CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM IRRIGATED AGRICULTURAL LANDS WITHIN THE LOS ANGELES REGION

REVISED

REVIEW OF CONDITIONAL WAIVER ORDER NO. R4-2010-0186
AND RECOMMENDATIONS FOR WAIVER RENEWAL

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

~~FEBRUARY~~ MARCH 2016

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1. INTRODUCTION

Pursuant to California Water Code section 13269, the California Regional Water Quality Control Board Los Angeles Region (Regional Board) adopted a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R4-2005-0080) on November 3, 2005 (2005 Waiver). On October 7, 2010, the Regional Board renewed the Conditional Waiver of Waste Discharge Requirements for Dischargers from Irrigated Lands (Order No. R4-2010-0186) (2010 Waiver). On October 8, 2015, the Regional Board adopted a temporary six-month Conditional Waiver (Order No. R4-2015-0202) that had the same requirements as Order No. R4-2010-0186.

Agricultural activities can generate wastes, as defined in the Water Code, such as sediment, pesticides, and nutrients that upon discharge to receiving water bodies can degrade water quality, impair beneficial uses, and cause nuisance conditions. The objectives of the Conditional Waiver program are to protect and restore the water quality of the waters of the state consistent with section 13269 of the California Water Code. This objective is accomplished through monitoring the water quality impacts caused by irrigated agricultural discharges and requiring control of those discharges as necessary to protect water quality. Specifically, the goal is to attain water quality benchmarks[1] by regulating the discharges of waste from irrigated agricultural lands within the Los Angeles Region. In accordance with California Water Code section 13269(a)(2), a Conditional Waiver for Irrigated Lands may not exceed five years in duration. This report presents a review of the Conditional Waiver for Irrigated Lands program over the last ten years and, based on the review, provides recommendations for the proposed new Conditional Waiver.

2. LAWS AND POLICIES

The Porter-Cologne Water Quality Control Act requires that any person discharging waste or proposing to discharge waste within the Regional Water Board's jurisdiction that could affect the quality of the waters of the state, shall file a Report of Waste

[1] "Water quality benchmark" means narrative or numeric water quality objectives established in the Regional Board Basin Plan, prohibitions established consistent with Water Code section 13243, a requirement established by an applicable Statewide plan or policy, criteria established by USEPA (including those in the California Toxics Rule and the applicable portions of the National Toxics Rule), and load allocations established pursuant to a total maximum daily load (TMDL) (whether established in the Basin Plan or other lawful means).

Discharge (ROWD) with the Regional Water Board. (Cal. Wat. Code §13260(a)(1)) The Regional Water Board may, in its discretion, issue Waste Discharge Requirements (WDRs) pursuant to Water Code section 13263(a). Water Code section 13269 authorizes the Regional Water Board to conditionally waive the provisions of Water Code sections 13260(a)(1) and 13263(a).

Water Code section 13269 requires that any waiver of ROWDs and/or WDRs ("Conditional Waiver") must (i) be consistent with any applicable water quality control plans; (ii) be "in the public interest;" (iii) contain conditions; (iv) not exceed five years in duration, but may be renewed in up to five-year increments; and (v) include monitoring provisions. In addition, Water Code section 13269(a)(4)(A) authorizes the State Water Resources Control Board (State Water Board) to adopt annual fees for recipients of waivers. Water Code section 13269(e) mandates that the regional water boards shall require compliance with the conditions of a waiver of waste discharge requirements.

The State Water Board has adopted the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program, which sets forth policies for the regulation of nonpoint sources that apply to irrigated agriculture subject to a conditional waiver. The Policy requires a nonpoint source program to implement five key elements that include (1) the purpose of the program must be stated and the program must address nonpoint source pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements; (2) the program must describe the practices to be implemented and processes to be used to select and verify proper implementation of practices; (3) where it is necessary to allow time to achieve water quality requirements, the program must include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching specified requirements; (4) the program must include feedback mechanisms to determine whether the program is achieving its purpose or whether additional or different practices are required; and (5) the program must state the consequences of failure to achieve the stated purpose.

As described in this Staff Report, the proposed Waiver renewal includes conditions in compliance with Water Code section 13269 and consistent with the Nonpoint Source Policy and other applicable requirements of the State and Regional Water Board.

3. SUMMARY OF 2010 CONDITIONAL WAIVER REQUIREMENTS

The 2010 Waiver continued many of the requirements of the 2005 Waiver. Agricultural dischargers were required to (1) enroll in the program, (2) conduct water quality monitoring, and (3) if monitoring showed exceedances of water quality benchmarks, develop a water quality management plan (WQMP) to implement iterative management practices (MPs) to attain water quality benchmarks. The process for enrollment and the documents required from the dischargers to enroll remained the same as in the 2005 Waiver. Water quality monitoring remained the key condition of the 2010 Waiver. A significant addition to the 2010 Waiver was the incorporation of TMDL load allocations as water quality benchmarks. In addition, the 2010 Waiver required more detailed WQMPs and specified that growers must implement the MPs identified in the WQMPs.

4. CURRENT ENROLLMENT STATUS

There are currently two approved Discharger Groups participating in the Conditional Waiver for Irrigated Lands. The Ventura County Agricultural Irrigated Lands Group (VCAILG) represents growers in Ventura County and the Nursery Growers Association – Los Angeles Irrigated Lands Group (NGA-LAILG) represents growers in Los Angeles County.

VCAILG formed in 2006 with the express purpose of acting as a county-wide Discharger Group to comply with the Conditional Waiver. VCAILG is overseen by a Steering Committee and Executive Committee. These committees are comprised of agricultural organization representatives, agricultural water district representatives, and landowners and/or growers from the three primary watersheds in Ventura County (Calleguas Creek, Santa Clara River, and Ventura River). Because VCAILG is an unincorporated organization, the Farm Bureau of Ventura County acts as the responsible entity for the collection of funds, contracting, and other business and/or fiscal matters. Currently, there are 1,281 members and 82,189 acres enrolled in the Conditional Waiver program through membership in VCAILG (Table 1). According to the 2014 Ventura County crop and livestock report, there are approximately 93,376 irrigated acres in Ventura County; thus, 88% of the irrigated acreage in the county is enrolled in the Conditional Waiver program.

Table 1 Irrigated acres enrolled in VCAILG

Watershed	Enrolled Irrigated Acres
Calleguas Creek	42,268
Oxnard Coastal	5,890
Santa Clara River	29,146
Ventura River	4,886
Total	**82,189**

NGA-LAILG also formed in 2006 to act as a Discharger Group under the Conditional Waiver program and represents Los Angeles County growers within the Los Angeles Region. NGA is a non-profit association with the purpose of encouraging the development of nursery stock and promoting matters pertaining to the interests of nursery growers. While mostly comprised of nursery growers, NGA-LAILG also includes orchards, vineyards, and farms as members. This group currently has 275 members with 1,952 acres enrolled throughout Los Angeles County. The total acreage of irrigated agriculture within Los Angeles County under the jurisdiction of the Regional Water Board is unknown, but it is estimated to be approximately 3,500 acres. Thus, about 55% of the total irrigated acreage in Los Angeles County within the Los Angeles Region is enrolled in the Conditional Waiver.

During the 2010 Waiver term, Regional Board staff worked with representatives from Southern California Edison (SCE) and the Department of Water and Power (DWP), who are the two major landowners of irrigated agricultural lands in Los Angeles County, to enroll growers who lease their property. In 2013, after several meetings with Regional Board staff and two joint workshops, SCE sent out a packet to all their tenants, informing them that their lease could be at risk if they did not enroll in the Conditional Waiver program. This partnership between the Regional Board and SCE resulted in a 10% increase in number of growers enrolled in 2013. In 2016, as a result of a similar partnership with DWP, enrollment in Los Angeles County increased by 30%.

5. SUMMARY OF CONDITIONAL WAIVER IMPLEMENTATION

5.1 EDUCATION REQUIREMENTS

The 2010 Waiver also required that growers and/or farm managers participate in eight hours of educational training. The educational training focused on typical agricultural practices, potential threats to water quality, and MPs designed to control those threats. Over the term of the 2010 Waiver, the Regional Board Executive Officer approved approximately 60 different workshops organized by VCAILG and NGA-LAILG, many in both English and Spanish, providing growers opportunities to obtain the required education credit. ~~Ninety~~ Sixty six percent of VCAILG members and 65% of NGA-LAILG members have completed the required educational training[2].

5.2 VENTURA COUNTY MONITORING RESULTS

VCAILG conducts monitoring at 15 locations throughout Ventura County; 7 sites are located in the Calleguas Creek Watershed, 6 in the Santa Clara River Watershed, and 2 in the Ventura River Watershed (Table 2 and Figure 1). Sample locations were selected to characterize agricultural inputs to surface waters, minimize contributions from other land uses, and are generally located at the lower end of agricultural drains and tributaries. Monitoring during both Waiver terms was conducted from 2007 through 2015, excluding 2011, because VCAILG suspended monitoring until their monitoring and reporting plan (MRP) submitted under the 2010 waiver was approved[3]. Figures 2 through 23 present the nitrogen, pesticides, and toxicity water quality data during the 2007-2014 period in the Calleguas Creek and Santa Clara River Watersheds. No graphs are presented for the monitoring locations in the Ventura River watershed, but the water quality results are discussed in the text. Monitoring results are presented as an assessment of existing water quality after two terms of the Conditional Waiver. No comparisons are drawn between water quality conditions and implementation of management practices or other conditions of the Conditional Waiver (see Sections 6.1 and 12.2 for further discussion).

[2] The proposed Conditional Waiver also contains enforceable education requirements, but with more specificity regarding the obligations of individual dischargers.
[3] The proposed Conditional Waiver contains a provision that monitoring under the existing MRP shall continue until the new MRP is approved.

