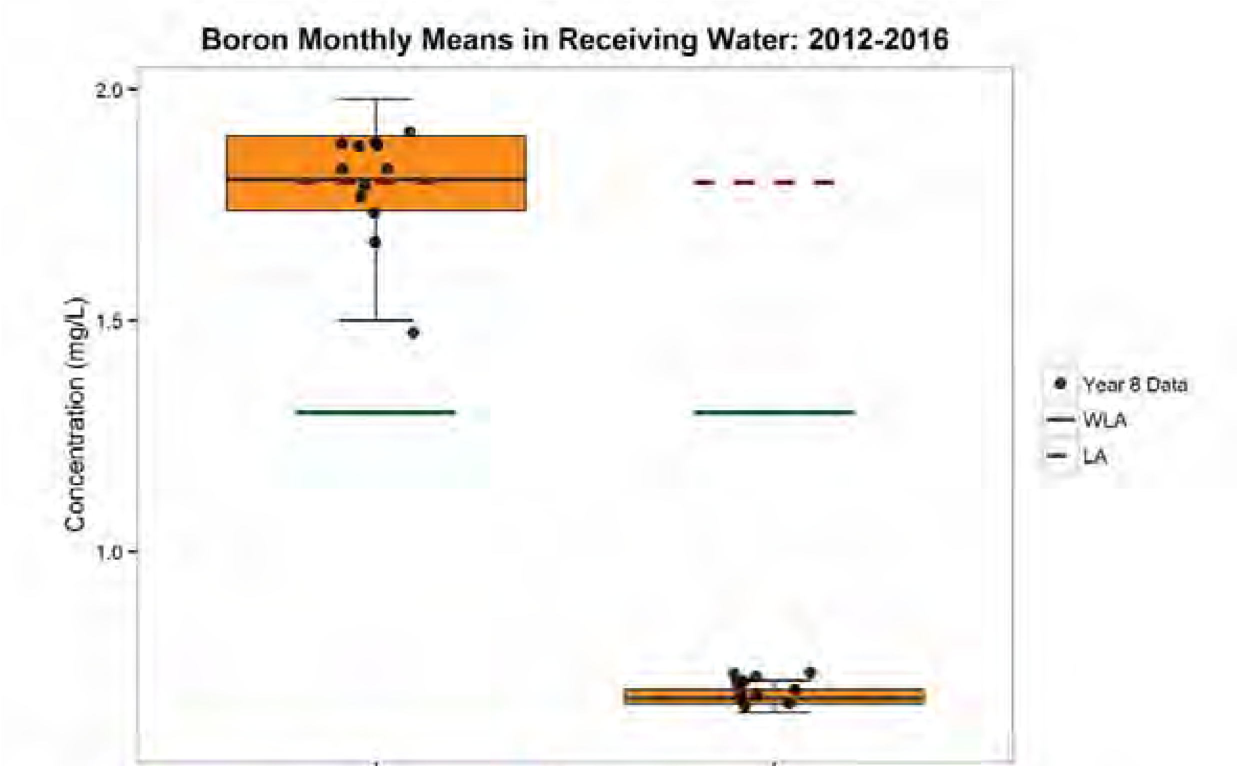
Date	03_UNIV	9A_HOWAR	07_TIERRA	9B_BARON	04_WOOD
Jul-15	214	206	175	165	202
Aug-15	214	202	172	166	210
Sep-15	219	206	172	171	205
Oct-15	233	224	171	173	162
Nov-15	221	207	174	175	192
Dec-15	197	186	171	169	205
Jan-16	207	200	176	173	213
Feb-16	211	203	169	162	203
Mar-16	219	208	173	164	202
Apr-16	216	205	172	161	197
May-16	226	216	173	157	194
Jun-16	235	225	177	161	186

Figure 62. Chloride Monthly Means for Receiving Water Sites Collected During Dry Weather



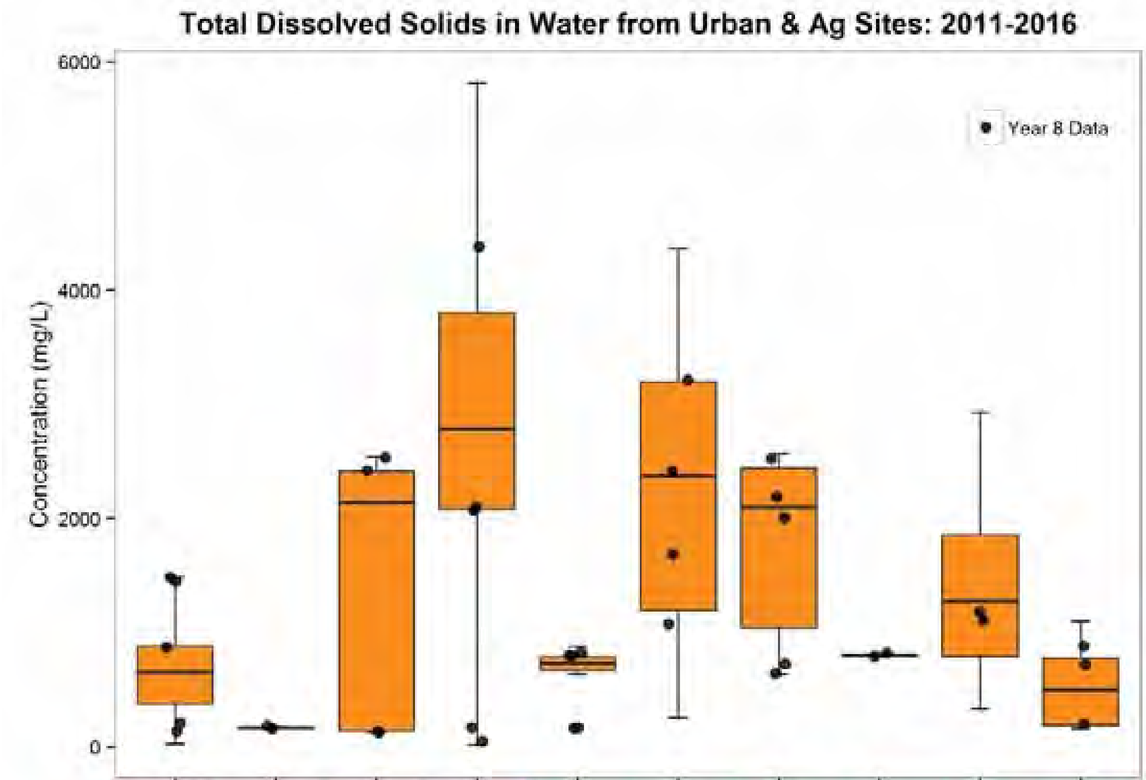
Date	03_UNIV	9A_HOWAR	07_TIERRA	9B_BARON	04_WOOD
Jul-15	266	253	452	180	*1872*
Aug-15	265	248	437	181	*1945*
Sep-15	271	252	441	190	*1899*
Oct-15	287	274	436	194	*1498*
Nov-15	274	254	447	199	*1778*
Dec-15	247	230	435	187	*1902*
Jan-16	258	245	456	195	**1976**
Feb-16	262	249	429	174	*1886*
Mar-16	271	255	442	178	*1872*
Apr-16	267	252	439	171	*1826*
May-16	280	264	443	163	*1794*
Jun-16	289	275	458	170	*1724*

Figure 63. Sulfate Monthly Means for Receiving Water Sites Collected During Dry Weather



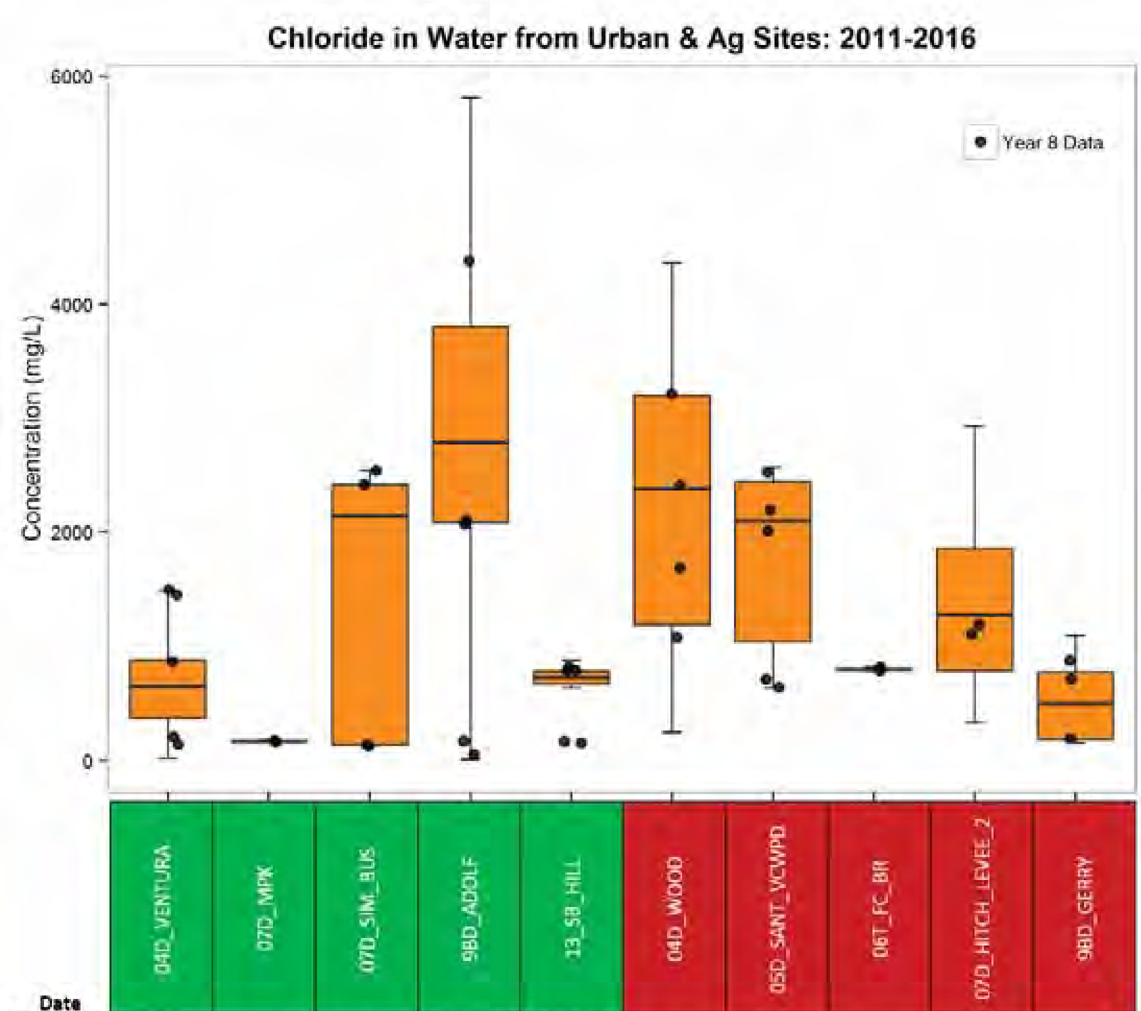
Date	04_WOOD	07_TIERRA
Jul-15	**1.8**	0.7
Aug-15	**1.9**	0.7
Sep-15	**1.9**	0.7
Oct-15	*1.5*	0.7
Nov-15	*1.7*	0.7
Dec-15	**1.9**	0.7
Jan-16	**1.9**	0.7
Feb-16	**1.9**	0.7
Mar-16	**1.8**	0.7
Apr-16	**1.8**	0.7
May-16	**1.8**	0.7
Jun-16	*1.7*	0.7

Figure 64. Boron Monthly Means for Receiving Water Sites Collected During Dry Weather



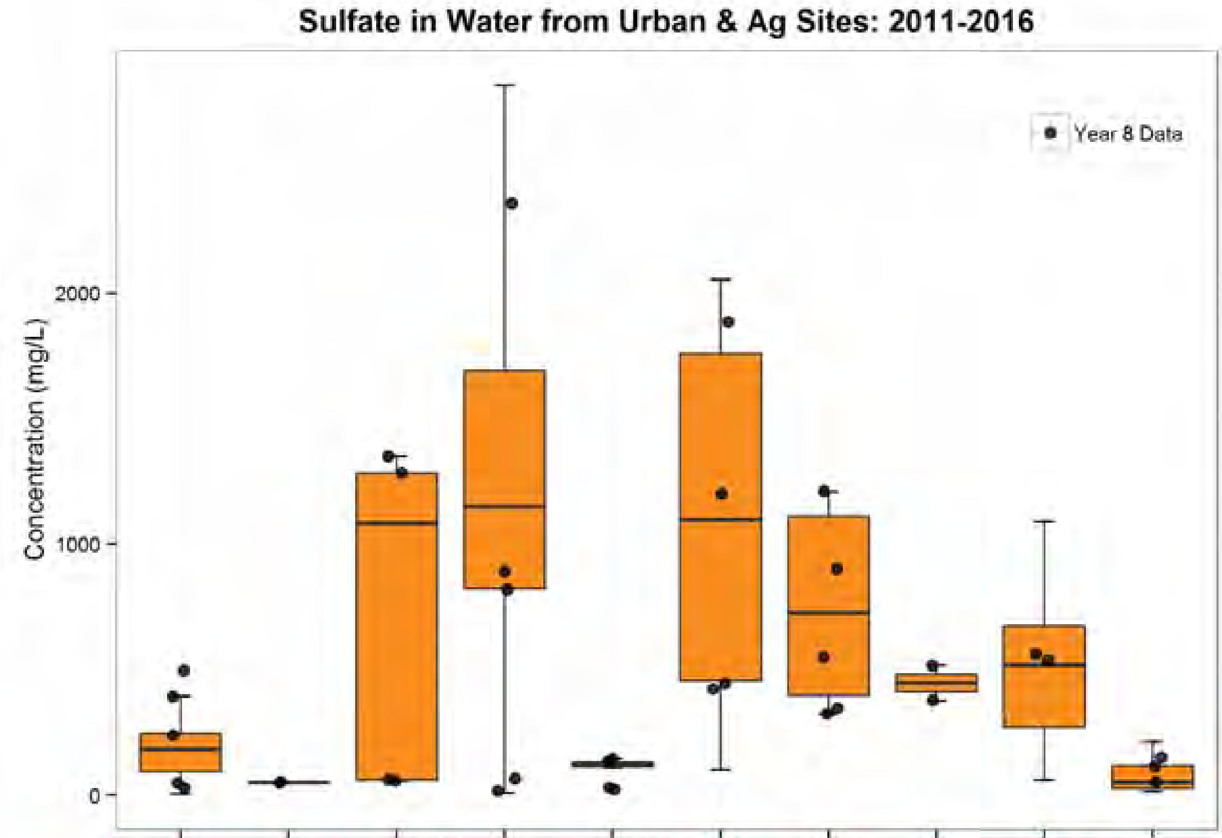
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Aug-15	1490	--	--	2100	800	--	2010	--	--	--
Jan-16	210	160	130	50	160	1690	720	820	1190	720
Jan-16	140	180	140	170	170	1080	640	790	1110	200
Feb-16	1450	--	2420	4380	820	3210	2530	--	--	880
May-16	870	--	2540	2070	800	2410	2190	--	--	--

Figure 65. Total Dissolved Solids in Water from Urban and Ag Sites: 2011-2016



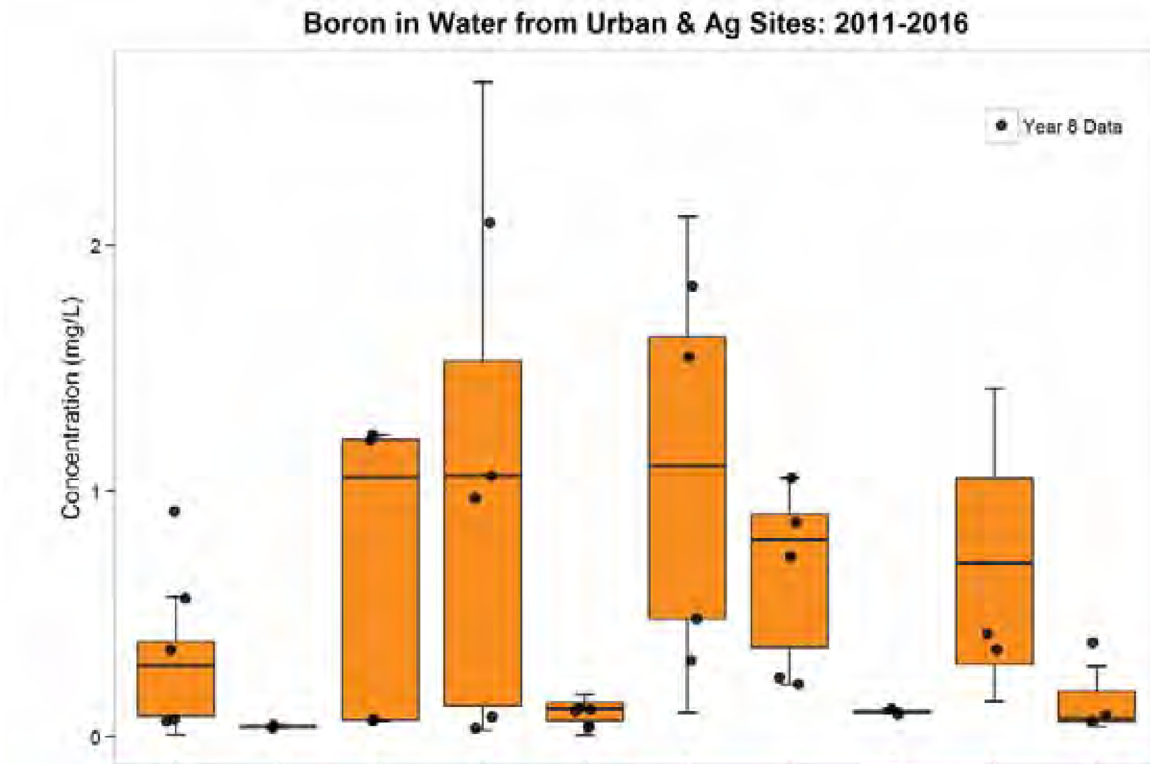
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Aug-15	330.4	--	--	282.2	147.3	--	84.4	--	--	--
Jan-16	52.61	10.26	11.1	14.32	31.54	181.55	60.9	69.02	87	47.59
Jan-16	27.08	16.07	12.88	27.61	19.78	81.85	45.75	12.34	79.9	25.3
Feb-16	429.5	--	200.2	441.9	152	255.6	226.1	--	--	216.6
May-16	150.3	--	195.1	284.1	176.5	248.1	198.6	--	--	--

Figure 66. Chloride in Water from Urban & Ag Sites: 2011-2016



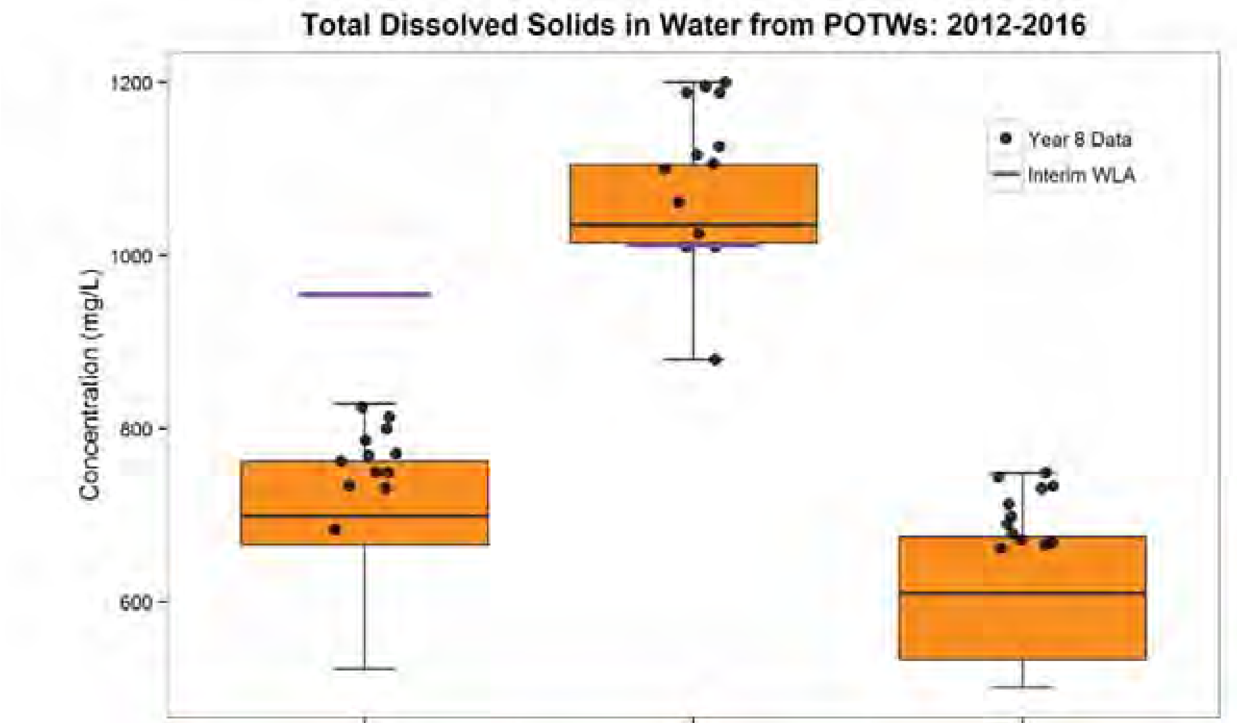
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Aug-15	495.2	--	--	890.2	135.6	--	548.5	--	--	--
Jan-16	48.37	52.22	57.16	16.18	30.78	422.25	346.55	376.75	561.1	114.39
Jan-16	28.07	48.86	61.49	64.62	22.46	444.35	323.45	515	536.1	51.21
Feb-16	392.4	--	1347.8	2356.4	145	1882.8	1208.8	--	--	149.8
May-16	238.1	--	1282.7	817.8	134.02	1199.8	900.5	--	--	--

Figure 67. Sulfate in Water from Urban & Ag Sites: 2011-2016



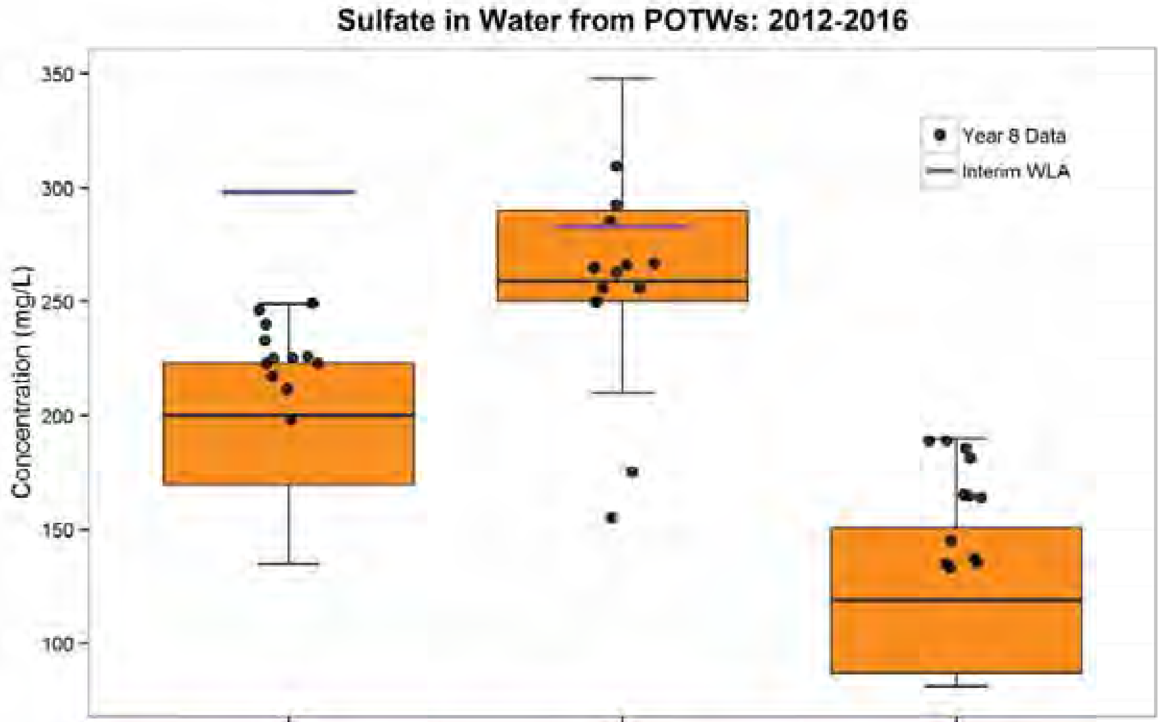
Date	04D_VENTURA	07D_MPK	07D_SIM_BUS	9BD_ADOLF	13_SB_HILL	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Aug-15	917.3	--	--	1061.7	120	--	732.5	--	--	--
Jan-16	72.5	37.5	64	35.9	41.9	310.5	214.7	114	355.7	88.9
Jan-16	63	48.2	69.9	81.2	38.9	479.4	240.6	91.8	418.7	64.6
Feb-16	562	--	1209.5	2092.5	103.6	1834.6	1054.6	--	--	383.6
May-16	354.9	--	1229.8	971.9	109.5	1546.5	872.7	--	--	--

Figure 68. Boron in Water from Urban & Ag Sites: 2011-2016



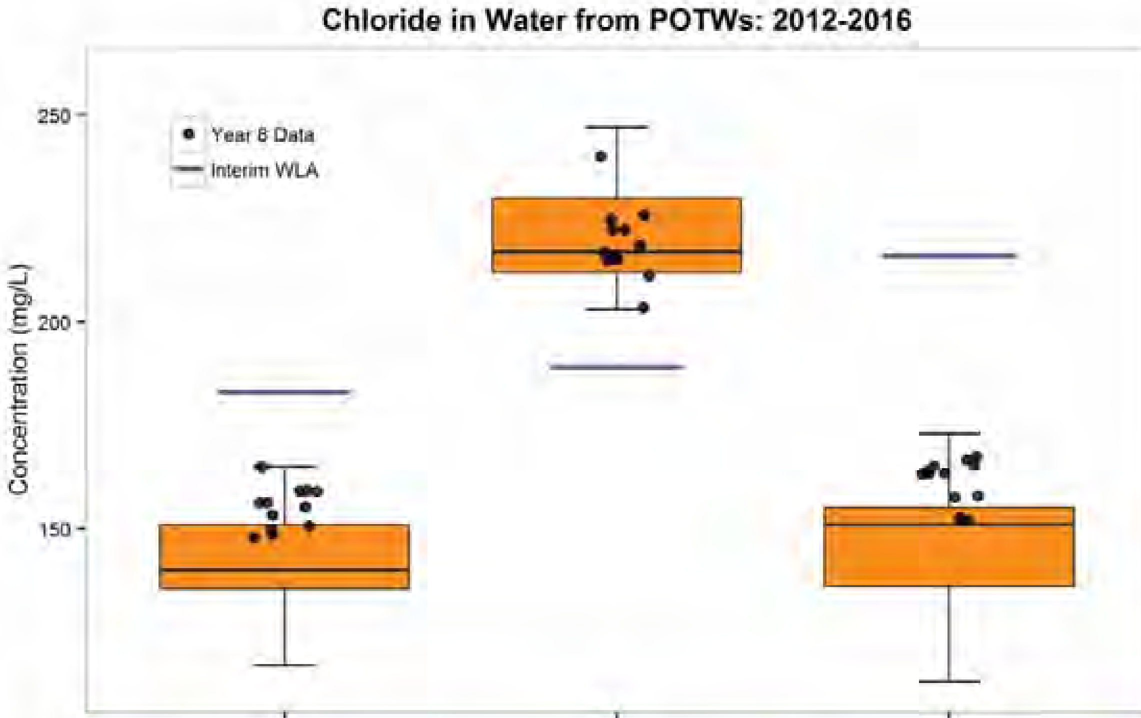
Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-15	750	**1200**	690
Aug-15	732	**1116**	699
Sep-15	769	1010	749
Oct-15	750	**1196**	713
Nov-15	786	**1100**	732
Dec-15	763	**1026**	734
Jan-16	734	880	666
Feb-16	814	**1062**	745
Mar-16	684	**1126**	662
Apr-16	771	**1106**	669
May-16	800	**1188**	679
Jun-16	825	**1188**	671

Figure 69. Total Dissolved Solids in Water from POTW Sites: 2012-2016



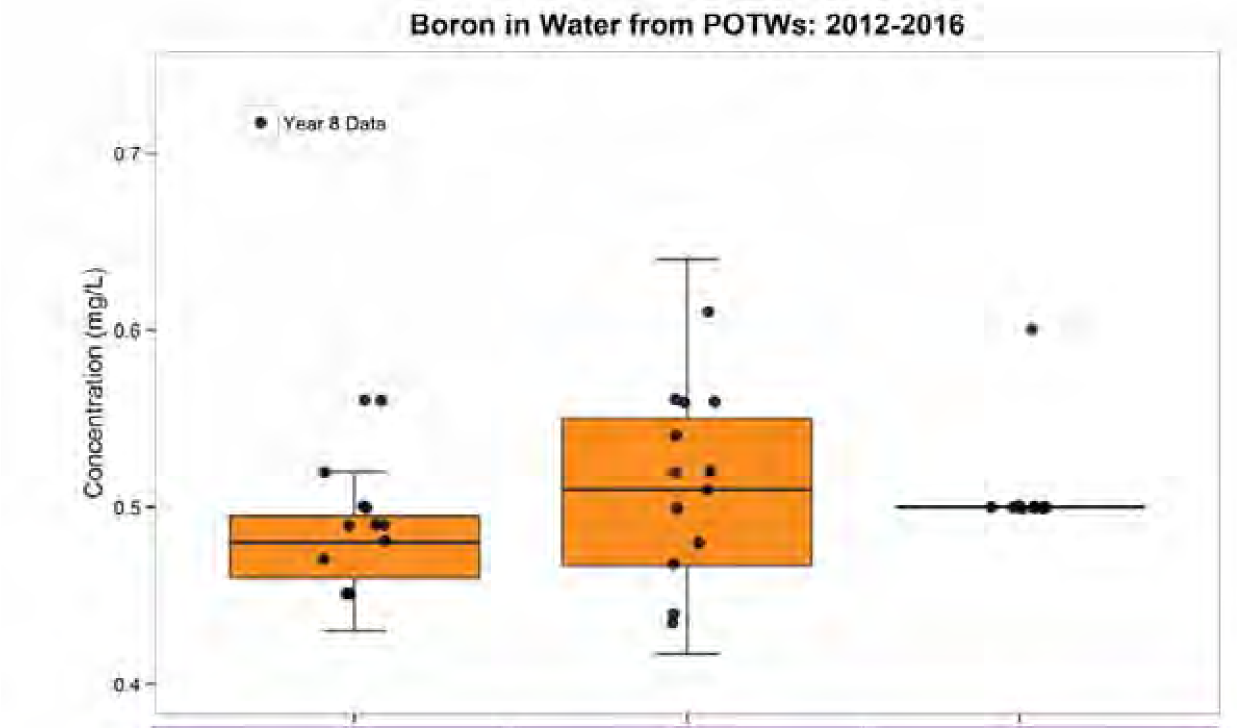
Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-15	223	**309**	164
Aug-15	226	**293**	165
Sep-15	246	263	189
Oct-15	225	**285**	165
Nov-15	225	266	185
Dec-15	233	175	181
Jan-16	198	155	145
Feb-16	249	265	189
Mar-16	212	250	137
Apr-16	217	256	135
May-16	223	256	135
Jun-16	240	267	133

Figure 70. Sulfate in Water from POTW Sites: 2012-2016



Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-15	150	**217**	153
Aug-15	149	**222**	152
Sep-15	156	**215**	164
Oct-15	151	**216**	158
Nov-15	153	**215**	165
Dec-15	159	**211**	167
Jan-16	159	**203**	165
Feb-16	156	**218**	163
Mar-16	148	**215**	158
Apr-16	159	**226**	163
May-16	155	**222**	163
Jun-16	165	**225**	167

Figure 71. Chloride in Water from POTW Sites: 2012-2016



Date	07D_SIMI	9AD_CAMA	10D_HILL
Jul-15	0.45	0.467	0.5
Aug-15	0.45	0.52	0.5
Sep-15	0.47	0.61	0.5
Oct-15	0.56	0.5	0.5
Nov-15	0.49	0.51	0.5
Dec-15	0.5	0.441	0.5
Jan-16	0.49	0.435	0.5
Feb-16	0.5	0.48	0.5
Mar-16	0.49	0.52	0.5
Apr-16	0.48	0.56	0.5
May-16	0.52	0.56	0.5
Jun-16	0.56	0.541	0.6

Figure 72. Boron in Water from POTW Sites: 2012-2016

TISSUE DATA

Tissue data is provided in the following tables for freshwater monitoring locations. Tissue samples are only collected in Mugu Lagoon every three years. The last tissue collection in the lagoon took place in year 7 and the associated data can be found in that annual monitoring report. For all tables, only those constituents that have been detected in at least one sample are included.

Freshwater Tissue Data

Table 9. Calleguas Creek – Camarillo Street CSUCI (03_UNIV) Fish Tissue Data Years 1-8 [1,2,3]

Date	Fish		Lipids	OC Pesticides [2]										PCBs [2]
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene		Total PCBs
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g		ng/g
8/6/08	Arroyo Chub	Whole Fish	4.7	DNQ	ND	ND	6.6	ND	ND	373	ND	ND		ND
9/3/09	Arroyo Chub	Comp. #1	4.2	25	11	24	38	97	127	2422	13	6397		98
9/3/09	Arroyo Chub	Comp. #2	5.7	20	13	28	38	102	116	2782	20	5675		55
9/3/09	Arroyo Chub	Comp. #3	6	32	15	31	45	117	175	2951	18	4300		56
9/3/09	Black Bullhead	Carcass	2.5	43	22	22	13	ND	184	6980	469	6469		55
9/3/09	Black Bullhead	Fillet w/ Skin	1.3	29	13	12	ND	ND	90	3603	233	3283		32
9/3/09	Common Carp	Carcass #1	4	32	15	25	17	29	100	2209	240	4805		ND
9/3/09	Common Carp	Carcass #2	4.3	37	19	24	DNQ	16	112	2492	328	8510		21
9/3/09	Common Carp	Carcass #3	4.7	47	25	26	22	31	119	2744	466	ND		ND
9/3/09	Common Carp	Fillet w/ Skin #1	1.5	5.5	ND	DNQ	ND	10	21	413	46	ND		ND
9/3/09	Common Carp	Fillet w/ Skin #2	1.6	12	DNQ	13	ND	21	25	708	115	ND		ND
9/3/09	Common Carp	Fillet w/ Skin #3	1.9	7.5	DNQ	18	ND	33	45	772	140	ND		ND
9/3/10	Arroyo Chub	0-85 mm	4.3	DNQ	DNQ	ND	DNQ	DNQ	DNQ	167	16	ND		ND
9/3/10	Arroyo Chub	86-112 mm	7	DNQ	DNQ	DNQ	12	30	44	1300	20	646		DNQ
9/3/10	Common Carp		4.3	DNQ	DNQ	DNQ	ND	DNQ	21	247	32	403		ND

Date	Fish		Lipids Percent Lipids %	OC Pesticides [2] Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	PCBs [2] Total PCBs ng/g
8/25/11	Common Carp		1.9	DNQ	ND	DNQ	ND	8.5	ND	125	ND	DNQ	ND
8/30/12			1.5	ND	ND	ND	ND	ND	ND	175	ND	ND	ND
8/27/13	Whole Fish Composite Fathead Minnow Green Sunfish Common Carp		3	ND	ND	ND	ND	ND	ND	200.5	ND	ND	ND
6/17/15	Common Carp	Whole Fish	5.1	37	9.5	19.2	20.3	103.1	227.5	7093.5	26.5	623.4	505.4
		Filet w/o skin #1	2.4	ND	ND	DNQ	DNQ	6.1	15.6	901.7	ND	128.7	DNQ
		Filet w/o skin #2	1.3	ND	ND	ND	ND	DNQ	DNQ	330.6	ND	93.19	ND
8/11/15	Fathead Minnow	Composite #1	12.6	20.0	7.6	ND	14.3	38.7	108.9	1959.1	ND	ND	35.4
		Composite #2	10.0	13.7	ND	ND	7.3	13.3	55.4	1009.4	ND	ND	23.4
		Composite #3	8.3	11.2	ND	ND	5.9	12.5	39.6	663.4	ND	ND	44.9
		Composite #4	10.9	36.1	9.0	13.0	18.4	21.3	56.0	1306.9	ND	156.8	29.7

1. Only constituents with detected values are included in the table.
2. Units are in wet weight with the exception of 2015 data, which the lab reported in dry weight.
3. No fish were caught at this site during the two days of fish collection in summer 2016.

Table 10. Conejo Creek – Adolfo Road (9B_ADOLF) Fish Tissue Data Years 1 – 8 [1, 2]

Date	Fish		Lipids	OC Pesticides [3]									PCBs [3]
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Total PCBs
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/6/08	Common Carp		3.5	ND	ND	ND	ND	ND	ND	111	54	ND	ND
9/3/09	Arroyo chub	Comp. #1	8.6	19	8.2	10	22	54	47	694	14	3611	ND
9/3/09	Arroyo chub	Comp. #2	9.5	18	5.2	15	15	40	37	646	21	3213	56
9/3/09	Arroyo chub	Comp. #3	8.4	18	6.8	16	21	43	61	629	ND	2766	67
9/3/09	Common Carp	Carcass #1	2.5	21	6.0	15	ND	ND	27	754	ND	ND	54
9/3/09	Common Carp	Fillet w/ Skin #1	0.8	ND	ND	ND	ND	ND	10	190	ND	ND	ND
9/3/09	Common Carp	Carcass #2	4.8	49	24	18	ND	ND	170	3643	99	3566	93
9/3/09	Common Carp	Fillet w/ Skin #2	1.6	10	5.4	8.6	ND	ND	43	1019	30	ND	26
9/3/09	Common Carp	Carcass Comp. #3	4	27	15	19	12	131	58	1019	190	2544	70
9/3/09	Common Carp	Fillet Comp. w/ Skin #3	1.8	DNQ	ND	25	ND	57	37	274	86	ND	ND
9/3/10	Arroyo chub	0-85 mm	4.9	DNQ	ND	DNQ	DNQ	11	21	626	17	487	ND
9/3/10	Arroyo chub	86-112 mm	6.6	DNQ	DNQ	ND	DNQ	DNQ	DNQ	137	14	ND	ND
8/25/11	Common carp		2.4	DNQ	DNQ	ND	ND	DNQ	ND	49	ND	DNQ	ND
8/27/13	Largemouth Bass		1.3	ND	ND	ND	ND	ND	ND	85.7	ND	ND	ND
6/17/15	Common Carp	Whole Fish	13.4	31.2	13.7	15.9	ND	20.5	35.2	678.1	DNQ	347.68	106.9
6/17/15	Common Carp	Filet w/o skin #1	9.8	22.9	10.9	12.4	10.2	7.4	35.2	350.5	10.6	452.86	58.5
6/17/15	Common Carp	Filet w/o skin #2	4.8	8	DNQ	DNQ	DNQ	5.2	12.2	635.7	ND	185.91	99.6

Date	Fish		Lipids	OC Pesticides [3]									PCBs [3]
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Total PCBs
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
5/18/16	Common Carp	#1	5.68	7.7	DNQ	61.1	7.1	31.0	ND	226.4	DNQ	ND	46.8
		#2	3.88	9.8	DNQ	31.2	11.3	7.8	12.8	316.6	ND	DNQ	57.3
		#3	0.96	DNQ	ND	8.6	DNQ	DNQ	ND	79.9	ND	ND	31.0

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during year five.
3. Units are wet weight with the exception of 2015 data, which the lab reported in dry weight.

Table 11. Arroyo Simi – Hitch Boulevard (07_HITCH) Fish Tissue Data Years 1 – 8 [1, 2]

Date	Fish			Lipids	OC Pesticides [3]								PCBs [3]
				Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Total PCBs
				%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/6/08	Arroyo Chub	Composite		8.3	ND	ND	ND	DNQ	ND	ND	521	ND	ND
9/3/09	Arroyo Chub	Composite #1	43-60mm	9.5	DNQ	ND	20	ND	52	233	955	ND	ND
9/3/09	Arroyo Chub	Composite #1	65-90mm	10.6	ND	ND	5.3	DNQ	12	15.8	365	ND	ND
9/3/09	Arroyo Chub	Composite #2	43-60mm	9.7	DNQ	ND	33	ND	749	437	1183	ND	ND
9/3/09	Arroyo Chub	Composite #2	65-90mm	10.5	DNQ	ND	32	14.6	74	195	1648	26	28
9/3/09	Arroyo Chub	Composite #3	43-60mm	8.3	DNQ	ND	26	ND	45	343	967	ND	ND
9/3/09	Arroyo Chub	Composite #3	65-90mm	11.3	6.6	ND	27	ND	57	110	1275	38	ND
9/3/10	Arroyo Chub			7.8	ND	ND	DNQ	DNQ	19	19.2	673	DNQ	ND
8/28/13	Whole Fish Composite Largemouth Bass Goldfish			11.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
6/17/15	Largemouth Bass	Whole fish #1		14.5	20.3	DNQ	ND	ND	ND	ND	315.1	ND	85.8
6/17/15	Largemouth Bass	Whole fish #2		11.8	ND	ND	ND	ND	ND	ND	254.4	ND	22.2
6/17/15	Largemouth Bass	Whole fish #3		14.9	DNQ	ND	ND	ND	5.1	11.8	574.1	20.6	33.7
6/17/15	Largemouth Bass	Whole fish #4		7.8	DNQ	ND	ND	ND	ND	ND	328.9	ND	53.1
6/17/15	Largemouth Bass	Whole fish #5		14.7	7.2	ND	ND	ND	5.6	10.1	398.7	15.8	71.9

Date	Fish		Lipids Percent Lipids %	OC Pesticides [3] Chlordane-alpha ng/g	 Chlordane-gamma ng/g	 2,4'-DDD ng/g	 2,4'-DDE ng/g	 2,4'-DDT ng/g	 4,4'-DDD ng/g	 4,4'-DDE ng/g	 4,4'-DDT ng/g	PCBs [3] Total PCBs ng/g
8/11/15	Goldfish	Composite	5.6	ND	ND	ND	ND	ND	ND	112.8	ND	ND
		Grab #1	4.2	ND	ND	ND	ND	ND	ND	184.1	ND	ND
		Grab #2	7.1	6.7	5.0	5.7	ND	ND	ND	101.3	ND	DNQ
		Grab #3	8.6	DNQ	DNQ	ND	ND	ND	ND	109.2	10.6	ND
	Fathead Minnow	Composite #1	17.2	6.6	DNQ	ND	ND	15.9	ND	360.8	8.1	ND
		Composite #2	14.2	5.5	DNQ	DNQ	ND	17.4	15.2	247.5	ND	ND
		Composite #3	11.0	DNQ	DNQ	ND	ND	15.7	22.8	323.5	ND	ND
		Composite #4	8.4	ND	ND	ND	ND	15.7	ND	191.7	ND	ND
		Composite #5	20.6	6.4	DNQ	ND	ND	30.5	ND	323.8	ND	DNQ
5/18/16	Fathead Minnow	#1	4.08	ND	ND	8.6	ND	6.1	ND	203	DNQ	33.1
		#2	4.51	ND	ND	16.4	ND	15.9	ND	365.6	12.9	54.3
		#3	4.49	ND	ND	15.5	ND	8.4	ND	548.7	16.9	50.4
		#4	4.4	DNQ	ND	26.4	ND	18.1	ND	442.8	15.5	67.5
		#5	4.37	ND	ND	19.4	ND	16.4	ND	542.9	DNQ	59.6
6/22/16 [4]	Goldfish	Filet with Skin #1	8.9	DNQ	DNQ	ND	ND	ND	ND	68.5	ND	ND
		Filet with Skin #2	8.5	DNQ	DNQ	ND	ND	ND	ND	44.6	ND	ND
		Filet with Skin #3	4.4	DNQ	DNQ	ND	ND	ND	ND	41.0	ND	ND
		Filet with Skin #4	21.7	DNQ	DNQ	ND	ND	ND	ND	44.4	ND	ND

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during years 4 or 5.
3. Units are wet weight with the exception of 2015 data, which the lab reported in dry weight.
4. June 22, 2016 samples were collected closer to the 07_TIERRA salts monitoring site and are labeled as such in the data files. However, the data is included here with the 07_HITCH data as the nearest fish tissue monitoring location.

Table 12. Arroyo Las Posas – Somis Road (06_SOMIS) Fish Tissue Data Years 1 – 8 [1, 2,3]

Date	Fish			Lipids Percent Lipids %	OC Pesticides [3] Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	Toxaphene ng/g	PCBs [4] Total PCBs ng/g
8/6/08	Arroyo Chub	Composite		2.7	ND	ND	ND	ND	ND	ND	492	ND	ND
9/3/09	Arroyo Chub	Composite #1	29-51mm	6.7	11	DNQ	37	ND	ND	646	1918	ND	34
9/3/09		Composite #1	53-97mm	4.6	DNQ	ND	62	ND	ND	535	1967	2821	36
9/3/09		Composite #2	29-51mm	6.8	9.0	DNQ	55	ND	ND	1158	2203	ND	31
9/3/09		Composite #2	53-97mm	6.2	12	5.9	28	16	43	128	2313	3054	44
9/3/09		Composite #3	29-51mm	5.7	10	DNQ	30	11	122	157	2124	ND	56
9/3/09		Composite #3	53-97mm	5.3	10	DNQ	12	ND	36	258	2258	2103	32

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during years 3, 4, 5, 6, or 7.
3. Access to 06_SOMIS was revoked during year eight.
4. Units are wet weight with the exception of 2015 data, which the lab reported in dry weight.

Table 13. Revolon Slough – Wood Road (04_WOOD) Fish Tissue Data Years 1 – 8 [1, 2]

Date	Fish		Lipids	OC Pesticides [3]									PCBs [3]
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Total PCBs
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/7/08	Common Carp	Comp. Fillet, no skin	3	ND	ND	27	ND	14	85	1194	21	349	ND
8/7/08		Comp. Fillet w/ skin	2.1	5.3	ND	18	7.4	DNQ	40	615	13	259	ND
9/3/09	Common Carp	Carcass	12.1	91	62	129	25	ND	1210	11100	904	25800	28
9/3/09		Fillet w/ Skin #1	2.8	35	21	55	17	ND	262	4210	328	6630	ND
9/3/09		Carcass	9.6	102	60	205	76	ND	1070	9590	367	17000	51
9/3/09		Fillet w/ Skin #2	3.3	47	31	110	31	ND	371	4790	168	5930	DNQ
9/3/09		Carcass	9	117	66	185	64	ND	1100	7750	411	14300	54
9/3/09		Fillet w/ Skin #3	2.7	54	33	77	39	50	378	4000	239	5480	20
9/3/09	Arroyo Chub	Comp. #1	8.7	41	27	133	77	191	878	6320	57	14700	24
9/3/09		Comp. #1	9	38	24	82	73	222	689	5630	36	19900	DNQ
9/3/09		Comp. #2	6.9	33	16	88	65	168	568	5580	52	17900	ND
8/25/11	Common carp		2.6	9.3	5.5	15	DNQ	67	ND	819	8.5	206	ND
8/30/12	Common carp		5.6	ND	ND	ND	ND	116	ND	1750	ND	ND	ND
8/27/13	Whole Fish Composite Common carp Fathead Minnow		6.3	ND	ND	ND	ND	ND	84.3	1984.1	ND	1611.1	ND

Date	Fish		Lipids Percent Lipids %	OC Pesticides [3] Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	PCBs [3] Total PCBs ng/g
6/17/15	Common Carp	Whole Fish #1	13.6	50.1	24.2	76.2	35.1	61.4	277.1	4474.4	294.5	3534.4	57.4
		Whole Fish #2	15.6	136.5	66.7	139.3	40.9	91.4	608	10502.1	560.4	4699.7	119.1
		Whole Fish #3	16.9	89.9	42.4	57.7	ND	67.4	534.5	8634.2	316.4	4147.6	72.7
		Fillet w/o skin #1	11.5	60.6	31	74.6	26.3	41.4	171.8	3492.5	217.5	3116.8	20.4
		Filet w/o skin #2	3.2	DNQ	DNQ	7.5	ND	13.7	37.3	632.7	41	728.3	ND
		Filet w/o skin #3	3.1	DNQ	DNQ	DNQ	ND	12.7	28.3	669.7	36.9	472.1	ND
		Filet w/o skin #4	2.6	DNQ	DNQ	9.4	6.6	14	29.4	724.4	18.5	472.9	ND
	Bullhead	Whole Fish	12.4	56	26.8	45.1	ND	80.5	270	3880.8	360.8	4567.3	42.9
		Filet w/o skin #1	2.8	ND	ND	ND	ND	18.3	39.8	810.7	40.8	736.6	ND
		Filet w/o skin #2	6.2	ND	ND	ND	ND	22.5	40.5	749.4	30.5	635.9	ND
8/11/15	Fathead Minnow	Comp. #1	23.3	50.0	22.3	71.1	42.2	114.4	238.6	3816.7	22.9	1546.3	56.6
		Comp. #2	18.8	52.5	22.0	57.3	43.7	71.6	305.2	4110.5	40.5	1157.2	55.4
		Comp. #3	14.8	48.4	22.1	34.2	46.3	50.2	375.7	3921.3	19.8	852.5	58.8
		Comp. #4	28.5	85.9	47.6	109.8	78.3	113.1	466.5	5563.2	61.1	1094.6	48.7

Date	Fish		Lipids Percent Lipids %	OC Pesticides [3] Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	PCBs [3] Total PCBs ng/g
5/18/16	Common Carp	#1	3.86	41	13.1	29.4	22.6	ND	346.1	4589.7	108.7	738.3	202.6
		#2	8.86	77	30.5	16.4	43.2	ND	617.5	7027.5	414.9	1871.6	120.7
		#3	1.11	19.3	9.1	DNQ	6.2	ND	174.1	1721.2	55.5	450.6	48.4
		#4	10.98	38.7	18.9	DNQ	ND	ND	157.4	2229.8	151.7	1602.9	31.2
		#5	3.93	33.3	11.3	17.3	21.2	ND	320.1	7042.7	91.4	537.1	111.6
		#6	6.36	57.2	17.1	24.2	11.3	ND	553.4	6460	110.1	1193.4	264.1
		#7	2.22	26.3	13.6	11.5	22.8	ND	275	3541.7	73	621.5	132.6
		#8	2.71	19.1	7.1	DNQ	DNQ	ND	198.7	3388.9	28.8	511.6	130.5
	Fathead Minnow	#1	3.89	25.5	9.9	12.6	37.6	ND	229.3	3058.8	ND	342.6	40.6
		#2	1.69	DNQ	DNQ	ND	7.8	ND	100	1508.3	ND	130.5	87.1
		#3	2.43	5.5	DNQ	ND	8.1	ND	66.7	1129.6	ND	ND	43.2
		#4	5.94	29.5	12	23.6	12.3	ND	132.6	1963.2	ND	775.3	88.1
		#5	2.02	11.9	8.7	33.7	13	15	105.5	1010.5	18.3	ND	62.9
		#6	1.41	7.1	DNQ	12	10.2	ND	46.9	516.3	ND	118.3	32
		#7	1.52	9.7	DNQ	10	10	ND	36.3	658.1	8	274.7	36.4
	Goldfish[4]	Filet w/ Skin #1	NA[4]	DNQ	DNQ	ND	ND	ND	18.4	258.4	11.3	ND	61.7
		Filet w/ Skin #2	NA[4]	DNQ	DNQ	DNQ	ND	ND	18.1	227.6	8.9	56	37.4
		Filet w/ Skin #3	NA[4]	DNQ	DNQ	ND	DNQ	ND	16.2	269.7	6.8	DNQ	33.0
		Filet w/ Skin #4	NA[4]	DNQ	DNQ	ND	DNQ	ND	14.7	242.2	5.4	DNQ	46.5

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during year 3.
3. Units are wet weight with the exception of 2015 data, which the lab reported in dry weight.
4. Percent lipid data not available due to small fish size.

Table 14. Revolon Slough – Wood Road (04_WOOD) Metals Fish Tissue Data Years 1 – 8 [1, 2]

Date	Fish		Lipids	Metals [3]	
			Percent Lipids %	Total Mercury µg/g	Total Selenium µg/g
8/7/08	Common Carp	Comp. Fillet, no skin	3	DNQ	1.3
8/7/08		Comp. Fillet w/ skin	2.1	DNQ	2.3
9/3/09	Common Carp	Carcass #1	12.1	DNQ	1.5
9/3/09		Fillet w/ Skin #1	2.8	DNQ	1.6
9/3/09		Carcass #2	9.6	DNQ	1.9
9/3/09		Fillet w/ Skin #2	3.3	DNQ	2.1
9/3/09		Carcass #3	9	DNQ	1.4
9/3/09		Fillet w/ Skin #3	2.7	0.02	1.7
9/3/09	Arroyo Chub	Comp. #1	8.7	0.02	1.6
9/3/09		Comp. #1	9	0.02	1.8
9/3/09		Comp. #2	6.9	0.02	1.4
8/25/11	Common carp		2.6	0.004	2.7
9/4/12	Common carp		5.6	0.011	1.9
8/27/13	Whole Fish Composite Common carp Fathead Minnow		6.3	0.01	1.9
6/17/15	Common Carp	Whole Fish #1	13.6	0.1	6.5
		Whole Fish #2	15.6	0.1	5.3
		Whole Fish #3	16.9	0.1	4.8
		Fillet w/o skin #1	11.5	0.1	4.8
		Filet w/o skin #2	3.2	0.1	5.3
		Filet w/o skin #3	3.1	0.1	5.9
		Filet w/o skin #4	2.6	0.1	5.5
	Bullhead	Whole Fish	12.4	0.1	7.9
		Filet w/o skin #1	2.8	0.1	5.9
		Filet w/o skin #2	6.2	0.2	5.1

Date	Fish		Lipids Percent Lipids %	Metals[3] Total Mercury µg/g	Total Selenium µg/g
8/11/15	Fathead Minnow	Comp. #1	23.3	0.1	9.6
		Comp. #2	18.8	0.1	11.2
		Comp. #3	14.8	0.7	10.0
		Comp. #4	28.5	0.7	10.5
5/18/16[4]	Common Carp	#1	3.86	0.03	1.3
		#2	8.86	0.04	1.6
		#3	1.11	0.02	1.4
		#4	10.98	0.02	1.6
		#5	3.93	0.03	1.6
		#6	6.36	0.03	1.9
		#7	2.22	0.02	1.1
		#8	2.71	0.02	1.0
	Fathead Minnow	#1	3.89	0.02	1.8
		#2	1.69	0.03	1.9
		#3	2.43	0.03	1.7
		#4	5.94	0.03	2.2
		#5	2.02	0.01	1.3
		#6	1.41	0.03	2.5
		#7	1.52	0.03	2.2

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during year 3.
3. Units are wet weight with the exception of 2015 data, which the lab reported in dry weight.
4. Goldfish tissue amounts collected on this date were insufficient to provide OC pesticides, PCBs, and metals analyses. It was determined that OC pesticides and PCBs results were most valuable to the monitoring program to support the long-term data evaluation related to natural attenuation of these constituents.

TOXICITY DATA

The following is a summary of the toxicity results to date for water column and sediment at the freshwater and estuarine sampling sites. Table 17 displays significant water column mortality test results for eight years of CCWTMP events, including both dry and storm (bolded text) events. Significant mortality found in freshwater sediments is shown in Table 16.

Toxicity was frequently identified at the 04_WOOD site during the first two monitoring years in water column samples and in each of the four sediment samples. The Stakeholders have chosen to invest resources into source control efforts to address sources potentially contributing to the toxicity issue. This is being accomplished through the implementation of the Agricultural Water Quality Management Plan (AWQMP) developed by the Ventura County Agricultural Irrigated Lands Group (VCAILG) as part of the Conditional Waiver for Irrigated Agricultural Lands (Ag Waiver).

During dry weather water column sampling, toxicity has been identified historically at all sampled sites except 13_BELT. There were no occurrences of dry weather water column toxicity during the eighth year of monitoring. Toxicity has been identified during wet weather monitoring at all sites, except for 10_GATE and 13_BELT. Wet weather toxicity occurred during both storm events for this year of monitoring (Event 52 and Event 53).

Water column TIEs have been initiated as described previously, and outcomes of these efforts have had limited success in identifying the true cause of toxicity. While not identifying the specific constituents causing toxicity, the TIEs have identified:

- Organic compounds are likely contributors to ambient water toxicity.
- Compounds similar to organophosphorus (OP) pesticides are continually being identified as possible contributors to the observed toxicity.

The results of future CCWTMP toxicity testing will continue to assist in the identification of when and where conditions are toxic in the Calleguas Creek watershed, and help the stakeholders better target areas in the watershed that show continual toxicity and focus limited resources to address the problems.

All of the freshwater toxicity occurrences during year eight were at the 04_WOOD site.

In year eight, fresh water sediment toxicity testing was performed during Event 50 for 04_WOOD, 02_PCH, 03_UNIV, and 9A_HOWAR. Statistically significant acute toxicity was observed for *Hyalella azteca* at 04_WOOD, but no toxicity was observed for the remaining sites. Follow-up toxicity investigation was not conducted at the 04_WOOD sites as TIEs are not performed at 04_WOOD due to the reason stated above.

Table 15. Water Column Toxicity for All Monitoring Events and Sites
(Significant mortality denoted by "X", bolded events are wet weather events)

CCWMTP Year	Event	Site ID						
		04_WOOD	9B_ADOLF	03_UNIV	10_GATE	06_SOMIS	13_BELT	07_HITCH
Year 1	1	X						
	2	X						
	3	**X**	**X**	**X**				**X**
	4	X						
	5	**X**						**X**
	6							
Year 2	9							
	12	X						
	14	**X**		**X**		**X**		
	16	**X**		**X**				**X**
	17							
	20			X				
Year 3	22							
	23							
	24	**X**						
	25							
	26	**X**						**X**
	27							
Year 4	28					X		
	29		X		X			
	30	**X**						
	31							
	32			**X**				
	33							
Year 5 [1]	34							
	35							
	36	**X** [2]						
	37			X [3]				
	38							
Year 6	39	X [2]						
	40				[4]			
	41		[6]	[6]	[6]	[6]	[5]	[6]
	42							
	43							
Year 7	44	X [2]		[7]		[8]		
	45	X [2]					[9]	
	46	**X**[2]		**X**[10]		**X**[11]		**X**[10]
	47	**X**[2]						
	48							
	49	X [2]				[12]	[12]	

CCWMTP Year	Event	Site ID						
		04_WOOD	9B_ADOLF	03_UNIV	10_GATE	06_SOMIS	13_BELT	07_HITCH
Year 8 [13]	50							
	51							
	52	**X**[2]						
	53	**X**[2]						
	54							
	55							

1. 10_GATE and 13_BELT are also toxicity investigation monitoring sites. During year 5 these sites were only sampled during Event 38.
2. A TIE was not initiated at this site. TIEs conducted during previous monitoring years identified organic compounds such as pesticides as the likely cause of the toxicity. TIEs have been suspended while efforts are taken to reduce the source of the toxicity.
3. A Phase I TIE was conducted for this site. While the TIE did not conclusively identify a source of toxicity, the results were indicative of organic compounds. The corresponding water quality sample detected the OP pesticide chlorpyrifos at a concentration of 0.083 µg/L. This level is above the wasteload allocation for stormwater discharges but below the agricultural discharger's interim load allocation and above the final numeric target.
4. Toxicity testing was not performed at the 10_GATE site for Event 40.
5. Toxicity testing was not performed at the 10_BELT site for Event 41.
6. Successful toxicity testing for sites with conductivity less than 3000 µS/cm could not be completed for Event 41 due to a decline in the *C. dubia* laboratory culture. Sites include: 9B_ADOLF, 03_UNIV, 10_GATE, 06_SOMIS, and 07_HITCH.
7. An initial and a follow-up Phase I TIE was conducted for this site. Though the acute and chronic results of the toxicity test was not significantly different than that of the laboratory, the testing of this site did result in a greater than 50% mortality, triggering the initial and follow-up Phase I TIE. The initial TIE did not conclusively determine the source of toxicity, but did suggest that multiple co-occurring contaminants may have been responsible for the toxicity. The follow-up TIE demonstrated that no additional reductions in survival or reproduction occurred after the initial Baseline treatment, suggesting that the toxicity observed in the initial test was not persistent. This result suggests that the toxicant may have undergone natural degradation processes as the sample water aged.
8. Toxicity testing was not performed at the 06_SOMIS site for Event 44.
9. Toxicity testing was not performed at the 13_BELT site for Event 45.
10. A Phase I TIE was initiated at this site. While the TIE did not conclusively identify a source of toxicity, the results suggest that compounds that are activated by the Cytochrome-P450 system (e.g. OP pesticides) are contributing to sample toxicity.
11. A Phase I TIE was initiated at this site. While the TIE did not conclusively identify a source of toxicity, the results suggest that non-polar organic compound(s) are contributing to the ambient toxicity.
12. Toxicity testing was not performed at the 06_SOMIS or 13_BELT sites for Event 49.
13. During year 8, toxicity testing was only performed at the 06_SOMIS site for Event 52.

Table 16. Sediment Toxicity for All CCWTMP Freshwater Monitoring Events and Sites (Significant mortality denoted by "X")

CCWMTP Year	Event	Site ID			
		04_WOOD	02_PCH [1]	03_UNIV	9A_HOWAR [1]
Year 1	1	X			
Year 2	9	X			
Year 3	22	X			
Year 4	28	X	X	X	
Year 5	34	X		X	
Year 6	39	X		X [2]	
Year 7	44	X		X	
Year 8	50	X			

1. 02_PCH and 9A_HOWAR are toxicity investigation monitoring sites.
2. A TIE targeted for organics was performed for the 03_UNIV site due to a greater than 50 percent reduction in *H. azteca* survival.

Exceedance Evaluation and Discussion

As outlined in the QAPP, data applicable to targets or allocations were reviewed for this report. The collected data were compared to the applicable targets or allocations and it is this comparison that the various agencies will use to determine necessary actions in accordance with their permit or conditional waiver. The comparison does not provide a determination of compliance with any TMDL provision of an individual permit or conditional waiver, as some permit/waiver conditions may vary from the comparisons provided in this section. For the comparison, various procedures were used depending on whether or not the final compliance dates for the TMDL were applicable during the monitoring year.

For TMDLs where final allocations or targets are not currently effective (OC Pesticides, Metals, and Salts TMDLs), the following compliance comparisons were conducted:

1. Applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load allocations and waste load allocations.
2. If an exceedance of an interim load allocation and/or waste load allocation was observed, the contributing land use data were reviewed to evaluate the potential cause of the exceedance.
3. POTW effluent data were compared to the relevant interim waste load allocations.

For the Nitrogen TMDL the following comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the analysis.
2. For agricultural dischargers and other non-point sources, final load allocations are currently effective. Since agricultural dischargers are the only entities with allocations other than POTWs, compliance is evaluated by comparing receiving water results against TMDL numeric targets.

For the Toxicity TMDL, the following comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the comparison.
2. For MS4 dischargers, the final waste load allocations are currently effective. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the final waste load allocations. If an exceedance of the final waste load allocation was found, the contributing urban land use data were reviewed to evaluate whether the MS4 was potentially causing the exceedance.
3. For agricultural dischargers, the final load allocations became effective in March 2016. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load allocations for the first five events and to the final load allocations for the final event of the year (May 2016). If an exceedance of the applicable load allocation for a particular event was observed, the contributing agricultural land use data were reviewed to evaluate whether agricultural discharges were potentially causing the exceedance.

4. In cases where the applicable interim load allocations or final waste load allocations have different values for acute (1-hour) toxicity and chronic (4-day) toxicity, the acute toxicity allocations were used for comparing wet weather data and the chronic toxicity allocations were used for comparing dry-weather data.

The following tables compare the applicable allocations based on the procedure outlined above for each of the TMDLs. Some constituents sampled under the CCWTMP do not have applicable allocations and/or targets and are not included in the comparison.

RECEIVING WATER SITE COMPARISON

Table 17. OC Pesticides, PCBs, & Siltation in Sediment

Site & Constituent	Units	Interim WLA & LA [1]	Event 50 Aug-2015
Calleguas Creek – Hwy 1 Bridge (02_PCH)			
Total Chlordane [2]	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	ND
4,4'-DDE	ng/g dw	470	5.8
4,4'-DDT	ng/g dw	110	ND
Dieldrin	ng/g dw	3	ND
PCBs [3]	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
Revolon Slough – Wood Road (04_WOOD)			
Total Chlordane [2]	ng/g dw	48	DNQ
4,4'-DDD	ng/g dw	400	DNQ
4,4'-DDE	ng/g dw	1600	23.5
4,4'-DDT	ng/g dw	690	ND
Dieldrin	ng/g dw	5.7	ND
PCBs [3]	ng/g dw	7600	ND
Toxaphene	ng/g dw	790	DNQ
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)			
Total Chlordane [2]	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	ND
4,4'-DDE	ng/g dw	470	DNQ
4,4'-DDT	ng/g dw	110	ND
Dieldrin	ng/g dw	3	ND
PCBs [3]	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND

Site & Constituent	Units	Interim WLA & LA [1]	Event 50 Aug-2015
Conejo Creek – Adolfo Road (9B_ADOLF)			
Total Chlordane [2]	ng/g dw	3.4	ND
4,4'-DDD	ng/g dw	5.3	ND
4,4'-DDE	ng/g dw	20	DNQ
4,4'-DDT	ng/g dw	2	ND
Dieldrin	ng/g dw	3	ND
PCBs [3]	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
Arroyo Las Posas – Somis Road (06_SOMIS)			
Total Chlordane [2]	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	290	DNQ
4,4'-DDE	ng/g dw	950	DNQ
4,4'-DDT	ng/g dw	670	ND
Dieldrin	ng/g dw	1.1	ND
PCBs [3]	ng/g dw	25,700	ND
Toxaphene	ng/g dw	230	ND
Arroyo Simi – Hitch Boulevard (07_HITCH)			
Total Chlordane [2]	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	14	ND
4,4'-DDE	ng/g dw	170	ND
4,4'-DDT	ng/g dw	25	ND
Dieldrin	ng/g dw	1.1	ND
PCBs [3]	ng/g dw	25,700	ND
Toxaphene	ng/g dw	230	ND

ND=not detected; DNQ=detected not quantifiable

1. Interim waste load allocation for stormwater permittees and interim load allocations for agricultural dischargers; effective until March 24, 2026 (R4-2005-010).
2. Total chlordane is the sum of alpha and gamma-chlordane.
3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Results in green type are below the applicable allocations.

Table 18. Nitrogen Compounds in Water

Site & Constituent	Units	Target [1]	Event 50 Dry Aug-15	Event 51 Dry Nov-15	Event 52 Wet Jan-15	Event 53 Wet Jan-15	Event 54 Dry Feb-15	Event 55 Dry May-15
Mugu Lagoon - Ronald Reagan Bridge (01_RR_BR)								
Ammonia-N	mg/L	8.1	0.22	0.31	0.84	0.25	DNQ	0.23
Nitrate-N	mg/L	10	**13.1**	**18.89**	**18.61**	**10.35**	**31.28**	**23.85**
Nitrite-N	mg/L	1	0.17	0.06	ND	0.06	0.15	0.18
Nitrate-N + Nitrite-N	mg/L	10	**13.27**	**18.95**	**18.61**	**10.41**	**31.43**	**24.03**
Calleguas Creek – Hwy 1 Bridge (02_PCH)								
Ammonia-N	mg/L	5.5	0.19	0.15	0.05	3.19	DNQ	0.06
Nitrate-N	mg/L	10	**11.65**	**26.15**	**11.54**	**15.06**	**17.81**	**41.22**
Nitrite-N	mg/L	1	ND	ND	ND	ND	0.11	ND
Nitrate-N + Nitrite-N	mg/L	10	**11.65**	**26.15**	**11.54**	**15.06**	**17.92**	**41.22**
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)								
Ammonia-N	mg/L	8.4	0.11	0.2	0.33	0.51	0.11	0.05
Nitrate-N	mg/L	10	6.82	6.6	4.3	7.4	7.45	**10.2**
Nitrite-N	mg/L	1	0.08	0.09	0.06	0.16	0.19	0.19
Nitrate-N + Nitrite-N	mg/L	10	6.90	6.69	4.36	7.56	7.64	**10.39**
Revolon Slough – Wood Road (04_WOOD)								
Ammonia-N	mg/L	5.7	0.35	0.12	0.37	0.4	0.29	0.29
Nitrate-N	mg/L	10	**28.3**	**36.08**	6.68	6.74	**46.6**	**38.82**
Nitrite-N	mg/L	1	0.46	0.17	0.07	0.12	0.34	0.74
Nitrate-N + Nitrite-N	mg/L	10	**28.76**	**36.25**	6.75	6.86	**46.94**	**39.56**
Beardsley Wash – Central Avenue (05_CENTR)								
Ammonia-N	mg/L	5.7	0.06	ND	0.45	0.55	0.05	0.15
Nitrate-N	mg/L	10	**20.84**	**25.48**	**15.25**	**10.34**	**47.1**	**26.7**
Nitrite-N	mg/L	1	0.13	0.12	0.08	0.13	0.44	0.43
Nitrate-N + Nitrite-N	mg/L	10	**20.97**	**25.60**	**15.33**	**10.47**	**47.54**	**27.13**
Arroyo Las Posas – Somis Road (06_SOMIS)[3]								
Ammonia-N	mg/L	8.1	--	DNQ	NS	NS	NS	NS
Nitrate-N	mg/L	10	--	8.82	NS	NS	NS	NS
Nitrite-N	mg/L	1	--	ND	NS	NS	NS	NS
Nitrate-N + Nitrite-N	mg/L	10	--	8.82	NS	NS	NS	NS

Site & Constituent	Units	Target [1]	Event 50 Dry Aug-15	Event 51 Dry Nov-15	Event 52 Wet Jan-15	Event 53 Wet Jan-15	Event 54 Dry Feb-15	Event 55 Dry May-15
Arroyo Simi – Hitch Boulevard (07_HITCH)								
Ammonia-N	mg/L	4.7	DNQ	DNQ	0.3	0.28	ND	0.21
Nitrate-N	mg/L	10	9.72	7.4	2.96	4.46	**10.96**	9.95
Nitrite-N	mg/L	1	0.05	0.06	0.07	0.11	0.11	0.13
Nitrate-N + Nitrite-N	mg/L	10	9.77	7.46	3.03	4.57	**11.07**	**10.08**
Conejo Creek – Adolfo Road (9B_ADOLF)								
Ammonia-N	mg/L	9.5	0.05	0.02	0.24	0.24	DNQ	0.2
Nitrate-N	mg/L	10	5.3	6.53	4.22	1.02	7.18	6.6
Nitrite-N	mg/L	1	0.05	ND	0.06	0.08	0.12	0.13
Nitrate-N + Nitrite-N	mg/L	10	5.35	6.53	4.28	1.10	7.30	6.73

NS=no sample, dry; NR=not required; ND=not detected; DNQ=detected not quantifiable; J=estimated DNQ values for Nitrite-N, shown for the purpose of calculating the Nitrite-N + Nitrate-N sum and comparing it against the Nitrate-N + Nitrite-N target.

1. Load allocations for Nitrate-N + Nitrite-N are in effect for agricultural and other non-point sources. For the comparison, monitoring results at receiving water compliance sites were compared against TMDL numeric targets (R4-2008-009).
2. One-hour average.
3. Access to 06_SOMIS no longer available.

Results in **bold red type** exceed numeric TMDL target.
Results in green type are below the applicable allocations.

Table 19. Toxicity, Diazinon, and Chlorpyrifos in Water

Site & Constituent	Units	Dry WLA [1]	Dry Interim LA [2]	Event 50 Dry Aug-15	Event 51 Dry Nov-15	Event 54 Dry Feb-16	Event 55[3] Dry May-16	Wet WLA [1]	Wet Interim LA [2]	Event 52 Wet Jan-16	Event 53 Wet Jan-16
Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)											
Chlorpyrifos	ug/L	0.014	0.81	0.004	ND	0.009	ND	0.014	2.57	**0.106**	0.005
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	ND
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)											
Chlorpyrifos	ug/L	0.014	0.81	ND	ND	**0.02**	ND	0.014	2.57	**0.02**	**0.02**
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	**0.27**	0.005
Revolon Slough – Wood Road (04_WOOD)											
Chlorpyrifos	ug/L	0.014	0.81	ND	ND	0.01	DNQ	0.014	2.57	**0.45**	**0.13**
Diazinon	ug/L	0.1	0.138	ND	ND	0.063	ND	0.1	0.278	0.032	0.0287
Arroyo Las Posas – Somis Road (06_SOMIS)											
Chlorpyrifos	ug/L	0.014	0.81	--	**0.027**	NS	NS	0.014	2.57	NS	NS
Diazinon	ug/L	0.1	0.138	--	ND	NS	NS	0.1	0.278	NS	NS
Arroyo Simi – Hitch Boulevard (07_HITCH)											
Chlorpyrifos	ug/L	0.014	0.81	0.003	ND	ND	ND	0.014	2.57	ND	0.004
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	ND
Conejo Creek – Adolfo Road (9B_ADOLF)											
Chlorpyrifos	ug/L	0.014	0.81	ND	ND	0.002	ND	0.014	2.57	**0.017**	0.005
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	0.0384	0.002
Conejo Creek – Hill Canyon Below N Fork (10_GATE)											
Chlorpyrifos	ug/L	0.014	0.81	ND	ND	ND	ND	0.014	2.57	ND	ND
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	ND
Conejo Creek – S Fork Behind Belt Press Build (13_BELT)											
Chlorpyrifos	ug/L	0.014	0.81	ND	ND	ND	ND	0.014	2.57	0.0093	ND
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	ND

ND=not detected; NS=no sample collected due to site being dry.

1. Final Dry and Wet Weather wasteload allocations for Stormwater Dischargers effective as of March 24, 2008 (R4-2005-009).
2. Interim Dry and Wet Weather load allocations for Irrigated Agriculture; effective until March 24, 2016 (R4-2005-009).
3. Final load allocations for irrigated agriculture became effective prior to Event 55. Samples collected during that event were meeting the final load allocations.

Results in **bold purple type** exceed the final wasteload allocation, but not the interim load allocation.
Results in green type are below the applicable allocations.

Table 20. Metals and Selenium in Water

Constituent	Units	Dry Interim WLA [1]	Dry Interim LA [2]	Event 50 Dry Aug-2015	Event 51 Dry Nov-2015	Event 54 Dry Feb-2016	Event 55 Dry May-2016	Wet Interim WLA [1]	Wet Interim LA [2]	Event 52 Wet Jan-2016	Event 53 Wet Jan-2016	Annual Average [3]
Revolon Slough – Wood Road (04_WOOD)												
Total Copper	µg/L	19	19	3.1	3.4	5.9	4.4	204	1390	138.4	42.3	
Total Nickel	µg/L	13	42	6.1	8.6	9.7	9.1	74 [4]	74 [4]	**78.7**	30.9	
Total Selenium	µg/L	13	6	**31.2**	**16.3**	**16.5**	**23. 6**	290 [4]	290 [4]	2.3	1.6	
Total Mercury [5]	lbs/yr	1.7	2					4	--			0.2
Calleguas Creek – Camarillo Street CSUCI (03_UNIV)												
Total Copper	µg/L	19	19	1.7	3.3	3.3	3.7	204	1390	45.7	7.6	
Total Nickel	µg/L	13	42	6.2	5.3	6.6	7.8	74 [4]	74 [4]	53.2	6.9	
Total Selenium	µg/L	--	--	0.7	0.5	0.9	0.4	--	--	0.8	0.7	
Total Mercury [5]	lbs/yr	3.3	3.9					10.5	--			0.2

1. Interim Dry Weather wasteload allocations for Stormwater Dischargers; effective until March 2022 (R4-2006-0012)
2. Interim Dry Weather load allocations for Irrigated Agriculture; effective until March 2022 (R4-2006-0012)
3. Mercury allocation is assessed as an annual load in suspended sediment. The water column mercury concentrations were used in calculating the loads, conservatively assuming that all mercury is on suspended sediment rather than being dissolved. The loads at each site are based on estimated annual concentrations (average of all monitored events at each site) and total annual flow calculated from preliminary streamflow data received from real time data loggers.
4. No wet weather exceedances of these constituents were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes the wet weather targets are included in the table.
5. Interim wasteload allocations and load allocations are expressed as annual loads. Total annual flow for 07/01/15 to 06/31/16 into Mugu Lagoon from Calleguas Creek and Revolon Slough is calculated as 5,247 Mgal/yr. As such, the interim wasteload allocatoin and load allocation shown correspond to the flow range of 0 to 15,000 to Mgal/yr, per R4-2006-0012.

Results in **bold red type** exceed applicable interim wasteload allocation and load allocation.
Results in green type are below the applicable allocations.

Table 21. Monthly Mean Salts Concentrations

	Units	Interim Limit WLA	Interim Limit LA	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
Revolon Slough – Wood Road (04_WOOD)															
TDS	mg/L	1720	3995	**3537**	**3676**	**3587**	**2829**	**3359**	**3594**	**3733**	**3564**	**3538**	**3450**	**3389**	**3256**
Chloride	mg/L	230	230	202	210	205	162	192	205	213	203	202	197	194	186
Sulfate	mg/L	1289	1962	**1872**	**1945**	**1899**	**1498**	**1778**	**1902**	**1976**	**1886**	**1872**	**1826**	**1794**	**1724**
Boron	mg/L	1.3	1.8	**1.8**	**1.9**	**1.9**	**1.5**	**1.8**	**1.9**	**1.9**	**1.9**	**1.8**	**1.8**	**1.8**	**1.7**
Calleguas Creek – University Drive CSUCI (03_UNIV)															
TDS	mg/L	1720	3995	1027	1024	1046	1113	1058	949	995	1011	1047	1032	1082	1121
Chloride	mg/L	230	230	214	214	219	**233**	221	197	207	211	219	216	226	**235**
Sulfate	mg/L	1289	1962	266	265	271	287	274	247	258	262	271	267	280	289
Conejo Creek – Howard Road Bridge (9A_HOWAR)															
TDS	mg/L	1720	3995	963	947	962	1044	968	877	935	951	974	961	1007	1047
Chloride	mg/L	230	230	206	202	206	224	207	186	200	203	208	205	216	225
Sulfate	mg/L	1289	1962	253	248	252	274	254	230	245	249	255	252	264	275
Conejo Creek – Baron Brothers Nursery (9B_BARON)															
TDS	mg/L	1720	3995	734	737	756	764	773	749	766	722	731	716	700	715
Chloride	mg/L	230	230	165	166	171	173	175	169	173	162	164	161	157	161
Sulfate	mg/L	1289	1962	180	181	190	194	199	187	195	174	178	171	163	170
Arroyo Simi – Tierra Rejada Road (07_TIERRA)															
TDS	mg/L	1720	3995	1164	1140	1146	1139	1157	1135	1171	1124	1149	1143	1150	1175
Chloride	mg/L	230	230	175	172	172	171	174	171	176	169	173	172	173	177
Sulfate	mg/L	1289	1962	452	437	441	436	447	435	456	429	442	439	443	458
Boron	mg/L	1.3	1.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Notes:

a. Monthly dry weather mean salt concentrations were generated using mean daily salt concentrations (from 5-min data) for days that met the definition of dry weather in the Salts TMDL (i.e., discharge < 86th percentile flow and no measureable rain in preceding 24 hrs). The 86th percentile of mean daily discharge at 03_Univ (generated using 5-min discharge data for the period July 1, 2015-June 30, 2016) was used as the flow-related threshold for distinguishing wet and dry days for all five compliance sites. Daily precipitation records for 24 gages in the CCW watershed (accessed via the VCWPD Hydrologic Data Server) were used to determine days with "measureable precipitation". Days were considered as having measureable precipitation if two or more rain gages in the watershed received 0.1 inch or more of precipitation.

Results in **bold red type** exceed both the applicable interim wasteload allocation and load allocation. Results in **bold purple type** exceed the interim wasteload allocation, but not the interim load allocation. Results in green type are below the applicable allocations.

POTW DATA COMPARISON

Table 22. Nitrogen Compounds – POTWs

Site & Constituent	Units	Final WLA [1]	Event 50 Dry Aug-15	Event 51 Dry Nov-15	Event 54 Dry Feb-16	Event 55 Dry May-16
Simi Valley Water Quality Control Plant (07D_SIMI)						
Ammonia-N	mg/L	3.5 [2], 7.8 [3]	1.1	1.4	1.3	1.3
Nitrate-N	mg/L	9	5.6	6.6	7.2	7.0
Nitrite-N	mg/L	0.9	0.01	0.02	0.01	0.01
Nitrate-N + Nitrite-N	mg/L	9	5.6	5.1	7.2	7
Camarillo Water Reclamation Plan (9AD_CAMA)						
Ammonia-N	mg/L	3.1 [2], 5.6 [3]	1.3	1.2	0.7	0.8
Nitrate-N	mg/L	9	7.9	5.6	8.4	6.4
Nitrite-N	mg/L	0.9	ND	ND	ND	ND
Nitrate-N + Nitrite-N	mg/L	9	7.9	5.6	8.4	6.4
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Ammonia-N	mg/L	2.4 [2], 3.3 [3]	1.6	1.6	1.4	1.4
Nitrate-N	mg/L	9	8.7	9.0	7.7	8.1
Nitrite-N	mg/L	0.9	ND	ND	ND	ND
Nitrate-N + Nitrite-N	mg/L	9	8.7	9.0	7.7	8.1

ND=constituent not detected at the MDL.
1. The effective date for these wasteload allocations was July 16, 2007 (R4-2008-009)
2. Wasteload allocations as Average Monthly Effluent Limit
3. Wasteload allocations as Maximum Daily Effluent Limit
Results in green type are below the applicable allocations.

Table 23. OC Pesticides, PCBs, and Siltation - POTWs

POTW & Constituent	Units	Final WLA [1]	Event 50 Dry Aug-2015	Event 51 Dry Nov-2015	Event 54 Dry Feb-2016	Event 55 Dry May-2016
Camarillo Water Reclamation Plant (9AD_CAMA)						
Total Chlordane [2]	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs [3]	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Total Chlordane [2]	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs [3]	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND
Simi Valley Water Quality Control Plant (07D_SIMI)						
Total Chlordane [2]	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs [3]	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND

ND=constituent not detected at the MDL.

1. Final wasteload allocations were added to each of the POTWs' permits in 2015.
2. Total chlordane is the sum of alpha and gamma-chlordane.
3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Results in green type are below the applicable allocations.

Table 24. Toxicity, Chlorpyrifos, and Diazinon - POTWs

POTW & Constituent	Units	Final WLA	Event 50 Dry Aug-2015	Event 51 Dry Nov-2015	Event 54 Dry Feb-2016	Event 55 Dry May-2016
Camarillo Water Reclamation Plant (9AD_CAMA)						
Chlorpyrifos	µg/L	0.0133	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Hill Canyon Wastewater Treatment Plant (10D_HILL)						
Chlorpyrifos	µg/L	0.014	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
Simi Valley Water Quality Control Plant (07D_SIMI)						
Chlorpyrifos	µg/L	0.014	0.003	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND

ND=constituent not detected at MDL.
Results in green type are below the applicable allocations.

Table 25. Metals - POTWs

POTW & Constituent	Units	Daily Max WLA	Monthly Avg WLA	WLA	Event 50 Dry Aug-2015	Event 51 Dry Nov-2015	Event 54 Dry Feb-2016	Event 55 Dry May-2015
Camarillo Water Reclamation Plant (9AD_CAMA)								
Total Copper	µg/L	57.0 [1]	20.0 [1]	--	3.5	4.6	4.4	4.2
Total Nickel	µg/L	16.0 [1]	6.2 [1]	--	3.0	3.1	2.8	2.5
Total Mercury [3]	lbs/month [4]	--	--	0.03 [1]	0.0004	0.0007	0.00007	0.00002
Hill Canyon Wastewater Treatment Plant (10D_HILL)								
Total Copper	µg/L	20.0 [1]	16.0 [1]	--	1.9	0.9	2.6	1.6
Total Nickel	µg/L	8.3 [1]	6.4 [1]	--	2.1	2.1	2.0	2.0
Total Mercury [3]	lbs/month [4]	--	--	0.23 [1]	0.02	0.02	0.02	0.02
Simi Valley Water Quality Control Plant (07D_SIMI)								
Total Copper	µg/L	31.0 [2]	30.5 [2]	--	5.2	5.2	3.8	3.2
Total Nickel	µg/L	960 [2]	169 [2]	--	1.9	1.7	1.2	1.7
Total Mercury [3]	lbs/month [4]	--	--	0.18 [1]	0.002	0.004	0.002	0.04

1. Interim wasteload allocation; effective until March 26, 2017 (R4-2006-012)
2. Final wasteload allocation; effective date was March 26, 2007 (R4-2006-012)
3. For total mercury concentrations reported as not detected (ND); one half of the method detection limit was used to calculate the monthly loads
4. During load calculation, the average monthly flow for each POTW was multiplied by the number of days in the month corresponding to when the sample was collected to get a total monthly flow. The total monthly flow was multiplied by the concentration of total mercury to yield the monthly total mercury load in pounds.

Results in green type are below the applicable allocations.

Table 26. Salts - POTWs

POTW & Constituent	Units	Monthly Avg Interim WLA	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
Camarillo Water Reclamation Plant (9AD_CAMA) [1]														
Boron	mg/L	N/A	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0. 6	0. 6	0.5
Chloride	mg/L	216	**217**	**222**	215	216	215	211	203	**218**	215	**226**	**222**	**225**
Sulfate	mg/L	283	**309**	**293**	263	**285**	266	175	155	265	250	256	256	267
Total Dissolved Solids	mg/L	1012	**1200**	**1116**	1010	**1196**	**1100**	**1026**	880	**1062**	**1126**	**1106**	**1188**	**1188**
Hill Canyon Wastewater Treatment Plant (10D_HILL)														
Boron	mg/L	N/A	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Chloride	mg/L	189	153	152	164	158	165	167	165	163	158	163	163	167
Sulfate	mg/L	N/A	164	165	189	165	185	181	145	189	137	135	135	133
Total Dissolved Solids	mg/L	N/A	690	699	749	713	732	734	666	745	662	669	679	671
Simi Valley Water Quality Control Plant (07D_SIMI)														
Boron	mg/L	N/A	0.5	0. 5	0.5	0. 6	0.5	0.5	0.5	0.5	0.5	05	0.5	0. 6
Chloride	mg/L	183	150	149	156	151	153	159	159	156	148	159	155	165
Sulfate	mg/L	298	223	226	246	225	225	233	198	249	212	217	223	240
Total Dissolved Solids	mg/L	955	750	732	769	750	786	763	734	814	684	771	800	825

N/A: "The 95th percentile concentration is below the Basin Plan objective so interim limits are not necessary."