Table 2 VCAILG sampling locations

Station ID	Station Location	Watershed
01T_ODD3_ARN	Rio de Santa Clara / Oxnard Drain #3 at Arnold Road	Calleguas Creek
04D_ETTG	Revolon Slough at Etting Road	Calleguas Creek
04D_LAS	Revolon Slough at South Las Posas Road	Calleguas Creek
05D_LAVD	La Vista Drain at La Vista Avenue	Calleguas Creek
05T_HONDO	Hondo Barranca at Highway 118	Calleguas Creek
06T_LONG2	Long Canyon at Balcom Canyon Road	Calleguas Creek
OXD_CENTR	Central Ditch at Harbor Boulevard	Oxnard Coastal
S02T_ELLS	Ellsworth Barranca at Telegraph Road	Santa Clara River
S02T_TODD	Todd Barranca at Highway 126	Santa Clara River
S03D_BARDS	Agricultural drain along Bardsdale Avenue upstream of confluence with Santa Clara River	Santa Clara River
S03T_BOULD	Boulder Creek at Highway 126	Santa Clara River
S03T_TIMB	Timber Canyon at Highway 126	Santa Clara River
S04T_TAPO	Tapo Canyon Creek	Santa Clara River
VRT_SANTO	San Antonio Creek at Grand Avenue	Ventura River
VRT_THACH	Thatcher Creek at Ojai Avenue	Ventura River

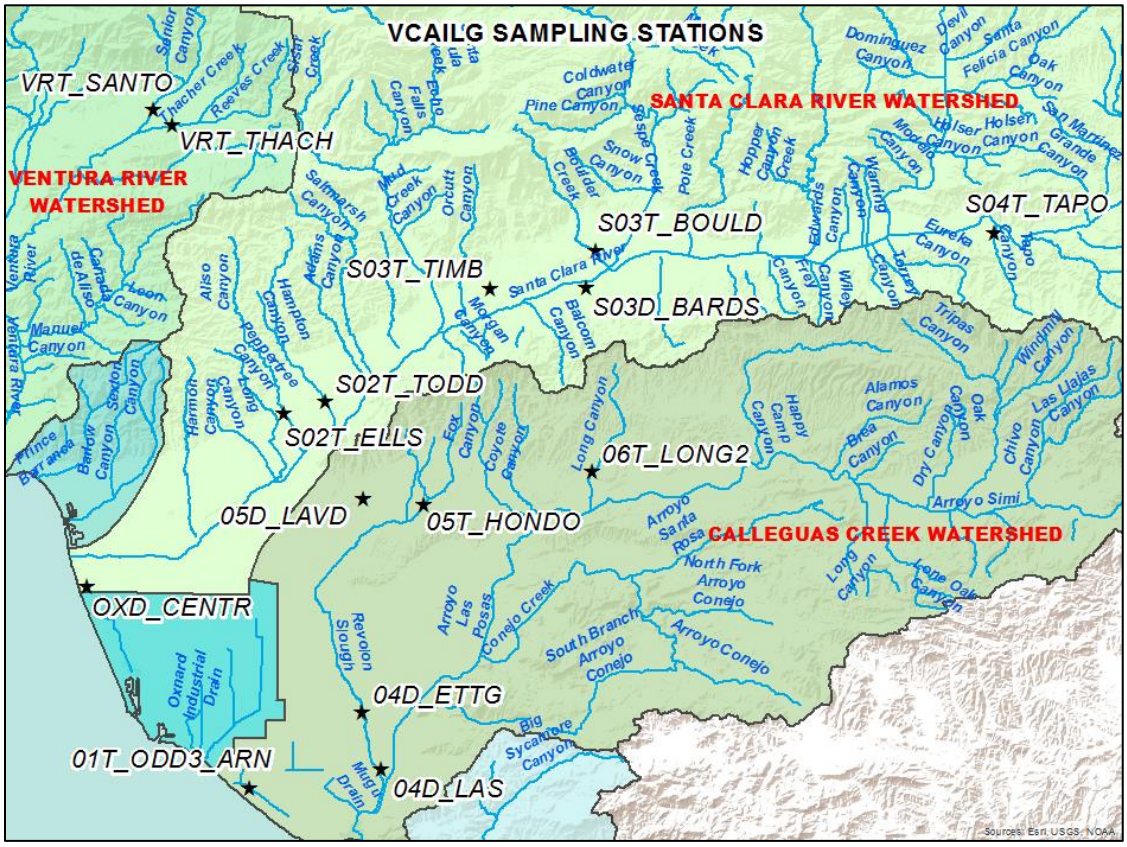

Figure 1 VCAILG sampling stations

In the Calleguas Creek and Santa Clara River Watersheds, water quality benchmark exceedances are reported consistently for organochlorine pesticides[4], organophosphate pesticides (chlorpyrifos and diazinon), and nitrogen. Trend lines are included on the graphs where necessary to show trends in water quality data for each constituent at each location. The lines do not represent statistical trends or regression analysis, but are included as a visual representation of increases and decreases in constituent concentrations.

For the purpose of this analysis, samples that were not collected in dry weather due to no flow or insufficient flow, as defined by the approved VCAILG Monitoring and Reporting Plan, are represented as zero concentrations for all analyzed constituents[5]. If there is no dry-weather discharge, then attainment of benchmarks is presumed. Also, for the completion of the analysis and trend lines, half the value of a constituent's method detection limit (MDL) was assigned to all non-detect samples. For example, the benchmark for diazinon is 0.10 µg/L. All of the non-detect samples are assigned a concentration of 0.001 µg/L, which is half of the MDL for diazinon.

5.2.1 Nitrogen Data Analysis

The water quality benchmark for nitrate-nitrogen varies depending on the waterbody, but is most commonly 10 mg/L, which is the value used here for comparison purposes. Nitrate-nitrogen exceedances are observed to the greatest extent in the Calleguas Creek Watershed during both dry and wet weather (Figures 2 and 3). The trend lines show increases and decreases at different sampling locations. In dry weather, four stations are consistently above the benchmark (04D_ETTG, 04D_LAS, 01T_ODD3_ARN and OXD_CENTR). Nitrate-nitrogen concentrations at 04D_ETTG have decreased, while nitrate-nitrogen concentrations at OXD_CENTR have stayed about the same, and

[4] The graphs focus on DDT. Other organochlorine pesticides that frequently exceed benchmarks include DDE and other DDT breakdown products, chlordane, toxaphene, and dieldrin.

[5] During the 2007-2014 period, 69 samples were not collected due to no flow or insufficient flow during dry weather at a number of sampling locations. These samples represent 45% of the total 153 potential dry-weather samples. In the Calleguas Creek Watershed, 52 samples were collected and 31 samples were not collected in dry weather. In the Santa Clara River Watershed, 32 samples were collected and 38 samples were not collected in dry weather. In 2008, the Executive Officer requested that VCAILG conduct one fish tissue monitoring event in the Santa Clara River Estuary in exchange for reduced monitoring at three other sites. Thus, during dry event 7 in 2008, VCAILG did not collect samples from three locations (01T_ODD3_ARN, S02T_TODD, and S03T_BOULD) as a trade to offset the cost of the fish tissue sampling.

nitrate-nitrogen concentrations at 04D_LAS and 01T_ODD3_ARN have increased. As reported by VCAILG, in the case of 04D_LAS, the increase is statistically significant (VCAILG, 2015). Three stations in Calleguas Creek are consistently below the benchmark (05D_LAVD, 05T_HONDO, and 06T_LONG2) in dry weather. Four out of 52 dry-weather samples were below the water quality benchmark for nitrate-nitrogen (considering all seven sites). In wet weather, the benchmark exceedances and trends are consistent with the results for dry weather at the same locations.

The concentrations of nitrate-nitrogen in the Santa Clara River Watershed are decreasing (SO3T_BOULD and SO4T_TAPO) or maintaining values below the benchmark (SO2_ELLS, SO2T_TODD, SO3D_BASRD, and SO3T_TIMB) (Figures 4 and 5). Out of the 70 potential dry-weather samples for the 2007-2014 period, 38 samples were not sampled due to insufficient or no flow and 13 out of the 32 samples that were collected were below the water quality benchmark for nitrate-nitrogen. In wet weather, the benchmark exceedances are consistent with the results for dry weather at the same locations, except for SO2T_TODD, which had some benchmark exceedances in wet weather.

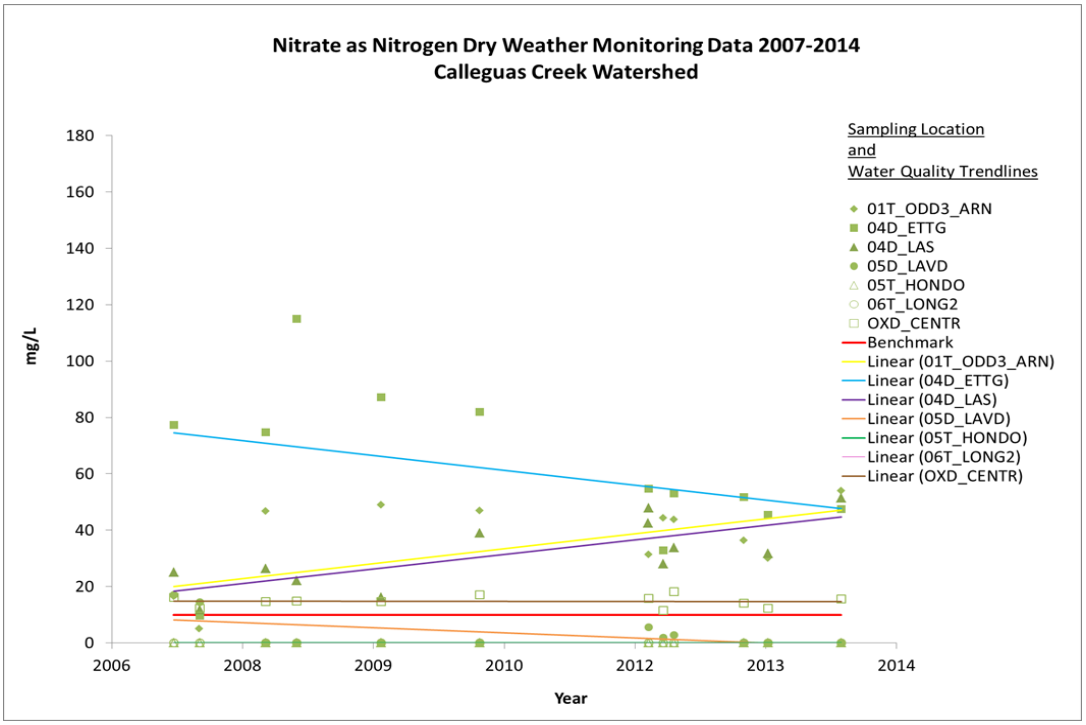

Figure 2 Nitrate as Nitrogen dry weather monitoring data 2007-2014, Calleguas Creek Watershed

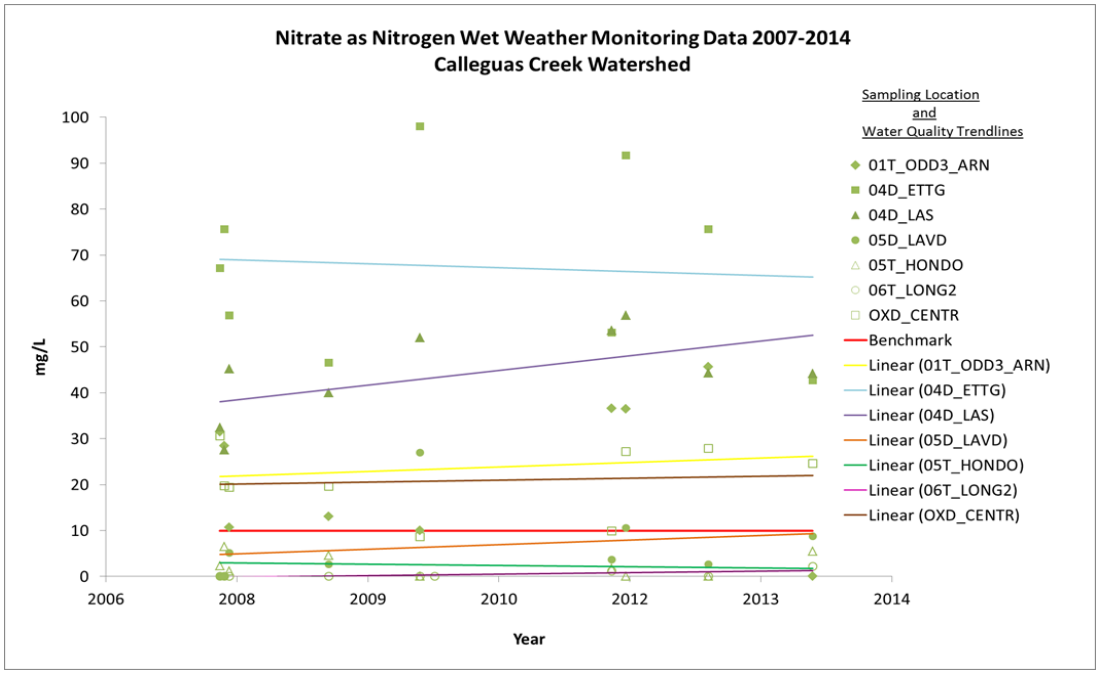

Figure 3 Nitrate as Nitrogen wet weather monitoring data 2007-2014, Calleguas Creek Watershed

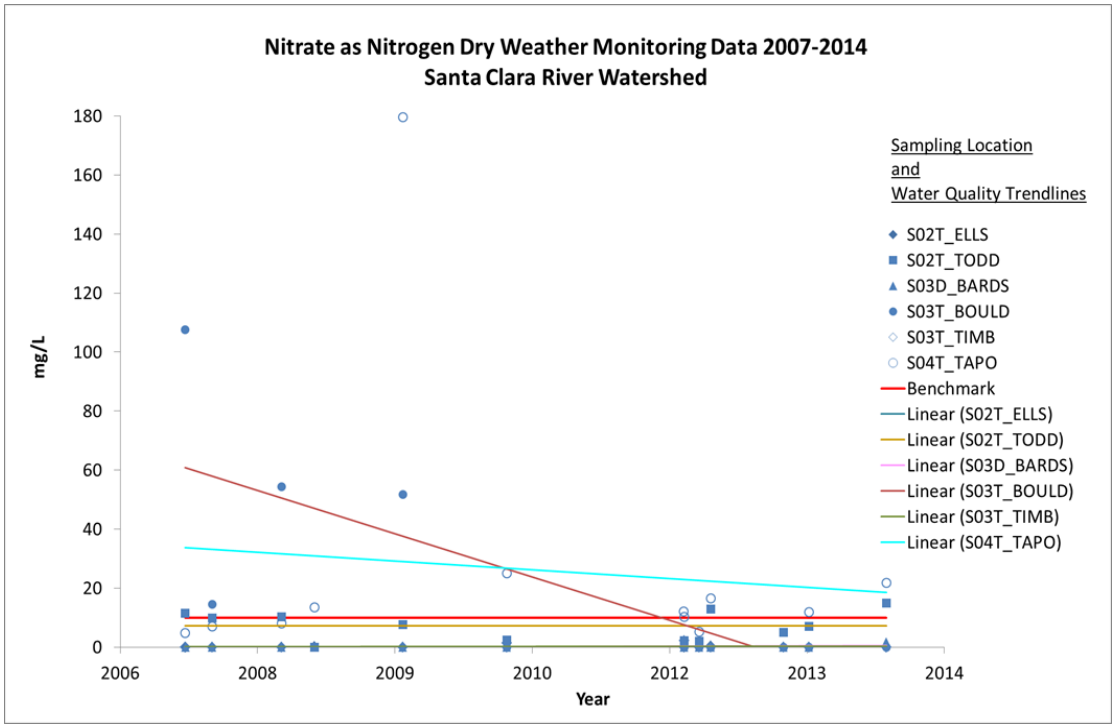

Figure 4 Nitrate as Nitrogen dry weather monitoring data 2007-2014, Santa Clara River Watershed

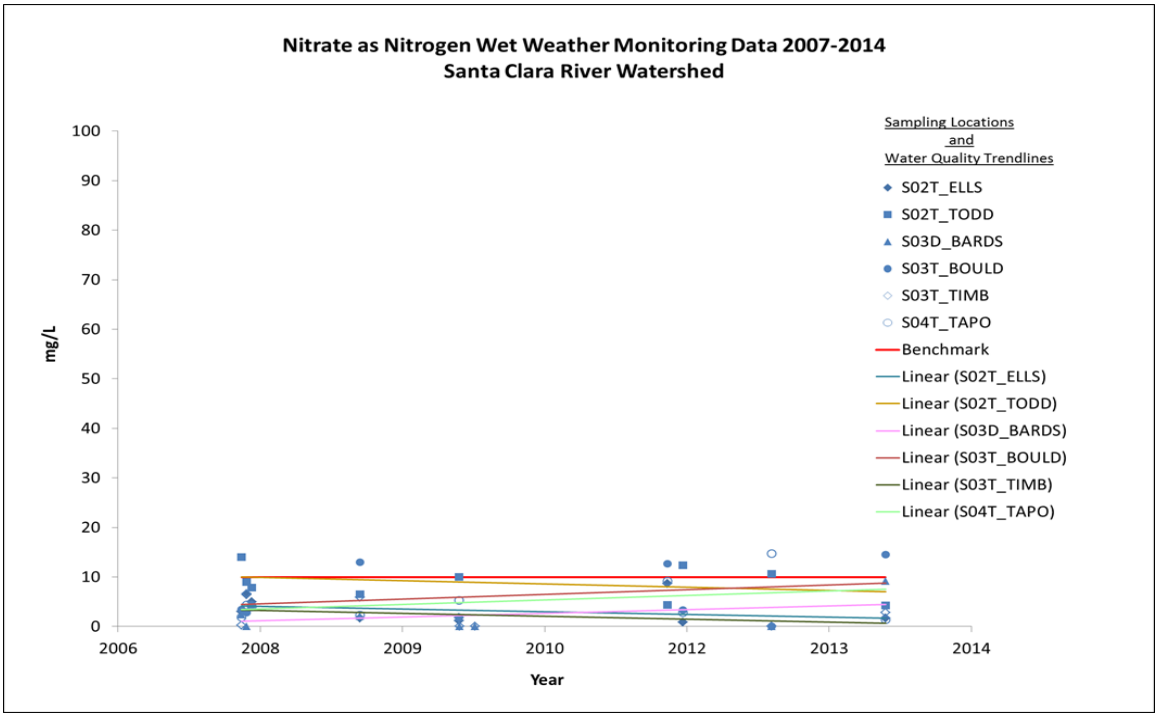

Figure 5 Nitrate as Nitrogen wet weather monitoring data 2007-2014, Santa Clara River Watershed

5.2.2 DDT Data Analysis

DDT or dichlorodiphenyltrichloroethane is a common historic organochlorine pesticide that is banned for use, but remains in the soils of agricultural fields and in agricultural runoff. The benchmark for DDT is 0.00059 µg/L. DDT exceedances are consistently present in wet and dry weather, but wet-weather monitoring results indicate higher concentrations, especially in the Calleguas Creek Watershed (Figures 6 and 7). In dry weather, the trends show slight decreases at most of the locations in Calleguas Creek, with an exception of the 05D_LAVD sampling location, where the concentrations of DDT are increasing. In wet weather, the trend lines for the Calleguas Creek Watershed show decreases of DDT concentrations at 5 of the locations (01T_ODD3_ARN, 04D_ETTG, 04D_LAS, 05T_HONDO, and OXD_CENTR) and slight increases at two locations (05D_LAVD and 06T_LONG2).

The trend lines for dry-weather monitoring data in the Santa Clara River Watershed indicate increases of DDT at two sampling locations (S03D BARDS and S04T_TAPO) and a decrease of DDT at one location (S02T_TODD) (Figures 8 and 9). Results from

the remaining locations are non-detect or samples were not collected due to insufficient or no flow. In wet weather, the trends show increases in DDT at three locations (S03_BARDS, S02T_ELLS, and S03_BOULD) and decreases in DDT at three locations (S03T_TIMB, S02T_TODD, and S04T_TAPO). The y axes of the lower graphs in Figures 6 through 8 are split to show detail because of the wide range in DDT concentrations.