Results in **bold red type** exceed applicable interim wasteload allocation.

Results in green type are below the applicable allocations.

1. Due to water conservation and alterations in the composition of the water supply available in the POTW service area, effluent salt concentrations have increased since the adoption of the TMDL. The increased salts concentrations are being addressed through a Time Schedule Order that provides for higher TDS and sulfate interim limits and a stay of interim limits for chloride (SWRCB WQO 2003-0019).

DATA COMPARISON DISCUSSION

OC Pesticides, Toxicity, Metals, Nutrients, and Salts

The datacomparisons shown in Table 17 through Table 26 above demonstrate that for the most part, the CCW is meeting the applicable interim or final wasteload allocations and load allocations currently in effect for the Nutrients, OC Pesticides, Toxicity, Salts, and Metals TMDLs. The following observations summarize the comparison:

1. No exceedances of the interim wasteload allocations or load allocations for OCs or PCBs were observed at any location in the watershed.
2. Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed in Mugu Lagoon, Revolon Slough, Beardsley Wash, Calleguas Creek, and Arroyo Simi. Most of the exceedances occurred during dry events, but there were 12 wet weather exceedances in Mugu Lagoon, Calleguas Creek, and Beardsley Wash. No exceedances of final nutrient wasteload allocations were measured at any POTW compliance site.
3. Two exceedances of the final MS4 wasteload allocations for chlorpyrifos were measured at receiving water sites during the dry weather; however, there were no exceedances of the interim load allocations. There were six exceedances of the final MS4 chlorpyrifos wasteload allocation during wet weather, but there were no instances where the chlorpyrifos concentration was above the interim load allocation. In addition, there was one instance where the diazinon final MS4 wasteload allocation was exceeded during wet weather and no instances where the interim load allocation was exceeded. These exceedances were considered in concert with MS4 outfall monitoring data and MS4 outfalls only exceeded the final allocations during 1 of these monitoring events. There were no exceedances of the final wasteload allocations for chlorpyrifos or diazinon at any POTW.
4. There were four exceedances of the interim load allocation and interim wasteload allocation for total selenium measured during the dry weather sampling events at the 04_WOOD site. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context. Additionally, there was one wet weather exceedance of the interim allocation for total nickel at the 04_WOOD site.
5. Although toxicity was observed at some locations in the watershed, toxicity events did not meet the TIE triggering requirements as detailed in the QAPP. As a result, the Stakeholders are in compliance with the toxicity wasteload allocations and load allocations per the requirements of the TMDL.
6. In general, receiving water sites were in compliance with interim load allocations and MS4 wasteload allocations established by the Salts TMDL; the only exception being exceedances in TDS, sulfate, and boron measured at 04_WOOD in the Revolon Slough watershed, and two chloride exceedances at 03_UNIV. POTWs are meeting interim salts wasteload allocations, with the exception of Camarillo Water Reclamation Plant (WRP), which experienced exceedances of chloride, sulfate, and TDS. The exceedances of interim salts wasteload allocations for the Camarillo WRP have resulted from increased influent salt concentrations due to water conservation and a shift in the composition of

the water supplied within the service area. Because the process for addressing salts is a watershed effort involving significant capital investments, the Camarillo WRP received an amended Time Schedule Order in December 2015 (R4-2011-0126-A03) to adjust the interim limits for TDS, sulfate and chloride (TSO limits: 1242 mg/L TDS, 359 mg/L sulfate, 351 mg/L chloride). As a result, the interim limits in the TMDL are not the currently applicable interim limits for the Camarillo WRP discharge.

Nutrients

Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed at sites in Mugu Lagoon, Calleguas Creek, Revolon Slough, Beardsley Wash, and Arroyo Simi. Nitrate-N exceedances are summarized in Table 27 below. The table focuses on Nitrate-N results since Nitrate-N + Nitrite-N exceedances were caused by high Nitrate-N values. Nitrite-N was below the 1 mg/L target at all sites for every event.

Table 27. Exceedances of Nitrate-N Numeric TMDL Target of 10 mg/L

Nitrogen TMDL Compliance Sites	Event 50 Dry Aug-15	Event 51 Dry Nov-15	Event 52 Wet Jan-16	Event 53 Wet Jan-16	Event 54 Dry Feb-16	Event 55 Dry May-16
01_RR_BR	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
02_PCH	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
03_UNIV	No	No	No	No	No	**Yes**
04_WOOD	**Yes**	**Yes**	No	No	**Yes**	**Yes**
05_CENTR	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
06_SOMIS	NS	No	--	--	--	--
07_HITCH	No	No	No	No	**Yes**	No[1]
9B_ADOLF	No	No	No	No	No	No

NR=not required, NS=no sample, dry
No signifies that monitoring results were below the Nitrate-N target during the monitoring event.
Yes signifies that monitoring results were above the Nitrate-N target during the monitoring event.
1. Nitrate-N result did not exceed 10 mg/L, however, Nitrate-N + Nitrite-N result did exceed 10 mg/L with a sum of 10.08 mg/L.

Nitrogen exceedances occurred primarily in areas of the watershed with agricultural inputs. Reaches downstream of POTW discharges are generally in compliance with the TMDL requirements and urban discharges were determined to be negligible during the TMDL analysis and therefore do not have TMDL allocations. The final nitrogen load allocations for agriculture became effective in July 2010. Under the 2016 Conditional Waiver (Order No. R4-2016-0143), agricultural dischargers have until October 14, 2025 to comply with the nitrogen load allocations. The Water Quality Management Plans developed by VCAILG for compliance with the Conditional Waiver will specify steps and milestones that work towards achieving these load allocations through the implementation of management practices.

Chlorpyrifos

Further examination of the chlorpyrifos exceedances at receiving water sites was needed to determine whether urban dischargers were contributing. The final wasteload allocations for urban dischargers are in effect and per the TMDL compliance is to be assessed in the receiving waters. Until March 2016, agricultural dischargers were required to meet interim load allocations, which allow higher concentrations of chlorpyrifos. It is only Event 55 when final allocations for both urban and agricultural dischargers were effective and no exceedances occurred.

Monitoring data at urban land use sites from each subwatershed for which an exceedance was observed in the receiving water was compared to the wasteload allocation to determine if MS4 discharges significantly contributed to the exceedance. If the urban land use data were below the wasteload allocation, the MS4 dischargers were considered to be meeting allocations. If the urban land use data were above the wasteload allocation, the MS4 could be contributing to the exceedance in the receiving water.

As shown in Table 28, there were eight exceedances of chlorpyrifos targets at the receiving water sites. In most cases, urban land use data for the same event were less than the final MS4 wasteload allocation for chlorpyrifos. However, in one case, the urban land use data for the same event exceeded the final wasteload allocation, indicating that urban discharge may be a contributor to the exceedance in the receiving water.

The interim wasteload allocation for diazinon was exceeded at one site during the first wet event. As there are no urban land use sites within this subwatershed, no further evaluation was done.

Table 28. Compliance and Land Use Sites Comparison to Determine MS4 Chlorpyrifos WLA Compliance

Sites Exceeding WLAs	Constituent	Event 50 Dry Aug-15	Event 51 Dry Nov-15	Event 52 Wet Jan-16	Event 53 Wet Jan-16	Event 54 Dry Feb-16	Event 55 Dry May-16
01_RR_BR	Chlorpyrifos			NA[1]			
03_UNIV	Chlorpyrifos			NA[1]	NA[1]	NA[1]	
04_WOOD	Chlorpyrifos			No	No		
06_SOMIS	Chlorpyrifos		NA[1]				
9B_ADOLF	Chlorpyrifos			Yes [2]			
03_UNIV	Diazinon			NA[1]			

No= none of the MS4 land use site for the subwatershed exceeded the MS4 wasteload allocation during the monitoring event.
Yes=the MS4 land use site for the subwatershed exceeded the MS4 wasteload allocation during the monitoring event.

1. There are no urban land use monitoring sites in these reaches.
2. The urban land use site exceeded the MS4 wasteload allocation.

Blank cells indicate that a wasteload allocation exceedance did not occur at the compliance monitoring site during a particular event.

Selenium

Selenium concentrations in Revolon Slough at 04_WOOD exceeded the urban dischargers interim wasteload allocation and the agricultural dischargers interim LA during all four dry weather monitoring events. A summary of monitoring results for total selenium at sites in the Revolon Slough subwatershed is shown in Table 29 below.

Table 29. Selenium Monitoring Data (ug/L) in the Revolon Slough Subwatershed

Site ID	Use	Interim WLA [1]	Interim LA [1]	Dry Weather Events 50 Aug-15	51 Nov-15	54 Feb-16	55 May-16
04_WOOD	RW	13	6	**31.2**	**16.3**	**16.5**	**23.6**
04D_WOOD	Ag		6	NS	0.3	5.2	3.6
05D_SANT_VCWPD	Ag		6	**56**	**58**	**47.2**	**49**
04D_VENTURA	Urban	13		1.0	0.4	0.4	0.4

1. Interim WLAs for stormwater permittees and interim LAs for agricultural dischargers are effective until March 2022 (R4-2006-012).
2. No wet weather exceedances were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes, the wet weather targets were included in this table.

RW – Receiving water compliance site; Ag – Agricultural; Urban – Urban

NS – Not sampled, dry

Results in **bold type** exceed applicable interim WLA or interim LA.

As noted in the table above, high levels of selenium were also observed at 05D_SANT_VCWPD, an agricultural use site in the upper reach of the subwatershed. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context.

Salts

A summary of monitoring results for total dissolved solids, sulfate, and boron at sites in the Revolon Slough subwatershed are shown in Table 30 through Table 32 below. Mean monthly dry weather TDS, sulfate, and boron concentrations in Revolon Slough at 04_WOOD exceeded their respective interim MS4 WLAs during all twelve months of the monitoring period. In addition, mean monthly dry weather boron, and sulfate concentrations in Revolon Slough at 04_WOOD exceeded their respective load allocations during seven and three months of the monitoring period, respectively.

Site 04D_WOOD represents agricultural discharge water quality in the Revolon Slough subwatershed. Samples were not taken at Site 04D_WOOD during the August 2015 sampling event due to no flow being present. Boron was the only salt constituent that exceeded its interim LAs at this site during the other quarterly dry weather events (in February 2016). Concentrations of salts at 04D_VENTURA, which is an urban land use site in the upper Revolon Slough watershed, were consistently below the interim MS4 WLAs for TDS, sulfate, and boron.

Table 30. Total Dissolved Solids Monitoring Data (mg/L) in Revolon Slough

Site ID	Use	Interim Limits		Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
		WLA	LA												
04_WOOD [1]	RW	1720	3995	**3537**	**3676**	**3587**	**2829**	**3359**	**3594**	**3733**	**3564**	**3538**	**3450**	**3389**	**3256**
04D_WOOD [2]	Ag		3995		NS			1070			3210			2410	
04D_VENTURA [2]	Urban	1720			1490			990			1450			870	

NS=no sample, dry
1. Data presented are monthly means
2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim wasteload allocation or interim load allocation.

Table 31. Sulfate Monitoring Data (mg/L) in Revolon Slough

Site ID	Use	Interim Limits		Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
		WLA	LA												
04_WOOD [1]	RW	1289	1962	**1872**	**1945**	**1899**	**1498**	**1778**	**1902**	**1976**	**1886**	**1872**	**1826**	**1794**	**1724**
04D_WOOD [2]	Ag		1962		NS			421			1883			1200	
04D_VENTURA [2]	Urban	1289			495.2			275.6			392.4			238.1	

NS=no sample, dry
1. Data presented are monthly means
2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim wasteload allocation or interim load allocation.

Table 32. Boron Monitoring Data (mg/L) in Revolon Slough

Site ID	Use	Interim Limits		Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
		WLA	LA												
04_WOOD [1]	RW	1.3	1.8	**1.84**	**1.91**	**1.87**	**1.47**	**1.75**	**1.87**	**1.94**	**1.85**	**1.84**	**1.79**	**1.76**	**1.69**
04D_WOOD [2]	Ag		1.8		NS			0.57			**1.83**			1.55	
04D_VENTURA [2]	Urban	1.3			0.92			0.35			0.56			0.35	

NS=no sample, dry
1. Data presented are monthly means
2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed the applicable interim wasteload allocation or interim load allocation

Revisions and Recommendations

The QAPP specifies that upon the completion of each CCWTMP annual report, revisions to standard procedures will be made, including: site relocation, ceasing monitoring efforts and/or deleting certain constituents from sample collection. An updated QAPP was submitted in December 2014 that incorporated the proposed revisions and recommendations included in the previous six CCWTMP annual reports. Additional modifications that reflect the most current lab methods and procedures for the field conditions were also part of the QAPP update process. Monitoring for the 2015-2016 monitoring year was per the revised QAPP.

The revised QAPP details the replacement of two urban land use sites in reach 7 to match sites used for the Ventura Countywide Stormwater Quality Management Program. This report displayed past data from the two original CCWTMP sites (07D_CTP and 07T_DC_H) alongside the new site locations (07D_MPK and 07D_CIM_BUS). Future reports will simply report on the current and past monitoring at the new sites.

In addition to the updates identified in the 2014 Revised QAPP, access to 06_SOMIS was revoked by the private landowner whom had previously given permission for monitoring. Due to this change, 06_SOMIS could only be visited during the first two monitoring events of the 2015/2016 monitoring year. In future years, monitoring will take place at a downstream site location still within Reach 6 and where access to the site is via County property. Details will be provided in the 9th annual monitoring report.

Appendix A:
Monitoring Event Summaries for Toxicity, OC Pesticides, Nutrients, Metals, and Salts

Calleguas Creek Watershed TMDL Monitoring Program
Post Event Summary
Event 50: Quarterly and Sediment Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro
Crew #1: Greg Cotten (KLI), Amy Howk (KLI)
Crew #2: Justin Martos (Fugro), David Thornhill (Fugro), Nicholas Simon (Fugro)

Sampling Dates: **Sediment sites (toxicity and chemistry):** August 4th and 5th, 2015

Receiving water and land use sites: August 5th and 6th, 2015

Sampling Type: Sediment, Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01T_ODD2_DCH	8-5-15	X		X	X	X	
02_PCH	8-5-15	X		X	X		
03_UNIV	8-5-15	X	X	X	X	X	
04_WOOD	8-5-15	X	X	X	X	X	
04D_VENTURA	8-5-15	X		X		X	X
05D_SANT_ VCWPD	8-5-15	X		X	X	X	X
05_CENTR	8-5-15	X			X		
06T_FC_BR	8-5-15	X			X	X	
07_HITCH	8-5-15	X	X		X	X	
07D_SIM_BUS	8-6-15	X				X	
9B_ADOLF	8-5-15	X	X		X	X	
9BD_ADOLF	8-5-15	X		X		X	X
10_GATE	8-5-15	X	X			X	
13_BELT	8-5-15	X	X			X	
13_SB_HILL	8-6-15	X				X	X
01_RR_BR (LWA sampled)	8-6-15	X		X	X	X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry.
04D_WOOD	Site was dry.
06_SOMIS	Site was dry but sediment samples were collected.
07D_HITCH_LEVEE	Site was dry.
9BD_GERRY	Site was dry.
07D_MPK	Site was dry.

SEDIMENT SAMPLED

Site ID	Date	Sediment Toxicity	Sediment Chemistry
02_PCH	8-4-15	X	X
03_UNIV	8-4-15	X	X
04_WOOD	8-4-15	X	X
06_SOMIS	8-5-15		X
07_HITCH	8-5-15		X
9A_HOWAR	8-4-15	X	X
9B_ADOLF	8-5-15		X

DEVIATIONS FROM QAPP

Site ID	Deviation
02_PCH	Flow was not measured due to tidal influence. Site was sampled near low tide to maximize watershed water.
04_WOOD	The conductivity at the site (4,020 uS/cm) was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.
07D_SIM_BUS	Intermediate container (Ziploc bag) used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Water quality field meters passed calibration targets.

06_SOMIS was scheduled to be sampled for both water and sediment. Because it was dry, no water was collected but sediment was collected. The sediment samples were collected only in the areas where recent flow patterns were visible in the sediment.

Photo facing upstream at 13_BELT was accidentally deleted.

Drawings of sediment sample locations are on the backside of the field book log sheets.

Prepared by:	Greg Cotten, KLI	Date:	08-25-15
Reviewed by:	Amy Howk, KLI	Date:	08-25-15
Approved by:	Michael Marson, LWA	Date:	09-02-15

Calleguas Creek Watershed TMDL Monitoring Program
Post Event Summary
Event 51: Quarterly Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro

Crew #1: Greg Cotten (KLI), Amy Howk (KLI)
Crew #2: Justin Martos (Fugro), Nick Simon (Fugro)
01_RR_BR: Michael Marson (LWA), Zach Helsley (LWA)

Sampling Dates: **Receiving water and land use sites:** November 4th and 5th, 2015

Sampling Type: Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	11/4/15	X		X	X	X	
04D_WOOD	11/5/15	X		X	X	X	X
04_WOOD	11/4/15	X	X	X	X	X	
04D_VENTURA	11/4/15	X		X		X	X
01T_ODD2_DCH	11/4/15	X		X	X	X	
02_PCH	11/4/15	X		X	X		
03_UNIV	11/4/15	X	X	X	X	X	
9B_ADOLF	11/4/15	X	X		X	X	
9BD_ADOLF	11/4/15	X		X		X	X
9BD_GERRY	11/4/15	X		X	X	X	X
05D_SANT_VCWPD	11/5/15	X		X	X	X	X
05_CENTR	11/5/15	X			X		
13_SB_HILL	11/5/15	X				X	X
10_GATE	11/4/15	X	X			X	
13_BELT	11/4/15	X	X			X	

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
06_SOMIS	11/4/15	X	X		X	X	
07D_HITCH_LEVEE	11/4/15	X			X	X	X
07_HITCH	11/4/15	X	X		X	X	
07D_SIM_BUS	11/5/15	X				X	X

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Site was dry
07D_MPK	Site was dry
06T_FC_BR	Site was dry

DEVIATIONS FROM QAPP

Site ID	Deviation
02_PCH	Flow was not measured due to tidal influence. Site was sampled near low tide to maximize watershed water.
04_WOOD	The conductivity at the site (3,690 uS/cm) was greater than the accepted range for the designated test species (*Ceriodaphnia dubia*). The QAPP requires the use of *Americamysis bahia*. However, *Hylella azteca* is identified by SWAMP as an appropriate water test species when conductivity is greater than 3,000 us/cm and is currently utilized by the Ventura County Irrigated Lands Group which conducts monitoring in the watershed. To maintain consistency with an existing watershed program, the toxicity testing lab (Pacific EcoRisk) utilized *Hylella azteca* in place of *Americamysis bahia*.
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
04D_WOOD	Intermediate container (Ziploc Bag) used to fill sample bottle #106 (organics) only.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.
9BD_GERRY	Intermediate container (Ziploc bag) used to fill sample bottles.
07D_SIM_BUS	Intermediate container (Ziploc Bag) used to fill sample bottle #163 (organics) only.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.

FOLLOW UP ACTIONS

None

ADDITIONAL COMMENTS

Meter 4547 was 12% above the calibration standard for dissolved oxygen in the post-calibration which was above the upper criteria of 10%. The sites samples with this meter were: SOMIS, HITCH, HITCH_LEVEE, SIM_BUS, ADOLF, BD_ADOLF, GERRY, GATE, BELT and SB_HILL.

Dissolved metals were field filtered immediately upon sampling.

The LWA team and the Fugro team met at the Los Posas' gate of Point Mugu. Their base access badges were not totally validated and so the LWA team conducted the sampling at RR_BR.

Prepared by:	Amy Howk, KLI	Date:	December 9, 2015
Reviewed by:	Greg Cotten, KLI	Date:	December 11, 2015
Approved by:	Michael Marson - LWA	Date:	January 22, 2016

Calleguas Creek Watershed TMDL Monitoring Program
Post Event Summary
Event 52: Wet Weather Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro
Crew #1: Greg Cotten (KLI), Kagen Holland (KLI)
Crew #2: Amy Howk (KLI), Spencer Johnson (KLI)
Crew #3: Justin Martos (Fugro), David Thornhill (Fugro)
Crew #4: Nick Simon (Fugro), Jeff Polis (Fugro)

Sampling Dates: **Receiving water and land use sites:** January 5th, 2016

Sampling Type: Wet weather water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	1-5-16	X		X	X	X	
02_PCH	1-5-16	X		X	X		
03_UNIV	1-5-16	X	X	X	X	X	X
9A_HOWAR	1-5-16	X					X
9B_ADOLF	1-5-16	X	X		X	X	
9BD_ADOLF	1-5-16	X		X		X	X
05D_SANT_VCWPD	1-5-16	X		X	X	X	X
05_CENTR	1-5-16	X			X		
04D_VENTURA	1-5-16	X		X		X	X
04D_WOOD	1-5-16	X		X	X	X	X
04_WOOD	1-5-16	X	X	X	X	X	X
01T_ODD2_DCH	1-5-16	X		X	X	X	
06T_FC_BR	1-5-16	X			X	X	X
07_HITCH	1-5-16	X	X		X	X	
07D_HITCH_LEVEE	1-5-16	X			X	X	X
07_TIERRA	1-5-16	X					X
07D_MPK	1-5-16	X				X	X

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
07D_SIM_BUS	1-5-16	X				X	X
13_SB_HILL	1-5-16	X				X	X
9B_BARON	1-5-16	X					X
9BD_GERRY	1-5-16	X		X	X	X	X
10_GATE	1-5-16	X	X			X	
13_BELT	1-5-16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
02D_BROOM	Dry. Stopped flowing before samples could be taken.
06_SOMIS	Site access closed.

DEVIATIONS FROM QAPP

Site ID	Deviation
02_PCH	Flow was roughly estimated due to tidal influence. Site was sampled near low tide (0.4') to minimize ocean influence.
9BD_GERRY	Intermediate container bottle 183 was used for all but metals collection.
07D_MPK	Sample was collected at site ladder upstream of small concrete foot bridge. Upstream of outfall under that bridge.

FOLLOW UP ACTIONS

07D_MPK will be collected downstream of footbridge but upstream of confluence for all future events.

ADDITIONAL COMMENTS

A week to 24 hours prior to the event the forecast was for nearly a 1.0” of rain. The storm increased in speed so only about 0.6” fell.

All sites were sampled but 02_BROOM because the flow stopped before it could be sampled and access to SOMIS was closed. This event could be considered one of our lower flow wet events. All sites were definitely elevated and clearly exhibiting runoff conditions but because of the nature of the watershed size and diverse micro climates this event almost didn’t happen. Much less rain would have started to have more dry sites or sites that were nearly at base flow by the time they were sampled. 0.75 inches continues to be the ideal minimum for all samples to be grabbed on a rising or peak hydrograph.

The only field meter issue was with Team 1’s Dissolved Oxygen probe failed post calibration. It’s thought that the membrane may have been damaged during sampling. Flow was able to be measured at several of the sites. The sites where the flow was too dangerous to enter, flow was estimated.

Sites where turbidity was measured above 1000 NTU’s, turbidity was added to the analyte list on the COC for lab analysis.

Prepared by:	Greg Cotten, KLI	Date:	Jan 21, 2016
Reviewed by:	Amy Howk, KLI	Date:	Jan 26, 2016
Approved by:	Michael Marson - LWA	Date:	April 11, 2016

Calleguas Creek Watershed TMDL Monitoring Program
Post Event Summary
Event 53: Wet Weather Sampling

Sampling Crews: **Crew #1:** Greg Cotten (KLI), Brian Homberger (KLI)
Crew #2: Amy Howk (KLI), Aidas Worthington (KLI)
Crew #3: Nick Simon (Fugro), Dustin Snyder (Fugro)
Crew #4: Justin Martos (Fugro), David Thornhill (Fugro)

Sampling Dates: **Receiving water and land use sites:** January 31st, 2016

Sampling Type: Wet weather water chemistry, toxicity, and salts

SITES SAMPLED

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	1-31-16	X		X	X	X	
02_PCH	1-31-16	X		X	X		
02D_BROOM	1-31-16	X		X	X	X	
03_UNIV	1-31-16	X	X	X	X	X	
9B_ADOLF	1-31-16	X	X		X	X	
9BD_ADOLF	1-31-16	X		X		X	X
05D_SANT_VCWPD	1-31-16	X		X	X	X	X
05_CENTR	1-31-16	X			X		
04D_VENTURA	1-31-16	X		X		X	X
04D_WOOD	1-31-16	X		X	X	X	X
04_WOOD	1-31-16	X	X	X	X	X	
01T_ODD2_DCH	1-31-16	X		X	X	X	
06T_FC_BR	1-31-16	X			X	X	X
07_HITCH	1-31-16	X	X		X	X	
07D_HITCH_LEVEE	1-31-16	X			X	X	X
07D_MPK	1-31-16	X				X	X
07D_SIM_BUS	1-31-16	X				X	X

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
13_SB_HILL	1-31-16	X				X	X
9BD_GERRY	1-31-16	X		X	X	X	X
10_GATE	1-31-16	X	X			X	
13_BELT	1-31-16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
06_SOMIS	No site access. Not sampled.

DEVIATIONS FROM QAPP

Site ID	Deviation
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill pesticides only.
04D_VENTURA	Photos were not taken
13_SB_HILL	Photos accidentally deleted
07D_SIM_BUS	Photos accidentally deleted

ADDITIONAL COMMENTS

Field meter calibration notes:

Team 1 (13_SB_HILL, 07D_SIM_BUS, 07D_MPK, 07_HITCH, 07D_HITCH_LEVEE_2 and 06T_FC_BR) field meter initial calibration was valid and passed post calibration except for Dissolved Oxygen.

Team 2 (9B_ADOLF, 9BD_ADOLF, 9BD_GERRY, 10_GATE and 13_BELT) field meter initial calibration was valid except for tubidity and passed all others in post calibration. Turbidity was collected as grab samples and analysed with Team 1 meter within 7 hours of collection.

Team 3 (05D_SANT_VCWPD, 05_CENTR, 04D_VENTURA, 04_WOOD and 04D_WOOD) field meter initial calibration was valid but failed Dissolved oxygen and turbidity post calibration.

Team 4 (03_UNIV, 02D_BROOM, 01T_ODD2_DCH, 02_PCH and 01_RR) field meter initial calibration was valid except for tubidity and passed all others in post calibration. Turbidity was collected as grab samples and analysed with Team 1 meter within 7.5 hours of collection. 01T_ODD2_DCH turbidity grab was not taken.

Post event conductivity standard was contaminated and meters were reanalyzed with new standard back at lab. All meters passed conductivity post sampling calibration check.

Meter exceedences:

Sites where turbidity exceeded 1000 NTU (field meter maximum) Turbidity was added to the site COC for laboratory analysis. These sites were: 06T_FC_BR, 05D_SANT_VCWPD, 05_CENTR and 04_WOOD.

Flow:

Due to dangerous flow conditions, flow was estimated at all sites except 07D_MPK, 07_HITCH, 07D_HITCH_LEVEE, 06T_FC_BR, 9BD_ADOLF, 9BD_GERRY, 04D_VENTURA, 01T_ODD2_DCH and 04D_WOOD where flow was measured using preferred methods.

Metals Sampling:

To decrease the sediment load on the filters, field crews used a 1L amber glass jar that was cleaned for metals analysis to allow the stormwater to settle prior to pouring it into the filter. This was done at: 9BD_ADOLF, 9BD_GERRY and 05D_SANT_VCWPD.

FOLLOW UP ACTIONS

None

Prepared by:	Greg Cotten, KLI	Date:	March 04, 2016
Reviewed by:	Amy Howk, KLI	Date:	March 21, 2016
Approved by:	Michael Marson, LWA	Date:	April 11, 2016

Calleguas Creek Watershed TMDL Monitoring Program
Post Event Summary
Event 54: Quarterly Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro

Crew #1: Greg Cotten (KLI), Aidas Worthington (KLI)
Crew #2: David Thornhill (Fugro), Nick Simon (Fugro)

Sampling Dates: **Receiving water and land use sites:** February 24th and 25th, 2016

Sampling Type: Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	2/24/16	X		X	X	X	
02_PCH	2/24/16	X		X	X		
02D_BROOM	2/24/16	X		X	X	X	
03_UNIV	2/24/16	X	X	X	X	X	
9B_ADOLF	2/24/16	X	X		X	X	
9BD_ADOLF	2/24/16	X		X		X	X
05D_SANT_VCWPD	2/24/16	X		X	X	X	X
05_CENTR	2/24/16	X			X		
04D_VENTURA	2/24/16	X		X		X	X
04D_WOOD	2/24/16	X		X	X	X	X
04_WOOD	2/24/16	X	X	X	X	X	
01T_ODD2_DCH	2/24/16	X		X	X	X	
07_HITCH	2/24/16	X	X		X	X	
07D_SIM_BUS	2/25/16	X				X	X
13_SB_HILL	2/25/16	X				X	X
9BD_GERRY	2/24/16	X		X	X	X	X
10_GATE	2/24/16	X	X			X	

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
13_BELT	2/24/16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
06T_FC_BR	Site was dry
07D_HITCH_LEVEE_2	Site was dry
07D_MPK	Site was dry
06_SOMIS	No access at this time

DEVIATIONS FROM QAPP

Site ID	Deviation
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc Bag) used to fill sample bottle #126, 122, 117, and 116
9BD_GERRY	Intermediate container (Ziploc bag) used to fill sample bottles. Construction on Bridge - sampled upstream.
01_RR_BR	Photos not taken

ADDITIONAL COMMENTS

Both Quantas passed post-calibration comfortably giving high confidence in their readings throughout the sampling.

Dissolved metals were field filtered immediately upon sampling.

FOLLOW UP ACTIONS

None

Prepared by:	Aidas Worthington, KLI	Date:	March 8, 2016
Reviewed by:	Greg Cotten, KLI	Date:	March 22, 2016
Approved by:	Michael Marson, LWA	Date:	April 12, 2016

Calleguas Creek Watershed TMDL Monitoring Program
Post Event Summary
Event 55: Quarterly Sampling

Sampling Crews: Kinnetic Laboratories, Inc. (KLI), Fugro

Crew #1: Greg Cotten (KLI), Aidas Worthington (KLI)
Crew #2: Justin Martos (Fugro), Nick Simon (Fugro)

Sampling Dates: **Receiving water and land use sites:** May 3rd, 2016

Sampling Type: Dry weather sampling: Water Chemistry, Toxicity, and Salts

SITES SAMPLED

Site ID		Constituents					
	Sample Date	General Parameters	Toxicity	Metals	Nutrients	PCBs, OP, OC, and Pyrethroid Pesticides	Salts
01_RR_BR	5/3/16	X		X	X	X	
02_PCH	5/3/16	X		X	X		
02D_BROOM	5/3/16	X		X	X	X	
03_UNIV	5/3/16	X	X	X	X	X	
9B_ADOLF	5/3/16	X	X		X	X	
9BD_ADOLF	5/3/16	X		X		X	X
05D_SANT_VCWPD	5/3/16	X		X	X	X	X
05_CENTR	5/3/16	X			X		
04D_VENTURA	5/3/16	X		X		X	X
04D_WOOD	5/3/16	X		X	X	X	X
04_WOOD	5/3/16	X	X	X	X	X	
01T_ODD2_DCH	5/3/16	X		X	X	X	
07_HITCH	5/3/16	X	X		X	X	
07D_SIM_BUS	5/3/16	X				X	X
13_SB_HILL	5/3/16	X				X	X
10_GATE	5/3/16	X	X			X	
13_BELT	5/3/16	X	X			X	

SITES NOT SAMPLED

Site ID	Reason for Omission
06T_FC_BR	Site was dry
07D_HITCH_LEVEE_2	Site was dry
07D_MPK	Site was dry
9BD_GERRY	Site was dry
06_SOMIS	Site not accessible

DEVIATIONS FROM QAPP

Site ID	Deviation
9BD_ADOLF	Intermediate container (Ziploc bag) used to fill sample bottles.
04D_WOOD	Intermediate container (Ziploc bag) used to fill sample bottles.
04D_VENTURA	Intermediate container (Ziploc bag) used to fill sample bottles.
05D_SANT_VCWPD	Intermediate container (Ziploc bag) used to fill sample bottles.

ADDITIONAL COMMENTS

Both water quality field meters passed post-calibration.

Dissolved metals were field filtered immediately upon sampling.

03_UNIV mercury blank bottle had some small dust like material in bottle once opened.

FOLLOW UP ACTIONS

None

Prepared by:	Aidas Worthington, KLI	Date:	May 13, 2016
Reviewed by:	Greg Cotten, KLI	Date:	May 17, 2016
Approved by:	Michael Marson, LWA	Date:	May 23, 2016

Appendix B:
Calibration Event Summary for Salts TMDL

The following section provides a summary of the monitoring events not covered by the quarterly or wet weather monitoring events completed during the eighth year of monitoring. The continuous sensor sites (03_UNIV, 04_WOOD, 9A_HOWAR, 9B_BARON, and 07_TIERRA) were visited monthly for calibration checks and flow measurements.

SUMMARY OF MONTHLY EVENTS

Monthly sampling events included measuring electrical conductivity (EC), temperature, and chloride (no grab samples were required during these visits). EC and temperature were measured using a Hach SensION5 meter and chloride was measured with Hach Quantab titration strips. The following table provides the date and constituents measured for each salt sensor monthly monitoring event.

Table 1. Monthly Salt Sensor Site Visits

Month	Site ID	Date Visited	EC	Chloride	Flow
August 2015	04_WOOD	08/04/2015	X	X	X
	03_UNIV	08/04/2015	X	X	X
	07_TIERRA	08/04/2015	X	X	X
	9A_HOWAR	08/04/2015	X	X	X
	9B_BARON	08/04/2015	X	X	X
September 2015	04_WOOD	09/01/2015	X	X	X
	03_UNIV	09/01/2015	X	X	X
	07_TIERRA	09/01/2015	X	X	X
	9A_HOWAR	09/01/2015	X	X	X
	9B_BARON	09/01/2015	X	X	X
	07_TIERRA	09/18/2015	X	X	X
October 2015	04_WOOD	10/07/2015	X	X	X
	03_UNIV	10/07/2015	X	X	X
	07_TIERRA	10/07/2015	X	X	X
	9A_HOWAR	10/07/2015	X	X	X
	9B_BARON	10/07/2015	X	X	X
November 2015	04_WOOD	11/04/2015	X	X	X
	03_UNIV	11/04/2015	X	X	X
	07_TIERRA	11/04/2015	X	X	X
	9A_HOWAR	11/04/2015	X	X	X
	9B_BARON	11/04/2015	X	X	X
	04_WOOD	11/23/2015	X	X	X
December 2015	04_WOOD	12/16/2015	X	X	X
	03_UNIV	12/16/2015	X	X	X
	07_TIERRA	12/16/2015	X	X	X
	9A_HOWAR	12/16/2015	X	X	X
	9B_BARON	12/16/2015	X	X	X
January 2016 - storm	04_WOOD	01/05/2016	X		X
	03_UNIV	01/05/2016	X		X
	07_TIERRA	01/05/2016	X		X
	9A_HOWAR	01/05/2016	X		X
	9B_BARON	01/05/2016	X		X
January 2016	04_WOOD	01/14/2016	X	X	X
	03_UNIV	01/14/2016	X	X	X
	07_TIERRA	01/14/2016	X	X	X
	9A_HOWAR	01/14/2016	X	X	X
	9B_BARON	01/14/2016	X	X	X

Month	Site ID	Date Visited	EC	Chloride	Flow
February 2016	04_WOOD	02/03/2016	X	X	X
	03_UNIV	02/03/2016	X	X	X
	07_TIERRA	02/03/2016	X	X	X
	9A_HOWAR	02/03/2016	X	X	X
	9B_BARON	02/03/2016	X	X	X
March 2016	04_WOOD	03/17/2016	X	X	X
	03_UNIV	03/17/2016	X	X	X
	07_TIERRA	03/17/2016	X	X	X
	9A_HOWAR	03/17/2016	X	X	X
	9B_BARON	03/17/2016	X	X	X
April 2016	04_WOOD	04/07/2016	X	X	X
	03_UNIV	04/07/2016	X	X	X
	07_TIERRA	04/07/2016	X	X	X
	9A_HOWAR	04/07/2016	X	X	X
	9B_BARON	04/07/2016	X	X	X
May 2016	04_WOOD	05/03/2016	X	X	X
	03_UNIV	05/03/2016	X	X	X
	07_TIERRA	05/03/2016	X	X	X
	9A_HOWAR	05/03/2016	X	X	X
	9B_BARON	05/03/2016	X	X	X
June 2016	04_WOOD	06/14/2016	X	X	X
	03_UNIV	06/14/2016	X	X	X
	07_TIERRA	06/14/2016	X	X	X
	9A_HOWAR	06/14/2016	X	X	X
	9B_BARON	06/14/2016	X	X	X
	04_WOOD	06/30/2016	X	X	X
	03_UNIV	06/30/2016	X	X	X
	07_TIERRA	06/30/2016	X	X	X
	9A_HOWAR	06/30/2016	X	X	X
	9B_BARON	06/30/2016	X	X	X
July 2016	04_WOOD	07/11/2016	X	X	X
	04_WOOD	07/22/2016	X	X	X
	03_UNIV	07/22/2016	X	X	X
	07_TIERRA	07/22/2016	X	X	X
	9A_HOWAR	07/22/2016	X	X	X
	9B_BARON	07/22/2016	X	X	X

Appendix C. Rating Curves and EC/Salt Relationships for Salts TMDL Compliance Sites for the July 2015-June 2016 Monitoring Year

RATING CURVES

Continuous water level time series data (5-min intervals) were converted to time series of flow estimates (cfs) using the USGS shift-adjusted rating curve method. The method establishes a base rating for a given date range. Over the date range that shares a base rating, this rating is then shifted, as necessary, for subsets of the data to account for small changes in the geometry of natural channels often caused by deposition, scouring, and vegetation. Rating curves for all sites took the form Q = c* (Lvl + a + S)b where,

Q = discharge (cfs)

Lvl = water level or "stage", referenced to depth sensor elevation (cm)

c = scaling coefficient

a = coefficient accounting for the vertical difference between depth sensor elevation (stage = 0) and stage at zero discharge (cm)

b = coefficient accounting for channel shape, natural channels fall between endpoints b=1.5 (square channel), and b=2.5 (triangular channel).

S = stage shift, typically varies over time for natural channels (cm).

Monthly manual measurements of discharge are performed at all sites and are used to establish base ratings and to determine the required "shifts" ("S" in the equation above) over time for a monitoring year. Base rating curve equations used for the July 2015-June 2016 monitoring year are provided in Table 1.

Table 1. Rating Curves for Salts TMDL Compliance Sites for Monitoring Year July 2015-June 2016

Site	Rating Curve
03_UNIV	$Q = 0.29*(Lvl – 29 + S)^{2.0}$
04_WOOD	$Q = 0.013*(Lvl - 7.0 + S)^{1.8}$
07_TIERRA	$Q = 0.0154*(Lvl - 20 + S)^{2.0}$
9A_HOWAR	$Q = 0.010*(Lvl – 4.0 + S)^{2.2}$
9B_BARON	$Q = 0.044*(Lvl + 0 + S)^{1.65}$

EC/SALT RELATIONSHIPS

Site-specific, linear relationships between specific conductivity (EC) and salt constituents were used to convert continuous EC sensor data to estimate salt concentrations. Surrogate relationships were derived from field data for EC and salts (grab samples for TDS, sulfate, chloride, or boron from quarterly-dry and up to two wet events per year) using linear regression, in the following form:

[Ion] = A*EC + B,   where,

[Ion] = concentration of TDS, sulfate, chloride, or boron (mg/L)

A = slope

EC = specific conductivity (μS/cm)

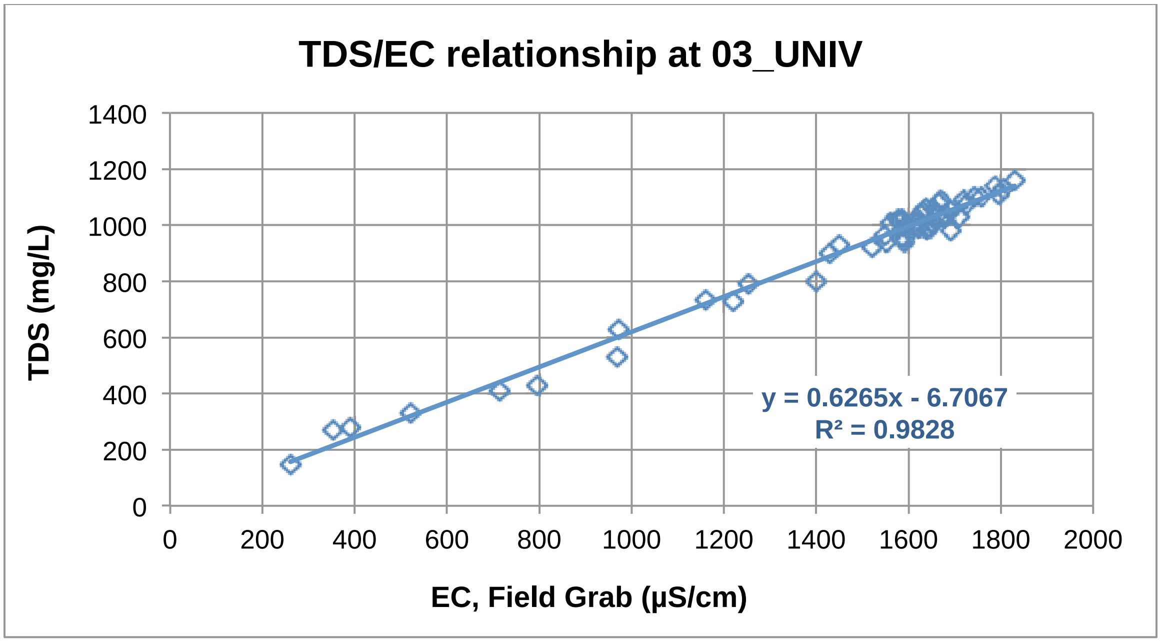
B = y intercept

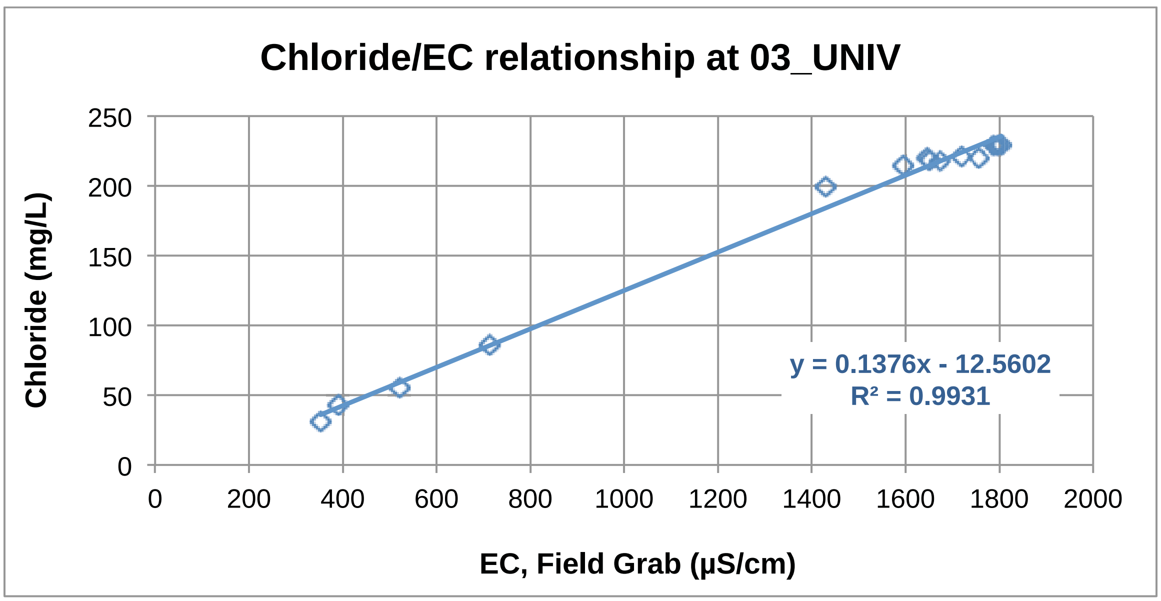
At the conclusion of the 2015/2016 monitoring year, surrogate relationships were updated using linear regression. As is done each year, ANCOVA analysis was performed to detect evidence of statistically significant temporal shifts in surrogate relationships that might signal a change in watershed conditions and justify adjustments in the date ranges of the field data used to construct the relationships. For example, analysis conducted after the 2014/2015 monitoring year showed that changes in date ranges were appropriate for some surrogate relationships related to a shift in the blend of imported water entering the watershed (i.e., a shift to a combination of San Joaquin/Sacramento Delta and Colorado River water imported by Calleguas Municipal Water District in February 2014).

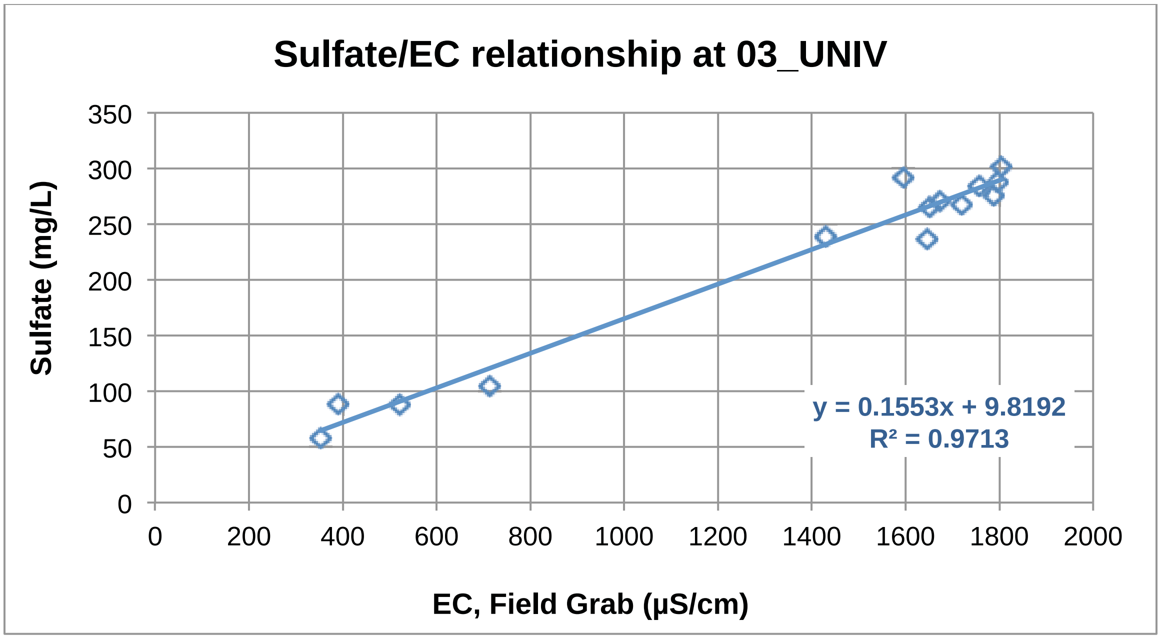
Minor changes in the 2015/2016 relationship parameters resulted from the current year's update, but no changes were made in the start dates of the time frames for the underlying field data for the relationships. However, analysis of the 2011-2016 datasets for sulfate at 07_TIERRA and 9B_BARON revealed that it was appropriate to begin to apply different surrogate relationships for EC-*vs*-sulfate to higher conductivity (drier weather) and lower conductivity (wetter weather) conditions. Different regression equations were derived for high- and low-EC conditions for both sites, and site-specific EC cutoffs were selected without difficulty to separate the 5-min EC sensor records. Surrogate relationships used to process the 2015/2016 EC sensor data are reported in **Table 2** and illustrated in figures following the table.

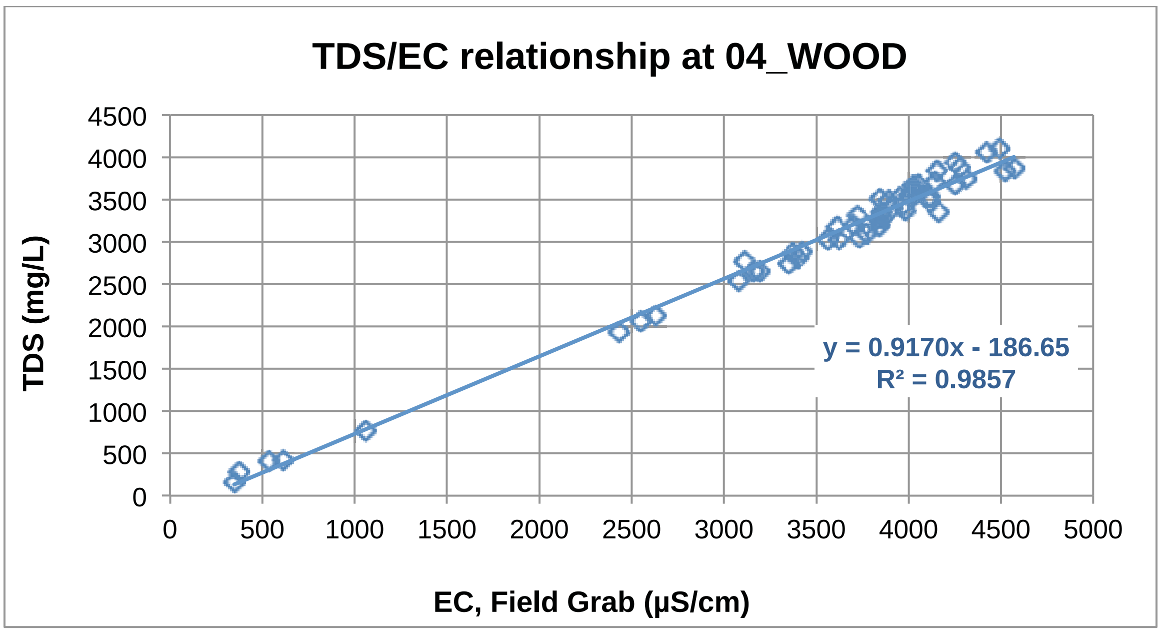
Table 2. Surrogate Relationships Used to Convert EC to Salt Concentrations for the 2015/2016 Monitoring Year

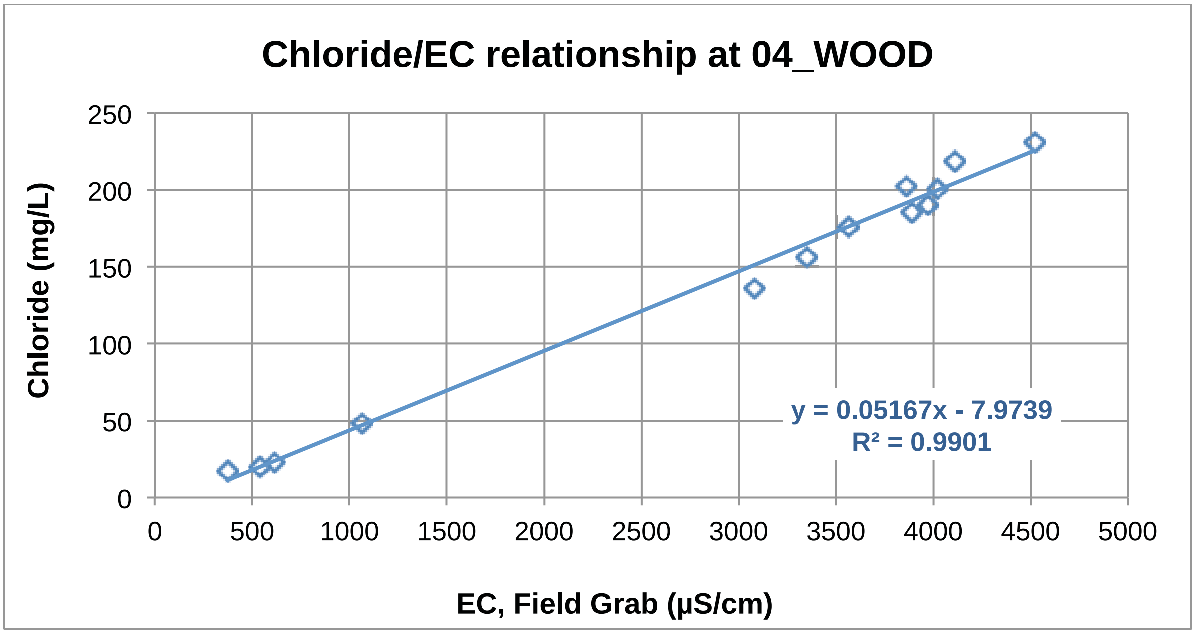
Site	Proxy Relationship	r^2	Underlying Field Data	
			Sample Size	Date Range
03_UNIV	TDS = (0.6262 * EC) - 6.7067	0.9828	54	1/31/2011 – 5/3/2016
	Cl = (0.1376 * EC) - 12.5602	0.9931	14	2/28/2014 - 5/3/2016
	SO4 = (0.1553 * EC) + 9.8192	0.9713	14	2/28/2014 - 5/3/2016
04_WOOD	TDS = (0.9170 * EC) - 186.65	0.9857	53	1/31/2011 – 5/3/2016
	Cl = (0.05167 * EC) - 7.9739	0.9901	13	2/28/2014 - 5/3/2016
	SO4 = (0.4846 * EC) - 95.8997	0.9939	13	2/28/2014 - 5/3/2016
	B = (0.0005 * EC) - 0.1061	0.8863	53	1/31/2011 – 5/3/2016
07_TIERRA	TDS = (0.7099 * EC) - 62.6624	0.9839	42	1/31/2011 – 5/3/2016
	Cl = (0.1078 * EC) - 11.0985	0.9932	13	2/28/2014 - 5/3/2016
	High Conductivity (>1400 µS/cm): SO4 = (0.4321 * EC) - 295.29	0.8198	34	1/31/2011 – 5/3/2016
	Low Conductivity (≤1400 µS/cm): SO4 = (0.2544 * EC) - 21.312	0.9467	8	1/31/2011 – 5/3/2016
	B = (0.0004 * EC) - 0.0645	0.9587	21	8/22/12 - 5/3/2016
9A_HOWAR	TDS = (0.6113 * EC) + 0.0106	0.9859	43	1/31/2011 – 5/3/2016
	Cl = (0.1371 * EC) - 10.2667	0.9893	13	2/28/2014 - 5/3/2016
	SO4 = (0.1612 * EC) -1.4692	0.9732	13	2/28/2014 - 5/3/2016
9B_BARON	TDS = (0.6006 * EC) - 4.8982	0.9731	43	1/31/2011 – 5/3/2016
	Cl = (0.1458 * EC) - 13.9923	0.9791	21	8/28/2012-5/3/2016
	High Conductivity (>1000 µS/cm): SO4 = (0.2967 * EC) -185.5365	0.8241	33	3/20/2011-5/3/2016
	Low Conductivity (≤1000 µS/cm): SO4 = (0.1367 * EC) - 2.7266	0.9727	6	3/20/2011-5/3/2016

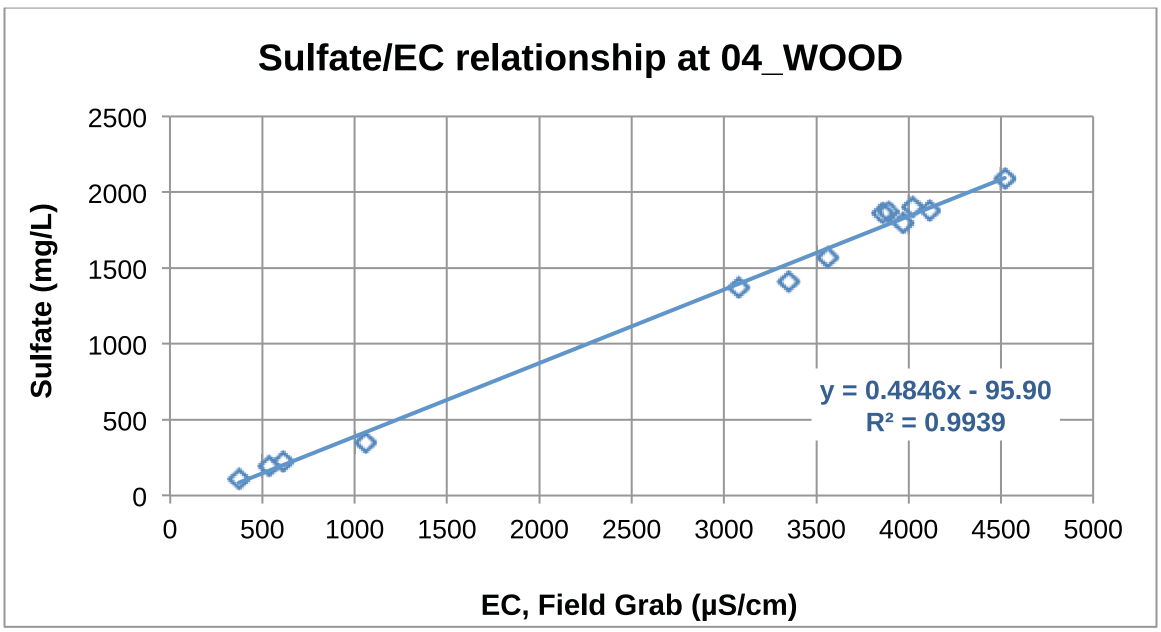

TDS/EC relationship at 03_UNIV
1400
1200
1000
800
600
400
200
0
TDS (mg/L)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)
y = 0.6265x - 6.7067
R² = 0.9828

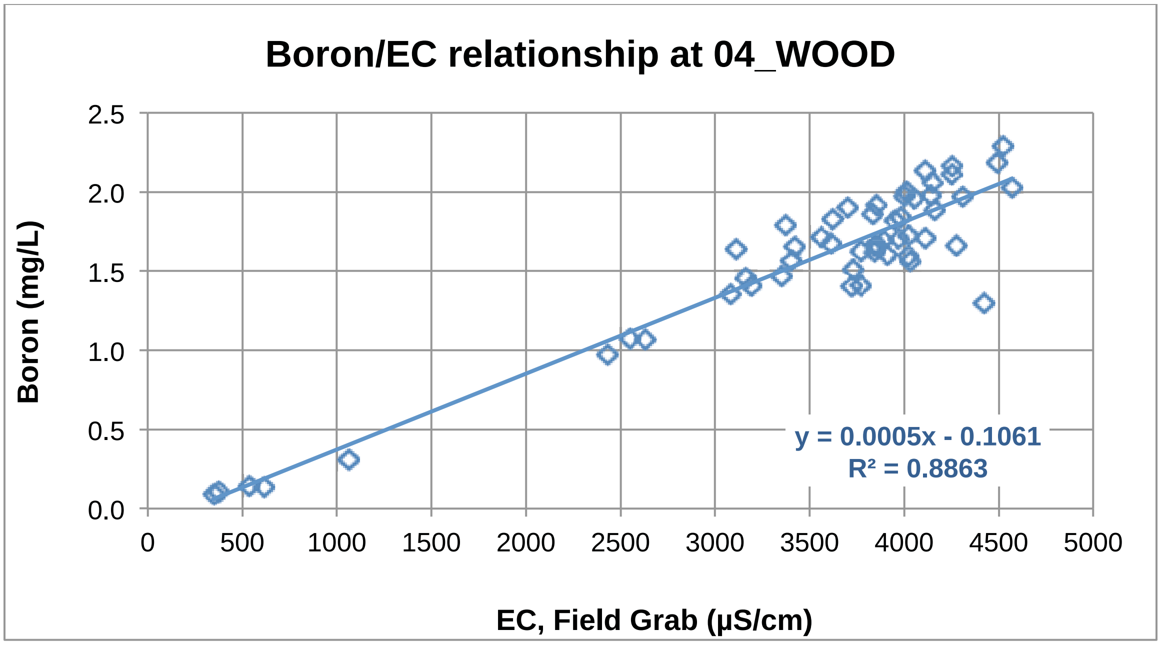

Chloride/EC relationship at 03_UNIV
250
200
150
100
50
0
Chloride (mg/L)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)
y = 0.1376x - 12.5602
R² = 0.9931

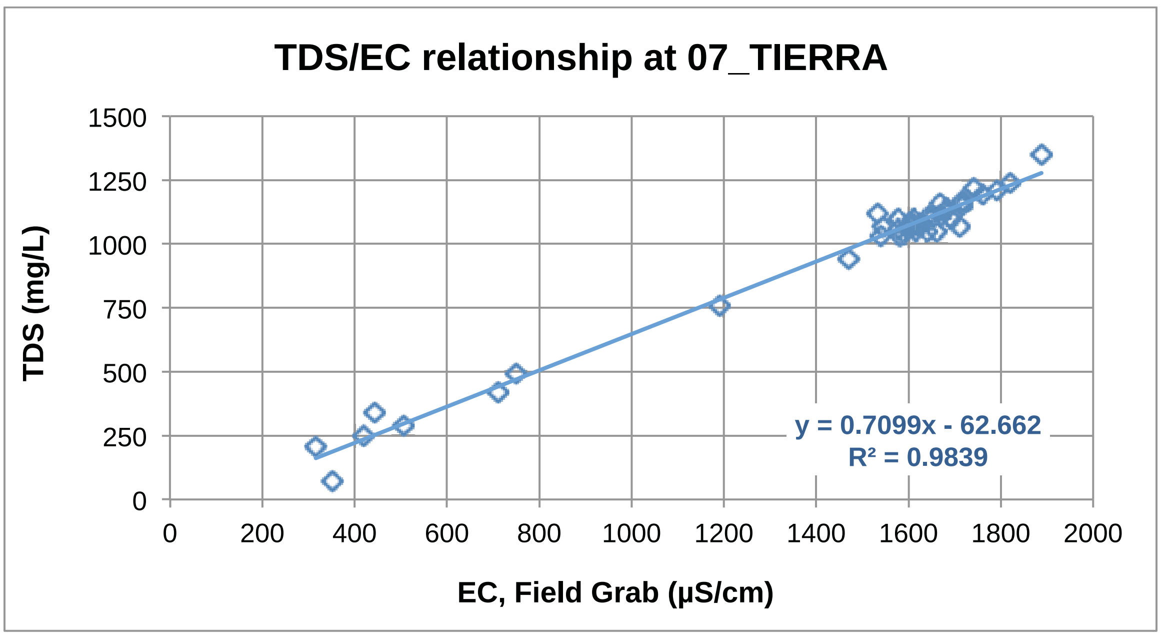

Sulfate/EC relationship at 03_UNIV
Sulfate (mg/L)
350
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)
y = 0.1553x + 9.8192
R² = 0.9713

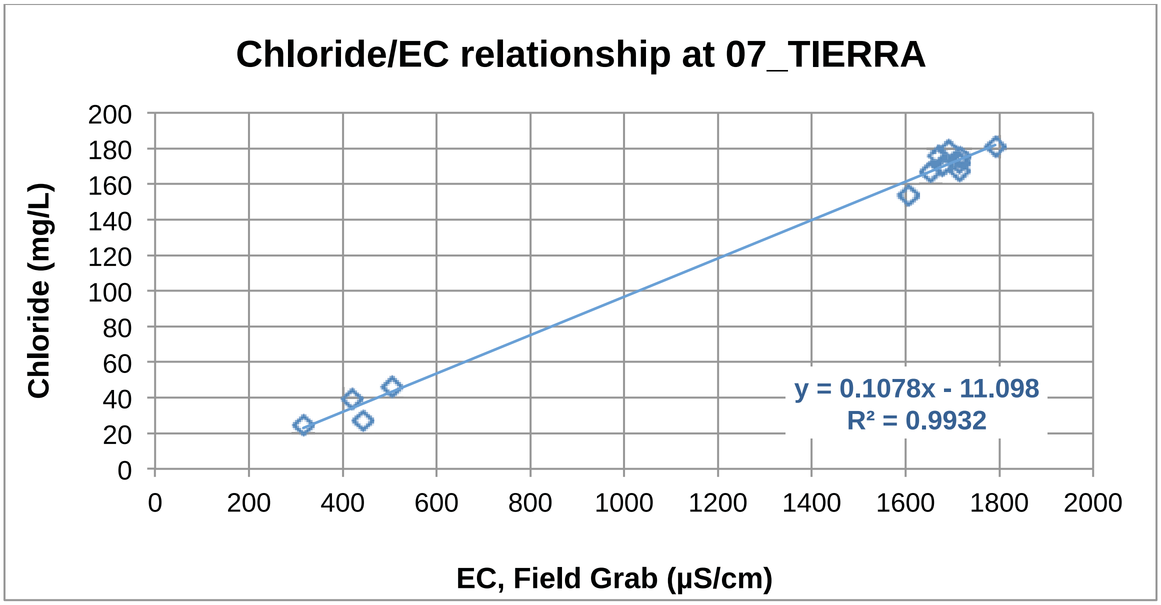

TDS/EC relationship at 04_WOOD
TDS (mg/L)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
EC, Field Grab (µS/cm)
y = 0.9170x - 186.65
R² = 0.9857

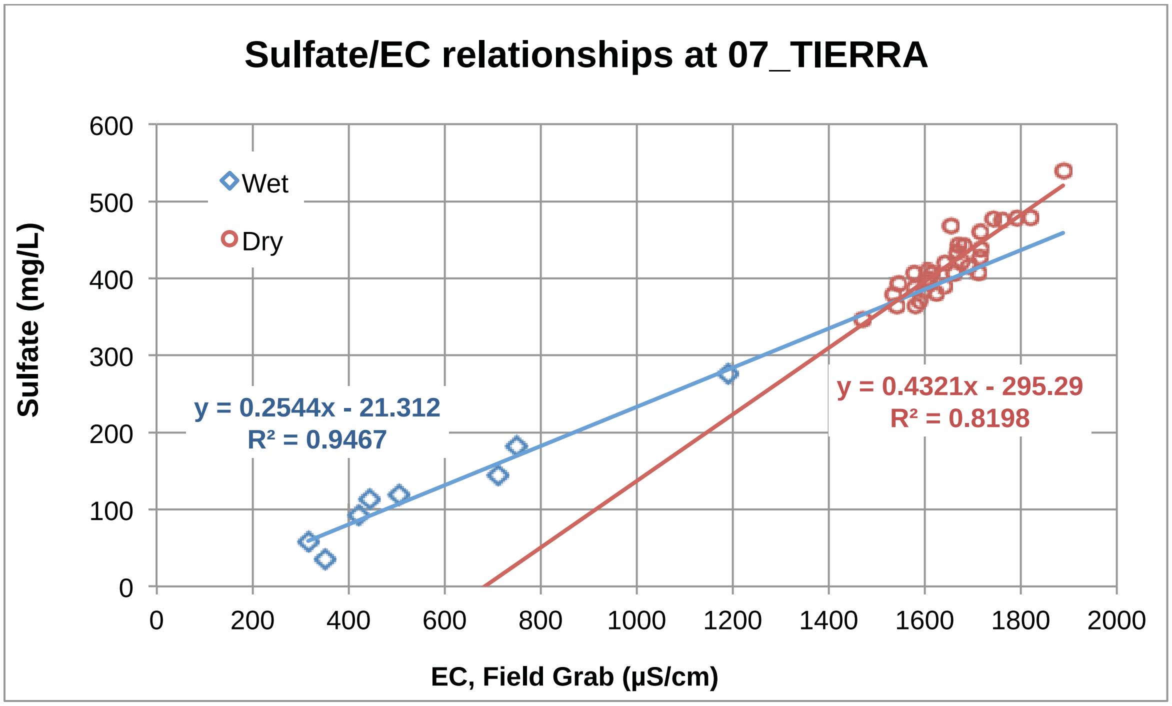

Chloride/EC relationship at 04_WOOD
Chloride (mg/L)
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
EC, Field Grab (µS/cm)
y = 0.05167x - 7.9739
R² = 0.9901

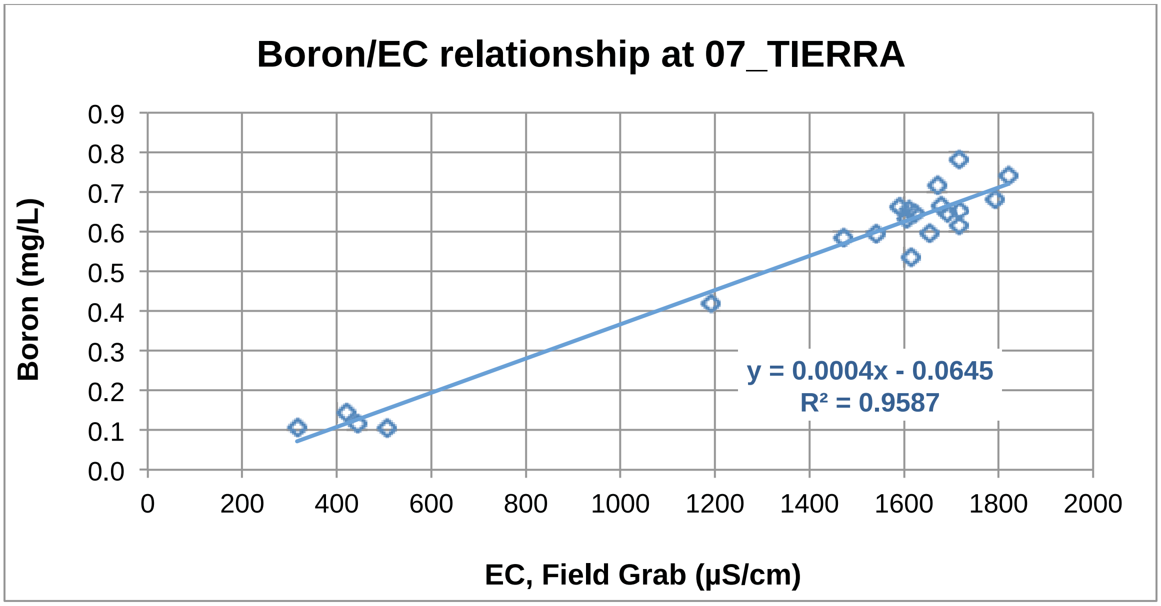

Sulfate/EC relationship at 04_WOOD
Sulfate (mg/L)
2500
2000
1500
1000
500
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
EC, Field Grab (µS/cm)
y = 0.4846x - 95.90
R² = 0.9939

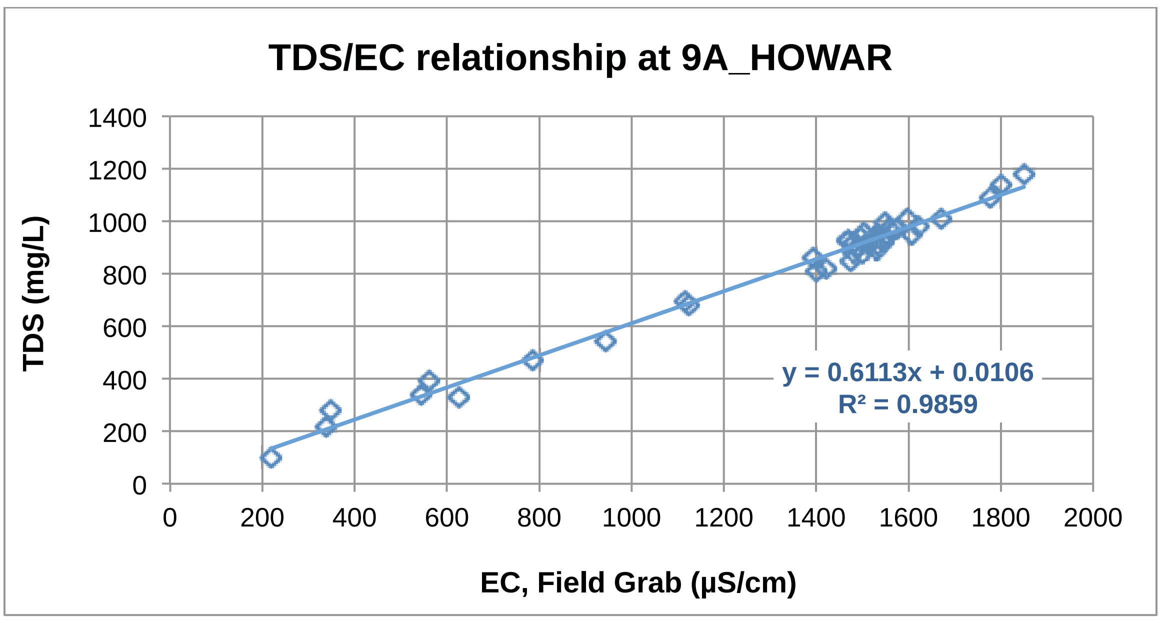

Boron/EC relationship at 04_WOOD
Boron (mg/L)
2.5
2.0
1.5
1.0
0.5
0.0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
y = 0.0005x - 0.1061
R² = 0.8863
EC, Field Grab (µS/cm)

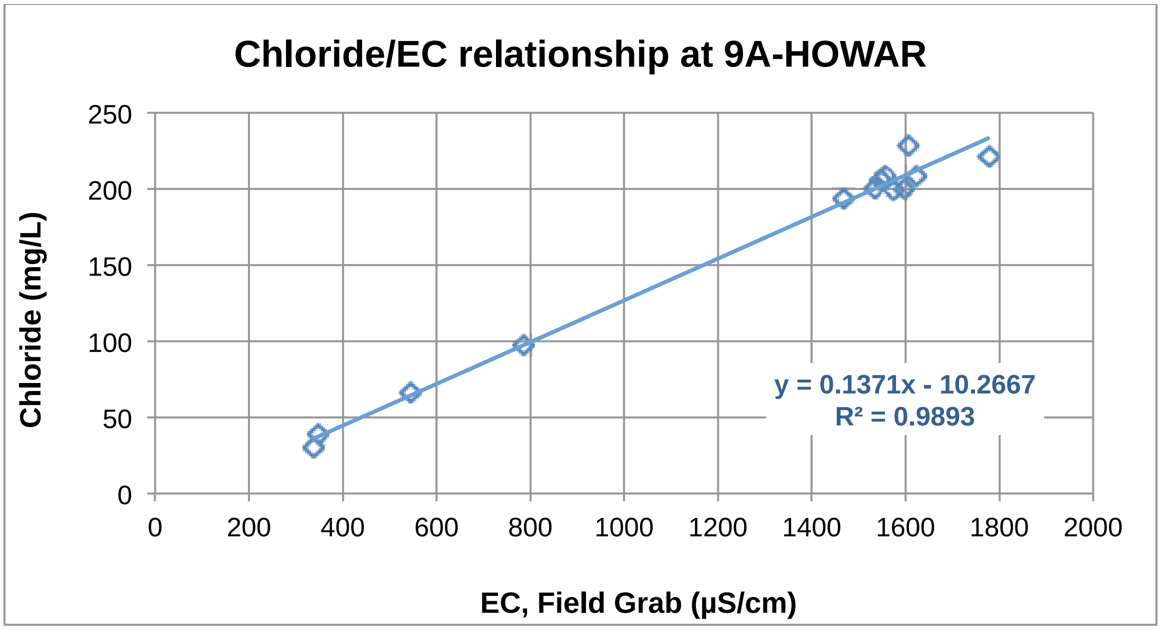

TDS/EC relationship at 07_TIERRA
TDS (mg/L)
1500
1250
1000
750
500
250
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
y = 0.7099x - 62.662
R² = 0.9839
EC, Field Grab (µS/cm)

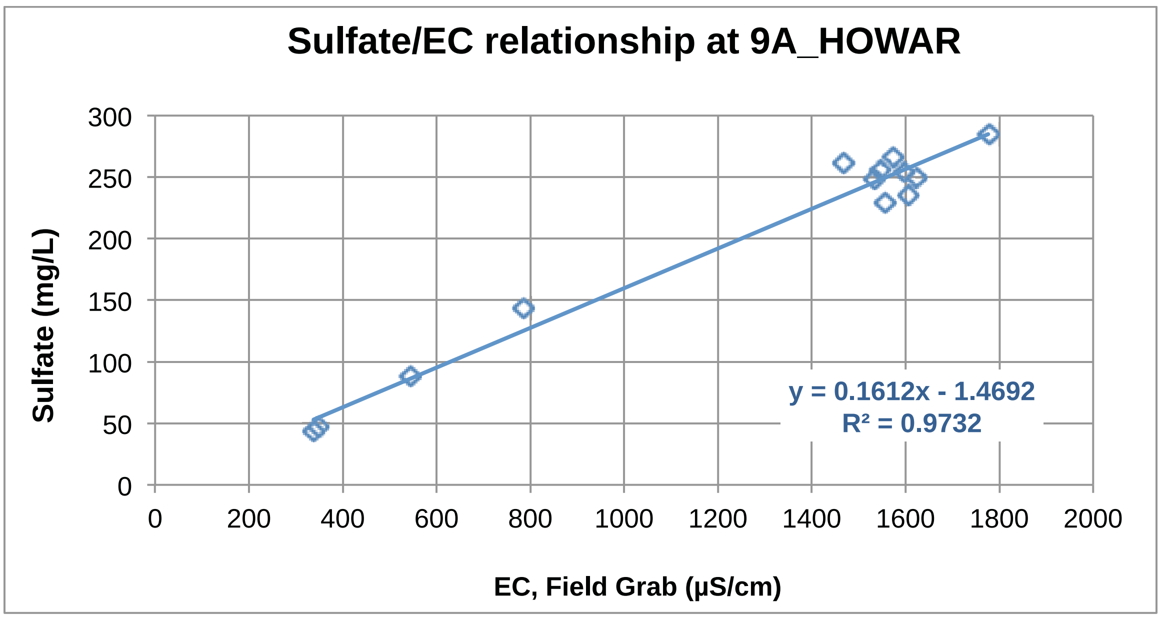

Chloride/EC relationship at 07_TIERRA
Chloride (mg/L)
200
180
160
140
120
100
80
60
40
20
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)
y = 0.1078x - 11.098
R² = 0.9932

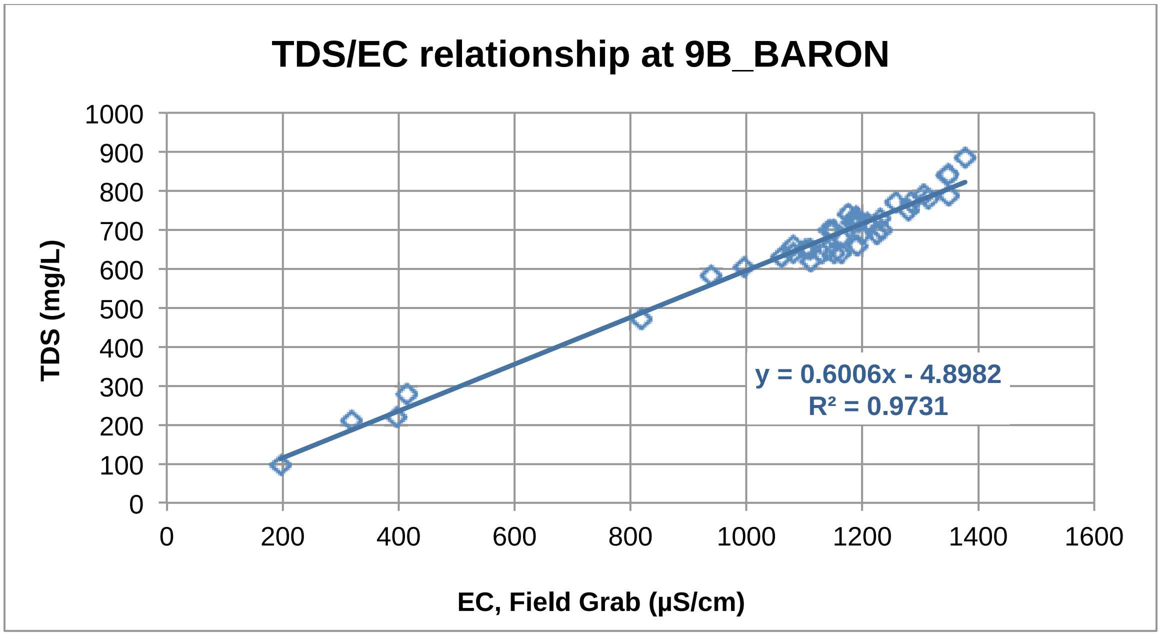

Sulfate/EC relationships at 07_TIERRA
Sulfate (mg/L)
600
500
400
300
200
100
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
EC, Field Grab (µS/cm)
Wet
Dry
y = 0.2544x - 21.312
R² = 0.9467
y = 0.4321x - 295.29
R² = 0.8198


Boron/EC relationship at 07_TIERRA
Boron (mg/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
y = 0.0004x - 0.0645
R² = 0.9587
EC, Field Grab (µS/cm)

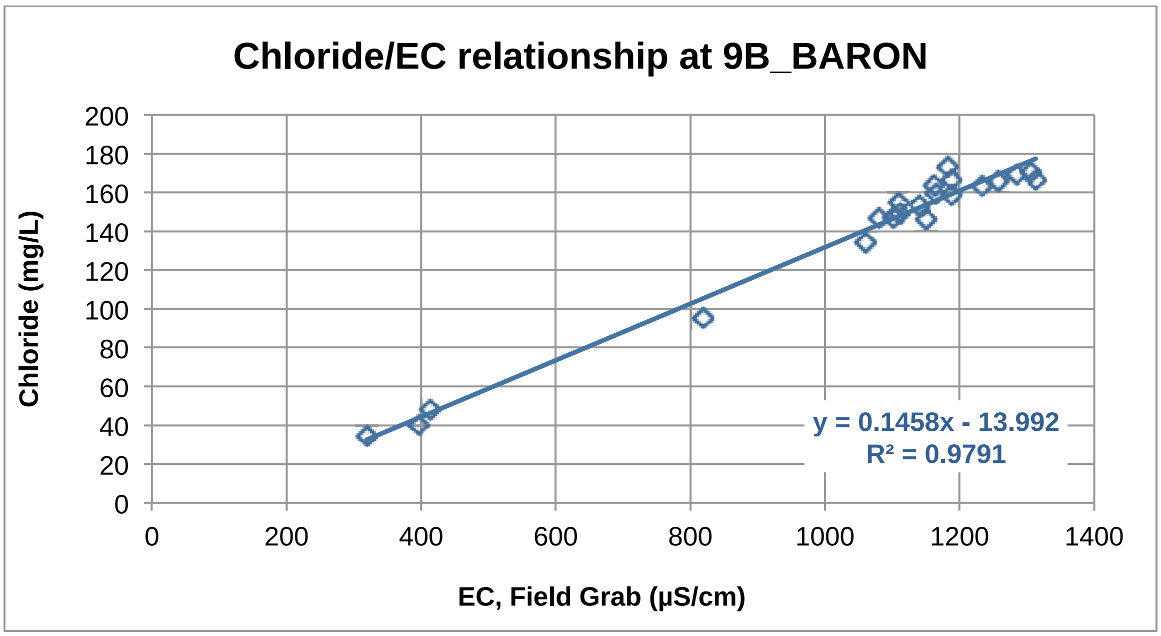

TDS/EC relationship at 9A_HOWAR
TDS (mg/L)
1400
1200
1000
800
600
400
200
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
y = 0.6113x + 0.0106
R² = 0.9859
EC, Field Grab (µS/cm)


Chloride/EC relationship at 9A-HOWAR
Chloride (mg/L)
250
200
150
100
50
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
y = 0.1371x - 10.2667
R² = 0.9893
EC, Field Grab (µS/cm)

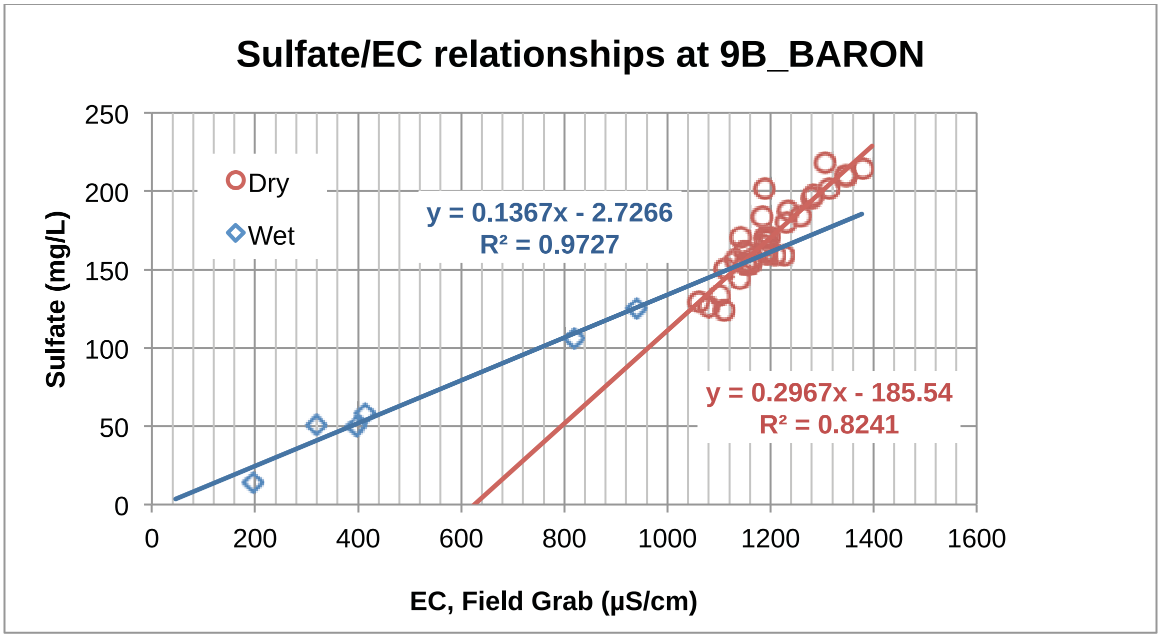

Sulfate/EC relationship at 9A_HOWAR
Sulfate (mg/L)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
y = 0.1612x - 1.4692
R² = 0.9732
EC, Field Grab (µS/cm)



TDS/EC relationship at 9B_BARON
TDS (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
0
200
400
600
800
1000
1200
1400
1600
EC, Field Grab (µS/cm)
y = 0.6006x - 4.8982
R² = 0.9731



Chloride/EC relationship at 9B_BARON
Chloride (mg/L)
200
180
160
140
120
100
80
60
40
20
0
0
200
400
600
800
1000
1200
1400
EC, Field Grab (µS/cm)
y = 0.1458x - 13.992
R² = 0.9791


Sulfate/EC relationships at 9B_BARON
Dry
Wet
y = 0.1367x - 2.7266
R² = 0.9727
y = 0.2967x - 185.54
R² = 0.8241
Sulfate (mg/L)
250
200
150
100
50
0
0
200
400
600
800
1000
1200
1400
1600
EC, Field Grab (µS/cm)

Appendix D: Toxicity Testing and Toxicity Identification Evaluations (TIE) Summary

TOXICITY TESTING PROCEDURES

For the Calleguas Creek Watershed Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP), toxicity testing at various locations is conducted to meet TMDL requirements. The following is a brief summary of the procedures for the analytical methods used by the CCWTMP. Specific details concerning the standard operating procedures (SOPs) followed by field crews collecting applicable samples and laboratory analyses are found in the Quality Assurance Project Plan (QAPP).