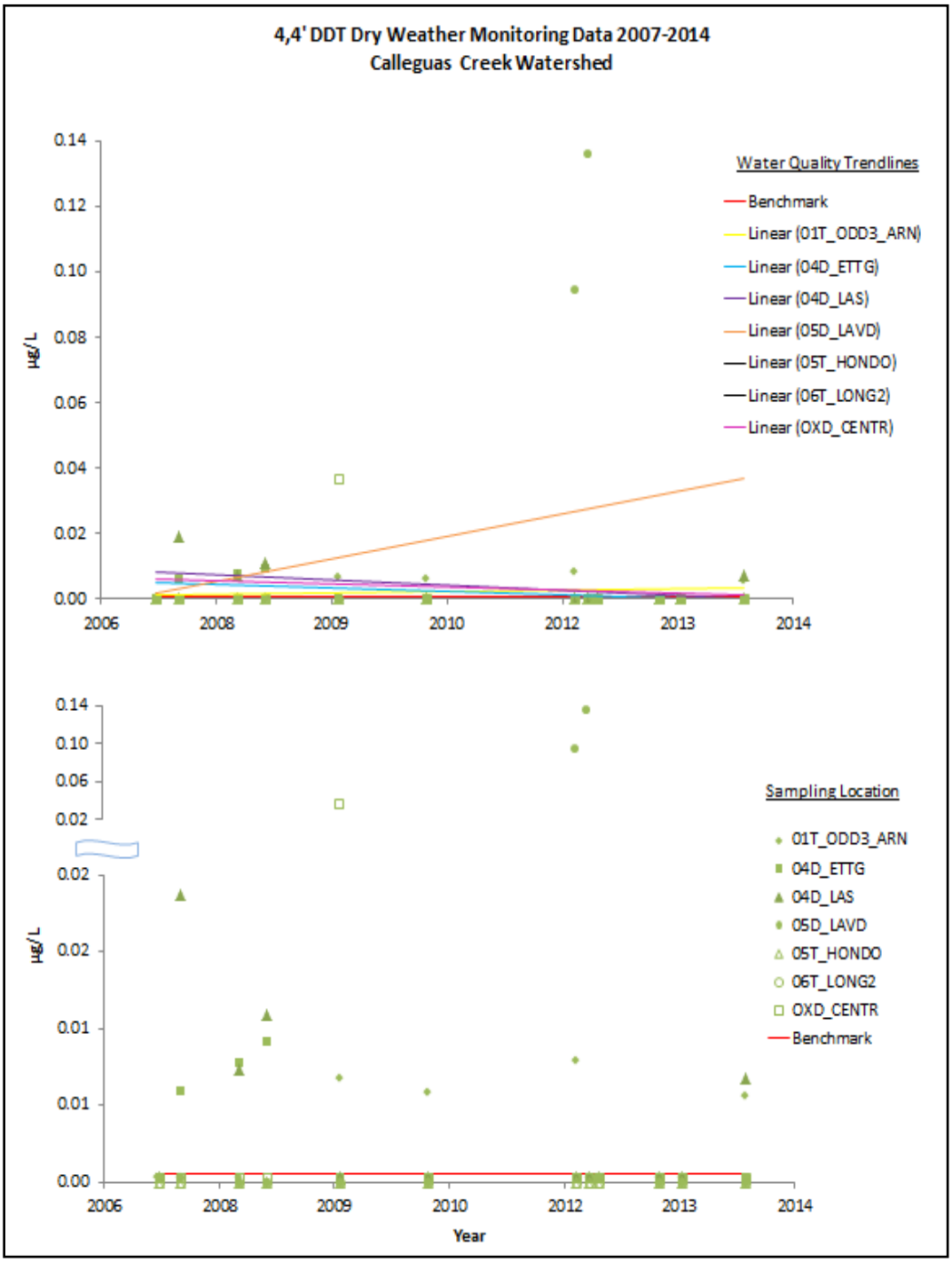

Figure 6 4,4'-DDT dry weather monitoring data 2007-2014, Calleguas Creek Watershed (Note: Y-axis on bottom graph is split to show detail.)

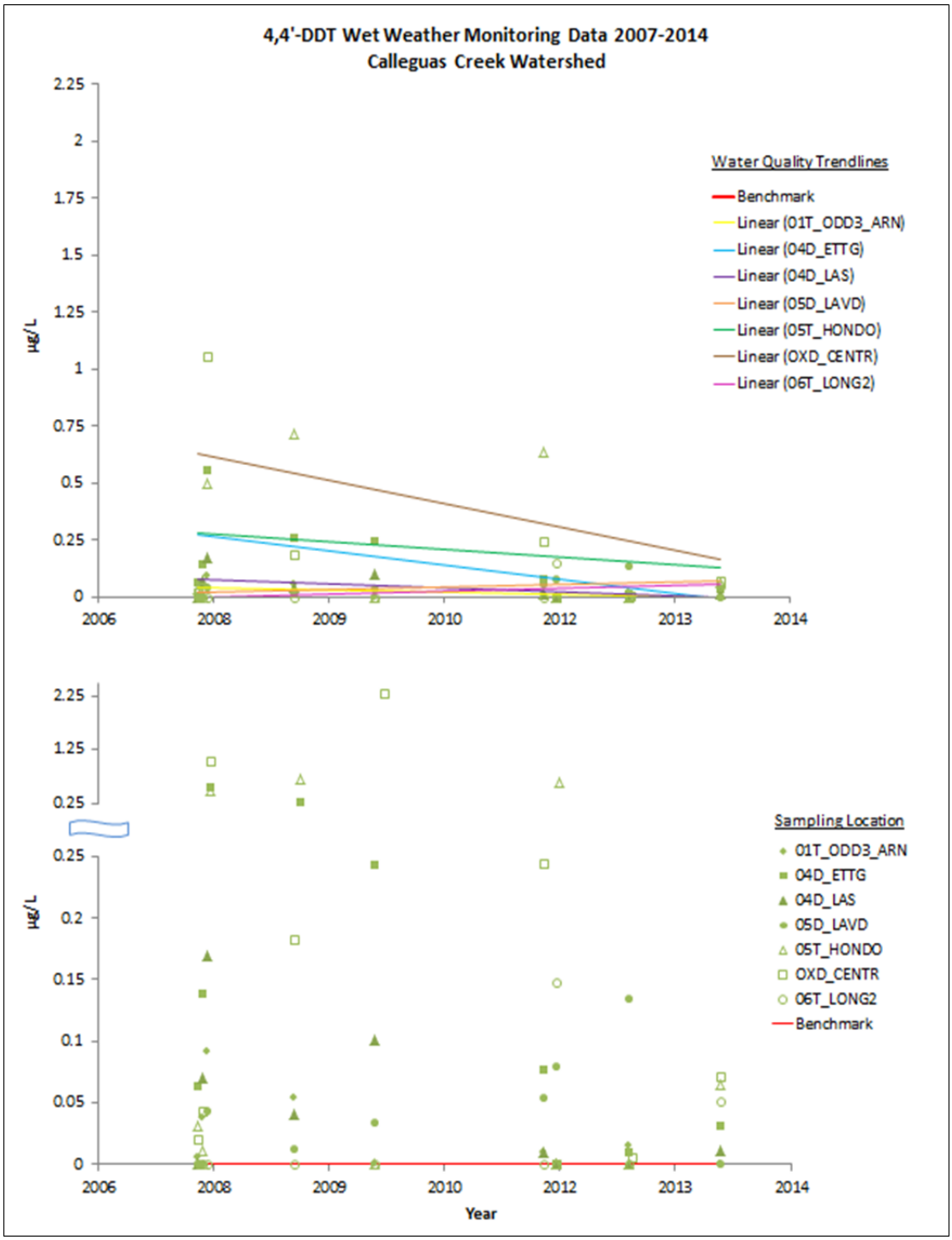

Figure 7 4,4'-DDT wet weather monitoring data 2007-2014, Calleguas Creek Watershed (Note: Y-axis on bottom graph is split to show detail.)