For the CCWTMP toxicity measures, standard test species were utilized for toxicity testing. *Ceriodaphnia dubia* was used for fresh water aquatic toxicity testing and *Hyalella azteca* for the saline water aquatic toxicity testing and bulk sediment and porewater toxicity testing. *Hyalella azteca* was used to conduct aquatic toxicity testing if sample salinity exceeded 1.5 part per thousand (PPT) but was less than 15 PPT. All test species are standard United States Environmental Protection Agency (USEPA) test species and considered the most applicable for the various types of pollutants impacting the watershed, and all analytical testing procedures were conducted using standard USEPA methods.

The results of each toxicity test are used to trigger further investigations to determine the cause of observed laboratory toxicity if necessary per the QAPP. If testing indicates the presence of significant toxicity in the sample, toxicity identification evaluations (TIEs) procedures are initiated to investigate the cause of toxicity. For the purpose of triggering TIE procedures, significant toxicity is defined as at least 50 percent mortality. The 50 percent mortality threshold is consistent with the approach recommended in guidance published by USEPA for conducting TIEs (USEPA, 1996), which recommends a minimum threshold of 50% mortality because the probability of completing a successful TIE decreases rapidly for samples with less than this level of toxicity.[1] A component of the compliance requirement when significant toxicity is found is to initiate a targeted Phase 1 TIE and test to determine the general class of constituent (*i.e.*, non-polar organics) causing toxicity. The targeted TIE focuses on classes of constituents anticipated to be observed in drainages dominated by urban and agricultural discharges and those previously observed to cause toxicity. Phase 2 TIEs may also be utilized to identify specific constituents causing toxicity if warranted. TIE methods will generally adhere to USEPA procedures documented in conducting TIEs.[2,3,4,5] For samples exhibiting toxic effects consistent with carbofuran, diazinon, or chlorpyrifos, TIE procedures follow those documented in Bailey *et al.*[6]

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

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

The decision to initiate TIE procedures on any sample, including samples exceeding the mortality threshold, as well as the focus and scope of TIE procedures, is determined by the Project Manager and toxicity laboratory staff. When deciding whether to initiate TIE procedures for a specific site and monitoring event, a number of factors are considered, including the level of toxicity, the magnitude of sample mortality and/or reburial levels as compared to lab control results, history of toxicity at the site, the species and endpoints exhibiting toxic effects, as well as the primary technical basis for triggering TIEs described above. A summary of the toxicity results and subsequent TIE actions, including the rationale for initiating TIE procedures for a specific sample are described below.

TOXICITY RESULTS SUMMARY

Freshwater sediment toxicity samples are collected annually during the first event of each monitoring year. Sediment toxicity samples are collected every three years in Mugu Lagoon. As such, freshwater and lagoon sediment toxicity samples were not collected during this monitoring year. Water column toxicity samples are collected at freshwater sites during each of the quarterly and wet weather events. Monitored sites include the following:

- **Sediment Toxicity (Freshwater Sites)**
  - 02_PCH
  - 03_UNIV
  - 04_WOOD
  - 9A_HOWAR
- **Freshwater Water Column Toxicity**
  - 04_WOOD
  - 03_UNIV
  - 9B_ADOLF
  - 06_SOMIS
  - 07_HITCH
  - 10_GATE (Toxicity Investigation site)

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[3] United States Environmental Protection Agency (USEPA). 1992. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents Phase 1. EPA/600/6-91/005. USEPA, Office of Research and Development, Washington, D.C.

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

[5] United States Environmental Protection Agency (USEPA). 1993b. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA/600/R-02/080. USEPA, Office of Research and Development, Washington, D.C.

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

- o 13_BELT (Toxicity Investigation site)

Toxicity samples for sediment were collected at the freshwater sites during dry weather Event 50. Water column toxicity testing was conducted during all four dry weather events (Events 50, 51, 54, and 55), and the wet weather events (Events 52 and 53). The following section describes the toxicity samples collected at each site for each event, the results of the tests, and a summary of applicable TIEs initiated per the requirements in the QAPP.

Event 50 Sediment Toxicity

Table 1. Freshwater Sediment Toxicity Event 50 - *Hyalella azteca*

Site ID	*Hyalella azteca*		
	Survival	Growth	TIE?
02_PCH	No	Yes	No
03_UNIV	No	No	No
04_WOOD	Yes[1]	Yes	No
9A_HOWAR	No	Yes	No

1. There was a greater than 50 percent reduction in *Hyalella azteca* survival.

Event 50 Water Column Toxicity

Table 2. Freshwater Water Column Toxicity Event 50 - *Ceriodaphnia dubia and Hyalella azteca*

Site ID	*Ceriodaphnia dubia*			*Hyalella azteca*	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
07_HITCH	No	No	No		
9B_ADOLF	No	No	No		
10_GATE	No	No	No		
13_BELT	No	No	No		

Event 50 Toxicity and TIE Summary

- Freshwater sediment sites exhibited significant mortality at the 04_WOOD site >50 percent, but a TIE was not performed. Toxicity was frequently identified at the 04_WOOD site during the first two monitoring years in water column samples and in each of the four sediment samples. The Stakeholders have chosen to invest resources into source control efforts to address sources potentially contributing to the toxicity issue, rather than conduct TIEs in the event of significant mortality.
- There were no significant reductions in survival or reproduction of *Ceriodaphnia dubia* in any of the Calleguas Creek ambient waters.
- There were no significant reductions in survival of *Hyalella Azteca* in any of the Calleguas Creek ambient waters.
- No TIEs were performed on samples collected for this sampling event.

Event 51 Water Quality Toxicity

Table 3. Water Quality Toxicity Event 51 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	*Ceriodaphnia dubia*			*Hyalella azteca*	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
06_SOMIS	No	No	No		
07_HITCH	No	No	No		
9B_ADOLF	No	Yes	No		
10_GATE	No	Yes	No		

Event 51 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* at the five freshwater sample sites during the sampling event.
- Significant reductions in reproduction were observed for *Ceriodaphnia dubia* at 9B_ADOLF and 10_GATE.
- No significant reduction in survival was observed for *Hyalella azteca* at the 04_WOOD site.
- No TIEs were performed on samples collected for this sampling event.

Event 52 Water Quality Toxicity

Table 4. Water Quality Toxicity Event 52 - *Ceriodaphnia dubia*

Site ID	*Ceriodaphnia dubia*		
	Survival	**Reproduction**	**TIE?**
03_UNIV	No	Yes	No
04_WOOD	Yes	Yes	No
07_HITCH	No[1]	Yes	No
9B_ADOLF	No	Yes	No
10_GATE	No	Yes	No
13_BELT	No[1]	Yes	No

1 – The survival response at the Lab Control treatment for this test did not meet test acceptability criteria (i.e., there was <80% survival); however, as there was 100% survival in the 100% ambient water treatment, it can be concluded that this sample was not toxic to *Ceriodaphnia* survival.

Event 52 Toxicity and TIE Summary

- Significant mortality was observed for *Ceriodaphnia dubia* at 04_WOOD >50 percent, but a TIE was not performed. Toxicity was frequently identified at the 04_WOOD site during the first two monitoring years in water column samples and in each of the four sediment samples. The Stakeholders have chosen to invest resources into source control efforts to address sources potentially contributing to the toxicity issue, rather than conduct TIEs in the event of significant mortality.
- There were significant reductions in reproduction observed for *Ceriodaphnia dubia* at all sites tested.
- No TIEs were performed on samples collected for this sampling event.

Event 53 Water Quality Toxicity

Table 5. Water Quality Toxicity Event 53 - *Ceriodaphnia dubia*

Site ID	*Ceriodaphnia dubia*		
	Survival	**Reproduction**	**TIE?**
03_UNIV	No	No	No
04_WOOD	Yes	No	No
07_HITCH	No	No	No
9B_ADOLF	No	No	No
10_GATE	No	No	No
13_BELT	No	No	No

Event 53 Toxicity and TIE Summary

- Significant reductions in survival were observed for *Ceriodaphnia dubia* at the 04_WOOD site >50 percent, but a TIE was not performed. Toxicity was frequently identified at the 04_WOOD site during the first two monitoring years in water column samples and in each of the four sediment samples. The Stakeholders have chosen to invest resources into source control efforts to address sources potentially contributing to the toxicity issue, rather than conduct TIEs in the event of significant mortality.
- No significant reductions in reproduction were observed.
- No TIEs were performed on samples collected for this sampling event.

Event 54 Water Quality Toxicity

Table 6. Water Quality Toxicity Event 54 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	*Ceriodaphnia dubia*			*Hyalella azteca*	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
07_HITCH	No	No	No		
9B_ADOLF	No	Yes	No		
10_GATE	No	No	No		
13_BELT	No	Yes	No		

Event 54 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* or *Hyalella azteca* for all sites.
- Significant reproduction toxicity for *Ceriodaphnia dubia* was observed at the 9B_ADOLF and 13_BELT sites.
- No TIEs were performed on samples collected for this sampling event.

Event 55 Water Quality Toxicity

Table 7. Water Quality Toxicity Event 55 - *Ceriodaphnia dubia* and *Hyalella azteca*

Site ID	*Ceriodaphnia dubia*			*Hyalella azteca*	
	Survival	Reproduction	TIE?	Survival	TIE?
03_UNIV	No	No	No		
04_WOOD				No	No
07_HITCH	No	No	No		
9B_ADOLF	No	No	No		
10_GATE	No	Yes	No		
13_BELT	No	No	No		

Event 55 Toxicity and TIE Summary

- No significant reductions in survival were observed for *Ceriodaphnia dubia* or *Hyalella azteca*.
- Significant reproduction toxicity for *Ceriodaphnia dubia* was observed at the 10_GATE site.
- No TIEs were performed on samples collected for this sampling event.

Appendix E:
Laboratory QA/QC Results and Discussion

QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control (QA/QC) measures are built into the Calleguas Creek Watershed Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP) to assure that collected data are credible. Two types of quality controls were conducted. Field quality controls (to test for field contamination and precision) were conducted by the field crews and include: equipment blanks, field blanks, and field duplicates. Laboratory quality controls (to test for laboratory contamination and precision) were conducted by the laboratories and include: method blanks, blank spikes, blank spike duplicates, lab duplicates, matrix spikes, matrix spike duplicates, laboratory control samples, and surrogates (organics only). Equipment blanks only apply to the shovels used in sediment sample collection. All field protocols for the collection of clean samples were followed according to the Quality Assurance Project Plan (QAPP). The following section lists the quality control failures that occurred during the 2015-2016 monitoring year and any associated qualifiers and comments.

Blank Contamination

Blank samples are used to identify the presents of and potential sources of sample contamination. During the eighth year of monitoring, there were three types of blank samples conducted.

- **Field blanks** are conducted by field crews and are looking for possible contamination in the collection and transportation of samples.
- **Equipment blanks** are done by the field crews and are look for contamination with the sampling equipment.
- **Laboratory blanks** are conducted by the analyzing laboratory and look for contamination in the lab.

Of the blank failures about half were in the laboratory blanks, while the other half were in the field blanks. Of the field blanks, a majority were in the metals category. There were no equipment blank failures. Of the lab blank failures, they were equal split between general water and metals. Even though the detections were above the method detection limit (MDL) value, most were low compared to the environmental sample, so very few qualifications were needed. Details of all the blank hits are reported in **Table 1** below. The following lists a basic summary of the blank contamination results:

- Field Blanks – 1838 analyzed – 10 detections above the MDL (0.54%) (does not include surrogates)
- Equipment Blanks – 129 analyzed – 0 detections above MDL (0.0%) (does not include lab duplicates or surrogates)
- Laboratory Blanks – 3690 analyzed – 11 detections above MDL (0.30%) (does not include surrogates)

Precision

Precision (reproducibility) of sample collection, preparation, and analytical methods is demonstrated by analyzing duplicate samples and calculating the relative percent difference (RPD) between the original and duplicate samples. The RPD is reported for field duplicates, lab duplicates, blank spike duplicates, laboratory control spike (LCS) duplicates, and matrix spike duplicates. An RPD is computed as:

$$RPD = 2 * |O_i - D_i| / (O_i + D_i) * 100$$

Where:

RPD = Relative Percent Difference
O_i = value of compound i in original sample
D_i = value of compound i in duplicate sample

QA failures for precision are noted when the RPD between a sample and its duplicate are greater than the acceptance value. Details of all the RPD failures are reported in **Table 2** below. The following list summarizes the precision analysis results:

- Field Duplicates – 1988 analyzed – 102 failed RPD (5.13%) (does not include surrogates)
- Laboratory Duplicates – 1089 analyzed – 1 failed RPD (0.09%) (includes surrogates)
- Blank Spike/LCS Duplicates – 3264 analyzed – 9 failed RPD (0.28%) (includes surrogates)
- Matrix Spike Duplicates – 1011 analyzed – 34 failed RPD (3.36%) (includes surrogates)

Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. Accuracy is measured as the percent recovery (%R) of a spiked compound and calculated as:

$$\%R = 100 * [(C_s - C) / S]$$

Where:

%R = Percent Recovery
C_s = analyzed spiked concentration
C = analyzed concentration of sample matrix
S = known spiked concentration

Percent recoveries of blank spike samples, LCS samples, and matrix spike samples check the accuracy of lab reported sample concentrations. For the blank spike samples and LCS samples that fell outside the acceptable range, eight of the ten were for pesticides constituents, and all were in water samples. The other two were for metals. For the matrix spike samples that fell outside the acceptable range, a little more than half of them were for metals while the others were for pesticides. **Table 3** summarizes the QA/QC sample results for accuracy that did not meet percent recovery objectives. The following lists the results of the accuracy analysis results:

- Blank Spike/LCS Samples – 6504 Analyzed – 10 fell outside the range (0.15%) (does not include surrogates)
- Matrix Spike Samples – 1966 Analyzed – 141 fell outside the range (7.17%) (does not include surrogates)

Table 1. Blank Contamination Observed

Constituent	Matrix	Event	Lab Batch	Equip Blank	Field Blank	Lab Blank	Program Qualifier	Comments
General Water Quality								
Electrical Conductivity (umhos/cm)	Water	55	2P1605166-B			0.07		
Electrical Conductivity (umhos/cm)	Water	55	2P1605735-A			0.09		
Total Dissolved Solids (mg/L)	Water	53	2P1601389-B			11.18		
Total Dissolved Solids (mg/L)	Water	54	2P1602300-A			9.23		
Total Dissolved Solids (mg/L)	Water	55	2P1605184-A			8		
Nutrients								
Total Kjeldahl Nitrogen (mg/L)	Water	55	Associated_QC11 6 6584_W_CON		0.13		U	Upper Limit due to analyte found in field blank
Total Kjeldahl Nitrogen (mg/L)	Water	55	Associated_QC116 6584_W_CON		0.14		U	Upper Limit due to analyte found in field blank
OC Pesticieds								
None								
PCBs								
None								
OP Pesticides								
Dimethoate (µg/L)	Water	50	W5H0735			0.0073		
Fensulfothion (µg/L)	Water	50	W5H0735			0.0042		
Pyrethroid Pesticides								
None								
Metals & Selenium								
Barium, Dissolved (µg/L)	Water	50	Physis E-8119 W		0.35			
Boron, Total (µg/L)	Water	50	E-8128		24			

Constituent	Matrix	Event	Lab Batch	Equip Blank	Field Blank	Lab Blank	Program Qualifier	Comments
Mercury, Dissolved (µg/L)	Water	54	W6B0614			0.009		
Molybdenum, Dissolved (µg/L)	Water	50	Physis E-8119 W		0.22			
Molybdenum, Total (µg/L)	Water	50	Physis E-8119 W		0.12			
Nickel, Dissolved (µg/L)	Water	50	Physis E-8119 W		0.05			
Nickel, Dissolved (µg/L)	Water	54	W6B1368			0.058		
Strontium, Dissolved (µg/L)	Water	50	Physis E-8119 W		0.03		MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Titanium, Dissolved (µg/L)	Water	50	Physis E-8119 W		0.18		MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Zinc, Dissolved (µg/L)	Water	50	Physis E-8119 W		0.05		FD RPD	FieldDup RPD Failed
Zinc, Dissolved (µg/L)	Water	51	W5K0839			2.44		
Zinc, Dissolved (µg/L)	Water	54	W6B1368			1.78		

Table 2. Precision QA/QC Issues

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
General Water Quality										
Dissolved Organic Carbon (mg/L)	Water	51	Associated_QC 1159787	01_RR_BR				***49***	EST MS/MSD	Estimate due to MS/MSD RPD failed
Total Organic Carbon (% Dry Weight)	sediment	50	GC-03-042	03_UNIV		***70***			FD RPD	FieldDup RPD Failed
Total Suspended Solids (mg/L)	Water	52	Physis C-17144 W	10_GATE		***74***			FD RPD	FieldDup RPD Failed
Nutrients										
Total Kjeldahl Nitrogen (mg/L)	Water	51	Associated_QC 1159909_W_C ON	03_UNIV		***86***			FD RPD	FieldDup RPD Failed
OC Pesticides										
Chlordane, alpha- (ng/wet g)	Tissue	55	Physis O-10112 W	07_TIERRA		***67***		9		
Chlordane, alpha-, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***44***			FD RPD	FieldDup RPD Failed
Chlordane, gamma- (ng/wet g)	Tissue	55	Physis O-10084 W	04_WOOD		***34***		23		
Chlordane, gamma-, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***43***			FD RPD	FieldDup RPD Failed
Chlordane, gamma-, Total (µg/L)	Water	52	Physis O-9032 W	10_GATE		***59***			FD RPD	FieldDup RPD Failed
DDD(o,p')	Tissue	55	Physis O-10084	04_WOOD		***39***		5		

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(ng/wet g)			W							
DDD(o,p'), Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***32***			FD RPD	FieldDup RPD Failed
DDD(o,p'), Total (µg/L)	Water	54	Physis O-9116 W	04_WOOD		***36***				
DDD(p,p'), Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***42***			FD RPD	FieldDup RPD Failed
DDD(p,p'), Total (µg/L)	Water	52	Physis O-9032 W	10_GATE		***135***			FD RPD	FieldDup RPD Failed
DDE(o,p') (ng/wet g)	Tissue	55	Physis O-10084 W	04_WOOD		***33***		10		
DDE(p,p') (ng/wet g)	Tissue	55	Physis O-10084 W	04_WOOD		12		***251***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
DDE(p,p') (ng/wet g)	Tissue	55	Physis O-10086 W	9B_ADOLF				***117***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
DDE(p,p'), Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***50***			FD RPD	FieldDup RPD Failed
DDE(p,p'), Total (µg/L)	Water	53	Physis O-9102 W	10_GATE		***34***				
DDE(p,p'), Total (µg/L)	Water	54	Physis O-9116 W	03_UNIV		***67***				
DDT(o,p'), Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***49***			FD RPD	FieldDup RPD Failed
DDT(p,p'), Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***46***			FD RPD	FieldDup RPD Failed
Dieldrin, Total (µg/L)	Water	52	Physis O-9032 W	10_GATE		***126***				

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Endrin Aldehyde, Total (µg/L)	Water	50	Physis O-8042 W	LABQA	***31***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Nonachlor, cis, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***61***				
Nonachlor, trans, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***42***			FD RPD	FieldDup RPD Failed
Permethrin, cis-, Total (µg/L)	Water	50	Physis O-8042 W	LABQA	***90***				BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
Permethrin, trans-, Total (µg/L)	Water	50	Physis O-8042 W	LABQA	***45***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Permethrin, trans-, Total (µg/L)	Water	55	Physis O-10068 W	LABQA	***37***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Permethrin, trans-, Total (µg/L)	Water	55	Physis O-10070 W	LABQA	***35***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Tetrachloro-m-xylene-2,4,5,6 (Surrogate), Total (%)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***54***				
Tetrachloro-m-xylene-2,4,5,6 (Surrogate), Total (%)	Water	52	Physis O-9032 W	10_GATE		***62***				
Tetrachloro-m-xylene-2,4,5,6 (Surrogate), Total (%)	Water	53	Physis O-9102 W	10_GATE		***54***				
Tetrachloro-m-xylene-2,4,5,6	Water	55	Physis O-10068 W	07_HITCH		***111***				

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(Surrogate), Total (%)										
PCBs										
PCB 030 (Surrogate) (%)	Tissue	55	Physis O-10084 W	04_WOOD		***32***		19	LD RPD	LabDuplicate RPD Failed
PCB 030 (Surrogate), Total (%)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***53***			FD RPD	FieldDup RPD Failed
PCB 030 (Surrogate), Total (%)	Water	52	Physis O-9032 W	10_GATE		***69***			FD RPD	FieldDup RPD Failed
PCB 030 (Surrogate), Total (%)	Water	53	Physis O-9102 W	10_GATE		***44***				
PCB 030 (Surrogate), Total (%)	Water	55	Physis O-10068 W	07_HITCH		***94***			FD RPD	FieldDup RPD Failed
PCB 037 (ng/wet g)	Tissue	55	Physis O-10112 W	07_TIERRA		0		***40***	EST MS/MSD	Estimate due to MS/MSD RPD failed
PCB 095, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***43***				
PCB 101, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***40***				
PCB 105 (ng/wet g)	Tissue	55	Physis O-10084 W	04_WOOD		***46***		11	LD RPD	LabDuplicate RPD Failed
PCB 110, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***42***				
PCB 112 (Surrogate), Total (%)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***38***			FD RPD	FieldDup RPD Failed
PCB 112	Water	52	Physis O-9032	10_GATE		***55***			FD RPD	FieldDup RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(Surrogate), Total (%)			W							
PCB 112 (Surrogate), Total (%)	Water	55	Physis O-10068 W	07_HITCH		***82***			FD RPD	FieldDup RPD Failed
PCB 118 (ng/wet g)	Water	55	Physis O-10086 W	LABQA	***31***				EST BS/BSD	Estimate due to BS/BSD RPD failed
PCB 128 (ng/wet g)	Tissue	55	Physis O-10086 W	9B_ADOLF		10		***40***	EST MS/MSD	Estimate due to MS/MSD RPD failed
PCB 151 (ng/wet g)	Tissue	55	Physis O-10086 W	9B_ADOLF		***40***		7		
PCB 153 (ng/wet g)	Tissue	55	Physis O-10112 W	07_TIERRA		***57***		7		
PCB 187 (ng/wet g)	Tissue	55	Physis O-10086 W	9B_ADOLF		22		***32***	EST MS/MSD	Estimate due to MS/MSD RPD failed
PCB 198 (Surrogate) (%)	Tissue	55	Physis O-10112 W	07_TIERRA		***59***		20		
PCB 198 (Surrogate), Total (%)	Water	52	Physis O-9032 W	01T_ODD2_DCH		***35***			FD RPD	FieldDup RPD Failed
PCB 198 (Surrogate), Total (%)	Water	52	Physis O-9032 W	10_GATE		***54***			FD RPD	FieldDup RPD Failed
PCB 198 (Surrogate), Total (%)	Water	55	Physis O-10068 W	07_HITCH		***90***			FD RPD	FieldDup RPD Failed
PCB 206 (ng/wet g)	Tissue	55	Physis O-10112 W	07_TIERRA		0		***104***	EST MS/MSD	Estimate due to MS/MSD RPD failed
PCB 209 (ng/wet g)	Tissue	55	Physis O-10086 W	9B_ADOLF		0		***41***	EST MS/MSD	Estimate due to MS/MSD RPD failed
OP Pesticides										

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Azinphos methyl (Guthion) (µg/L)	Water	54	W6B0505	10D_HILL				***37***		
Azinphos methyl (Guthion) (µg/L)	Water	55	W6E0400	10D_HILL				***35***		
Bolstar (µg/L)	Water	54	W6B0505	10D_HILL				***71***		
Chlorpyrifos (ng/dry g)	Sediment	50	Physis O-8038 W	03_UNIV		***32***				
Chlorpyrifos, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DC H		***43***			FD RPD	FieldDup RPD Failed
Chlorpyrifos, Total (µg/L)	Water	55	Physis O-10068 W	01T_ODD2_DC H		***73***			FD RPD	FieldDup RPD Failed
Coumaphos (µg/L)	Water	54	W6B0505	10D_HILL				***35***		
Coumaphos (µg/L)	Water	55	W6E0400	10D_HILL				***42***		
Demeton-o (µg/L)	Water	54	W6B0505	10D_HILL				***154***		
Demeton-s, Total (µg/L)	Water	50	Physis O-8030 W	LABQA	***48***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Diazinon (µg/L)	Water	54	W6B0505	10D_HILL				***124***		
Diazinon (µg/L)	Water	55	W6E0400	10D_HILL				***31***		
Diazinon, Total (µg/L)	Water	50	Physis O-8042 W	LABQA	***32***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Disulfoton, Total (µg/L)	Water	50	Physis O-8030 W	LABQA	***50***				EST BS/BSD	Estimate due to BS/BSD RPD failed
Fensulfothion (µg/L)	Water	54	W6B0505	10D_HILL				***33***		
Malathion, Total (µg/L)	Water	52	Physis O-9032 W	10_GATE		***189***			FD RPD	FieldDup RPD Failed
Malathion, Total	Water	53	Physis O-9094	03_UNIV		***76***			FD RPD	FieldDup RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(µg/L)			W							
Merphos (µg/L)	Water	54	W6B0505	10D_HILL				***54***		
Mevinphos (µg/L)	Water	51	W5K0614	10D_HILL				***31***	EST MS/MSD	Estimate due to MS/MSD RPD failed
Tokuthion (Prothiofos) (µg/L)	Water	54	W6B0505	10D_HILL				***41***		
PAHs										
None										
Pyrethroid Pesticides										
Bifenthrin (ng/dry g)	Sediment	50	Physis O-8038 W	03_UNIV		***46***				
Bifenthrin, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DCH		***87***			FD RPD	FieldDup RPD Failed
Bifenthrin, Total (µg/L)	Water	52	Physis O-9032 W	10_GATE		***32***			FD RPD	FieldDup RPD Failed
Cyfluthrin, total, Total (µg/L)	Water	52	Physis O-9032 W	10_GATE		***75***			FD RPD	FieldDup RPD Failed
Cypermethrin, total, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DCH		***123***			FD RPD	FieldDup RPD Failed
Danitol, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DCH		***91***			FD RPD	FieldDup RPD Failed
Deltamethrin/Tralomethrin (µg/L)	Water	54	W6B0466	10D_HILL			***77***			
Esfenvalerate, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DCH		***157***			FD RPD	FieldDup RPD Failed
Fenvalerate, Total (µg/L)	Water	52	Physis O-9032 W	01T_ODD2_DCH		***131***				
L-Cyhalothrin	Water	50	W5H0425	LABQA				***37***		

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(µg/L)										
Metals and Selenium										
Aluminum, Dissolved (µg/L)	Water	50	Physis E-8119 W	04_WOOD		***31***				
Aluminum, Dissolved (µg/L)	Water	51	Physis E-10023 W	02_PCH		***43***			MS >UL	MS failed upper limit
Aluminum, Dissolved (µg/L)	Water	53	Physis E-10089 W	01T_ODD2_DC H		***42***			LD RPD	LabDuplicate RPD Failed
Aluminum, Total (µg/L)	Water	52	Physis E-10054 W	01_RR_BR		2		***37***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Aluminum, Total (µg/L)	Water	53	Physis E-10089 W	03_UNIV		***31***			FD RPD	FieldDup RPD Failed
Antimony, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***42***		7		
Barium, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***35***		4	FD RPD	FieldDup RPD Failed
Beryllium, Dissolved (µg/L)	Water	54	Physis E-10090 W	9AD_CAMA		***120***		3		
Beryllium, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***133***		2		
Beryllium, Total (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***120***		1		
Cadmium, Dissolved (µg/L)	Water	51	Physis E-10024 W	05D_SANT_VC WPD		***75***		1		
Cadmium, Dissolved (µg/L)	Water	55	Physis E-10147 W	9AD_CAMA		***57***		4		
Cadmium, Total (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***33***		2	LD RPD	LabDuplicate RPD Failed
Cadmium, Total	Water	55	Physis E-10147	9AD_CAMA		***112***		0	LD RPD	LabDuplicate RPD Failed

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(µg/L)			W							
Chromium, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***51***		2	LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Chromium, Dissolved (µg/L)	Water	55	Physis E-10147 W	9AD_CAMA		***54***		3	LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Chromium, Total (µg/L)	Water	53	Physis E-10089 W	03_UNIV		***32***			FD RPD	FieldDup RPD Failed
Cobalt, Dissolved (µg/L)	Water	53	Physis E-10089 W	01T_ODD2_DC H		***91***			LD RPD	LabDuplicate RPD Failed
Iron, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H				***158***	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Iron, Total (µg/L)	Water	53	Physis E-10089 W	03_UNIV		***41***			FD RPD	FieldDup RPD Failed
Iron, Total (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H				***52***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Lead, Dissolved (µg/L)	Water	50	Physis E-8119 W	01T_ODD2_DC H		***41***		1	LD RPD	LabDuplicate RPD Failed
Lead, Dissolved (µg/L)	Water	51	Physis E-10023 W	02_PCH		***143***		0	LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Lead, Dissolved (µg/L)	Water	51	Physis E-10023 W	03_UNIV		***88***			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Lead, Dissolved (µg/L)	Water	52	Physis E-10053 W	01T_ODD2_DC H		***40***			FD RPD	FieldDup RPD Failed
Lead, Dissolved (µg/L)	Water	53	Physis E-10089 W	01T_ODD2_DC H		***80***			LD RPD	LabDuplicate RPD Failed
Lead, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***32***		3	LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Lead, Dissolved	Water	55	Physis E-10147	9AD_CAMA		***56***		0	LD RPD,	LabDuplicate RPD Failed,

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(µg/L)			W						FD RPD	FieldDuplicate RPD Failed
Lead, Total (µg/L)	Water	55	Physis E-10147 W	9AD_CAMA		***57***		1	LD RPD	LabDuplicate RPD Failed
Manganese, Total (µg/L)	Water	52	Physis E-10054 W	01_RR_BR		2		***43***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Mercury, Dissolved (µg/L)	Water	54	Physis E-9104 W	07D_SIMI		***67***			LD RPD	LabDuplicate RPD Failed
Mercury, Total (µg/L)	Water	51	Physis E-9037 W	03_UNIV		***46***				
Mercury, Total (µg/L)	Water	54	Physis E-9116 W	03_UNIV		***80***			FD RPD	FieldDup RPD Failed
Selenium, Dissolved (µg/L)	Water	53	Physis E-10089 W	03_UNIV		***34***			FD RPD	FieldDup RPD Failed
Selenium, Dissolved (µg/L)	Water	55	Physis E-10147 W	9AD_CAMA		***68***		4	LD RPD	LabDuplicate RPD Failed
Selenium, Total (µg/L)	Water	54	Physis E-10110 W	01_RR_BR		***33***			LD RPD, FD RPD	LabDuplicate RPD Failed, FieldDuplicate RPD Failed
Selenium, Total (µg/L)	Water	54	Physis E-10111 W	03_UNIV		***46***			FD RPD	FieldDup RPD Failed
Selenium, Total (µg/L)	Water	55	Physis E-10147 W	9AD_CAMA		***171***		4	LD RPD	LabDuplicate RPD Failed
Strontium, Dissolved (µg/L)	Water	50	Physis E-8119 W	01T_ODD2_DC H		1		***32***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Strontium, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		7		***73***	MS >UL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Strontium, Total (µg/L)	Water	52	Physis E-10054 W	01_RR_BR		2		***75***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
Strontium, Total (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		1		***2644***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Thallium, Dissolved (µg/L)	Water	50	Physis E-8119 W	07D_SIMI		***86***		0		
Thallium, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***40***		2		
Thallium, Total (µg/L)	Water	53	Physis E-10089 W	03_UNIV		***67***				
Thallium, Total (µg/L)	Water	55	Physis E-10144 W	01_RR_BR		***35***				
Thallium, Total (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		***67***		1		
Tin, Dissolved (µg/L)	Water	50	Physis E-8119 W	04_WOOD		***59***				
Tin, Total (µg/L)	Water	50	Physis E-8119 W	01T_ODD2_DC H		***80***		2		
Tin, Total (µg/L)	Water	50	Physis E-8124 W	01_RR_BR		***40***			LD RPD	LabDuplicate RPD Failed
Tin, Total (µg/L)	Water	55	Physis E-10147 W	9AD_CAMA		***75***		4		
Titanium, Dissolved (µg/L)	Water	50	Physis E-8119 W	01T_ODD2_DC H		2		***171***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Titanium, Dissolved (µg/L)	Water	55	Physis E-10147 W	01T_ODD2_DC H		8		***31***	MS >UL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Titanium, Total (µg/L)	Water	50	Physis E-8119 W	01T_ODD2_DC H		1		***67***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Titanium, Total	Water	55	Physis E-10147	01T_ODD2_DC		1		***43***	MS <LL,	MS failed lower limit,

Constituent	Matrix	Event	Lab Batch	Site	BS/ BSD RPD	Field Dup RPD	Lab Dup RPD	MS/ MSD RPD	Program Qualifier	Comments
(µg/L)			W	H					EST MS/MSD	Estimate due to RPD failure between MS/MSD
Zinc, Dissolved (µg/L)	Water	50	Physis E-8119 W	04_WOOD		***60***			FD RPD	FieldDup RPD Failed
Zinc, Dissolved (µg/L)	Water	51	Physis E-10024 W	05D_SANT_VC WPD		***33***		1		
Zinc, Total (µg/L)	Water	52	Physis E-10054 W	01_RR_BR		2		***58***	MS <LL, MS >UL, EST MS/MSD	MS failed lower limit, MS failed upper limit, Estimate due to RPD failure between MS/MSD

EST BS/BSD = Estimated due to Blank Spike/Blank Spike Duplicate RPD failure.
EST MS/MSD = Estimated due to Matrix Spike/Matrix Spike Duplicate RPD failure
FD RPD = Field Duplicate Relative Percent Difference failure
LD RPD = Lab Duplicate Relative Percent Difference failure
MS <LL = Matrix spike recovery was below the Lower Limit of the acceptance range
MS >UL = Matrix spike recovery was above the Upper Limit of the acceptance range

Table 3. Accuracy QA/QC Issues

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
General Water Quality											
Dissolved Organic Carbon (mg/L)	Water	51	Associated_QC1 159787	80	120	96		117	***71***	EST MS/MSD	Estimate due to RPD failure between MS/MSD
Nutrients											
Ammonia as N (mg/L)	Water	51	Physis C-18107 W	75	121			***64***	***64***	MS <LL	MS failed lower limit
Nitrate as N (mg/L)	Water	51	Physis C-23130 W	91	122			***88***	***86***	MS <LL	MS failed lower limit
Nitrate as N (mg/L)	Water	53	Physis C-26020 W	76	121			***127***	***126***	MS >UL	MS failed upper limit
Nitrite as N (mg/L)	Water	51	Physis C-24150 W	81	112			***48***	***46***	MS <LL	MS failed lower limit
Nitrite as N (mg/L)	Water	55	Physis C-28057 W	70	130			***60***	***60***	MS <LL	MS failed lower limit
OC Pesticides											
DDE(p,p') (ng/wet g)	Tissue	55	Physis O-10084 W	44	148			***16***	***-14***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
DDE(p,p') (ng/wet g)	Tissue	55	Physis O-10086 W	44	148			***149***	***39***	MS <LL, MS >UL, EST MS/MSD	MS failed lower limit, MS failed upper limit, Estimate due to RPD failure between MS/MSD
Methoxychlor (ng/wet g)	Tissue	55	Physis O-10112 W	54	166			***47***	***51***	MS <LL	MS failed lower limit
Oxychlordane (ng/wet g)	Tissue	55	Physis O-10084 W	43	156			***623***	***636***	MS >UL	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
Toxaphene (ng/wet g)	Tissue	55	Physis O-10112 W	51	174			***44***	***37***	MS <LL	MS failed lower limit
PCBs											
PCB 018 (ng/wet g)	Tissue	55	Physis O-10112 W	59	136			***321***	***358***	MS >UL	MS failed upper limit
PCB 128 (ng/wet g)	Tissue	55	Physis O-10084 W	53	158			***45***		MS <LL	MS failed lower limit
PCB 170 (ng/wet g)	Tissue	55	Physis O-10112 W	47	160			***38***	***34***	MS <LL	MS failed lower limit
OP Pesticides											
Azinphos methyl (Guthion) (µg/L)	Water	55	W6E0400	0.1	154			135	***193***	MS >UL	MS failed upper limit
Bolstar, Total (µg/L)	Water	55	Physis O-10070 W	46	147	131	***155***			BS >UL	BS failed upper limit
Demeton-s (µg/L)	Water	51	W5K0614	0.1	213	***270***		***324***	***321***	BS >UL, MS >UL	BS failed upper limit, MS failed upper limit
Demeton-s (µg/L)	Water	50	W5H0735	0.1	207			187	***208***	MS >UL	MS failed upper limit
Diazinon (µg/L)	Water	54	W6B0505	36	153			135	***31***	MS <LL	MS failed lower limit
Disulfoton (ng/dry g)	Water	50	Physis O-8038 W	25	125	***22***	26			BS <LL	BS failed lower limit
Ethoprop (µg/L)	Water	50	W5H0735	51	167			***177***	***176***	MS >UL	MS failed upper limit
Malathion (µg/L)	Water	50	W5H0735	6	184			165	***185***	MS >UL	MS failed upper limit
Stirophos (µg/L)	Water	50	W5H0735	0.1	167			***197***	***197***	MS >UL	MS failed upper limit
Tokuthion (Prothiofos) (µg/L)	Water	55	W6E0400	27	160			***183***	***238***	MS >UL	MS failed upper limit
Pyrethroid Pesticides											
Allethrin, Total (µg/L)	Water	52	Physis O-9034 W	63	124	***62***	66			BS <LL	BS failed lower limit
Cyfluthrin (µg/L)	Water	50	W5H0425	11	214			***258***	***245***	MS >UL	MS failed upper limit
Cypermethrin (µg/L)	Water	50	W5H0425	20	206			***229***	***224***	MS >UL	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
Cypermethrin, total, Total (µg/L)	Water	51	Physis O-8132 W	65	120	119	***122***			BS >UL	BS failed upper limit
Fenvalerate/Esfenvalerate (µg/L)	Water	50	W5H0425	32	193			***196***	189	MS >UL	MS failed upper limit
L-Cyhalothrin (µg/L)	Water	50	W5H0425	61	209			***211***	146	MS >UL	MS failed upper limit
Permethrin (µg/L)	Water	50	W5H0425	37	209			***237***	***245***	MS >UL	MS failed upper limit
Permethrin, cis-, Total (µg/L)	Water	50	Physis O-8042 W	41	151	79	***30***			BS <LL, EST BS/BSD	BS failed lower limit, Estimate due to BS/BSD RPD failed
Permethrin, trans-, Total (µg/L)	Water	55	Physis O-10068 W	41	147	114	***165***			EST BS/BSD	Estimate due to RPD failure between BS/BSD
Permethrin, trans-, Total (µg/L)	Water	55	Physis O-10070 W	41	147	113	***161***			EST BS/BSD	Estimate due to RPD failure between BS/BSD
Prallethrin (µg/L)	Water	55	W6E0672	11	247			***349***	***324***	MS >UL	MS failed upper limit
Sumithrin (Phenothrin) (µg/L)	Water	50	W5H0425	12	247			***264***	***249***	MS >UL	MS failed upper limit
Metals and Selenium											
Aluminum, Dissolved (µg/L)	Water	51	Physis E-10023 W	75	130			***134***	***134***	MS >UL	MS failed upper limit
Aluminum, Total (µg/L)	Water	52	Physis E-10054 W	75	130			***-2399***	***-1655***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Arsenic, Dissolved (µg/L)	Water	50	Physis E-8119 W	98	130			130	***131***	MS >UL	MS failed upper limit
Arsenic, Total (µg/L)	Water	50	Physis E-8119 W	98	130			***131***	***131***	MS >UL	MS failed upper limit
Arsenic, Total (µg/L)	Water	54	Physis E-10110 W	99	129	***96***	100			BS <LL	BS failed lower limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
Barium, Total (µg/L)	Water	52	Physis E-10054 W	95	115			***90***	98	MS <LL	MS failed lower limit
Beryllium, Dissolved (µg/L)	Water	51	Physis E-10023 W	86	118			***120***	***122***	MS >UL	MS failed upper limit
Beryllium, Dissolved (µg/L)	Water	54	Physis E-10111 W	86	118			***83***	***83***	MS <LL	MS failed lower limit
Beryllium, Dissolved (µg/L)	Water	54	Physis E-10112 W	86	118			***82***	***81***	MS <LL	MS failed lower limit
Chromium, Dissolved (µg/L)	Water	51	Physis E-10023 W	91	118			***119***	***119***	MS >UL	MS failed upper limit
Iron, Dissolved (µg/L)	Water	55	Physis E-10147 W	65	134			***22***	***187***	MS <LL, MS >UL, EST MS/MSD	MS failed lower limit, MS failed upper limit, Estimate due to RPD failure between MS/MSD
Iron, Dissolved (µg/L)	Water	55	Physis E-10147 W	65	134			***166***	***151***	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Iron, Total (µg/L)	Water	50	Physis E-8119 W	74	124			***70***	***69***	MS <LL	MS failed lower limit
Iron, Total (µg/L)	Water	52	Physis E-10054 W	65	134			***-3415***	***-2843***	MS <LL	MS failed lower limit
Iron, Total (µg/L)	Water	55	Physis E-10147 W	65	134			***-12***	***-73***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Iron, Total (µg/L)	Water	55	Physis E-10147 W	65	134			***143***	***138***	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Manganese, Dissolved (µg/L)	Water	51	Physis E-10023 W	93	121			***128***	***124***	MS >UL	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
Manganese, Total (µg/L)	Water	50	Physis E-8119 W	93	121			***92***	***92***	MS <LL	MS failed lower limit
Manganese, Total (µg/L)	Water	52	Physis E-10054 W	83	125			***37***	***57***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Mercury, Total (µg/L)	Water	52	Physis E-9081 W	73	140			***157***	***155***	MS >UL	MS failed upper limit
Selenium, Dissolved (µg/L)	Water	50	Physis E-8119 W	83	134			***141***	***137***	MS >UL	MS failed upper limit
Selenium, Total (µg/L)	Water	50	Physis E-8119 W	83	134			***135***	***136***	MS >UL	MS failed upper limit
Silver, Dissolved (µg/L)	Water	50	Physis E-8119 W	68	106			***61***	***60***	MS <LL	MS failed lower limit
Silver, Total (µg/L)	Water	50	Physis E-8119 W	68	106			***49***	***50***	MS <LL	MS failed lower limit
Strontium, Dissolved (µg/L)	Water	50	Physis E-8119 W	75	125			***51***	***46***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Strontium, Dissolved (µg/L)	Water	50	Physis E-8119 W	75	125			***-35***	***-25***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Strontium, Dissolved (µg/L)	Water	51	Physis E-1023 W	75	125			***142***	***146***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	51	Physis E-10023 W	75	125			***517***	***396***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	51	Physis E-10024 W	75	125			***169***	***174***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	52	Physis E-10053 W	75	125			***154***	***171***	MS >UL	MS failed upper limit
Strontium, Dissolved	Water	53	Physis E-10089	75	125			***292***	***324***	MS >UL	MS failed upper limit

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
(µg/L)			W								
Strontium, Dissolved (µg/L)	Water	53	Physis E-10090 W	75	125			***143***	***136***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	54	Physis E-10090 W	75	125			113	***130***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	54	Physis E-10090 W	75	125			***129***	***127***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	54	Physis E-10111 W	75	125			***424***	***376***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	54	Physis E-10112 W	75	125			***163***	***145***	MS >UL	MS failed upper limit
Strontium, Dissolved (µg/L)	Water	55	Physis E-10147 W	75	125			***189***	***404***	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Strontium, Dissolved (µg/L)	Water	55	Physis E-10147 W	75	125			***131***	115	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Strontium, Total (µg/L)	Water	50	Physis E-8119 W	75	125			***-29***	***-25***	MS <LL	MS failed lower limit
Strontium, Total (µg/L)	Water	52	Physis E-10054 W	75	125			***34***	75	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Strontium, Total (µg/L)	Water	55	Physis E-10147 W	75	125			***-64***	***55***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Titanium, Dissolved (µg/L)	Water	50	Physis E-8119 W	75	131			***-13***	***-1***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between

Constituent	Matrix	Event	Lab Batch	LCL	UCL	LCS %Rec	LCSD %Rec	MS %Rec	MSD %Rec	Program Qualifier	Comments
											MS/MSD
Titanium, Dissolved (µg/L)	Water	51	Physis E-10023 W	75	131			***168***	***157***	MS >UL	MS failed upper limit
Titanium, Dissolved (µg/L)	Water	54	Physis E-10111 W	75	131			***133***	114	MS >UL	MS failed upper limit
Titanium, Dissolved (µg/L)	Water	55	Physis E-10147 W	75	131			121	***166***	MS >UL, EST MS/MSD	MS failed upper limit, Estimate due to RPD failure between MS/MSD
Titanium, Total (µg/L)	Water	50	Physis E-8119 W	75	131			***-12***	***-6***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Titanium, Total (µg/L)	Water	52	Physis E-10054 W	75	131			***51***	***59***	MS <LL	MS failed lower limit
Titanium, Total (µg/L)	Water	55	Physis E-10147 W	75	131			***45***	***70***	MS <LL, EST MS/MSD	MS failed lower limit, Estimate due to RPD failure between MS/MSD
Vanadium, Dissolved (µg/L)	Water	51	Physis E-10023 W	101	121			***131***	***131***	MS >UL	MS failed upper limit
Zinc, Total (µg/L)	Water	52	Physis E-10054 W	85	132			***150***	***83***	MS <LL, MS >UL, EST MS/MSD	MS failed lower limit, MS failed upper limit, Estimate due to RPD failure between MS/MSD

LCL = Lower Control Limit
UCL = Upper Control Limit
MS = Matrix Spike
MS = Matrix Spike Duplicate
LCS = Laboratory Control Spike
LCSD = Laboratory Control Spike Duplicate
%Rec = Percent Recovery

Revolon Slough/Beardsley Wash Trash TMDL TMRP/MFAC 2015-2016 Annual Report

submitted to

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION

on behalf of the

COUNTY OF VENTURA,
VENTURA COUNTY WATERSHED PROTECTION DISTRICT,
CITY OF CAMARILLO,
CITY OF OXNARD,
PARTICIPANTS IN THE VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP,
AND CALIFORNIA DEPARTMENT OF TRANSPORTATION

LARRY WALKER ASSOCIATES

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Executive Summary

The purpose of this report is to present the results of the seventh-year (2015-2016) monitoring efforts conducted in accordance with the Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL), which is effective as of March 6, 2008, and the Trash Monitoring and Reporting Plan (TMRP) Minimum Frequency of Assessment and Collection/Best Management Practice (MFAC/BMP) Program. The Los Angeles Regional Water Quality Control Board (Regional Board) approved Addendum No. 1 to the TMRP in June 2015, which revised the monitoring program from a quantitative program to a visual program. The seventh-year monitoring effort was the first full year of monitoring under Addendum No.1 to the TMRP.

The responsible parties are complying with the non-point source requirements of the Trash TMDL through the implementation of a MFAC/BMP Program and complying with the point source requirements through the installation of certified trash full capture devices on all responsible parties' conveyances discharging to Revolon Slough and Beardsley Wash and/or implementing a point source-specific MFAC/BMP Program within the Revolon Slough and Beardsley Wash subwatershed.

During the first full year of implementation, the responsible parties were able to gain a better understanding of trash accumulation trends and potential sources at each site. High trash levels were found at Site 1 and Site 5, so the responsible parties decided to increase BMP implementation in the areas surrounding these sites to further address trash. Overall, the MFAC/BMP Program is effective for addressing trash as none of the five monitoring sites met the criteria for increased BMP implementation (four consecutive months of Category 3 trash conditions). The non-point source-responsible parties are in compliance with the requirements of the Trash TMDL as the MFAC Program resulted in zero trash in-stream immediately following all of the monitoring events. Non-point source-responsible parties will continue to conduct all required MFAC events and implement BMPs at high trash generating areas as well as watershed-wide to reduce the discharge of trash from their jurisdictions to minimize the impact of trash in the watershed per the Regional Board-approved June 2015 Addendum No. 1 to the TMRP.

To address point sources, the responsible parties, where feasible, have, and will continue to install full capture devices on conveyances discharging to Revolon Slough and Beardsley Wash and/or install full capture devices in high trash generating areas and employ a point source-specific MFAC/BMP Program in other areas of their jurisdictions.

Per previous communications with Regional Board staff, the City of Camarillo is currently meeting compliance with the point source requirements of the Trash TMDL through a point source MFAC/BMP Program (see **Section 3.2.1.** for information on the City's point source MFAC/BMP Program). Further, the City continues to maintain the 33 trash full capture devices that were installed in City of Camarillo storm drain catch basins in the high trash generating areas within the Revolon Slough and Beardsley Wash subwatershed.

The City of Oxnard employs various BMPs to address trash including catch basin inspection and cleaning, open channel maintenance, street sweeping, education and outreach, stormwater ordinances, and commercial/industrial facilities and construction site inspections. The City of Oxnard has not yet been able to install full capture devices for conveyances discharging to

Revolon Slough and Beardsley Wash. The City of Oxnard identified 106 catch basins that require retrofitting. A staff report has been prepared and the project has been assigned to the Capital Improvement Project (CIP) Division. The CIP Division is currently working with the City of Oxnard's finance department to secure funding to install the full capture devices. While full capture device planning in ongoing, the City is continuing to implement BMPs within their jurisdiction to address point sources of trash and participate in the non-point source MFAC/BMP program. The non-point source MFAC/BMP program results in cleanups of a site within the City of Oxnard to support point source compliance as well.

For point sources, the County completed installing full capture devices in conveyances it is responsible for and is meeting the March 2016 requirement of 100 percent of the conveyances discharging to Revolon Slough and Beardsley Wash addressed by full capture devices.

The California Department of Transportation (Caltrans) has installed 24 biofiltration swales and one Austin Vault Sand Filter along Highway 101 in the Revolon Slough and Beardsley Wash subwatershed. The biofiltration swales and Austin Vault Sand Filter were installed to address a suite of constituents including metals and selenium; organochlorine pesticides, PCBs, and siltation; and trash. Caltrans will continue to implement its current suite of BMPs as outlined in the TMRP as well as study the maintenance impact for installing full capture devices, and when it is possible, implement future potential full trash capture devices, subject to funding availability and TMDL Reach Prioritization as completed under the new Caltrans MS4 Permit. The continued implementation of current BMPs and the implementation of future potential BMPs will be directed by results obtained from future monitoring events as part of the adaptive management compliance approach. Caltrans has plans of installing five infiltration trenches along Highway 34 in 2019 subject to funding availability and the TMDL Reach Prioritization.

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1 Overview

This Annual Report is being submitted to fulfill the compliance requirements of the Amendments to the Water Quality Control Plan – Los Angeles Region for the Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL), Resolution No. R4-2007-007 (effective March 6, 2008). The purpose of this Annual Report is to present the results of seventh-year (2015-2016) monitoring efforts associated with the Revolon Slough/Beardsley Wash Trash Monitoring and Reporting Plan (TMRP) - Addendum No. 1 and associated Minimum Frequency of Assessment and Collection/Best Management Practice (MFAC/BMP) Program.

The Annual Report includes:

- MFAC/BMP Program Summary and Assessment;
- Compliance strategy; and
- Proposed revisions to MFAC/BMP Program.

This effort is being completed on behalf of the responsible parties to the Trash TMDL as listed in **Table 1**.

Table 1. Responsible Parties Participating in this TMRP and MFAC/BMP Program

Responsible Party	Non-point Source	Point Source
City of Camarillo	X	X[1]
City of Oxnard	X	X[2]
Ventura County	X	X[2]
Ventura County Watershed Protection District (VCWPD)	X	X
Participants in the VCAILG[3, 4]	X	
California Department of Transportation (Caltrans)[5]		X[2]

1. The City of Camarillo is complying with the point source requirements through a point source-specific MFAC/BMP Program.
2. These Responsible Parties are complying with the point source requirements through installation of certified trash full capture devices on all conveyances discharging to Revolon Slough and Beardsley Wash.
3. Ventura County Agricultural Irrigated Lands Group.
4. Not listed as point sources in the Trash TMDL.
5. Caltrans was not given a non-point source Load Allocation (LA) in the TMDL yet is voluntarily participating in the MFAC to meet the TMDL goals.

To complete this effort, the responsible parties hired the California Conservation Corps (CCC) to conduct field monitoring efforts and Larry Walker Associates (LWA) to oversee and conduct monitoring efforts as well as complete reporting requirements. The monitoring efforts during 2015-2016 were conducted according to the TMRP Addendum No. 1, which was submitted to the Regional Board in June 2015. TMRP Addendum No. 1 revised the non-point source MFAC Program from a quantitative assessment-based program to a visual assessment-based program. A TMRP update was necessary to improve the effectiveness of the MFAC Program to more efficiently assess trash levels in Revolon Slough and Beardsley Wash, target actions towards reducing trash quantities, and better utilize available resources. The revised MFAC Program was initiated in July 2015 and this Annual Report provides the results from October 2015 to September 2016.

1.1 ASSESSMENT SITE LOCATIONS

Five visual assessment sites were included in TMRP Addendum No. 1, with four of the sites comprised of assessment sites from the previous MFAC Program (Sites 1, 3a, 5 and 8) and one site comprised of a new assessment location in the City of Oxnard (Site 10). The assessment sites listed below are also depicted in **Figure 1** and detailed in **Appendix 1.**

Assessment Sites:

- Site 1: Revolon Slough and its adjacent land areas at Wood Road (the end of the concrete-lined channel). (MFAC-required)
- Site 3a: Drain outlet on the north side of Camarillo Hills Drain between Las Posas Road and Springville Drive. (MFAC-required)
- Site 5: Agriculture Drain – East of Wood Road on Etting Road.
- Site 8: Caltrans Site at the 101 Freeway Bridge over Revolon Slough.
- Site 10: 5th Street Drain in the City of Oxnard. (MFAC-required)

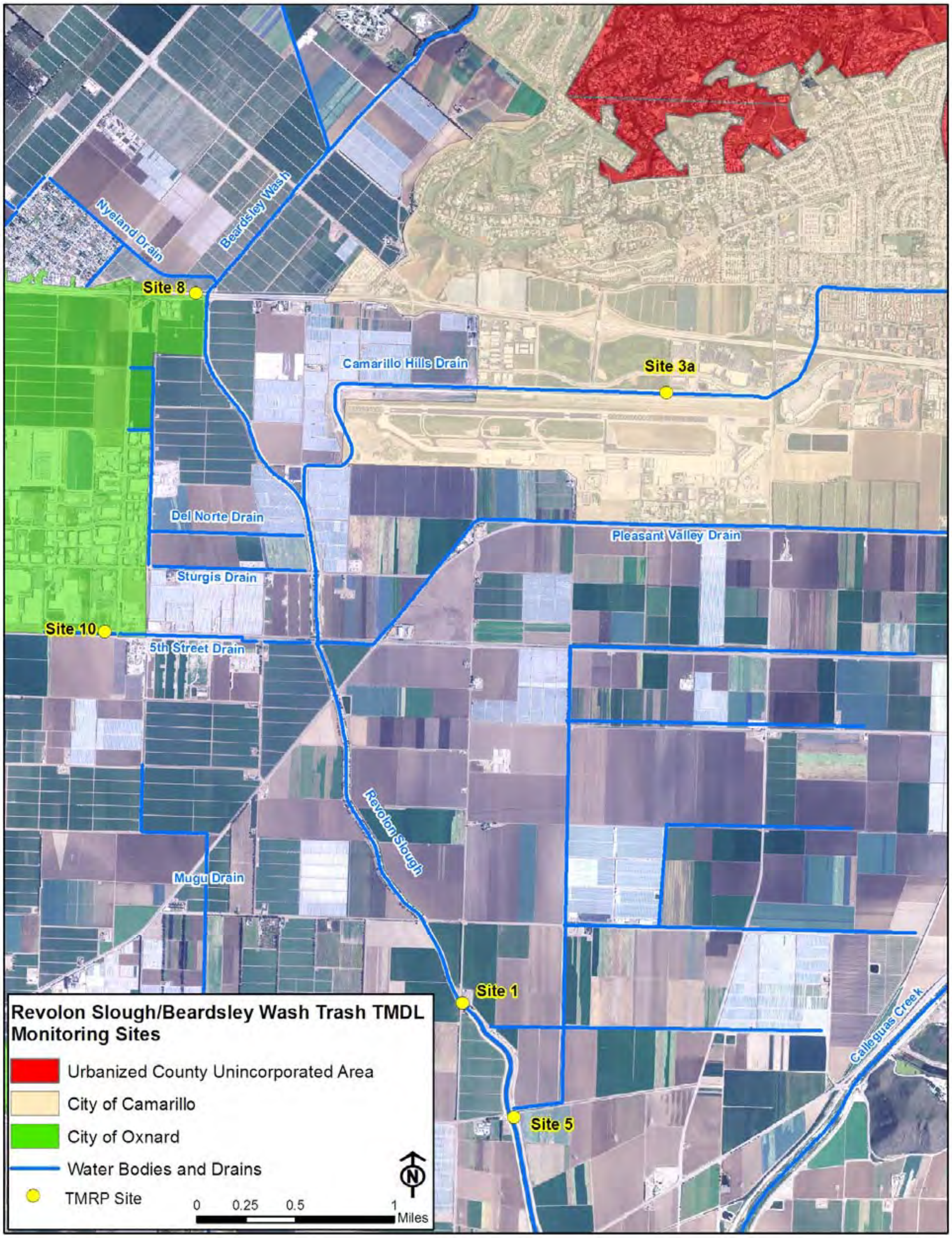

Figure 1. TMRP/MFAC Program Sites

2 Visual MFAC Program

This section provides a summary of the visual monitoring program implemented October 2015 through September 2016.

2.1 MFAC/BMP PROGRAM APPROACH

The goal of the MFAC/BMP program is to address non-point sources of trash in the Revolon Slough and Beardsley Wash watershed. The MFAC/BMP program includes implementing BMPs as outlined in the TMRP and conducting monitoring to assess the effectiveness of BMP implementation.

The revised MFAC/BMP Program includes the following elements:

1. **Conduct monthly assessments and trash collection events**

   MFAC events are conducted monthly at the monitoring sites. The collection aspect of the MFAC utilizes information from the assessments (visual surveys) to determine the locations where trash collection efforts should be focused for the event.

2. **Conduct regular cleanups**

   Although the TMRP outlined quarterly cleanups, the responsible parties have been conducting monthly cleanups to reduce the amount of trash entering the Revolon Slough and Beardsley Wash.

3. **Employ additional BMPs**

   Information gathered during the MFAC events are used to inform the responsible parties as to the level and frequency of BMP implementation, including special trash cleanups, needed to achieve a Category 1 level of trash, as detailed below.

2.2 MONITORING APPROACH

The monitoring approach is a streamlined visual survey of trash levels at select sites within Revolon Slough and Beardsley Wash and sites within conveyances that discharge to Revolon Slough and Beardsley Wash. The visual survey uses a component of the Surface Water Ambient Monitoring Program Rapid trash Assessment Protocol (SWAMP Protocol) and visual assessment approaches being utilized by the City of Ventura, the Santa Clara Valley Urban Runoff Pollution Prevention Program in the San Francisco Bay Area, and a number of cities and municipalities throughout the country.

The visual surveys utilize a three-point system based on the “Level of Trash” scoring category discussed in the SWAMP Protocol to estimate the presence of litter in a specific area. Individuals performing the visual surveys are trained on how to properly conduct these assessments to ensure consistency when performing such surveys and are trained to score each assessed area by rating the amount of litter observed, using the following categories:

- Category 1 – Represents the SWAMP Category “Optimal”
- Category 2 – Represents the SWAMP Category “Suboptimal”
- Category 3 – Represents the SWAMP Category “Poor”

The definition of Category 1 is:

> “On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.”

The definition of Category 2 is:

> “On first glance, low to medium levels of trash are evident (10 – 100 pieces). Stream, bank surfaces, and riparian zone contain some litter and debris. Possible evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.”

The definition of Category 3 is:

> “Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.”

Visual monitoring is conducted monthly for each designated site (**Table 2**).

2.3 MFAC/BMP PROGRAM ASSESSMENT APPROACH

As stated above, the goal of the MFAC/BMP Program is to address non-point sources of trash in Revolon Slough and Beardsley Wash. Results of the monitoring are used to evaluate the effectiveness of the MFAC/BMP Program and to support any necessary modifications. The MFAC/BMP Program is continuously evaluated and modified using an adaptive management approach consistent with the procedures outlined in the TMRP - Addendum No. 1 and as summarized below:

1. Monitoring sites classified in Category 1 during the visual monitoring event are noted and any trash observed is collected during the visual monitoring event.
2. Monitoring sites classified in Category 2 are evaluated to determine if and what type of additional BMPs are needed to reduce the accumulation of trash between visual monitoring events with intent to move these sites to Category 1.
3. Monitoring sites classified in Category 3 for four (4) consecutive monthly visual monitoring events initiate more frequent additional cleanups in the areas surrounding the sites to address trash. It is anticipated that the additional cleanups will address trash thereby moving the site to Category 2 and then to Category 1.

2.4 COMPLETED MONITORING EVENTS

Seventh-year visual monitoring for the Trash TMDL was conducted from October 2015 to September 2016 at the frequencies detailed in **Table 2.** The completed monitoring events are shown in **Table 3** and **Appendix 2** contains example photos from a typical MFAC Event.

Table 2. TMRP Seventh-Year Visual Assessment Monitoring Event Frequency

Site	Frequency
Site 1 – Revolon Slough At Wood Road	Once Monthly[1]
Site 3a – Storm drain outlet on the north side of Camarillo Hills Drain just downstream of Las Posas Road	Once Monthly[1]
Site 5 – Agricultural Drain East of Etting Road	Once Monthly[2]
Site 8 – Caltrans Site on side of US101 just west of Revolon Slough	Once Monthly[2]
Site 10 – 5th Street Drain at Del Norte Boulevard	Once Monthly[1]

1. The Trash TMDL specifically required these sites to be included in the MFAC Program.
2. The Trash TMDL did not require these sites; they were included to better characterize trash in the watershed.

Table 3. Completed Visual Assessment Monitoring Events (October 2015 – September 2016)

Site	Month											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	X	X	X	X	X	X	X	X	NA[1]	X	X	X
3a	X	X	X	X	X	X	X	X	X	X	X	X
5	X	X	X	X	X	X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X	X	X

X = Visual assessment monitoring event completed per the TMRP - Addendum No. 1.

1. Site 1 was inaccessible during the June 2016 event due to VCWPD channel maintenance activities.

2.5 MFAC/BMP PROGRAM ASSESSMENT

Seventh-year visual monitoring was the first year to exclusively include Visual Assessment Monitoring methods, in comparison to the sixth year monitoring effort, which was split between Quantitative Monitoring and Visual Monitoring. During the full year of implementation, the responsible parties were able to gain a better understanding of trash accumulation trends and potential sources at each site. The visual assessment categories for each site during the monthly MFAC events from October 2015 to September 2016 are presented in **Table 4**.

During the monitoring events, the main sources and types of trash were identified as originating from agricultural and urban sources. Agricultural trash includes irrigation hose, plastic containers for shipping produce, row crop plastic covering, plant containers, etc. Urban trash includes food wrappers, Styrofoam, cardboard, paper, metal, etc.

Site 1 was found to be consistently in the Category 2 and Category 3 range throughout the reporting period, with the exception of the December 2015 Event. Site 1 was not found to be in Category 3 for four consecutive months, and did not warrant additional BMPs such as more frequent cleanups, as outlined in the TMRP - Addendum No. 1. However, considering the goal of the MFAC/BMP Program is to address trash from non-point sources, the responsible parties decided to expand the areas subject to additional cleanups as a preventative measure to reduce trash discharging to Revolon Slough. In addition, the responsible parties installed anti-litter signage to reduce illegal dumping activities as reoccurring cases of dumping directly in or near the agricultural ditches along Wood Road that drain into Revolon Slough were observed.

Site 3a was consistently found to be in Category 1 for the entire monitoring year indicating that the BMPs implemented to address trash upstream of and along the Camarillo Hills Drain are effective at addressing trash.

Site 5 was found to be primarily in Category 2 during the monitoring year. It is believed that the proximity to several agricultural fields is contributing to the high trash levels. An agricultural ditch is upstream of the site, which runs between several agricultural fields, where trash may accumulate before discharging into Revolon Slough. Site 5 also has significant vegetation within the stream and on the banks, which acts as a natural capture device. Based on the visual assessment data collected, the responsible parties began conducting targeted outreach to the agricultural areas surrounding Site 5 including contacting the owners/operators of the agricultural areas and installing anti-litter signage at key locations in the agricultural areas. Site 5 also had evidence of a homeless encampment during the March 2016 and April 2016 monitoring events, but after crews removed belongings and debris, the individual(s) did not return to the area.

Site 8 was in Category 1 for ten of the twelve months during the monitoring year and in Category 2 for the other two months indicating the BMPs implemented to address trash along the 101 freeway are effective at addressing trash.

Site 10 was in Category 1 eight of the twelve months during the monitoring year. During October 2015 to December 2015, Site 10 was in Category 2 or Category 3, but beginning in January, Site 10 was in Category 1 for the remaining months except for August 2016, when Site 10 was in Category 2. Site 10 had evidence of a homeless encampment within the storm drain, which was the likely cause of the Category 2 conditions found at Site 10 during August 2016. The homeless encampment has since been removed from Site 10.

Overall, the MFAC/BMP Program is effective for addressing trash as none of the five monitoring sites met the criteria for increased BMP implementation (four consecutive months of Category 3 trash conditions). However, as high trash levels were found at Site 1 and Site 5, the responsible parties decided to increase BMP implementation in the areas surrounding these sites to further address trash. The responsible parties are confident these increased BMPs will lead to further trash reduction in these areas.

Table 4. Visual Assessment Trash Categories by Monitoring Site

Site	Visual Assessment Trash Category[1]											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2	2	1	3	2	3	2	2	NA[2]	3	2	2
3a	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	2	2	1	3	2	1	2	2	2	2
8	1	2	1	1	1	1	2	1	1	1	1	1
10	2	2	3	1	1	1	1	1	1	1	2	1

1. Number indicates trash category.
2. Site 1 was inaccessible during the June 2016 event due to VCWPD channel maintenance activities.

3 Compliance Strategy

The Trash TMDL requires all annual reports to include proposals to enhance BMPs, revise the MFAC (if needed), and prioritize the installation of full capture devices or other compliance measures, including structural BMPs or trash collection events for high trash generating areas. Additionally, the Trash TMDL requires point source-responsible parties to achieve a 100 percent reduction from the baseline wasteload allocation (WLA) by March 2016. This section describes the proposed compliance strategies to be utilized to meet the non-point source and point source Trash TMDL requirements and to further reduce trash discharges into Revolon Slough and Beardsley Wash.

Non-point source-responsible parties will continue complying with the Trash TMDL through a MFAC/BMP Program that includes a combination of MFAC events and BMPs including structural and non-structural BMPs. The information gathered from the MFAC/BMP Program will guide BMP implementation and selection to ensure efficient and effective compliance with the Trash TMDL. The responsible parties will also utilize adaptive management to allow for flexibility in determining the correct BMPs to implement and the correct locations to implement the BMPs. The proposed adaptive management compliance strategy is as follows:

1. Continue implementation of the approved MFAC Program using the visual assessment method.
2. Continue to implement the current suite of BMPs identified in the TMRP with the additions described in the **Current Best Management Practices Section**;
3. Implement BMPs in the future based on information generated from the MFAC/BMP Program focusing on the high trash generating areas as discussed in the **Future Potential Best Management Practices Section**; and
4. Evaluate the effectiveness and needs for additional BMPs and/or MFAC revisions semi-annually based on the results of the MFAC/BMP Program. The evaluation will consider the results of the visual assessments, on a site-by-site and watershed basis, to prioritize the areas where additional BMP implementation may be most effective in reducing trash levels. Proposed revisions to the MFAC/BMP Program and full capture device or other measure installation/implementation prioritization will be included in each annual report.

To address point sources, the responsible parties, where feasible, are installing full capture devices on conveyances discharging to Revolon Slough and Beardsley Wash and/or installing full capture devices in high trash generating areas and/or employing a point source-specific MFAC/BMP Program in other areas of their jurisdictions.

The following sections outline the jurisdictional BMPs currently being implemented, the additional BMPs to be implemented in prioritized areas, other BMPs being considered for implementation throughout the watershed, and a BMP implementation schedule.

3.1 CURRENT BEST MANAGEMENT PRACTICES

TMRP - Addendum No. 1 lists a suite of BMPs that each responsible party is implementing in their respective jurisdictions. One of the primary modifications to the MFAC/BMP Program in response to the monitoring results is to add additional trash cleanups at the high trash generating sites identified during the monitoring. Initially, the responsible parties contracted with the CCC to conduct monthly trash cleanups near Sites 1, 3a, and 5 from October 2014 through July 2015. Beginning in August 2015, Sites 8 and 10 were added to the monthly special cleanups. From October 2015 through May 2016, approximately 2,340 pounds of trash in 216 44-, 39-, or 33-gallon bags were removed from Sites 1, 3a, 5, 8, and 10. Beginning in June 2016, the trash cleanup area for Sites 1 was expanded to address trash found in these areas. Approximately 970 pounds of trash in 108 33-gallon bags were removed from Sites 1, 3a, 5, 8, and 10 during June 2016 to September 2016. The total annual amount of trash removed at all sites from October 2015 through June 2016 was 3,310 pounds. Example photos taken during these special cleanups are presented in **Appendix 3**.

In addition to the trash cleanups, the responsible parties implemented the following BMPs to address trash:

3.1.1 City of Camarillo Litter Management Program

TMRP BMP list for the City:

1. Catch basin cleaning - all City catch basins are inspected at least once per year and those in high-trash generating areas are inspected four times per year and all are cleaned when filled with trash to 25 percent or more of the catch basin's capacity. As identified in the City's March 2016 letter to the Regional Board staff, starting with July 2016, the city changed the inspection frequency to quarterly and the metric for determining when a catch basin needs to be cleaned to the same metric used for the nonpoint source program. The first quarterly inspection conducted in July 2016 revealed only 14 percent of the catch basins needed to be cleaned out (84 out of 665). The total pounds of trash removed from all the cleanouts from July 2015 through June 2016 was 698 pounds.
2. Open channel maintenance - all City-maintained channels are inspected and cleaned at least once before the wet season and at least once after the wet season.
3. Trash Management at Public Events - All special use permits for events in the public right of way require proper management of trash and litter.

The following are enhancements/revisions made to the non-point source BMPs listed in the TMRP for the City:

1. Trash removal was also performed along City fence lines near city stormwater system structures in the watershed.
2. The City performs annual debris and trash removal from city-maintained ditches/channels and detention basins. Approximately 30,060 pounds of materials were removed from the structures within the Revolon Slough and Beardsley Wash subwatershed.
3. City arterial streets are swept weekly and residential streets are swept monthly in an attempt to reduce trash accumulating in deleterious amounts on streets within the City.
4. The City requires conditions pertaining to trash to be met for all new development and redevelopment projects within the watershed, including:

A. Trash full capture devices and post-construction treatment devices for other pollutants of concern must be installed in drain inlets;

B. Trash enclosures and/or recycling areas must be properly installed (e.g., covered and including structures to direct stormwater away from entering the enclosures/areas);

C. All property areas must be maintained free of litter/debris;

D. Onsite storm drains must be cleaned at least twice per year, including once before the beginning of the wet season; and

E. Private roads and parking lots must be swept at a minimum of once per month, with two sweepings occurring in October before the beginning of the wet season.

5. The City requires private owners to provide proof of maintenance of their post construction treatment devices annually.

6. The City hosts household hazardous waste collection events two days per month to provide residents a place to properly dispose of their materials. This reduces the amount of illegal dumping and diverts household hazardous waste from landfills. Camarillo successfully diverted 222,059 pounds of household hazardous waste in 2015-2016 which equals a 99.9 percent diversion rate of items collected during the events.

7. The City adopted Stormwater Ordinance No. 1032 in December 2012 which includes trash specific prohibitions and fines and penalties for violations of the prohibitions.

8. The City continued additional measures to its Water Conservation Ordinance in 2015-2016 limiting lawn watering to three days per week, no washing of hard surfaces (i.e., driveways, sidewalks), and imposing penalties for runoff. Further, the City of reduced its water usage by 23.6 percent for the six month period ending July 2016 compared to usage in 2013. These measures will reduce dry weather flows to the storm drain system thereby reducing trash transport.

9. The City engages in several outreach and education campaigns including:

   A. The City includes a litter prevention message, at least annually, in its quarterly Cityscene Newsletter, which is distributed to all residents.

   B. The City includes an insert with all utility bills soliciting volunteers to remove trash in the City on Coastal Cleanup Day and which also educates residents on pollution prevention.

   C. The City conducts commercial and industrial facility inspections to ensure proper pollutant prevention BMPs are being applied and to educate the employees on the importance of pollution prevention. The City inspected 461 facilities during 2015-2016.

   D. The City sends out letters to all commercial, industrial, and high-density residential property managers requesting assistance in controlling trash on their property.

E. The City inspects all construction sites to ensure application of proper pollution prevention BMPs. The City inspected 174 sites in 2015-2016.

F. The City mails construction site BMP brochures to contractors and developers annually, during fall, to ensure proper pollutant prevention BMPs are being applied especially before the wet season.

G. The City participates in the Countywide Stormwater Public Outreach Program that includes litter outreach, which can be reviewed at www.cleanwatershed.org. In 2015-2016, over 9.1 million impressions were made via this program with 15 percent of those in Spanish.

The following are enhancements/revisions made to the point source BMPs listed in the TMRP for the City:

1. The City installed and is maintaining 44 trash full capture devices in City storm drain catch basins in high trash generating areas throughout the City including 33 devices within the Revolon Slough and Beardsley Wash watershed. However, the City is currently employing a point source MFAC/BMP Program to meet the point source compliance requirements of the Trash TMDL (see **Section 3.2.1.** for information on the City's point source MFAC/BMP Program).

3.1.2 City of Oxnard Litter Management Program

1. Catch basin cleaning - all City of Oxnard catch basins are inspected at least once per year and those in high-trash generating areas are inspected four times per year and all are cleaned when filled with trash to 25 percent or more of the catch basin's capacity.
2. Open channel maintenance - all City of Oxnard-maintained channels are inspected and cleaned at least once per year before the wet season and at least once per year after the wet season.
3. City of Oxnard arterial streets are swept weekly and residential streets are swept monthly in an attempt to reduce trash accumulating in deleterious amounts on streets within the City of Oxnard.
4. Trash Management at Public Events - All special use permits for events in the public right of way require proper management of trash and litter.
5. The City of Oxnard requires conditions pertaining to trash to be met for all new development and redevelopment projects within the watershed, including:

    A. Trash full capture devices and post-construction treatment devices for other pollutants of concern must be installed in drain inlets;

    B. Trash enclosures and/or recycling areas must be properly installed (e.g., covered and including structures to direct stormwater away from entering the enclosures/areas);

    C. All property areas must be maintained free of litter/debris;

    D. Onsite storm drains must be cleaned at least twice per year, including once before the beginning of the wet season; and

E. Private roads and parking lots must be swept at a minimum of once per month, with two sweepings occurring in October before the beginning of the wet season.

6. The City of Oxnard requires private owners to provide proof of maintenance of their post construction treatment devices annually.
7. The City of Oxnard accepts household hazardous wastes at the Del Norte Regional Recycling Station Monday - Saturday to provide residents a place to properly dispose of their materials. This reduces the amount of illegal dumping.
8. The City of Oxnard adopted Stormwater Ordinance No. 2876 in November 2013, which includes trash specific prohibitions and fines and penalties for violations of the prohibitions.
9. The City of Oxnard imposed additional measures to its Water Conservation Ordinance in 2014 by prohibiting lawn watering except between 4 PM and 9 AM or 6 PM and 9AM during daylight savings, no washing of hard surfaces (i.e., driveways, sidewalks), and imposing penalties for runoff. These measures will reduce dry weather flows to the storm drain system thereby reducing trash transport.
10. The City catch basins are labeled, "Don't pollute, Flows to Waterways".
11. The City of Oxnard engages in several outreach and education campaigns including:
    A. The City of Oxnard has established the www.oxnardnews.org website which disseminates information regarding pollution prevention, household hazardous waste roundups, Coastal Clean-up day and water conservation.
    B. The City of Oxnard includes an insert with all utility bills soliciting volunteers to remove trash in the City of Oxnard on Coastal Cleanup Day which also educates residents on pollution prevention.
    C. The City of Oxnard conducts commercial, industrial, and construction facility/site inspections to ensure proper pollutant prevention BMPs are being applied and to educate the employees on the importance of pollution prevention.
    D. The City of Oxnard sends out letters to all commercial, industrial, and high-density residential property managers requesting assistance in controlling trash on their property.
    E. The City of Oxnard inspects all construction sites to ensure application of proper pollution prevention BMPs.
    F. The City of Oxnard participates in the Countywide Stormwater Public Outreach Program that includes litter outreach, which can be reviewed at www.cleanwatershed.org.

3.1.3 County of Ventura and VCWPD Litter Management Program

The County has a very limited storm drain system within the Trash TMDL responsibility area. In 2014, eight StormTek® connector pipe screen full capture devices were installed. The final inspection of the eight full capture devices was completed in October 2014 towards 100 percent

Trash TMDL compliance. However, additional storm drain system analysis indicated the installed devices were insufficient to meet point source compliance requirements. In May 2015, the County issued a contract for a site suitability analysis for installation of additional full capture devices within the Revolon Slough/Beardsley Wash watershed. The results of this study showed that 48 additional full capture devices were required to meet the 100 percent full capture requirement. The County installed the remaining 48 full capture devices and is meeting the 100 percent point source compliance requirement. For details, refer to "County of Ventura Full Capture Connector Pipe Screen Trash Excluder Certification Report" provided in **Appendix 4**.

1. Catch basin cleaning - Catch basins are inspected at least once a year and cleaned when filled to 25 percent or more of the catch basin's capacity. During storm season, all drainage facilities are inspected and cleaned as necessary.
2. Open channel storm drain maintenance - All VCWPD-owned and -maintained channels are cleared, inspected, and cleaned as required at least once per year. During the annual 2015-2016 channel sediment cleaning of Revolon Slough and Beardsley Wash, a total of 5,362 tons of combined plant material, sediment and trash were removed. Trash accounted for approximately 3.8 tons of the removed material.
3. Trash Management at Public Events - A proper Management of Trash and Litter Plan is required when obtaining a permit for staging public events. This Plan requires adequate facilities for trash collection and disposal.
4. Public areas - Trash receptacles have been placed within high trash generation areas. These devices are cleaned and maintained regularly to prevent trash overflow.
5. The Stormwater Quality Management Ordinance for Unincorporated Areas (Ventura County Ordinance No. 4450) includes litter and trash specific prohibitions for the discharge or deposition of trash that may enter the County storm drain system or receiving waters (Section 6942). The ordinance also includes civil penalties for violations and provisions for issuing administrative fines, recovery of costs and misdemeanor violations.
6. County catch basins are labeled, "Don't pollute, Flows to Waterways".
7. New watershed awareness signs have been installed at key locations at major roadway crossings of Revolon Slough and Beardsley Wash, stating "Calleguas Creek Watershed, Keep It Clean!" In addition, in June 2016, the County/VCWPD installed 11 bilingual "No Dumping Allowed" signs at six locations at access points along Revolon Slough and Beardsley Wash, where illegal dumping has occurred. Photos of the newly installed signs are provided in **Appendix 5**.
8. In October 2013, an anti-littering billboard space was leased from ClearChannel with a message posted for a month along Highway 101 (near the Del Norte overcrossing) stating "Our Oceans are Drowning in Plastic", encouraging proper disposal of waste and recyclable materials. This location was seen by 97,000 people per day (estimated at 64,000 Ventura County residents and 33,000 others travelling through the area) for the entire month of October.
9. On July 31, 2012 the County of Ventura Board of Supervisors received and filed a draft model Single-Use Bag Ordinance referred to the County by the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON). The County endorsed the

use of up to $8,000 as the County's pro-rata share of a regional Environmental Impact Report (EIR) to be prepared by BEACON, which is required to be completed under the California Environmental Quality Act (CEQA) before the model single-use bag ban can be adopted. This was the first step for the County to move forward with the consideration of adoption of a single-use plastic bag ban.

10. On June 24, 2014 the County of Ventura Board of Supervisors approved a motion directing the County of Ventura Executive Officer to have staff prepare a Single-Use Bag Ordinance modeled on the BEACON Ordinance.
11. The County and VCWPD continue to participate in the Countywide Stormwater Program to provide outreach and education retaining the services of "The Agency", a professional advertisement group that designs and conducts Countywide, bilingual outreach programs advocating proper trash disposal. The most recent addition to the outreach program is trash prevention and protection of stormwater quality education using Facebook®. This program made over 9.1 million countywide media impressions (TV, radio, internet, transit shelters) including 15 percent of those impressions in Spanish.
12. The County conducts commercial, industrial, and construction facility/site inspections to ensure proper pollutant prevention BMPs are being applied and to educate the employees on the importance of pollution prevention. The County inspects the 362 businesses at least twice during the Ventura County MS4 Permit Term.
13. The County requires private owners to provide proof of maintenance of their post construction treatment devices annually.
14. On September 17, 2016, County staff captained a Coastal Cleanup Day site in Beardsley Wash. 23 volunteers cleaned two sections of Beardsley Wash and removed 515 pounds of trash that included food and tobacco product wrappers, cigarette butts, as well as glass and plastic bottles. In addition, VCWPD crews removed 45 illegally dumped tires from Beardsley Wash weighing 2,020 pounds and an illegally dumped couch.

3.1.4 VCAILG Litter Management Program

During the 2015-2016 monitoring year, VCAILG provided education and outreach to a diverse group of owners and growers throughout Ventura County. Certain aspects of the education and outreach discuss trash BMPs for agricultural areas and information regarding the Trash TMDL. In addition, at a September 2016 VCAILG educational meeting, Regional Board staff gave an overview of the new Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region (Conditional Waiver) and the TMDL requirements under the Conditional Waiver, including those for trash.

VCAILG has been conducting direct outreach to agricultural areas surrounding Site 1 and Site 5 to address agricultural trash that was found near those sites. In addition, VCAILG installed anti-littering signs near the agricultural areas surrounding Site 1 and Site 5.

3.1.5 Caltrans Litter Management Program

Caltrans implements a variety of BMPs in the watershed along the freeways and highways. These BMPs are a suite of programs done to reduce trash as follows.

1. Street Sweeping
2. Trash Collection
3. Adopt-a-Highway Program

Caltrans (District 7, serving Los Angeles and Ventura Counties) uses a variety of methods to educate the public about the importance of managing stormwater. This consists of a variety of written materials, bulletins, and websites. A few venues the District uses to accomplish this are public schools and community sponsored clean up events, Bring Your Child to Work Day, and Earth Day. The written material is designed to appeal to the public while providing technical information on selected Caltrans projects and activities. Caltrans continues to install stenciled warnings prohibiting discharges to drain inlets at park and ride lots, rest areas, vista points and other areas with pedestrian traffic. Additionally, Caltrans has installed 24 biofiltration swales and one Austin Vault Sand Filter along Highway 101 in the Revolon Slough and Beardsley Wash subwatershed. The biofiltration swales and Austin Vault Sand Filter were installed to address a suite of constituents including metals and selenium; organochlorine pesticides, PCBs, and siltation; and trash.

3.2 FUTURE POTENTIAL BEST MANAGEMENT PRACTICES

Future potential BMPs specific to each responsible party are detailed below.

3.2.1 City of Camarillo Litter Management Program

To address non-point sources, the City will focus BMP efforts at the high trash generating areas identified through the MFAC Program and continue watershed-wide BMP activities as a means to further reduce the discharge of trash to Revolon Slough and Beardsley Wash.

For point sources, the City has been complying with the Trash TMDL's point source requirements by installing full capture systems and has installed 44 full capture systems citywide in the areas designated by the City as high trash generating; 33 of those are within the Revolon Slough and Beardsley Wash watershed. However, the City and its residents have recently been impacted by Federal Emergency Management Agency (FEMA) flood plain map revisions, placing residents in flood zones and thus projecting the increased possibility of flooding in those areas. In addition, residents in these areas are now required to purchase expensive flood insurance. As such, the City is going to analyze the existing full capture systems under more substantial rain events to ensure they operate efficiently and safely before installing additional full capture systems that could potentially increase flooding issues in these FEMA-designated flood plains. Therefore, the City has started compliance with the point source requirements of the Trash TMDL through a point source MFAC/BMP Program, as identified in the March 6, 2016 letter to Regional Board staff.