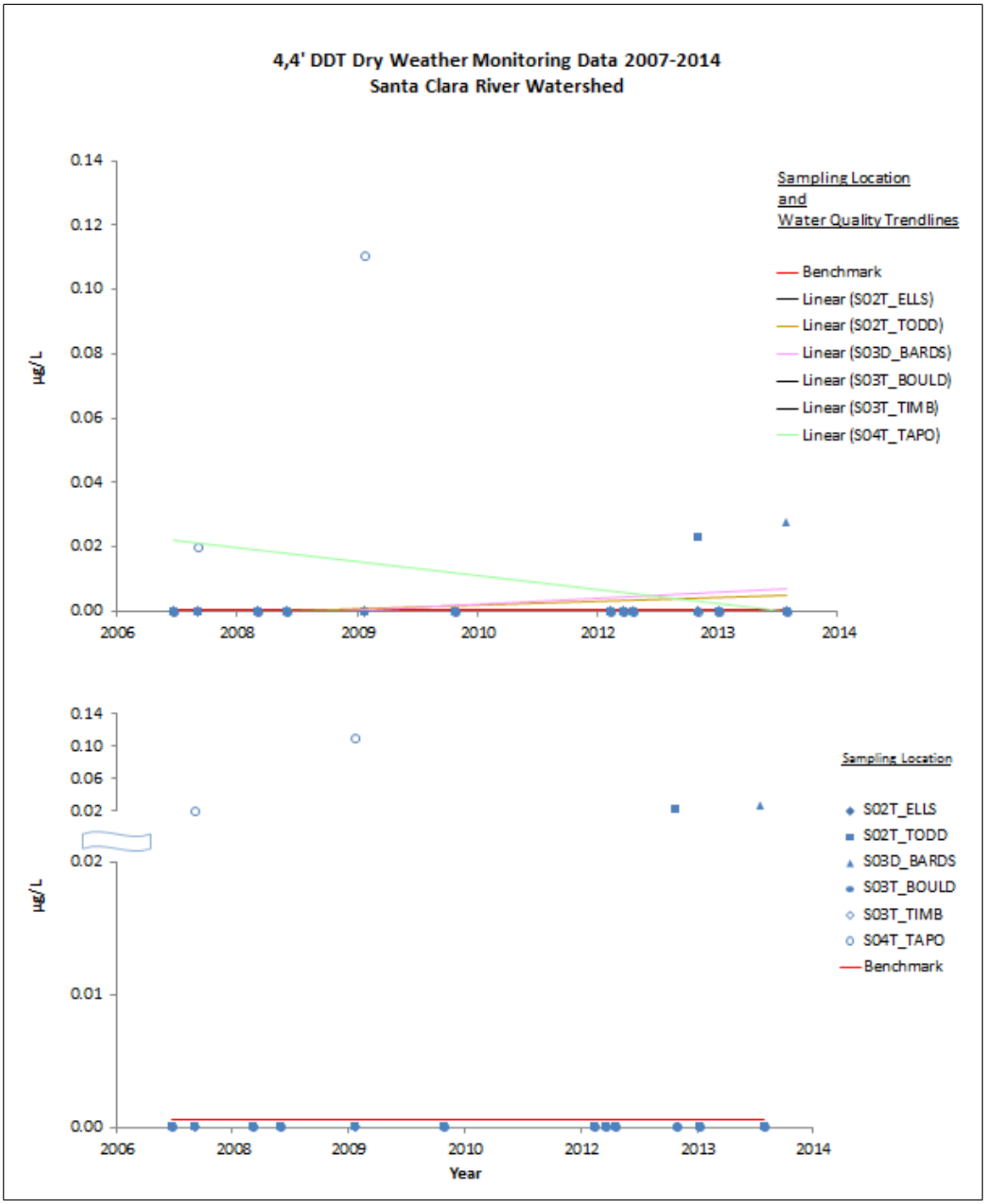

Figure 8 4,4'-DDT dry weather monitoring data 2007-2014, Santa Clara River Watershed. (Note: Y-axis on bottom graph is split to show detail.)

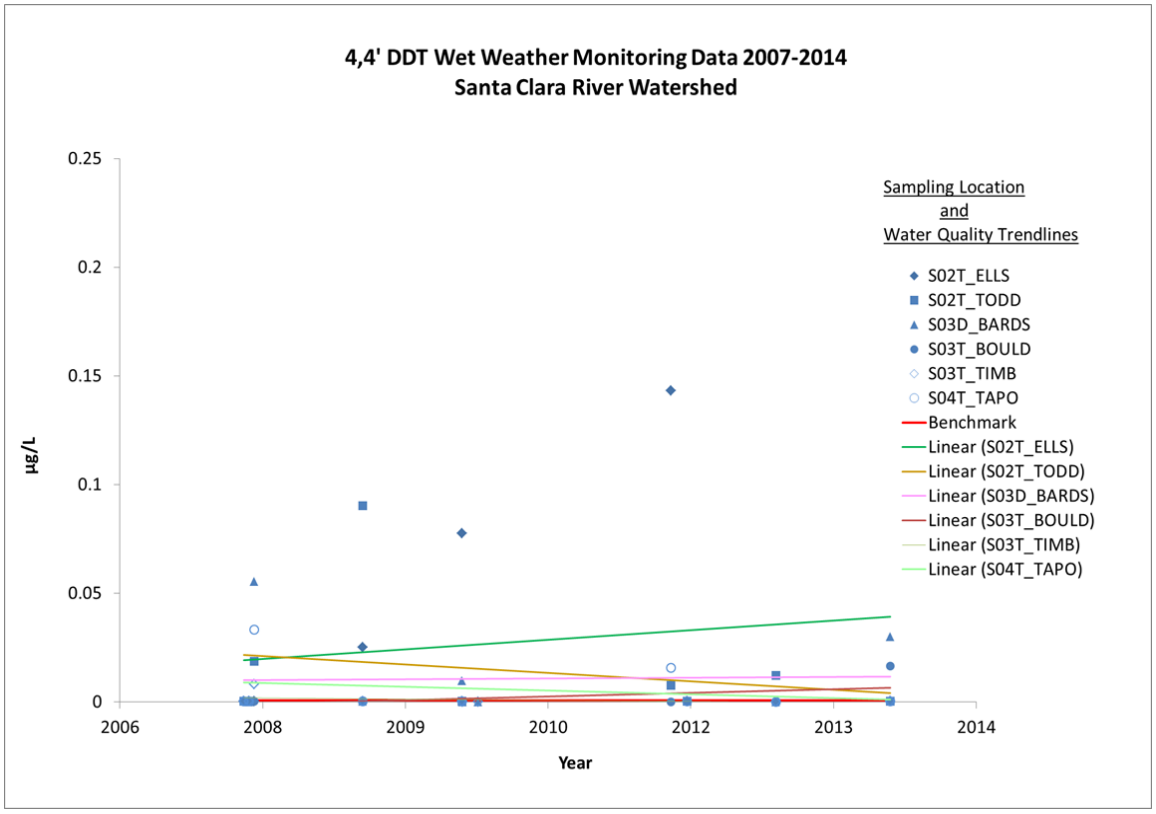

Figure 9 4,4'-DDT wet weather monitoring data 2007-2014, Santa Clara River Watershed

5.2.3 Chlorpyrifos and Diazinon Data Analysis

Figures 10 through 17 present the monitoring data analysis for chlorpyrifos and diazinon, which are organophosphate pesticides. The frequency and magnitude of chlorpyrifos exceedances are decreasing in both watersheds, especially during dry weather. In the Calleguas Creek Watershed during dry weather, most chlorpyrifos concentrations are below the benchmark and the trend lines indicate decreases in chlorpyrifos at all locations except one (OXD_CENTR). In wet weather, the trends indicate decreases of chlorpyrifos at all of the sampling locations except one (06T_LONG2).

In the Santa Clara River Watershed, the concentrations of chlorpyrifos are below the benchmark in dry weather except for one instance in 2008 at the S02T_ELLS sampling location. In wet weather, the trends lines for chlorpyrifos indicate decreases at three locations (S0T_ELLS, S03D_BARDS, and S02T_TODD) and an increase at one (S03T_TIMB). Concentrations of chlorpyrifos at S03T_BOULD and S04T_TAPO are below the benchmark in wet weather.

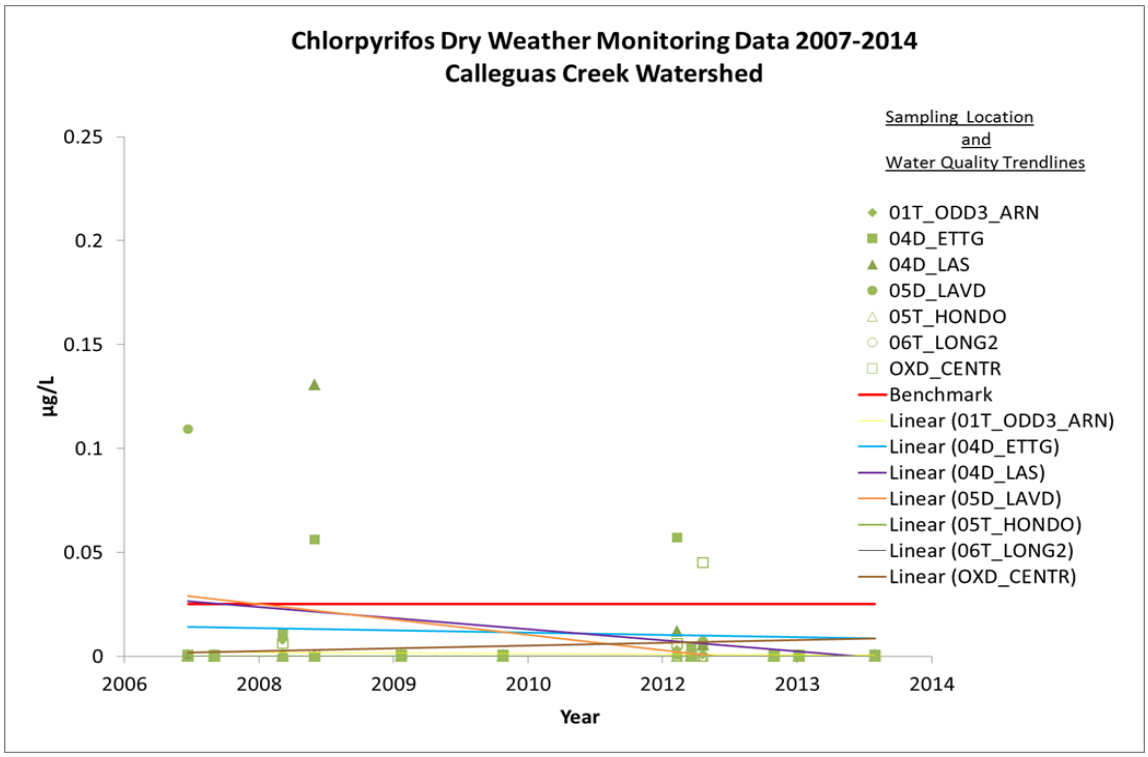

Figure 10 Chlorpyrifos dry weather monitoring data 2007-2014, Calleguas Creek Watershed

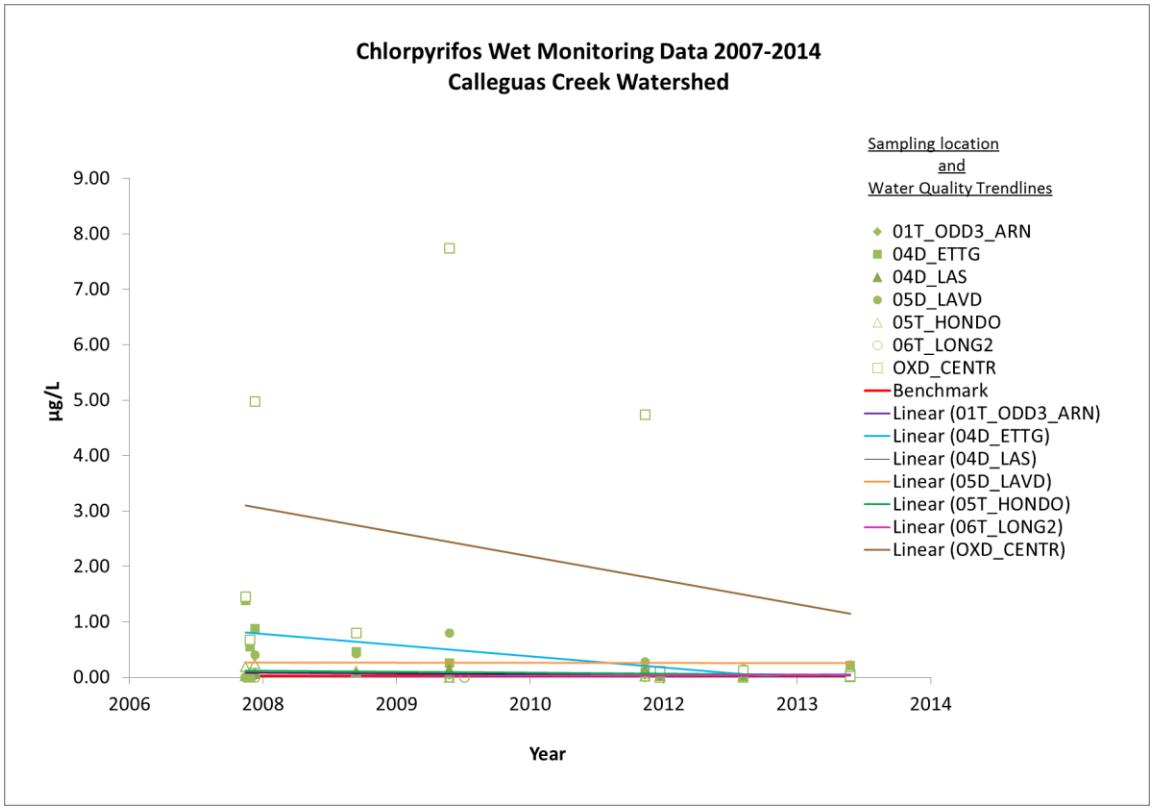

Figure 11 Chlorpyrifos wet weather monitoring data 2007-2014, Calleguas Creek Watershed

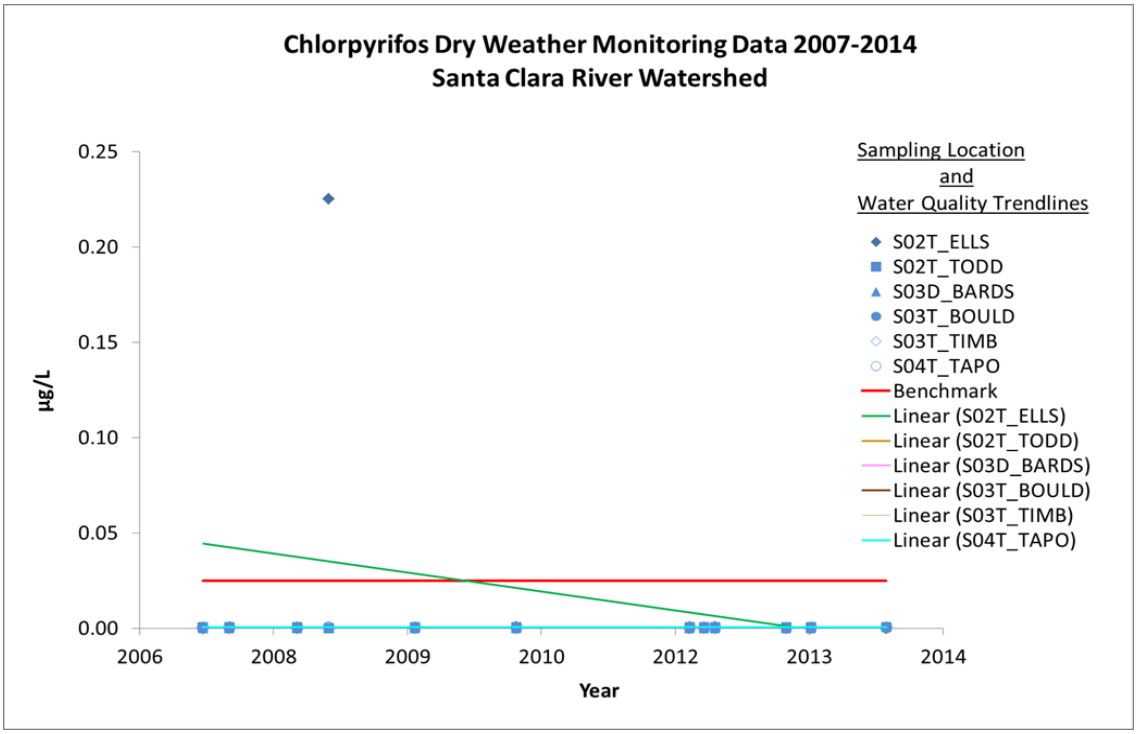

Figure 12 Chlorpyrifos dry weather monitoring data 2007-2014, Santa Clara River Watershed.

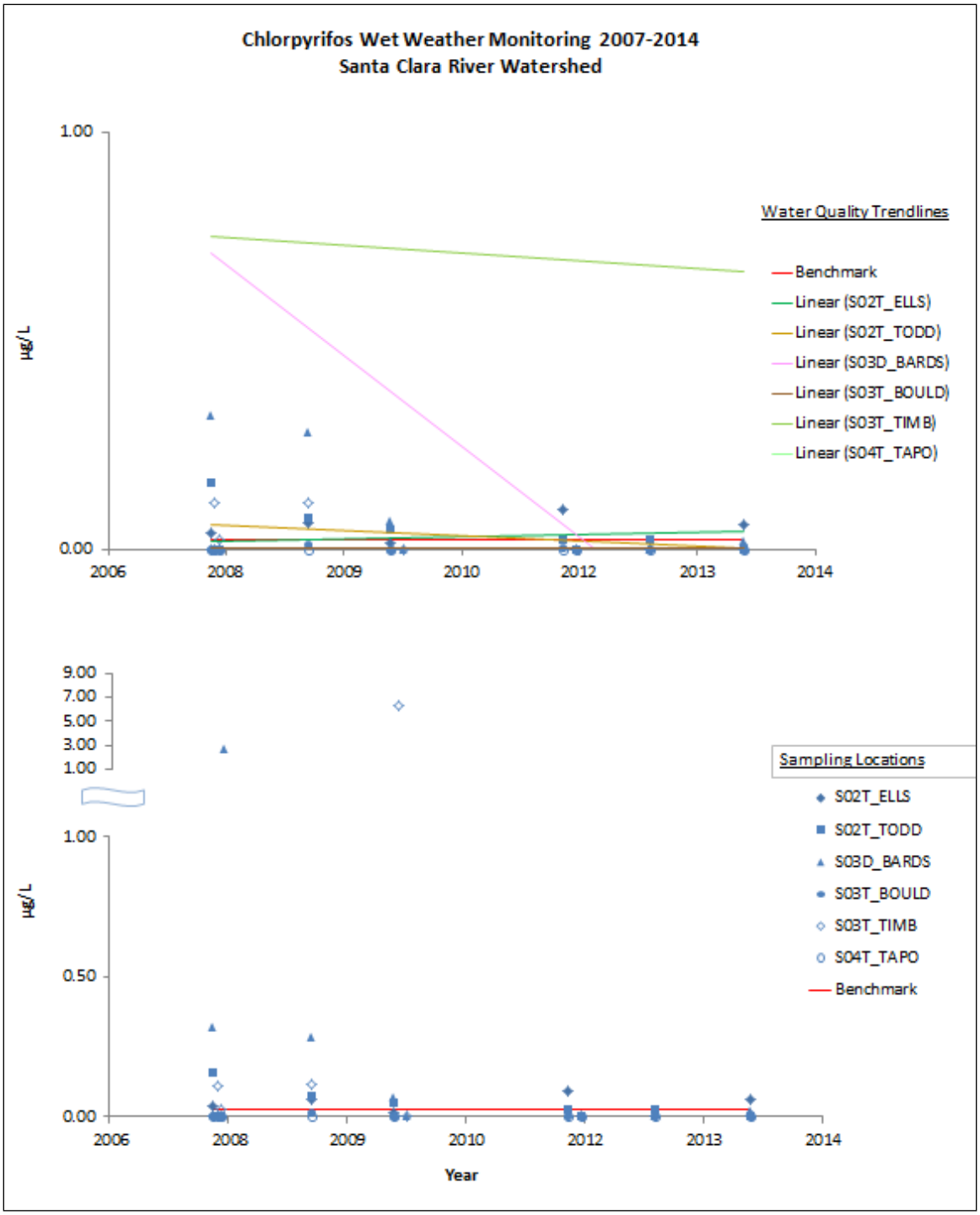

Figure 13 Chlorpyrifos wet weather monitoring data 2007-2014, Santa Clara River Watershed. (Note: Y-axis on bottom graph is split to show detail.)

In the Calleguas Creek Watershed, diazinon has not been detected above the water quality benchmark in either dry weather (since 2008) or wet weather (since January of 2012). In wet weather, diazinon concentrations increase at three sampling locations (05D_LAVD, 06T_LONG, and 04D_ETTG) and decrease at three sampling locations (04D_LAS, 01T_ODD3_ARN, and 05T_HONDO), but the trends are below the benchmark. In the Santa Clara River Watershed, diazinon concentrations were all below the benchmark in dry weather except once in August 2009 at the S02T_TODD sampling location. During wet weather, diazinon was detected three times above the benchmark at S02T_TODD, S03T_TIMB, and S03D_BARDS, but these were the only exceedances at these locations and they occurred before 2010.