In May 2015, the City submitted a letter to the Regional Board staff detailing a proposed point source compliance option and requesting Regional Board approval. Subsequently, in July 2015 the City met with Regional Board staff to discuss the City's May 2015 letter. In October 2015, per a Regional Board staff request, the City submitted additional data related to the point source compliance option. On December 14, 2015, the City received a response letter from the Regional Board stating it was unable to approve the City's requested point source strategy. On March 3, 2016, the City submitted another letter to the Regional Board in response to the December 14, 2015 letter detailing a revised, proposed point source compliance strategy (listed below). As of the submittal date of this annual report, the City has not received approval of the proposed point source compliance option.

Until the Regional Board re-considers the Trash TMDL related to the Statewide Trash Policy's priority land use areas, the City will address all land uses (non-priority and priority) within the Revolon Slough and Beardsley Wash watershed by conducting a point source MFAC/BMP Program, which will consist of implementing the suite of BMPs currently employed by the City, as detailed in TMRP - Addendum No. 1 and Annual Monitoring Reports, as well as inspecting and monitoring catch basins for trash and/or leaf litter. The City is implementing the following inspection and collection schedule for non-priority land use area catch basins to serve as the assessment collection aspect of the MFAC/BMP Program:

- Initially, the City will conduct quarterly visual inspections for all non-priority land use catch basins.
- Inspection frequencies may be modified for particular catch basins based on the amount of trash and/or anthropogenic landscape litter (dumped grass clippings) present during initial quarterly inspections. A minimum inspection frequency interval will be selected that prevents trash and/or leaf litter from accumulating in deleterious amounts between collections.
- Collection events will occur concurrently with the assessments and the City will ensure zero trash and/or leaf litter will remain after the collection event.

Based on this inspection and cleaning schedule, catch basins cleaned one or fewer times (i.e., no trash/anthropogenic landscaping litter found during inspections) over a rolling three-year period will be considered equivalent to catch basins with full capture devices installed. This determination is based on trash and/or anthropogenic landscaping litter not accumulating in the catch basins and therefore not being discharged to Revolon Slough and Beardsley Wash. This also indicates the BMPs implemented by the City are addressing trash equivalent to full capture devices. If any catch basin does not maintain its one or fewer cleaning status, the catch basin and/or area surrounding the catch basin will be addressed via trash-control BMPs to return the catch basin to the one or fewer cleaning category and, depending on the results of the full capture systems analyses, may be addressed by a full capture system. If the Regional Board revises the Trash TMDL to only focus on priority land uses, the MFAC/BMP Program will be ceased for the non-priority areas and the inspection and cleaning protocols will revert to the requirements of the Ventura County MS4 Permit.

In order to assess compliance with the 100 percent reduction from the baseline WLA requirement, the City calculated a point source baseline WLA for: (1) all land uses and (2) only the priority land uses, using land use acreage determined through geographic information system (GIS) analyses and trash generation rate (TGR) data obtained through a review of reports that contain trash generation rate data. A baseline WLA of 2,738 gallons per year was calculated for all land uses and a baseline WLA of 1,653 gallons per year was calculated for only the priority land use areas. In essence, if the City's BMPs address at least 2,738 gallons per year of trash, then they will be in compliance with the 100 percent reduction from the baseline WLA.

In 2015-2016, the City removed 54,628 gallons of trash through the implemented trash control measures (**Table 5**). Further, the City began point source MFAC/BMP Program quarterly inspections in July 2016. The July 2016 inspection revealed that only 84 catch basins had to be cleaned, which equates to only 14 percent of the total 665 catch basins. Therefore, trash and debris are not accumulating in deleterious amounts between the inspection and collection events. The City is confident the current trash control measures implemented as well as the point source MFAC/BMP Program are effectively meeting the point source requirements of the Trash TMDL.

Table 5. Materials Removed via Various City Trash-Control Measures Implemented in 2015-2016

BMP	Estimated Amount Removed	Amount of Trash	Amount of Leaf Litter[2]	Amount of Sediment
Amount of trash collected in pounds				
Catch Basin Cleaning	13,959	698	10,469	2,792
Street Sweeping	644,800	128,960	257,920	128,960
Ditch, Channel, and Detention Basin Cleaning	30,060	6,012	12,024	6,012
Fence Line Trash Removal	900	900	0	0
Total	**689,719**	**136,570**	**280,413**	**137,764**
Amount of trash collected in gallons[1]				
Catch Basin Cleaning	5,584	279	4,188	1,117
Street Sweeping	257,920	51,584	103,168	51,584
Ditch, Channel, and Detention Basin Cleaning	12,024	2,405	4,810	2,405
Fence Line Trash Removal	360	360	0	0
Total	**275,888**	**54,628**	**112,166**	**55,106**

1. Pounds converted to gallons using 2.5 pounds=1 gallon from: Michael Baker International. Literature Review for Trash Amendment Compliance Strategy. Contract No. 534079, Task Order 52. Prepared for: County of San Diego Department of Public Works. July 2015.
2. Leaf litter is not anthropogenic landscaping litter but literally leaves from adjacent trees. Dumped landscaping litter is considered trash and is accounted for under "trash" category.

3.2.2 City of Oxnard Litter Management Program

The City owns and operates the Del Norte Regional Recycling and Transfer Station, which is responsible for accepting, transferring and disposing of approximately 200,000 solid waste tons each year from the City, permitted haulers, and self-haulers throughout the region, as well as materials recovery, which is responsible for diverting material from the waste stream to prevent marketable recyclable material and divertible material from entering the landfill. The City has entered into agreements with organizations such as the Carpet America Recovery Effort (carpetrecovery.org) and Recycle with Paint Care (paintcare.org) for recycling of post consumer products. Green waste is recycled to provide compost soil amendments and other beneficial environmental products. The Del Norte Regional Recycling and Transfer Station includes a buyback center, which is responsible for accepting and dispensing payments to customers that redeem California Redemption Value material such as aluminum cans, plastic beverage containers, and glass. In addition, the Del Norte Regional Recycling and Transfer Station contains the Recyclable Household Hazardous Waste Center, which is responsible for accepting and recycling material from City residents that drop-off antifreeze, batteries, used motor oil, water-based paint and electronic devices. For hazardous wastes that are not accepted at Del Norte Regional Recycling and Transfer Station, the City offers Household Hazardous Waste Collection Events which are held at a separate location and allow residents to transport up to 15 gallons or 125 lbs household hazardous waste to the event. There is also a special program available once per month for Oxnard Conditionally Exempt Small Quantity Generator Businesses (CESQG's). A CESQG generates or stores less than 27 gallons or 200 pounds of Hazardous Waste per month. A CESQG may qualify for a limited amount of free disposal.

The City of Oxnard will continue to promote the City's Green Sustainability Programs with robust outreach focused on pollution prevention and environmental sustainability. The City of Oxnard has started a new "On the Road to Zero Waste" campaign which encourages community participation through a series of workshops designed to educate the public and garner community input. The program has vision of zero waste with a guiding principle to protect the environment and public health.

Additionally, the City of Oxnard joined efforts with the Calleguas Creek Stakeholder Group during the 2014-2015 monitoring year and is participating in the approved TMRP - Addendum and MFAC/BMP Program for trash monitoring and BMP implementation. The City of Oxnard will focus BMP efforts at the high trash generating areas identified through the MFAC Program and continue watershed-wide BMP activities as a means to further reduce the discharge of trash to Revolon Slough and Beardsley Wash.

For point sources, the City of Oxnard has not yet been able to install full capture devices for conveyances discharging to Revolon Slough and Beardsley Wash. The City of Oxnard identified 106 catch basins that require retrofitting. A staff report has been prepared and the project has been assigned to the Capital Improvement Project (CIP) Division. The CIP Division is currently working with the City of Oxnard's finance department to secure funding to install the full capture devices. While full capture device planning in ongoing, the City is continuing to implement BMPs within their jurisdiction to address point sources of trash and participate in the non-point source MFAC/BMP program. The non-point source MFAC/BMP program results in cleanups of a site within the City of Oxnard to support point source compliance as well.

3.2.3 County of Ventura and VCWPD Litter Management Program

The County/VCWPD will continue to install and implement structural and non-structural BMPs to address non-point source trash to minimize the discharge of trash from their jurisdictions as part of the MFAC/BMP Program. BMPs will include monthly trash cleanups at high trash generating areas. Additionally, the County will conduct targeted outreach to schools within the area covered by the Trash TMDL to educate the students, staff, and faculty on the importance of pollution prevention specifically regarding trash. The scale of BMP implementation will depend on the trash data collected during the 2016-2017 monitoring year. For point sources, the County completed installing full capture devices in conveyances they are responsible for and is meeting the March 2016 requirement of 100 percent of the conveyances discharging to Revolon Slough and Beardsley Wash are addressed by full capture devices (**Appendix 4**).

3.2.4 VCAILG Litter Management Program

As part of the new Conditional Waiver, VCAILG will provide educational classes focused on improving water quality, including identifying trash as an impairment of water quality. VCAILG will make a concerted effort to make trash management a bigger focus during educational classes. Furthermore, based on 2015-2016 monitoring results, VCAILG will assist its members with the implementation of additional BMPs as necessary by following the adaptive process identified in the WQMP. In addition, VCAILG members will continue to be billed separately for Trash TMDLs to further reinforce the idea, through a fiscal measure, that there are trash problems in the watershed.

3.2.5 Caltrans Litter Management Program

Caltrans will continue to implement its current suite of BMPs as outlined in the TMRP as well as study the maintenance impact for installing full capture devices, and when it is possible, implement future potential full trash capture devices, subject to funding availability and TMDL Reach Prioritization as completed under the new Caltrans MS4 Permit. The continued implementation of current BMPs and the implementation of future potential BMPs will be directed by results obtained from future monitoring events as part of the adaptive management compliance approach. Caltrans has plans of installing five infiltration trenches along Highway 34 in 2019 subject to funding availability and the TMDL Reach Prioritization.

3.3 BEST MANAGEMENT PRACTICES IMPLEMENTATION SCHEDULE

Non-point source-responsible parties intend to continue complying with the Trash TMDL through a visual MFAC/BMP Program, which may include the installation or implementation of structural or non-structural BMPs. The MFAC/BMP Program that was included in TMRP - Addendum No. 1 will continue to be implemented. Additional BMP implementation will be scheduled as appropriate to address the identified high trash generating areas.

Point source-responsible parties will continue installing full capture devices on conveyances discharging to Revolon Slough and Beardsley Wash and/or employ a point source-specific MFAC/BMP Program.

4 MFAC Revisions

Overall, the non-point source MFAC/BMP Program is effective for addressing trash as none of the five monitoring sites met the criteria for increased BMP implementation (four consecutive months of Category 3 trash conditions). In addition, the current monthly non-point source MFAC monitoring schedule is appropriate for assessing trash conditions within the Revolon Slough and Beardsley Wash subwatershed. Any necessary revisions identified during the implementation of the 2016-2017 monitoring year will be proposed in the eighth-year monitoring annual report in December 2017.

In addition, the City of Camarillo’s point source-specific MFAC/BMP Program is effective at addressing trash and the quarterly inspection and collection frequency is appropriate for assessing trash conditions within the City’s portion of the Revolon Slough and Beardsley Wash subwatershed. Any necessary revisions identified during the implementation of the 2016-2017 monitoring year will be proposed in the eighth-year monitoring annual report in December 2017.

Appendix 1. Assessment Site Descriptions

Site 1 – Revolon Slough at Wood Road

This site consists of Revolon Slough and its adjacent land areas. It begins at the end of a concrete channel and includes the 100 foot downstream portion of Revolon Slough and the banks on both sides of the water body.

<u>GPS Coordinates</u>:
Lat: 34.169771
Lon: -119.095591

Site 3a – Camarillo Hills Drain Outlet

This site begins at the upstream end of a drain outlet and includes the in-stream portions of the Camarillo Hills Drain and the banks on either side of the drain.

<u>GPS Coordinates</u>:
Lat: 34.215486
Lon: -119.076388

Site 5 – Revolon Slough at Etting Road

This site begins at the downstream end of an agricultural drain that discharges into Revolon Slough and includes the in-stream portions of Revolon Slough as well as the land areas within the slough and the banks.

<u>GPS Coordinates</u>:
Lat: 34.161731
Lon: -119.091460

Site 8 – Caltrans Site on U.S. 101 Freeway	
This site is located on the south side of U.S. 101 Freeway near Revolon Slough. The site begins at the end of the guard rail and ends at the fence surrounding Revolon Slough. <u>GPS Coordinates</u>: Lat: 34.221799 Lon: -119.120400	

Site 10 – 5th Street Drain at Del Norte Blvd.	
This site is located within the 5th Street Drain near the intersection of Del Norte Boulevard and 5th Street. This site was added to the MFAC Program in July 2015. <u>GPS Coordinates</u>: Lat: 34.191006 Lon: -119.107392	

Appendix 2. Example MFAC Event Photos

Site 1 – Revolon Slough at Wood Road

Figure 1: Site 1 before a MFAC Event in October, 2015

Figure 2: Site 1 after a MFAC Event in October, 2015

Site 3a – Camarillo Hills Drain Outlet

Figure 3: Site 3a before a MFAC Event in October, 2015

Figure 4: Site 3a after a MFAC Event in October, 2015

Site 5 – Revolon Slough at Etting Road

Figure 5: Site 5 before a MFAC Event in October, 2015

Figure 6: Site 5 after a MFAC Event in October, 2015

Site 8 – Caltrans Site on U.S. 101 Freeway

Figure 7: Site 8 before a MFAC Event in October, 2015

Figure 8: Site 8 after a MFAC Event in October, 2015

Site 10 – Revolon Slough at Del Norte Blvd.

Figure 9. Site 10 before a MFAC Event in October, 2015

Figure 10. Site 10 before a MFAC Event in October, 2015

Appendix 3. Example Special Cleanup Photos

Site 1 – Revolon Slough at Wood Road

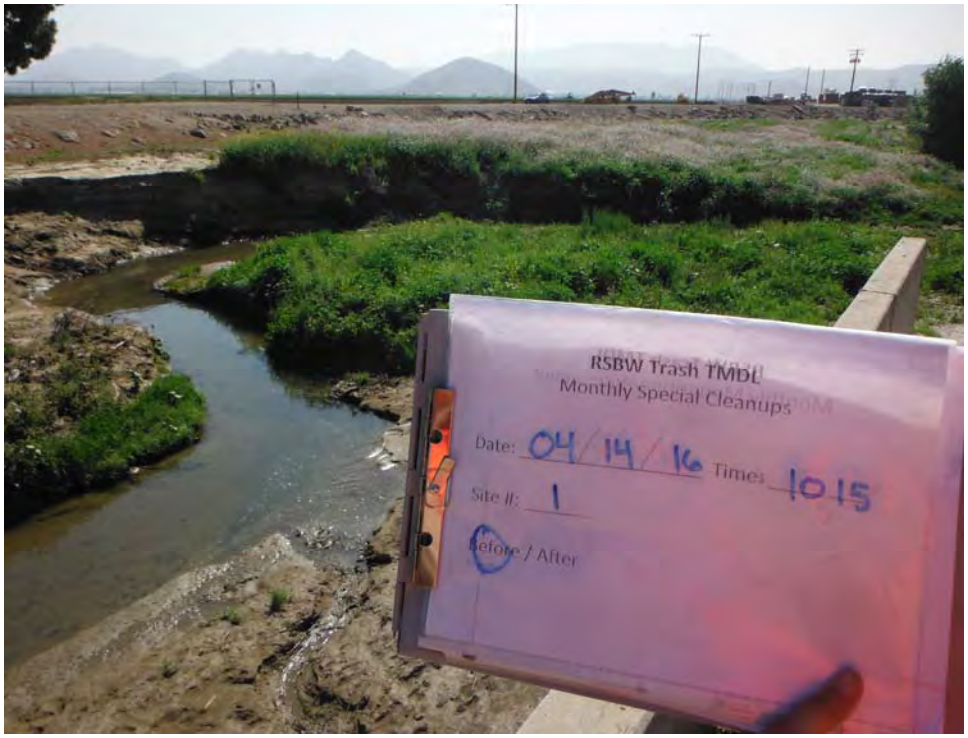

Figure 1: Site 1 before a Special Cleanup Event in April, 2016

Figure 2: Site 1 after a Special Cleanup Event in April, 2016

Site 3a-Camarillo Hills Drain Outlet

Figure 3: Site 3a before a Special Cleanup Event in April, 2016

Figure 4: Site 3a after a Special Cleanup Event in April, 2016

Site 5 – Revolon Slough at Etting Road

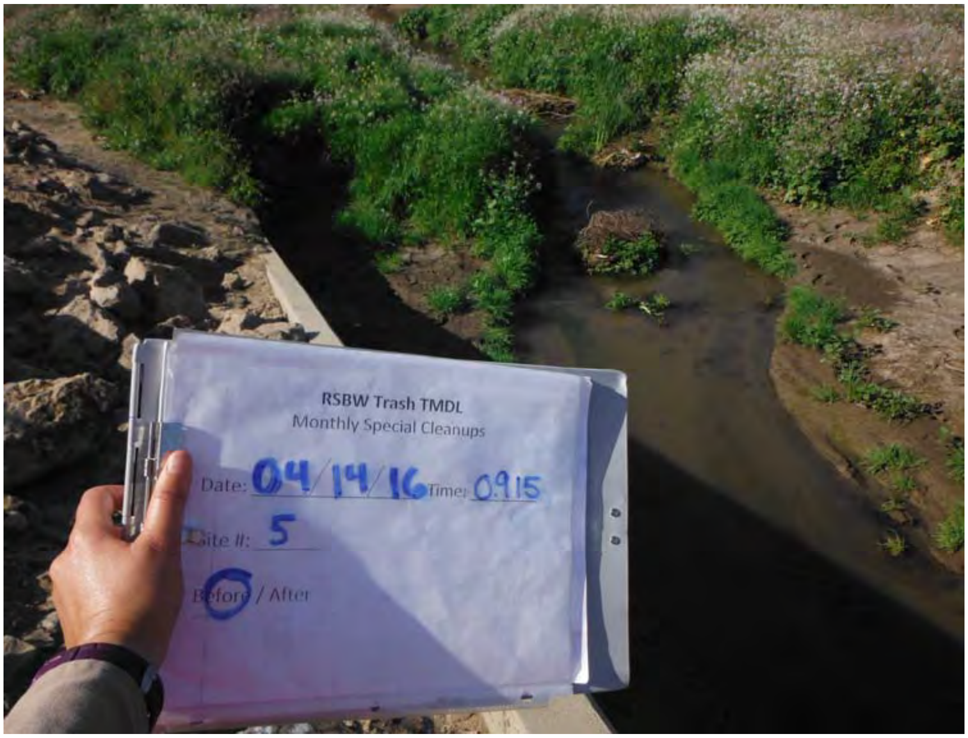

Figure 5: Site 5 before a Special Cleanup Event in April, 2016

Figure 6: Site 5 after a Special Cleanup Event in April, 2016

Site 8 – Caltrans Site on U.S. 101 Freeway

Figure 7: Site 8 before a Special Cleanup Event in April, 2016

Figure 8: Site 8 after a Special Cleanup Event in April, 2016

Site 10 – Revolon Slough at Del Norte Blvd.

Figure 9. Site 10 before a Special Cleanup Event in April, 2016

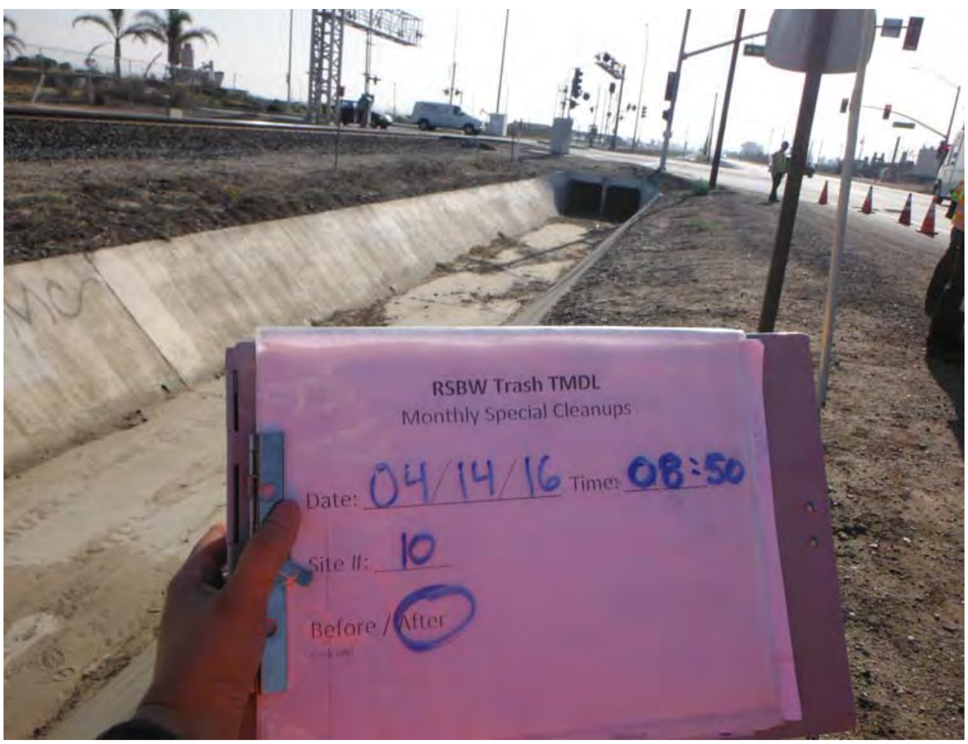

Figure 10. Site 10 after a Special Cleanup Event in April, 2016

Appendix 4. County of Ventura Full Capture Connector Pipe Screen Trash Excluder Certification Report

REVOLON SLOUGH/BEARDSLEY WASH TRASH TMDL
FULL CAPTURE CONNECTOR PIPE SCREEN TRASH EXCLUDER
CERTIFICATION REPORT

100% Full Trash Capture Compliance within
County Unincorporated Areas in Revolon Slough/Beardsley Wash Subwatersheds

Prepared By:

Ventura County Public Works Agency

800 S. Victoria Avenue

Ventura, CA 93009-1600

December 2016

REVOLON SLOUGH/BEARDSLEY WASH TRASH TMDL
FULL CAPTURE CONNECTOR PIPE SCREEN TRASH EXCLUDER
CERTIFICATION REPORT

Prepared By:

David Laak, Water Quality Planner

Ventura County Watershed Protection District

Reviewed By:

Ewelina Mutkowska, Engineering Manager

David Kirby, Water Quality Engineer

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Appendix A Detailed Maps and Drainage Areas

Appendix B Installation Photos

Appendix C As-Built Drawings

Background

The purpose of this report is to document the installation and certification of 54 adequately sized and maintained connector pipe screen (CPS) 100% full capture trash excluders and 2 custom sized Detention Basin standpipe 5 mm screens for all Ventura County Unincorporated (County) areas draining to the County's MS4 within the Revolon Slough/Beardsley Wash (RSBW) watershed as part of the Point Source requirements of the Revolon Slough and Beardsley Wash Trash TMDL (Los Angeles Regional Water Quality Control Board Resolution No. R4-2007-007).

The Los Angeles Regional Water Quality Control Board (LARWQCB) adopted the definition of "full capture system" for the Ballona Creek Trash Total Maximum Daily Load (TMDL) per Resolution No. 04-023 on March 4, 2004. This definition is considered applicable for all receiving waters in the Los Angeles Region identified as being impaired for trash. The definition is as follows:

"A full capture system is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the subdrainage area. Rational equation is used to compute the peak flow rate: Q = C x I x A, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map), and A = subdrainage area (acres)."

On August 1, 2007 the Los Angeles County Division of Public Works (LACDPW) received full capture certification from the LARWQCB for semi-circular connector pipe screens that were the basis of the submitted technical report "Connector Pipe Screen Design, Full Capture TMDL Compliance, Screen and Bypass Sizing Requirements (LACDPW Technical Report)," dated April 2007. Following the guidelines of the technical report, the County of Ventura hired contractors to design, manufacture and install these types of devices in the RSBW Watershed, in order to claim full capture credit towards the Trash TMDL requirements. The Stormtek and United Storm Water Inc., CPS devices installed within RSBW are certified for 100% trash capture per LACDPW Technical Report requirements.

In Fall 2014, 8 County owned and maintained catch basins were retrofitted with Stormtek CPS devices with 5 mm mesh screen designed to provide 100% capture of trash within their respective drainage areas. All devices were installed on the downstream connector pipe at strategic locations within their respective drainage areas to ensure 100% full trash capture for the areas draining to these devices.

During Summer 2015, the County hired Stantec Consulting Services, Inc. to perform a site suitability analysis study of both land use and the storm drain system to determine County owned catch basins requiring installation of full capture devices. This analysis included field reconnaissance findings with key information pertaining to physical measurements, photos, and field sketches, in addition to required drainage area delineation and hydrology calculations. Based on this site suitability analysis and additional field investigations and desktop analysis performed by County staff, in Fall 2016 48 additional County owned and maintained catch basin inlets were installed with custom designed and fabricated CPS devices from United Storm Water Inc. in addition to installation at two locations of 5 mm custom CPS screens on existing Ventura County Watershed Protection District (VCWPD) detention basin standpipes. In October 2016 it was discovered that the City of Oxnard had annexed a small roadway portion on Almond Drive in the Nyeland Acres community to become part of the City of Oxnard. 2 CPS devices were installed within this newly annexed area and will be transferred to the City of Oxnard for ownership and maintenance.

Potential Point Sources and Responsible Jurisdiction

The Trash Total Maximum Daily Load For Revolon Slough and Beardsley Wash in the Calleguas Creek Watershed Staff Report defines the Revolon Slough starting "… as Beardsley Wash at the Camarillo Hills…becomes Revolon Slough in the Oxnard Plain… Revolon Slough flows into Mugu Lagoon in a channel that runs parallel to Calleguas Creek near Pacific Coast Highway". **Figure 1** depicts the extent of the Revolon Slough Subwatershed and the County of Ventura Unincorporated Urban Infill areas and the Camarillo Airport properties, which are owned by the County of Ventura.

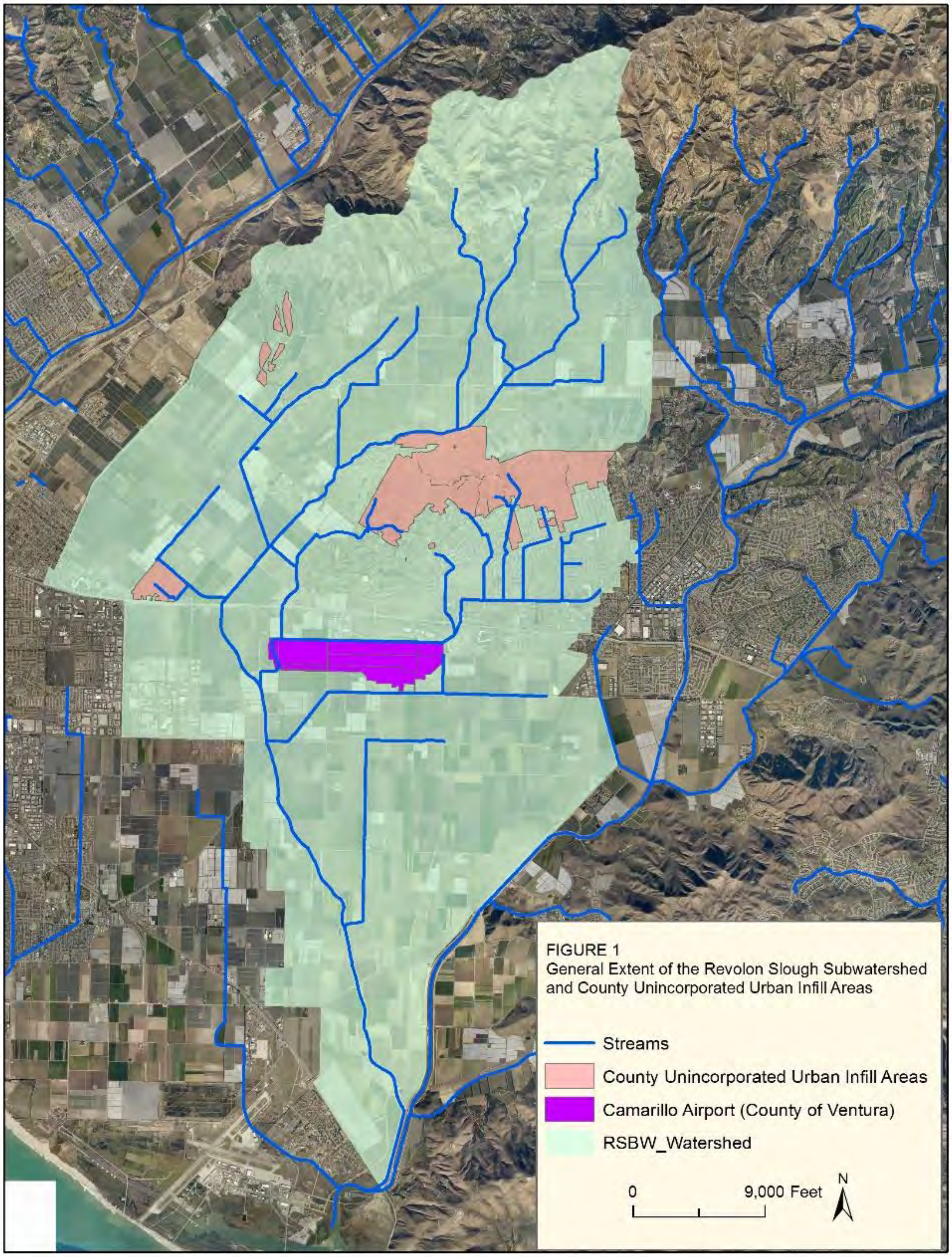


Figure 1 –Extent of the Revolon Slough Subwatershed, County Unincorporated Infill Areas and Camarillo Airport

The County's MS4 storm drain network that is within the RSBW Subwatershed was analyzed to identify the catch basin locations requiring CPS installations. Each catch basin location was also evaluated for feasibility of installation of CPS devices based on its dimensions, inlet type and existing storm drain infrastructure. The locations of the installations represent 100% trash capture for all County MS4 drainage areas within the subwatershed to catch basins that are feasible for CPS device installation. The VCWPD owned Ramona and Las Posas Estates Detention Basins were identified as ideal locations for 5-mm mesh screen installation on their basin standpipes due to the large drainage area to each basin. For the Camarillo Airport area, the secured runway and hangar area is covered under the State's Industrial

General Permit (IGP). As such, enhanced stormwater BMP's, including trash capture and frequent street/runway cleaning are implemented within this area per IGP and FAA safety requirements. The MS4 system outside of this IGP area was analyzed for full capture device requirements. **Figure 2** shows an overview of the County's MS4 within the RSBW Subwatershed with the locations of the installed CPS devices.

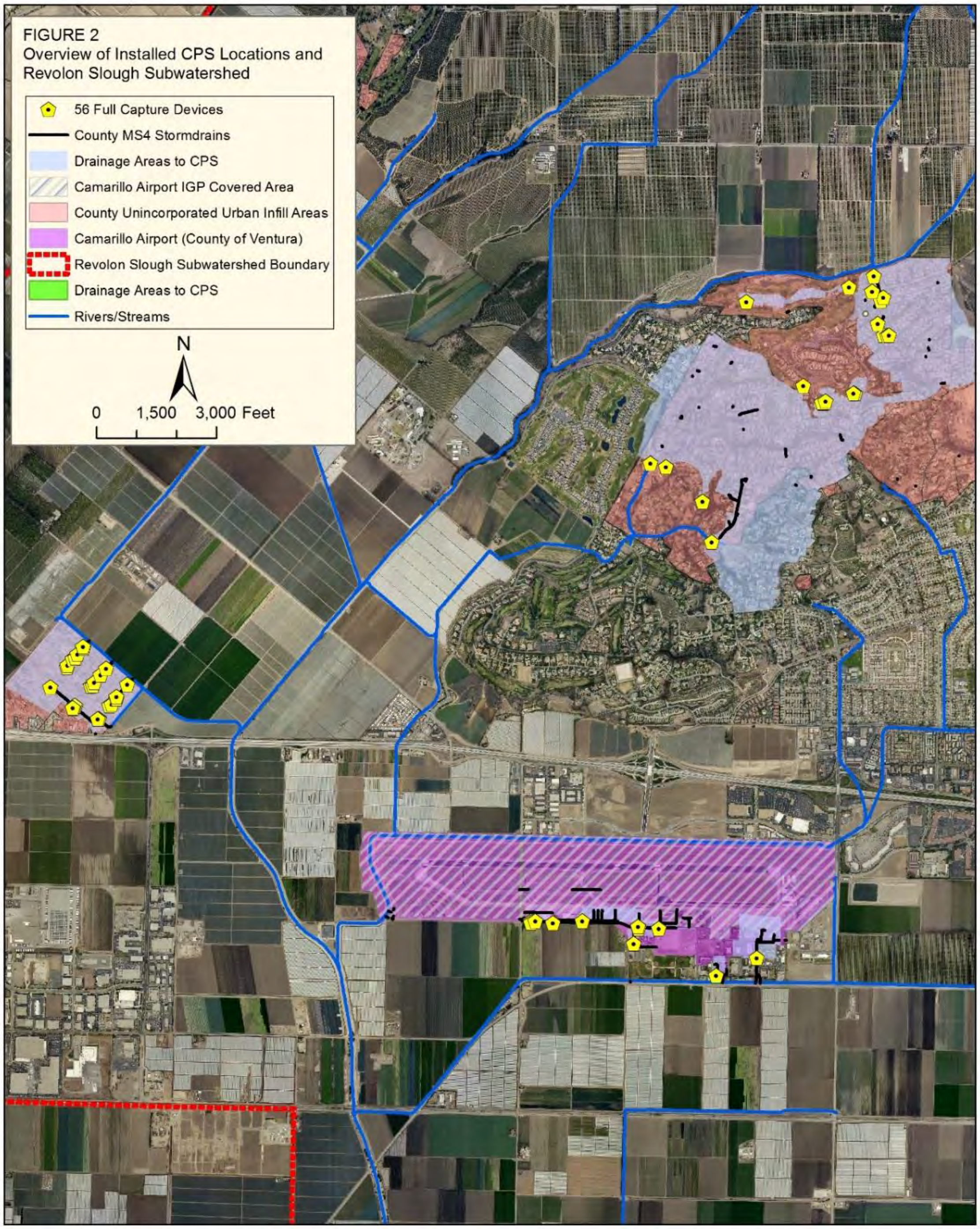


Figure 2 – Overview of Installed CPS Locations within Revolon Slough Subwatershed

CPS Device Trash Excluder Locations

Figures 3, 4 and 5 show detailed maps of the County MS4 and the installed CPS devices with their drainage areas. **Appendix A** contains more detailed maps of each retrofitted catch basin and their drainage areas. **Appendix B** contains photos of the installed for each of the locations using their unique device identification number. The installed devices As-built drawings can be found in **Appendix D.**

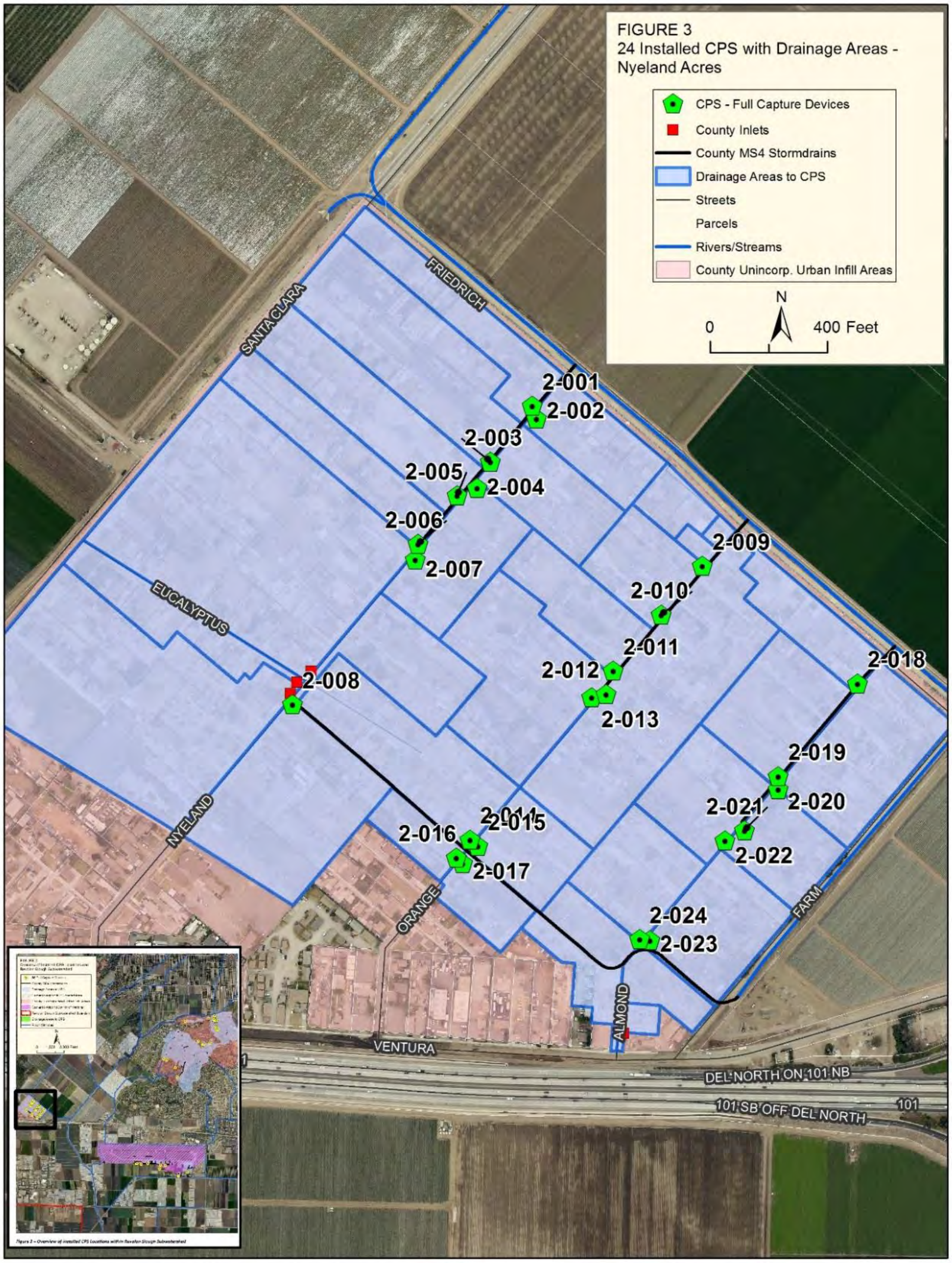


Figure 3 – 24 Installed CPS with Drainage Areas – Nyeland Acres

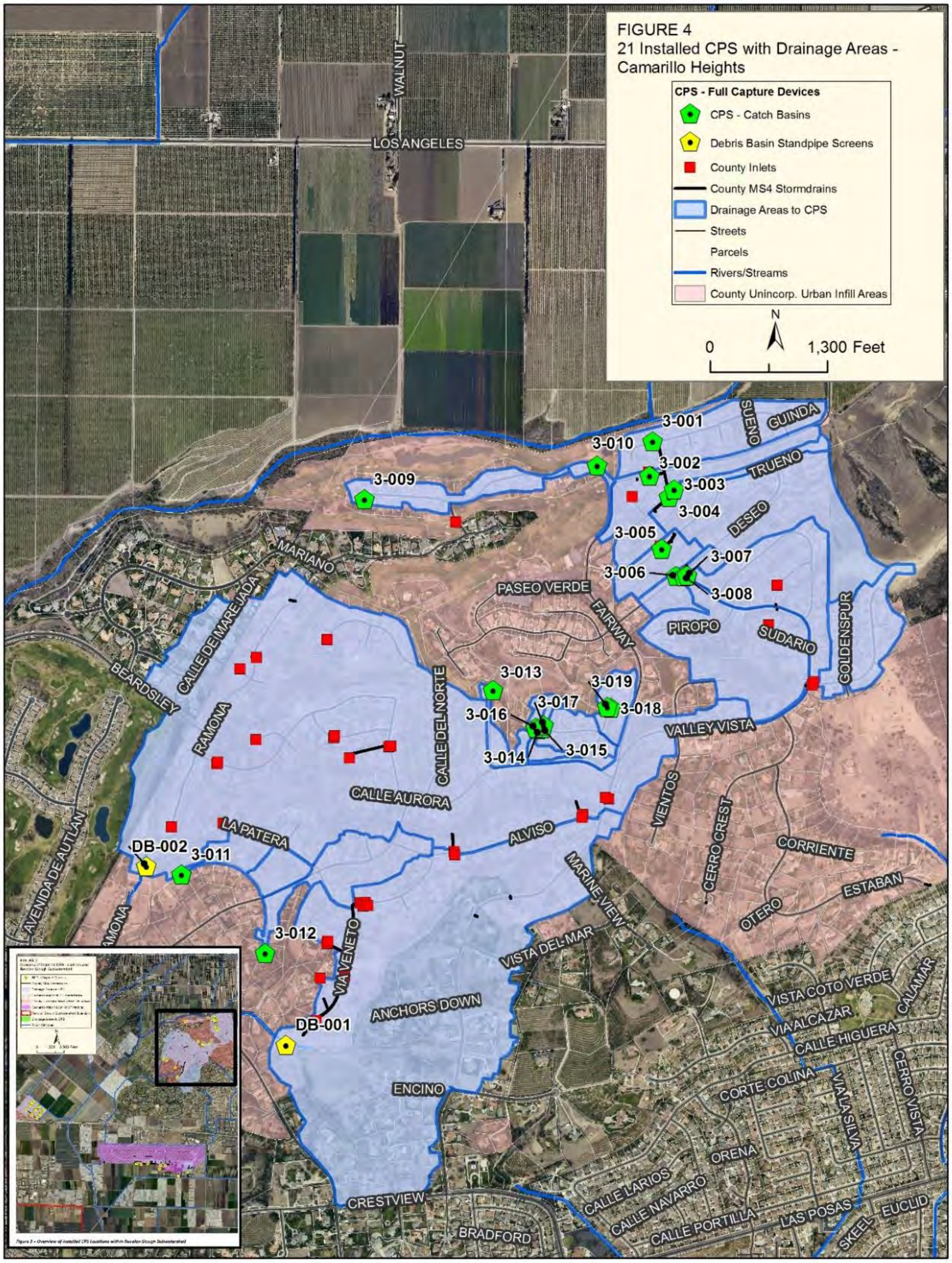


Figure 4 - 21 Installed CPS with Drainage Areas – Camarillo Heights

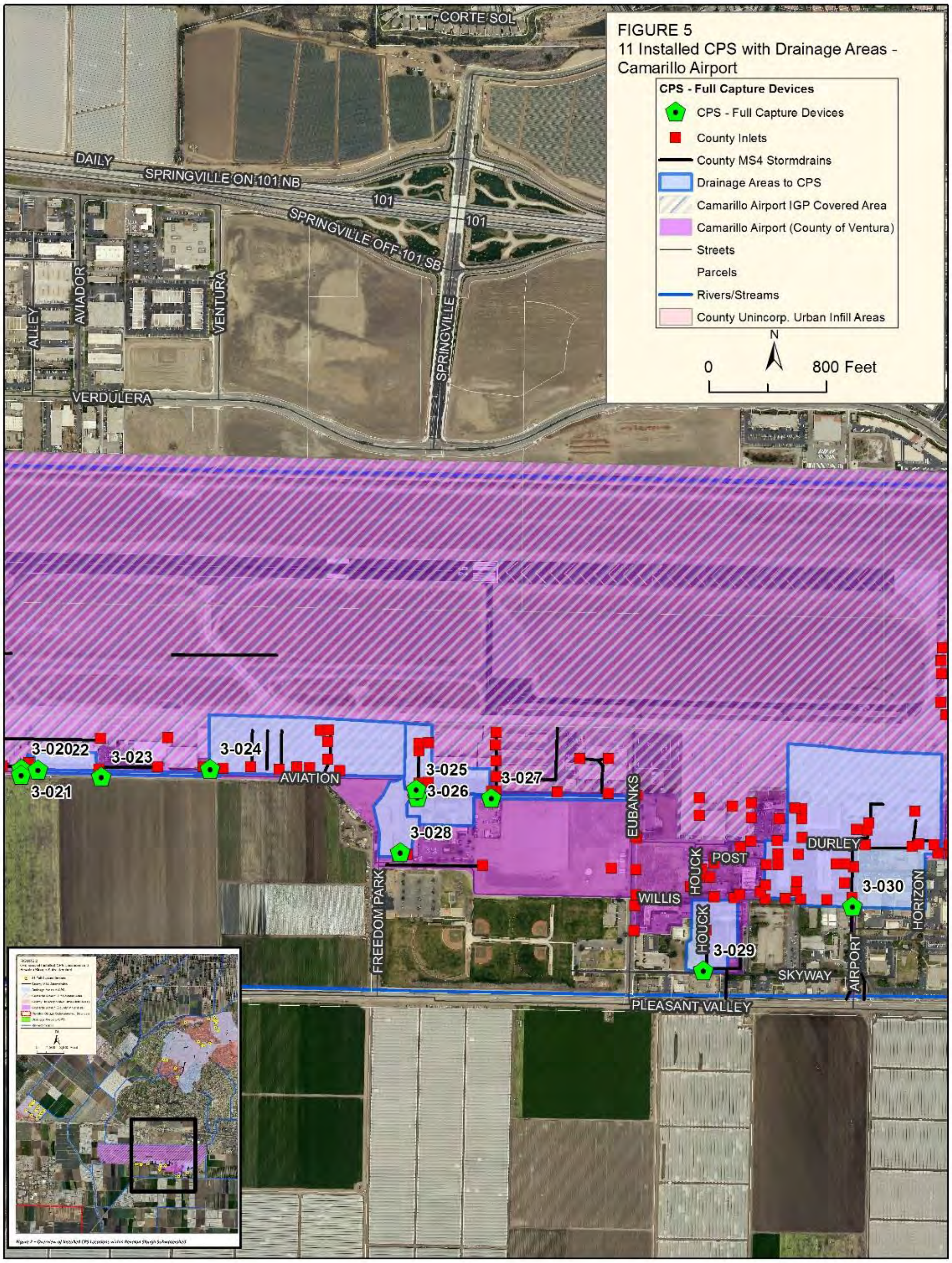


Figure 5 - 11 Installed CPS with Drainage Areas – Camarillo Airport

Each of the CPS devices will be inspected and maintained by responsible personnel in accordance with the 'Connector Pipe Screen (CPS) Trash Excluders – Operation and Maintenance Plans' (O&M Plans) which are currently under review and approval by the involved County Departments.

Design Hydrology

In Fall 2014, 8 County owned and maintained catch basins were retrofitted with Stormtek CPS devices with 5 mm mesh screen designed to provide 100% capture of trash within their respective drainage areas. Stantec Consulting Services, Inc. was hired in Summer 2015 to perform a complete site suitability analysis study of both land use and the storm drain system to determine additional County owned catch basins requiring installation of full capture devices within RSBW. This analysis included field reconnaissance findings with key information pertaining to physical measurements, photos, and field sketches, in addition to required drainage area delineation and hydrology calculations. Since the majority of Ventura County drainage facilities are designed for a 10-yr design storm frequency (Q_{10}), the calculations in this report for the sizing of the CPS devices are for a catch basin designed with a 10-year storm frequency. The VCWPD hydrology section provided guidance on two different recommended hydrologic calculations methods to determine flow rates to each catch basin in addition to providing two different methods for the CPS device 1-yr/1hr treatment flow. The methods utilized within the RSBW watershed are discussed below and provide larger flow rates, and therefore more conservative values. Below is a discussion of the hydrology calculations used to determine the 1-yr/1-hr design flow (for CPS device treatment flow to attain full capture requirements), and the 10-yr/24-hr design flow for the catch basin itself.

Calculation of 1-Yr/1-Hr Design Flow and 10-Yr/24-hr Design Flow

Guidance on acceptable analysis methods were provided by the VCWPD Hydrology Section. Mark Bandurraga, Design Hydrologist with VCWPD provided information and assistance regarding the existing VCRat model of the Revolon watershed and 1-yr/1-hr rainfall data. The following procedure was used for determining the design flow for the 1-yr/1-hr storm within the RSBW watershed:

- The Rational Equation Method (Q = CIA) was used to determine the runoff generated from the tributary area "A" of each inlet analyzed.
    - The "C" coefficients were determined from the Ventura County Technical Guidance Manual (TGM).
    - The equation for coefficient "C" = 0.95 * imp + Cp (1-imp).
        - "Cp" values are based on the Ventura Soil Type
        - (Soil Number 1 – 7) and are depicted on Table 2-3 of the TGM.

Table 2-3: Ventura Soil Type Pervious Runoff Coefficients

Ventura Soil Type (Soil Number)	C_p value
1	0.15
2	0.10
3	0.10
4	0.05
5	0.05
6	0
7	0

    - Intensity "I" values were determined using the Precipitation Frequency Data Server on NOAA's Hydrometeorological Design Studies Center website http://hdsc.nws.noaa.gov/hdsc/pfds/).
        - The latitude and longitude of each inlet location was entered on the website.
        - A site specific table of the precipitation frequency estimates for the 1-yr/1-hr storm event were provide for each location.

- The tributary areas for the inlets analyzed in the RSBW watersheds were provided by the County, with additional analyses conducted using a topographic map from LIDAR data, Google Earth Pro, and field investigation information. Drainage areas were delineated for each catch basin with a CPS device installed. See **Figures 3 & 4** – Installed CPS Devices and Drainage Areas.

The 10-yr/24-hr design flow analysis utilizes the results from a revised version of the Revolon model. The following summarizes the procedure for this storm scenario for the RSBW watershed:

- The 100-yr Tc's in the model are revised according to the County's general rules to reflect 10-yr conditions.
    - Table - 2 of the Moon Ditch Watershed Design Hydrology Update Final Report (dated January 2015) was referenced in converting the 100-yr Tc to the 10-yr Tc.
        - The percent imperviousness, soil numbers, and time of concentration for the nodes depicted in the table varied.
        - However, the ratio between the 100-yr Tc and the 10-yr Tc were consistently around the low 60% to the mid-70% range.
    - Using an average Tc value from the nodes depicted in Table – 2, a multiplier was determined for use in converting the 100-yr Tc in the Revolon model to an equivalent 10-yr Tc.
- The model was then rerun using those Tc's and the K10 rainfall distribution.
    - The results were pro-rated to determine the runoff of the tributary area for each catch basin analyzed.
    - The results of the design flows for both storm events are included in **Tables 1 & 2.**

RSBW - Calculation of Detention Basin Design Peak Flow, Volume, and Water Surface Elevation

Utilizing the VCWPD record drawings of the basins, the VCWPD Debris Basin Report (dated September, 2005) for reference, and the previously mentioned existing VCRat model of the Revolon watershed modified to reference the 1-yr /1-hr rainfall data. The basin routing results from the model was used to determine the design peak flow, volume, and water surface elevation for the Las Posas Estates Detention Basin and the Ramona Detention Dam.

- The Stage-Discharge Curves and Area-Capacity Curves from the VCWPD Debris Basin Report were used to create stage-storage-discharge curves for the reservoir routing of the Las Posas Estates and Ramona basins.
    - The report also provided the emergency spillway elevations and top of dam elevations.
- For the 1-yr/1-hr scenario, the VCRat model uses the intensity data from the vcrain.dat file that the County provided. The vcrain.dat file was renamed to vcrain_1-yr.dat. The rain curve used in the run was changed to the L10. A single curve was created using a value of 0.493 in/hr.
    - The Revolon Model Node ID for the Las Posas Estates Detention Basin is 5173D.
        - Finish Grade – Bleeder Pipe: 151.00'
        - Water Surface Elevation (WSE) Increase: +1.3'
        - Water Surface Elevation: 152.3 ft
        - Design Peak Flow: 29.44 cfs
        - Volume: 1.87 ac-ft (81,457 cu-ft)
    - The Revolon Model Node ID for the Ramona Detention Dam is 5166B.
        - Finish Grade – Bleeder Pipe: 149.00'
        - Water Surface Elevation (WSE) Increase: +4.85'
        - Water Surface Elevation: 153.85 ft

- Design Peak Flow: 55.08 cfs
- Volume: 4.35 ac-ft (189,486 cu-ft)

- Due to a reduction in volume, fattening of the hydrograph was removed for this storm scenario.

- For the 10-yr/24-hr scenario, the Revolon model was rerun using the 10-yr Tc values previously discussed. The reservoir routing provides values of the incoming hydrograph peak flows, the maximum elevation (stage) attained in the basin, and the corresponding volume (storage) at that elevation.
  - The Revolon Model Node ID for the Las Posas Estates Detention Basin is 5173D.
    - Design Peak Flow: 264.14 cfs
    - Water Surface Elevation: 163.97 ft
    - Volume: 12.46 ac-ft (542,758 cu-ft)
  - The Revolon Model Node ID for the Ramona Detention Dam is 5166B.
    - Design Peak Flow: 330.30 cfs
    - Water Surface Elevation: 165.12 ft
    - Volume: 18.68 ac-ft (813,701 cu-ft)

From the hydrologic analysis and calculated water surface elevation, it was determined that only the bleeder pipes located at each basin required the 5mm screen retrofit and neither of the intake towers required screens.

Table 1 – Q_{1-1} Hydrology Peak Flow Rates and Parameters

Table 1: 1-Yr/1-Hr Design Flow Analysis (NOAA Intensity with TGM "C" Coefficients)

Device ID	Revolon Subarea No.	Area (acres)	Soil No.	% Imp (Effective)	% Imp (Average)	Cp	C	Intensity (in/hr)	Tributary Area (acres)	Q1 Design Flow (cfs)
2-001	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.76	0.70
2-002	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.33	0.59
2-003	5379	62	3	0.23	0.47	0.10	0.50	0.510	5.78	1.47
2-004	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.60	0.66
2-005	5379	62	3	0.23	0.47	0.10	0.50	0.510	4.08	1.04
2-006	5379	62	3	0.23	0.47	0.10	0.50	0.510	3.08	0.78
2-007	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.95	0.75
2-008	5387	59	3	0.23	0.47	0.10	0.50	0.510	8.79	2.24
2-009	5379	62	3	0.23	0.47	0.10	0.50	0.510	0.23	0.06
2-010	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.13	0.54
2-011	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.44	0.62
2-012	5379	62	3	0.23	0.47	0.10	0.50	0.510	7.89	2.01
2-013	5379	62	3	0.23	0.47	0.10	0.50	0.510	5.20	1.33
2-014	5387	59	3	0.23	0.47	0.10	0.50	0.510	4.38	1.12
2-015	5387	59	3	0.23	0.47	0.10	0.50	0.510	2.13	0.54
2-016	5387	59	3	0.23	0.47	0.10	0.50	0.510	1.06	0.27
2-017	5387	59	3	0.23	0.47	0.10	0.50	0.510	1.35	0.34

Device ID	Revolon Subarea No.	Area (acres)	Soil No.	% Imp (Effective)	% Imp (Average)	Cp	C	Intensity (in/hr)	Tributary Area (acres)	Q1 Design Flow (cfs)
2-018	5379	62	3	0.23	0.47	0.10	0.50	0.504	2.00	**0.50**
2-019	5379	62	3	0.23	0.47	0.10	0.50	0.510	3.20	**0.81**
2-020	5379	62	3	0.23	0.47	0.10	0.50	0.510	4.26	**1.09**
2-021	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.13	**0.54**
2-022	5379	62	3	0.23	0.47	0.10	0.50	0.510	2.66	**0.68**
2-023	5387	59	3	0.23	0.47	0.10	0.50	0.510	3.19	**0.81**
2-024	5387	59	3	0.23	0.47	0.10	0.50	0.510	2.66	**0.68**
3-001	5110	81	1	0.13	0.25	0.15	0.35	0.509	23.80	**4.24**
3-002	5110	81	1	0.13	0.25	0.15	0.35	0.509	17.70	**3.15**
3-003	5110	81	1	0.13	0.25	0.15	0.35	0.509	3.40	**0.61**
3-004	5110	81	1	0.13	0.25	0.15	0.35	0.509	42.10	**7.50**
3-005	5109	57	1	0.15	0.30	0.15	0.39	0.509	8.10	**1.61**
3-006	5109	57	1	0.15	0.30	0.15	0.39	0.509	6.30	**1.25**
3-007	5109	57	1	0.15	0.30	0.15	0.39	0.509	27.00	**5.36**
3-008	5109	57	1	0.15	0.30	0.15	0.39	0.509	56.20	**11.16**
3-009	5120	39	1	0.10	0.20	0.15	0.31	0.512	12.41	**1.97**
3-010	5116	48	3	0.04	0.08	0.10	0.17	0.509	1.60	**0.14**
3-011	5168	52	2	0.15	0.30	0.10	0.36	0.500	5.96	**1.06**
3-012	5176	39	2	0.15	0.30	0.10	0.36	0.500	17.52	**3.11**
3-013	5117	41	1	0.10	0.20	0.15	0.31	0.512	4.72	**0.75**
3-014	5117	41	1	0.10	0.20	0.15	0.31	0.512	3.09	**0.49**
3-015	5117	41	1	0.10	0.20	0.15	0.31	0.512	4.05	**0.64**
3-016	5117	41	1	0.10	0.20	0.15	0.31	0.512	2.06	**0.33**
3-017	5117	41	1	0.10	0.20	0.15	0.31	0.512	2.73	**0.43**
3-018	5117	41	1	0.10	0.20	0.15	0.31	0.512	4.46	**0.71**
3-019	5117	41	1	0.10	0.20	0.15	0.31	0.512	1.36	**0.22**
3-020	5702	21	3	0.30	0.60	0.10	0.61	0.467	0.15	**0.04**
3-021	5702	21	3	0.30	0.60	0.10	0.61	0.467	0.29	**0.08**
3-022	5702	21	3	0.30	0.60	0.10	0.61	0.467	1.22	**0.35**
3-023	5702	21	3	0.30	0.60	0.10	0.61	0.467	0.43	**0.12**
3-024	5702	21	3	0.30	0.60	0.10	0.61	0.467	11.88	**3.38**
3-025	5697	86	3	0.20	0.40	0.10	0.44	0.454	0.62	**0.12**
3-026	5697	86	3	0.20	0.40	0.10	0.44	0.454	3.55	**0.71**
3-027	5697	86	3	0.20	0.40	0.10	0.44	0.454	2.18	**0.43**
3-028	5697	86	3	0.20	0.40	0.10	0.44	0.454	2.64	**0.53**
3-029	5694	55	3	0.40	0.76	0.10	0.75	0.454	3.12	**1.06**
3-030	5693	55	3	0.15	0.30	0.10	0.36	0.449	22.90	**3.65**
DB-001	Las Posas	168	1	0.15	0.30	0.15	0.39	0.486	191.24	**36.25**
DB-002	Ramona	254	1	0.15	0.30	0.15	0.39	0.500	257.09	**50.13**

Table 2 – Q_{10-24} Hydrology Peak Flow Rates and Parameters

Table 2: 10-Yr/24-Hr Design Flow Analysis

Device ID	Revolon Subarea No.	Area (acres)	Soil No.	% Imp	Q100 Tc (min)	Q100 (cfs)	10-yr Tc Ratio	Q10 Tc (min)	Q10 (cfs)	cfs/acre	Tributary Area (acres)	Q10 Design Flow (cfs)
2-001	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.76	**3.12**
2-002	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.33	**2.63**
2-003	5379	62	3	0.23	17	135	1.5479	26	70	1.13	5.78	**6.52**
2-004	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.60	**2.94**
2-005	5379	62	3	0.23	17	135	1.5479	26	70	1.13	4.08	**4.61**
2-006	5379	62	3	0.23	17	135	1.5479	26	70	1.13	3.08	**3.47**
2-007	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.95	**3.33**
2-008	5387	59	3	0.23	16	133	1.5479	25	68	1.15	8.79	**10.13**
2-009	5379	62	3	0.23	17	135	1.5479	26	70	1.13	0.23	**0.26**
2-010	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.13	**2.41**
2-011	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.44	**2.75**
2-012	5379	62	3	0.23	17	135	1.5479	26	70	1.13	7.89	**8.91**
2-013	5379	62	3	0.23	17	135	1.5479	26	70	1.13	5.20	**5.87**
2-014	5387	59	3	0.23	16	133	1.5479	25	68	1.15	4.38	**5.05**
2-015	5387	59	3	0.23	16	133	1.5479	25	68	1.15	2.13	**2.46**
2-016	5387	59	3	0.23	16	133	1.5479	25	68	1.15	1.06	**1.23**
2-017	5387	59	3	0.23	16	133	1.5479	25	68	1.15	1.35	**1.55**
2-018	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.00	**2.26**
2-019	5379	62	3	0.23	17	135	1.5479	26	70	1.13	3.20	**3.61**
2-020	5379	62	3	0.23	17	135	1.5479	26	70	1.13	4.26	**4.81**
2-021	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.13	**2.40**
2-022	5379	62	3	0.23	17	135	1.5479	26	70	1.13	2.66	**3.00**
2-023	5387	59	3	0.23	16	133	1.5479	25	68	1.15	3.19	**3.68**
2-024	5387	59	3	0.23	16	133	1.5479	25	68	1.15	2.66	**3.07**
3-001	5110	81	1	0.13	12	163	1.5479	19	125	1.54	23.80	**36.73**
3-002	5110	81	1	0.13	12	163	1.5479	19	125	1.54	17.70	**27.31**
3-003	5110	81	1	0.13	12	163	1.5479	19	125	1.54	3.40	**5.25**
3-004	5110	81	1	0.13	12	163	1.5479	19	125	1.54	42.10	**64.97**
3-005	5109	57	1	0.15	10	128	1.5479	15	101	1.77	8.10	**14.35**
3-006	5109	57	1	0.15	10	128	1.5479	15	101	1.77	6.30	**11.16**
3-007	5109	57	1	0.15	10	128	1.5479	15	101	1.77	27.00	**47.84**
3-008	5109	57	1	0.15	10	128	1.5479	15	101	1.77	56.20	**99.58**
3-009	5120	39	1	0.10	9	135	1.5479	14	72	1.85	12.41	**22.91**
3-010	5116	48	3	0.04	12	123	1.5479	19	61	1.27	1.60	**2.03**
3-011	5168	52	2	0.15	12	144	1.5479	19	73	1.40	5.96	**8.37**
3-012	5176	39	2	0.15	8	135	1.5479	12	72	1.85	17.52	**32.34**
3-013	5117	41	1	0.10	8	150	1.5479	12	82	2.00	4.72	**9.44**
3-014	5117	41	1	0.10	8	150	1.5479	12	82	2.00	3.09	**6.18**
3-015	5117	41	1	0.10	8	150	1.5479	12	82	2.00	4.05	**8.10**
3-016	5117	41	1	0.10	8	150	1.5479	12	82	2.00	2.06	**4.12**
3-017	5117	41	1	0.10	8	150	1.5479	12	82	2.00	2.73	**5.46**
3-018	5117	41	1	0.10	8	150	1.5479	12	82	2.00	4.46	**8.92**
3-019	5117	41	1	0.10	8	150	1.5479	12	82	2.00	1.36	**2.72**
3-020	5702	21	3	0.30	18	45	1.5479	28	23	1.10	0.15	**0.17**
3-021	5702	21	3	0.30	18	45	1.5479	28	23	1.10	0.29	**0.31**

Device ID	Revolon Subarea No.	Area (acres)	Soil No.	% Imp	Q100 Tc (min)	Q100 (cfs)	10-yr Tc Ratio	Q10 Tc (min)	Q10 (cfs)	cfs/acre	Tributary Area (acres)	Q10 Design Flow (cfs)
3-022	5702	21	3	0.30	18	45	1.5479	28	23	1.10	1.22	**1.34**
3-023	5702	21	3	0.30	18	45	1.5479	28	23	1.10	0.43	**0.48**
3-024	5702	21	3	0.30	18	45	1.5479	28	23	1.10	11.88	**13.07**
3-025	5697	86	3	0.20	19	173	1.5479	29	90	1.05	0.62	**0.65**
3-026	5697	86	3	0.20	19	173	1.5479	29	90	1.05	3.55	**3.73**
3-027	5697	86	3	0.20	19	173	1.5479	29	90	1.05	2.18	**2.29**
3-028	5697	86	3	0.20	19	173	1.5479	29	90	1.05	2.64	**2.77**
3-029	5694	55	3	0.40	12	152	1.5479	19	79	1.44	3.12	**4.49**
3-030	5693	55	3	0.15	15	127	1.5479	23	64	1.16	22.90	**26.64**
DB-001	Las Posas	168				495	1.5479		264	1.57	191.24	**300.52**
DB-002	Ramona	254				602	1.5479		330	1.30	257.09	**334.01**

For all devices, the contractor sized the screens, their diameter or length and height and the vertical opening around the perimeter at the top of the screen for each device according to the recommended calculations and dimensions as shown in the LACDPW Technical Report. Each unit was custom designed and constructed for the catch basin based on its dimensions, outflow pipe and modeled flow rates. **Table 3** lists the catch basin dimensions, installed CPS dimensions, and the LACDPW Technical Report minimum sizes and design screen capacities.

Hydraulic Analysis

A conservative estimate of catch basin flows based on curb openings widths must be determined in order to calculate the Q_{1-1}. The bypass structure must also be able to pass the maximum catch basin flow in order to provide proper flood protection. The LACDPW Technical Report was used for guidance in this analysis. The table in the Appendix of the LACDPW Technical Report was used to define the minimum screen capacity and minimum screen surface area for each catch basin. The catch basins were categorized as either 1) CB 300 – Standard Catch Basin, 2) CB 301 Side Inlet with Grate Catch Basin, or 3) CB 303 Standard Grating Catch Basin. By using the table, the catch basin type and their dimensions as well as the installed CPS device dimensions, the minimum screen capacity (cfs) and minimum screen surface area (sq in) were compared to the installed device capacity and surface area. For those catch basins where the CPS device was installed underneath the catch basin opening, a lid was installed on top of the device to ensure trash coming in through the opening would not fall behind or bypass the CPS Device. For these locations, the bypass height in inches is shown. **Table 3** lists these values and dimensions.

Table 3 – Catch Basin/CPS Dimensions & Minimum Recommended Screen Size/Capacity

	Catch Basin Dimensions					Installed Insert Dimensions					LADPW Tech. Report Information				Calculated Flows
ID No.	CB Type	Depth (ft)	Width (ft)	Length (ft)	Outlet Dia (in)	Config*	Bypass (in)	Screen Height (in)	Screen Length (ft)	Screen Surface Area (sq in)	Min. Screen Height (in)**	Min. Screen Length (ft)**	Min. Screen Surface Area (sq in)	Min. Screen Capacity (cfs)**	Q1-1 (cfs)
2-001	300	5	3.15	10	18	S	12	20	7.5	1800	30	3.0	1080	5.0	0.70
2-002	300	4.6	3.4	3	18	L	12	20	3.6	860	24	1.1	317	1.5	0.59
2-003	300	4	3.15	10	18	L	12	20	7.5	1800	24	3.3	950	4.4	1.47
2-004	300	4.7	3.15	3.5	18	L	12	20	3.6	860	24	1.1	317	1.5	0.66
2-005	300	4	3.15	10	18	S	12	20	7.5	1800	24	3.3	950	4.4	1.04
2-006	300	4	3.15	10	18	L	12	24	6.0	1728	24	3.3	950	4.4	0.78
2-007	300	4.6	3.15	3.5	18	L	12	24	3.0	864	24	1.5	432	1.5	0.75
2-008	300	4	4.6	6.5	36	L	N/A	24	5.0	1440	24	2.9	835	3.8	2.24
2-009	300	3.8	4.3	3	18	T	N/A	18	3.1	666	24	1.5	432	2.0	0.06
2-010	300	3.2	4.4	3	18	T	N/A	18	3.1	666	18	1.5	324	1.5	0.54
2-011	300	3.6	4.5	3	18	L	N/A	18	3.1	666	18	1.5	324	1.5	0.62
2-012	300	4.3	3.5	3.4	18	L	N/A	18	3.0	648	24	1.1	317	1.5	2.01
2-013	300	4.8	3.4	3	18	L	N/A	24	3.1	888	30	1.1	396	1.8	1.33
2-014	300	3.45	4.5	4.5	24	T	12	16	4.0	768	18	1.5	324	1.5	1.12
2-015	300	4.18	4.5	4.5	24	T	12	18	3.0	648	24	1.5	432	2.0	0.54
2-016	300	3.3	4.5	3	24	T	12	18	3.0	648	18	1.5	324	1.5	0.27
2-017	300	3.8	4.5	3	24	T	12	18	4.0	864	24	1.5	432	2.0	0.34
2-018	300	3.3	4.5	3	18	L	N/A	18	3.1	666	18	1.5	324	1.5	0.50
2-019	300	4.35	4.5	3	18	L	N/A	20	3.3	780	24	1.1	317	2.0	0.81
2-020	300	3.8	4.5	3.6	18	L	N/A	20	3.6	860	24	1.5	432	2.0	1.09
2-021	300	3.6	4.5	3.5	18	L	N/A	18	3.1	666	18	1.5	324	1.5	0.54
2-022	300	3.5	4.6	3	18	L	N/A	18	3.1	666	18	1.5	324	1.5	0.68
2-023	300	4.2	4.6	3	24	T	N/A	24	3.3	960	24	1.5	432	2.0	0.81
2-024	300	3.44	4.5	3	24	T	12	24	2.9	840	18	1.5	324	1.5	0.68
3-001	301	4	4	10	24	SC	N/A	38	3.7	1672	24	3.4	979	4.5	4.24
3-002	301	4.17	4	7	28	SC	N/A	35	3.8	1575	24	3.3	950	3.3	3.15
3-003	301	5	4	14	24	SC	N/A	40	4.7	2240	30	3.5	1260	5.8	0.61
3-004	300	4.17	3.83	14	20	SC	N/A	30	4.8	1710	24	3.9	1123	5.1	7.50
3-005	301	4	3	7	16	SC	N/A	40	3.9	1880	24	3.3	950	4.4	1.61
3-006	301	3	3.83	10	18	SC	N/A	18	3.7	792	18	3.4	734	3.4	1.25
3-007	301	3.83	3.83	20	24	SC	N/A	30	3.7	1320	24	4.0	1152	5.3	5.36
3-008	301	3.83	4.17	20	24	SC	N/A	34	4.4	1802	24	4.0	1152	5.3	11.16
3-009	303	2.83	1.75	3.5	15	T	10	16	3.5	672	18	3.0	648	3.0	1.97
3-010	303	5	2	3.5	36	S	12	24	3.5	1008	30	3.0	1080	5.0	0.14
3-011	303	2.83	1.75	3.33	14	T	10	16	3.5	672	18	3.0	648	3.0	1.06
3-012	303	2.7	1.83	3.5	12	T	10	14	3.5	588	18	3.0	648	3.0	3.11
3-013	303	3.92	1.75	3.5	18	T	10	16	3.5	672	24	3.0	864	4.0	0.75
3-014	300	3.5	3	7	18	L	12	20	4.0	960	18	2.9	626	2.9	0.49
3-015	300	3	3	7	18	S	10	16	4.0	768	18	2.9	626	2.9	0.64
3-016	300	5.17	3	7	18	L	12	24	4.0	1152	30	2.1	756	3.5	0.33
3-017	300	6	3	7	18	L	12	24	4.0	1152	42	2.1	1058	4.9	0.43
3-018	300	3.92	3	10	18	L	12	18	6.0	1296	24	3.3	950	4.4	0.71
3-019	300	4.3	3	3.5	18	S	12	24	3.5	1008	24	1.1	317	1.5	0.22
3-020	300	3.5	7	3.2	18	T	12	20	3.1	740	18	1.5	324	1.5	0.04
3-021	300	3.6	3.5	3	12	S	12	20	3.5	840	18	1.5	324	1.5	0.08
3-022	303	3	3	3	18	S	10	16	2.9	560	18	1.5	324	1.5	0.35
3-023	300	4.66	3.5	3.5	18	S	12	24	3.6	1032	24	1.1	317	1.5	0.12
3-024	303	5.5	3	3	27	T	12	24	3.0	864	36	3.0	1296	6.0	3.38
3-025	300	3	3	3	18	T	8	10	3.0	360	18	1.5	324	1.5	0.12
3-026	300	3	3	3	18	S	10	18	3.0	648	18	1.5	324	1.5	0.71
3-027	300	4	3	3	18	T	12	24	3.0	864	24	1.5	432	2.0	0.43
3-028	300	3.5	3.5	3.5	18	T	N/A	24	3.0	864	18	1.5	324	1.5	0.53
3-029	303	2.4	2.5	2.5	15	S	10	16	2.7	512	18	3.0	648	3.0	1.06
3-030	303	5.75	3	3	24	S	11	22	2.5	660	36	3.0	1296	6.0	3.65

* Configuration: L = "L" Shaped, T=Triangle, S=Square, SC=Semi Circular

** Screen capacity and recommended screen dimensions from LADPW Tech. Report, 2007

As noted in the LACDPW Technical Report some combinations of V-depths, connector pipe sizes and catch basin dimensions made installation of standard sized CPS devices impossible. For Device ID's 2-012, 3-004, 3-008 and 3-012, the calculated Q_{1-1} is greater than minimum Q_{1-1} shown in the LACDPW Technical Report for a catch basin with similar V-depths and lengths. The total area and therefore treatment capacity of the screen is still adequate at these locations as can be seen in the comparison of the installed Screen Surface Area to the Minimum Screen Surface area from the LACDPW Technical Report. Device ID 3-012 has a V-depth of 2.7' and was compared to the minimum V-depth provided in the LACDPW Technical Report of 3.5'. With this difference in V-depth, this device has adequate surface screen area. Although the screen surface areas for Device ID's 3-010, 3-012, 3-024 and 3-030 was less than the recommended screen surface area from the LACDPW Technical Report, the screen capacity at these locations is adequate for the calculated flows. As shown in **Table 3**, all of the installed devices meet the performance criteria for full capture certification.

Connecting Pipe Flows

As stated in the August 3, 2004 LARWQCB Technical Memorandum – Procedures and Requirements for Certification of a Best Management Practice for Trash Control as a Full Capture System (Memo), the pipes carrying the flows from the subdrainage area should be able to handle peak flows. Full flow capacities using Manning's Equation were calculated for all connector pipes immediately downstream of the installed full capture devices. Slopes for the downstream connector pipes were estimated at 0.05 ft/ft. **Table 4** lists the estimated full flow capacities for each location.

Table 4 – Connector Pipe Full Flow Capacities

Device ID	Outlet Pipe Diameter (in.)	Slope*	'N'-Value	Full Flow Capacity	Calculated Q10
2-001	18	0.05	0.012	25.4	**3.12**
2-002	18	0.05	0.012	25.4	**2.63**
2-003	18	0.05	0.012	25.4	**6.52**
2-004	18	0.05	0.012	25.4	**2.94**
2-005	18	0.05	0.012	25.4	**4.61**
2-006	18	0.05	0.012	25.4	**3.47**
2-007	18	0.05	0.012	25.4	**3.33**
2-008	36	0.05	0.012	161.5	**10.13**
2-009	18	0.05	0.012	25.4	**0.26**
2-010	18	0.05	0.012	25.4	**2.41**
2-011	18	0.05	0.012	25.4	**2.75**
2-012	18	0.05	0.012	25.4	**8.91**
2-013	18	0.05	0.012	25.4	**5.87**
2-014	24	0.05	0.012	54.8	**5.05**
2-015	24	0.05	0.012	54.8	**2.46**
2-016	24	0.05	0.012	54.8	**1.23**
2-017	24	0.05	0.012	54.8	**1.55**
2-018	18	0.05	0.012	25.4	**2.26**
2-019	18	0.05	0.012	25.4	**3.61**
2-020	18	0.05	0.012	25.4	**4.81**
2-021	18	0.05	0.012	25.4	**2.40**

Device ID	Outlet Pipe Diameter (in.)	Slope*	'N'-Value	Full Flow Capacity	Calculated Q10
2-022	18	0.05	0.012	25.4	3.00
2-023	24	0.05	0.012	54.8	3.68
2-024	24	0.05	0.012	54.8	3.07
3-001	24	0.05	0.012	54.8	36.73
3-002	28	0.05	0.012	75	27.31
3-003	24	0.05	0.012	54.8	5.25
3-004	20	0.05	0.012	38.3	64.97
3-005	16	0.05	0.012	18.753	14.35
3-006	18	0.05	0.012	25.4	11.16
3-007	24	0.05	0.012	54.8	47.84
3-008	24	0.05	0.012	54.8	99.58
3-009	15	0.05	0.012	15.6	22.91
3-010	36	0.05	0.012	161.5	2.03
3-011	14	0.05	0.012	13	8.37
3-012	12	0.05	0.012	8.6	32.34
3-013	18	0.05	0.012	25.4	9.44
3-014	18	0.05	0.012	25.4	6.18
3-015	18	0.05	0.012	25.4	8.10
3-016	18	0.05	0.012	25.4	4.12
3-017	18	0.05	0.012	25.4	5.46
3-018	18	0.05	0.012	25.4	8.92
3-019	18	0.05	0.012	25.4	2.72
3-020	18	0.05	0.012	25.4	0.17
3-021	12	0.05	0.012	8.6	0.31
3-022	18	0.05	0.012	25.4	1.34
3-023	18	0.05	0.012	25.4	0.48
3-024	27	0.05	0.012	75	13.07
3-025	18	0.05	0.012	25.4	0.65
3-026	18	0.05	0.012	25.4	3.73
3-027	18	0.05	0.012	25.4	2.29
3-028	18	0.05	0.012	25.4	2.77
3-029	15	0.05	0.012	15.6	4.49
3-030	24	0.05	0.012	54.8	26.64

The majority of the pipes carrying the flows from the subdrainage areas are able to adequately convey the calculated peak flows for the 10-year design storm.

Inspections and Maintenance Procedures

To aid in the inspection and maintenance of the CPS devices, the County is in the process of creating 2 custom O&M Plans for the agencies responsible for maintenance of the CPS devices: Ventura County Department of Airports (Devices 3-020 through 3-030) and Ventura County Public Works Agency's Transportation Department (remaining CPS devices). The County is also currently preparing an O&M plan for the 2 detention basin screens to be maintained by the Ventura County Watershed Protection District. These documents will include comprehensive information on all aspects of required inspection and maintenance of the CPS devices. These O&M Plans will also act as an official interagency maintenance agreement between VCWPD and the responsible maintenance groups. Included in the O&M Plans will be location maps with unique identification numbers, inspection procedures and frequency, equipment needed, maintenance procedures, emergency flood response, project contacts and documentation submittal details and required forms. Because the CPS devices are recently installed, the O&M Plans are subject to minor revisions over time. This chapter represents a summary of the inspection and maintenance procedures outlined in the documents.

The maps and CPS device information in the O&M Plans will be associated through unique CPS device numbers given to each installed full capture trash excluder. The first part of the identification number is a single number before the hyphen representing the Flood Control District Zone the device is located within. The second part is a three digit number representing a unique number for each device installed within that Flood Control District Zone numbered sequentially based on date of installation. For example, 3-001 represents the first device installed in Zone 3.

Each catch basin retrofitted with a CPS device has been identified in the field by a thermoplastic medallion (refer to **Figure 6**). Also, as a back-up, a 4-inch diameter red spray paint dot was marked in case medallion gets deteriorated with time to mark CPS devices before a replacement medallion is installed. Both medallion and the dot are positioned directly above the CPS device. This is for easy identification as device locations vary between catch basins.

Figure 6 - CPS Device Medallion and Spray Paint Dot Photos

All CPS devices will have inspection and maintenance completed a minimum of three times per fiscal year (July 1 through June 30). Each occurrence must be separated by at least 30 calendar days.

- One (1) before the wet season (before October 1),
- One (1) during the wet season (October 1 – April 15), and
- One (1) after the wet season (after April 15).

All inspections and maintenance performed will be recorded by the designated Transportation Department, VCWPD or Department of Airport O&M staff on the Checklist for Inspection and Maintenance form. The Inspection and maintenance procedure herein anticipates work will be completed by a two-person crew equipped with the proper tools and items per the O&M Plans.

Completed inspection and maintenance forms and pictures shall be submitted to the County Stormwater Program (CSWP) by July 30th each year for inclusion within the Stormwater Annual Report or upon request as needed for inclusion into the TMDL Compliance Reports. CSWP shall be notified within 1 week of any device removals or those identified as damaged.

CSWP will collect all inspection and maintenance forms and record all data within a spreadsheet for TMDL reporting requirements. Additionally, CSWP will coordinate required repairs identified on the inspection forms with the contractor that manufactured and installed the devices.

Conclusion and Summary

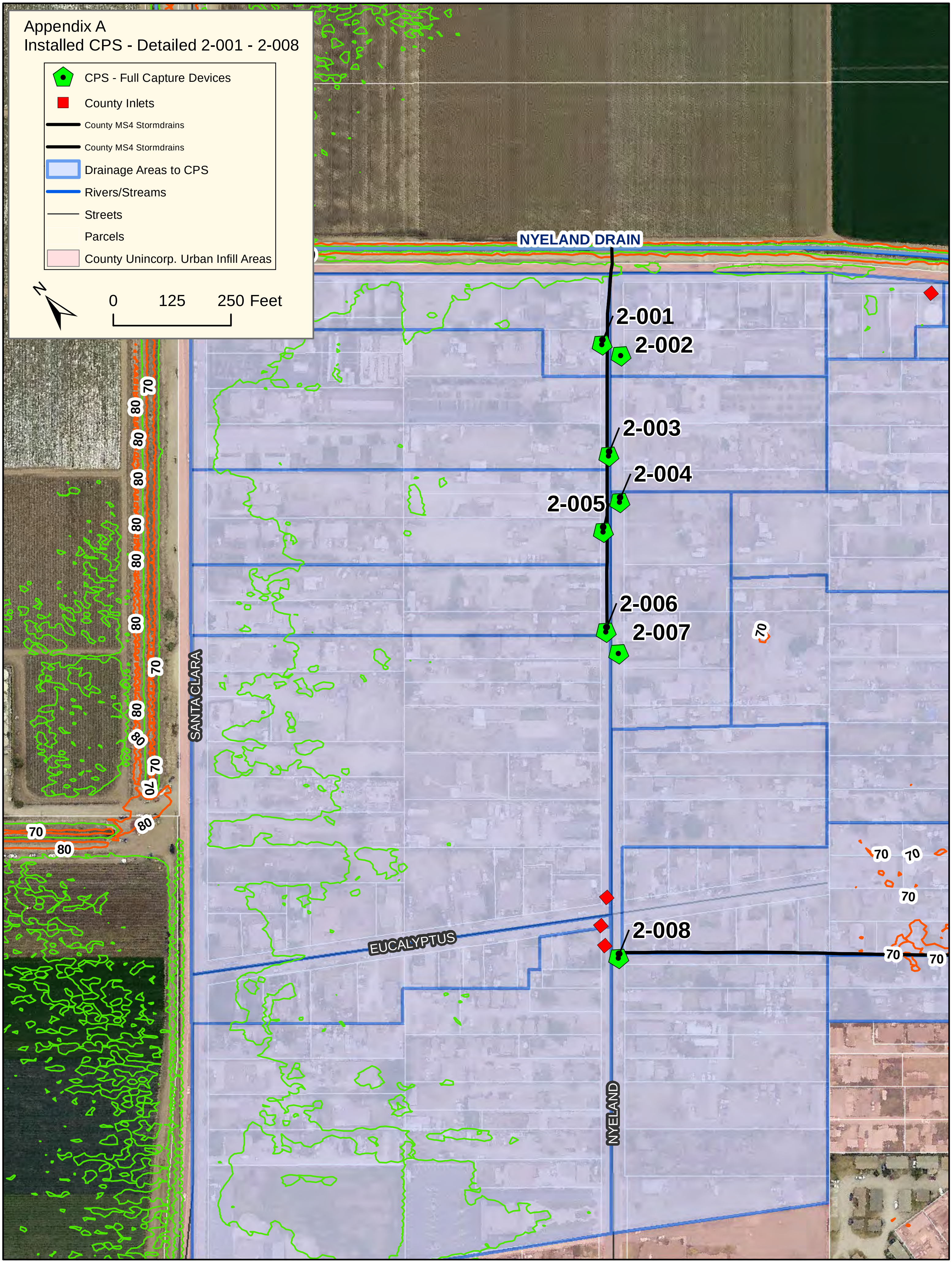
As shown in this report, the County of Ventura CPS retrofits within the RSBW subwatershed meet the definition of full capture system and are certified as a full capture system by trapping all particles retained by a 5-mm mesh screen, and having a treatment capacity exceeding the peak flow rate resulting from a 1-yr/1-hr storm in the subdrainage area. In addition, the following requirements are met:

1. Adequate Pipe Sizing: The pipes carrying the flows from the subdrainage area are able to convey peak flows: and
2. Regular Inspections and Maintenance: The full capture system will be regularly inspected and serviced to continually maintain adequate flow through capacity.