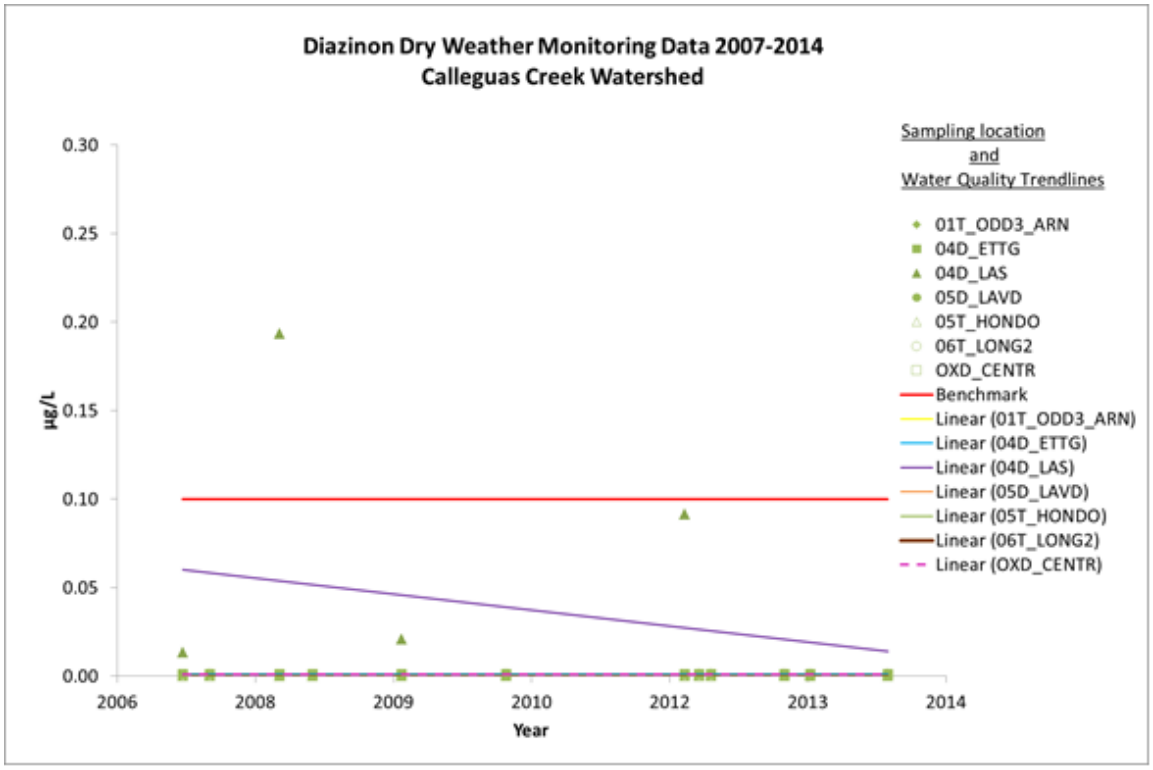

Figure 14 Diazinon dry weather monitoring data 2007-2014, Calleguas Creek Watershed

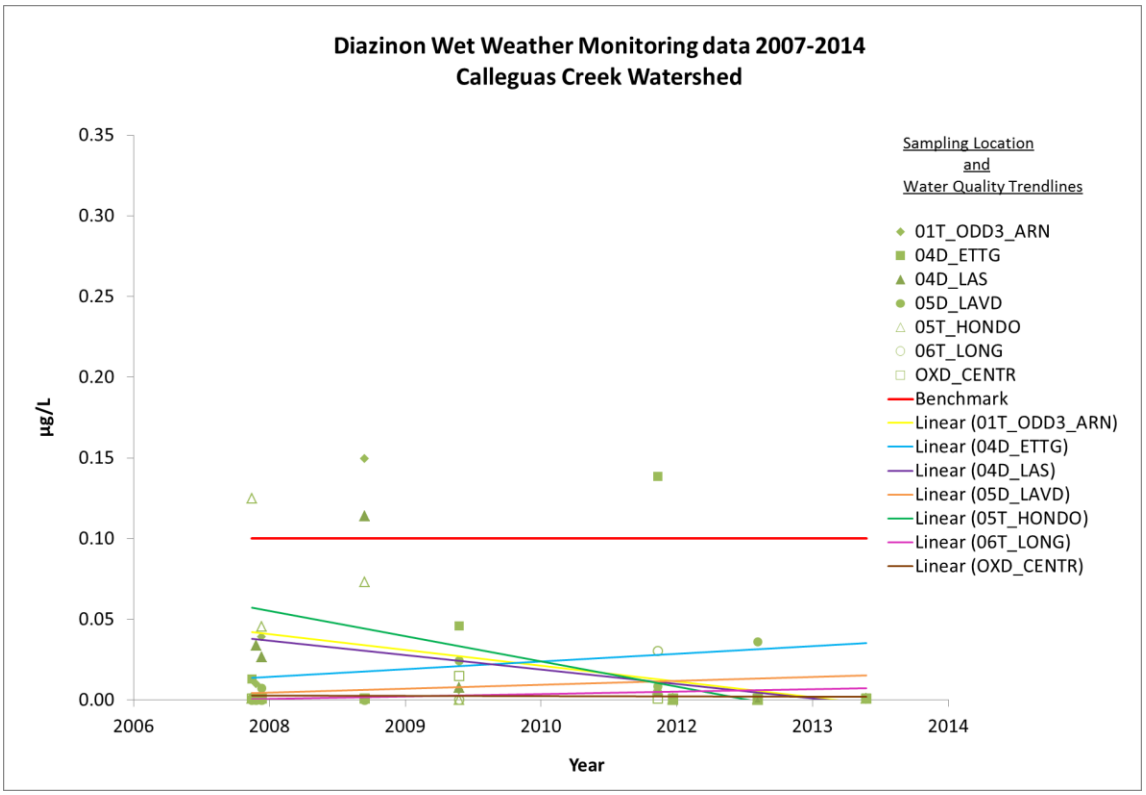

Figure 15 Diazinon wet weather monitoring data 2007-2014, Calleguas Creek Watershed

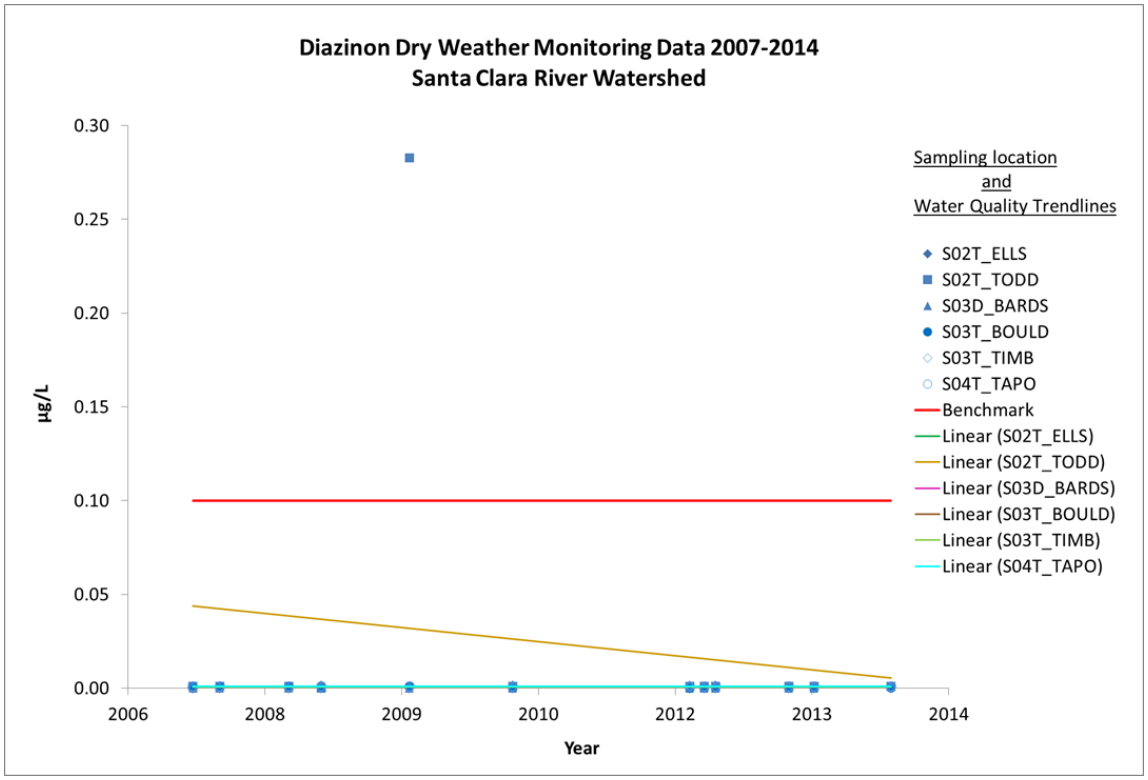

Figure 16 Diazinon dry weather monitoring data 2007-2014, Santa Clara River Watershed