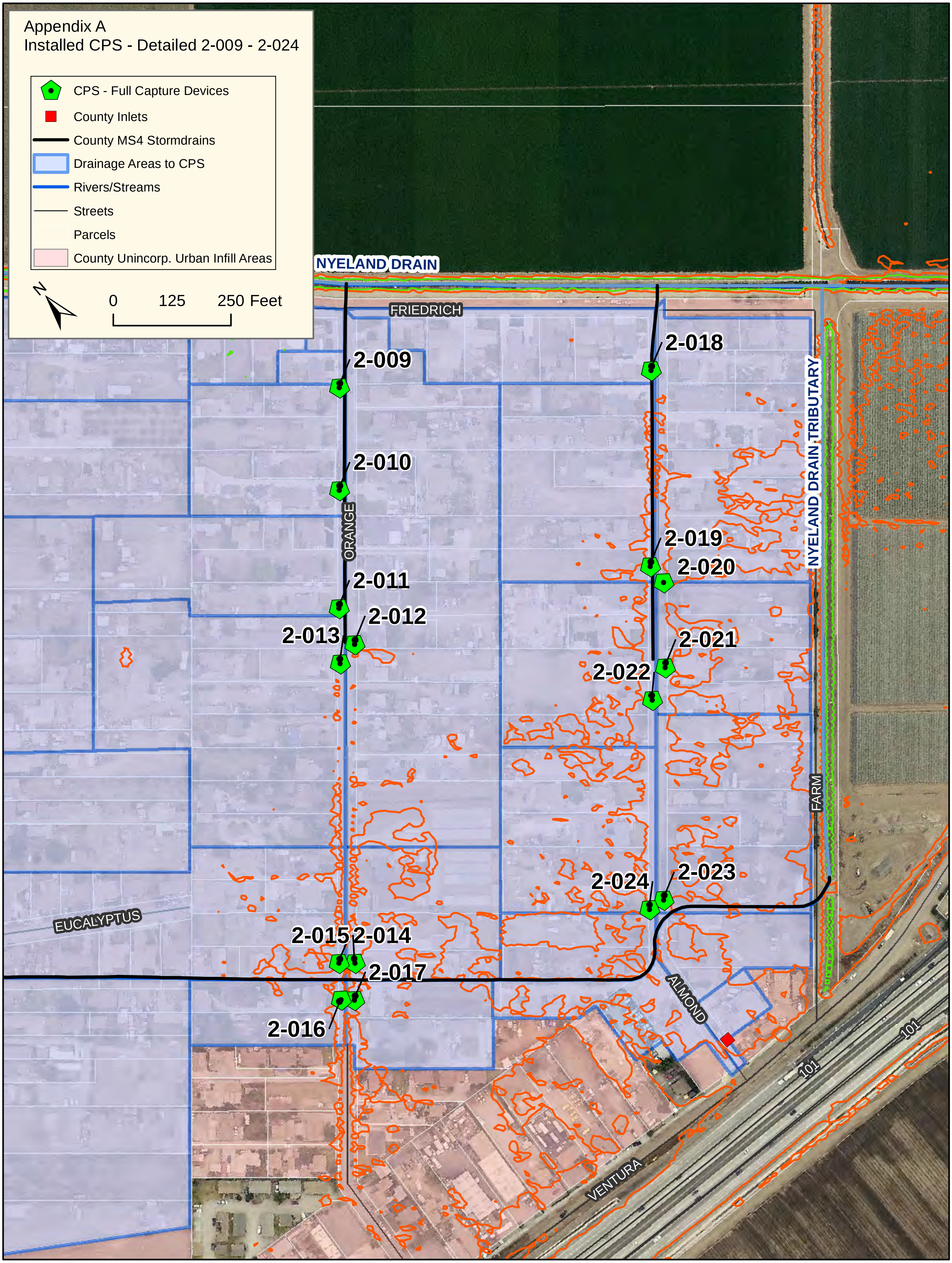
The County area within the RSBW subwatershed that drains to County MS4 system has been treated by the installations of the CPS devices. This report serves as a determination that the vertical Connector Pipe Screens (as described and identified in this Report), when installed and maintained in appropriately sized catch basins, completely satisfy the full capture definition of the RSBW TMDL for County Unincorporated areas. It is understood that the County will have an on-going obligation to demonstrate that the installation of these devices are appropriately sized and meet the intent of this program. Likewise, the County is responsible for on-going maintenance to ensure the systems perform to design specifications.

APPENDIX A

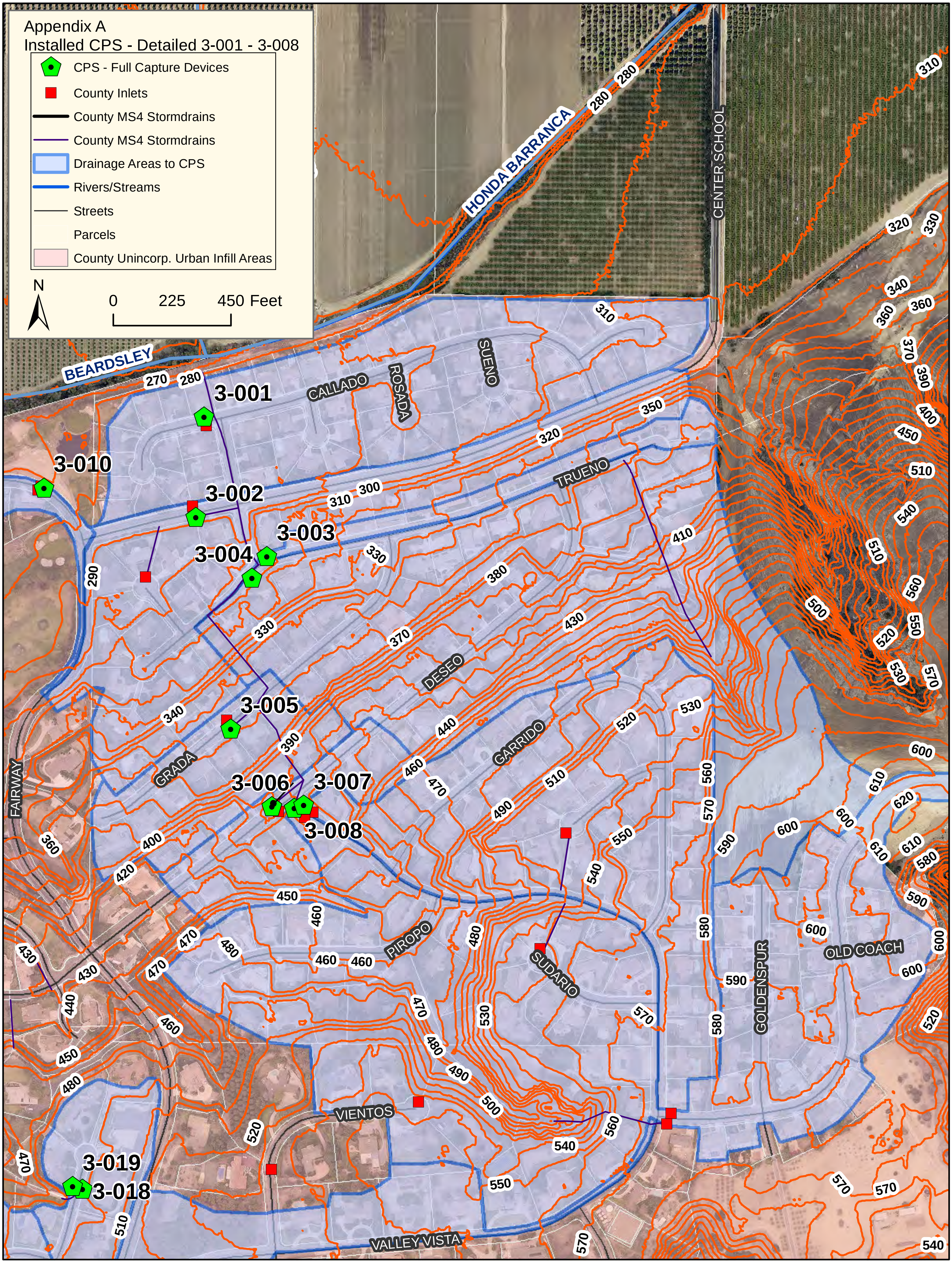
DETAILED MAPS AND DRAINAGE AREAS



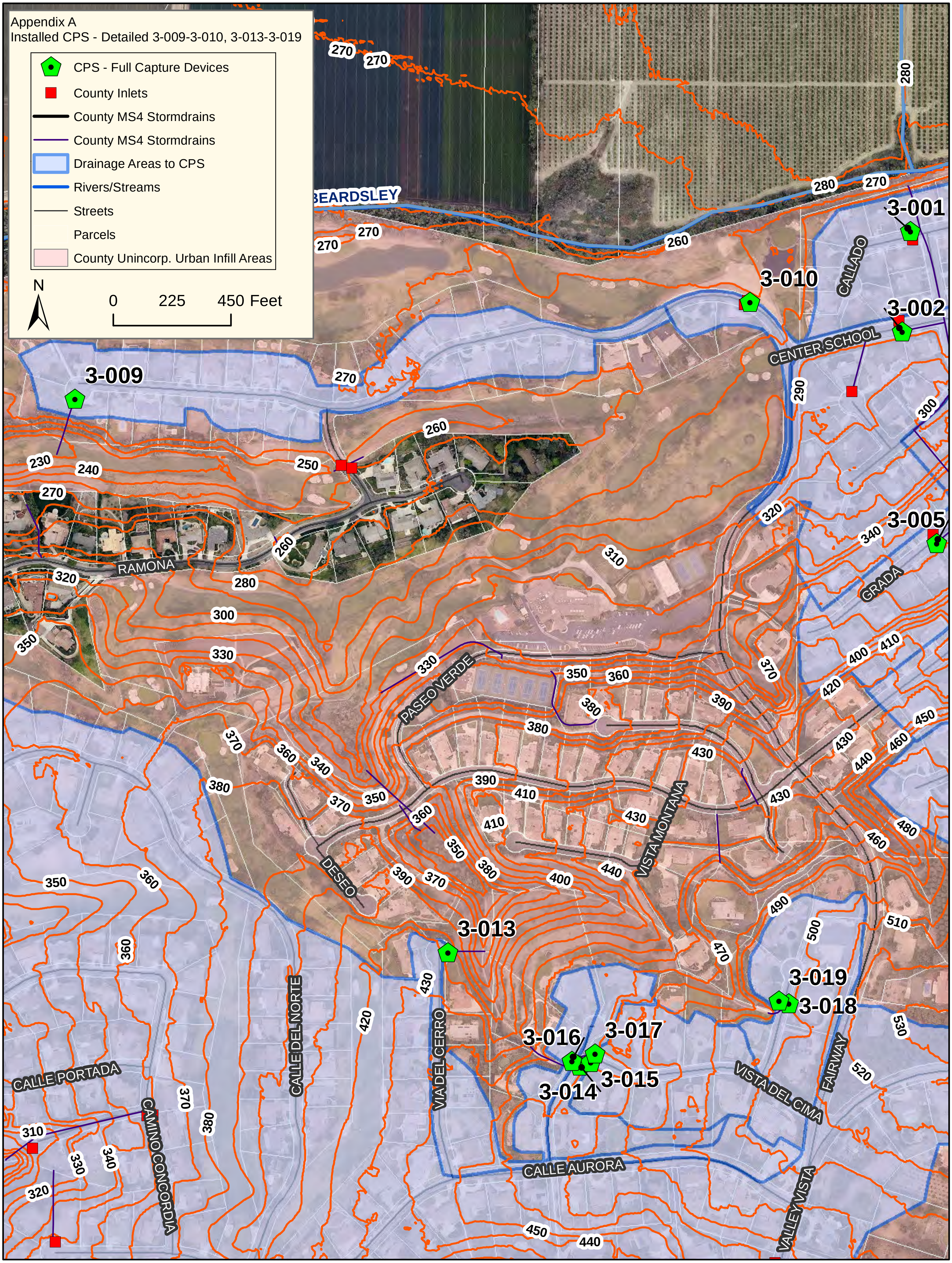
Appendix A
Installed CPS - Detailed 2-001 - 2-008
CPS - Full Capture Devices
County Inlets
County MS4 Stormdrains
County MS4 Stormdrains
Drainage Areas to CPS
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0 125 250 Feet
NYELAND DRAIN
2-001
2-002
2-003
2-004
2-005
2-006
2-007
2-008
SANTA CLARA
EUCALYPTUS
NYELAND



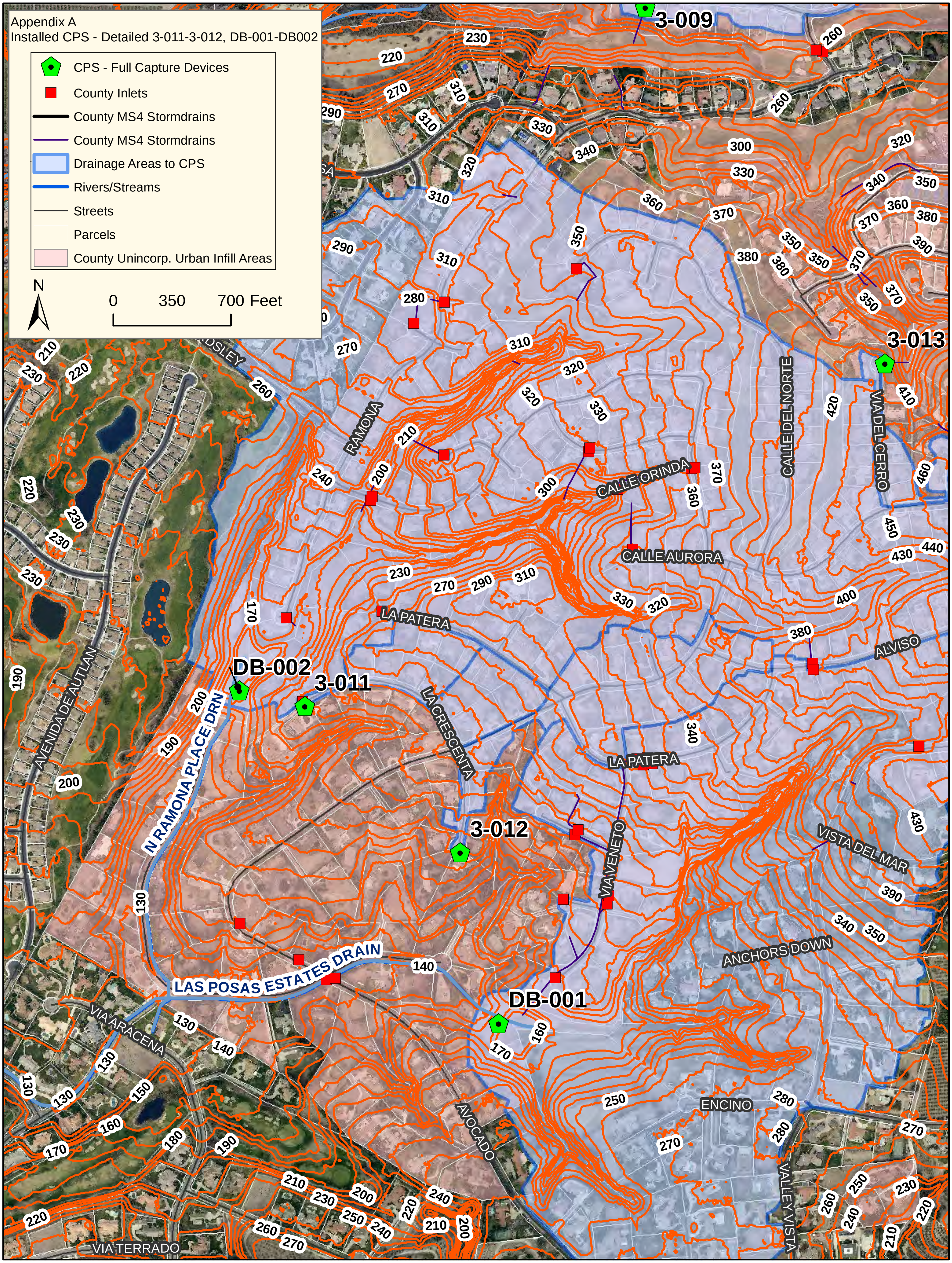
Appendix A
Installed CPS - Detailed 2-009 - 2-024
CPS - Full Capture Devices
County Inlets
County MS4 Stormdrains
Drainage Areas to CPS
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0
125
250 Feet
NYELAND DRAIN
FRIEDRICH
NYELAND DRAIN TRIBUTARY
ORANGE
FARM
EUCALYPTUS
ALMOND
VENTURA
101
2-009
2-010
2-011
2-012
2-013
2-014
2-015
2-016
2-017
2-018
2-019
2-020
2-021
2-022
2-023
2-024



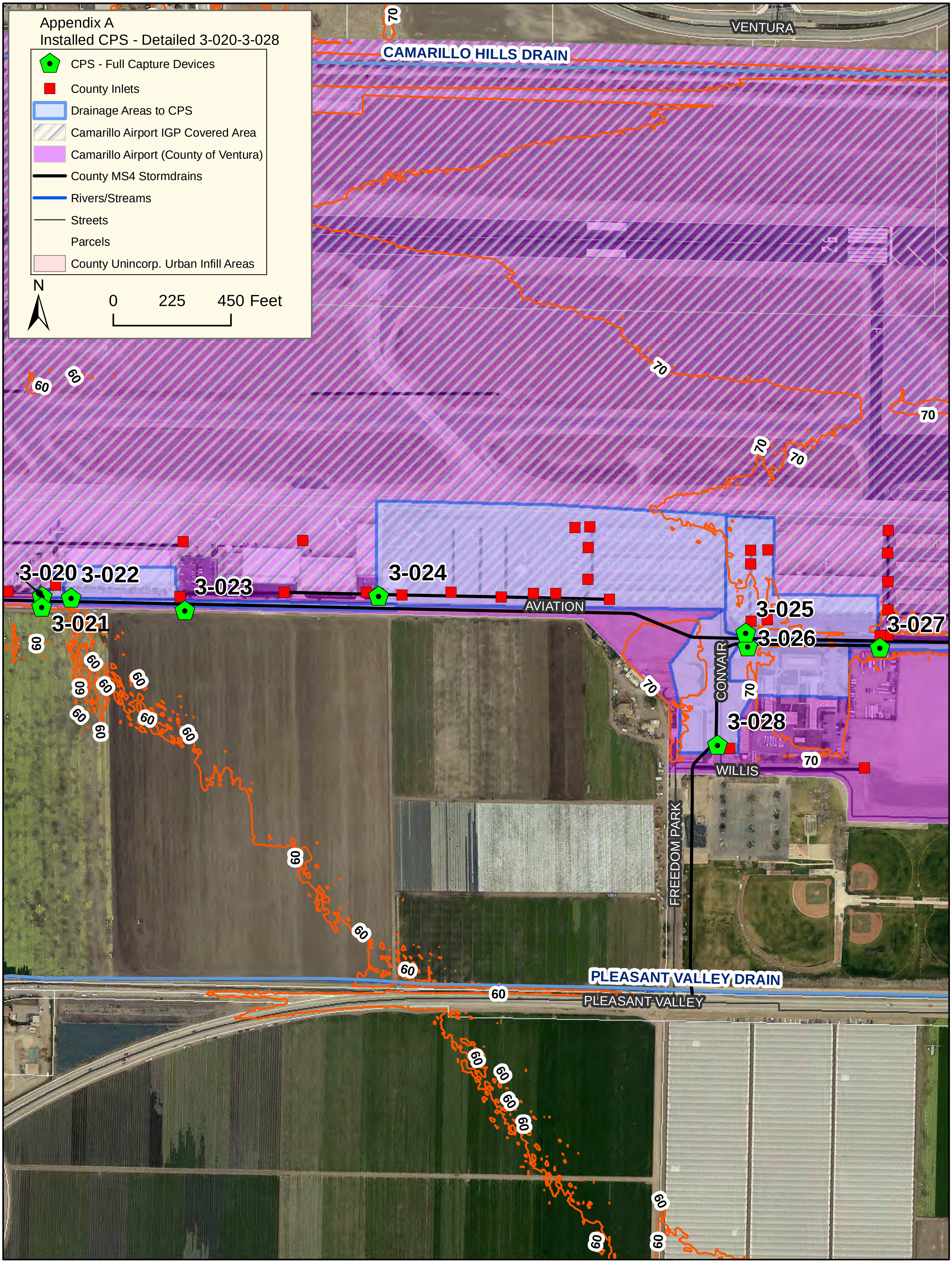
Appendix A
Installed CPS - Detailed 3-001 - 3-008
CPS - Full Capture Devices
County Inlets
County MS4 Stormdrains
County MS4 Stormdrains
Drainage Areas to CPS
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0 225 450 Feet
3-001
3-002
3-003
3-004
3-005
3-006
3-007
3-008
3-010
3-018
3-019
HONDA BARRANCA
CENTER SCHOOL
BEARDSLEY
CALLADO
ROSADA
SUENO
TRUENO
DESEO
GARRIDO
GRADA
FAIRWAY
PIROPO
SUDARIO
GOLDENSPUR
OLD COACH
VIENTOS
VALLEY VISTA



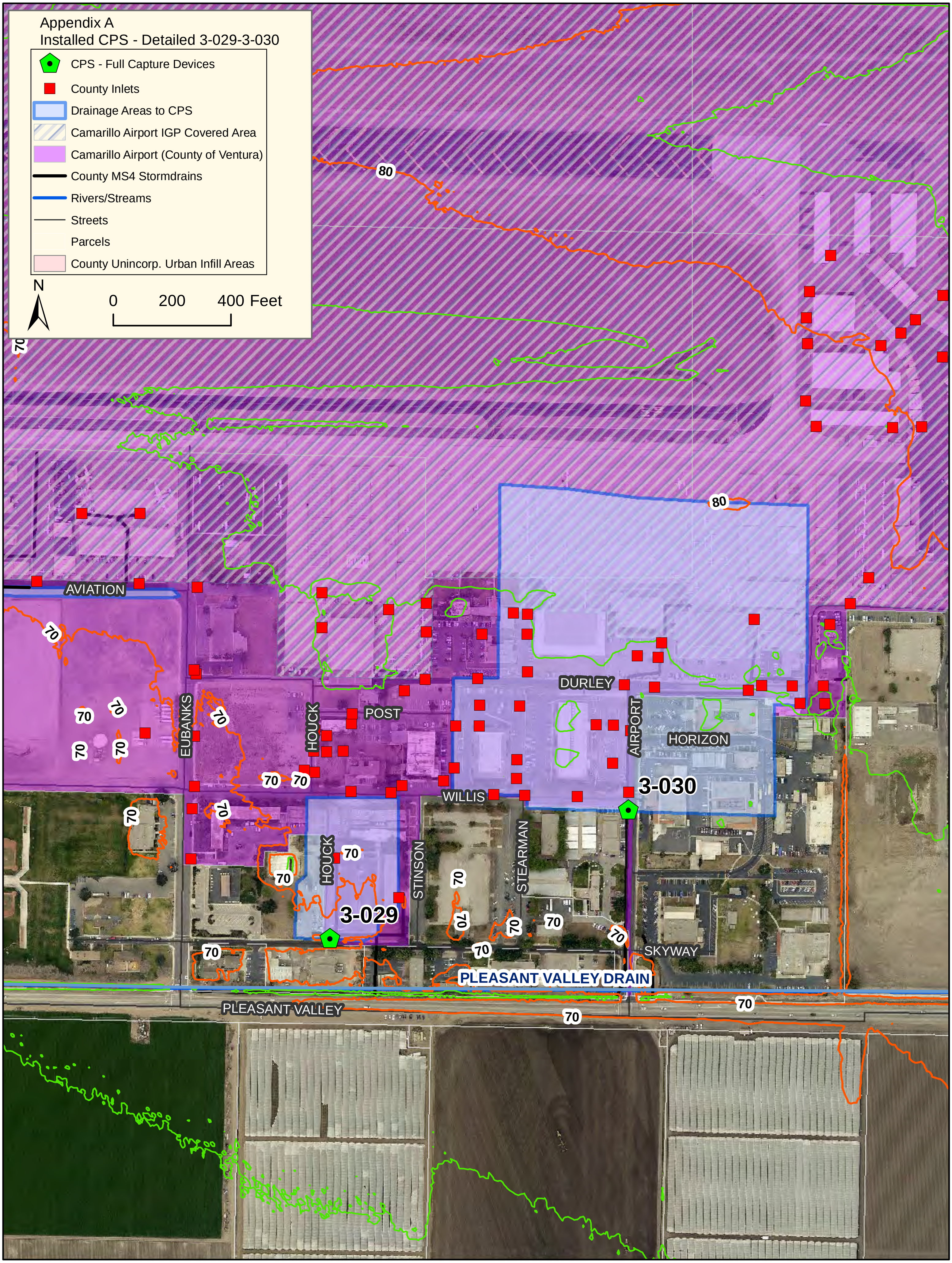
Appendix A
Installed CPS - Detailed 3-009-3-010, 3-013-3-019
CPS - Full Capture Devices
County Inlets
County MS4 Stormdrains
County MS4 Stormdrains
Drainage Areas to CPS
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0
225
450 Feet
3-001
3-002
3-005
3-009
3-010
3-013
3-014
3-015
3-016
3-017
3-018
3-019
BEARDSLEY
CALLADO
CENTER SCHOOL
RAMONA
GRADA
PASEO VERDE
VISTA MONTANA
DESEO
CALLE DEL NORTE
VIA DEL CERRO
CALLE PORTADA
CAMINO CONCORDIA
CALLE AURORA
VISTA DEL CIMA
FAIRWAY
VALLEY VISTA



Appendix A
Installed CPS - Detailed 3-011-3-012, DB-001-DB002
CPS - Full Capture Devices
County Inlets
County MS4 Stormdrains
County MS4 Stormdrains
Drainage Areas to CPS
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0 350 700 Feet
3-009
3-013
3-011
3-012
DB-001
DB-002
RAMONA
CALLE ORINDA
CALLE AURORA
CALLE DEL NORTE
VIA DEL CERRO
LA PATERA
ALVISO
LA CRESCENTA
VIA VENETO
VISTA DEL MAR
ANCHORS DOWN
ENCINO
VALLEY VISTA
AVOCADO
N RAMONA PLACE DRN
LAS POSAS ESTATES DRAIN
AVENIDA DE AUTLAN
VIA ARACENA
VIA TERRADO



Appendix A
Installed CPS - Detailed 3-020-3-028
CPS - Full Capture Devices
County Inlets
Drainage Areas to CPS
Camarillo Airport IGP Covered Area
Camarillo Airport (County of Ventura)
County MS4 Stormdrains
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0 225 450 Feet
VENTURA
CAMARILLO HILLS DRAIN
3-020
3-021
3-022
3-023
3-024
3-025
3-026
3-027
3-028
AVIATION
CONVAIR
WILLIS
FREEDOM PARK
PLEASANT VALLEY DRAIN
PLEASANT VALLEY
70
60



Appendix A
Installed CPS - Detailed 3-029-3-030
CPS - Full Capture Devices
County Inlets
Drainage Areas to CPS
Camarillo Airport IGP Covered Area
Camarillo Airport (County of Ventura)
County MS4 Stormdrains
Rivers/Streams
Streets
Parcels
County Unincorp. Urban Infill Areas
N
0 200 400 Feet
AVIATION
EUBANKS
HOUCK
POST
DURLEY
AIRPORT
HORIZON
WILLIS
STINSON
STEARMAN
SKYWAY
PLEASANT VALLEY DRAIN
PLEASANT VALLEY
3-029
3-030
80
70

APPENDIX B

INSTALLATION PHOTOS

ZONE 2 - TRASH EXCLUDERS

2-001

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	5	Bypass (in)	12
Width (ft)	3.15	Length (in)	90
Length (ft)	10	Screen Height (in)	20
Outlet D (in)	18	Config = Square	

2-002

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.6	Bypass (in)	12
Width (ft)	3.4	Length (in)	43
Length (ft)	3	Screen Height (in)	20
Outlet D (in)	18	Config = "L" Shaped	

2-003

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4	Bypass (in)	12
Width (ft)	3.15	Length (in)	90
Length (ft)	10	Screen Height (in)	20
Outlet D (in)	18	Config = "L" Shaped	

2-004

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

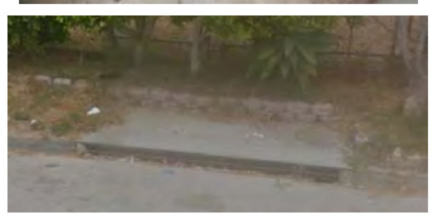
Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.7	Bypass (in)	12
Width (ft)	3.15	Length (in)	43
Length (ft)	3.5	Screen Height (in)	20
Outlet D (in)	18	Config = "L" Shaped	

2-005

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4	Bypass (in)	12
Width (ft)	3.15	Length (in)	90
Length (ft)	10	Screen Height (in)	20
Outlet D (in)	18	Config = Square	



2-006

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4	Bypass (in)	12
Width (ft)	3.15	Length (in)	72
Length (ft)	10	Screen Height (in)	24
Outlet D (in)	18	Config = "L" Shaped	

ZONE 2 - TRASH EXCLUDERS

2-007

Road = Nyeland Ave

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.6	Bypass (in)	12
Width (ft)	3.15	Length (in)	36
Length (ft)	3.5	Screen Height (in)	24
Outlet D (in)	18	Config = "L" Shaped	

2-008

Road = Nyeland Ave

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4	Bypass (in)	N/A
Width (ft)	4.6	Length (in)	60
Length (ft)	6.5	Screen Height (in)	24
Outlet D (in)	36	Config = "L" Shpaed	

2-009

Road = Orange Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.8	Bypass (in)	N/A
Width (ft)	4.3	Length (in)	37
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	18	Config = Triangle	

2-010

Road = Orange Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.2	Bypass (in)	N/A
Width (ft)	4.4	Length (in)	37
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	18	Config = Triangle	

2-011

Road = Orange Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.6	Bypass (in)	N/A
Width (ft)	4.5	Length (in)	37
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	18	Config = "L" Shaped	

2-012

Road = Orange Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.3	Bypass (in)	N/A
Width (ft)	3.5	Length (in)	36
Length (ft)	3.4	Screen Height (in)	18
Outlet D (in)	18	Config = "L" Shaped	

ZONE 2 - TRASH EXCLUDERS

2-013

Road = Orange Dr
Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.8	Bypass (in)	N/A
Width (ft)	3.4	Length (in)	37
Length (ft)	3	Screen Height (in)	24
Outlet D (in)	18	Config = "L" Shaped	


2-014

Road = Orange Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.45	Bypass (in)	12
Width (ft)	4.5	Length (in)	48
Length (ft)	4.5	Screen Height (in)	16
Outlet D (in)	24	Config = Triangle	


2-015

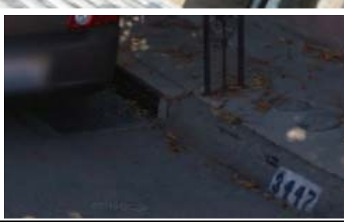
Road = Orange Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.18	Bypass (in)	12
Width (ft)	4.5	Length (in)	36
Length (ft)	4.5	Screen Height (in)	18
Outlet D (in)	24	Config = Triangle	


2-016

Road = Orange Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.3	Bypass (in)	12
Width (ft)	4.5	Length (in)	36
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	24	Config = Triangle	

2-017

Road = Orange Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.8	Bypass (in)	12
Width (ft)	4.5	Length (in)	48
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	24	Config = Triangle	


2-018

Road = Almond Dr
Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.3	Bypass (in)	N/A
Width (ft)	4.5	Length (in)	37
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	18	Config = "L" Shaped	


ZONE 2 - TRASH EXCLUDERS

2-019

Road = Almond Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.35	Bypass (in)	N/A
Width (ft)	4.5	Length (in)	39
Length (ft)	3	Screen Height (in)	20
Outlet D (in)	18	Config = "L" Shaped	

2-020

Road = Almond Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.8	Bypass (in)	N/A
Width (ft)	4.5	Length (in)	43
Length (ft)	3.6	Screen Height (in)	20
Outlet D (in)	18	Config = "L" Shaped	

2-021

Road = Almond Dr

Access Type = Manhole Lid (Circular)

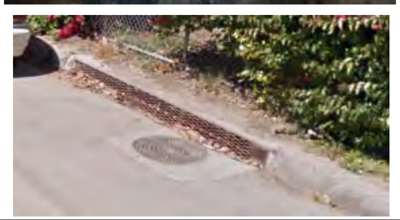
Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.6	Bypass (in)	N/A
Width (ft)	4.5	Length (in)	37
Length (ft)	3.5	Screen Height (in)	18
Outlet D (in)	18	Config = "L" Shaped	

2-022

Road = Almond Dr

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.5	Bypass (in)	N/A
Width (ft)	4.6	Length (in)	37
Length (ft)	3	Screen Height (in)	18
Outlet D (in)	18	Config = "L" Shaped	



2-023

Road = Almond Dr

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.2	Bypass (in)	N/A
Width (ft)	4.5	Length (in)	40
Length (ft)	3	Screen Height (in)	24
Outlet D (in)	24	Config = Triangle	

2-024

Road = Almond Dr

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.44	Bypass (in)	12
Width (ft)	4.5	Length (in)	35
Length (ft)	3	Screen Height (in)	24
Outlet D (in)	24	Config = Triangle	

ZONE 3 - TRASH EXCLUDERS

3-001

Road = Callado St

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4	Diameter (ft)	2.33
Width (ft)	4	Circumfrence (ft)	3.75
Length (ft)	10	Height (ft)	3.17
Outlet Dia (ft)	2	Config = Semi-Circular	

3-002

Road = Center School Rd

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.17	Diameter (ft)	2.5
Width (ft)	4	Circumfrence (ft)	3.75
Length (ft)	7	Height (ft)	2.92
Outlet Dia (ft)	2.33	Config = Semi-Circular	

3-003

Road = Trueno Ave

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	5	Diameter (ft)	2.33
Width (ft)	4	Circumfrence (ft)	4.67
Length (ft)	14	Height (ft)	3.33
Outlet Dia (ft)	2	Config = Semi-Circular	

3-004

Road = Trueno Ave

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.17	Diameter (ft)	3
Width (ft)	3.83	Circumfrence (ft)	4.75
Length (ft)	14	Height (ft)	2.5
Outlet Dia (ft)	1.67	Config = Semi-Circular	

3-005

Road = Grada Ave

Access Type = Drop Inlet Grate

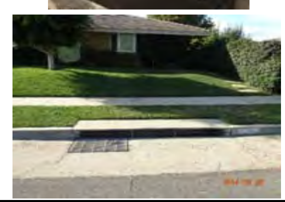
Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4	Diameter (ft)	2.5
Width (ft)	3	Circumfrence (ft)	3.92
Length (ft)	7	Height (ft)	3.33
Outlet Dia (ft)	1.33	Config = Semi-Circular	

3-006

Road = Deseo Ave

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3	Diameter (ft)	2.33
Width (ft)	3.83	Circumfrence (ft)	3.67
Length (ft)	10	Height (ft)	1.5
Outlet Dia (ft)	1.5	Config = Semi-Circular	



ZONE 3 - TRASH EXCLUDERS

3-007

Road = Valley Vista Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.83	Diameter (ft)	2.33
Width (ft)	3.83	Circumfrence (ft)	3.67
Length (ft)	20	Height (ft)	2.5
Outlet Dia (ft)	2	Config = Semi-Circular	


3-008

Road = Valley Vista Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.83	Diameter (ft)	2.83
Width (ft)	4.17	Circumfrence (ft)	4.42
Length (ft)	20	Height (ft)	2.83
Outlet Dia (ft)	2	Config = Semi-Circular	


3-009

Road = Fairway Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	2.83	Bypass (in)	10
Width (ft)	1.75	Length (in)	42
Length (ft)	3.5	Screen Height (in)	16
Outlet D (in)	15	Config = Triangle	


3-010

Road = Fairway Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	5	Bypass (in)	12
Width (ft)	2	Length (in)	42
Length (ft)	3.5	Screen Height (in)	24
Outlet D (in)	36	Config = Wall to Wall	


3-011

Road = La Crescenta Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	2.83	Bypass (in)	10
Width (ft)	1.75	Length (in)	42
Length (ft)	3.33	Screen Height (in)	16
Outlet D (in)	14	Config = Triangle	


3-012

Road = La Crescenta Dr
Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	2.7	Bypass (in)	10
Width (ft)	1.83	Length (in)	42
Length (ft)	3.5	Screen Height (in)	14
Outlet D (in)	12	Config = Triangle	


ZONE 3 - TRASH EXCLUDERS

3-013

Road = Villa Del Cerro

Access Type = Drop Inlet Grate

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.92	Bypass (in)	10
Width (ft)	1.75	Length (in)	42
Length (ft)	3.5	Screen Height (in)	16
Outlet D (in)	18	Config = Triangle	

3-014

Road = Vista Del Campo

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.5	Bypass (in)	12
Width (ft)	3	Length (in)	48
Length (ft)	7	Screen Height (in)	20
Outlet D (in)	18	Config = "L" Shaped	

3-015

Road = Vista Del Cima

Access Type = Manhole Lid (Circular)

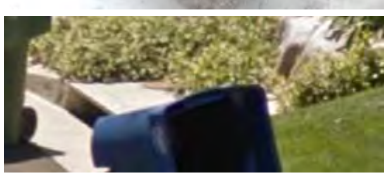
Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3	Bypass (in)	10
Width (ft)	3	Length (in)	48
Length (ft)	7	Screen Height (in)	16
Outlet D (in)	18	Config = Square	

3-016

Road = Vista Del Campo

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	5.17	Bypass (in)	12
Width (ft)	3	Length (in)	48
Length (ft)	7	Screen Height (in)	24
Outlet D (in)	18	Config = "L" Shaped	



3-017

Road = Vista Del Cima

Access Type = Manhole Lid (Circular)

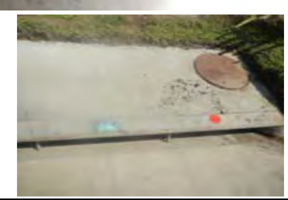
Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	6	Bypass (in)	12
Width (ft)	3	Length (in)	48
Length (ft)	7	Screen Height (in)	24
Outlet D (in)	18	Config = "L" Shaped	

3-018

Road = Via Con Dios

Access Type = Manhole Lid (Circular)

Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	3.92	Bypass (in)	12
Width (ft)	3	Length (in)	72
Length (ft)	10	Screen Height (in)	18
Outlet D (in)	18	Config = "L" Shaped	



ZONE 3 - TRASH EXCLUDERS

3-019

Road = Via Con Dios

Access Type = Manhole Lid (Circular)

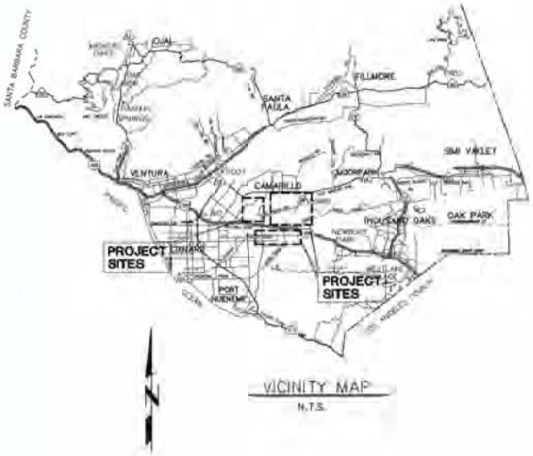
Catch Basin Dimensions		CPS Device Dimensions	
Depth (ft)	4.3	Bypass (in)	12
Width (ft)	3	Length (in)	42
Length (ft)	3.5	Screen Height (in)	24
Outlet D (in)	18	Config = Wall to Wall	

DB001 – Las Posas Estates Detention Basin

DB002 – Ramona Detention Basin

APPENDIX C

AS-BUILT DRAWINGS



VICINITY MAP
N.T.S.

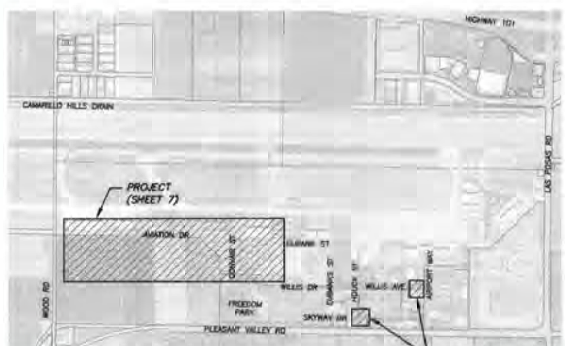
COUNTY OF VENTURA
PUBLIC WORKS AGENCY
VENTURA COUNTY WATERSHED PROTECTION DISTRICT
ZONE 2 AND 3
REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES

INDEX TO SHEETS

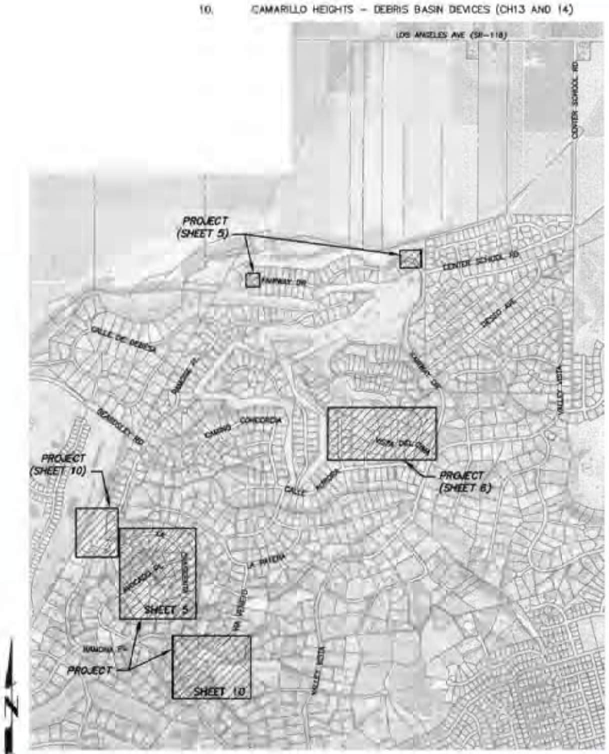
SHEET NO.	TITLE
1.	TITLE SHEET
2.	NYELAND ACRES – DEVICES (NA1 THRU NA8)
3.	NYELAND ACRES – DEVICES (NA9 THRU NA17)
4.	NYELAND ACRES – DEVICES (NA18 THRU NA26)
5.	CAMARILLO HEIGHTS – DEVICES (CH1 THRU CH5)
6.	CAMARILLO HEIGHTS – DEVICES (CH6 THRU CH12)
7.	CAMARILLO AIRPORT – DEVICES (CA1 THRU CA11)
8.	DEVICE DETAILS
9.	DEVICE DATA TABLES
10.	CAMARILLO HEIGHTS – DEBRIS BASIN DEVICES (CH13 AND 14)

RECORD DRAWING	
DATE PROJECT COMPLETED	8/26/2016
REVISIONS SUBMITTED BY	D. YANT
DRAWING REVISED BY	D. KIRBY
APPROVED BY	D. KIRBY DATE 10/18/16

GENERAL LOCATION PLAN, NYELAND ACRES
SCALE: 1"=500'



GENERAL LOCATION PLAN, CAMARILLO AIRPORT
SCALE: 1"=1,000'



GENERAL LOCATION PLAN, CAMARILLO HEIGHTS
SCALE: 1"=1,000'

GENERAL NOTES

1. LETTERS AND NUMBERS IN ⊖ INDICATE THE DETAIL CALL-OUT AND SHEET ON WHICH REFERENCE DETAIL IS SHOWN.
2. NUMBERS IN △ REFER TO NOTES ON THE SAME SHEET UNLESS OTHERWISE NOTED.
3. EXISTING IMPROVEMENTS WITHIN THE RIGHT OF WAY AND WORK AREAS SHALL REMAIN AND SHALL BE PROTECTED UNLESS OTHERWISE NOTED. DAMAGED IMPROVEMENTS SHALL BE REPLACED IN KIND TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
4. UTILITIES ARE SHOWN AS KNOWN TO EXIST AT TIME OF SURVEY. UTILITIES MAY HAVE BEEN OMITTED, MISPLACED, AND/OR RELOCATED. CONTRACTOR SHALL EXERCISE CARE IN EXCAVATION AND SHALL PROTECT ALL UTILITIES.
5. CONTRACTOR SHALL NOTIFY UTILITY OWNERS A MINIMUM OF 48 HOURS PRIOR TO STARTING WORK IN AREAS AFFECTING THEIR FACILITIES.
6. CONTRACTOR SHALL REMOVE AND DISPOSE OF TRASH, SEDIMENT AND DEBRIS INSIDE CATCH BASINS AND MANHOLES IDENTIFIED FOR DEVICE INSTALLATION IN ACCORDANCE WITH SPECIFICATIONS.
7. CONTRACTOR SHALL FIELD VERIFY CATCH BASIN DIMENSIONS AND CONFIRM FEASIBILITY OF INSTALLING DEVICES PRIOR TO DEVICE MANUFACTURE/ORDER.
8. NUMBERS IN ◯ INDICATE BID ITEMS FOR WHICH PAYMENT WILL BE MADE.

ABBREVIATION LIST

CA	CAMARILLO AIRPORT
CH	CAMARILLO HEIGHTS
NA	NYELAND ACRES

UNDERGROUND SERVICE ALERT
1-800-422-4133
CALL USA/SC
FOR UNDERGROUND LOCATION
2 WORKING DAYS BEFORE YOU DIG

GREGORY J. MUSSER NO 77627

REV			
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C			
B			
A			
△	REVISION DESCRIPTION	APP	DATE

Stantec

GREGORY J. MUSSER
PROJECT ENGINEER
DATE 4/18/2016
R.C.E. 77627
2064125900
04-15-2016
PLAN DATE

4/19/16
4/20/2016
4/20/16

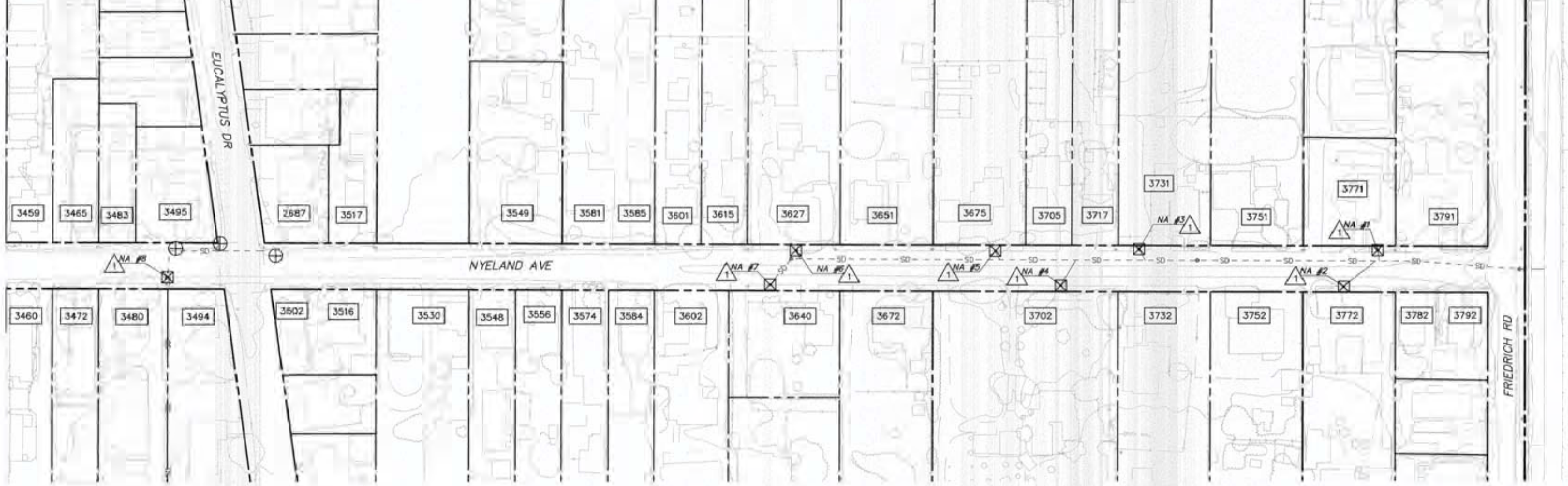
COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

WP16-11(I)
40530

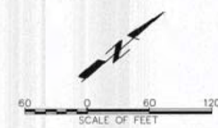
REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
TITLE SHEET

SHEET 1 OF 10
DRAWING NO. Y-2-3852

4/15/2016 2:43 PM



PLAN VIEW - NYELAND ACRES



CONSTRUCTION NOTES

1. CONSTRUCT FULL CAPTURE PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN PER SHEET 8. DIMENSION INFORMATION PER SHEET 9 – CONTRACTOR TO VERIFY IN FIELD. (4)

LEGEND

- ⊠ EXISTING INLET/MANHOLE DESIGNATED FOR DEVICE INSTALLATION
- ⊕ EXISTING INLET/MANHOLE – NO DEVICE REQUIRED
- ✦ EXISTING DRAIN STRUCTURE – NO DEVICE REQUIRED
- CA #24 — AREA / DEVICE #
- – – SD – – EXISTING STORM DRAIN
- [3717] PARCEL ADDRESS NUMBER

REGISTERED PROFESSIONAL ENGINEER GREGORY J. MUSSER NO 77627 CIVIL STATE OF CALIFORNIA

RECORD DRAWING	
DATE PROJECT COMPLETED	8/26/2016
REVISIONS SUBMITTED BY	D. YANT
DRAWING REVISED BY	D. KIRBY
APPROVED BY	D. KIRBY DATE 10/18/16

SAVE DATE: 4/15/16 TMAAG ...2064125900_PLAN.dwg

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	REVISION DESCRIPTION	APR.	DATE
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GREGORY J. MUSSER, PROJECT ENGINEER, DATE: 4/18/2016, R.C.E. 77627, 2064125900, W.O., 04-15-2016 PLAN DATE

GJM DESIGNED; DL DRAWN; GJM CHECKED

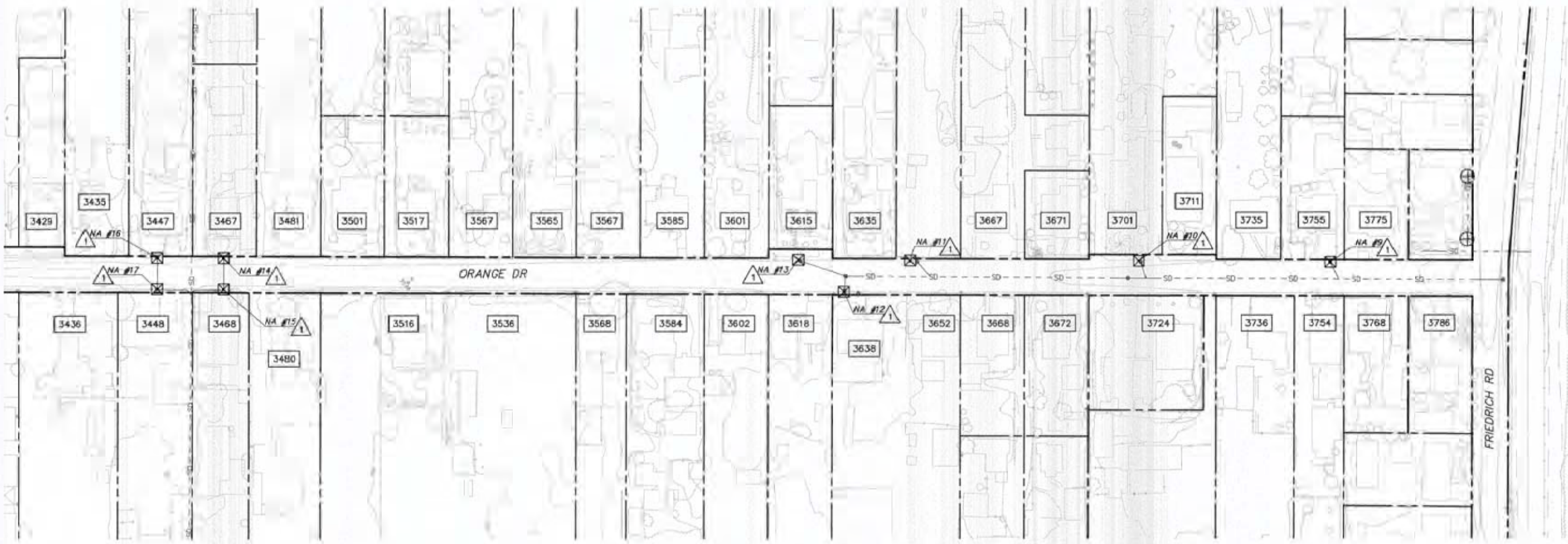
PROJECT MANAGER — DATE 4/18/2016; DEPUTY DIRECTOR — DATE 4/19/16; DISTRICT DIRECTOR — DATE 4/20/2016

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

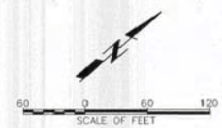
SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
NYELAND ACRES – DEVICES (NA1 THRU NA8)

SHEET 2 OF 10
DRAWING NO. Y-2-3853



PLAN VIEW - NYELAND ACRES



CONSTRUCTION NOTES

1. CONSTRUCT FULL CAPTURE PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN PER SHEET 8. DIMENSION INFORMATION PER SHEET 9 – CONTRACTOR TO VERIFY IN FIELD. (4)

LEGEND

⊠	EXISTING INLET/MANHOLE DESIGNATED FOR DEVICE INSTALLATION
⊕	EXISTING INLET/MANHOLE – NO DEVICE REQUIRED
✦	EXISTING DRAIN STRUCTURE – NO DEVICE REQUIRED
CA #24	AREA / DEVICE #
– –SD– –	EXISTING STORM DRAIN
3717	PARCEL ADDRESS NUMBER

REGISTERED PROFESSIONAL ENGINEER GREGORY J. MUSSER NO 77627 CIVIL STATE OF CALIFORNIA

RECORD DRAWING
DATE PROJECT COMPLETED 8/26/2016
REVISIONS SUBMITTED BY D. YANT
DRAWING REVISED BY D. KIRBY
APPROVED BY D. KIRBY DATE 10/18/16

SAVE DATE: 4/15/16

4/15/2016 2:45 PM

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GREGORY J. MUSSER, PROJECT ENGINEER; DATE: 4/18/2016; R.C.E. 77627; 2064125900; W.O. 04-15-2016 PLAN DATE

GJM DESIGNED; DL DRAWN; GJM CHECKED

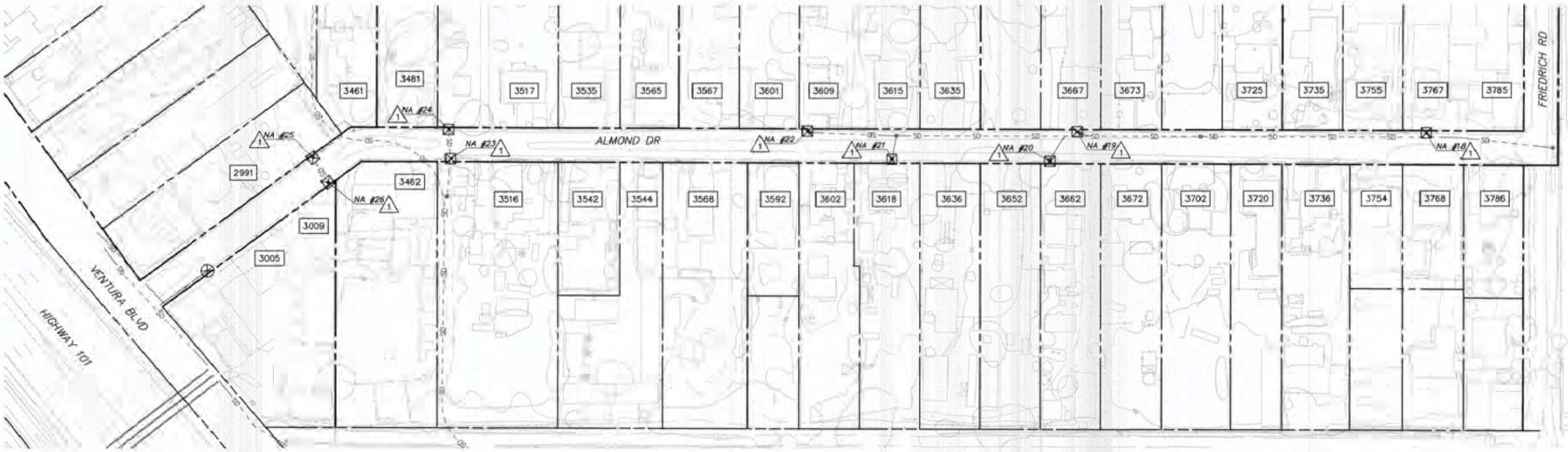
PROJECT MANAGER 4/18/2016 DATE; DEPUTY DIRECTOR 4/19/16 DATE; DISTRICT DIRECTOR 4/20/2016 DATE

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

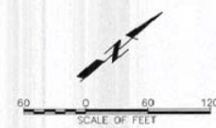
SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
NYELAND ACRES – DEVICES (NA9 THRU NA17)

SHEET 3 OF 10
DRAWING NO. Y-2-3854



PLAN VIEW - NYELAND ACRES



CONSTRUCTION NOTES

1. CONSTRUCT FULL CAPTURE PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN PER SHEET 8. DIMENSION INFORMATION PER SHEET 9 – CONTRACTOR TO VERIFY IN FIELD. (4)

LEGEND

- ⊠ EXISTING INLET/MANHOLE DESIGNATED FOR DEVICE INSTALLATION
- ⊕ EXISTING INLET/MANHOLE – NO DEVICE REQUIRED
- ✦ EXISTING DRAIN STRUCTURE – NO DEVICE REQUIRED
- CA #24 — AREA / DEVICE #
- – SD – EXISTING STORM DRAIN
- [3717] PARCEL ADDRESS NUMBER

RECORD DRAWING	
DATE PROJECT COMPLETED	8/26/2016
REVISIONS SUBMITTED BY	D. YANT
DRAWING REVISED BY	D. KIRBY
APPROVED BY	D. KIRBY DATE 10/18/16

GREGORY J. MUSSER NO 77627 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

SAVE DATE: 4/15/16

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	REVISION	DESCRIPTION	APP.	DATE
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GREGORY J. MUSSER, PROJECT ENGINEER
DATE: 4/18/2016
R.C.E. 77627
2064125900
W.O.
04-15-2016 PLAN DATE

GJM DESIGNED
DL DRAWN
GJM CHECKED

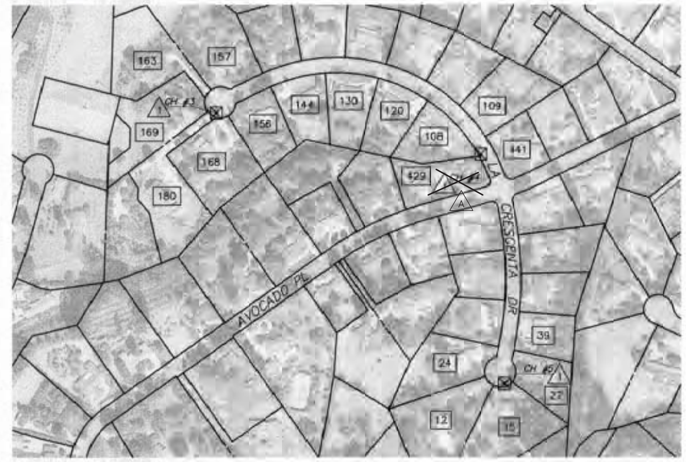
PROJECT MANAGER — DATE 4/18/2016
DEPUTY DIRECTOR — DATE 4/19/16
DISTRICT DIRECTOR — DATE 4/20/2016

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
NYELAND ACRES – DEVICES (NA18 THRU NA26)

SHEET 4 OF 10
DRAWING NO. Y-2-3855



PLAN VIEW - CAMARILLO HEIGHTS

CONSTRUCTION NOTES

1. *CONSTRUCT FULL CAPTURE PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN PER SHEET 8. DIMENSION INFORMATION PER SHEET 9 – CONTRACTOR TO VERIFY IN FIELD.* (4)

LEGEND

⊠	EXISTING INLET/MANHOLE DESIGNATED FOR DEVICE INSTALLATION
⊕	EXISTING INLET/MANHOLE – NO DEVICE REQUIRED
✦	EXISTING DRAIN STRUCTURE – NO DEVICE REQUIRED
CA #24	AREA / DEVICE #
– –SD– –	EXISTING STORM DRAIN
3717	PARCEL ADDRESS NUMBER

200 0 200 400
SCALE OF FEET

REGISTERED PROFESSIONAL ENGINEER — GREGORY J. MUSSER — NO 77627 — CIVIL — STATE OF CALIFORNIA

RECORD DRAWING

DATE PROJECT COMPLETED 8/26/2016
REVISIONS SUBMITTED BY D. YANT
DRAWING REVISED BY D. KIRBY
APPROVED BY D. KIRBY DATE 10/18/16

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Stantec

GREGORY J. MUSSER, PROJECT ENGINEER
DATE: 4/18/2016
R.C.E. 77627
2064125900
W.O.
04-15-2016 PLAN DATE

DESIGNED: GJM
DRAWN: DL
CHECKED: GJM

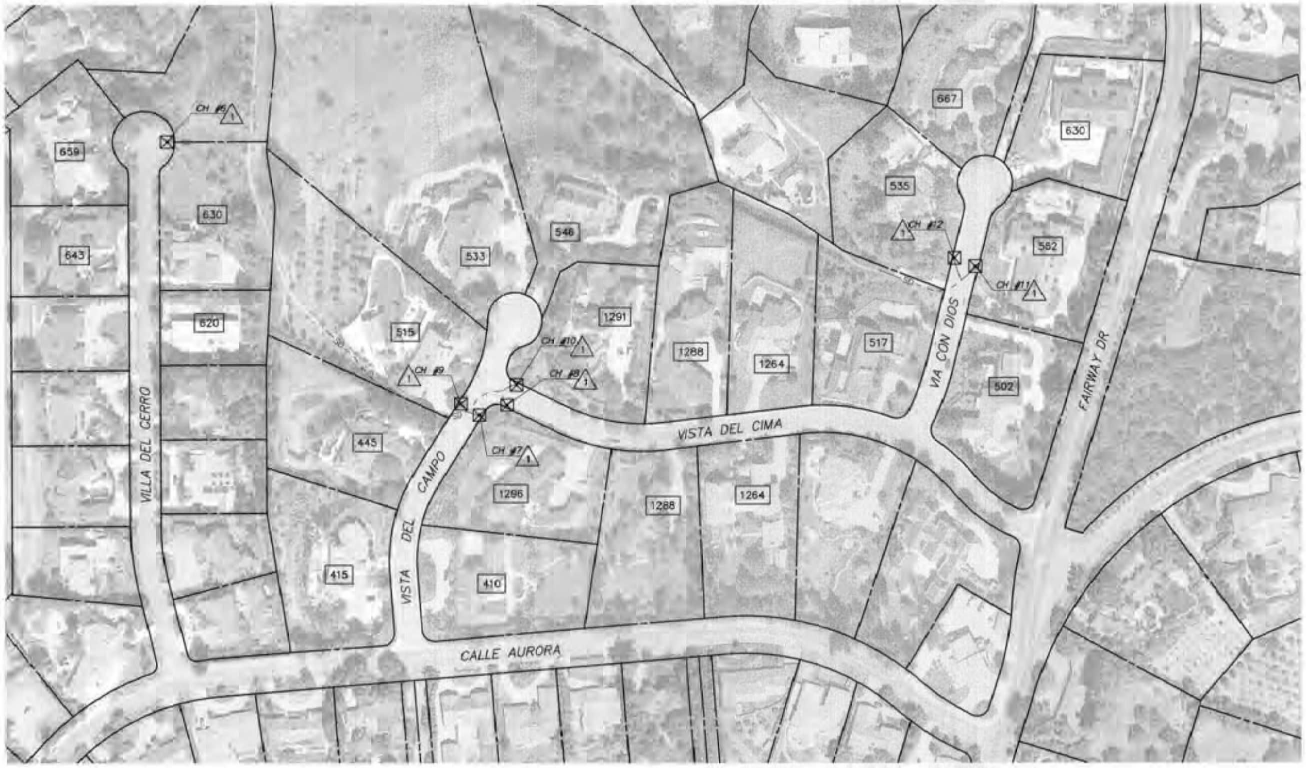
PROJECT MANAGER — DATE 4/18/2016
DEPUTY DIRECTOR — DATE 4/19/16
DISTRICT DIRECTOR — DATE 4/20/2016

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
CAMARILLO HEIGHTS – DEVICES (CH1 THRU CH5)

SHEET 5 OF 10
DRAWING NO. Y-2-3856



CONSTRUCTION NOTES

1. CONSTRUCT FULL CAPTURE PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN PER SHEET 8. DIMENSION INFORMATION PER SHEET 9 – CONTRACTOR TO VERIFY IN FIELD. (4)

PLAN VIEW - CAMARILLO HEIGHTS

100 0 100 200
SCALE OF FEET

LEGEND

⊠	EXISTING INLET/MANHOLE DESIGNATED FOR DEVICE INSTALLATION
⊕	EXISTING INLET/MANHOLE – NO DEVICE REQUIRED
+	EXISTING DRAIN STRUCTURE – NO DEVICE REQUIRED
CA #24	AREA / DEVICE #
– – –	EXISTING STORM DRAIN
3717	PARCEL ADDRESS NUMBER

REGISTERED PROFESSIONAL ENGINEER GREGORY J. MUSSER NO 77627 STATE OF CALIFORNIA CIVIL

RECORD DRAWING
DATE PROJECT COMPLETED 8/26/2016
REVISIONS SUBMITTED BY D. YANT
DRAWING REVISED BY D. KIRBY
APPROVED BY D. KIRBY DATE 10/18/16

SAVE DATE: 4/15/16 TMAAG

REV	REVISION DESCRIPTION	APP.	DATE
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Stantec

GREGORY J. MUSSER, PROJECT ENGINEER
DATE: 4/18/2016
R.C.E. 77627
2064125900
W.O.
04-15-2016 PLAN DATE

GJM DESIGNED
DL DRAWN
GJM CHECKED

PROJECT MANAGER 4/19/2016 DATE
DEPUTY DIRECTOR 4/19/16 DATE
DISTRICT DIRECTOR 4/20/2016 DATE

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
CAMARILLO HEIGHTS – DEVICES (CH6 THRU CH12)

SHEET 6 OF 10
DRAWING NO. Y-2-3857

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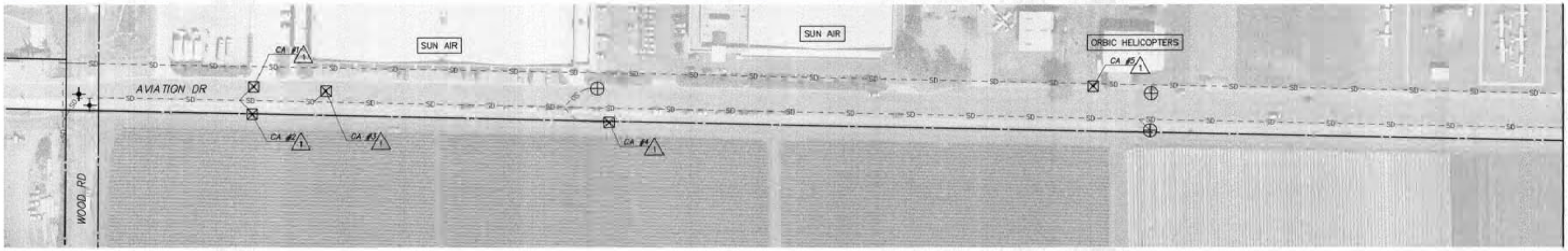

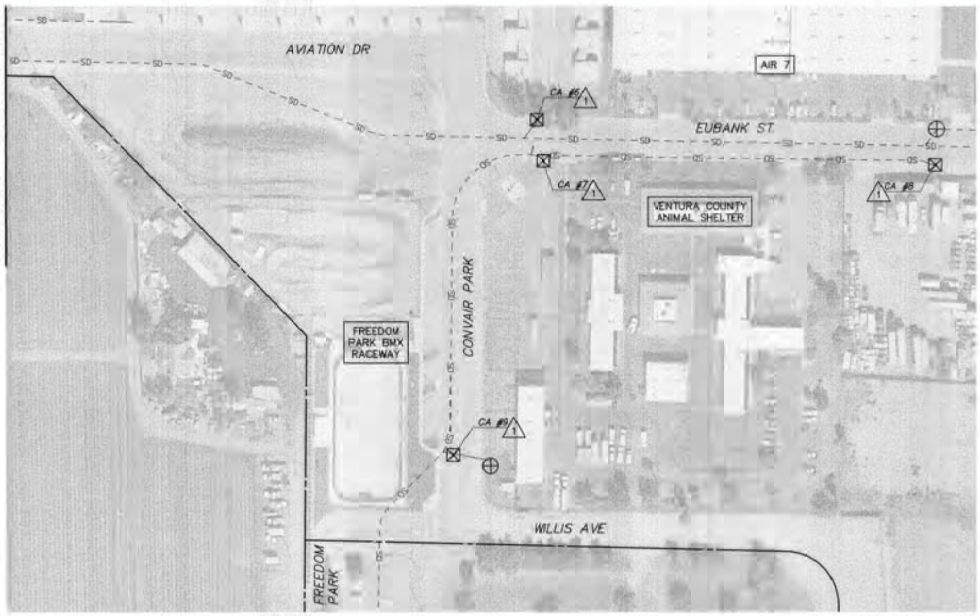

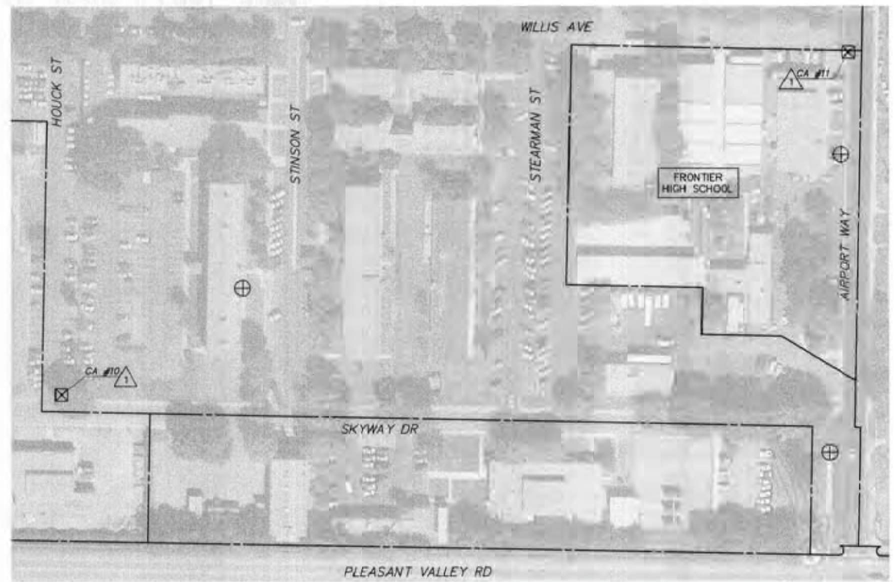

CONSTRUCTION NOTES

1. CONSTRUCT FULL CAPTURE PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN PER SHEET 8. DIMENSION INFORMATION PER SHEET 9 – CONTRACTOR TO VERIFY IN FIELD. (4)

PLAN VIEW - CAMARILLO AIRPORT

80 0 80 160
SCALE OF FEET

LEGEND

- ⊠ EXISTING INLET/MANHOLE DESIGNATED FOR DEVICE INSTALLATION
- ⊕ EXISTING INLET/MANHOLE – NO DEVICE REQUIRED
- ✦ EXISTING DRAIN STRUCTURE – NO DEVICE REQUIRED
- CA #24 — AREA — DEVICE #
- – –SD– – EXISTING STORM DRAIN
- 3717 PARCEL ADDRESS NUMBER

RECORD DRAWING

DATE PROJECT COMPLETED 8/26/2016
REVISIONS SUBMITTED BY D. YANT
DRAWING REVISED BY D. KIRBY
APPROVED BY D. KIRBY DATE 10/18/16

REGISTERED PROFESSIONAL ENGINEER GREGORY J. MUSSER NO 77827 CIVIL STATE OF CALIFORNIA

SAVE DATE: 4/15/16 TMAAO V:\2064\active\2064125900\civil\Civil\2064125900_PLAN.dwg

4/15/2016 2:46 PM

	REVISION	DESCRIPTION	APP.	DATE
D				
C				
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Stantec

GREGORY J. MUSSER
PROJECT ENGINEER
DATE: 4/18/2016
R.C.E. 77827
2064125900
W.O.
04-15-2016
PLAN DATE

GJM DESIGNED
DL DRAWN
GJM CHECKED

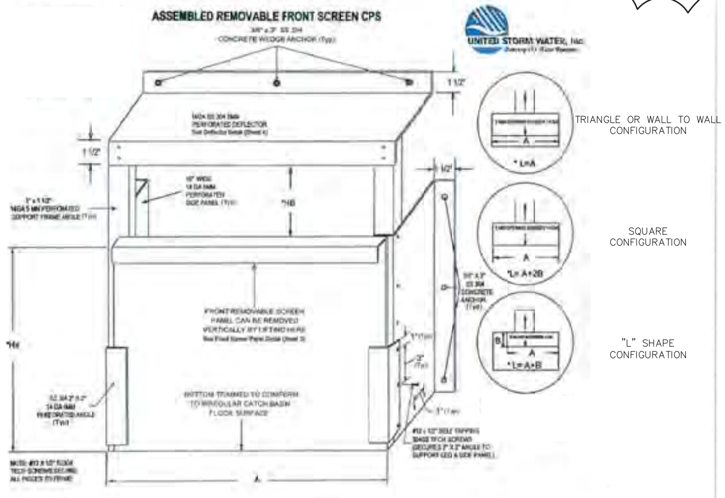
PROJECT MANAGER 4/18/2016 DATE
DEPUTY DIRECTOR 4/19/16 DATE
DISTRICT DIRECTOR 4/20/2016 DATE

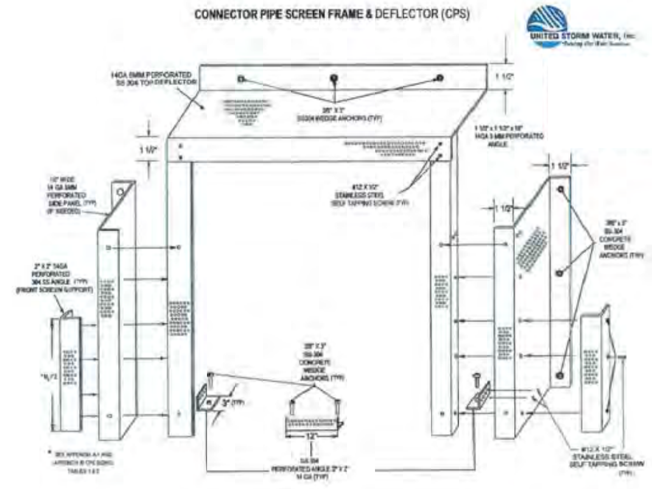
COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

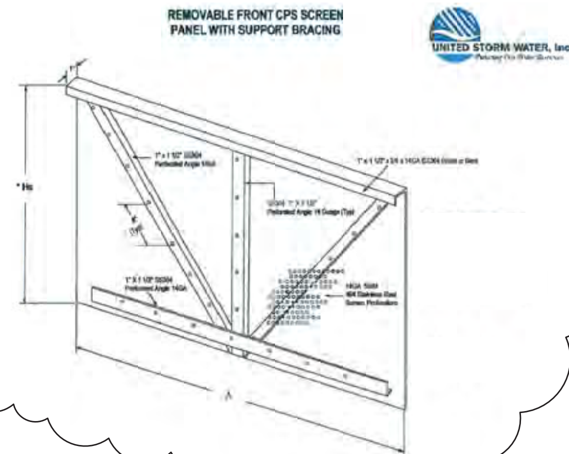
SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
CAMARILLO AIRPORT – DEVICES (CA1 THRU CA11)

SHEET 7 OF 10
DRAWING NO. Y-2-3858







A

NOTES:

1. *THE PROTECTIVE LIDS SHALL ONLY BE INSTALLED WHEN THE CONNECTOR PIPE IS LOCATED BELOW THE CURB LINE AND FLOW COULD FALL BEHIND THE DEVICE UNFILTERED, OR UNLESS OTHERWISE APPROVED.*
2. *DEVICES SHALL BE EVENLY SPACED AROUND THE CONNECTOR PIPE AND ENSURE SPACING OF 4" MINIMUM FROM ANY CORNER, UNLESS OTHERWISE APPROVED.*
3. *WHERE MANHOLE STEPS CONFLICT WITH THE DEVICE, REINSTALL STEPS PER NOTE #6 OF EITHER SPPWC (2015) -300-3 OR 301-3. IF NEITHER CONFIGURATION IS POSSIBLE THEN ALL ATTEMPTS SHALL BE MADE TO MAINTAIN THE EXISTING STEPS. LAST CASE SCENARIO SHALL BE REMOVE 1 STEP, AND TWO STEPS MAXIMUM IF NECESSARY.*

A ~~4. DEVICES SHALL BE ADS FLEXSTORM CPS PRODUCT MANUFACTURED BY INLET & PIPE PROTECTION INC., A DIVISION OF ADS, INC., OR APPROVED EQUAL.~~

RECORD DRAWING
DATE PROJECT COMPLETED 8/26/2016
REVISIONS SUBMITTED BY D. YANT
DRAWING REVISED BY D. KIRBY
APPROVED BY D. KIRBY DATE 10/18/16

D			
C			
B			
A	CCO #1 - DEVICE SUB (UNITED SW)	DK	10/18/16
REVISION	DESCRIPTION	APP	DATE

Stantec

GREGORY J. MUSSER
DATE 4/18/2016
R.C.E. 72627
2064125900
04-15-2016

CJM DESIGNED
DL DRAWN
GJM CHECKED

4/19/2016
4/19/16
4/20/2016

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

SPEC. NO. WP16-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
DEVICE DETAILS

SHEET 8 OF 10
DRAWING NO. Y-2-3859

NYELAND ACRES (NA)

DEVICE NO.	MODEL NO. △1	PROTECTIVE BYPASS LID?	DIMENSIONS PER SHEET 8 Hb (IN)	L (IN)	Hs (IN)	CONFIGURATION	OUTLET PIPE DIA. (in)	DIRECTION OF DISCHARGE PIPE △2	ACCESS TYPE	Q_{10} (cfs)	$Q_{1.1}$ (cfs)
1 △3	~~22W12D15H~~	YES	12	90	20	SQUARE	18	NE	MANHOLE	3.12	0.70
2 △3	~~22W12D15H~~	YES	12	43	20	"L" SHAPE	18	NW	MANHOLE	2.63	0.59
3 △3	~~22W12D15H~~	YES	12	90	20	"L" SHAPE	18	NE	MANHOLE	6.52	1.47
4 △3	~~22W12D15H~~	YES	12	43	20	"L" SHAPE	18	NW	MANHOLE	2.94	0.66
5 △3	~~22W12D15H~~	YES	12	90	20	SQUARE	18	NE	MANHOLE	4.63	1.04
6 △3	~~36SL-15/36SR-15~~	YES	12	72	24	"L" SHAPE	18	NE	MANHOLE	3.47	0.78
7 △3	~~36SL-15/36SR-15~~	YES	12	36	24	"L" SHAPE	18	NW	MANHOLE	3.33	0.75
8 △4	~~48SL-15/48SR-15~~	NO	0	60	24	"L" SHAPE	36	SE	GRATE	10.13	2.24
9 △3	~~36SL-15/36SR-15~~	NO	0	37	18	TRIANGLE	18	NE	MANHOLE	0.26	0.06
10 △3	~~36SL-15/36SR-15~~	NO	0	37	18	TRIANGLE	18	NE	MANHOLE	2.41	0.54
11 △3	~~22W12D15H~~	NO	0	37	18	"L" SHAPE	18	NE	MANHOLE	2.75	0.62
12 △3	~~22W12D15H~~	NO	0	36	18	"L" SHAPE	18	NW	MANHOLE	8.91	2.01
13 △3 △4	~~36SL-15/36SR-15~~	NO	0	37	24	"L" SHAPE	18	NE	MANHOLE	5.87	1.33
14 △4	~~32W15D15H~~	YES	12	48	18	TRIANGLE	24	SE	GRATE	5.05	1.12
15	~~32W15D15H~~	YES	12	36	18	TRIANGLE	24	SW	GRATE	2.46	0.54
16	~~26W8D18H~~	YES	12	36	18	TRIANGLE	24	SE	GRATE	1.23	0.27
17	~~32W15D15H~~	YES	12	48	18	TRIANGLE	24	NE	GRATE	1.55	0.34
18 △3	~~36SL-15/36SR-15~~	NO	0	37	18	SQUARE	18	NE	MANHOLE	2.26	0.50
19 △3	~~22W12D15H~~	NO	0	39	20	SQUARE	18	NE	MANHOLE	3.61	0.81
20 △3	~~22W12D15H~~	NO	0	43	20	SQUARE	18	NW	MANHOLE	4.81	1.09
21 △3	~~36SL-15/36SR-15~~	NO	0	37	18	SQUARE	18	NW	MANHOLE	2.40	0.54
22 △3	~~36SL-15/36SR-15~~	NO	0	37	18	SQUARE	18	NE	MANHOLE	3.00	0.68
23	~~36SL-15/36SR-15~~	NO	0	40	24	TRIANGLE	24	SE	GRATE	3.60	0.81
24 △4	~~36SL-15/36SR-15~~	YES	12	35	24	TRIANGLE	24	SE	GRATE	3.07	0.68
25	~~36SL-15/36SR-15~~	NO	0	48	20	SQUARE	24	N	GRATE	2.53	0.56
26	~~36SL-15/36SR-15~~	YES	12	36	18	TRIANGLE	24	W	GRATE	1.20	0.27

△A

CAMARILLO HEIGHTS (CH)

DEVICE NO.	MODEL NO. △1	PROTECTIVE BYPASS LID?	DIMENSIONS PER SHEET 8 Hb (IN)	L (IN)	Hs (IN)	CONFIGURATION	OUTLET PIPE DIA. (in)	DIRECTION OF DISCHARGE PIPE △2	ACCESS TYPE	Q_{10} (cfs)	$Q_{1.1}$ (cfs)
1	~~22W12D15H~~	YES	10	42	16	TRIANGLE	15	S	GRATE	22.90	1.97
2 △4	~~42W18D15H~~	YES	12	42	24	WALL TO WALL	36	NE	GRATE	2.03	0.14
3 △4	~~22W12D15H~~	YES	10	42	16	TRIANGLE	14	SW	GRATE	8.37	1.06
~~4 △4~~	~~22W12D15H~~	~~YES~~	~~DETERMINED INFEASIBLE IN FIELD~~					~~SW~~	~~GRATE~~	~~7.51~~	~~0.95~~
5 △4	~~22W12D15H~~	YES	10	42	14	TRIANGLE	12	S	GRATE	32.35	3.11
6	~~22W12D15H~~	YES	10	42	16	TRIANGLE	18	E	GRATE	9.45	0.75
7 △3	~~36SL-15/36SR-15~~	YES	12	48	20	"L" SHAPE	18	SW	MANHOLE	6.38	0.49
8 △3	~~22W12D15H~~	YES	10	48	16	SQUARE	18	SW	MANHOLE	8.10	0.64
9 △3	~~22W12D15H~~	YES	12	48	24	"L" SHAPE	18	SE	MANHOLE	4.12	0.33
10 △3 △4	~~22W12D15H~~	YES	12	48	24	"L" SHAPE	18	SW	MANHOLE	5.46	0.43
11 △3	~~36SL-15/36SR-15~~	YES	12	72	18	WALL TO WALL	18	SW	MANHOLE	8.92	0.71
12 △3	~~36SL-15/36SR-15~~	YES	12	42	24	WALL TO WALL	18	SE	MANHOLE	2.72	0.22
13	SEE SHEET 10 FOR CUSTOM DEBRIS BASIN DEVICES										
14											

△A △B

CAMARILLO AIRPORT (CA)

DEVICE NO.	MODEL NO. △1	PROTECTIVE BYPASS LID?	DIMENSIONS PER SHEET 8 Hb (IN)	L (IN)	Hs (IN)	CONFIGURATION	OUTLET PIPE DIA. (in)	DIRECTION OF DISCHARGE PIPE △2	ACCESS TYPE	Q_{10} (cfs)	$Q_{1.1}$ (cfs)
1 △3	~~36SL-15/36SR-15~~	△A YES	10	37	20	TRIANGLE	18	W	MANHOLE	0.17	0.04
2 △3	~~22W12D15H~~	YES	12	42	20	WALL TO WALL	12	N	MANHOLE	0.31	0.08
3	~~22W12D15H~~	YES	10	35	16	WALL TO WALL	18	W	GRATE	1.34	0.35
4 △3	~~22W12D15H~~	YES	12	43	24	WALL TO WALL	18	N	MANHOLE	0.48	0.12
5	~~42W18D15H~~	YES	12	36	24	TRIANGLE	27	S	GRATE	11.07	3.38
6 △3	~~22W12D15H~~	YES	8	36	10	TRIANGLE	18	W	MANHOLE	0.65	0.12
7 △3	~~36SL-15/36SR-15~~	YES	10	36	18	TRIANGLE	18	S	MANHOLE	3.73	0.71
8 △3	~~36SL-15/36SR-15~~	YES	12	36	24	TRIANGLE	18	N	MANHOLE	2.29	0.43
9 △3	~~36SL-15/36SR-15~~	NO	0	36	24	TRIANGLE	18	W	MANHOLE	2.77	0.53
10 △4	~~22W12D15H~~	YES	10	32	16	TRIANGLE	15	E	GRATE	4.12	1.06
11 △3	~~42W18D15H~~	△A YES	11	30	22	WALL TO WALL	39	S	MANHOLE	23.90	3.65

△A

CONSTRUCTION NOTES

△A ~~1. MODEL NOS. LISTED ARE FROM LATEST ABS FLEXSTORM CATALOG. MODEL, MANUFACTURER AND CONFIGURATION MAY BE CHANGED WITH APPROVED EQUAL.~~
2. MANY DEVICES WILL REQUIRE CUSTOM BOTTOM EXTENSIONS TO FIT NON-UNIFORM CATCH BASIN FLOORS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY, MEASURE, AND CONSTRUCT SUCH EXTENSIONS IN THE FIELD.
3. DEVICE IN THIS INLET/STRUCTURE MAY REQUIRE CUSTOMIZATION.
4. MANHOLE OR GRATE LID IS BOLTED OR FROZEN

REGISTERED PROFESSIONAL ENGINEER GREGORY J. MUSSER NO 77627 CIVIL STATE OF CALIFORNIA

RECORD DRAWING
DATE PROJECT COMPLETED 8/26/2016
REVISIONS SUBMITTED BY D. YANT
DRAWING REVISED BY D. KIRBY
APPROVED BY D. KIRBY DATE 10/18/16

SAVE DATE: 4/15/16 TMAAG

△	REVISION DESCRIPTION	APP.	DATE
D			
C			
B	CCO #2 – CH#4 REMOVED (INFEASIBLE)	DK	10/18/16
A	CCO #1 – DEVICE SUB (UNITED SW)	DK	10/18/16

Stantec

GREGORY J. MUSSER, PROJECT ENGINEER
DATE 4/18/2016
R.C.E. 77627
2064125900
W.O.
04-15-2016 PLAN DATE

GJM DESIGNED
DL DRAWN
GJM CHECKED

PROJECT MANAGER 4/18/2016 DATE
DEPUTY DIRECTOR 4/19/16 DATE
DISTRICT DIRECTOR 4/20/2016 DATE

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

SPEC. NO. WP15-11(I)
PROJ. NO. 40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
DEVICE DATA TABLES

SHEET 9 OF 10
DRAWING NO. Y-2-3860

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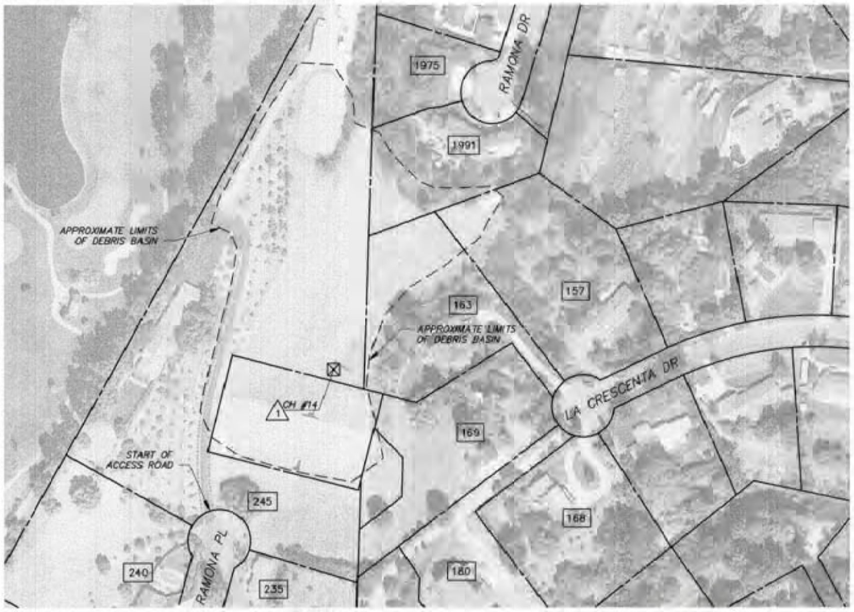
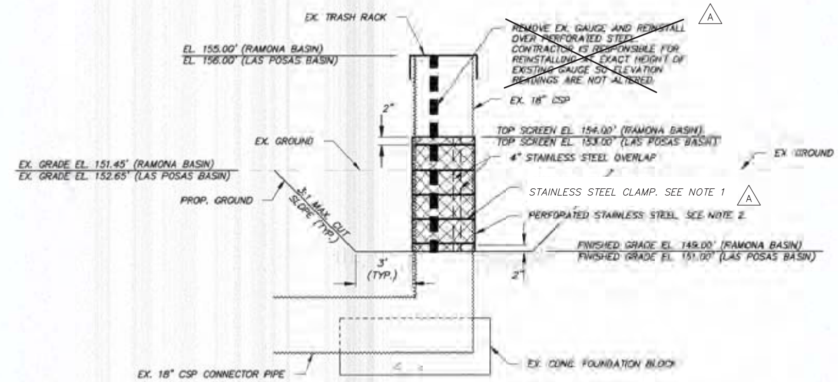


PLAN VIEW - RAMONA DETENTION BASIN

100 0 100 200
SCALE OF FEET

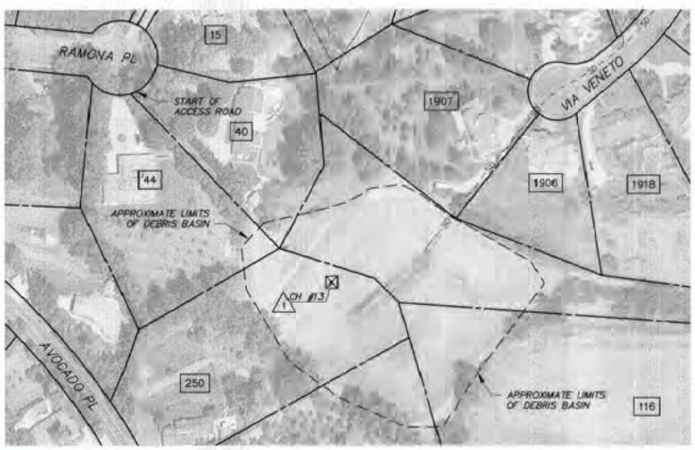


NOTE:

1. INDIANA SEAL (SERIES 300) STAINLESS STEEL HOSE CLAMPS USED FOR SECURING PERFORATED STAINLESS STEEL SCREEN. CLAMPS SPACED AT 12" MAX O.C.
2. PERFORATED STAINLESS STEEL SHALL BE TYPE 304, 18 GAUGE, MILL FINISH, 3/16" HOLES ON 1/4" CENTERS, AND STAGGERED PATTERN. STAINLESS STEEL SCREEN SHALL BE A SINGLE SHEET WRAPPED AROUND THE STANDPIPE, SECURED AND OVERLAPPED AS NOTED IN THE DETAIL, UNLESS OTHERWISE APPROVED. CONTRACTOR RESPONSIBLE FOR MEASUREMENT OF EXISTING STANDPIPE OUTSIDE CIRCUMFERENCE PRIOR TO SCREEN MANUFACTURE.
3. EXCAVATED MATERIALS MAY BE SPREAD EVENLY AMONG DEBRIS BASIN. TRASH IN EXCAVATED MATERIALS SHALL BE REMOVED AND DISPOSED OF APPROPRIATELY.

TYPICAL DETAIL - DEBRIS BASIN STANDPIPE DEVICE

SCALE: N.T.S.



PLAN VIEW - LAS POSAS ESTATES DETENTION BASIN

100 0 100 200
SCALE OF FEET

CONSTRUCTION NOTES

1. CONSTRUCT FULL CAPTURE DEBRIS BASIN STANDPIPE DEVICE PER DETAIL HEREON. (5)

RECORD DRAWING	
DATE PROJECT COMPLETED	8/26/2016
REVISIONS SUBMITTED BY	D. YANT
DRAWING REVISED BY	D. KIRBY
APPROVED BY	D. KIRBY DATE 10/18/16

REV.	DESCRIPTION	APP.	DATE
D			
C			
B			
A	GAUGE NOT REMOVED, HOSE CLAMPS SUB	DK	10/18/16

Stantec

GREGORY J. MUSSER, PROJECT ENGINEER, DATE 4/18/2016, R.C.E. 77627, 2064125900, W.O., 04-15-2016 PLAN DATE

GM DESIGNED; DL DRAWN; GM CHECKED

PROJECT MANAGER 4/18/2016; DEPUTY DIRECTOR 4/19/16; DISTRICT DIRECTOR 4/20/2016

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

WP16-11(I)
40530

REVOLON SLOUGH AND BEARDSLEY WASH
FULL CAPTURE TRASH DEVICES
CAMARILLO HEIGHTS — DEBRIS BASIN DEVICES (CH13 AND 14)

SHEET 10 OF 10
DRAWING NO. Y-2-3861

VICINITY MAP

N.T.S.

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

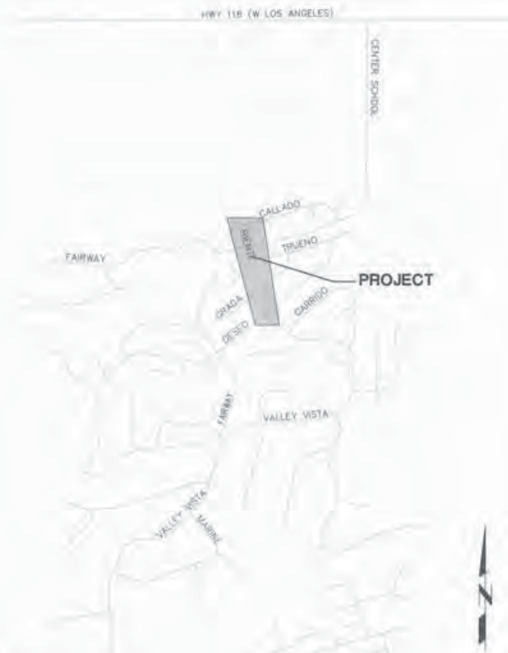
INSTALLATION OF FULL CAPTURE CATCH BASIN TRASH EXCLUDER DEVICES, VENTURA RIVER AND CAMARILLO HILLS

INDEX TO SHEETS

SHEET NO.	TITLE
1.	TITLE SHEET
2.	TRASH EXCLUDER LOCATIONS

GENERAL LOCATION PLAN, VENTURA RIVER AREA

2000 1000 0 2000 4000
SCALE OF FEET



GENERAL LOCATION PLAN, CAMARILLO HILLS AREA

1000 500 0 1000 2000
SCALE OF FEET

REGISTERED PROFESSIONAL ENGINEER
DAVID C. KIRBY
No. 79085
Exp. 3/31/16
CIVIL
STATE OF CALIFORNIA

GENERAL NOTES

1. ALL EXISTING IMPROVEMENTS INCLUDING BUT NOT LIMITED TO CATCH BASINS AND EXISTING UTILITIES WITHIN THE RIGHT OF WAY AND WORK AREAS SHALL REMAIN AND SHALL BE PROTECTED UNLESS OTHERWISE NOTED. DAMAGED IMPROVEMENTS SHALL BE REPLACED IN KIND TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION AND TO THE SATISFACTION OF THE ENGINEER. ALL DAMAGED IMPROVEMENTS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. EXISTING IMPROVEMENTS ARE SHOWN AS KNOWN TO EXIST AT TIME OF SURVEY. SOME MAY HAVE BEEN OMITTED, MISPLACED, AND/OR RELOCATED.
3. NUMBERS IN ⬡ INDICATE BID ITEMS UNDER WHICH PAYMENT WILL BE MADE.
4. NUMBERS IN △ REFER TO NOTES ON THE SAME SHEET UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL CONTACT THE PROJECT MANAGER A MINIMUM OF 48 HOURS PRIOR TO STARTING TRASH EXCLUDER UNIT INSTALLATIONS.

UNDERGROUND SERVICE ALERT
1-800-422-4133
CALL USA/SC
FOR UNDERGROUND LOCATION
2 WORKING DAYS BEFORE YOU DIG

D				
C				
B				
A				
△		DESCRIPTION	APP.	DATE

7/16/14
7/16/2014
7/21/14

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATERSHED PROTECTION DISTRICT

SPEC. NO. WP15-02(N)
PROJ. NO. 40530

INSTALLATION OF FULL CAPTURE CATCH BASIN TRASH EXCLUDER DEVICES, VENTURA RIVER AND CAMARILLO HILLS
TITLE SHEET

SHEET 1 OF 2
DRAWING NO. 114453

NOTES:

1. CONSTRUCT FULL CAPTURE CONNECTOR PIPE SCREEN FOR THE OUTLET PIPE WITHIN THE EXISTING CATCH BASIN. DIMENSIONS TO BE DETERMINED BY CONTRACTOR IN FIELD.
2. TWO FULL CAPTURE CONNECTOR PIPE SCREENS CONSTRUCTED SIDE BY SIDE IS REQUIRED AT THIS LOCATION TO SPAN LENGTH OF RECTANGULAR CATCH BASIN OUTLET.
3. REMOVE AND DISPOSE OF EXISTING FIXED OR AUTOMATIC RETRACTABLE SCREEN TRASH EXCLUDER AT CATCH BASIN INLET.

VENTURA RIVER AREA - PLAN VIEW

SCALE OF FEET

CAMARILLO HILLS AREA - PLAN VIEW

200 100 0 200 400
SCALE OF FEET

DK		7/16/14	COUNTY OF VENTURA PUBLIC WORKS AGENCY WATERSHED PROTECTION DISTRICT
DK		7/16/14	
EM		7/16/2014	

WP15-02(N)	INSTALLATION OF FULL CAPTURE CATCH BASIN TRASH EXCLUDER DEVICES, VENTURA RIVER AND CAMARILLO HILLS TRASH EXCLUDER LOCATIONS	SHEET 2 OF 2
40530		114454

Appendix 5. No Dumping Sign Installation Photos

REVOLON SLOUGH AND
BEARSDLY WASH SUBWATERSHED

Installation of 5 educational and 6 "No dumping allowed" signs on June 22, 2016

HIGHWAY 101 AND WEST VENTURA BLVD

APPROXIMATELY 4 MILES UPSTREAM OF TMRP SITE 1

STURGIS ROAD

APPROXIMATELY 2.5 MILES UPSTREAM OF TMRP SITE 1

PLEASANT VALLEY ROAD

APPROXIMATELY 1.75 MILES UPSTREAM OF TMRP SITE 1

LAGUNA ROAD

APPROXIMATELY 0.5 MILE UPSTREAM OF TMRP SITE 1

WOOD ROAD AT TMRP SITE 1

ETTING ROAD AT TMRP SITE 5

October 25, 2016

Ms. Jenny Newman
TMDL Section Chief
Los Angeles Regional Water Quality Control Board
320 W. 4th St., Suite 200
Los Angeles, California 90013

SUBJECT: MALIBU CREEK TRASH TMDL ANNUAL REPORT (UPPER MEDEA CREEK AND UPPER LINDERO CREEK) BASELINE AND ANNUAL REPORT DATED OCTOBER 20 2016

Dear Ms. Newman:

Enclosed for your review is the Fourth Malibu Creek Trash TMDL Annual Monitoring Report for 2014-2015. This Annual Monitoring Report is being submitted by the County of Ventura (the County), Ventura County Watershed Protection District (the District), and City of Thousand Oaks (the City) per the requirements of the Malibu Creek Trash TMDL, Los Angeles Regional Water Quality Control Board Resolution No. R4 2008-007. It documents fourth year implementation of the Malibu Creek Watershed Trash Monitoring and Reporting Plan and Minimum Frequency of Assessment and Collection (TMRP/MFAC) program, submitted by the County, the District, and the City on April 30, 2010.

This annual summary report presents the data and analysis of trash loading patterns from the defined assessment areas during normal and critical weather events, an evaluation of the effectiveness of existing Best Management Practices (BMPs), and comparison against the project defined baseline trash Waste Load Allocations.

If you have any comments or question regarding the attached document, please contact Ewelina Mutkowska at (805) 645-1382 or Paul Jorgensen at (805) 449-2470.

Sincerely,

(acting)
Peter Sheydayi
Ventura County Watershed Protection District
Interim Director

Jay T. Spurgin
City of Thousand Oaks
Public Works Director

CC: Renee Purdy, Regional Water Quality Control Board (RWQCB), Regional Programs Chief
Stefanie Hada, RWQCB, Environmental Scientist
Jeff Pratt, Ventura County Public Works Agency (VCPWA), Director
Arne Anselm, Ventura County Watershed Protection District, Deputy Director
Ewelina Mutkowska, VCPWA, Stormwater Program Manager
John Minkel, City of Thousand Oaks, Utilities Superintendent
Paul Jorgensen, City of Thousand Oaks, Environmental Programs Coordinator
Ron Manwill, City of Thousand Oaks, Environmental Programs Analyst

City of Thousand Oaks
County of Ventura and
Ventura County Watershed Protection District

Annual Trash Monitoring and Reporting Plan Report for the Malibu Creek Watershed

October 20, 2016

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Introduction

This Annual Report is for the fourth year of Trash Total Maximum Daily Load (TMDL) implementation, July 2014-June 2015. It is submitted by and for the City of Thousand Oaks (the City), the County of Ventura (the County), and the Ventura County Watershed Protection District (the District). This report fulfills requirements specified by the Los Angeles Region Water Quality Control Plan with regard to the Malibu Creek Watershed Trash TMDL, Resolution No. R4-2008-007 (effective July 7, 2009). The trash monitoring results and compliance assessments are reported for point source waste load allocations (WLAs) and non-point source load allocations (LAs). The monitoring efforts that generated these data were conducted according to the Trash Monitoring and Reporting Plan (TMRP) for the Malibu Creek Trash TMDL submitted to Los Angeles Regional Water Quality Control Board (RWQCB) on April 30, 2010.

Additionally, the monitoring data were evaluated to discern trends and factors that may help explain trash loading such as:

- Variation in monthly and yearly trash accumulation data,
- Effects of extreme weather on trash and litter transport,
- Possible loading sources, and
- Effectiveness of the Minimum Frequency of Assessment and Collection and Best Management Practice (MFAC/BMP) programs.

Based on a review of these factors, recommendations for modifications to improve BMP effectiveness or revisions to the MFAC schedule may be made.

Overview

To monitor and take steps to prevent watershed impairment caused by transport of trash in Lindero and Medea Creeks, a proposed TMRP was devised with representative locations so that trash accumulation within creek areas could be estimated. Compliance with point source WLAs is also determined. Non-point source trash is evaluated by visual checks and controlled by scheduled crew and ad hoc volunteer cleanups.

The assessment locations were selected at the lowest point of flow from each subwatershed where creek morphology is conducive to accumulate trash deposits. This provides a measure of the level of trash that could move between subwatersheds. These locations were also judged to be accessible and safe for entry.

The contribution of trash and litter transported by critical events (high winds and sufficiently intense rainstorms) has been estimated. This allows the trash loading impacts of these events to be considered as part of a trash and litter loading evaluation.

As specified in the TMRP, a minimum of one collection per month was to be done at each site. All collections were completed on the dates indicated in Table 1.

Table 1. Collection Date Summary

Monitoring Date	Lindero Creek Reach 2, LC-1	Medea Creek Reach 2, MC-1
7/10/14	X	X
8/7/14	X	X
9/10/14	X	X
10/27/14	X	X
11/21/14	X	X
12/29/14	X	X
1/22/15	X	X
2/17/15	X	X
3/17/15	X	X
4/15/15	X	X
5/12/15	X	X
6/10/15	X	X

Assessment Area Characteristics

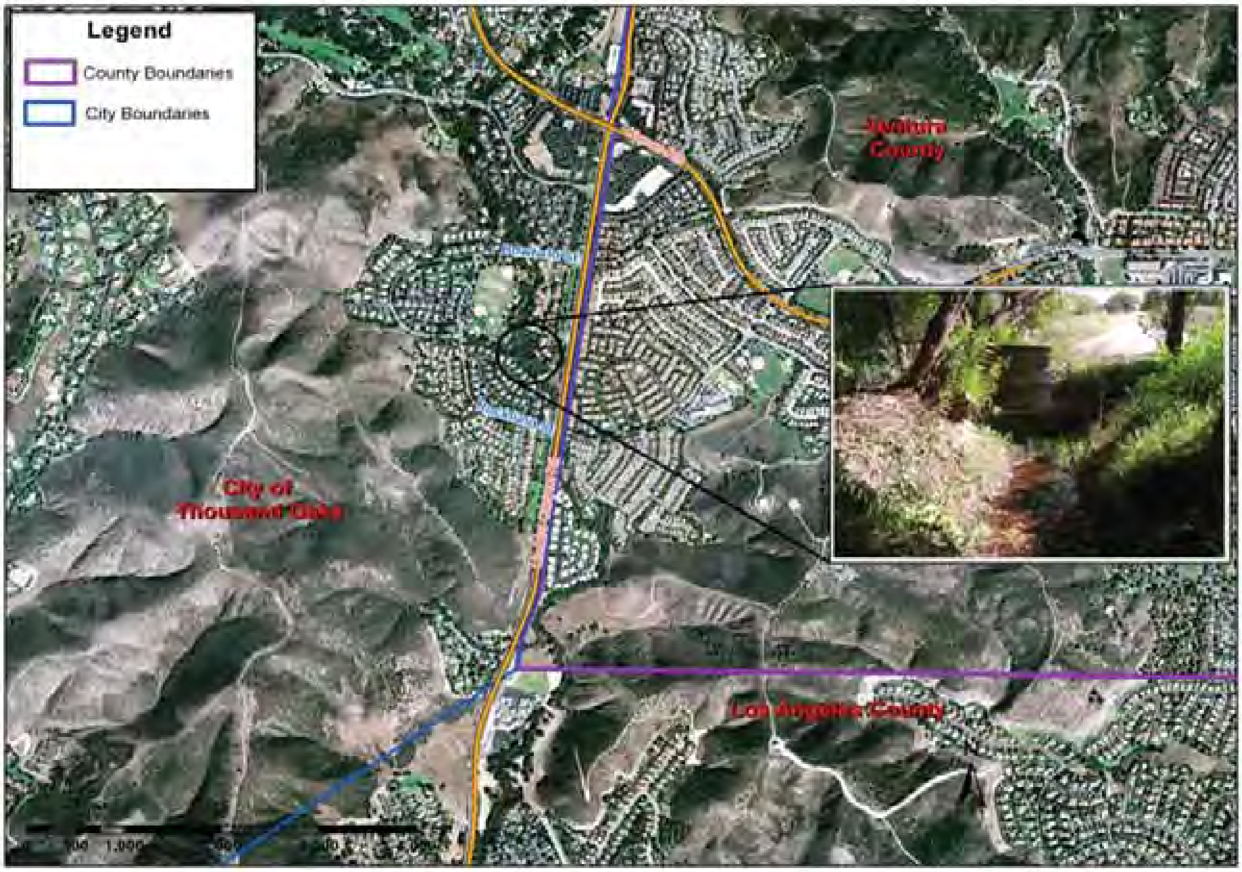
A detailed review of land uses in a drainage area offers another view of potential trash sources and activities responsible for inappropriate disposal of trash. For example, visual inspections have shown that popular recreation areas and areas close to schools have a high potential for litter generation. This is partly due to a high incidence of snack and packaged convenience food being consumed in these areas.

Lindero Creek Subwatershed

The area within the City of Thousand Oaks jurisdiction with drainage to Reach 2 of Lindero Creek is 2.08 square miles. A breakdown of land uses in this area is: 49.03% open space, 44.71% residential; 6.25% public and institutional lands (includes a golf course and parks); and 1.29% commercial. The population is estimated to be 1,970 persons. Areas in unincorporated Ventura County also have drainage to Lindero Creek. This area is 0.9 square miles. The land uses of this area are 9.5% commercial; 49.7% residential; and 40.8% open space. Population data for the unincorporated area is not yet available.

The Lindero Creek assessment site is a debris basin with a creek that is typified as a braided flow that converges at a perforated stand pipe for below flood-stage discharges that bypass the overflow structure. A reduction in hydraulic gradient at the debris basin, in addition to the standpipe’s size restriction, promotes trash and debris accumulation in the flood plain after storm-level flows recede. The location of the Lindero Creek assessment area is shown in Figure 1.

Figure 1. Lindero Creek Assessment Site (LC-1) Map



Medea Creek Subwatershed

The area within County unincorporated community of Oak Park with drainage to Reach 2 of Medea Creek is 3.32 square miles. A breakdown of land uses for this area is: 6.93% commercial and community facilities; 30.08% residential; and 62.98% open space. The population in Oak Park is about 13,800.

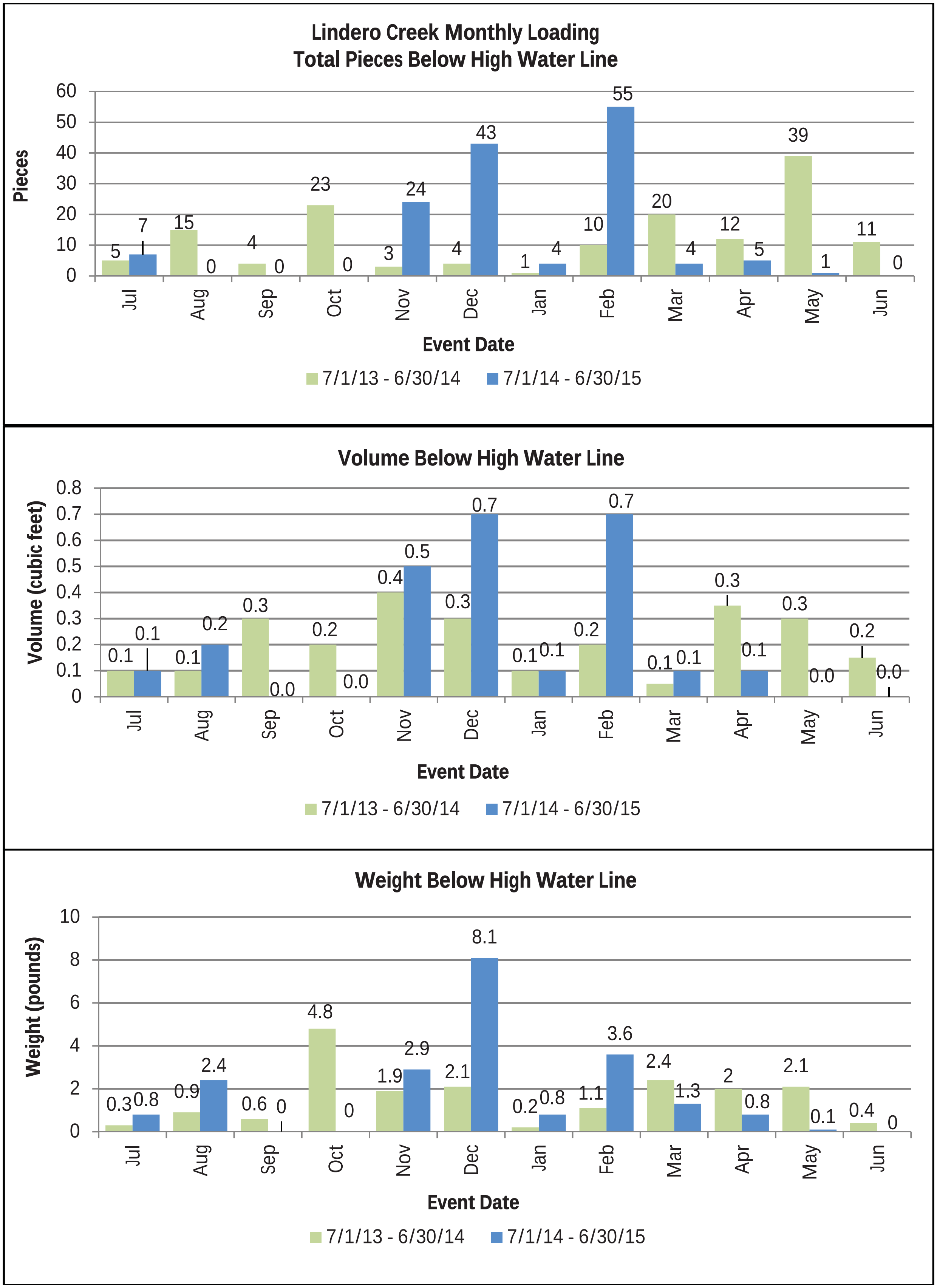
Medea Creek follows a single flow path as it moves through the assessment area. When flow levels rise due to a storm event, the stream configuration causes bank overflow and deposition of transported trash and debris onto an existing flood plain. The Medea Creek assessment site is shown in Figure 2.

Figure 2. Medea Creek Assessment Site (MC-1) Map

Evaluation of Trash Loading

Comparison of monthly piece counts helps identify temporal patterns such as increases due to seasonal usage, weather events, or isolated incidents each of which could be a cause for a spike in trash levels. Additionally, each of the metrics can reveal something different about the sources and activities causing loading, as well as the modes of trash transport. Figure 3 shows the monthly trash levels for the current and prior year at Lindero Creek.

Figure 3. Current & Prior Year Monthly Trash Loading, LC1



Lindero Creek

As seen in the Figure 3, peak months for trash pieces were November, December, and February. These months also had peak levels for both weight and volume metrics. This multi-metric loading emphasizes that the quantity of trash loading in those months was elevated. Reviewing the data sheets for what materials were responsible for the high loading amounts provided more information about the cause. Larger numbers of bigger, heavier litter items came from sporting goods (e.g., tennis balls), glass bottles, metal cans, and plastic bottles. Random littering, extreme weather event transport or a combination of both are likely causative factors for the abnormally high loading.

Volunteer cleanup of trash has removed much of the non-point source trash in the vicinity of assessment area LC1. Consequently, the movement of accumulated stores of trash is not a likely source of the loading spikes. A more likely cause was the transport of newly deposited materials from random littering, moved by one or more extreme weather events.

Timing of the spikes may give an indication as to the dominant mode for trash accumulation. Weather transport is certainly a contender as all the spikes were in the winter months this year. On the other hand, summer months may be predisposed to higher litter loading because of increased outdoor activities triggered by increased summer temperatures. A second factor for an increased summer accumulation may be from litter by school-aged children that have less structure and supervision when schools are closed for summer break (mid-June to late August).

To further examine the timing of trash spikes, the frequency during which summer or winter period had a higher count of collected pieces was compared using 3 years of data. Table 2 shows the total piece counts for winter - October to March, during which extreme weather events most often occur, and summer - May to September.

Table 2. Comparison of Seasonal Counts at LC1

Collection Period	Piece Count Summer months	Pieces Count Winter Months
2012-2013	285	150
2013-2014	57	61
2014-2015	69	130

These data do not support the assertion that winter weather increased the amounts of litter due to enhanced transport. That said, the dataset is too small to derive a certain conclusion. Variation in loading between years should be expected for several reasons: weather events have differing levels of intensity; the timing of the litter deposition may result in its removal before transport i.e., BMPs such as volunteer cleanups and street sweeping could remove deposition before weather transport occurs; and, the differing amounts of random littering. The likelihood that weather transport caused spike-level loading in this current year will be explored in the section on extreme weather events.

Because random littering is a suspected cause, a longer range evaluation may add support this belief. Table 3 shows the last three years of collection data for monthly pieces.

Table 3. Monthly Loading Comparison - Multiple Years, Lindero Creek

Month	**Pieces Collected at Lindero Creek**		
	2012-2013	2013-2014	2014-2015
July	24	5	7
August	14	15	0
September	8	4	0
October	9	23	0
November	29	3	24
December	11	4	43
January	53	1	4
February	17	10	55
March	31	20	4
April	21	12	5
May	0	39	1
June	12	11	0

From an informal review of these data, no month shows consistent high loading for the three years (≥ 20 pieces). The only pattern that can be seen in 2014-15 is that higher loading occurs in winter months. Given this timing, there is greater probability that weather events were intense enough to have played a larger role as a transport mechanism. The timing of the deposition of litter was a second, complementary factor.

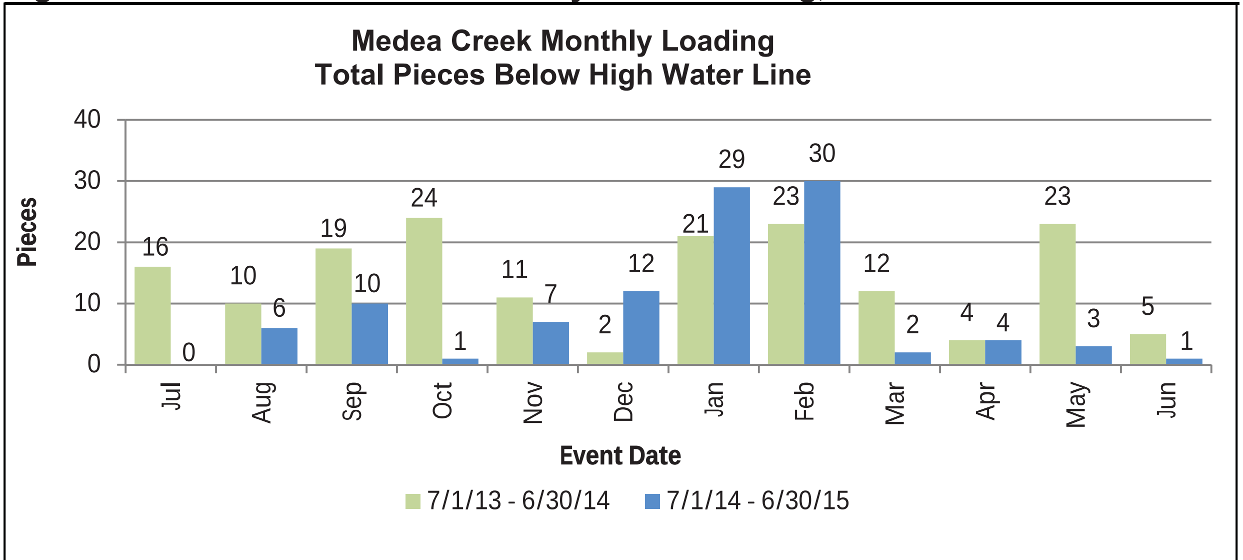
Medea Creek

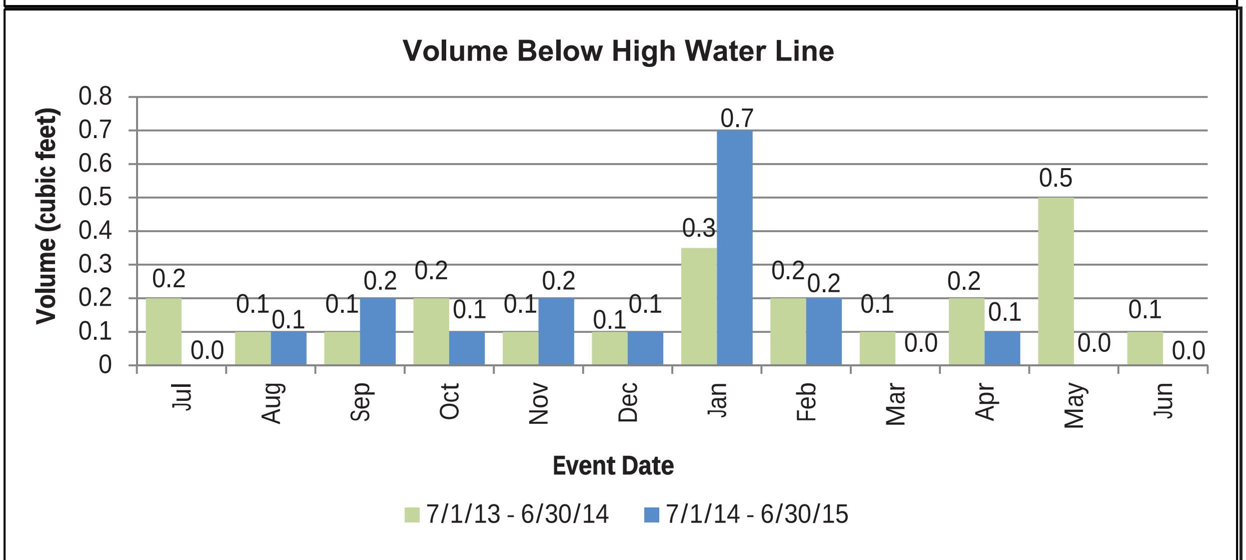
Figure 4 shows loading patterns for the various metrics at Medea Creek.

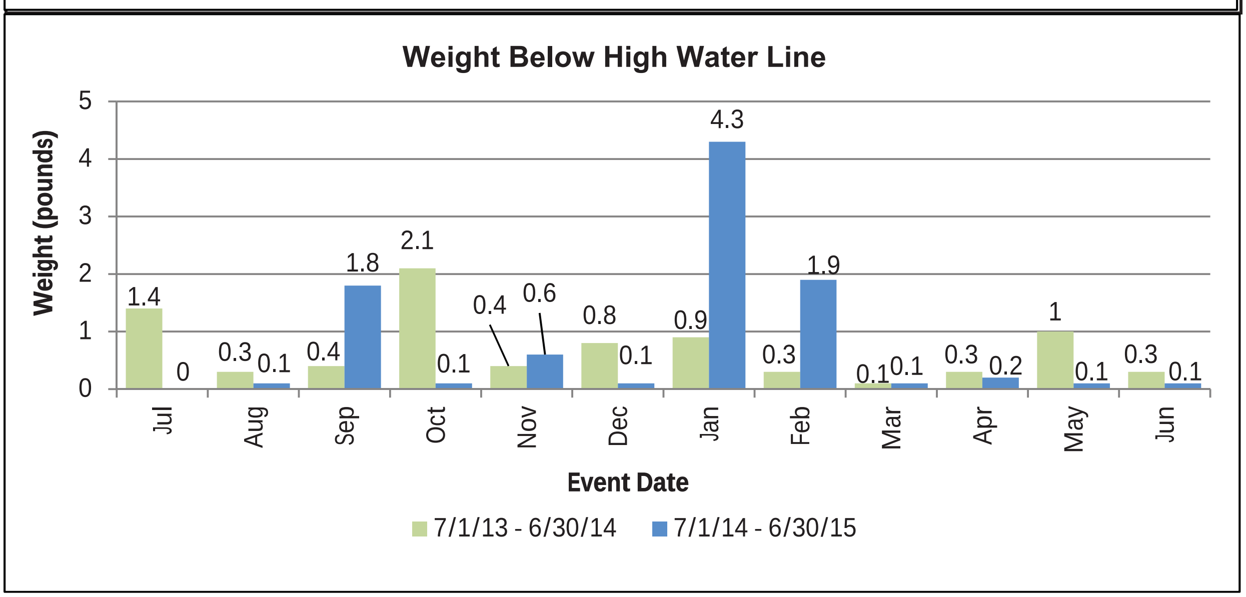
At MC1, January and February of 2014-15 had spike-level litter in all metrics. These loading extremes being in winter is similar to the data pattern at LC1. This timing suggests that weather events may have been a larger factor than previous years for transporting litter rather than random littering that can occur at the site.

January and February had the largest spikes for piece counts, with a smaller spike in December. For the volume data, January had a large spike with a minor ones occurring in September, November and February. Spikes for the weight metric occurred in September, January, and February. Increases in this latter metric showed that actions or transport involved larger, denser materials.

Figure 4. Current & Prior Year Monthly Trash Loading, MC1







Data sheets for MC1 were reviewed to gain information about the materials behind the spike increases. This evaluation produced mixed indications. In January for example, there were 5 sporting goods, and 6 plastic bottles. These types of litter are suggestive of random occurrences. February, in contrast, had a high number of litter was comprised by a diverse array of categories. This suggests storm-related transport of a general assortment of dispersed litter.

Timing also plays an important factor in trash loading at MC1 that may favor extreme weather event transport. BMPs such as volunteer cleanup of non-point source trash and street sweeping have reduced accumulations of trash. Despite much of the accumulated litter being removed from creek areas newly deposited materials could be quickly transported during storm periods before being removed by a BMP.

A total piece count for winter months (October-March) versus summer (April-September) provides a seasonal comparison for MC1. This evaluation will help gain further indication if high-loading patterns exist owing to extreme weather transport or increases in available recreation time from school breaks or increased activity levels from warmer temperatures. Analysis of the differences in piece counts in summer and winter months are shown in Table 4.

Table 4. Comparison of Seasonal Counts at MC1

Collection Period	Piece Count Summer Months	Piece Count Winter Months
2012-2013	111	97
2013-2014	83	102
2014-2015	48	81

These data do not show that there is a consistently greater loading of litter pieces during the winter months. This is an indication that extreme weather transport is just one factor that leads to litter and trash loading at Medea Creek.

An analysis of monthly loading at MC1 over multiple years may give additional understanding of the randomness of monthly loading. Table 5 shows a multi-year comparison of monthly piece counts.

January is a peak discharge month for all years. May and October are both at spike loading level (≥ 20 pieces) for two of the three years. It is premature to conclude what these slight trends may indicate.

Table 5. Monthly Loading Comparison - Multiple Years, Medea Creek

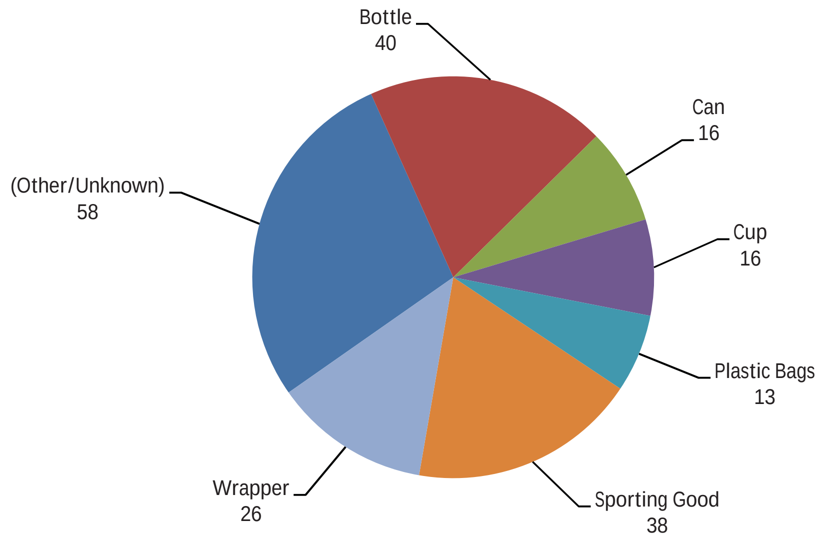
Month	Pieces Collected at Medea Creek		
	2012-2013	2013-2014	2014-2015
July	9	16	0
August	8	10	6
September	11	19	10
October	20	24	1
November	11	11	7
December	2	2	12
January	36	21	29
February	18	32	30
March	10	12	2
April	11	4	4
May	20	23	3
June	7	5	1

At both sites, litter's presence appears to be caused by an interplay of factors such as weather intensities, timing and amount of littering, and BMP location and type. Nevertheless, evaluation of trash loading could lead to the discovery of trash loading sources that are controllable.

Trash Profile: High Frequency Categories

Reviewing the relative contribution of litter by category indicates the types of litter and the relative contribution of each to the annual loading. Figures 5 and 6 depict the relative amounts of annual trash by category for Lindero Creek and Malibu Creek, respectively.
Small, unidentifiable scraps of paper and plastic designated as Other/Unknown were still a sizable presence as a category at LC1. Such lightweight and therefore easily transported materials may be difficult to eliminate. Different BMP approaches will need to be considered to reduce this category.

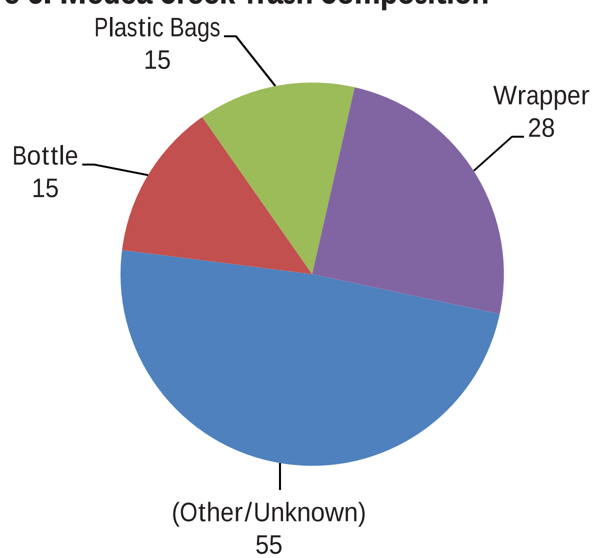
Figure 5. Lindero Creek Trash Composition



Trash Categories at Lindero Creek

There was also a large amount of sports equipment and plastic water bottles that were found at the assessment site. Improvement was seen by there being four fewer litter categories than the previous year. Additionally, there was a 43% reduction in plastic bags over the previous year.

Figure 6. Medea Creek Trash Composition



Trash Categories at Medea Creek

Small unidentifiable scraps of various materials designated as Other/Unknown was the largest type of litter collected at MC1. As mentioned, this is a highly transportable type of litter. Different BMP approaches will need to be considered to reduce this category.

Showing improvement, there were five fewer categories of trash including a negligible presence of shattered glass and cigarettes butts. There was also a 43% reduction in the amount of plastic bags that were collected (identical to Lindero Creek).

Extreme Weather Events

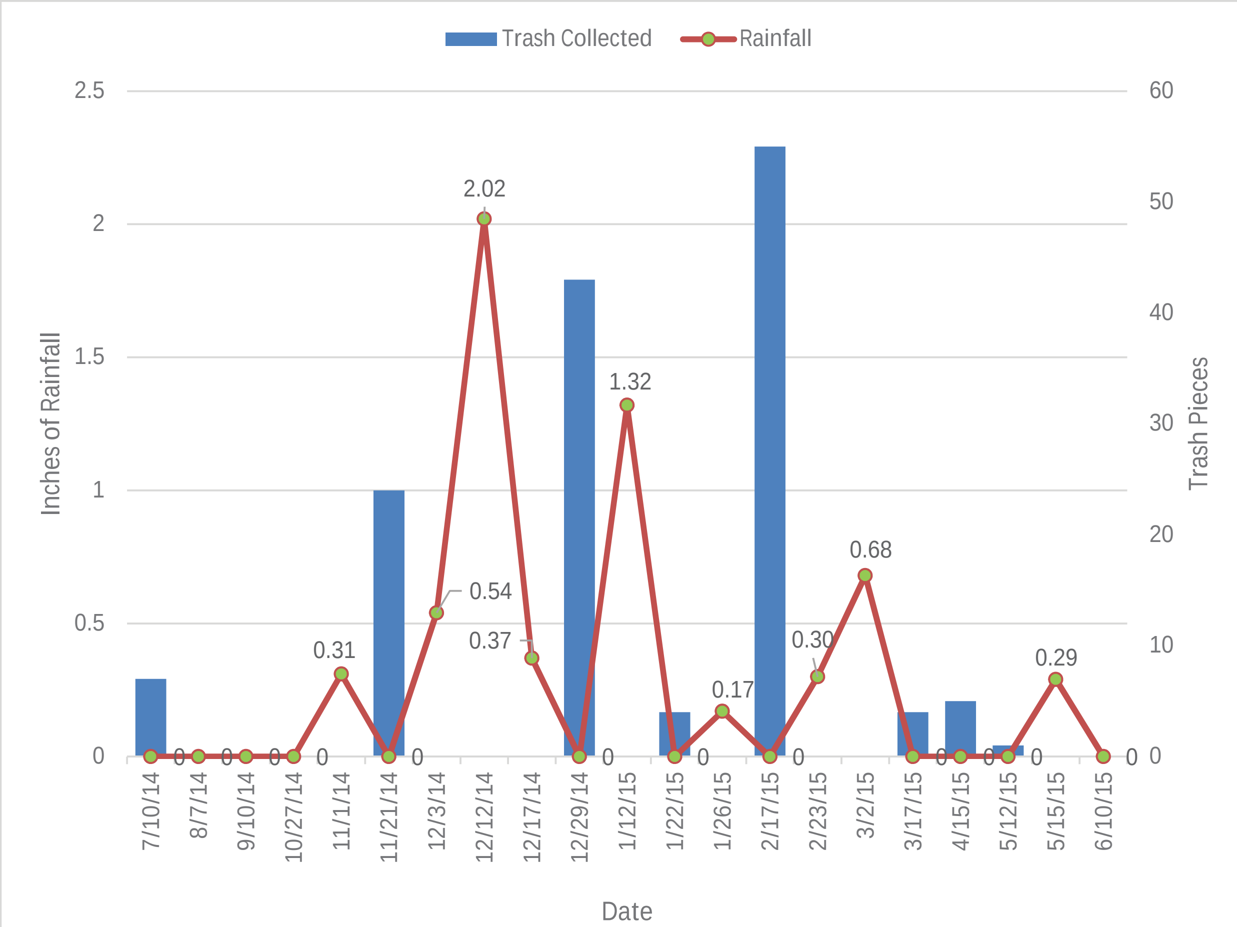
All extreme weather events were tracked so that a comparison could be made with monthly loading values to determine if a correlation exist between them. This year had more extreme wind events so the cut-off point was raised to greater or equal to 20 mile per hour average wind. Additionally, the threshold of rain events was raised to be at or above 0.15” because there were more events that had greater intensity. This change was made because it was presumed that more extreme weather events would transport greater amounts of trash and produce stronger correlations. Note that when rain occurred on consecutive days, best efforts were taken to determine the maximum amount that occurred over a 24-hour period. Table 6 summarizes the significant weather events.

Table 6. Extreme Wind and Rain Events

Wind Events		Rain Events	Wind Events		Rain Events
Date	Speed, ≥ 20 mph	Volume ≥0.15”	Date	Speed, ≥ 20 mph	Volume ≥0.15”
11/1/14		0.31	2/11/15	24	
12/3/14		0.54	2/12/15	21	
12/12/14		2.02	2/23/15		0.30
12/17/14		0.37	3/2/15		0.68
1/12/15		1.32	3/6/15	22	
1/21/15	31		3/13/15	22	
1/24/15	33		4/16/15	21	
1/25/15	22		4/27/15	22	
1/26/15		0.17	4/30/15	22	
2/10/15	23		5/15/15		0.29

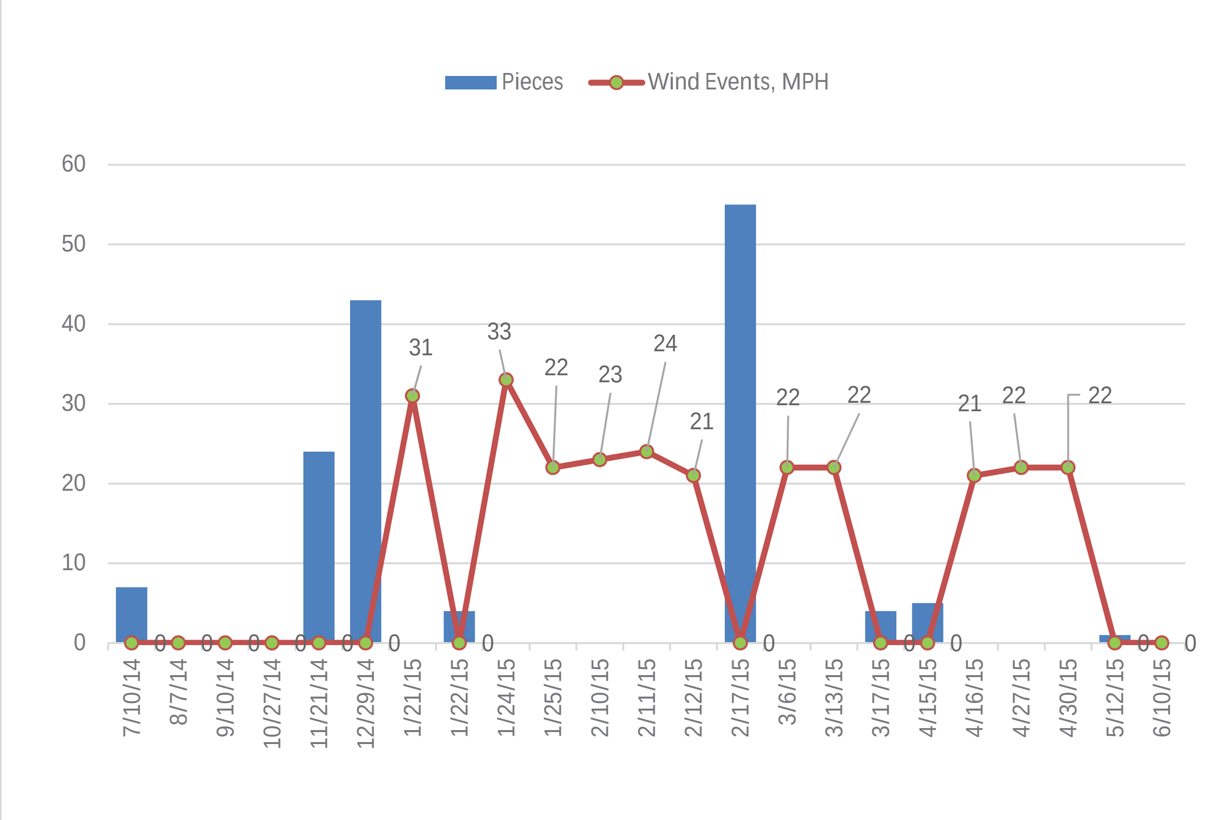
To further evaluate the possibility that extreme weather was a causative factor for the peaks in monthly metrics (November, December, and February at LC1 and December, January, and February at MC1), Figures 9, 10, 11, and 12 graphically depict the intensities of weather events in addition to piece counts from the site assessments.

Figure 9. Rain Effect Analysis on Loading at LC1



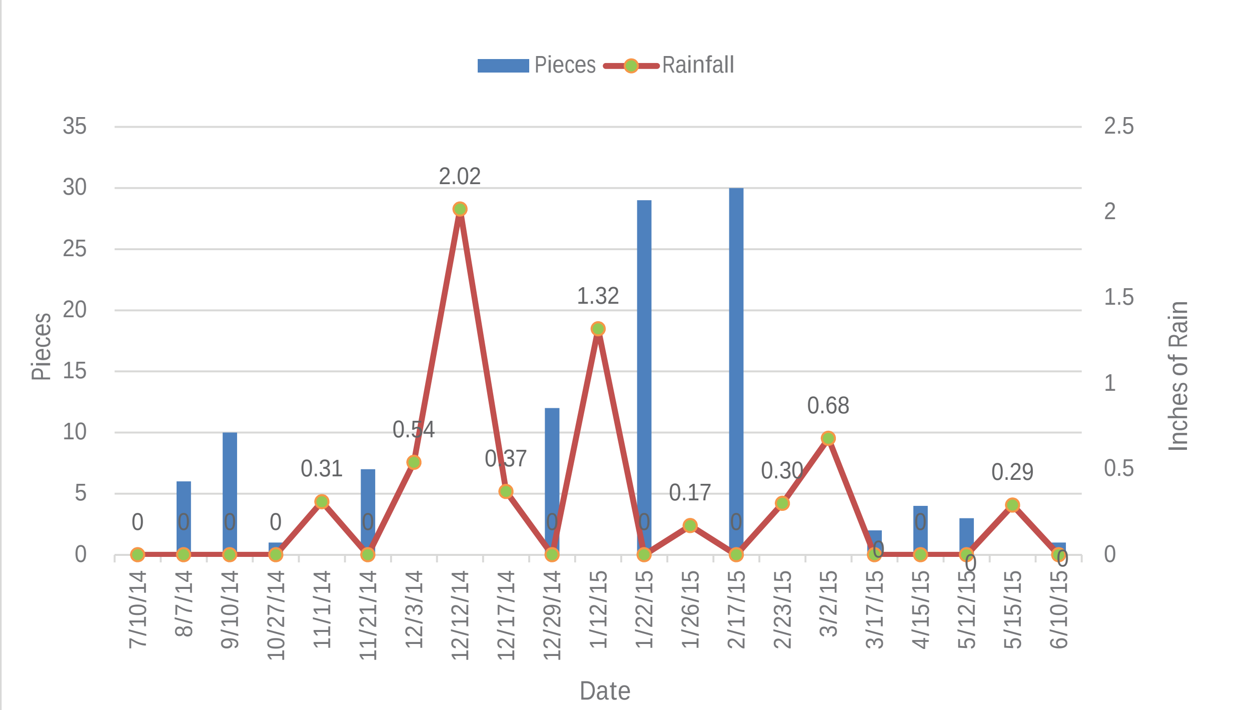
At LC1, November and December site collection counts show a clear response to the high intensity rain events that preceded them. The collection count in January does not respond to the preceding rain event. This may be because accumulations were largely removed by BMPs or depleted by earlier storm action. February's collection had an extreme peak loading, but a much smaller preceding storm. This suggests that additional factors were involved, such as abnormally high random littering. These data show that rain events can be a significant factor in the movement and deposition of trash and litter.

Figure 10. Wind Effect Analysis on Loading at LC1



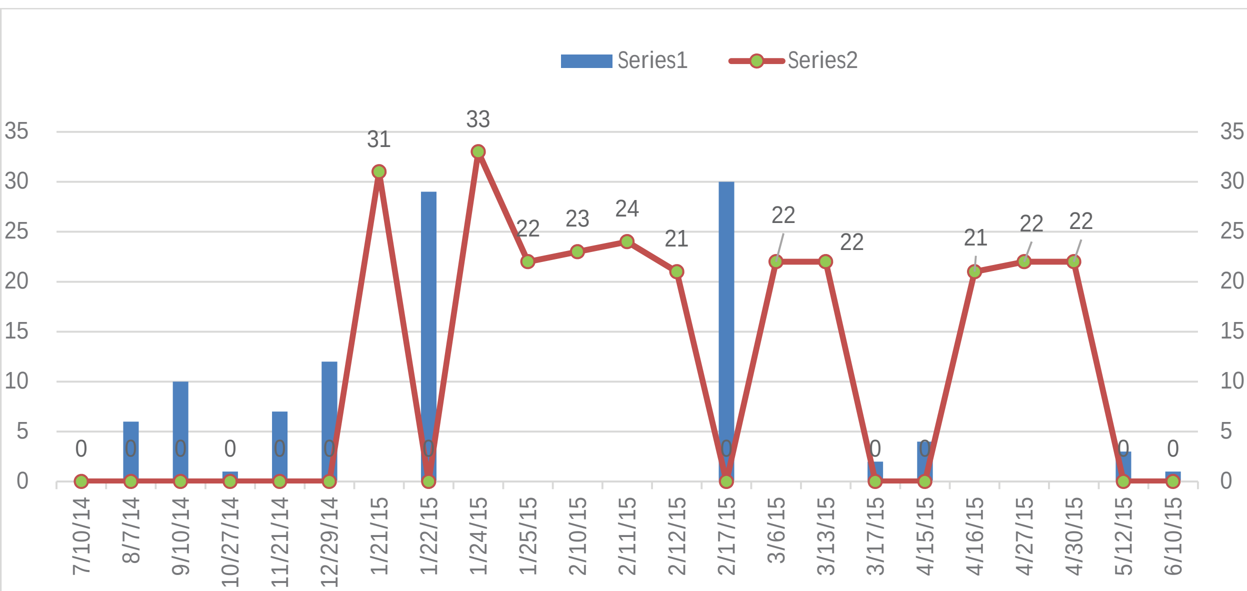
For clarity, wind events were examined separately as an additional factor that could enhance litter transport in the Lindero Creek subwatershed. For example, high-winds may provide an explanation for the unusually high loading in February, given the relatively small, preceding rain event. This is because high winds themselves can be an additional loading factor by blowing trash during any handling activities such as trash collection. While there might be minimal trash lost to the environment normally, strong winds are likely to increase inadvertent releases. With this in mind, the high-wind events in January and February could have been the source and transport of litter so a plethora was available for transport to the MS4 by a smaller storm.

Figure 11. Rain Effect Analysis on Loading at MC1



At MC1, piece count spikes followed rain events in December and January. The first anomaly in the pattern of rain events increasing counts of collected litter is February's collection. February had the largest piece count spike of the year, but it was preceded by a relatively small rain event. The second anomaly is that storms in November, March, and May had little response to sizable rain events.

Figure 12. Wind Effect Analysis on Piece Loading at MC1



At MC1, as with the other site, a high wind pattern provides a plausible explanation for inconsistencies with rain events producing increases in loading. A relatively small rain toward the end of January produced a large spike in piece count. Apparently, the high winds created the opportunity for an ample supply of litter that the rain then transported into the MS4. Similarly, high wind in January appears to have worked in concert with the rain to result in one of the largest spikes of the year at about 28 pieces.

Speaking for both sites in recap, rain and wind events alone cannot be used to predict and control loading levels. If there is a supply of litter available, even small rain storms can cause significant transport into the MS4.

Annual Trash and Debris Loading

The amount of litter collected at the assessment sites each month is summarized in Table 7. Annual totals are included so that these values can be compared to the point source WLAs in effect at each site.

Table 7. Annual Trash Loading at LC1 and MC1

Data Compliance	Lindero Creek			Medea Creek		
	Pieces	Vol., c.f.	Weight, pounds	Pieces	Vol., c.f.	Weight, pounds
Baseline WLAs	902	13.4	69	970	7.2	16.3
40% Reduction due 7/7/2014	541	8.3	41.4	582	4.3	9.8
2014-15 Annual Loading	143	2.5	20.8	105	1.7	9.4
% Reduction from Baseline	84%	81%	70%	89%	76%	42%

Waste Load Allocation Compliance

Annual loading values at the assessment sites were compared with the point source WLA values for each of the three metrics at the Lindero and Medea Creek assessments sites (Table 8).

Data in Table 8 show that assessment sites LC1 and MC1 meet the point source WLAs for all trash and litter metrics.

Table 8. WLA versus Trash Loading

Date	Site: LC1			Site: MC1		
	Piece Count	Vol., c.f.	Weight lbs.	Piece Count	Vol., c.f.	Weight lbs.
7/10/14	7	0.1	0.8	0	0	0
8/7/14	0	0.2	2.4	6	0.1	0.1
9/10/14	0	0	0	10	0.2	1.8
10/29/14	0	0	0	1	0.1	0.1
11/21/14	24	0.5	2.9	7	0.2	0.6
12/29/14	43	0.7	8.1	12	0.1	0.1
1/22/15	4	0.1	0.8	29	0.7	4.3
2/17/15	55	0.7	3.6	30	0.2	1.9
3/17/15	4	0.1	1.3	2	0	0.1
4/15/15	5	0.1	0.8	4	0.1	0.2
5/12/15	1	0	0.1	3	0	0.1
6/10/15	0	0	0	1	0	0.1
Total	**143**	**2.5**	**20.8**	**105**	**1.7**	**9.4**

Ongoing volunteer trash cleanups in the vicinity of LC1 and MC1 have been reducing accumulations of litter. Secondly, there is zero trash in areas within proximity of the assessment area after an MFAC event. Therefore, non-point sources meet load allocations and TMDL responsible parties are in compliance.

BMP Evaluation

Existing BMPs are done over the course of the year and are reasonably effective at preventing an accumulation of trash in most areas. The BMPs currently in use in areas surrounding and including assessment sites LC-1 and MC-1 are itemized as follows:

<u>City of Thousand Oaks Litter Reduction Measures:</u>

- Catch basin cleaning - Catch basins are inspected annually. If trash has accumulated to 25% or more of the unit's capacity, it is cleaned by a vactor truck.
- Street sweeping - All residential areas (public and private) are swept 19 times per year and commercial areas are swept once per week.

- Open channel storm drain maintenance: All city-maintained channels are inspected and cleaned as required once per year, prior to the wet season.

- Public Event Litter Control - A recycling plan is required when obtaining a permit for staging public events. This plan requires adequate facilities for trash collection and disposal and reclamation of recyclable materials.

- Public areas - Trash receptacles have been placed at public use areas. These devices are monitored and emptied regularly.

- Freeway Ramp and Interchange Collection Program - The City pays for trash and debris collection at freeway on-ramps and exits and from the freeway interchange.

- Free Landfill Day - The City sponsors two days one in April and one in September when residents may take waste and recyclables, including electronics, to the Simi Valley Landfill for free disposal.

- The City-sponsored “Neighborhood Cleanup Program” provides 40-yard dumpsters and free disposal to residential neighborhoods desiring to organize and conduct cleanup events.

- Residents may safely and legally dispose of household hazardous waste at the City’s Hazardous Waste Collection Facility on Fridays and Saturdays. In addition, the City provides household battery collection services at twelve locations.

- Thousand Oaks residents may dispose of up to four “bulky items” per year, such as appliances, mattresses and old furniture, simply by calling their trash company and arranging for free pickup.

- Thousand Oaks Municipal Code Sec.7-8.201 (7) prohibits the disposal and accumulation of trash in public and private areas.

- Catch basins are labeled “Drains to Creek, Do Not Dump” or “Drains to Lake, Do Not Dump.”

- Public outreach/education addressing trash pollution is conducted at multiple public events, through radio and newspapers ads, and on the City’s website.

- Utility bill inserts - Promotional inserts are used to advertise Coastal Clean-up Day, Community Clean-up Day, Free Landfill Day, and other City-sponsored trash reduction/clean-up programs.

<u>County of Ventura and VCWPD Litter Management Program:</u>

- Catch basin cleaning - Catch basins are inspected at least once a year and cleaned when filled to 25% or more of the catch basin's capacity. During the storm season, all drainage facilities are inspected and cleaned as necessary.
- Ventura County's catch basins are labeled, "Don't Pollute, Flows to Waterways."
- Open channel storm drain maintenance - All channels owned and maintained by VCWPD are cleared, inspected, and cleaned as required, at least once per year.
- Trash Management at Public Events - A trash and litter management plan is required when obtaining a permit for staging public events. This plan requires adequate facilities for trash collection and disposal.
- Public areas - Trash receptacles have been placed within high trash generation areas. These devices are cleaned and maintained regularly to prevent trash overflow.
- The amended Ventura County Stormwater Quality Management Ordinance for Unincorporated Areas (Ventura County Ordinance No. 4450) has been in effect since August 2012. It includes litter and trash specific prohibitions (§ 6942) on the discharge or deposition of trash that may enter the County storm drain system or receiving waters. The revised ordinance ~~also~~ includes increased civil penalties for violations and provisions for issuing administrative fines, recovery of costs, and misdemeanor violations.
- The County and VCWPD participate in the Ventura Countywide Stormwater Quality Management Program that provides outreach and education facilitated by contracted services from "The Agency," a professional advertisement group that designs and conducts countywide, bilingual outreach programs advocating proper trash disposal. Outreach includes social media messages about litter prevention and the protection of stormwater quality.
- The County conducts commercial, industrial, and construction facility/site inspections to ensure pollution prevention BMPs are adequate and maintained and to educate employees about the importance of pollution prevention.
- The County completed a site suitability analysis study of both land use and the storm drain system to determine County owned catch basins requiring installation of full capture devices. This analysis included field reconnaissance findings with key information pertaining to physical measurements, photos, and field sketches, in addition to required drainage area delineation and hydrology calculations.
- Big Sunday Event May 1, 2016. It was another event under on-going program "Annual Big Sunday Trash Removal and Catch Basin Stenciling" (first Sunday of each May) organized by the Oak Park Unified School District, see Appendix A.

Recommended BMP Modifications

Ongoing activities by each responsible agency continue to assess and improve litter control in urban and recreational areas.

Lindero Creek

- Evaluate catch basin loading to evaluate full-capture devices at the locations with a high accumulation.
- Consider additional street sweeping after high-wind periods.

Medea Creek

Additional BMPs:

- County successfully secured funding under Proposition 84 Storm Water Grant Program Round 2 for the Oak Park Green Streets Urban Retrofit project. Ten modular wetlands and two biofilters will be installed in the Oak Park located within Medea Creek subdrainage area. Project construction is currently scheduled for summer 2017.
- Using findings of the recently completed Site Suitability Analysis for full trash capture devices, the County is moving forward with design and installation of full trash capture devices in the areas designated as high trash areas to meet point source WLAs compliance; the installation is scheduled for spring of 2017.

MFAC Program Changes

No changes to the MFAC plan are currently recommended.

Appendix A

2016 Big Sunday Participant Photo

Catch Basin Stenciling

county of ventura

PUBLIC WORKS AGENCY
JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher E. Cooper, Director

Transportation Department
David L. Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Tully K. Clifford, Director

August 15, 2016

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California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
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(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of July 2016. Sites were sampled weekly on Tuesdays (July 12, 19 and 26), except for one instance when sites were sampled on Wednesday (July 6) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ◆). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 645-1382.

Sincerely,

Ewelina Mutkowska
County Stormwater Program Manager, Watershed Protection District

CC: Tully Clifford, Watershed Protection District
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

				Single Sample (as sampled)	
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	-	7/6/2016♦			Dry
MCW-8b	-	7/12/2016♦			Dry
MCW-8b	-	7/19/2016♦			Dry
MCW-8b	-	7/26/2016♦			Dry
MCW-9	-	7/6/2016♦			Dry
MCW-9	-	7/12/2016♦			Dry
MCW-9	-	7/19/2016♦			Dry
MCW-9	-	7/26/2016♦			Dry
MCW-12	-	7/6/2016♦			Dry
MCW-12	-	7/12/2016♦			Dry
MCW-12	-	7/19/2016♦			Dry
MCW-12	-	7/26/2016♦			Dry
MCW-14b	910	7/6/2016♦		=	70
MCW-14b	1030	7/12/2016♦		<	20
MCW-14b	915	7/19/2016♦		<	20
MCW-14b	840	7/26/2016♦		=	80
MCW-15c	830	7/6/2016♦		=	80
MCW-15c	930	7/12/2016♦		=	300
MCW-15c	955	7/19/2016♦		=	500
MCW-15c	915	7/26/2016♦		=	40
MCW-17	-	7/6/2016♦			Dry
MCW-17	-	7/12/2016♦			Dry
MCW-17	-	7/19/2016♦			Dry
MCW-17	-	7/26/2016♦			Dry
MCW-18	-	7/6/2016♦			Dry
MCW-18	-	7/12/2016♦			Dry
MCW-18	-	7/19/2016♦			Dry
MCW-18	-	7/26/2016♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	7/1/2016	Dry	<	10	10
MCW-8b	-	7/2/2016	Dry	<	10	10
MCW-8b	-	7/3/2016	Dry	<	10	10
MCW-8b	-	7/4/2016	Dry	<	10	10
MCW-8b	-	7/5/2016	Dry	<	10	10
MCW-8b	-	7/6/2016♦	Dry	<	10	10
MCW-8b	-	7/7/2016	Dry	<	10	10
MCW-8b	-	7/8/2016	Dry	<	10	10
MCW-8b	-	7/9/2016	Dry	<	10	10
MCW-8b	-	7/10/2016	Dry	<	10	10
MCW-8b	-	7/11/2016	Dry	<	10	10
MCW-8b	-	7/12/2016♦	Dry	<	10	10
MCW-8b	-	7/13/2016	Dry	<	10	10
MCW-8b	-	7/14/2016	Dry	<	10	10
MCW-8b	-	7/15/2016	Dry	<	10	10
MCW-8b	-	7/16/2016	Dry	<	10	10
MCW-8b	-	7/17/2016	Dry	<	10	10
MCW-8b	-	7/18/2016	Dry	<	10	10
MCW-8b	-	7/19/2016♦	Dry	<	10	10
MCW-8b	-	7/20/2016	Dry	<	10	10
MCW-8b	-	7/21/2016	Dry	<	10	10
MCW-8b	-	7/22/2016	Dry	<	10	10
MCW-8b	-	7/23/2016	Dry	<	10	10
MCW-8b	-	7/24/2016	Dry	<	10	10
MCW-8b	-	7/25/2016	Dry	<	10	10
MCW-8b	-	7/26/2016♦	Dry	<	10	10
MCW-8b	-	7/27/2016	Dry	<	10	10
MCW-8b	-	7/28/2016	Dry	<	10	10
MCW-8b	-	7/29/2016	Dry	<	10	10
MCW-8b	-	7/30/2016	Dry	<	10	10
MCW-8b	-	7/31/2016	Dry	<	10	10
MCW-9	-	7/1/2016	Dry	<	10	10
MCW-9	-	7/2/2016	Dry	<	10	10
MCW-9	-	7/3/2016	Dry	<	10	10
MCW-9	-	7/4/2016	Dry	<	10	10
MCW-9	-	7/5/2016	Dry	<	10	10
MCW-9	-	7/6/2016♦	Dry	<	10	10
MCW-9	-	7/7/2016	Dry	<	10	10
MCW-9	-	7/8/2016	Dry	<	10	10
MCW-9	-	7/9/2016	Dry	<	10	10
MCW-9	-	7/10/2016	Dry	<	10	10
MCW-9	-	7/11/2016	Dry	<	10	10
MCW-9	-	7/12/2016♦	Dry	<	10	10
MCW-9	-	7/13/2016	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	7/12/2016♦	Dry	<	10	10
MCW-9	-	7/13/2016	Dry	<	10	10
MCW-9	-	7/14/2016	Dry	<	10	10
MCW-9	-	7/15/2016	Dry	<	10	10
MCW-9	-	7/16/2016	Dry	<	10	10
MCW-9	-	7/17/2016	Dry	<	10	10
MCW-9	-	7/18/2016	Dry	<	10	10
MCW-9	-	7/19/2016♦	Dry	<	10	10
MCW-9	-	7/20/2016	Dry	<	10	10
MCW-9	-	7/21/2016	Dry	<	10	10
MCW-9	-	7/22/2016	Dry	<	10	10
MCW-9	-	7/23/2016	Dry	<	10	10
MCW-9	-	7/24/2016	Dry	<	10	10
MCW-9	-	7/25/2016	Dry	<	10	10
MCW-9	-	7/26/2016♦	Dry	<	10	10
MCW-9	-	7/27/2016	Dry	<	10	10
MCW-9	-	7/28/2016	Dry	<	10	10
MCW-9	-	7/29/2016	Dry	<	10	10
MCW-9	-	7/30/2016	Dry	<	10	10
MCW-9	-	7/31/2016	Dry	<	10	10
MCW-12	-	7/1/2016	Dry	<	10	10
MCW-12	-	7/2/2016	Dry	<	10	10
MCW-12	-	7/3/2016	Dry	<	10	10
MCW-12	-	7/4/2016	Dry	<	10	10
MCW-12	-	7/5/2016	Dry	<	10	10
MCW-12	-	7/6/2016♦	Dry	<	10	10
MCW-12	-	7/7/2016	Dry	<	10	10
MCW-12	-	7/8/2016	Dry	<	10	10
MCW-12	-	7/9/2016	Dry	<	10	10
MCW-12	-	7/10/2016	Dry	<	10	10
MCW-12	-	7/11/2016	Dry	<	10	10
MCW-12	-	7/12/2016♦	Dry	<	10	10
MCW-12	-	7/13/2016	Dry	<	10	10
MCW-12	-	7/14/2016	Dry	<	10	10
MCW-12	-	7/15/2016	Dry	<	10	10
MCW-12	-	7/16/2016	Dry	<	10	10
MCW-12	-	7/17/2016	Dry	<	10	10
MCW-12	-	7/18/2016	Dry	<	10	10
MCW-12	-	7/19/2016♦	Dry	<	10	10
MCW-12	-	7/20/2016	Dry	<	10	10
MCW-12	-	7/21/2016	Dry	<	10	10
MCW-12	-	7/22/2016	Dry	<	10	10
MCW-12	-	7/23/2016	Dry	<	10	10
MCW-12	-	7/24/2016	Dry	<	10	10

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	-	7/25/2016	Dry	<	10	10
MCW-12	-	7/26/2016◆	Dry	<	10	10
MCW-12	-	7/27/2016	Dry	<	10	10
MCW-12	-	7/28/2016	Dry	<	10	10
MCW-12	-	7/29/2016	Dry	<	10	10
MCW-12	-	7/30/2016	Dry	<	10	10
MCW-12	-	7/31/2016	Dry	<	10	10
MCW-14b	715	7/1/2016		=	500	86
MCW-14b	715	7/2/2016		=	500	91
MCW-14b	715	7/3/2016		=	500	97
MCW-14b	715	7/4/2016		=	500	103
MCW-14b	715	7/5/2016		=	500	109
MCW-14b	910	7/6/2016◆		=	70	109
MCW-14b	910	7/7/2016		=	70	111
MCW-14b	910	7/8/2016		=	70	113
MCW-14b	910	7/9/2016		=	70	115
MCW-14b	910	7/10/2016		=	70	117
MCW-14b	910	7/11/2016		=	70	119
MCW-14b	1030	7/12/2016◆		<	10	114
MCW-14b	1030	7/13/2016		<	10	109
MCW-14b	1030	7/14/2016		<	10	97
MCW-14b	1030	7/15/2016		<	10	87
MCW-14b	1030	7/16/2016		<	10	77
MCW-14b	1030	7/17/2016		<	10	69
MCW-14b	1030	7/18/2016		<	10	62
MCW-14b	915	7/19/2016◆		<	10	55
MCW-14b	915	7/20/2016		<	10	49
MCW-14b	915	7/21/2016		<	10	48
MCW-14b	915	7/22/2016		<	10	47
MCW-14b	915	7/23/2016		<	10	46
MCW-14b	915	7/24/2016		<	10	45
MCW-14b	915	7/25/2016		<	10	44
MCW-14b	840	7/26/2016◆		=	80	46
MCW-14b	840	7/27/2016		=	80	48
MCW-14b	840	7/28/2016		=	80	45
MCW-14b	840	7/29/2016		=	80	43
MCW-14b	840	7/30/2016		=	80	40
MCW-14b	840	7/31/2016		=	80	38
MCW-15c	755	7/1/2016		=	110	42
MCW-15c	755	7/2/2016		=	110	42
MCW-15c	755	7/3/2016		=	110	43
MCW-15c	755	7/4/2016		=	110	43
MCW-15c	755	7/5/2016		=	110	43
MCW-15c	830	7/6/2016◆		=	80	43
MCW-15c	830	7/7/2016		=	80	43

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs) E. coli (235 MPN)	Geomean E. coli (126 MPN)
MCW-15c	830	7/8/2016		=	80	42
MCW-15c	830	7/9/2016		=	80	41
MCW-15c	830	7/10/2016		=	80	41
MCW-15c	830	7/11/2016		=	80	40
MCW-15c	930	7/12/2016♦		=	300	41
MCW-15c	930	7/13/2016		=	300	42
MCW-15c	930	7/14/2016		=	300	47
MCW-15c	930	7/15/2016		=	300	53
MCW-15c	930	7/16/2016		=	300	60
MCW-15c	930	7/17/2016		=	300	67
MCW-15c	930	7/18/2016		=	300	75
MCW-15c	955	7/19/2016♦		=	500	85
MCW-15c	955	7/20/2016		=	500	97
MCW-15c	955	7/21/2016		=	500	108
MCW-15c	955	7/22/2016		=	500	120
MCW-15c	955	7/23/2016		=	500	134
MCW-15c	955	7/24/2016		=	500	149
MCW-15c	955	7/25/2016		=	500	166
MCW-15c	915	7/26/2016♦		=	40	170
MCW-15c	915	7/27/2016		=	40	174
MCW-15c	915	7/28/2016		=	40	168
MCW-15c	915	7/29/2016		=	40	162
MCW-15c	915	7/30/2016		=	40	157
MCW-15c	915	7/31/2016		=	40	152
MCW-17	-	7/1/2016	Dry	<	10	10
MCW-17	-	7/2/2016	Dry	<	10	10
MCW-17	-	7/3/2016	Dry	<	10	10
MCW-17	-	7/4/2016	Dry	<	10	10
MCW-17	-	7/5/2016	Dry	<	10	10
MCW-17	-	7/6/2016♦	Dry	<	10	10
MCW-17	-	7/7/2016	Dry	<	10	10
MCW-17	-	7/8/2016	Dry	<	10	10
MCW-17	-	7/9/2016	Dry	<	10	10
MCW-17	-	7/10/2016	Dry	<	10	10
MCW-17	-	7/11/2016	Dry	<	10	10
MCW-17	-	7/12/2016♦	Dry	<	10	10
MCW-17	-	7/13/2016	Dry	<	10	10
MCW-17	-	7/14/2016	Dry	<	10	10
MCW-17	-	7/15/2016	Dry	<	10	10
MCW-17	-	7/16/2016	Dry	<	10	10
MCW-17	-	7/17/2016	Dry	<	10	10
MCW-17	-	7/18/2016	Dry	<	10	10
MCW-17	-	7/19/2016♦	Dry	<	10	10
MCW-17	-	7/20/2016	Dry	<	10	10
MCW-17	-	7/21/2016	Dry	<	10	10
MCW-17	-	7/22/2016	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	7/23/2016	Dry	<	10	10
MCW-17	-	7/24/2016	Dry	<	10	10
MCW-17	-	7/25/2016	Dry	<	10	10
MCW-17	-	7/26/2016	Dry	<	10	10
MCW-17	-	7/27/2016	Dry	<	10	10
MCW-17	-	7/28/2016	Dry	<	10	10
MCW-17	-	7/29/2016	Dry	<	10	10
MCW-17	-	7/30/2016	Dry	<	10	10
MCW-17	-	7/31/2016	Dry	<	10	10
MCW-18	-	7/1/2016	Dry	<	10	10
MCW-18	-	7/2/2016	Dry	<	10	10
MCW-18	-	7/3/2016	Dry	<	10	10
MCW-18	-	7/4/2016	Dry	<	10	10
MCW-18	-	7/5/2016	Dry	<	10	10
MCW-18	-	7/6/2016♦	Dry	<	10	10
MCW-18	-	7/7/2016	Dry	<	10	10
MCW-18	-	7/8/2016	Dry	<	10	10
MCW-18	-	7/9/2016	Dry	<	10	10
MCW-18	-	7/10/2016	Dry	<	10	10
MCW-18	-	7/11/2016	Dry	<	10	10
MCW-18	-	7/12/2016♦	Dry	<	10	10
MCW-18	-	7/13/2016	Dry	<	10	10
MCW-18	-	7/14/2016	Dry	<	10	10
MCW-18	-	7/15/2016	Dry	<	10	10
MCW-18	-	7/16/2016	Dry	<	10	10
MCW-18	-	7/17/2016	Dry	<	10	10
MCW-18	-	7/18/2016	Dry	<	10	10
MCW-18	-	7/19/2016♦	Dry	<	10	10
MCW-18	-	7/20/2016	Dry	<	10	10
MCW-18	-	7/21/2016	Dry	<	10	10
MCW-18	-	7/22/2016	Dry	<	10	10
MCW-18	-	7/23/2016	Dry	<	10	10
MCW-18	-	7/24/2016	Dry	<	10	10
MCW-18	-	7/25/2016	Dry	<	10	10
MCW-18	-	7/26/2016♦	Dry	<	10	10
MCW-18	-	7/27/2016	Dry	<	10	10
MCW-18	-	7/28/2016	Dry	<	10	10
MCW-18	-	7/29/2016	Dry	<	10	10
MCW-18	-	7/30/2016	Dry	<	10	10
MCW-18	-	7/31/2016	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
♦ Date of sampling

county of ventura

PUBLIC WORKS AGENCY
JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

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Christopher E. Cooper, Director

Transportation Department
David L. Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Tully K. Clifford, Director

September 19, 2016

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of August 2016. Sites were sampled weekly on Tuesdays (August 2, 9, 16, 23 and 30). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 645-1382.

Sincerely,

Ewelina Mutkowska
County Stormwater Program Manager, Watershed Protection District

CC: Tully Clifford, Watershed Protection District
Paul Jorgensen, City of Thousand Oaks (via email)
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Table 1. Weekly sampling results

					Single Sample (as sampled)
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	-	8/2/2016♦			Dry
MCW-8b	-	8/9/2016♦			Dry
MCW-8b	-	8/16/2016♦			Dry
MCW-8b	-	8/23/2016♦			Dry
MCW-8b	-	8/30/2016♦			Dry
MCW-9	-	8/2/2016♦			Dry
MCW-9	-	8/9/2016♦			Dry
MCW-9	-	8/16/2016♦			Dry
MCW-9	-	8/23/2016♦			Dry
MCW-9	-	8/30/2016♦			Dry
MCW-12	-	8/2/2016♦			Dry
MCW-12	-	8/9/2016♦			Dry
MCW-12	-	8/16/2016♦			Dry
MCW-12	935	8/23/2016♦		=	170**
MCW-12	-	8/30/2016♦			Dry
MCW-14b	925	8/2/2016♦		=	40
MCW-14b	930	8/9/2016♦		=	500
MCW-14b	920	8/16/2016♦		<	20
MCW-14b	1100	8/23/2016♦		=	16,000
MCW-14b	1020	8/30/2016♦		=	130
MCW-15c	1000	8/2/2016♦		=	230
MCW-15c	845	8/9/2016♦		=	1,300
MCW-15c	840	8/16/2016♦		=	800
MCW-15c	830	8/23/2016♦		=	500
MCW-15c	945	8/30/2016♦		=	2,400
MCW-17	-	8/2/2016♦			Dry
MCW-17	-	8/9/2016♦			Dry
MCW-17	-	8/16/2016♦			Dry
MCW-17	-	8/23/2016♦			Dry
MCW-17	-	8/30/2016♦			Dry
MCW-18	-	8/2/2016♦			Dry
MCW-18	-	8/9/2016♦			Dry
MCW-18	-	8/16/2016♦			Dry
MCW-18	-	8/23/2016♦			Dry
MCW-18	-	8/30/2016♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

** Oak Park Water Service experienced a main pipe break discharging a large amount of water into Medea Creek resulting in flow at MCW-12. Results show that the location was in compliance. Samples could not be collected the following week due to a return to dry conditions.

♦ Date of sampling

Table 2. Computation of daily geomean

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	8/1/2016	Dry	<	10	10
MCW-8b	-	8/2/2016♦	Dry	<	10	10
MCW-8b	-	8/3/2016	Dry	<	10	10
MCW-8b	-	8/4/2016	Dry	<	10	10
MCW-8b	-	8/5/2016	Dry	<	10	10
MCW-8b	-	8/6/2016	Dry	<	10	10
MCW-8b	-	8/7/2016	Dry	<	10	10
MCW-8b	-	8/8/2016	Dry	<	10	10
MCW-8b	-	8/9/2016♦	Dry	<	10	10
MCW-8b	-	8/10/2016	Dry	<	10	10
MCW-8b	-	8/11/2016	Dry	<	10	10
MCW-8b	-	8/12/2016	Dry	<	10	10
MCW-8b	-	8/13/2016	Dry	<	10	10
MCW-8b	-	8/14/2016	Dry	<	10	10
MCW-8b	-	8/15/2016	Dry	<	10	10
MCW-8b	-	8/16/2016♦	Dry	<	10	10
MCW-8b	-	8/17/2016	Dry	<	10	10
MCW-8b	-	8/18/2016	Dry	<	10	10
MCW-8b	-	8/19/2016	Dry	<	10	10
MCW-8b	-	8/20/2016	Dry	<	10	10
MCW-8b	-	8/21/2016	Dry	<	10	10
MCW-8b	-	8/22/2016	Dry	<	10	10
MCW-8b	-	8/23/2016♦	Dry	<	10	10
MCW-8b	-	8/24/2016	Dry	<	10	10
MCW-8b	-	8/25/2016	Dry	<	10	10
MCW-8b	-	8/26/2016	Dry	<	10	10
MCW-8b	-	8/27/2016	Dry	<	10	10
MCW-8b	-	8/28/2016	Dry	<	10	10
MCW-8b	-	8/29/2016	Dry	<	10	10
MCW-8b	-	8/30/2016♦	Dry	<	10	10
MCW-8b	-	8/31/2016	Dry	<	10	10
MCW-9	-	8/1/2016	Dry	<	10	10
MCW-9	-	8/2/2016♦	Dry	<	10	10
MCW-9	-	8/3/2016	Dry	<	10	10
MCW-9	-	8/4/2016	Dry	<	10	10
MCW-9	-	8/5/2016	Dry	<	10	10
MCW-9	-	8/6/2016	Dry	<	10	10
MCW-9	-	8/7/2016	Dry	<	10	10
MCW-9	-	8/8/2016	Dry	<	10	10
MCW-9	-	8/9/2016♦	Dry	<	10	10
MCW-9	-	8/10/2016	Dry	<	10	10
MCW-9	-	8/11/2016	Dry	<	10	10
MCW-9	-	8/12/2016	Dry	<	10	10
MCW-9	-	8/13/2016	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	8/14/2016	Dry	<	10	10
MCW-9	-	8/15/2016	Dry	<	10	10
M[illegible]W[illegible]	-	8/16/2016♦	Dry	<	10	10
M[illegible]W[illegible]	-	8/17/2016	Dry	<	10	10
M[illegible]W[illegible]	-	8/18/2016	Dry	<	10	10
MCW-9	-	8/19/2016	Dry	<	10	10
MCW-9	-	8/20/2016	Dry	<	10	10
MCW-9	-	8/21/2016	Dry	<	10	10
M[illegible]	-	8/22/2016	Dry	<	10	10
MCW-9	-	8/23/2016♦	Dry	<	10	10
M[illegible]W-9	-	8/24/2016	Dry	<	10	10
M[illegible]W[illegible]	-	8/25/2016	Dry	<	10	10
M[illegible]	-	8/26/2016	Dry	<	10	10
M[illegible]	-	8/27/2016	Dry	<	10	10
M[illegible]	-	8/28/2016	Dry	<	10	10
M[illegible]W-9	-	8/29/2016	Dry	<	10	10
M[illegible]W-9	-	8/30/2016♦	Dry	<	10	10
M[illegible]	-	8/31/2016	Dry	<	10	10
M[illegible]2	-	8/1/2016	Dry	<	10	10
M[illegible]W-12	-	8/2/2016♦	Dry	<	10	10
M[illegible]W-12	-	8/3/2016	Dry	<	10	10
M[illegible]2	-	8/4/2016	Dry	<	10	10
M[illegible]2	-	8/5/2016	Dry	<	10	10
M[illegible]2	-	8/6/2016	Dry	<	10	10
M[illegible]2	-	8/7/2016	Dry	<	10	10
M[illegible]2	-	8/8/2016	Dry	<	10	10
M[illegible]2	-	8/9/2016♦	Dry	<	10	10
M[illegible]2	-	8/10/2016	Dry	<	10	10
M[illegible]2	-	8/11/2016	Dry	<	10	10
M[illegible]-12	-	8/12/2016	Dry	<	10	10
M[illegible]	-	8/13/2016	Dry	<	10	10
M[illegible]	-	8/14/2016	Dry	<	10	10
M[illegible]2	-	8/15/2016	Dry	<	10	10
M[illegible]2	-	8/16/2016♦	Dry	<	10	10
M[illegible]2	-	8/17/2016	Dry	<	10	10
M[illegible]	-	8/18/2016	Dry	<	10	10
M[illegible]	-	8/19/2016	Dry	<	10	10
M[illegible]	-	8/20/2016	Dry	<	10	10
M[illegible]	-	8/21/2016	Dry	<	10	10
M[illegible]	-	8/22/2016	Dry	<	10	10
M[illegible]	935	8/23/2016♦		=	170**	26
M[illegible]	935	8/24/2016		=	170**	26
M[illegible]	935	8/25/2016		=	170**	29
M[illegible]	935	8/26/2016		=	170**	32

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs) E. coli (235 MPN)	Geomean E. coli (126 MPN)
MC[illegible]12	935	8/27/2016		=	170**	35
MC[illegible]12	935	8/28/2016		=	170**	38
MC[illegible]	935	8/29/2016		=	170**	42
MC[illegible]	935	8/30/2016♦		=	170**	46
MC[illegible]12	-	8/31/2016	Dry	<	10	10
MCW[illegible]b	840	8/1/2016		=	80	35
MCW[illegible]b	925	8/2/2016♦		=	40	33
MC[illegible]b	925	8/3/2016		=	40	30
MC[illegible]b	925	8/4/2016		=	40	28
MC[illegible]b	925	8/5/2016		=	40	27
MC[illegible]	925	8/6/2016		=	40	27
MC[illegible]	925	8/7/2016		=	40	26
MC[illegible]	925	8/8/2016		=	40	26
MC[illegible]b	930	8/9/2016♦		=	500	27
MC[illegible]b	930	8/10/2016		=	500	29
MCW[illegible]b	930	8/11/2016		=	500	33
MC[illegible]	930	8/12/2016		=	500	38
MC[illegible]	930	8/13/2016		=	500	43
MC[illegible]b	930	8/14/2016		=	500	49
MC[illegible]	930	8/15/2016		=	500	56
MC[illegible]	920	8/16/2016♦		<	10	56
MC[illegible]	920	8/17/2016		<	10	56
MC[illegible]	920	8/18/2016		<	10	56
MC[illegible]	920	8/19/2016		<	10	56
MC[illegible]	920	8/20/2016		<	10	56
MC[illegible]	920	8/21/2016		<	10	56
MC[illegible]	920	8/22/2016		<	10	56
MC[illegible]	1100	8/23/2016♦		=	16,000	72
MC[illegible]	1100	8/24/2016		=	16,000	91
MC[illegible]	1100	8/25/2016		=	16,000	109
MC[illegible]	1100	8/26/2016		=	16,000	130
MC[illegible]	1100	8/27/2016		=	16,000	155
MC[illegible]	1100	8/28/2016		=	16,000	185
MC[illegible]	1100	8/29/2016		=	16,000	221
M[illegible]	1020	8/30/2016♦		=	130	225
M[illegible]	1020	8/31/2016		=	130	228
M[illegible]	915	8/1/2016		=	40	147
M[illegible]	1000	8/2/2016♦		=	230	150
M[illegible]	1000	8/3/2016		=	230	154
M[illegible]	1000	8/4/2016		=	230	158
M[illegible]	1000	8/5/2016		=	230	164
M[illegible]	1000	8/6/2016		=	230	169
M[illegible]	1000	8/7/2016		=	230	175
M[illegible]	1000	8/8/2016		=	230	182
M[illegible]	845	8/9/2016♦		=	1,300	199

						Single Sample (adjusted for rain, dry and NDs)	Geomean
Lo		Time	Date	Rain		E. coli	E. coli
						(235 MPN)	(126 MPN)
M		845	8/10/2016		=	1,300	219
M		845	8/11/2016		=	1,300	230
M		845	8/12/2016		=	1,300	241
M		845	8/13/2016		=	1,300	253
M		845	8/14/2016		=	1,300	266
M		845	8/15/2016		=	1,300	279
M		840	8/16/2016♦		=	800	289
M		840	8/17/2016		=	800	298
M		840	8/18/2016		=	800	303
M		840	8/19/2016		=	800	308
M		840	8/20/2016		=	800	313
M		840	8/21/2016		=	800	318
M		840	8/22/2016		=	800	323
M		830	8/23/2016♦		=	500	323
M		830	8/24/2016		=	500	323
M		830	8/25/2016		=	500	351
M		830	8/26/2016		=	500	382
M		830	8/27/2016		=	500	415
M		830	8/28/2016		=	500	452
M		830	8/29/2016		=	500	492
M		945	8/30/2016♦		=	2,400	563
M		945	8/31/2016		=	2,400	646
		-	8/1/2016	Dry	<	10	10
		-	8/2/2016♦	Dry	<	10	10
		-	8/3/2016	Dry	<	10	10
		-	8/4/2016	Dry	<	10	10
		-	8/5/2016	Dry	<	10	10
		-	8/6/2016	Dry	<	10	10
		-	8/7/2016	Dry	<	10	10
		-	8/8/2016	Dry	<	10	10
		-	8/9/2016♦	Dry	<	10	10
		-	8/10/2016	Dry	<	10	10
		-	8/11/2016	Dry	<	10	10
		-	8/12/2016	Dry	<	10	10
		-	8/13/2016	Dry	<	10	10
		-	8/14/2016	Dry	<	10	10
		-	8/15/2016	Dry	<	10	10
		-	8/16/2016♦	Dry	<	10	10
		-	8/17/2016	Dry	<	10	10
		-	8/18/2016	Dry	<	10	10
		-	8/19/2016	Dry	<	10	10
		-	8/20/2016	Dry	<	10	10
		-	8/21/2016	Dry	<	10	10
		-	8/22/2016	Dry	<	10	10
		-	8/23/2016♦	Dry	<	10	10
		-	8/24/2016	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)		Geomean
1		Time	Date	Rain		E. coli	E. coli
						(235 MPN)	(126 MPN)
		-	8/25/2016	Dry	<	10	10
		-	8/26/2016	Dry	<	10	10
		-	8/27/2016	Dry	<	10	10
		-	8/28/2016	Dry	<	10	10
		-	8/29/2016	Dry	<	10	10
		-	8/30/2016♦	Dry	<	10	10
		-	8/31/2016	Dry	<	10	10
		-	8/1/2016	Dry	<	10	10
		-	8/2/2016♦	Dry	<	10	10
		-	8/3/2016	Dry	<	10	10
		-	8/4/2016	Dry	<	10	10
		-	8/5/2016	Dry	<	10	10
		-	8/6/2016	Dry	<	10	10
		-	8/7/2016	Dry	<	10	10
		-	8/8/2016	Dry	<	10	10
		-	8/9/2016♦	Dry	<	10	10
		-	8/10/2016	Dry	<	10	10
		-	8/11/2016	Dry	<	10	10
		-	8/12/2016	Dry	<	10	10
		-	8/13/2016	Dry	<	10	10
		-	8/14/2016	Dry	<	10	10
		-	8/15/2016	Dry	<	10	10
		-	8/16/2016♦	Dry	<	10	10
		-	8/17/2016	Dry	<	10	10
		-	8/18/2016	Dry	<	10	10
		-	8/19/2016	Dry	<	10	10
		-	8/20/2016	Dry	<	10	10
		-	8/21/2016	Dry	<	10	10
		-	8/22/2016	Dry	<	10	10
		-	8/23/2016♦	Dry	<	10	10
		-	8/24/2016	Dry	<	10	10
		-	8/25/2016	Dry	<	10	10
		-	8/26/2016	Dry	<	10	10
		-	8/27/2016	Dry	<	10	10
		-	8/28/2016	Dry	<	10	10
		-	8/29/2016	Dry	<	10	10
		-	8/30/2016♦	Dry	<	10	10
		-	8/31/2016	Dry	<	10	10

N
W ...vet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample val... ulate the geomean.
R... 20 are adjusted to use half the MDL (=10) in the calculation of the geomean
... CB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
... Water Service experienced a main pipe break discharging a large amount of water into Medea Creek resulting in flow at
M... esults show that the location was in compliance. Samples could not be collected the following week due to a return to dry
co...
♦ ... mpling

county of ventura

PUBLIC WORKS AGENCY
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Michaela Brown, Director

Watershed Protection District
Tully K. Clifford, Director

July 18, 2016

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of June 2016. Sites were sampled weekly on Tuesdays (June 7, 14, 21 and 28). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 645-1382.

Sincerely,

Acting Manager

Ewelina Mutkowska
County Stormwater Program Manager, Watershed Protection District

CC: Tully Clifford, Watershed Protection District
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

				Single Sample (as sampled)	
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	-	6/7/2016♦			Dry
MCW-8b	-	6/14/2016♦			Dry
MCW-8b	-	6/21/2016♦			Dry
MCW-8b	-	6/28/2016♦			Dry
MCW-9	-	6/7/2016♦			Dry
MCW-9	-	6/14/2016♦			Dry
MCW-9	-	6/21/2016♦			Dry
MCW-9	-	6/28/2016♦			Dry
MCW-12	-	6/7/2016♦			Dry
MCW-12	-	6/14/2016♦			Dry
MCW-12	-	6/21/2016♦			Dry
MCW-12	-	6/28/2016♦			Dry
MCW-14b	845	6/7/2016♦		=	40
MCW-14b	925	6/14/2016♦		=	300
MCW-14b	830	6/21/2016♦		=	20
MCW-14b	715	6/28/2016♦		=	500
MCW-15c	800	6/7/2016♦		=	130
MCW-15c	840	6/14/2016♦		<	20
MCW-15c	750	6/21/2016♦		=	20
MCW-15c	755	6/28/2016♦		=	110
MCW-17	-	6/7/2016♦			Dry
MCW-17	-	6/14/2016♦			Dry
MCW-17	-	6/21/2016♦			Dry
MCW-17	-	6/28/2016♦			Dry
MCW-18	-	6/7/2016♦			Dry
MCW-18	-	6/14/2016♦			Dry
MCW-18	-	6/21/2016♦			Dry
MCW-18	-	6/28/2016♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	6/1/2016	Dry	<	10	10
MCW-8b	-	6/2/2016	Dry	<	10	10
MCW-8b	-	6/3/2016	Dry	<	10	10
MCW-8b	-	6/4/2016	Dry	<	10	10
MCW-8b	-	6/5/2016	Dry	<	10	10
MCW-8b	-	6/6/2016	Dry	<	10	10
MCW-8b	-	6/7/2016♦	Dry	<	10	10
MCW-8b	-	6/8/2016	Dry	<	10	10
MCW-8b	-	6/9/2016	Dry	<	10	10
MCW-8b	-	6/10/2016	Dry	<	10	10
MCW-8b	-	6/11/2016	Dry	<	10	10
MCW-8b	-	6/12/2016	Dry	<	10	10
MCW-8b	-	6/13/2016	Dry	<	10	10
MCW-8b	-	6/14/2016♦	Dry	<	10	10
MCW-8b	-	6/15/2016	Dry	<	10	10
MCW-8b	-	6/16/2016	Dry	<	10	10
MCW-8b	-	6/17/2016	Dry	<	10	10
MCW-8b	-	6/18/2016	Dry	<	10	10
MCW-8b	-	6/19/2016	Dry	<	10	10
MCW-8b	-	6/20/2016	Dry	<	10	10
MCW-8b	-	6/21/2016♦	Dry	<	10	10
MCW-8b	-	6/22/2016	Dry	<	10	10
MCW-8b	-	6/23/2016	Dry	<	10	10
MCW-8b	-	6/24/2016	Dry	<	10	10
MCW-8b	-	6/25/2016	Dry	<	10	10
MCW-8b	-	6/26/2016	Dry	<	10	10
MCW-8b	-	6/27/2016	Dry	<	10	10
MCW-8b	-	6/28/2016♦	Dry	<	10	10
MCW-8b	-	6/29/2016	Dry	<	10	10
MCW-8b	-	6/30/2016	Dry	<	10	10
MCW-9	-	6/1/2016	Dry	<	10	10
MCW-9	-	6/2/2016	Dry	<	10	10
MCW-9	-	6/3/2016	Dry	<	10	10
MCW-9	-	6/4/2016	Dry	<	10	10
MCW-9	-	6/5/2016	Dry	<	10	10
MCW-9	-	6/6/2016	Dry	<	10	10
MCW-9	-	6/7/2016♦	Dry	<	10	10
MCW-9	-	6/8/2016	Dry	<	10	10
MCW-9	-	6/9/2016	Dry	<	10	10
MCW-9	-	6/10/2016	Dry	<	10	10
MCW-9	-	6/11/2016	Dry	<	10	10
MCW-9	-	6/12/2016	Dry	<	10	10
MCW-9	-	6/13/2016	Dry	<	10	10
MCW-9	-	6/14/2016♦	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-9	-	6/15/2016	Dry	<	10	10
MCW-9	-	6/16/2016	Dry	<	10	10
MCW-9	-	6/17/2016	Dry	<	10	10
MCW-9	-	6/18/2016	Dry	<	10	10
MCW-9	-	6/19/2016	Dry	<	10	10
MCW-9	-	6/20/2016	Dry	<	10	10
MCW-9	-	6/21/2016♦	Dry	<	10	10
MCW-9	-	6/22/2016	Dry	<	10	10
MCW-9	-	6/23/2016	Dry	<	10	10
MCW-9	-	6/24/2016	Dry	<	10	10
MCW-9	-	6/25/2016	Dry	<	10	10
MCW-9	-	6/26/2016	Dry	<	10	10
MCW-9	-	6/27/2016	Dry	<	10	10
MCW-9	-	6/28/2016♦	Dry	<	10	10
MCW-9	-	6/29/2016	Dry	<	10	10
MCW-9	-	6/30/2016	Dry	<	10	10
MCW-12	-	6/1/2016	Dry	<	10	10
MCW-12	-	6/2/2016	Dry	<	10	10
MCW-12	-	6/3/2016	Dry	<	10	10
MCW-12	-	6/4/2016	Dry	<	10	10
MCW-12	-	6/5/2016	Dry	<	10	10
MCW-12	-	6/6/2016	Dry	<	10	10
MCW-12	-	6/7/2016♦	Dry	<	10	10
MCW-12	-	6/8/2016	Dry	<	10	10
MCW-12	-	6/9/2016	Dry	<	10	10
MCW-12	-	6/10/2016	Dry	<	10	10
MCW-12	-	6/11/2016	Dry	<	10	10
MCW-12	-	6/12/2016	Dry	<	10	10
MCW-12	-	6/13/2016	Dry	<	10	10
MCW-12	-	6/14/2016♦	Dry	<	10	10
MCW-12	-	6/15/2016	Dry	<	10	10
MCW-12	-	6/16/2016	Dry	<	10	10
MCW-12	-	6/17/2016	Dry	<	10	10
MCW-12	-	6/18/2016	Dry	<	10	10
MCW-12	-	6/19/2016	Dry	<	10	10
MCW-12	-	6/20/2016	Dry	<	10	10
MCW-12	-	6/21/2016♦	Dry	<	10	10
MCW-12	-	6/22/2016	Dry	<	10	10
MCW-12	-	6/23/2016	Dry	<	10	10
MCW-12	-	6/24/2016	Dry	<	10	10
MCW-12	-	6/25/2016	Dry	<	10	10
MCW-12	-	6/26/2016	Dry	<	10	10
MCW-12	-	6/27/2016	Dry	<	10	10
MCW-12	-	6/28/2016♦	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	-	6/29/2016	Dry	<	10	10
MCW-12	-	6/30/2016	Dry	<	10	10
MCW-14b	850	6/1/2016		=	80	191
MCW-14b	850	6/2/2016		=	80	179
MCW-14b	850	6/3/2016		=	80	169
MCW-14b	850	6/4/2016		=	80	159
MCW-14b	850	6/5/2016		=	80	149
MCW-14b	850	6/6/2016		=	80	140
MCW-14b	845	6/7/2016◆		=	40	129
MCW-14b	845	6/8/2016		=	40	119
MCW-14b	845	6/9/2016		=	40	116
MCW-14b	845	6/10/2016		=	40	113
MCW-14b	845	6/11/2016		=	40	111
MCW-14b	845	6/12/2016		=	40	108
MCW-14b	845	6/13/2016		=	40	106
MCW-14b	925	6/14/2016◆		=	300	110
MCW-14b	925	6/15/2016		=	300	115
MCW-14b	925	6/16/2016		=	300	121
MCW-14b	925	6/17/2016		=	300	121
MCW-14b	925	6/18/2016		=	300	121
MCW-14b	925	6/19/2016		=	300	121
MCW-14b	925	6/20/2016		=	300	121
MCW-14b	830	6/21/2016◆		=	20	110
MCW-14b	830	6/22/2016		=	20	101
MCW-14b	830	6/23/2016		=	20	94
MCW-14b	830	6/24/2016		=	20	87
MCW-14b	830	6/25/2016		=	20	81
MCW-14b	830	6/26/2016		=	20	76
MCW-14b	830	6/27/2016		=	20	70
MCW-14b	715	6/28/2016◆		=	500	73
MCW-14b	715	6/29/2016		=	500	76
MCW-14b	715	6/30/2016		=	500	81
MCW-15c	810	6/1/2016		=	80	46
MCW-15c	810	6/2/2016		=	80	46
MCW-15c	810	6/3/2016		=	80	46
MCW-15c	810	6/4/2016		=	80	46
MCW-15c	810	6/5/2016		=	80	46
MCW-15c	810	6/6/2016		=	80	47
MCW-15c	800	6/7/2016◆		=	130	48
MCW-15c	800	6/8/2016		=	130	49
MCW-15c	800	6/9/2016		=	130	52
MCW-15c	800	6/10/2016		=	130	55
MCW-15c	800	6/11/2016		=	130	59
MCW-15c	800	6/12/2016		=	130	62
MCW-15c	800	6/13/2016		=	130	66

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	840	6/14/2016♦		<	10	65
MCW-15c	840	6/15/2016		<	10	63
MCW-15c	840	6/16/2016		<	10	62
MCW-15c	840	6/17/2016		<	10	58
MCW-15c	840	6/18/2016		<	10	54
MCW-15c	840	6/19/2016		<	10	50
MCW-15c	840	6/20/2016		<	10	47
MCW-15c	750	6/21/2016♦		=	20	45
MCW-15c	750	6/22/2016		=	20	43
MCW-15c	750	6/23/2016		=	20	42
MCW-15c	750	6/24/2016		=	20	41
MCW-15c	750	6/25/2016		=	20	40
MCW-15c	750	6/26/2016		=	20	39
MCW-15c	750	6/27/2016		=	20	38
MCW-15c	755	6/28/2016♦		=	110	39
MCW-15c	755	6/29/2016		=	110	41
MCW-15c	755	6/30/2016		=	110	41
MCW-17	-	6/1/2016	Dry	<	10	10
MCW-17	-	6/2/2016	Dry	<	10	10
MCW-17	-	6/3/2016	Dry	<	10	10
MCW-17	-	6/4/2016	Dry	<	10	10
MCW-17	-	6/5/2016	Dry	<	10	10
MCW-17	-	6/6/2016	Dry	<	10	10
MCW-17	-	6/7/2016♦	Dry	<	10	10
MCW-17	-	6/8/2016	Dry	<	10	10
MCW-17	-	6/9/2016	Dry	<	10	10
MCW-17	-	6/10/2016	Dry	<	10	10
MCW-17	-	6/11/2016	Dry	<	10	10
MCW-17	-	6/12/2016	Dry	<	10	10
MCW-17	-	6/13/2016	Dry	<	10	10
MCW-17	-	6/14/2016♦	Dry	<	10	10
MCW-17	-	6/15/2016	Dry	<	10	10
MCW-17	-	6/16/2016	Dry	<	10	10
MCW-17	-	6/17/2016	Dry	<	10	10
MCW-17	-	6/18/2016	Dry	<	10	10
MCW-17	-	6/19/2016	Dry	<	10	10
MCW-17	-	6/20/2016	Dry	<	10	10
MCW-17	-	6/21/2016♦	Dry	<	10	10
MCW-17	-	6/22/2016	Dry	<	10	10
MCW-17	-	6/23/2016	Dry	<	10	10
MCW-17	-	6/24/2016	Dry	<	10	10
MCW-17	-	6/25/2016	Dry	<	10	10
MCW-17	-	6/26/2016	Dry	<	10	10
MCW-17	-	6/27/2016	Dry	<	10	10
MCW-17	-	6/28/2016♦	Dry	<	10	10
MCW-17	-	6/29/2016	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	6/30/2016	Dry	<	10	10
MCW-18	-	6/1/2016	Dry	<	10	10
MCW-18	-	6/2/2016	Dry	<	10	10
MCW-18	-	6/3/2016	Dry	<	10	10
MCW-18	-	6/4/2016	Dry	<	10	10
MCW-18	-	6/5/2016	Dry	<	10	10
MCW-18	-	6/6/2016	Dry	<	10	10
MCW-18	-	6/7/2016♦	Dry	<	10	10
MCW-18	-	6/8/2016	Dry	<	10	10
MCW-18	-	6/9/2016	Dry	<	10	10
MCW-18	-	6/10/2016	Dry	<	10	10
MCW-18	-	6/11/2016	Dry	<	10	10
MCW-18	-	6/12/2016	Dry	<	10	10
MCW-18	-	6/13/2016	Dry	<	10	10
MCW-18	-	6/14/2016♦	Dry	<	10	10
MCW-18	-	6/15/2016	Dry	<	10	10
MCW-18	-	6/16/2016	Dry	<	10	10
MCW-18	-	6/17/2016	Dry	<	10	10
MCW-18	-	6/18/2016	Dry	<	10	10
MCW-18	-	6/19/2016	Dry	<	10	10
MCW-18	-	6/20/2016	Dry	<	10	10
MCW-18	-	6/21/2016♦	Dry	<	10	10
MCW-18	-	6/22/2016	Dry	<	10	10
MCW-18	-	6/23/2016	Dry	<	10	10
MCW-18	-	6/24/2016	Dry	<	10	10
MCW-18	-	6/25/2016	Dry	<	10	10
MCW-18	-	6/26/2016	Dry	<	10	10
MCW-18	-	6/27/2016	Dry	<	10	10
MCW-18	-	6/28/2016♦	Dry	<	10	10
MCW-18	-	6/29/2016	Dry	<	10	10
MCW-18	-	6/30/2016	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling

county of ventura

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October 19, 2016

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: **MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS**

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of September 2016. Sites were sampled weekly on Tuesdays (September 6, 13, 20 and 27). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Peter Sheydayi, Interim Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

Location	Time	Date	Rain		Single Sample (as sampled) E. coli (235 MPN)
MCW-8b	-	9/6/2016♦			Dry
MCW-8b	-	9/13/2016♦			Dry
MCW-8b	-	9/20/2016♦			Dry
MCW-8b	-	9/27/2016♦			Dry
MCW-9	-	9/6/2016♦			Dry
MCW-9	-	9/13/2016♦			Dry
MCW-9	-	9/20/2016♦			Dry
MCW-9	-	9/27/2016♦			Dry
MCW-12	-	9/6/2016♦			Dry
MCW-12	-	9/13/2016♦			Dry
MCW-12	-	9/20/2016♦			Dry
MCW-12	-	9/27/2016♦			Dry
MCW-14b	915	9/6/2016♦		=	80
MCW-14b	1015	9/13/2016♦		=	20
MCW-14b	1130	9/20/2016♦		=	80
MCW-14b	1020	9/27/2016♦		=	36
MCW-15c	830	9/6/2016♦		=	3,000
MCW-15c	940	9/13/2016♦		=	20
MCW-15c	1045	9/20/2016♦		=	40
MCW-15c	945	9/27/2016♦		=	490
MCW-17	-	9/6/2016♦			Dry
MCW-17	-	9/13/2016♦			Dry
MCW-17	-	9/20/2016♦			Dry
MCW-17	-	9/27/2016♦			Dry
MCW-18	-	9/6/2016♦			Dry
MCW-18	-	9/13/2016♦			Dry
MCW-18	-	9/20/2016♦			Dry
MCW-18	-	9/27/2016♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.
♦Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	9/1/16	Dry	<	10	10
MCW-8b	-	9/2/16	Dry	<	10	10
MCW-8b	-	9/3/16	Dry	<	10	10
MCW-8b	-	9/4/16	Dry	<	10	10
MCW-8b	-	9/5/16	Dry	<	10	10
MCW-8b	-	9/6/2016♦	Dry	<	10	10
MCW-8b	-	9/7/16	Dry	<	10	10
MCW-8b	-	9/8/16	Dry	<	10	10
MCW-8b	-	9/9/16	Dry	<	10	10
MCW-8b	-	9/10/16	Dry	<	10	10
MCW-8b	-	9/11/16	Dry	<	10	10
MCW-8b	-	9/12/16	Dry	<	10	10
MCW-8b	-	9/13/2016♦	Dry	<	10	10
MCW-8b	-	9/14/16	Dry	<	10	10
MCW-8b	-	9/15/16	Dry	<	10	10
MCW-8b	-	9/16/16	Dry	<	10	10
MCW-8b	-	9/17/16	Dry	<	10	10
MCW-8b	-	9/18/16	Dry	<	10	10
MCW-8b	-	9/19/16	Dry	<	10	10
MCW-8b	-	9/20/2016♦	Dry	<	10	10
MCW-8b	-	9/21/16	Dry	<	10	10
MCW-8b	-	9/22/16	Dry	<	10	10
MCW-8b	-	9/23/16	Dry	<	10	10
MCW-8b	-	9/24/16	Dry	<	10	10
MCW-8b	-	9/25/16	Dry	<	10	10
MCW-8b	-	9/26/16	Dry	<	10	10
MCW-8b	-	9/27/2016♦	Dry	<	10	10
MCW-8b	-	9/28/16	Dry	<	10	10
MCW-8b	-	9/29/16	Dry	<	10	10
MCW-8b	-	9/30/16	Dry	<	10	10
MCW-9	-	9/1/16	Dry	<	10	10
MCW-9	-	9/2/16	Dry	<	10	10
MCW-9	-	9/3/16	Dry	<	10	10
MCW-9	-	9/4/16	Dry	<	10	10
MCW-9	-	9/5/16	Dry	<	10	10
MCW-9	-	9/6/2016♦	Dry	<	10	10
MCW-9	-	9/7/16	Dry	<	10	10
MCW-9	-	9/8/16	Dry	<	10	10
MCW-9	-	9/9/16	Dry	<	10	10
MCW-9	-	9/10/16	Dry	<	10	10
MCW-9	-	9/11/16	Dry	<	10	10
MCW-9	-	9/12/16	Dry	<	10	10
MCW-9	-	9/13/2016♦	Dry	<	10	10
MCW-9	-	9/14/16	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	**Time**	**Date**	**Rain**		E. coli	E. coli
		-			(235 MPN)	(126 MPN)
MCW-9	-	9/15/16	Dry	<	10	10
MCW-9	-	9/16/16	Dry	<	10	10
MCW-9	-	9/17/16	Dry	<	10	10
MCW-9	-	9/18/16	Dry	<	10	10
MCW-9	-	9/19/16	Dry	<	10	10
MCW-9	-	9/20/2016♦	Dry	<	10	10
MCW-9	-	9/21/16	Dry	<	10	10
MCW-9	-	9/22/16	Dry	<	10	10
MCW-9	-	9/23/16	Dry	<	10	10
MCW-9	-	9/24/16	Dry	<	10	10
MCW-9	-	9/25/16	Dry	<	10	10
MCW-9	-	9/26/16	Dry	<	10	10
MCW-9	-	9/27/2016♦	Dry	<	10	10
MCW-9	-	9/28/16	Dry	<	10	10
MCW-9	-	9/29/16	Dry	<	10	10
MCW-9	-	9/30/16	Dry	<	10	10
MCW-12	-	9/1/16	Dry	<	10	21
MCW-12	-	9/2/16	Dry	<	10	21
MCW-12	-	9/3/16	Dry	<	10	21
MCW-12	-	9/4/16	Dry	<	10	21
MCW-12	-	9/5/16	Dry	<	10	21
MCW-12	-	9/6/2016♦	Dry	<	10	21
MCW-12	-	9/7/16	Dry	<	10	21
MCW-12	-	9/8/16	Dry	<	10	21
MCW-12	-	9/9/16	Dry	<	10	21
MCW-12	-	9/10/16	Dry	<	10	21
MCW-12	-	9/11/16	Dry	<	10	21
MCW-12	-	9/12/16	Dry	<	10	21
MCW-12	-	9/13/2016♦	Dry	<	10	21
MCW-12	-	9/14/16	Dry	<	10	21
MCW-12	-	9/15/16	Dry	<	10	21
MCW-12	-	9/16/16	Dry	<	10	21
MCW-12	-	9/17/16	Dry	<	10	21
MCW-12	-	9/18/16	Dry	<	10	21
MCW-12	-	9/19/16	Dry	<	10	21
MCW-12	-	9/20/2016♦	Dry	<	10	21
MCW-12	-	9/21/16	Dry	<	10	21
MCW-12	-	9/22/16	Dry	<	10	19
MCW-12	-	9/23/16	Dry	<	10	18
MCW-12	-	9/24/16	Dry	<	10	16
MCW-12	-	9/25/16	Dry	<	10	15
MCW-12	-	9/26/16	Dry	<	10	13
MCW-12	-	9/27/2016♦	Dry	<	10	12
MCW-12	-	9/28/16	Dry	<	10	11

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	-	9/29/16	Dry	<	10	10
MCW-12	-	9/30/16	Dry	<	10	10
MCW-14b	1020	9/1/16		=	130	238
MCW-14b	1020	9/2/16		=	130	247
MCW-14b	1020	9/3/16		=	130	257
MCW-14b	1020	9/4/16		=	130	267
MCW-14b	1020	9/5/16		=	130	278
MCW-14b	915	9/6/2016♦		=	80	285
MCW-14b	915	9/7/16		=	80	291
MCW-14b	915	9/8/16		=	80	274
MCW-14b	915	9/9/16		=	80	258
MCW-14b	915	9/10/16		=	80	242
MCW-14b	915	9/11/16		=	80	228
MCW-14b	915	9/12/16		=	80	215
MCW-14b	1015	9/13/2016♦		=	20	193
MCW-14b	1015	9/14/16		=	20	173
MCW-14b	1015	9/15/16		=	20	177
MCW-14b	1015	9/16/16		=	20	181
MCW-14b	1015	9/17/16		=	20	186
MCW-14b	1015	9/18/16		=	20	190
MCW-14b	1015	9/19/16		=	20	194
MCW-14b	1130	9/20/2016♦		=	80	208
MCW-14b	1130	9/21/16		=	80	223
MCW-14b	1130	9/22/16		=	80	187
MCW-14b	1130	9/23/16		=	80	157
MCW-14b	1130	9/24/16		=	80	131
MCW-14b	1130	9/25/16		=	80	110
MCW-14b	1130	9/26/16		=	80	92
MCW-14b	1020	9/27/2016♦		=	36	75
MCW-14b	1020	9/28/16		=	36	61
MCW-14b	1020	9/29/16		=	36	59
MCW-14b	1020	9/30/16		=	36	56
MCW-15c	945	9/1/16		=	2,400	698
MCW-15c	945	9/2/16		=	2,400	755
MCW-15c	945	9/3/16		=	2,400	817
MCW-15c	945	9/4/16		=	2,400	883
MCW-15c	945	9/5/16		=	2,400	955
MCW-15c	830	9/6/2016♦		=	3,000	1,040
MCW-15c	830	9/7/16		=	3,000	1,133
MCW-15c	830	9/8/16		=	3,000	1,165
MCW-15c	830	9/9/16		=	3,000	1,198
MCW-15c	830	9/10/16		=	3,000	1,232
MCW-15c	830	9/11/16		=	3,000	1,267
MCW-15c	830	9/12/16		=	3,000	1,303
MCW-15c	940	9/13/2016♦		=	20	1,133

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	**Time**	**Date**	**Rain**		**E. coli**	**E. coli**
					(235 MPN)	**(126 MPN)**
MCW-15c	940	9/14/16		=	20	986
MCW-15c	940	9/15/16		=	20	872
MCW-15c	940	9/16/16		=	20	771
MCW-15c	940	9/17/16		=	20	682
MCW-15c	940	9/18/16		=	20	603
MCW-15c	940	9/19/16		=	20	533
MCW-15c	1045	9/20/2016◆		=	40	483
MCW-15c	1045	9/21/16		=	40	437
MCW-15c	1045	9/22/16		=	40	401
MCW-15c	1045	9/23/16		=	40	369
MCW-15c	1045	9/24/16		=	40	339
MCW-15c	1045	9/25/16		=	40	312
MCW-15c	1045	9/26/16		=	40	287
MCW-15c	945	9/27/2016◆		=	490	286
MCW-15c	945	9/28/16		=	490	286
MCW-15c	945	9/29/16		=	490	272
MCW-15c	945	9/30/16		=	490	258
MCW-17	-	9/1/16	Dry	<	10	10
MCW-17	-	9/2/16	Dry	<	10	10
MCW-17	-	9/3/16	Dry	<	10	10
MCW-17	-	9/4/16	Dry	<	10	10
MCW-17	-	9/5/16	Dry	<	10	10
MCW-17	-	9/6/2016◆	Dry	<	10	10
MCW-17	-	9/7/16	Dry	<	10	10
MCW-17	-	9/8/16	Dry	<	10	10
MCW-17	-	9/9/16	Dry	<	10	10
MCW-17	-	9/10/16	Dry	<	10	10
MCW-17	-	9/11/16	Dry	<	10	10
MCW-17	-	9/12/16	Dry	<	10	10
MCW-17	-	9/13/2016◆	Dry	<	10	10
MCW-17	-	9/14/16	Dry	<	10	10
MCW-17	-	9/15/16	Dry	<	10	10
MCW-17	-	9/16/16	Dry	<	10	10
MCW-17	-	9/17/16	Dry	<	10	10
MCW-17	-	9/18/16	Dry	<	10	10
MCW-17	-	9/19/16	Dry	<	10	10
MCW-17	-	9/20/2016◆	Dry	<	10	10
MCW-17	-	9/21/16	Dry	<	10	10
MCW-17	-	9/22/16	Dry	<	10	10
MCW-17	-	9/23/16	Dry	<	10	10
MCW-17	-	9/24/16	Dry	<	10	10
MCW-17	-	9/25/16	Dry	<	10	10
MCW-17	-	9/26/16	Dry	<	10	10
MCW-17	-	9/27/2016◆	Dry	<	10	10
MCW-17	-	9/28/16	Dry	<	10	10
MCW-17	-	9/29/16	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	9/30/16	Dry	<	10	10
MCW-18	-	9/1/16	Dry	<	10	10
MCW-18	-	9/2/16	Dry	<	10	10
MCW-18	-	9/3/16	Dry	<	10	10
MCW-18	-	9/4/16	Dry	<	10	10
MCW-18	-	9/5/16	Dry	<	10	10
MCW-18	-	9/6/2016◆	Dry	<	10	10
MCW-18	-	9/7/16	Dry	<	10	10
MCW-18	-	9/8/16	Dry	<	10	10
MCW-18	-	9/9/16	Dry	<	10	10
MCW-18	-	9/10/16	Dry	<	10	10
MCW-18	-	9/11/16	Dry	<	10	10
MCW-18	-	9/12/16	Dry	<	10	10
MCW-18	-	9/13/2016◆	Dry	<	10	10
MCW-18	-	9/14/16	Dry	<	10	10
MCW-18	-	9/15/16	Dry	<	10	10
MCW-18	-	9/16/16	Dry	<	10	10
MCW-18	-	9/17/16	Dry	<	10	10
MCW-18	-	9/18/16	Dry	<	10	10
MCW-18	-	9/19/16	Dry	<	10	10
MCW-18	-	9/20/2016◆	Dry	<	10	10
MCW-18	-	9/21/16	Dry	<	10	10
MCW-18	-	9/22/16	Dry	<	10	10
MCW-18	-	9/23/16	Dry	<	10	10
MCW-18	-	9/24/16	Dry	<	10	10
MCW-18	-	9/25/16	Dry	<	10	10
MCW-18	-	9/26/16	Dry	<	10	10
MCW-18	-	9/27/2016◆	Dry	<	10	10
MCW-18	-	9/28/16	Dry	<	10	10
MCW-18	-	9/29/16	Dry	<	10	10
MCW-18	-	9/30/16	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
◆Date of sampling

county of ventura

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Peter Sheydayi, Interim Director

November 21, 2016

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

SUBJECT: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of October 2016. Sites were sampled weekly on Tuesdays (October 4, 18 and 25), except for one instance when sites were sampled on Wednesday (October 12) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Peter Sheydayi, Interim Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

				Single Sample (as sampled)	
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	-	10/4/2016♦			Dry
MCW-8b	-	10/12/2016♦			Dry
MCW-8b	-	10/18/2016♦			Dry
MCW-8b	-	10/25/2016♦			Dry
MCW-9	-	10/4/2016♦			Dry
MCW-9	-	10/12/2016♦			Dry
MCW-9	-	10/18/2016♦			Dry
MCW-9	-	10/25/2016♦			Dry
MCW-12	-	10/4/2016♦			Dry
MCW-12	-	10/12/2016♦			Dry
MCW-12	-	10/18/2016♦			Dry
MCW-12	-	10/25/2016♦			Dry
MCW-14b	1035	10/4/2016♦		=	1700
MCW-14b	1040	10/12/2016♦		=	230
MCW-14b	1040	10/18/2016♦		=	3000
MCW-14b	950	10/25/2016♦		=	260
MCW-15c	950	10/4/2016♦		=	110
MCW-15c	1000	10/12/2016♦		=	230
MCW-15c	945	10/18/2016♦		=	3000
MCW-15c	900	10/25/2016♦		=	1300
MCW-17	-	10/4/2016♦			Dry
MCW-17	-	10/12/2016♦			Dry
MCW-17	-	10/18/2016♦			Dry
MCW-17	-	10/25/2016♦			Dry
MCW-18	-	10/4/2016♦			Dry
MCW-18	-	10/12/2016♦			Dry
MCW-18	-	10/18/2016♦			Dry
MCW-18	-	10/25/2016♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	10/1/16	Dry	<	10	10
MCW-8b	-	10/2/16	Dry	<	10	10
MCW-8b	-	10/3/16	Dry	<	10	10
MCW-8b	-	10/4/2016♦	Dry	<	10	10
MCW-8b	-	10/5/16	Dry	<	10	10
MCW-8b	-	10/6/16	Dry	<	10	10
MCW-8b	-	10/7/16	Dry	<	10	10
MCW-8b	-	10/8/16	Dry	<	10	10
MCW-8b	-	10/9/16	Dry	<	10	10
MCW-8b	-	10/10/16	Dry	<	10	10
MCW-8b	-	10/11/16	Dry	<	10	10
MCW-8b	-	10/12/2016♦	Dry	<	10	10
MCW-8b	-	10/13/16	Dry	<	10	10
MCW-8b	-	10/14/16	Dry	<	10	10
MCW-8b	-	10/15/16	Dry	<	10	10
MCW-8b	-	10/16/16	Dry	<	10	10
MCW-8b	-	10/17/16	Dry	<	10	10
MCW-8b	-	10/18/2016♦	Dry	<	10	10
MCW-8b	-	10/19/16	Dry	<	10	10
MCW-8b	-	10/20/16	Dry	<	10	10
MCW-8b	-	10/21/16	Dry	<	10	10
MCW-8b	-	10/22/16	Dry	<	10	10
MCW-8b	-	10/23/16	Dry	<	10	10
MCW-8b	-	10/24/16	Dry	<	10	10
MCW-8b	-	10/25/2016♦	Dry	<	10	10
MCW-8b	-	10/26/16	Dry	<	10	10
MCW-8b	-	10/27/16	Dry	<	10	10
MCW-8b	-	10/28/16	Dry	<	10	10
MCW-8b	-	10/29/16	Dry	<	10	10
MCW-8b	-	10/30/16	Dry	<	10	10
MCW-8b	-	10/31/16	Dry	<	10	10
MCW-9	-	10/1/16	Dry	<	10	10
MCW-9	-	10/2/16	Dry	<	10	10
MCW-9	-	10/3/16	Dry	<	10	10
MCW-9	-	10/4/2016♦	Dry	<	10	10
MCW-9	-	10/5/16	Dry	<	10	10
MCW-9	-	10/6/16	Dry	<	10	10
MCW-9	-	10/7/16	Dry	<	10	10
MCW-9	-	10/8/16	Dry	<	10	10
MCW-9	-	10/9/16	Dry	<	10	10
MCW-9	-	10/10/16	Dry	<	10	10
MCW-9	-	10/11/16	Dry	<	10	10
MCW-9	-	10/12/2016♦	Dry	<	10	10
MCW-9	-	10/13/16	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	10/14/16	Dry	<	10	10
MCW-9	-	10/15/16	Dry	<	10	10
MCW-9	-	10/16/16	Dry	<	10	10
MCW-9	-	10/17/16	Dry	<	10	10
MCW-9	-	10/18/2016♦	Dry	<	10	10
MCW-9	-	10/19/16	Dry	<	10	10
MCW-9	-	10/20/16	Dry	<	10	10
MCW-9	-	10/21/16	Dry	<	10	10
MCW-9	-	10/22/16	Dry	<	10	10
MCW-9	-	10/23/16	Dry	<	10	10
MCW-9	-	10/24/16	Dry	<	10	10
MCW-9	-	10/25/2016♦	Dry	<	10	10
MCW-9	-	10/26/16	Dry	<	10	10
MCW-9	-	10/27/16	Dry	<	10	10
MCW-9	-	10/28/16	Dry	<	10	10
MCW-9	-	10/29/16	Dry	<	10	10
MCW-9	-	10/30/16	Dry	<	10	21
MCW-9	-	10/31/16	Dry	<	10	21
MCW-12	-	10/1/16	Dry	<	10	21
MCW-12	-	10/2/16	Dry	<	10	21
MCW-12	-	10/3/16	Dry	<	10	21
MCW-12	-	10/4/2016♦	Dry	<	10	21
MCW-12	-	10/5/16	Dry	<	10	21
MCW-12	-	10/6/16	Dry	<	10	21
MCW-12	-	10/7/16	Dry	<	10	21
MCW-12	-	10/8/16	Dry	<	10	21
MCW-12	-	10/9/16	Dry	<	10	21
MCW-12	-	10/10/16	Dry	<	10	21
MCW-12	-	10/11/16	Dry	<	10	21
MCW-12	-	10/12/2016♦	Dry	<	10	21
MCW-12	-	10/13/16	Dry	<	10	21
MCW-12	-	10/14/16	Dry	<	10	21
MCW-12	-	10/15/16	Dry	<	10	21
MCW-12	-	10/16/16	Dry	<	10	21
MCW-12	-	10/17/16	Dry	<	10	21
MCW-12	-	10/18/2016♦	Dry	<	10	21
MCW-12	-	10/19/16	Dry	<	10	21
MCW-12	-	10/20/16	Dry	<	10	19
MCW-12	-	10/21/16	Dry	<	10	18
MCW-12	-	10/22/16	Dry	<	10	16
MCW-12	-	10/23/16	Dry	<	10	15
MCW-12	-	10/24/16	Dry	<	10	13
MCW-12	-	10/25/2016♦	Dry	<	10	12
MCW-12	-	10/26/16	Dry	<	10	11

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	-	10/27/16	Dry	<	10	10
MCW-12	-	10/28/16	Dry	<	10	10
MCW-12	-	10/29/16	Dry	<	10	10
MCW-12	-	10/30/16	Dry	<	10	10
MCW-12	-	10/31/16	Dry	<	10	10
MCW-14b	1020	10/1/16		=	36	54
MCW-14b	1020	10/2/16		=	36	52
MCW-14b	1020	10/3/16		=	36	50
MCW-14b	1035	10/4/2016♦		=	1,700	54
MCW-14b	1035	10/5/16		=	1,700	59
MCW-14b	1035	10/6/16		=	1,700	65
MCW-14b	1035	10/7/16		=	1,700	72
MCW-14b	1035	10/8/16		=	1,700	80
MCW-14b	1035	10/9/16		=	1,700	89
MCW-14b	1035	10/10/16		=	1,700	98
MCW-14b	1035	10/11/16		=	1,700	109
MCW-14b	1040	10/12/2016♦		=	230	112
MCW-14b	1040	10/13/16		=	230	122
MCW-14b	1040	10/14/16		=	230	132
MCW-14b	1040	10/15/16		=	230	144
MCW-14b	1040	10/16/16		=	230	156
MCW-14b	1040	10/17/16		=	230	169
MCW-14b	1040	10/18/2016♦		=	3,000	200
MCW-14b	1040	10/19/16		=	3,000	236
MCW-14b	1040	10/20/16		=	3,000	266
MCW-14b	1040	10/21/16		=	3,000	300
MCW-14b	1040	10/22/16		=	3,000	339
MCW-14b	1040	10/23/16		=	3,000	383
MCW-14b	1040	10/24/16		=	3,000	432
MCW-14b	950	10/25/2016♦		=	260	449
MCW-14b	950	10/26/16		=	260	467
MCW-14b	950	10/27/16		=	260	499
MCW-14b	950	10/28/16		=	260	533
MCW-14b	950	10/29/16		=	260	569
MCW-14b	950	10/30/16		=	260	608
MCW-14b	950	10/31/16		=	260	649
MCW-15c	945	10/1/16		=	490	244
MCW-15c	945	10/2/16		=	490	232
MCW-15c	945	10/3/16		=	490	220
MCW-15c	950	10/4/2016♦		=	110	198
MCW-15c	950	10/5/16		=	110	179
MCW-15c	950	10/6/16		=	110	160
MCW-15c	950	10/7/16		=	110	143
MCW-15c	950	10/8/16		=	110	129
MCW-15c	950	10/9/16		=	110	115

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	950	10/10/16		=	110	103
MCW-15c	950	10/11/16		=	110	92
MCW-15c	1000	10/12/2016◆		=	230	85
MCW-15c	1000	10/13/16		=	230	92
MCW-15c	1000	10/14/16		=	230	100
MCW-15c	1000	10/15/16		=	230	108
MCW-15c	1000	10/16/16		=	230	117
MCW-15c	1000	10/17/16		=	230	127
MCW-15c	945	10/18/2016◆		=	3,000	150
MCW-15c	945	10/19/16		=	3,000	178
MCW-15c	945	10/20/16		=	3,000	205
MCW-15c	945	10/21/16		=	3,000	237
MCW-15c	945	10/22/16		=	3,000	274
MCW-15c	945	10/23/16		=	3,000	316
MCW-15c	945	10/24/16		=	3,000	365
MCW-15c	900	10/25/2016◆		=	1,300	410
MCW-15c	900	10/26/16		=	1,300	461
MCW-15c	900	10/27/16		=	1,300	476
MCW-15c	900	10/28/16		=	1,300	492
MCW-15c	900	10/29/16		=	1,300	508
MCW-15c	900	10/30/16		=	1,300	525
MCW-15c	900	10/31/16		=	1,300	542
MCW-17	-	10/1/16	Dry	<	10	10
MCW-17	-	10/2/16	Dry	<	10	10
MCW-17	-	10/3/16	Dry	<	10	10
MCW-17	-	10/4/2016◆	Dry	<	10	10
MCW-17	-	10/5/16	Dry	<	10	10
MCW-17	-	10/6/16	Dry	<	10	10
MCW-17	-	10/7/16	Dry	<	10	10
MCW-17	-	10/8/16	Dry	<	10	10
MCW-17	-	10/9/16	Dry	<	10	10
MCW-17	-	10/10/16	Dry	<	10	10
MCW-17	-	10/11/16	Dry	<	10	10
MCW-17	-	10/12/2016◆	Dry	<	10	10
MCW-17	-	10/13/16	Dry	<	10	10
MCW-17	-	10/14/16	Dry	<	10	10
MCW-17	-	10/15/16	Dry	<	10	10
MCW-17	-	10/16/16	Dry	<	10	10
MCW-17	-	10/17/16	Dry	<	10	10
MCW-17	-	10/18/2016◆	Dry	<	10	10
MCW-17	-	10/19/16	Dry	<	10	10
MCW-17	-	10/20/16	Dry	<	10	10
MCW-17	-	10/21/16	Dry	<	10	10
MCW-17	-	10/22/16	Dry	<	10	10
MCW-17	-	10/23/16	Dry	<	10	10
MCW-17	-	10/24/16	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	10/25/2016♦	Dry	<	10	10
MCW-17	-	10/26/16	Dry	<	10	10
MCW-17	-	10/27/16	Dry	<	10	10
MCW-17	-	10/28/16	Dry	<	10	10
MCW-17	-	10/29/16	Dry	<	10	10
MCW-17	-	10/30/16	Dry	<	10	10
MCW-17	-	10/31/16	Dry	<	10	10
MCW-18	-	10/1/16	Dry	<	10	10
MCW-18	-	10/2/16	Dry	<	10	10
MCW-18	-	10/3/16	Dry	<	10	10
MCW-18	-	10/4/2016♦	Dry	<	10	10
MCW-18	-	10/5/16	Dry	<	10	10
MCW-18	-	10/6/16	Dry	<	10	10
MCW-18	-	10/7/16	Dry	<	10	10
MCW-18	-	10/8/16	Dry	<	10	10
MCW-18	-	10/9/16	Dry	<	10	10
MCW-18	-	10/10/16	Dry	<	10	10
MCW-18	-	10/11/16	Dry	<	10	10
MCW-18	-	10/12/2016♦	Dry	<	10	10
MCW-18	-	10/13/16	Dry	<	10	10
MCW-18	-	10/14/16	Dry	<	10	10
MCW-18	-	10/15/16	Dry	<	10	10
MCW-18	-	10/16/16	Dry	<	10	10
MCW-18	-	10/17/16	Dry	<	10	10
MCW-18	-	10/18/2016♦	Dry	<	10	10
MCW-18	-	10/19/16	Dry	<	10	10
MCW-18	-	10/20/16	Dry	<	10	10
MCW-18	-	10/21/16	Dry	<	10	10
MCW-18	-	10/22/16	Dry	<	10	10
MCW-18	-	10/23/16	Dry	<	10	10
MCW-18	-	10/24/16	Dry	<	10	10
MCW-18	-	10/25/2016♦	Dry	<	10	10
MCW-18	-	10/26/16	Dry	<	10	10
MCW-18	-	10/27/16	Dry	<	10	10
MCW-18	-	10/28/16	Dry	<	10	10
MCW-18	-	10/29/16	Dry	<	10	10
MCW-18	-	10/30/16	Dry	<	10	10
MCW-18	-	10/31/16	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦Date of sampling

county of ventura

PUBLIC WORKS AGENCY
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Watershed Protection District
Peter Sheydayi, Interim Director

December 19, 2016

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

SUBJECT: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of November 2016. Sites were sampled weekly on Tuesdays (November 1, 8, 15, 22 and 29). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

					Single Sample (as sampled)
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	-	11/1/2016♦			Dry
MCW-8b	-	11/8/2016♦			Dry
MCW-8b	-	11/15/2016♦			Dry
MCW-8b	-	11/22/2016♦			Dry
MCW-8b	-	11/29/2016♦			Dry
MCW-9	-	11/1/2016♦			Dry
MCW-9	-	11/8/2016♦			Dry
MCW-9	-	11/15/2016♦			Dry
MCW-9	-	11/22/2016♦			Dry
MCW-9	-	11/29/2016♦			Dry
MCW-12	-	11/1/2016♦			Dry
MCW-12	-	11/8/2016♦			Dry
MCW-12	-	11/15/2016♦			Dry
MCW-12	-	11/22/2016♦			Dry
MCW-12	-	11/29/2016♦			Dry
MCW-14b	1000	11/1/2016♦	Rain	=	1,700
MCW-14b	1000	11/8/2016♦		=	16,000
MCW-14b	1015	11/15/2016♦		=	130
MCW-14b	920	11/22/2016♦	Rain	=	5,000
MCW-14b	950	11/29/2016♦	Rain	=	20
MCW-15c	1055	11/1/2016♦	Rain	=	1,300
MCW-15c	920	11/8/2016♦		=	16,000
MCW-15c	940	11/15/2016♦		=	170
MCW-15c	840	11/22/2016♦	Rain	=	300
MCW-15c	910	11/29/2016♦	Rain	=	80
MCW-17	-	11/1/2016♦			Dry
MCW-17	-	11/8/2016♦			Dry
MCW-17	-	11/15/2016♦			Dry
MCW-17	-	11/22/2016♦			Dry
MCW-17	-	11/29/2016♦			Dry
MCW-18	-	11/1/2016♦			Dry
MCW-18	-	11/8/2016♦			Dry
MCW-18	-	11/15/2016♦			Dry
MCW-18	-	11/22/2016♦			Dry
MCW-18	-	11/29/2016♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦Date of sampling

Table 2. Computation of daily geomean

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	11/1/2016♦	Dry	<	10	10
MCW-8b	-	11/2/2016	Dry	<	10	10
MCW-8b	-	11/3/2016	Dry	<	10	10
MCW-8b	-	11/4/2016	Dry	<	10	10
MCW-8b	-	11/5/2016	Dry	<	10	10
MCW-8b	-	11/6/2016	Dry	<	10	10
MCW-8b	-	11/7/2016	Dry	<	10	10
MCW-8b	-	11/8/2016♦	Dry	<	10	10
MCW-8b	-	11/9/2016	Dry	<	10	10
MCW-8b	-	11/10/2016	Dry	<	10	10
MCW-8b	-	11/11/2016	Dry	<	10	10
MCW-8b	-	11/12/2016	Dry	<	10	10
MCW-8b	-	11/13/2016	Dry	<	10	10
MCW-8b	-	11/14/2016	Dry	<	10	10
MCW-8b	-	11/15/2016♦	Dry	<	10	10
MCW-8b	-	11/16/2016	Dry	<	10	10
MCW-8b	-	11/17/2016	Dry	<	10	10
MCW-8b	-	11/18/2016	Dry	<	10	10
MCW-8b	-	11/19/2016	Dry	<	10	10
MCW-8b	-	11/20/2016	Dry	<	10	10
MCW-8b	-	11/21/2016	Dry	<	10	10
MCW-8b	-	11/22/2016♦	Dry	<	10	10
MCW-8b	-	11/23/2016	Dry	<	10	10
MCW-8b	-	11/24/2016	Dry	<	10	10
MCW-8b	-	11/25/2016	Dry	<	10	10
MCW-8b	-	11/26/2016	Dry	<	10	10
MCW-8b	-	11/27/2016	Dry	<	10	10
MCW-8b	-	11/28/2016	Dry	<	10	10
MCW-8b	-	11/29/2016♦	Dry	<	10	10
MCW-8b	-	11/30/2016	Dry	<	10	10
MCW-9	-	11/1/2016♦	Dry	<	10	10
MCW-9	-	11/2/2016	Dry	<	10	10
MCW-9	-	11/3/2016	Dry	<	10	10
MCW-9	-	11/4/2016	Dry	<	10	10
MCW-9	-	11/5/2016	Dry	<	10	10
MCW-9	-	11/6/2016	Dry	<	10	10
MCW-9	-	11/7/2016	Dry	<	10	10
MCW-9	-	11/8/2016♦	Dry	<	10	10
MCW-9	-	11/9/2016	Dry	<	10	10
MCW-9	-	11/10/2016	Dry	<	10	10
MCW-9	-	11/11/2016	Dry	<	10	10
MCW-9	-	11/12/2016	Dry	<	10	10
MCW-9	-	11/13/2016	Dry	<	10	10
MCW-9	-	11/14/2016	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	11/15/2016♦	Dry	<	10	10
MCW-9	-	11/16/2016	Dry	<	10	10
MCW-9	-	11/17/2016	Dry	<	10	10
MCW-9	-	11/18/2016	Dry	<	10	10
MCW-9	-	11/19/2016	Dry	<	10	10
MCW-9	-	11/20/2016	Dry	<	10	10
MCW-9	-	11/21/2016	Dry	<	10	10
MCW-9	-	11/22/2016♦	Dry	<	10	10
MCW-9	-	11/23/2016	Dry	<	10	10
MCW-9	-	11/24/2016	Dry	<	10	10
MCW-9	-	11/25/2016	Dry	<	10	10
MCW-9	-	11/26/2016	Dry	<	10	10
MCW-9	-	11/27/2016	Dry	<	10	10
MCW-9	-	11/28/2016	Dry	<	10	10
MCW-9	-	11/29/2016♦	Dry	<	10	10
MCW-9	-	11/30/2016	Dry	<	10	10
MCW-12	-	11/1/2016♦	Dry	<	10	10
MCW-12	-	11/2/2016	Dry	<	10	10
MCW-12	-	11/3/2016	Dry	<	10	10
MCW-12	-	11/4/2016	Dry	<	10	10
MCW-12	-	11/5/2016	Dry	<	10	10
MCW-12	-	11/6/2016	Dry	<	10	10
MCW-12	-	11/7/2016	Dry	<	10	10
MCW-12	-	11/8/2016♦	Dry	<	10	10
MCW-12	-	11/9/2016	Dry	<	10	10
MCW-12	-	11/10/2016	Dry	<	10	10
MCW-12	-	11/11/2016	Dry	<	10	10
MCW-12	-	11/12/2016	Dry	<	10	10
MCW-12	-	11/13/2016	Dry	<	10	10
MCW-12	-	11/14/2016	Dry	<	10	10
MCW-12	-	11/15/2016♦	Dry	<	10	10
MCW-12	-	11/16/2016	Dry	<	10	10
MCW-12	-	11/17/2016	Dry	<	10	10
MCW-12	-	11/18/2016	Dry	<	10	10
MCW-12	-	11/19/2016	Dry	<	10	10
MCW-12	-	11/20/2016	Dry	<	10	10
MCW-12	-	11/21/2016	Dry	<	10	10
MCW-12	-	11/22/2016♦	Dry	<	10	10
MCW-12	-	11/23/2016	Dry	<	10	10
MCW-12	-	11/24/2016	Dry	<	10	10
MCW-12	-	11/25/2016	Dry	<	10	10
MCW-12	-	11/26/2016	Dry	<	10	10
MCW-12	-	11/27/2016	Dry	<	10	10
MCW-12	-	11/28/2016	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	-	11/29/2016♦	Dry	<	10	10
MCW-12	-	11/30/2016	Dry	<	10	10
MCW-14b	1000	11/1/2016♦	Rain		**Rain**	**Rain**
MCW-14b	1000	11/2/2016	Rain		**Rain**	**Rain**
MCW-14b	1000	11/3/2016	Rain		**Rain**	**Rain**
MCW-14b	1000	11/4/2016	Rain		**Rain**	**Rain**
MCW-14b	1000	11/5/2016	Rain		**Rain**	**Rain**
MCW-14b	1000	11/6/2016	Rain		**Rain**	**Rain**
MCW-14b	1000	11/7/2016	Rain		**Rain**	**Rain**
MCW-14b	1000	11/8/2016♦		=	16,000	795
MCW-14b	1000	11/9/2016		=	16,000	975
MCW-14b	1000	11/10/2016		=	16,000	1,050
MCW-14b	1000	11/11/2016		=	16,000	1,132
MCW-14b	1000	11/12/2016		=	16,000	1,220
MCW-14b	1000	11/13/2016		=	16,000	1,314
MCW-14b	1000	11/14/2016		=	16,000	1,416
MCW-14b	1015	11/15/2016♦		=	130	1,300
MCW-14b	1015	11/16/2016		=	130	1,193
MCW-14b	1015	11/17/2016		=	130	1,095
MCW-14b	1015	11/18/2016		=	130	1,075
MCW-14b	1015	11/19/2016		=	130	1,054
MCW-14b	1015	11/20/2016		=	130	1,035
MCW-14b	1015	11/21/2016		=	130	1,015
MCW-14b	920	11/22/2016♦	Rain		**Rain**	**Rain**
MCW-14b	920	11/23/2016	Rain		**Rain**	**Rain**
MCW-14b	920	11/24/2016	Rain		**Rain**	**Rain**
MCW-14b	920	11/25/2016	Rain		**Rain**	**Rain**
MCW-14b	920	11/26/2016	Rain		**Rain**	**Rain**
MCW-14b	920	11/27/2016	Rain		**Rain**	**Rain**
MCW-14b	920	11/28/2016	Rain		**Rain**	**Rain**
MCW-14b	950	11/29/2016♦	Rain		**Rain**	**Rain**
MCW-14b	950	11/30/2016	Rain		**Rain**	**Rain**
MCW-15c	1055	11/1/2016♦	Rain		**Rain**	**Rain**
MCW-15c	1055	11/2/2016	Rain		**Rain**	**Rain**
MCW-15c	1055	11/3/2016	Rain		**Rain**	**Rain**
MCW-15c	1055	11/4/2016	Rain		**Rain**	**Rain**
MCW-15c	1055	11/5/2016	Rain		**Rain**	**Rain**
MCW-15c	1055	11/6/2016	Rain		**Rain**	**Rain**
MCW-15c	1055	11/7/2016	Rain		**Rain**	**Rain**
MCW-15c	920	11/8/2016♦		=	16,000	609
MCW-15c	920	11/9/2016		=	16,000	684
MCW-15c	920	11/10/2016		=	16,000	807
MCW-15c	920	11/11/2016		=	16,000	953
MCW-15c	920	11/12/2016		=	16,000	1,125
MCW-15c	920	11/13/2016		=	16,000	1,328

				Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	920	11/14/2016		=	16,000	1,568
MCW-15c	940	11/15/2016♦		=	170	1,591
MCW-15c	940	11/16/2016		=	170	1,614
MCW-15c	940	11/17/2016		=	170	1,638
MCW-15c	940	11/18/2016		=	170	1,621
MCW-15c	940	11/19/2016		=	170	1,605
MCW-15c	940	11/20/2016		=	170	1,589
MCW-15c	940	11/21/2016		=	170	1,573
MCW-15c	840	11/22/2016♦	Rain		**Rain**	**Rain**
MCW-15c	840	11/23/2016	Rain		**Rain**	**Rain**
MCW-15c	840	11/24/2016	Rain		**Rain**	**Rain**
MCW-15c	840	11/25/2016	Rain		**Rain**	**Rain**
MCW-15c	840	11/26/2016	Rain		**Rain**	**Rain**
MCW-15c	840	11/27/2016	Rain		**Rain**	**Rain**
MCW-15c	840	11/28/2016	Rain		**Rain**	**Rain**
MCW-15c	910	11/29/2016♦	Rain		**Rain**	**Rain**
MCW-15c	910	11/30/2016	Rain		**Rain**	**Rain**
MCW-17	-	11/1/2016♦	Dry	<	10	10
MCW-17	-	11/2/2016	Dry	<	10	10
MCW-17	-	11/3/2016	Dry	<	10	10
MCW-17	-	11/4/2016	Dry	<	10	10
MCW-17	-	11/5/2016	Dry	<	10	10
MCW-17	-	11/6/2016	Dry	<	10	10
MCW-17	-	11/7/2016	Dry	<	10	10
MCW-17	-	11/8/2016♦	Dry	<	10	10
MCW-17	-	11/9/2016	Dry	<	10	10
MCW-17	-	11/10/2016	Dry	<	10	10
MCW-17	-	11/11/2016	Dry	<	10	10
MCW-17	-	11/12/2016	Dry	<	10	10
MCW-17	-	11/13/2016	Dry	<	10	10
MCW-17	-	11/14/2016	Dry	<	10	10
MCW-17	-	11/15/2016♦	Dry	<	10	10
MCW-17	-	11/16/2016	Dry	<	10	10
MCW-17	-	11/17/2016	Dry	<	10	10
MCW-17	-	11/18/2016	Dry	<	10	10
MCW-17	-	11/19/2016	Dry	<	10	10
MCW-17	-	11/20/2016	Dry	<	10	10
MCW-17	-	11/21/2016	Dry	<	10	10
MCW-17	-	11/22/2016♦	Dry	<	10	10
MCW-17	-	11/23/2016	Dry	<	10	10
MCW-17	-	11/24/2016	Dry	<	10	10
MCW-17	-	11/25/2016	Dry	<	10	10
MCW-17	-	11/26/2016	Dry	<	10	10
MCW-17	-	11/27/2016	Dry	<	10	10
MCW-17	-	11/28/2016	Dry	<	10	10
MCW-17	-	11/29/2016♦	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	11/30/2016	Dry	<	10	10
MCW-18	-	11/1/2016♦	Dry	<	10	10
MCW-18	-	11/2/2016	Dry	<	10	10
MCW-18	-	11/3/2016	Dry	<	10	10
MCW-18	-	11/4/2016	Dry	<	10	10
MCW-18	-	11/5/2016	Dry	<	10	10
MCW-18	-	11/6/2016	Dry	<	10	10
MCW-18	-	11/7/2016	Dry	<	10	10
MCW-18	-	11/8/2016♦	Dry	<	10	10
MCW-18	-	11/9/2016	Dry	<	10	10
MCW-18	-	11/10/2016	Dry	<	10	10
MCW-18	-	11/11/2016	Dry	<	10	10
MCW-18	-	11/12/2016	Dry	<	10	10
MCW-18	-	11/13/2016	Dry	<	10	10
MCW-18	-	11/14/2016	Dry	<	10	10
MCW-18	-	11/15/2016♦	Dry	<	10	10
MCW-18	-	11/16/2016	Dry	<	10	10
MCW-18	-	11/17/2016	Dry	<	10	10
MCW-18	-	11/18/2016	Dry	<	10	10
MCW-18	-	11/19/2016	Dry	<	10	10
MCW-18	-	11/20/2016	Dry	<	10	10
MCW-18	-	11/21/2016	Dry	<	10	10
MCW-18	-	11/22/2016♦	Dry	<	10	10
MCW-18	-	11/23/2016	Dry	<	10	10
MCW-18	-	11/24/2016	Dry	<	10	10
MCW-18	-	11/25/2016	Dry	<	10	10
MCW-18	-	11/26/2016	Dry	<	10	10
MCW-18	-	11/27/2016	Dry	<	10	10
MCW-18	-	11/28/2016	Dry	<	10	10
MCW-18	-	11/29/2016♦	Dry	<	10	10
MCW-18	-	11/30/2016	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
♦Date of sampling

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April 21, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of March 2017. Sites were sampled weekly on Tuesdays (March 14, 21 and 28), except for one instance when sites were sampled Wednesday (March 8) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

				Single Sample (as sampled)	
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	1140	3/8/2017♦		<	20
MCW-8b	1050	3/14/2017♦		<	20
MCW-8b	1235	3/21/2017♦		=	40
MCW-8b	1155	3/28/2017♦		<	20
MCW-9	-	3/8/2017♦			Dry
MCW-9	-	3/14/2017♦			Dry
MCW-9	-	3/21/2017♦			Dry
MCW-9	-	3/28/2017♦			Dry
MCW-12	1045	3/8/2017♦		<	20
MCW-12	1000	3/14/2017♦		<	20
MCW-12	1130	3/21/2017♦		=	40
MCW-12	1100	3/28/2017♦		=	110
MCW-14b	1000	3/8/2017♦		<	20
MCW-14b	920	3/14/2017♦		<	20
MCW-14b	1045	3/21/2017♦		=	500
MCW-14b	1035	3/28/2017♦		=	170
MCW-15c	935	3/8/2017♦		<	20
MCW-15c	840	3/14/2017♦		=	20
MCW-15c	1000	3/21/2017♦		=	300
MCW-15c	955	3/28/2017♦		=	210
MCW-17	900	3/8/2017♦		<	20
MCW-17	800	3/14/2017♦		=	20
MCW-17	915	3/21/2017♦		=	300
MCW-17	915	3/28/2017♦		=	70
MCW-18	-	3/8/2017♦			Dry
MCW-18	-	3/14/2017♦			Dry
MCW-18	-	3/21/2017♦			Dry
MCW-18	-	3/28/2017♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.
♦Date of sampling

Table 2. Computation of daily geomean

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs) E. coli (235 MPN)	Geomean E. coli (126 MPN)
MCW-8b	1130	3/1/2017			**Rain**	**Rain**
MCW-8b	1130	3/2/2017			**Rain**	**Rain**
MCW-8b	1130	3/3/2017			**Rain**	**Rain**
MCW-8b	1130	3/4/2017			**Rain**	**Rain**
MCW-8b	1130	3/5/2017			**Rain**	**Rain**
MCW-8b	1130	3/6/2017			**Rain**	**Rain**
MCW-8b	1130	3/7/2017			**Rain**	**Rain**
MCW-8b	1140	3/8/2017♦		<	10	25
MCW-8b	1140	3/9/2017		<	10	25
MCW-8b	1140	3/10/2017		<	10	25
MCW-8b	1140	3/11/2017		<	10	25
MCW-8b	1140	3/12/2017		<	10	25
MCW-8b	1140	3/13/2017		<	10	25
MCW-8b	1050	3/14/2017♦		<	10	25
MCW-8b	1050	3/15/2017		<	10	25
MCW-8b	1050	3/16/2017		<	10	25
MCW-8b	1050	3/17/2017		<	10	25
MCW-8b	1050	3/18/2017		<	10	25
MCW-8b	1050	3/19/2017		<	10	25
MCW-8b	1050	3/20/2017		<	10	25
MCW-8b	1235	3/21/2017♦		=	40	26
MCW-8b	1235	3/22/2017		=	40	27
MCW-8b	1235	3/23/2017		=	40	28
MCW-8b	1235	3/24/2017		=	40	29
MCW-8b	1235	3/25/2017		=	40	28
MCW-8b	1235	3/26/2017		=	40	28
MCW-8b	1235	3/27/2017		=	40	27
MCW-8b	1155	3/28/2017♦		<	10	26
MCW-8b	1155	3/29/2017		<	10	24
MCW-8b	1155	3/30/2017		<	10	23
MCW-8b	1155	3/31/2017		<	10	21
MCW-9	-	3/1/2017	Dry	<	10	10
MCW-9	-	3/2/2017	Dry	<	10	10
MCW-9	-	3/3/2017	Dry	<	10	10
MCW-9	-	3/4/2017	Dry	<	10	10
MCW-9	-	3/5/2017	Dry	<	10	10
MCW-9	-	3/6/2017	Dry	<	10	10
MCW-9	-	3/7/2017	Dry	<	10	10
MCW-9	-	3/8/2017♦	Dry	<	10	10
MCW-9	-	3/9/2017	Dry	<	10	10
MCW-9	-	3/10/2017	Dry	<	10	10
MCW-9	-	3/11/2017	Dry	<	10	10
MCW-9	-	3/12/2017	Dry	<	10	10
MCW-9	-	3/13/2017	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	3/14/2017♦	Dry	<	10	10
MCW-9	-	3/15/2017	Dry	<	10	10
MCW-9	-	3/16/2017	Dry	<	10	10
MCW-9	-	3/17/2017	Dry	<	10	10
MCW-9	-	3/18/2017	Dry	<	10	10
MCW-9	-	3/19/2017	Dry	<	10	10
MCW-9	-	3/20/2017	Dry	<	10	10
MCW-9	-	3/21/2017♦	Dry	<	10	10
MCW-9	-	3/22/2017	Dry	<	10	10
MCW-9	-	3/23/2017	Dry	<	10	10
MCW-9	-	3/24/2017	Dry	<	10	10
MCW-9	-	3/25/2017	Dry	<	10	10
MCW-9	-	3/26/2017	Dry	<	10	10
MCW-9	-	3/27/2017	Dry	<	10	10
MCW-9	-	3/28/2017♦	Dry	<	10	10
MCW-9	-	3/29/2017	Dry	<	10	10
MCW-9	-	3/30/2017	Dry	<	10	10
MCW-9	-	3/31/2017	Dry	<	10	10
MCW-12	1000	3/1/2017			**Rain**	**Rain**
MCW-12	1000	3/2/2017			**Rain**	**Rain**
MCW-12	1000	3/3/2017			**Rain**	**Rain**
MCW-12	1000	3/4/2017			**Rain**	**Rain**
MCW-12	1000	3/5/2017			**Rain**	**Rain**
MCW-12	1000	3/6/2017			**Rain**	**Rain**
MCW-12	1000	3/7/2017			**Rain**	**Rain**
MCW-12	1045	3/8/2017♦		<	10	72
MCW-12	1045	3/9/2017		<	10	64
MCW-12	1045	3/10/2017		<	10	61
MCW-12	1045	3/11/2017		<	10	59
MCW-12	1045	3/12/2017		<	10	56
MCW-12	1045	3/13/2017		<	10	53
MCW-12	1000	3/14/2017♦		<	10	51
MCW-12	1000	3/15/2017		<	10	49
MCW-12	1000	3/16/2017		<	10	47
MCW-12	1000	3/17/2017		<	10	44
MCW-12	1000	3/18/2017		<	10	41
MCW-12	1000	3/19/2017		<	10	38
MCW-12	1000	3/20/2017		<	10	36
MCW-12	1130	3/21/2017♦		=	40	35
MCW-12	1130	3/22/2017		=	40	35
MCW-12	1130	3/23/2017		=	40	34
MCW-12	1130	3/24/2017		=	40	34
MCW-12	1130	3/25/2017		=	40	33
MCW-12	1130	3/26/2017		=	40	32

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1130	3/27/2017		=	40	30
MCW-12	1100	3/28/2017♦		=	110	30
MCW-12	1100	3/29/2017		=	110	30
MCW-12	1100	3/30/2017		=	110	30
MCW-12	1100	3/31/2017		=	110	30
MCW-14b	915	3/1/2017			**Rain**	**Rain**
MCW-14b	915	3/2/2017			**Rain**	**Rain**
MCW-14b	915	3/3/2017			**Rain**	**Rain**
MCW-14b	915	3/4/2017			**Rain**	**Rain**
MCW-14b	915	3/5/2017			**Rain**	**Rain**
MCW-14b	915	3/6/2017			**Rain**	**Rain**
MCW-14b	915	3/7/2017			**Rain**	**Rain**
MCW-14b	1000	3/8/2017♦		<	10	33
MCW-14b	1000	3/9/2017		<	10	30
MCW-14b	1000	3/10/2017		<	10	28
MCW-14b	1000	3/11/2017		<	10	26
MCW-14b	1000	3/12/2017		<	10	25
MCW-14b	1000	3/13/2017		<	10	23
MCW-14b	920	3/14/2017♦		<	10	22
MCW-14b	920	3/15/2017		<	10	20
MCW-14b	920	3/16/2017		<	10	19
MCW-14b	920	3/17/2017		<	10	19
MCW-14b	920	3/18/2017		<	10	18
MCW-14b	920	3/19/2017		<	10	18
MCW-14b	920	3/20/2017		<	10	17
MCW-14b	1045	3/21/2017♦		=	500	19
MCW-14b	1045	3/22/2017		=	500	22
MCW-14b	1045	3/23/2017		=	500	24
MCW-14b	1045	3/24/2017		=	500	26
MCW-14b	1045	3/25/2017		=	500	28
MCW-14b	1045	3/26/2017		=	500	30
MCW-14b	1045	3/27/2017		=	500	32
MCW-14b	1035	3/28/2017♦		=	170	32
MCW-14b	1035	3/29/2017		=	170	33
MCW-14b	1035	3/30/2017		=	170	34
MCW-14b	1035	3/31/2017		=	170	35
MCW-15c	835	3/1/2017			**Rain**	**Rain**
MCW-15c	835	3/2/2017			**Rain**	**Rain**
MCW-15c	835	3/3/2017			**Rain**	**Rain**
MCW-15c	835	3/4/2017			**Rain**	**Rain**
MCW-15c	835	3/5/2017			**Rain**	**Rain**
MCW-15c	835	3/6/2017			**Rain**	**Rain**
MCW-15c	835	3/7/2017			**Rain**	**Rain**
MCW-15c	935	3/8/2017♦		<	10	15
MCW-15c	935	3/9/2017		<	10	14

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	935	3/10/2017		<	10	14
MCW-15c	935	3/11/2017		<	10	14
MCW-15c	935	3/12/2017		<	10	14
MCW-15c	935	3/13/2017		<	10	14
MCW-15c	840	3/14/2017♦		=	20	14
MCW-15c	840	3/15/2017		=	20	14
MCW-15c	840	3/16/2017		=	20	15
MCW-15c	840	3/17/2017		=	20	15
MCW-15c	840	3/18/2017		=	20	15
MCW-15c	840	3/19/2017		=	20	15
MCW-15c	840	3/20/2017		=	20	15
MCW-15c	1000	3/21/2017♦		=	300	16
MCW-15c	1000	3/22/2017		=	300	18
MCW-15c	1000	3/23/2017		=	300	19
MCW-15c	1000	3/24/2017		=	300	21
MCW-15c	1000	3/25/2017		=	300	23
MCW-15c	1000	3/26/2017		=	300	25
MCW-15c	1000	3/27/2017		=	300	28
MCW-15c	955	3/28/2017♦		=	210	30
MCW-15c	955	3/29/2017		=	210	32
MCW-15c	955	3/30/2017		=	210	35
MCW-15c	955	3/31/2017		=	210	37
MCW-17	800	3/1/2017			**Rain**	**Rain**
MCW-17	800	3/2/2017			**Rain**	**Rain**
MCW-17	800	3/3/2017			**Rain**	**Rain**
MCW-17	800	3/4/2017			**Rain**	**Rain**
MCW-17	800	3/5/2017			**Rain**	**Rain**
MCW-17	800	3/6/2017			**Rain**	**Rain**
MCW-17	800	3/7/2017			**Rain**	**Rain**
MCW-17	900	3/8/2017♦		<	10	12
MCW-17	900	3/9/2017		<	10	12
MCW-17	900	3/10/2017		<	10	12
MCW-17	900	3/11/2017		<	10	12
MCW-17	900	3/12/2017		<	10	12
MCW-17	900	3/13/2017		<	10	12
MCW-17	800	3/14/2017♦		=	20	12
MCW-17	800	3/15/2017		=	20	12
MCW-17	800	3/16/2017		=	20	13
MCW-17	800	3/17/2017		=	20	13
MCW-17	800	3/18/2017		=	20	13
MCW-17	800	3/19/2017		=	20	14
MCW-17	800	3/20/2017		=	20	14
MCW-17	915	3/21/2017♦		=	300	15
MCW-17	915	3/22/2017		=	300	17
MCW-17	915	3/23/2017		=	300	19
MCW-17	915	3/24/2017		=	300	21

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs) E. coli	Geomean E. coli
					(235 MPN)	(126 MPN)
MCW-17	915	3/25/2017		=	300	24
MCW-17	915	3/26/2017		=	300	26
MCW-17	915	3/27/2017		=	300	29
MCW-17	915	3/28/2017♦		=	70	31
MCW-17	915	3/29/2017		=	70	33
MCW-17	915	3/30/2017		=	70	36
MCW-17	915	3/31/2017		=	70	38
MCW-18	-	3/1/2017	Dry	<	10	10
MCW-18	-	3/2/2017	Dry	<	10	10
MCW-18	-	3/3/2017	Dry	<	10	10
MCW-18	-	3/4/2017	Dry	<	10	10
MCW-18	-	3/5/2017	Dry	<	10	10
MCW-18	-	3/6/2017	Dry	<	10	10
MCW-18	-	3/7/2017	Dry	<	10	10
MCW-18	-	3/8/2017♦	Dry	<	10	10
MCW-18	-	3/9/2017	Dry	<	10	10
MCW-18	-	3/10/2017	Dry	<	10	10
MCW-18	-	3/11/2017	Dry	<	10	10
MCW-18	-	3/12/2017	Dry	<	10	10
MCW-18	-	3/13/2017	Dry	<	10	10
MCW-18	-	3/14/2017♦	Dry	<	10	10
MCW-18	-	3/15/2017	Dry	<	10	10
MCW-18	-	3/16/2017	Dry	<	10	10
MCW-18	-	3/17/2017	Dry	<	10	10
MCW-18	-	3/18/2017	Dry	<	10	10
MCW-18	-	3/19/2017	Dry	<	10	10
MCW-18	-	3/20/2017	Dry	<	10	10
MCW-18	-	3/21/2017♦	Dry	<	10	10
MCW-18	-	3/22/2017	Dry	<	10	10
MCW-18	-	3/23/2017	Dry	<	10	10
MCW-18	-	3/24/2017	Dry	<	10	10
MCW-18	-	3/25/2017	Dry	<	10	10
MCW-18	-	3/26/2017	Dry	<	10	10
MCW-18	-	3/27/2017	Dry	<	10	10
MCW-18	-	3/28/2017♦	Dry	<	10	10
MCW-18	-	3/29/2017	Dry	<	10	10
MCW-18	-	3/30/2017	Dry	<	10	10
MCW-18	-	3/31/2017	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling

county of ventura

PUBLIC WORKS AGENCY
JEFF PRATT
Agency Director

Central Services Department
J. Tabin Cosio, Director

Engineering Services Department
Christopher E. Cooper, Director

Transportation Department
David L. Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

January 23, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of December 2016. Sites were sampled weekly on Tuesdays (December 6, 13, 20 and 27). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
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Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

Location	Time	Date	Rain		Single Sample (as sampled) E. coli (235 MPN)
MCW-8b	-	12/6/2016♦			Dry
MCW-8b	-	12/13/2016♦			Dry
MCW-8b	-	12/20/2016♦			Dry
MCW-8b	-	12/27/2016♦			Dry
MCW-9	-	12/6/2016♦			Dry
MCW-9	-	12/13/2016♦			Dry
MCW-9	-	12/20/2016♦			Dry
MCW-9	-	12/27/2016♦			Dry
MCW-12	-	12/6/2016♦			Dry
MCW-12	-	12/13/2016♦			Dry
MCW-12	-	12/20/2016♦			Dry
MCW-12	1140	12/27/2016♦		=	300
MCW-14b	855	12/6/2016♦		=	170
MCW-14b	1000	12/13/2016♦		=	230
MCW-14b	100	12/20/2016♦		=	40
MCW-14b	1050	12/27/2016♦		=	140
MCW-15c	945	12/6/2016♦		=	80
MCW-15c	920	12/13/2016♦		=	220
MCW-15c	1215	12/20/2016♦		=	40
MCW-15c	1000	12/27/2016♦		=	80
MCW-17	-	12/6/2016♦			Dry
MCW-17	-	12/13/2016♦			Dry
MCW-17	-	12/20/2016♦			Dry
MCW-17	-	12/27/2016♦			Dry
MCW-18	-	12/6/2016♦			Dry
MCW-18	-	12/13/2016♦			Dry
MCW-18	-	12/20/2016♦			Dry
MCW-18	-	12/27/2016♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	12/1/2016	Dry	<	10	10
MCW-8b	-	12/2/2016	Dry	<	10	10
MCW-8b	-	12/3/2016	Dry	<	10	10
MCW-8b	-	12/4/2016	Dry	<	10	10
MCW-8b	-	12/5/2016	Dry	<	10	10
MCW-8b	-	12/6/2016♦	Dry	<	10	10
MCW-8b	-	12/7/2016	Dry	<	10	10
MCW-8b	-	12/8/2016	Dry	<	10	10
MCW-8b	-	12/9/2016	Dry	<	10	10
MCW-8b	-	12/10/2016	Dry	<	10	10
MCW-8b	-	12/11/2016	Dry	<	10	10
MCW-8b	-	12/12/2016	Dry	<	10	10
MCW-8b	-	12/13/2016♦	Dry	<	10	10
MCW-8b	-	12/14/2016	Dry	<	10	10
MCW-8b	-	12/15/2016	Dry	<	10	10
MCW-8b	-	12/16/2016	Dry	<	10	10
MCW-8b	-	12/17/2016	Dry	<	10	10
MCW-8b	-	12/18/2016	Dry	<	10	10
MCW-8b	-	12/19/2016	Dry	<	10	10
MCW-8b	-	12/20/2016♦	Dry	<	10	10
MCW-8b	-	12/21/2016	Dry	<	10	10
MCW-8b	-	12/22/2016	Dry	<	10	10
MCW-8b	-	12/23/2016	Dry	<	10	10
MCW-8b	-	12/24/2016	Dry	<	10	10
MCW-8b	-	12/25/2016	Dry	<	10	10
MCW-8b	-	12/26/2016	Dry	<	10	10
MCW-8b	-	12/27/2016♦	Dry	<	10	10
MCW-8b	-	12/28/2016	Dry	<	10	10
MCW-8b	-	12/29/2016	Dry	<	10	10
MCW-8b	-	12/30/2016	Dry	<	10	10
MCW-8b	-	12/31/2016	Dry	<	10	10
MCW-9	-	12/1/2016	Dry	<	10	10
MCW-9	-	12/2/2016	Dry	<	10	10
MCW-9	-	12/3/2016	Dry	<	10	10
MCW-9	-	12/4/2016	Dry	<	10	10
MCW-9	-	12/5/2016	Dry	<	10	10
MCW-9	-	12/6/2016♦	Dry	<	10	10
MCW-9	-	12/7/2016	Dry	<	10	10
MCW-9	-	12/8/2016	Dry	<	10	10
MCW-9	-	12/9/2016	Dry	<	10	10
MCW-9	-	12/10/2016	Dry	<	10	10
MCW-9	-	12/11/2016	Dry	<	10	10
MCW-9	-	12/12/2016	Dry	<	10	10
MCW-9	-	12/13/2016♦	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	12/14/2016	Dry	<	10	10
MCW-9	-	12/15/2016	Dry	<	10	10
MCW-9	-	12/16/2016	Dry	<	10	10
MCW-9	-	12/17/2016	Dry	<	10	10
MCW-9	-	12/18/2016	Dry	<	10	10
MCW-9	-	12/19/2016	Dry	<	10	10
MCW-9	-	12/20/2016♦	Dry	<	10	10
MCW-9	-	12/21/2016	Dry	<	10	10
MCW-9	-	12/22/2016	Dry	<	10	10
MCW-9	-	12/23/2016	Dry	<	10	10
MCW-9	-	12/24/2016	Dry	<	10	10
MCW-9	-	12/25/2016	Dry	<	10	10
MCW-9	-	12/26/2016	Dry	<	10	10
MCW-9	-	12/27/2016♦	Dry	<	10	10
MCW-9	-	12/28/2016	Dry	<	10	10
MCW-9	-	12/29/2016	Dry	<	10	10
MCW-9	-	12/30/2016	Dry	<	10	10
MCW-9	-	12/31/2016	Dry	<	10	10
MCW-12	-	12/1/2016	Dry	<	10	10
MCW-12	-	12/2/2016	Dry	<	10	10
MCW-12	-	12/3/2016	Dry	<	10	10
MCW-12	-	12/4/2016	Dry	<	10	10
MCW-12	-	12/5/2016	Dry	<	10	10
MCW-12	-	12/6/2016♦	Dry	<	10	10
MCW-12	-	12/7/2016	Dry	<	10	10
MCW-12	-	12/8/2016	Dry	<	10	10
MCW-12	-	12/9/2016	Dry	<	10	10
MCW-12	-	12/10/2016	Dry	<	10	10
MCW-12	-	12/11/2016	Dry	<	10	10
MCW-12	-	12/12/2016	Dry	<	10	10
MCW-12	-	12/13/2016♦	Dry	<	10	10
MCW-12	-	12/14/2016	Dry	<	10	10
MCW-12	-	12/15/2016	Dry	<	10	10
MCW-12	-	12/16/2016	Dry	<	10	10
MCW-12	-	12/17/2016	Dry	<	10	10
MCW-12	-	12/18/2016	Dry	<	10	10
MCW-12	-	12/19/2016	Dry	<	10	10
MCW-12	-	12/20/2016♦	Dry	<	10	10
MCW-12	-	12/21/2016	Dry	<	10	10
MCW-12	-	12/22/2016	Dry	<	10	10
MCW-12	-	12/23/2016	Dry	<	10	10
MCW-12	-	12/24/2016	Dry	<	10	10
MCW-12	-	12/25/2016	Dry	<	10	10
MCW-12	-	12/26/2016	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1140	12/27/2016♦		=	300	11
MCW-12	1140	12/28/2016		=	300	13
MCW-12	1140	12/29/2016		=	300	14
MCW-12	1140	12/30/2016		=	300	16
MCW-12	1140	12/31/2016		=	300	18
MCW-14b	950	12/1/2016	Rain		**Rain**	**Rain**
MCW-14b	950	12/2/2016	Rain		**Rain**	**Rain**
MCW-14b	950	12/3/2016	Rain		**Rain**	**Rain**
MCW-14b	950	12/4/2016	Rain		**Rain**	**Rain**
MCW-14b	950	12/5/2016	Rain		**Rain**	**Rain**
MCW-14b	855	12/6/2016♦		=	170	1,005
MCW-14b	855	12/7/2016		=	170	995
MCW-14b	855	12/8/2016		=	170	904
MCW-14b	855	12/9/2016		=	170	822
MCW-14b	855	12/10/2016		=	170	747
MCW-14b	855	12/11/2016		=	170	678
MCW-14b	855	12/12/2016		=	170	617
MCW-14b	1000	12/13/2016♦		=	230	566
MCW-14b	1000	12/14/2016		=	230	520
MCW-14b	1000	12/15/2016		=	230	517
MCW-14b	1000	12/16/2016		=	230	515
MCW-14b	1000	12/17/2016		=	230	513
MCW-14b	1000	12/18/2016		=	230	511
MCW-14b	1000	12/19/2016		=	230	509
MCW-14b	100	12/20/2016♦		=	40	478
MCW-14b	100	12/21/2016		=	40	449
MCW-14b	100	12/22/2016		=	40	368
MCW-14b	100	12/23/2016		=	40	301
MCW-14b	100	12/24/2016		=	40	247
MCW-14b	100	12/25/2016		=	40	202
MCW-14b	100	12/26/2016		=	40	166
MCW-14b	1050	12/27/2016♦		=	140	141
MCW-14b	1050	12/28/2016		=	140	121
MCW-14b	1050	12/29/2016		=	140	121
MCW-14b	1050	12/30/2016		=	140	121
MCW-14b	1050	12/31/2016		=	140	122
MCW-15c	910	12/1/2016	Rain		**Rain**	**Rain**
MCW-15c	910	12/2/2016	Rain		**Rain**	**Rain**
MCW-15c	910	12/3/2016	Rain		**Rain**	**Rain**
MCW-15c	910	12/4/2016	Rain		**Rain**	**Rain**
MCW-15c	910	12/5/2016	Rain		**Rain**	**Rain**
MCW-15c	945	12/6/2016♦		=	80	1,519
MCW-15c	945	12/7/2016		=	80	1,466
MCW-15c	945	12/8/2016		=	80	1,299
MCW-15c	945	12/9/2016		=	80	1,151

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	945	12/10/2016		=	80	1,020
MCW-15c	945	12/11/2016		=	80	904
MCW-15c	945	12/12/2016		=	80	801
MCW-15c	920	12/13/2016♦		=	220	735
MCW-15c	920	12/14/2016		=	220	673
MCW-15c	920	12/15/2016		=	220	635
MCW-15c	920	12/16/2016		=	220	598
MCW-15c	920	12/17/2016		=	220	564
MCW-15c	920	12/18/2016		=	220	531
MCW-15c	920	12/19/2016		=	220	501
MCW-15c	1215	12/20/2016♦		=	40	446
MCW-15c	1215	12/21/2016		=	40	397
MCW-15c	1215	12/22/2016		=	40	325
MCW-15c	1215	12/23/2016		=	40	266
MCW-15c	1215	12/24/2016		=	40	218
MCW-15c	1215	12/25/2016		=	40	179
MCW-15c	1215	12/26/2016		=	40	146
MCW-15c	1000	12/27/2016♦		=	80	123
MCW-15c	1000	12/28/2016		=	80	103
MCW-15c	1000	12/29/2016		=	80	100
MCW-15c	1000	12/30/2016		=	80	98
MCW-15c	1000	12/31/2016		=	80	95
MCW-17	-	12/1/2016	Dry	<	10	10
MCW-17	-	12/2/2016	Dry	<	10	10
MCW-17	-	12/3/2016	Dry	<	10	10
MCW-17	-	12/4/2016	Dry	<	10	10
MCW-17	-	12/5/2016	Dry	<	10	10
MCW-17	-	12/6/2016♦	Dry	<	10	10
MCW-17	-	12/7/2016	Dry	<	10	10
MCW-17	-	12/8/2016	Dry	<	10	10
MCW-17	-	12/9/2016	Dry	<	10	10
MCW-17	-	12/10/2016	Dry	<	10	10
MCW-17	-	12/11/2016	Dry	<	10	10
MCW-17	-	12/12/2016	Dry	<	10	10
MCW-17	-	12/13/2016♦	Dry	<	10	10
MCW-17	-	12/14/2016	Dry	<	10	10
MCW-17	-	12/15/2016	Dry	<	10	10
MCW-17	-	12/16/2016	Dry	<	10	10
MCW-17	-	12/17/2016	Dry	<	10	10
MCW-17	-	12/18/2016	Dry	<	10	10
MCW-17	-	12/19/2016	Dry	<	10	10
MCW-17	-	12/20/2016♦	Dry	<	10	10
MCW-17	-	12/21/2016	Dry	<	10	10
MCW-17	-	12/22/2016	Dry	<	10	10
MCW-17	-	12/23/2016	Dry	<	10	10
MCW-17	-	12/24/2016	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	12/25/2016	Dry	<	10	10
MCW-17	-	12/26/2016	Dry	<	10	10
MCW-17	-	12/27/2016♦	Dry	<	10	10
MCW-17	-	12/28/2016	Dry	<	10	10
MCW-17	-	12/29/2016	Dry	<	10	10
MCW-17	-	12/30/2016	Dry	<	10	10
MCW-17	-	12/31/2016	Dry	<	10	10
MCW-18	-	12/1/2016	Dry	<	10	10
MCW-18	-	12/2/2016	Dry	<	10	10
MCW-18	-	12/3/2016	Dry	<	10	10
MCW-18	-	12/4/2016	Dry	<	10	10
MCW-18	-	12/5/2016	Dry	<	10	10
MCW-18	-	12/6/2016♦	Dry	<	10	10
MCW-18	-	12/7/2016	Dry	<	10	10
MCW-18	-	12/8/2016	Dry	<	10	10
MCW-18	-	12/9/2016	Dry	<	10	10
MCW-18	-	12/10/2016	Dry	<	10	10
MCW-18	-	12/11/2016	Dry	<	10	10
MCW-18	-	12/12/2016	Dry	<	10	10
MCW-18	-	12/13/2016♦	Dry	<	10	10
MCW-18	-	12/14/2016	Dry	<	10	10
MCW-18	-	12/15/2016	Dry	<	10	10
MCW-18	-	12/16/2016	Dry	<	10	10
MCW-18	-	12/17/2016	Dry	<	10	10
MCW-18	-	12/18/2016	Dry	<	10	10
MCW-18	-	12/19/2016	Dry	<	10	10
MCW-18	-	12/20/2016♦	Dry	<	10	10
MCW-18	-	12/21/2016	Dry	<	10	10
MCW-18	-	12/22/2016	Dry	<	10	10
MCW-18	-	12/23/2016	Dry	<	10	10
MCW-18	-	12/24/2016	Dry	<	10	10
MCW-18	-	12/25/2016	Dry	<	10	10
MCW-18	-	12/26/2016	Dry	<	10	10
MCW-18	-	12/27/2016♦	Dry	<	10	10
MCW-18	-	12/28/2016	Dry	<	10	10
MCW-18	-	12/29/2016	Dry	<	10	10
MCW-18	-	12/30/2016	Dry	<	10	10
MCW-18	-	12/31/2016	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling

county of ventura

PUBLIC WORKS AGENCY
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February 23, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of January 2017. Sites were sampled weekly on Tuesdays (January 3, 10, 17, 24 and 31). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

for

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

Location	Time	Date	Rain		Single Sample (as sampled) E. coli (235 MPN)
MCW-8b	-	1/3/2017♦			Dry
MCW-8b	-	1/10/2017♦	Rain		Dry
MCW-8b	-	1/17/2017♦			Dry
MCW-8b	1200	1/24/2017♦	Rain	=	80
MCW-8b	900	1/31/2017♦		=	70
MCW-9	-	1/3/2017♦			Dry
MCW-9	-	1/10/2017♦	Rain		Dry
MCW-9	-	1/17/2017♦			Dry
MCW-9	-	1/24/2017♦	Rain		Dry
MCW-9	-	1/31/2017♦			Dry
MCW-12	1015	1/3/2017♦		=	40
MCW-12	1000	1/10/2017♦	Rain	=	2400
MCW-12	1000	1/17/2017♦		=	70
MCW-12	1100	1/24/2017♦	Rain	=	500
MCW-12	815	1/31/2017♦		=	130
MCW-14b	930	1/3/2017♦		=	70
MCW-14b	915	1/10/2017♦	Rain	=	300
MCW-14b	1055	1/17/2017♦		=	20
MCW-14b	1020	1/24/2017♦	Rain	=	500
MCW-14b	945	1/31/2017♦		=	80
MCW-15c	900	1/3/2017♦		<	20
MCW-15c	820	1/10/2017♦	Rain	=	500
MCW-15c	1140	1/17/2017♦		=	20
MCW-15c	940	1/24/2017♦	Rain	<	20
MCW-15c	1035	1/31/2017♦		=	20
MCW-17	-	1/3/2017♦			Dry
MCW-17	-	1/10/2017♦	Rain		Dry
MCW-17	-	1/17/2017♦			Dry
MCW-17	900	1/24/2017♦	Rain	=	110
MCW-17	1110	1/31/2017♦		<	20
MCW-18	-	1/3/2017♦			Dry
MCW-18	-	1/10/2017♦	Rain		Dry
MCW-18	-	1/17/2017♦			Dry
MCW-18	-	1/24/2017♦	Rain		Dry
MCW-18	-	1/31/2017♦			Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	-	1/1/2017	Dry	<	10	10
MCW-8b	-	1/2/2017	Dry	<	10	10
MCW-8b	-	1/3/2017♦	Dry	<	10	10
MCW-8b	-	1/4/2017	Dry	<	10	10
MCW-8b	-	1/5/2017	Dry	<	10	10
MCW-8b	-	1/6/2017	Dry	<	10	10
MCW-8b	-	1/7/2017	Dry	<	10	10
MCW-8b	-	1/8/2017	Dry	<	10	10
MCW-8b	-	1/9/2017	Dry	<	10	10
MCW-8b	-	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-8b	-	1/11/2017	Rain		**Rain**	**Rain**
MCW-8b	-	1/12/2017	Rain		**Rain**	**Rain**
MCW-8b	-	1/13/2017	Rain		**Rain**	**Rain**
MCW-8b	-	1/14/2017	Rain		**Rain**	**Rain**
MCW-8b	-	1/15/2017	Rain		**Rain**	**Rain**
MCW-8b	-	1/16/2017	Rain		**Rain**	**Rain**
MCW-8b	-	1/17/2017♦	Dry	<	10	10
MCW-8b	-	1/18/2017	Dry	<	10	10
MCW-8b	-	1/19/2017	Dry	<	10	10
MCW-8b	-	1/20/2017	Dry	<	10	10
MCW-8b	-	1/21/2017	Dry	<	10	10
MCW-8b	-	1/22/2017	Dry	<	10	10
MCW-8b	-	1/23/2017	Dry	<	10	10
MCW-8b	1200	1/24/2017♦	Rain		**Rain**	**Rain**
MCW-8b	1200	1/25/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	1/26/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	1/27/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	1/28/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	1/29/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	1/30/2017	Rain		**Rain**	**Rain**
MCW-8b	900	1/31/2017♦		=	70	11
MCW-9	-	1/1/2017	Dry	<	10	10
MCW-9	-	1/2/2017	Dry	<	10	10
MCW-9	-	1/3/2017♦	Dry	<	10	10
MCW-9	-	1/4/2017	Dry	<	10	10
MCW-9	-	1/5/2017	Dry	<	10	10
MCW-9	-	1/6/2017	Dry	<	10	10
MCW-9	-	1/7/2017	Dry	<	10	10
MCW-9	-	1/8/2017	Dry	<	10	10
MCW-9	-	1/9/2017	Dry	<	10	10
MCW-9	-	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-9	-	1/11/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/12/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/13/2017	Rain		**Rain**	**Rain**
				Single Sample (adjusted for rain, dry and NDs)		Geomean

Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	1/14/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/15/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/16/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/17/2017♦	Dry	<	10	10
MCW-9	-	1/18/2017	Dry	<	10	10
MCW-9	-	1/19/2017	Dry	<	10	10
MCW-9	-	1/20/2017	Dry	<	10	10
MCW-9	-	1/21/2017	Dry	<	10	10
MCW-9	-	1/22/2017	Dry	<	10	10
MCW-9	-	1/23/2017	Dry	<	10	10
MCW-9	-	1/24/2017♦	Rain		**Rain**	**Rain**
MCW-9	-	1/25/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/26/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/27/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/28/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/29/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/30/2017	Rain		**Rain**	**Rain**
MCW-9	-	1/31/2017♦	Dry	<	10	10
MCW-12	1140	1/1/2017		=	300	20
MCW-12	1140	1/2/2017		=	300	22
MCW-12	1015	1/3/2017♦		=	40	23
MCW-12	1015	1/4/2017		=	40	24
MCW-12	1015	1/5/2017		=	40	25
MCW-12	1015	1/6/2017		=	40	27
MCW-12	1015	1/7/2017		=	40	28
MCW-12	1015	1/8/2017		=	40	29
MCW-12	1015	1/9/2017		=	40	31
MCW-12	1000	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-12	1000	1/11/2017	Rain		**Rain**	**Rain**
MCW-12	1000	1/12/2017	Rain		**Rain**	**Rain**
MCW-12	1000	1/13/2017	Rain		**Rain**	**Rain**
MCW-12	1000	1/14/2017	Rain		**Rain**	**Rain**
MCW-12	1000	1/15/2017	Rain		**Rain**	**Rain**
MCW-12	1000	1/16/2017	Rain		**Rain**	**Rain**
MCW-12	1000	1/17/2017♦		=	70	33
MCW-12	1000	1/18/2017		=	70	35
MCW-12	1000	1/19/2017		=	70	37
MCW-12	1000	1/20/2017		=	70	40
MCW-12	1000	1/21/2017		=	70	42
MCW-12	1000	1/22/2017		=	70	45
MCW-12	1000	1/23/2017		=	70	48
MCW-12	1100	1/24/2017♦	Rain		**Rain**	**Rain**
MCW-12	1100	1/25/2017	Rain		**Rain**	**Rain**
MCW-12	1100	1/26/2017	Rain		**Rain**	**Rain**
					Single Sample (adjusted for rain, dry and NDs)	Geomean

Location	Time	Date	Rain		E. coli (235 MPN)	E. coli (126 MPN)
MCW-12	1100	1/27/2017	Rain		**Rain**	**Rain**
MCW-12	1100	1/28/2017	Rain		**Rain**	**Rain**
MCW-12	1100	1/29/2017	Rain		**Rain**	**Rain**
MCW-12	1100	1/30/2017	Rain		**Rain**	**Rain**
MCW-12	815	1/31/2017♦		=	130	52
MCW-14b	1050	1/1/2017		=	140	121
MCW-14b	1050	1/2/2017		=	140	122
MCW-14b	930	1/3/2017♦		=	70	119
MCW-14b	930	1/4/2017		=	70	117
MCW-14b	930	1/5/2017		=	70	114
MCW-14b	930	1/6/2017		=	70	111
MCW-14b	930	1/7/2017		=	70	107
MCW-14b	930	1/8/2017		=	70	104
MCW-14b	930	1/9/2017		=	70	101
MCW-14b	915	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-14b	915	1/11/2017	Rain		**Rain**	**Rain**
MCW-14b	915	1/12/2017	Rain		**Rain**	**Rain**
MCW-14b	915	1/13/2017	Rain		**Rain**	**Rain**
MCW-14b	915	1/14/2017	Rain		**Rain**	**Rain**
MCW-14b	915	1/15/2017	Rain		**Rain**	**Rain**
MCW-14b	915	1/16/2017	Rain		**Rain**	**Rain**
MCW-14b	1055	1/17/2017♦		=	20	94
MCW-14b	1055	1/18/2017		=	20	88
MCW-14b	1055	1/19/2017		=	20	81
MCW-14b	1055	1/20/2017		=	20	75
MCW-14b	1055	1/21/2017		=	20	69
MCW-14b	1055	1/22/2017		=	20	63
MCW-14b	1055	1/23/2017		=	20	58
MCW-14b	1020	1/24/2017♦	Rain		**Rain**	**Rain**
MCW-14b	1020	1/25/2017	Rain		**Rain**	**Rain**
MCW-14b	1020	1/26/2017	Rain		**Rain**	**Rain**
MCW-14b	1020	1/27/2017	Rain		**Rain**	**Rain**
MCW-14b	1020	1/28/2017	Rain		**Rain**	**Rain**
MCW-14b	1020	1/29/2017	Rain		**Rain**	**Rain**
MCW-14b	1020	1/30/2017	Rain		**Rain**	**Rain**
MCW-14b	945	1/31/2017♦		=	80	56
MCW-15c	1000	1/1/2017		=	80	87
MCW-15c	1000	1/2/2017		=	80	87
MCW-15c	900	1/3/2017♦		<	10	80
MCW-15c	900	1/4/2017		<	10	75
MCW-15c	900	1/5/2017		<	10	70
MCW-15c	900	1/6/2017		<	10	65
MCW-15c	900	1/7/2017		<	10	61
MCW-15c	900	1/8/2017		<	10	57
MCW-15c	900	1/9/2017		<	10	53

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	820	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-15c	820	1/11/2017	Rain		**Rain**	**Rain**
MCW-15c	820	1/12/2017	Rain		**Rain**	**Rain**
MCW-15c	820	1/13/2017	Rain		**Rain**	**Rain**
MCW-15c	820	1/14/2017	Rain		**Rain**	**Rain**
MCW-15c	820	1/15/2017	Rain		**Rain**	**Rain**
MCW-15c	820	1/16/2017	Rain		**Rain**	**Rain**
MCW-15c	1140	1/17/2017♦		=	20	51
MCW-15c	1140	1/18/2017		=	20	48
MCW-15c	1140	1/19/2017		=	20	45
MCW-15c	1140	1/20/2017		=	20	41
MCW-15c	1140	1/21/2017		=	20	38
MCW-15c	1140	1/22/2017		=	20	35
MCW-15c	1140	1/23/2017		=	20	32
MCW-15c	940	1/24/2017♦	Rain		**Rain**	**Rain**
MCW-15c	940	1/25/2017	Rain		**Rain**	**Rain**
MCW-15c	940	1/26/2017	Rain		**Rain**	**Rain**
MCW-15c	940	1/27/2017	Rain		**Rain**	**Rain**
MCW-15c	940	1/28/2017	Rain		**Rain**	**Rain**
MCW-15c	940	1/29/2017	Rain		**Rain**	**Rain**
MCW-15c	940	1/30/2017	Rain		**Rain**	**Rain**
MCW-15c	1035	1/31/2017♦		=	20	30
MCW-17	-	1/1/2017	Dry	<	10	10
MCW-17	-	1/2/2017	Dry	<	10	10
MCW-17	-	1/3/2017♦	Dry	<	10	10
MCW-17	-	1/4/2017	Dry	<	10	10
MCW-17	-	1/5/2017	Dry	<	10	10
MCW-17	-	1/6/2017	Dry	<	10	10
MCW-17	-	1/7/2017	Dry	<	10	10
MCW-17	-	1/8/2017	Dry	<	10	10
MCW-17	-	1/9/2017	Dry	<	10	10
MCW-17	-	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-17	-	1/11/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/12/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/13/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/14/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/15/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/16/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/17/2017♦	Dry	<	10	10
MCW-17	-	1/18/2017	Dry	<	10	10
MCW-17	-	1/19/2017	Dry	<	10	10
MCW-17	-	1/20/2017	Dry	<	10	10
MCW-17	-	1/21/2017	Dry	<	10	10
MCW-17	-	1/22/2017	Dry	<	10	10
MCW-17	-	1/23/2017	Dry	<	10	10
MCW-17	-	1/24/2017♦	Rain		**Rain**	**Rain**

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	1/25/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/26/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/27/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/28/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/29/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/30/2017	Rain		**Rain**	**Rain**
MCW-17	-	1/31/2017♦	Dry	<	10	10
MCW-18	-	1/1/2017	Dry	<	10	10
MCW-18	-	1/2/2017	Dry	<	10	10
MCW-18	-	1/3/2017♦	Dry	<	10	10
MCW-18	-	1/4/2017	Dry	<	10	10
MCW-18	-	1/5/2017	Dry	<	10	10
MCW-18	-	1/6/2017	Dry	<	10	10
MCW-18	-	1/7/2017	Dry	<	10	10
MCW-18	-	1/8/2017	Dry	<	10	10
MCW-18	-	1/9/2017	Dry	<	10	10
MCW-18	-	1/10/2017♦	Rain		**Rain**	**Rain**
MCW-18	-	1/11/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/12/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/13/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/14/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/15/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/16/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/17/2017♦	Dry	<	10	10
MCW-18	-	1/18/2017	Dry	<	10	10
MCW-18	-	1/19/2017	Dry	<	10	10
MCW-18	-	1/20/2017	Dry	<	10	10
MCW-18	-	1/21/2017	Dry	<	10	10
MCW-18	-	1/22/2017	Dry	<	10	10
MCW-18	-	1/23/2017	Dry	<	10	10
MCW-18	-	1/24/2017♦	Rain		**Rain**	**Rain**
MCW-18	-	1/25/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/26/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/27/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/28/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/29/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/30/2017	Rain		**Rain**	**Rain**
MCW-18	-	1/31/2017♦	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

♦ Date of sampling

county of ventura

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March 20, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: Malibu Creek and Lagoon Bacteria TMDL Compliance Monitoring For Ventura County and City Of Thousand Oaks

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of February 2017. Sites were sampled weekly on Tuesdays (February 7, 14, 24 and 28). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ◆). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

Location	Time	Date	Rain	Single Sample (as sampled)	
					E. coli
					(235 MPN)
MCW-8b	1240	2/7/2017♦	Rain	<	20
MCW-8b	1135	2/14/2017♦		=	70
MCW-8b	1200	2/21/2017♦	Rain	=	110
MCW-8b	1130	2/28/2017♦	Rain	<	20
MCW-9	-	2/7/2017♦	Rain		Dry
MCW-9	-	2/14/2017♦			Dry
MCW-9	-	2/21/2017♦	Rain		Dry
MCW-9	-	2/28/2017♦	Rain		Dry
MCW-12	1200	2/7/2017♦	Rain	=	170
MCW-12	1200	2/14/2017♦		=	80
MCW-12	1115	2/21/2017♦	Rain	=	300
MCW-12	1000	2/28/2017♦	Rain	=	130
MCW-14b	1130	2/7/2017♦	Rain	=	1700
MCW-14b	815	2/14/2017♦		<	20
MCW-14b	1040	2/21/2017♦	Rain	=	1300
MCW-14b	915	2/28/2017♦	Rain	=	300
MCW-15c	1050	2/7/2017♦	Rain	=	1700
MCW-15c	815	2/14/2017♦		<	20
MCW-15c	1000	2/21/2017♦	Rain	=	1300
MCW-15c	835	2/28/2017♦	Rain	=	130
MCW-17	1000	2/7/2017♦	Rain	=	80
MCW-17	700	2/14/2017♦		=	20
MCW-17	915	2/21/2017♦	Rain	=	500
MCW-17	800	2/28/2017♦	Rain	<	20
MCW-18	-	2/7/2017♦	Rain		Dry
MCW-18	-	2/14/2017♦			Dry
MCW-18	-	2/21/2017♦	Rain		Dry
MCW-18	-	2/28/2017♦	Rain		Dry

Notes:

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.

♦ Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	900	2/1/2017		=	70	11
MCW-8b	900	2/2/2017		=	70	12
MCW-8b	900	2/3/2017		=	70	13
MCW-8b	900	2/4/2017		=	70	14
MCW-8b	900	2/5/2017		=	70	15
MCW-8b	900	2/6/2017		=	70	16
MCW-8b	1240	2/7/2017♦	Rain		**Rain**	**Rain**
MCW-8b	1240	2/8/2017	Rain		**Rain**	**Rain**
MCW-8b	1240	2/9/2017	Rain		**Rain**	**Rain**
MCW-8b	1240	2/10/2017	Rain		**Rain**	**Rain**
MCW-8b	1240	2/11/2017	Rain		**Rain**	**Rain**
MCW-8b	1240	2/12/2017	Rain		**Rain**	**Rain**
MCW-8b	1240	2/13/2017	Rain		**Rain**	**Rain**
MCW-8b	1135	2/14/2017♦		=	70	17
MCW-8b	1135	2/15/2017		=	70	18
MCW-8b	1135	2/16/2017		=	70	19
MCW-8b	1135	2/17/2017		=	70	20
MCW-8b	1135	2/18/2017		=	70	22
MCW-8b	1135	2/19/2017		=	70	23
MCW-8b	1135	2/20/2017		=	70	25
MCW-8b	1200	2/21/2017♦	Rain		**Rain**	**Rain**
MCW-8b	1200	2/22/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	2/23/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	2/24/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	2/25/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	2/26/2017	Rain		**Rain**	**Rain**
MCW-8b	1200	2/27/2017	Rain		**Rain**	**Rain**
MCW-8b	1130	2/28/2017♦	Rain		**Rain**	**Rain**
MCW-9	-	2/1/2017	Dry	<	10	10
MCW-9	-	2/2/2017	Dry	<	10	10
MCW-9	-	2/3/2017	Dry	<	10	10
MCW-9	-	2/4/2017	Dry	<	10	10
MCW-9	-	2/5/2017	Dry	<	10	10
MCW-9	-	2/6/2017	Dry	<	10	10
MCW-9	-	2/7/2017♦	Dry	<	10	10
MCW-9	-	2/8/2017	Dry	<	10	10
MCW-9	-	2/9/2017	Dry	<	10	10
MCW-9	-	2/10/2017	Dry	<	10	10
MCW-9	-	2/11/2017	Dry	<	10	10
MCW-9	-	2/12/2017	Dry	<	10	10
MCW-9	-	2/13/2017	Dry	<	10	10
MCW-9	-	2/14/2017♦	Dry	<	10	10
MCW-9	-	2/15/2017	Dry	<	10	10
MCW-9	-	2/16/2017	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	2/17/2017	Dry	<	10	10
MCW-9	-	2/18/2017	Dry	<	10	10
MCW-9	-	2/19/2017	Dry	<	10	10
MCW-9	-	2/20/2017	Dry	<	10	10
MCW-9	-	2/21/2017♦	Dry	<	10	10
MCW-9	-	2/22/2017	Dry	<	10	10
MCW-9	-	2/23/2017	Dry	<	10	10
MCW-9	-	2/24/2017	Dry	<	10	10
MCW-9	-	2/25/2017	Dry	<	10	10
MCW-9	-	2/26/2017	Dry	<	10	10
MCW-9	-	2/27/2017	Dry	<	10	10
MCW-9	-	2/28/2017♦	Dry	<	10	10
MCW-12	815	2/1/2017		=	130	57
MCW-12	815	2/2/2017		=	130	62
MCW-12	815	2/3/2017		=	130	68
MCW-12	815	2/4/2017		=	130	74
MCW-12	815	2/5/2017		=	130	80
MCW-12	815	2/6/2017		=	130	88
MCW-12	1200	2/7/2017♦	Rain		**Rain**	**Rain**
MCW-12	1200	2/8/2017	Rain		**Rain**	**Rain**
MCW-12	1200	2/9/2017	Rain		**Rain**	**Rain**
MCW-12	1200	2/10/2017	Rain		**Rain**	**Rain**
MCW-12	1200	2/11/2017	Rain		**Rain**	**Rain**
MCW-12	1200	2/12/2017	Rain		**Rain**	**Rain**
MCW-12	1200	2/13/2017	Rain		**Rain**	**Rain**
MCW-12	1200	2/14/2017♦		=	80	94
MCW-12	1200	2/15/2017		=	80	101
MCW-12	1200	2/16/2017		=	80	96
MCW-12	1200	2/17/2017		=	80	92
MCW-12	1200	2/18/2017		=	80	88
MCW-12	1200	2/19/2017		=	80	84
MCW-12	1200	2/20/2017		=	80	81
MCW-12	1115	2/21/2017♦	Rain		**Rain**	**Rain**
MCW-12	1115	2/22/2017	Rain		**Rain**	**Rain**
MCW-12	1115	2/23/2017	Rain		**Rain**	**Rain**
MCW-12	1115	2/24/2017	Rain		**Rain**	**Rain**
MCW-12	1115	2/25/2017	Rain		**Rain**	**Rain**
MCW-12	1115	2/26/2017	Rain		**Rain**	**Rain**
MCW-12	1115	2/27/2017	Rain		**Rain**	**Rain**
MCW-12	1000	2/28/2017♦	Rain		**Rain**	**Rain**
MCW-14b	945	2/1/2017		=	80	54
MCW-14b	945	2/2/2017		=	80	56
MCW-14b	945	2/3/2017		=	80	57
MCW-14b	945	2/4/2017		=	80	58

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-14b	945	2/5/2017		=	80	60
MCW-14b	945	2/6/2017		=	80	61
MCW-14b	1130	2/7/2017♦			**Rain**	**Rain**
MCW-14b	1130	2/8/2017			**Rain**	**Rain**
MCW-14b	1130	2/9/2017			**Rain**	**Rain**
MCW-14b	1130	2/10/2017			**Rain**	**Rain**
MCW-14b	1130	2/11/2017			**Rain**	**Rain**
MCW-14b	1130	2/12/2017			**Rain**	**Rain**
MCW-14b	1130	2/13/2017			**Rain**	**Rain**
MCW-14b	815	2/14/2017♦		<	10	58
MCW-14b	815	2/15/2017		<	10	56
MCW-14b	815	2/16/2017		<	10	51
MCW-14b	815	2/17/2017		<	10	47
MCW-14b	815	2/18/2017		<	10	43
MCW-14b	815	2/19/2017		<	10	39
MCW-14b	815	2/20/2017		<	10	36
MCW-14b	1040	2/21/2017♦			**Rain**	**Rain**
MCW-14b	1040	2/22/2017			**Rain**	**Rain**
MCW-14b	1040	2/23/2017			**Rain**	**Rain**
MCW-14b	1040	2/24/2017			**Rain**	**Rain**
MCW-14b	1040	2/25/2017			**Rain**	**Rain**
MCW-14b	1040	2/26/2017			**Rain**	**Rain**
MCW-14b	1040	2/27/2017			**Rain**	**Rain**
MCW-14b	915	2/28/2017♦			**Rain**	**Rain**
MCW-15c	1035	2/1/2017		=	20	28
MCW-15c	1035	2/2/2017		=	20	27
MCW-15c	1035	2/3/2017		=	20	26
MCW-15c	1035	2/4/2017		=	20	26
MCW-15c	1035	2/5/2017		=	20	25
MCW-15c	1035	2/6/2017		=	20	25
MCW-15c	1050	2/7/2017♦	Rain		**Rain**	**Rain**
MCW-15c	1050	2/8/2017	Rain		**Rain**	**Rain**
MCW-15c	1050	2/9/2017	Rain		**Rain**	**Rain**
MCW-15c	1050	2/10/2017	Rain		**Rain**	**Rain**
MCW-15c	1050	2/11/2017	Rain		**Rain**	**Rain**
MCW-15c	1050	2/12/2017	Rain		**Rain**	**Rain**
MCW-15c	1050	2/13/2017	Rain		**Rain**	**Rain**
MCW-15c	815	2/14/2017♦		<	10	24
MCW-15c	815	2/15/2017		<	10	22
MCW-15c	815	2/16/2017		<	10	21
MCW-15c	815	2/17/2017		<	10	20
MCW-15c	815	2/18/2017		<	10	18
MCW-15c	815	2/19/2017		<	10	17
MCW-15c	815	2/20/2017		<	10	16
MCW-15c	1000	2/21/2017♦	Rain		**Rain**	**Rain**

Location		Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	1000	2/22/2017	Rain		**Rain**	**Rain**
MCW-15c	1000	2/23/2017	Rain		**Rain**	**Rain**
MCW-15c	1000	2/24/2017	Rain		**Rain**	**Rain**
MCW-15c	1000	2/25/2017	Rain		**Rain**	**Rain**
MCW-15c	1000	2/26/2017	Rain		**Rain**	**Rain**
MCW-15c	1000	2/27/2017	Rain		**Rain**	**Rain**
MCW-15c	835	2/28/2017◆	Rain		**Rain**	**Rain**
MCW-17	1110	2/1/2017		<	10	10
MCW-17	1110	2/2/2017		<	10	10
MCW-17	1110	2/3/2017		<	10	10
MCW-17	1110	2/4/2017		<	10	10
MCW-17	1110	2/5/2017		<	10	10
MCW-17	1110	2/6/2017		<	10	10
MCW-17	1000	2/7/2017◆	Rain		**Rain**	**Rain**
MCW-17	1000	2/8/2017	Rain		**Rain**	**Rain**
MCW-17	1000	2/9/2017	Rain		**Rain**	**Rain**
MCW-17	1000	2/10/2017	Rain		**Rain**	**Rain**
MCW-17	1000	2/11/2017	Rain		**Rain**	**Rain**
MCW-17	1000	2/12/2017	Rain		**Rain**	**Rain**
MCW-17	1000	2/13/2017	Rain		**Rain**	**Rain**
MCW-17	700	2/14/2017◆		=	20	10
MCW-17	700	2/15/2017		=	20	10
MCW-17	700	2/16/2017		=	20	11
MCW-17	700	2/17/2017		=	20	11
MCW-17	700	2/18/2017		=	20	11
MCW-17	700	2/19/2017		=	20	11
MCW-17	700	2/20/2017		=	20	12
MCW-17	915	2/21/2017◆	Rain		**Rain**	**Rain**
MCW-17	915	2/22/2017	Rain		**Rain**	**Rain**
MCW-17	915	2/23/2017	Rain		**Rain**	**Rain**
MCW-17	915	2/24/2017	Rain		**Rain**	**Rain**
MCW-17	915	2/25/2017	Rain		**Rain**	**Rain**
MCW-17	915	2/26/2017	Rain		**Rain**	**Rain**
MCW-17	915	2/27/2017	Rain		**Rain**	**Rain**
MCW-17	800	2/28/2017◆	Rain		**Rain**	**Rain**
MCW-18	-	2/1/2017	Dry	<	10	10
MCW-18	-	2/2/2017	Dry	<	10	10
MCW-18	-	2/3/2017	Dry	<	10	10
MCW-18	-	2/4/2017	Dry	<	10	10
MCW-18	-	2/5/2017	Dry	<	10	10
MCW-18	-	2/6/2017	Dry	<	10	10
MCW-18	-	2/7/2017◆	Dry	<	10	10
MCW-18	-	2/8/2017	Dry	<	10	10
MCW-18	-	2/9/2017	Dry	<	10	10
MCW-18	-	2/10/2017	Dry	<	10	10
MCW-18	-	2/11/2017	Dry	<	10	10

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-18	-	2/12/2017	Dry	<	10	10
MCW-18	-	2/13/2017	Dry	<	10	10
MCW-18	-	2/14/2017◆	Dry	<	10	10
MCW-18	-	2/15/2017	Dry	<	10	10
MCW-18	-	2/16/2017	Dry	<	10	10
MCW-18	-	2/17/2017	Dry	<	10	10
MCW-18	-	2/18/2017	Dry	<	10	10
MCW-18	-	2/19/2017	Dry	<	10	10
MCW-18	-	2/20/2017	Dry	<	10	10
MCW-18	-	2/21/2017◆	Dry	<	10	10
MCW-18	-	2/22/2017	Dry	<	10	10
MCW-18	-	2/23/2017	Dry	<	10	10
MCW-18	-	2/24/2017	Dry	<	10	10
MCW-18	-	2/25/2017	Dry	<	10	10
MCW-18	-	2/26/2017	Dry	<	10	10
MCW-18	-	2/27/2017	Dry	<	10	10
MCW-18	-	2/28/2017◆	Dry	<	10	10

Notes:

Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.

Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean

* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010

◆Date of sampling

county of ventura

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May 19, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of April 2017. Sites were sampled weekly on Tuesdays (April 4, 11, 18 and 25). Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

Location	Time	Date	Rain		Single Sample (as sampled) E. coli (235 MPN)
MCW-8b	1125	4/4/2017♦		=	230
MCW-8b	1230	4/11/2017♦		<	20
MCW-8b	1215	4/18/2017♦		<	20
MCW-8b	1245	4/25/2017♦		=	170
MCW-9	-	4/4/2017♦			Dry
MCW-9	-	4/11/2017♦			Dry
MCW-9	-	4/18/2017♦			Dry
MCW-9	-	4/25/2017♦			Dry
MCW-12	1040	4/4/2017♦		=	170
MCW-12	1130	4/11/2017♦		<	20
MCW-12	1125	4/18/2017♦		<	20
MCW-12	1140	4/25/2017♦		=	80
MCW-14b	1000	4/4/2017♦		=	130
MCW-14b	1050	4/11/2017♦		<	20
MCW-14b	1100	4/18/2017♦		=	500
MCW-14b	1050	4/25/2017♦		=	130
MCW-15c	925	4/4/2017♦		<	20
MCW-15c	1015	4/11/2017♦		<	20
MCW-15c	1035	4/18/2017♦		=	130
MCW-15c	1000	4/25/2017♦		=	230
MCW-17	845	4/4/2017♦		=	40
MCW-17	940	4/11/2017♦		=	40
MCW-17	1015	4/18/2017♦		=	130
MCW-17	915	4/25/2017♦		=	300
MCW-18	-	4/4/2017♦			Dry
MCW-18	-	4/11/2017♦			Dry
MCW-18	-	4/18/2017♦			Dry
MCW-18	-	4/25/2017♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.
♦Date of sampling

Table 1. Weekly sampling results

Location	Time	Date	Rain		Single Sample (as sampled) E. coli (235 MPN)
MCW-8b	1125	4/4/2017♦		=	230
MCW-8b	1230	4/11/2017♦		<	20
MCW-8b	1215	4/18/2017♦		<	20
MCW-8b	1245	4/25/2017♦		=	170
MCW-9	-	4/4/2017♦			Dry
MCW-9	-	4/11/2017♦			Dry
MCW-9	-	4/18/2017♦			Dry
MCW-9	-	4/25/2017♦			Dry
MCW-12	1040	4/4/2017♦		=	170
MCW-12	1130	4/11/2017♦		<	20
MCW-12	1125	4/18/2017♦		<	20
MCW-12	1140	4/25/2017♦		=	80
MCW-14b	1000	4/4/2017♦		=	130
MCW-14b	1050	4/11/2017♦		<	20
MCW-14b	1100	4/18/2017♦		=	500
MCW-14b	1050	4/25/2017♦		=	130
MCW-15c	925	4/4/2017♦		<	20
MCW-15c	1015	4/11/2017♦		<	20
MCW-15c	1035	4/18/2017♦		=	130
MCW-15c	1000	4/25/2017♦		=	230
MCW-17	845	4/4/2017♦		=	40
MCW-17	940	4/11/2017♦		=	40
MCW-17	1015	4/18/2017♦		=	130
MCW-17	915	4/25/2017♦		=	300
MCW-18	-	4/4/2017♦			Dry
MCW-18	-	4/11/2017♦			Dry
MCW-18	-	4/18/2017♦			Dry
MCW-18	-	4/25/2017♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.
♦Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	1155	4/1/2017		<	10	19
MCW-8b	1155	4/2/2017		<	10	18
MCW-8b	1155	4/3/2017		<	10	17
MCW-8b	1125	4/4/2017♦		=	230	17
MCW-8b	1125	4/5/2017		=	230	18
MCW-8b	1125	4/6/2017		=	230	19
MCW-8b	1125	4/7/2017		=	230	21
MCW-8b	1125	4/8/2017		=	230	23
MCW-8b	1125	4/9/2017		=	230	26
MCW-8b	1125	4/10/2017		=	230	29
MCW-8b	1230	4/11/2017♦		<	10	29
MCW-8b	1230	4/12/2017		<	10	29
MCW-8b	1230	4/13/2017		<	10	29
MCW-8b	1230	4/14/2017		<	10	29
MCW-8b	1230	4/15/2017		<	10	29
MCW-8b	1230	4/16/2017		<	10	29
MCW-8b	1230	4/17/2017		<	10	29
MCW-8b	1215	4/18/2017♦		<	10	29
MCW-8b	1215	4/19/2017		<	10	29
MCW-8b	1215	4/20/2017		<	10	27
MCW-8b	1215	4/21/2017		<	10	26
MCW-8b	1215	4/22/2017		<	10	25
MCW-8b	1215	4/23/2017		<	10	24
MCW-8b	1215	4/24/2017		<	10	23
MCW-8b	1245	4/25/2017♦		=	170	24
MCW-8b	1245	4/26/2017		=	170	25
MCW-8b	1245	4/27/2017		=	170	28
MCW-8b	1245	4/28/2017		=	170	30
MCW-8b	1245	4/29/2017		=	170	33
MCW-8b	1245	4/30/2017		=	170	37
MCW-9	-	4/1/2017	Dry	<	10	10
MCW-9	-	4/2/2017	Dry	<	10	10
MCW-9	-	4/3/2017	Dry	<	10	10
MCW-9	-	4/4/2017♦	Dry	<	10	10
MCW-9	-	4/5/2017	Dry	<	10	10
MCW-9	-	4/6/2017	Dry	<	10	10
MCW-9	-	4/7/2017	Dry	<	10	10
MCW-9	-	4/8/2017	Dry	<	10	10
MCW-9	-	4/9/2017	Dry	<	10	10
MCW-9	-	4/10/2017	Dry	<	10	10
MCW-9	-	4/11/2017♦	Dry	<	10	10
MCW-9	-	4/12/2017	Dry	<	10	10
MCW-9	-	4/13/2017	Dry	<	10	10
MCW-9	-	4/14/2017	Dry	<	10	10

Location	Time	Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	4/15/2017	Dry	<	10	10
MCW-9	-	4/16/2017	Dry	<	10	10
MCW-9	-	4/17/2017	Dry	<	10	10
MCW-9	-	4/18/2017♦	Dry	<	10	10
MCW-9	-	4/19/2017	Dry	<	10	10
MCW-9	-	4/20/2017	Dry	<	10	10
MCW-9	-	4/21/2017	Dry	<	10	10
MCW-9	-	4/22/2017	Dry	<	10	10
MCW-9	-	4/23/2017	Dry	<	10	10
MCW-9	-	4/24/2017	Dry	<	10	10
MCW-9	-	4/25/2017♦	Dry	<	10	10
MCW-9	-	4/26/2017	Dry	<	10	10
MCW-9	-	4/27/2017	Dry	<	10	10
MCW-9	-	4/28/2017	Dry	<	10	10
MCW-9	-	4/29/2017	Dry	<	10	10
MCW-9	-	4/30/2017	Dry	<	10	10
MCW-12	1100	4/1/2017		=	110	29
MCW-12	1100	4/2/2017		=	110	29
MCW-12	1100	4/3/2017		=	110	30
MCW-12	1040	4/4/2017♦		=	170	31
MCW-12	1040	4/5/2017		=	170	31
MCW-12	1040	4/6/2017		=	170	32
MCW-12	1040	4/7/2017		=	170	35
MCW-12	1040	4/8/2017		=	170	39
MCW-12	1040	4/9/2017		=	170	43
MCW-12	1040	4/10/2017		=	170	47
MCW-12	1130	4/11/2017♦		<	10	47
MCW-12	1130	4/12/2017		<	10	47
MCW-12	1130	4/13/2017		<	10	47
MCW-12	1130	4/14/2017		<	10	47
MCW-12	1130	4/15/2017		<	10	47
MCW-12	1130	4/16/2017		<	10	47
MCW-12	1130	4/17/2017		<	10	47
MCW-12	1125	4/18/2017♦		<	10	47
MCW-12	1125	4/19/2017		<	10	47
MCW-12	1125	4/20/2017		<	10	45
MCW-12	1125	4/21/2017		<	10	43
MCW-12	1125	4/22/2017		<	10	41
MCW-12	1125	4/23/2017		<	10	39
MCW-12	1125	4/24/2017		<	10	37
MCW-12	1140	4/25/2017♦		=	80	38
MCW-12	1140	4/26/2017		=	80	39
MCW-12	1140	4/27/2017		=	80	39
MCW-12	1140	4/28/2017		=	80	38

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1140	4/29/2017		=	80	38
MCW-12	1140	4/30/2017		=	80	37
MCW-14b	1035	4/1/2017		=	170	40
MCW-14b	1035	4/2/2017		=	170	44
MCW-14b	1035	4/3/2017		=	170	48
MCW-14b	1000	4/4/2017♦		=	130	53
MCW-14b	1000	4/5/2017		=	130	57
MCW-14b	1000	4/6/2017		=	130	62
MCW-14b	1000	4/7/2017		=	130	68
MCW-14b	1000	4/8/2017		=	130	74
MCW-14b	1000	4/9/2017		=	130	81
MCW-14b	1000	4/10/2017		=	130	88
MCW-14b	1050	4/11/2017♦		<	10	88
MCW-14b	1050	4/12/2017		<	10	88
MCW-14b	1050	4/13/2017		<	10	88
MCW-14b	1050	4/14/2017		<	10	88
MCW-14b	1050	4/15/2017		<	10	88
MCW-14b	1050	4/16/2017		<	10	88
MCW-14b	1050	4/17/2017		<	10	88
MCW-14b	1100	4/18/2017♦		=	500	100
MCW-14b	1100	4/19/2017		=	500	114
MCW-14b	1100	4/20/2017		=	500	114
MCW-14b	1100	4/21/2017		=	500	114
MCW-14b	1100	4/22/2017		=	500	114
MCW-14b	1100	4/23/2017		=	500	114
MCW-14b	1100	4/24/2017		=	500	114
MCW-14b	1050	4/25/2017♦		=	130	109
MCW-14b	1050	4/26/2017		=	130	104
MCW-14b	1050	4/27/2017		=	130	103
MCW-14b	1050	4/28/2017		=	130	102
MCW-14b	1050	4/29/2017		=	130	101
MCW-14b	1050	4/30/2017		=	130	101
MCW-15c	955	4/1/2017		=	210	43
MCW-15c	955	4/2/2017		=	210	48
MCW-15c	955	4/3/2017		=	210	53
MCW-15c	925	4/4/2017♦		<	10	53
MCW-15c	925	4/5/2017		<	10	53
MCW-15c	925	4/6/2017		<	10	53
MCW-15c	925	4/7/2017		<	10	53
MCW-15c	925	4/8/2017		<	10	53
MCW-15c	925	4/9/2017		<	10	53
MCW-15c	925	4/10/2017		<	10	53
MCW-15c	1015	4/11/2017♦		<	10	53
MCW-15c	1015	4/12/2017		<	10	53
MCW-15c	1015	4/13/2017		<	10	52

Location		Date	Rain	Single Sample (adjusted for rain, dry and NDs)		Geomean
					E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	1015	4/14/2017		<	10	51
MCW-15c	1015	4/15/2017		<	10	49
MCW-15c	1015	4/16/2017		<	10	48
MCW-15c	1015	4/17/2017		<	10	47
MCW-15c	1035	4/18/2017♦		=	130	50
MCW-15c	1035	4/19/2017		=	130	53
MCW-15c	1035	4/20/2017		=	130	52
MCW-15c	1035	4/21/2017		=	130	50
MCW-15c	1035	4/22/2017		=	130	49
MCW-15c	1035	4/23/2017		=	130	48
MCW-15c	1035	4/24/2017		=	130	46
MCW-15c	1000	4/25/2017♦		=	230	46
MCW-15c	1000	4/26/2017		=	230	46
MCW-15c	1000	4/27/2017		=	230	46
MCW-15c	1000	4/28/2017		=	230	46
MCW-15c	1000	4/29/2017		=	230	46
MCW-15c	1000	4/30/2017		=	230	46
MCW-17	915	4/1/2017		=	70	40
MCW-17	915	4/2/2017		=	70	42
MCW-17	915	4/3/2017		=	70	44
MCW-17	845	4/4/2017♦		=	40	45
MCW-17	845	4/5/2017		=	40	46
MCW-17	845	4/6/2017		=	40	47
MCW-17	845	4/7/2017		=	40	49
MCW-17	845	4/8/2017		=	40	52
MCW-17	845	4/9/2017		=	40	54
MCW-17	845	4/10/2017		=	40	57
MCW-17	940	4/11/2017♦		=	40	59
MCW-17	940	4/12/2017		=	40	62
MCW-17	940	4/13/2017		=	40	63
MCW-17	940	4/14/2017		=	40	65
MCW-17	940	4/15/2017		=	40	66
MCW-17	940	4/16/2017		=	40	68
MCW-17	940	4/17/2017		=	40	70
MCW-17	1015	4/18/2017♦		=	130	74
MCW-17	1015	4/19/2017		=	130	79
MCW-17	1015	4/20/2017		=	130	77
MCW-17	1015	4/21/2017		=	130	75
MCW-17	1015	4/22/2017		=	130	73
MCW-17	1015	4/23/2017		=	130	71
MCW-17	1015	4/24/2017		=	130	69
MCW-17	915	4/25/2017♦		=	300	69
MCW-17	915	4/26/2017		=	300	69
MCW-17	915	4/27/2017		=	300	72
MCW-17	915	4/28/2017		=	300	76
MCW-17	915	4/29/2017		=	300	79

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	915	4/30/2017		=	300	83
MCW-18	-	4/1/2017	Dry	<	10	10
MCW-18	-	4/2/2017	Dry	<	10	10
MCW-18	-	4/3/2017	Dry	<	10	10
MCW-18	-	4/4/2017♦	Dry	<	10	10
MCW-18	-	4/5/2017	Dry	<	10	10
MCW-18	-	4/6/2017	Dry	<	10	10
MCW-18	-	4/7/2017	Dry	<	10	10
MCW-18	-	4/8/2017	Dry	<	10	10
MCW-18	-	4/9/2017	Dry	<	10	10
MCW-18	-	4/10/2017	Dry	<	10	10
MCW-18	-	4/11/2017♦	Dry	<	10	10
MCW-18	-	4/12/2017	Dry	<	10	10
MCW-18	-	4/13/2017	Dry	<	10	10
MCW-18	-	4/14/2017	Dry	<	10	10
MCW-18	-	4/15/2017	Dry	<	10	10
MCW-18	-	4/16/2017	Dry	<	10	10
MCW-18	-	4/17/2017	Dry	<	10	10
MCW-18	-	4/18/2017♦	Dry	<	10	10
MCW-18	-	4/19/2017	Dry	<	10	10
MCW-18	-	4/20/2017	Dry	<	10	10
MCW-18	-	4/21/2017	Dry	<	10	10
MCW-18	-	4/22/2017	Dry	<	10	10
MCW-18	-	4/23/2017	Dry	<	10	10
MCW-18	-	4/24/2017	Dry	<	10	10
MCW-18	-	4/25/2017♦	Dry	<	10	10
MCW-18	-	4/26/2017	Dry	<	10	10
MCW-18	-	4/27/2017	Dry	<	10	10
MCW-18	-	4/28/2017	Dry	<	10	10
MCW-18	-	4/29/2017	Dry	<	10	10
MCW-18	-	4/30/2017	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
♦Date of sampling

county of ventura

PUBLIC WORKS AGENCY
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June 26, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of May 2017. Sites were sampled weekly on Tuesdays (May 2, 9, 16 and 30), except for one instance when sites were sampled Wednesday (May 24) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with♦). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

					Single Sample (as sampled)
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	1215	5/2/2017♦		=	20
MCW-8b	1215	5/9/2017♦		=	500
MCW-8b	1245	5/16/2017♦		=	130
MCW-8b	1245	5/24/2017♦		=	16,000
MCW-8b	1240	5/30/2017♦		=	40
MCW-9	-	5/2/2017♦			Dry
MCW-9	-	5/9/2017♦			Dry
MCW-9	-	5/16/2017♦			Dry
MCW-9	-	5/24/2017♦			Dry
MCW-9	-	5/30/2017♦			Dry
MCW-12	1115	5/2/2017♦		=	170
MCW-12	1100	5/9/2017♦		=	300
MCW-12	1125	5/16/2017♦		=	20
MCW-12	1130	5/24/2017♦		=	16,000
MCW-12	1000	5/30/2017♦		=	40
MCW-14b	1035	5/2/2017♦		=	45
MCW-14b	1135	5/9/2017♦		=	230
MCW-14b	1040	5/16/2017♦		=	20
MCW-14b	1040	5/24/2017♦		=	340
MCW-14b	1040	5/30/2017♦		=	20
MCW-15c	1000	5/2/2017♦		=	45
MCW-15c	1015	5/9/2017♦		=	130
MCW-15c	1015	5/16/2017♦		=	230
MCW-15c	955	5/24/2017♦		=	790
MCW-15c	1000	5/30/2017♦		=	40
MCW-17	930	5/2/2017♦		=	20
MCW-17	930	5/9/2017♦		=	140
MCW-17	930	5/16/2017♦		=	230
MCW-17	915	5/24/2017♦		=	700
MCW-17	920	5/30/2017♦		=	800
MCW-18	-	5/2/2017♦			Dry
MCW-18	-	5/9/2017♦			Dry
MCW-18	-	5/16/2017♦			Dry
MCW-18	-	5/24/2017♦			Dry
MCW-18	-	5/30/2017♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.
♦Date of sampling

Table 2. Computation of daily geomean

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-8b	1245	5/1/2017		=	170	40
MCW-8b	1215	5/2/2017♦		=	20	41
MCW-8b	1215	5/3/2017		=	20	42
MCW-8b	1215	5/4/2017		=	20	39
MCW-8b	1215	5/5/2017		=	20	36
MCW-8b	1215	5/6/2017		=	20	33
MCW-8b	1215	5/7/2017		=	20	30
MCW-8b	1215	5/8/2017		=	20	28
MCW-8b	1215	5/9/2017♦		=	500	29
MCW-8b	1215	5/10/2017		=	500	30
MCW-8b	1215	5/11/2017		=	500	34
MCW-8b	1215	5/12/2017		=	500	38
MCW-8b	1215	5/13/2017		=	500	44
MCW-8b	1215	5/14/2017		=	500	50
MCW-8b	1215	5/15/2017		=	500	57
MCW-8b	1245	5/16/2017♦		=	130	62
MCW-8b	1245	5/17/2017		=	130	67
MCW-8b	1245	5/18/2017		=	130	73
MCW-8b	1245	5/19/2017		=	130	80
MCW-8b	1245	5/20/2017		=	130	87
MCW-8b	1245	5/21/2017		=	130	95
MCW-8b	1245	5/22/2017		=	130	103
MCW-8b	1245	5/23/2017		=	130	112
MCW-8b	1245	5/24/2017♦		=	16,000	144
MCW-8b	1245	5/25/2017		=	16,000	167
MCW-8b	1245	5/26/2017		=	16,000	195
MCW-8b	1245	5/27/2017		=	16,000	226
MCW-8b	1245	5/28/2017		=	16,000	264
MCW-8b	1245	5/29/2017		=	16,000	307
MCW-8b	1240	5/30/2017♦		=	40	292
MCW-8b	1240	5/31/2017		=	40	278
MCW-9	-	5/1/2017	Dry	<	10	10
MCW-9	-	5/2/2017♦	Dry	<	10	10
MCW-9	-	5/3/2017	Dry	<	10	10
MCW-9	-	5/4/2017	Dry	<	10	10
MCW-9	-	5/5/2017	Dry	<	10	10
MCW-9	-	5/6/2017	Dry	<	10	10
MCW-9	-	5/7/2017	Dry	<	10	10
MCW-9	-	5/8/2017	Dry	<	10	10
MCW-9	-	5/9/2017♦	Dry	<	10	10
MCW-9	-	5/10/2017	Dry	<	10	10
MCW-9	-	5/11/2017	Dry	<	10	10
MCW-9	-	5/12/2017	Dry	<	10	10
MCW-9	-	5/13/2017	Dry	<	10	10

Location	Time	Date	Rain		Single Sample (adjusted for rain, dry and NDs) E. coli (235 MPN)	Geomean E. coli (126 MPN)
MCW-9	-	5/14/2017	Dry	<	10	10
MCW-9	-	5/15/2017	Dry	<	10	10
MCW-9	-	5/16/2017♦	Dry	<	10	10
MCW-9	-	5/17/2017	Dry	<	10	10
MCW-9	-	5/18/2017	Dry	<	10	10
MCW-9	-	5/19/2017	Dry	<	10	10
MCW-9	-	5/20/2017	Dry	<	10	10
MCW-9	-	5/21/2017	Dry	<	10	10
MCW-9	-	5/22/2017	Dry	<	10	10
MCW-9	-	5/23/2017	Dry	<	10	10
MCW-9	-	5/24/2017♦	Dry	<	10	10
MCW-9	-	5/25/2017	Dry	<	10	10
MCW-9	-	5/26/2017	Dry	<	10	10
MCW-9	-	5/27/2017	Dry	<	10	10
MCW-9	-	5/28/2017	Dry	<	10	10
MCW-9	-	5/29/2017	Dry	<	10	10
MCW-9	-	5/30/2017♦	Dry	<	10	10
MCW-9	-	5/31/2017	Dry	<	10	10
MCW-12	1140	5/1/2017		=	80	37
MCW-12	1115	5/2/2017♦		=	170	37
MCW-12	1115	5/3/2017		=	170	38
MCW-12	1115	5/4/2017		=	170	38
MCW-12	1115	5/5/2017		=	170	38
MCW-12	1115	5/6/2017		=	170	38
MCW-12	1115	5/7/2017		=	170	38
MCW-12	1115	5/8/2017		=	170	38
MCW-12	1100	5/9/2017♦		=	300	39
MCW-12	1100	5/10/2017		=	300	39
MCW-12	1100	5/11/2017		=	300	44
MCW-12	1100	5/12/2017		=	300	50
MCW-12	1100	5/13/2017		=	300	55
MCW-12	1100	5/14/2017		=	300	62
MCW-12	1100	5/15/2017		=	300	70
MCW-12	1125	5/16/2017♦		=	20	71
MCW-12	1125	5/17/2017		=	20	73
MCW-12	1125	5/18/2017		=	20	75
MCW-12	1125	5/19/2017		=	20	76
MCW-12	1125	5/20/2017		=	20	78
MCW-12	1125	5/21/2017		=	20	80
MCW-12	1125	5/22/2017		=	20	82
MCW-12	1125	5/23/2017		=	20	84
MCW-12	1130	5/24/2017♦		=	16,000	107
MCW-12	1130	5/25/2017		=	16,000	128
MCW-12	1130	5/26/2017		=	16,000	152

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1130	5/27/2017		=	16,000	182
MCW-12	1130	5/28/2017		=	16,000	217
MCW-12	1130	5/29/2017		=	16,000	259
MCW-12	1000	5/30/2017♦		=	40	253
MCW-12	1000	5/31/2017		=	40	247
MCW-14b	1050	5/1/2017		=	130	100
MCW-14b	1035	5/2/2017♦		=	45	95
MCW-14b	1035	5/3/2017		=	45	91
MCW-14b	1035	5/4/2017		=	45	88
MCW-14b	1035	5/5/2017		=	45	85
MCW-14b	1035	5/6/2017		=	45	82
MCW-14b	1035	5/7/2017		=	45	79
MCW-14b	1035	5/8/2017		=	45	76
MCW-14b	1135	5/9/2017♦		=	230	78
MCW-14b	1135	5/10/2017		=	230	79
MCW-14b	1135	5/11/2017		=	230	88
MCW-14b	1135	5/12/2017		=	230	98
MCW-14b	1135	5/13/2017		=	230	109
MCW-14b	1135	5/14/2017		=	230	121
MCW-14b	1135	5/15/2017		=	230	134
MCW-14b	1040	5/16/2017♦		=	20	137
MCW-14b	1040	5/17/2017		=	20	140
MCW-14b	1040	5/18/2017		=	20	126
MCW-14b	1040	5/19/2017		=	20	113
MCW-14b	1040	5/20/2017		=	20	102
MCW-14b	1040	5/21/2017		=	20	91
MCW-14b	1040	5/22/2017		=	20	82
MCW-14b	1040	5/23/2017		=	20	74
MCW-14b	1040	5/24/2017♦		=	340	73
MCW-14b	1040	5/25/2017		=	340	75
MCW-14b	1040	5/26/2017		=	340	77
MCW-14b	1040	5/27/2017		=	340	80
MCW-14b	1040	5/28/2017		=	340	83
MCW-14b	1040	5/29/2017		=	340	85
MCW-14b	1040	5/30/2017♦		=	20	80
MCW-14b	1040	5/31/2017		=	20	75
MCW-15c	1000	5/1/2017		=	230	46
MCW-15c	1000	5/2/2017♦		=	45	44
MCW-15c	1000	5/3/2017		=	45	42
MCW-15c	1000	5/4/2017		=	45	44
MCW-15c	1000	5/5/2017		=	45	46
MCW-15c	1000	5/6/2017		=	45	49
MCW-15c	1000	5/7/2017		=	45	51
MCW-15c	1000	5/8/2017		=	45	54
MCW-15c	1015	5/9/2017♦		=	230	59

					Single Sample (adjusted for rain, dry and NDs)	Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	1015	5/10/2017		=	230	64
MCW-15c	1015	5/11/2017		=	230	69
MCW-15c	1015	5/12/2017		=	230	76
MCW-15c	1015	5/13/2017		=	230	82
MCW-15c	1015	5/14/2017		=	230	90
MCW-15c	1015	5/15/2017		=	230	98
MCW-15c	1015	5/16/2017♦		=	230	108
MCW-15c	1015	5/17/2017		=	230	120
MCW-15c	1015	5/18/2017		=	230	123
MCW-15c	1015	5/19/2017		=	230	125
MCW-15c	1015	5/20/2017		=	230	128
MCW-15c	1015	5/21/2017		=	230	130
MCW-15c	1015	5/22/2017		=	230	132
MCW-15c	1015	5/23/2017		=	230	135
MCW-15c	955	5/24/2017♦		=	790	143
MCW-15c	955	5/25/2017		=	790	149
MCW-15c	955	5/26/2017		=	790	156
MCW-15c	955	5/27/2017		=	790	162
MCW-15c	955	5/28/2017		=	790	169
MCW-15c	955	5/29/2017		=	790	176
MCW-15c	1000	5/30/2017♦		=	40	166
MCW-15c	1000	5/31/2017		=	40	157
MCW-17	915	5/1/2017		=	300	87
MCW-17	930	5/2/2017♦		=	20	84
MCW-17	930	5/3/2017		=	20	80
MCW-17	930	5/4/2017		=	20	79
MCW-17	930	5/5/2017		=	20	77
MCW-17	930	5/6/2017		=	20	75
MCW-17	930	5/7/2017		=	20	73
MCW-17	930	5/8/2017		=	20	72
MCW-17	930	5/9/2017♦		=	230	75
MCW-17	930	5/10/2017		=	230	78
MCW-17	930	5/11/2017		=	230	81
MCW-17	930	5/12/2017		=	230	85
MCW-17	930	5/13/2017		=	230	88
MCW-17	930	5/14/2017		=	230	92
MCW-17	930	5/15/2017		=	230	96
MCW-17	930	5/16/2017♦		=	230	102
MCW-17	930	5/17/2017		=	230	108
MCW-17	930	5/18/2017		=	230	110
MCW-17	930	5/19/2017		=	230	112
MCW-17	930	5/20/2017		=	230	114
MCW-17	930	5/21/2017		=	230	116
MCW-17	930	5/22/2017		=	230	119
MCW-17	930	5/23/2017		=	230	121
MCW-17	915	5/24/2017♦		=	700	128

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	915	5/25/2017		=	700	132
MCW-17	915	5/26/2017		=	700	135
MCW-17	915	5/27/2017		=	700	139
MCW-17	915	5/28/2017		=	700	143
MCW-17	915	5/29/2017		=	700	147
MCW-17	920	5/30/2017♦		=	800	152
MCW-17	920	5/31/2017		=	800	157
MCW-18	-	5/1/2017	Dry	<	10	10
MCW-18	-	5/2/2017♦	Dry	<	10	10
MCW-18	-	5/3/2017	Dry	<	10	10
MCW-18	-	5/4/2017	Dry	<	10	10
MCW-18	-	5/5/2017	Dry	<	10	10
MCW-18	-	5/6/2017	Dry	<	10	10
MCW-18	-	5/7/2017	Dry	<	10	10
MCW-18	-	5/8/2017	Dry	<	10	10
MCW-18	-	5/9/2017♦	Dry	<	10	10
MCW-18	-	5/10/2017	Dry	<	10	10
MCW-18	-	5/11/2017	Dry	<	10	10
MCW-18	-	5/12/2017	Dry	<	10	10
MCW-18	-	5/13/2017	Dry	<	10	10
MCW-18	-	5/14/2017	Dry	<	10	10
MCW-18	-	5/15/2017	Dry	<	10	10
MCW-18	-	5/16/2017♦	Dry	<	10	10
MCW-18	-	5/17/2017	Dry	<	10	10
MCW-18	-	5/18/2017	Dry	<	10	10
MCW-18	-	5/19/2017	Dry	<	10	10
MCW-18	-	5/20/2017	Dry	<	10	10
MCW-18	-	5/21/2017	Dry	<	10	10
MCW-18	-	5/22/2017	Dry	<	10	10
MCW-18	-	5/23/2017	Dry	<	10	10
MCW-18	-	5/24/2017♦	Dry	<	10	10
MCW-18	-	5/25/2017	Dry	<	10	10
MCW-18	-	5/26/2017	Dry	<	10	10
MCW-18	-	5/27/2017	Dry	<	10	10
MCW-18	-	5/28/2017	Dry	<	10	10
MCW-18	-	5/29/2017	Dry	<	10	10
MCW-18	-	5/30/2017♦	Dry	<	10	10
MCW-18	-	5/31/2017	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
♦ Date of sampling

county of ventura

PUBLIC
VENTURA COUNTY
WORKS

JEFF PRATT
Agency Director

Central Services Department
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Engineering Services Department
Christopher Cooper, Director

Transportation Department
David Fleisch, Director

Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

July 24, 2017

Kangshi Wang, Ph.D.
California Regional Water Quality Control Board
Los Angeles Region
Standards & TMDL Unit
320 West 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6780

Subject: MALIBU CREEK AND LAGOON BACTERIA TMDL COMPLIANCE MONITORING FOR VENTURA COUNTY AND CITY OF THOUSAND OAKS

Dear Dr. Wang:

The table below summarizes the results of the weekly monitoring effort required by the Malibu Creek and Lagoon Bacteria TMDL (TMDL) Compliance Monitoring Plan (CMP) for the month of June 2017. Sites were sampled weekly on Tuesdays (June 6, 13, 20), except for one instance when sites were sampled Monday (June 26) due to staffing conflicts. Sites without results reported were not sampled due to insufficient flow and are labeled "Dry." Daily geomeans were calculated using results from the previous 30 days (actual sampling date marked with ◆). Weeks with wet weather samples (collected less than 72 hours after a day with > 0.1" rain) use the previous non-rain single sample value to calculate the geomean. Half the detection limit was used for the purpose of calculating the daily geomean for sites with results reported as < 20 MPN/100ml or for dry weather when no sample was taken.

Fecal coliform monitoring has been discontinued, as approved by the Los Angeles Regional Water Quality Control Board on October 31, 2014, in alignment with the Regional Board's removal of the fecal coliform objective for REC-1 freshwaters from the TMDL on June 7, 2012 and subsequent approval by the U.S. Environmental Protection Agency on July 2, 2014.

If you have any questions regarding this matter, please contact me at (805) 654-3942.

Sincerely,

Arne Anselm
Deputy Director, Watershed Protection District

CC: Glenn Shephard, Director Watershed Protection District
Ewelina Mutkowska, County of Ventura
Paul Jorgensen, City of Thousand Oaks (via email)
Joe Bellomo, Willdan Associates (via email)
Kelly Fisher, City of Agoura Hills (via email)
Allen Ma, County of Los Angeles (via email)

Table 1. Weekly sampling results

				Single Sample (as sampled)	
Location	Time	Date	Rain		E. coli
					(235 MPN)
MCW-8b	1230	6/6/2017♦		=	40
MCW-8b	1140	6/13/2017♦		<	20
MCW-8b	1255	6/20/2017♦		<	20
MCW-8b	1230	6/26/2017♦		<	20
MCW-9	-	6/6/2017♦			Dry
MCW-9	-	6/13/2017♦			Dry
MCW-9	-	6/20/2017♦			Dry
MCW-9	-	6/26/2017♦			Dry
MCW-12	1130	6/6/2017♦		=	80
MCW-12	1100	6/13/2017♦		=	300
MCW-12	1200	6/20/2017♦		=	110
MCW-12	1125	6/26/2017♦		=	330
MCW-14b	1040	6/6/2017♦		<	20
MCW-14b	1030	6/13/2017♦		=	20
MCW-14b	1115	6/20/2017♦		=	110
MCW-14b	1030	6/26/2017♦		=	78
MCW-15c	1000	6/6/2017♦		<	20
MCW-15c	1000	6/13/2017♦		=	500
MCW-15c	1040	6/20/2017♦		=	110
MCW-15c	940	6/26/2017♦		=	1,300
MCW-17	920	6/6/2017♦		=	40
MCW-17	935	6/13/2017♦		=	230
MCW-17	-	6/20/2017♦			Dry
MCW-17	-	6/26/2017♦			Dry
MCW-18	-	6/6/2017♦			Dry
MCW-18	-	6/13/2017♦			Dry
MCW-18	-	6/20/2017♦			Dry
MCW-18	-	6/26/2017♦			Dry

Notes:
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010.
♦Date of sampling

Table 2. Computation of daily geomean

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	**Time**	**Date**	**Rain**		**E. coli**	**E. coli**
					(235 MPN)	**(126 MPN)**
MCW-8b	1240	6/1/2017		=	40	285
MCW-8b	1240	6/2/2017		=	40	292
MCW-8b	1240	6/3/2017		=	40	298
MCW-8b	1240	6/4/2017		=	40	305
MCW-8b	1240	6/5/2017		=	40	313
MCW-8b	1230	6/6/2017♦		=	40	320
MCW-8b	1230	6/7/2017		=	40	327
MCW-8b	1230	6/8/2017		=	40	301
MCW-8b	1230	6/9/2017		=	40	277
MCW-8b	1230	6/10/2017		=	40	254
MCW-8b	1230	6/11/2017		=	40	234
MCW-8b	1230	6/12/2017		=	40	215
MCW-8b	1140	6/13/2017♦		<	10	189
MCW-8b	1140	6/14/2017		<	10	166
MCW-8b	1140	6/15/2017		<	10	152
MCW-8b	1140	6/16/2017		<	10	139
MCW-8b	1140	6/17/2017		<	10	128
MCW-8b	1140	6/18/2017		<	10	118
MCW-8b	1140	6/19/2017		<	10	108
MCW-8b	1255	6/20/2017♦		<	10	99
MCW-8b	1255	6/21/2017		<	10	91
MCW-8b	1255	6/22/2017		<	10	84
MCW-8b	1255	6/23/2017		<	10	65
MCW-8b	1255	6/24/2017		<	10	51
MCW-8b	1255	6/25/2017		<	10	40
MCW-8b	1230	6/26/2017♦		<	10	31
MCW-8b	1230	6/27/2017		<	10	24
MCW-8b	1230	6/28/2017		<	10	19
MCW-8b	1230	6/29/2017		<	10	18
MCW-8b	1230	6/30/2017		<	10	17
MCW-9		6/1/2017	Dry	<	10	10
MCW-9	-	6/2/2017	Dry	<	10	10
MCW-9	-	6/3/2017	Dry	<	10	10
MCW-9	-	6/4/2017	Dry	<	10	10
MCW-9	-	6/5/2017	Dry	<	10	10
MCW-9	-	6/6/2017♦	Dry	<	10	10
MCW-9	-	6/7/2017	Dry	<	10	10
MCW-9	-	6/8/2017	Dry	<	10	10
MCW-9	-	6/9/2017	Dry	<	10	10
MCW-9	-	6/10/2017	Dry	<	10	10
MCW-9	-	6/11/2017	Dry	<	10	10
MCW-9	-	6/12/2017	Dry	<	10	10
MCW-9	-	6/13/2017♦	Dry	<	10	10
MCW-9	-	6/14/2017	Dry	<	10	10

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-9	-	6/15/2017	Dry	<	10	10
MCW-9	-	6/16/2017	Dry	<	10	10
MCW-9	-	6/17/2017	Dry	<	10	10
MCW-9	-	6/18/2017	Dry	<	10	10
MCW-9	-	6/19/2017	Dry	<	10	10
MCW-9	-	6/20/2017♦	Dry	<	10	10
MCW-9	-	6/21/2017	Dry	<	10	10
MCW-9	-	6/22/2017	Dry	<	10	10
MCW-9	-	6/23/2017	Dry	<	10	10
MCW-9	-	6/24/2017	Dry	<	10	10
MCW-9	-	6/25/2017	Dry	<	10	10
MCW-9	-	6/26/2017♦	Dry	<	10	10
MCW-9	-	6/27/2017	Dry	<	10	10
MCW-9	-	6/28/2017	Dry	<	10	10
MCW-9	-	6/29/2017	Dry	<	10	10
MCW-9	-	6/30/2017	Dry	<	10	10
MCW-12	1000	6/1/2017		=	40	236
MCW-12	1000	6/2/2017		=	40	224
MCW-12	1000	6/3/2017		=	40	214
MCW-12	1000	6/4/2017		=	40	204
MCW-12	1000	6/5/2017		=	40	194
MCW-12	1130	6/6/2017♦		=	80	189
MCW-12	1130	6/7/2017		=	80	185
MCW-12	1130	6/8/2017		=	80	177
MCW-12	1130	6/9/2017		=	80	169
MCW-12	1130	6/10/2017		=	80	162
MCW-12	1130	6/11/2017		=	80	155
MCW-12	1130	6/12/2017		=	80	148
MCW-12	1100	6/13/2017♦		=	300	148
MCW-12	1100	6/14/2017		=	300	148
MCW-12	1100	6/15/2017		=	300	162
MCW-12	1100	6/16/2017		=	300	177
MCW-12	1100	6/17/2017		=	300	194
MCW-12	1100	6/18/2017		=	300	213
MCW-12	1100	6/19/2017		=	300	233
MCW-12	1200	6/20/2017♦		=	110	246
MCW-12	1200	6/21/2017		=	110	261
MCW-12	1200	6/22/2017		=	110	276
MCW-12	1200	6/23/2017		=	110	234
MCW-12	1200	6/24/2017		=	110	198
MCW-12	1200	6/25/2017		=	110	168
MCW-12	1125	6/26/2017♦		=	330	147
MCW-12	1125	6/27/2017		=	330	129
MCW-12	1125	6/28/2017		=	330	114

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-12	1125	6/29/2017		=	330	122
MCW-12	1125	6/30/2017		=	330	131
MCW-14b	1040	6/1/2017		=	20	73
MCW-14b	1040	6/2/2017		=	20	71
MCW-14b	1040	6/3/2017		=	20	69
MCW-14b	1040	6/4/2017		=	20	68
MCW-14b	1040	6/5/2017		=	20	66
MCW-14b	1040	6/6/2017♦		<	10	63
MCW-14b	1040	6/7/2017		<	10	60
MCW-14b	1040	6/8/2017		<	10	54
MCW-14b	1040	6/9/2017		<	10	48
MCW-14b	1040	6/10/2017		<	10	43
MCW-14b	1040	6/11/2017		<	10	39
MCW-14b	1040	6/12/2017		<	10	35
MCW-14b	1030	6/13/2017♦		=	20	33
MCW-14b	1030	6/14/2017		=	20	30
MCW-14b	1030	6/15/2017		=	20	30
MCW-14b	1030	6/16/2017		=	20	30
MCW-14b	1030	6/17/2017		=	20	30
MCW-14b	1030	6/18/2017		=	20	30
MCW-14b	1030	6/19/2017		=	20	30
MCW-14b	1115	6/20/2017♦		=	110	32
MCW-14b	1115	6/21/2017		=	110	34
MCW-14b	1115	6/22/2017		=	110	36
MCW-14b	1115	6/23/2017		=	110	34
MCW-14b	1115	6/24/2017		=	110	33
MCW-14b	1115	6/25/2017		=	110	32
MCW-14b	1030	6/26/2017♦		=	78	30
MCW-14b	1030	6/27/2017		=	78	29
MCW-14b	1030	6/28/2017		=	78	27
MCW-14b	1030	6/29/2017		=	78	29
MCW-14b	1030	6/30/2017		=	78	30
MCW-15c	1000	6/1/2017		=	40	156
MCW-15c	1000	6/2/2017		=	40	155
MCW-15c	1000	6/3/2017		=	40	155
MCW-15c	1000	6/4/2017		=	40	154
MCW-15c	1000	6/5/2017		=	40	154
MCW-15c	1000	6/6/2017♦		<	10	146
MCW-15c	1000	6/7/2017		<	10	139
MCW-15c	1000	6/8/2017		<	10	128
MCW-15c	1000	6/9/2017		<	10	117
MCW-15c	1000	6/10/2017		<	10	108
MCW-15c	1000	6/11/2017		<	10	99
MCW-15c	1000	6/12/2017		<	10	91
MCW-15c	1000	6/13/2017♦		=	500	95

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location		Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-15c	1000	6/14/2017		=	500	99
MCW-15c	1000	6/15/2017		=	500	102
MCW-15c	1000	6/16/2017		=	500	104
MCW-15c	1000	6/17/2017		=	500	107
MCW-15c	1000	6/18/2017		=	500	110
MCW-15c	1000	6/19/2017		=	500	113
MCW-15c	1040	6/20/2017♦		=	110	110
MCW-15c	1040	6/21/2017		=	110	107
MCW-15c	1040	6/22/2017		=	110	105
MCW-15c	1040	6/23/2017		=	110	98
MCW-15c	1040	6/24/2017		=	110	92
MCW-15c	1040	6/25/2017		=	110	86
MCW-15c	940	6/26/2017♦		=	1,300	88
MCW-15c	940	6/27/2017		=	1,300	89
MCW-15c	940	6/28/2017		=	1,300	90
MCW-15c	940	6/29/2017		=	1,300	102
MCW-15c	940	6/30/2017		=	1,300	114
MCW-17	920	6/1/2017		=	800	178
MCW-17	920	6/2/2017		=	800	201
MCW-17	920	6/3/2017		=	800	227
MCW-17	920	6/4/2017		=	800	257
MCW-17	920	6/5/2017		=	800	291
MCW-17	920	6/6/2017♦		=	40	298
MCW-17	920	6/7/2017		=	40	305
MCW-17	920	6/8/2017		=	40	292
MCW-17	920	6/9/2017		=	40	280
MCW-17	920	6/10/2017		=	40	269
MCW-17	920	6/11/2017		=	40	258
MCW-17	920	6/12/2017		=	40	247
MCW-17	935	6/13/2017♦		=	230	251
MCW-17	935	6/14/2017		=	230	256
MCW-17	935	6/15/2017		=	230	256
MCW-17	935	6/16/2017		=	230	256
MCW-17	935	6/17/2017		=	230	256
MCW-17	935	6/18/2017		=	230	256
MCW-17	935	6/19/2017		=	230	256
MCW-17	-	6/20/2017♦	Dry	<	10	230
MCW-17	-	6/21/2017	Dry	<	10	207
MCW-17	-	6/22/2017	Dry	<	10	187
MCW-17	-	6/23/2017	Dry	<	10	162
MCW-17	-	6/24/2017	Dry	<	10	141
MCW-17	-	6/25/2017	Dry	<	10	122
MCW-17	-	6/26/2017♦	Dry	<	10	106
MCW-17	-	6/27/2017	Dry	<	10	92
MCW-17	-	6/28/2017	Dry	<	10	80
MCW-17	-	6/29/2017	Dry	<	10	69

				Single Sample (adjusted for rain, dry and NDs)		Geomean
Location	Time	Date	Rain		E. coli	E. coli
					(235 MPN)	(126 MPN)
MCW-17	-	6/30/2017	Dry	<	10	60
MCW-18	-	6/1/2017	Dry	<	10	10
MCW-18	-	6/2/2017	Dry	<	10	10
MCW-18	-	6/3/2017	Dry	<	10	10
MCW-18	-	6/4/2017	Dry	<	10	10
MCW-18	-	6/5/2017	Dry	<	10	10
MCW-18	-	6/6/2017♦	Dry	<	10	10
MCW-18	-	6/7/2017	Dry	<	10	10
MCW-18	-	6/8/2017	Dry	<	10	10
MCW-18	-	6/9/2017	Dry	<	10	10
MCW-18	-	6/10/2017	Dry	<	10	10
MCW-18	-	6/11/2017	Dry	<	10	10
MCW-18	-	6/12/2017	Dry	<	10	10
MCW-18	-	6/13/2017♦	Dry	<	10	10
MCW-18	-	6/14/2017	Dry	<	10	10
MCW-18	-	6/15/2017	Dry	<	10	10
MCW-18	-	6/16/2017	Dry	<	10	10
MCW-18	-	6/17/2017	Dry	<	10	10
MCW-18	-	6/18/2017	Dry	<	10	10
MCW-18	-	6/19/2017	Dry	<	10	10
MCW-18	-	6/20/2017♦	Dry	<	10	10
MCW-18	-	6/21/2017	Dry	<	10	10
MCW-18	-	6/22/2017	Dry	<	10	10
MCW-18	-	6/23/2017	Dry	<	10	10
MCW-18	-	6/24/2017	Dry	<	10	10
MCW-18	-	6/25/2017	Dry	<	10	10
MCW-18	-	6/26/2017♦	Dry	<	10	10
MCW-18	-	6/27/2017	Dry	<	10	10
MCW-18	-	6/28/2017	Dry	<	10	10
MCW-18	-	6/29/2017	Dry	<	10	10
MCW-18	-	6/30/2017	Dry	<	10	10

Notes:
Weeks with wet weather samples (collected less than 72 hours after a day with >0.1" rain) use the previous non-rain single sample value to calculate the geomean.
Results of <20 are adjusted to use half the MDL (=10) in the calculation of the geomean
* The RWQCB granted permission to replace site MCW-15b with site Special-05 (renamed MCW-15c) on August 11th, 2010
♦ Date of sampling