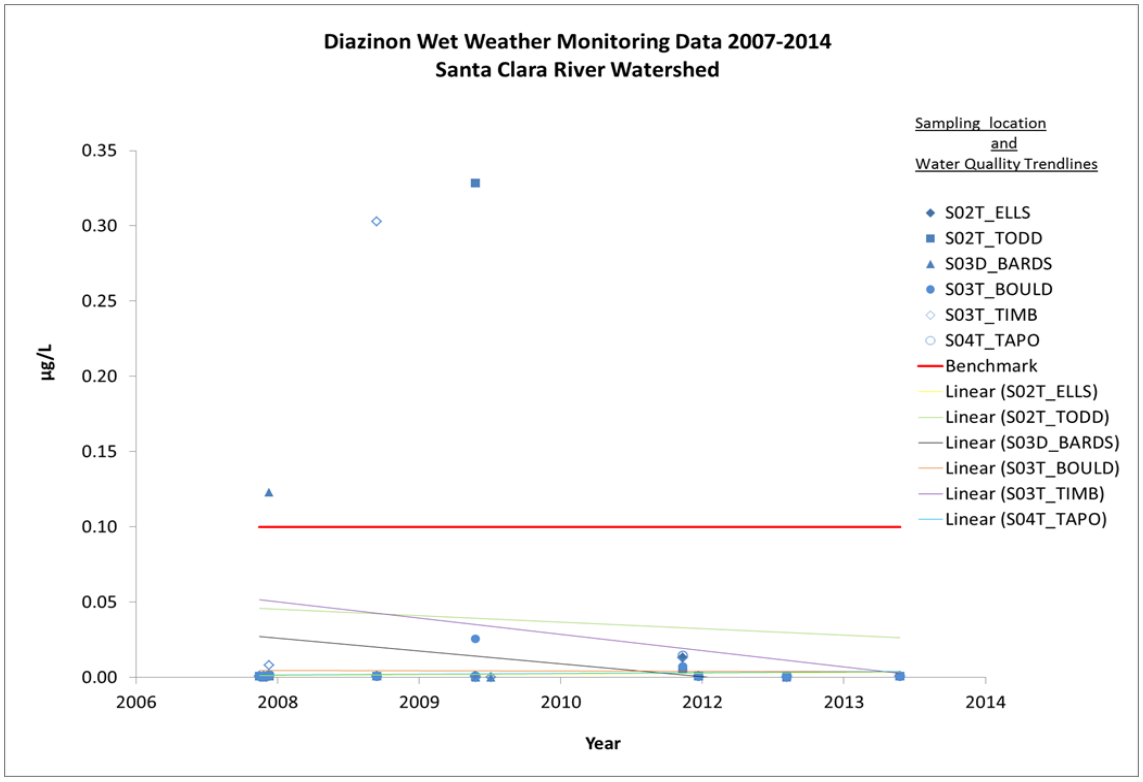

Figure 17 Diazinon wet weather monitoring data 2007-2014, Santa Clara River Watershed

5.2.4 Pyrethroids Data Analysis

Bifenthrin is a common pyrethroid used on various agricultural crops. There is no benchmark for bifenthrin in the 2010 Waiver, but monitoring was required. For this analysis, Regional Board staff assumed 0.6 ng/L as a water quality benchmark for bifenthrin, which is the numeric target in the 2011 Oxnard Drain 3 Pesticides, PCBs, and Sediment Toxicity TMDL. The monitoring analysis of bifenthrin during wet weather in the Calleguas Creek Watershed indicates increasing trends at every sampling location with two exceptions at 05T_HONDO and OXD_CENTR, where the concentrations are decreasing, but are higher than the benchmark (Figure 18). In wet weather in the Santa Clara River Watershed, the trend lines show an increase at all sampling locations. In both watersheds, some concentrations are hundreds of times higher than the 0.6 ng/L benchmark in wet weather (Figure 19). In the Calleguas Creek Watershed during dry weather, bifenthrin concentrations increased at the OXD_CENTR sampling location and decreased at the rest of the locations. Most of the detections are below the benchmark (Figure 20). In the Santa Clara River Watershed during dry weather, the bifenthrin water

quality trend line increased at one sampling location (SO3T_TIMB) and decreased in the rest of the locations (Figure 21).

These results, showing increasing trends and high concentrations of bifenthrin, emphasize the need to include water quality benchmarks for pyrethroids in the proposed Waiver renewal.

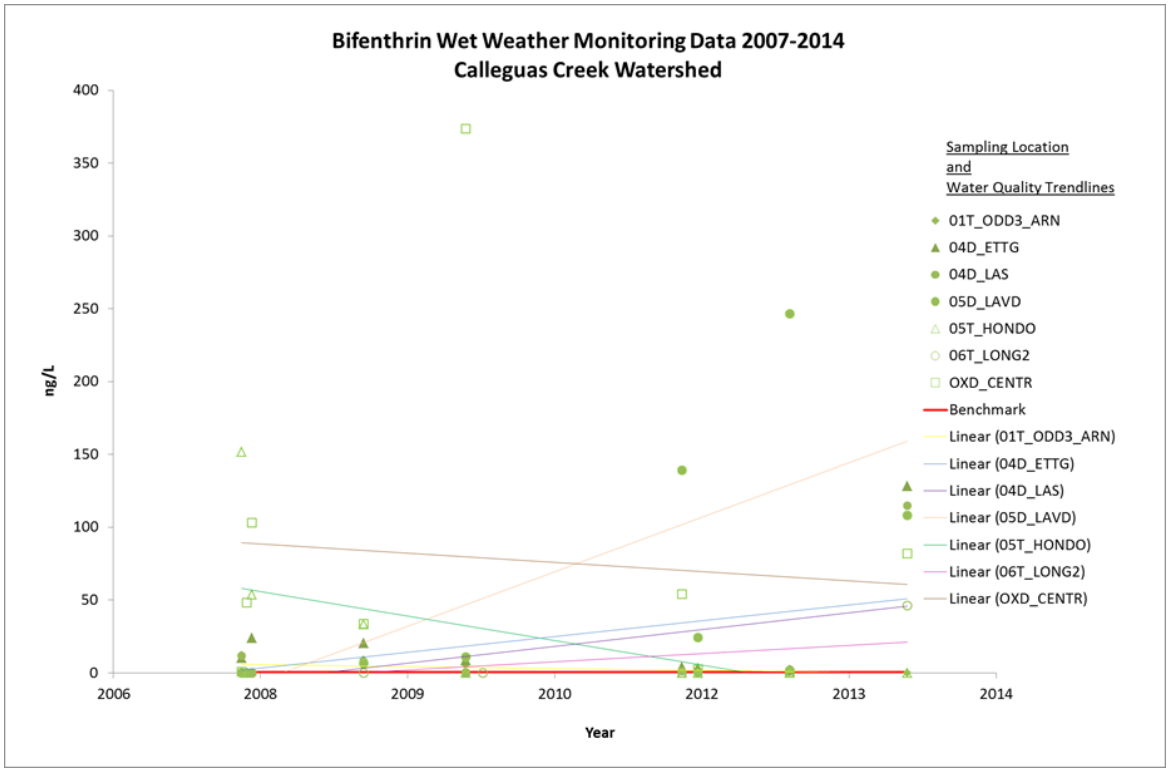

Figure 18 Bifenthrin wet weather monitoring data 2007-2014, Calleguas Creek Watershed

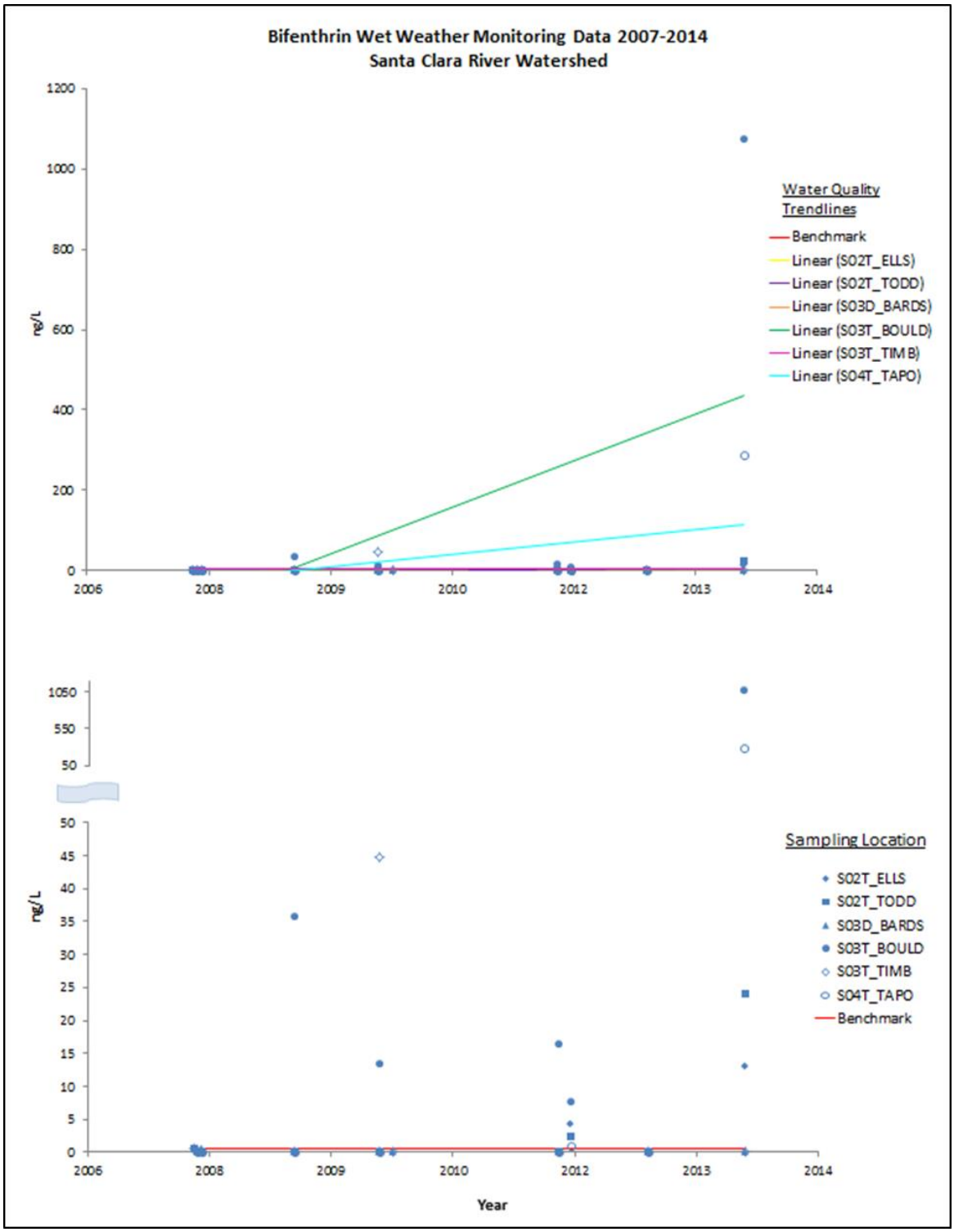

Figure 19 Bifenthrin wet weather monitoring data 2007-2014, Santa Clara River Watershed (Note: Y-axis on bottom graph is split to show detail.)

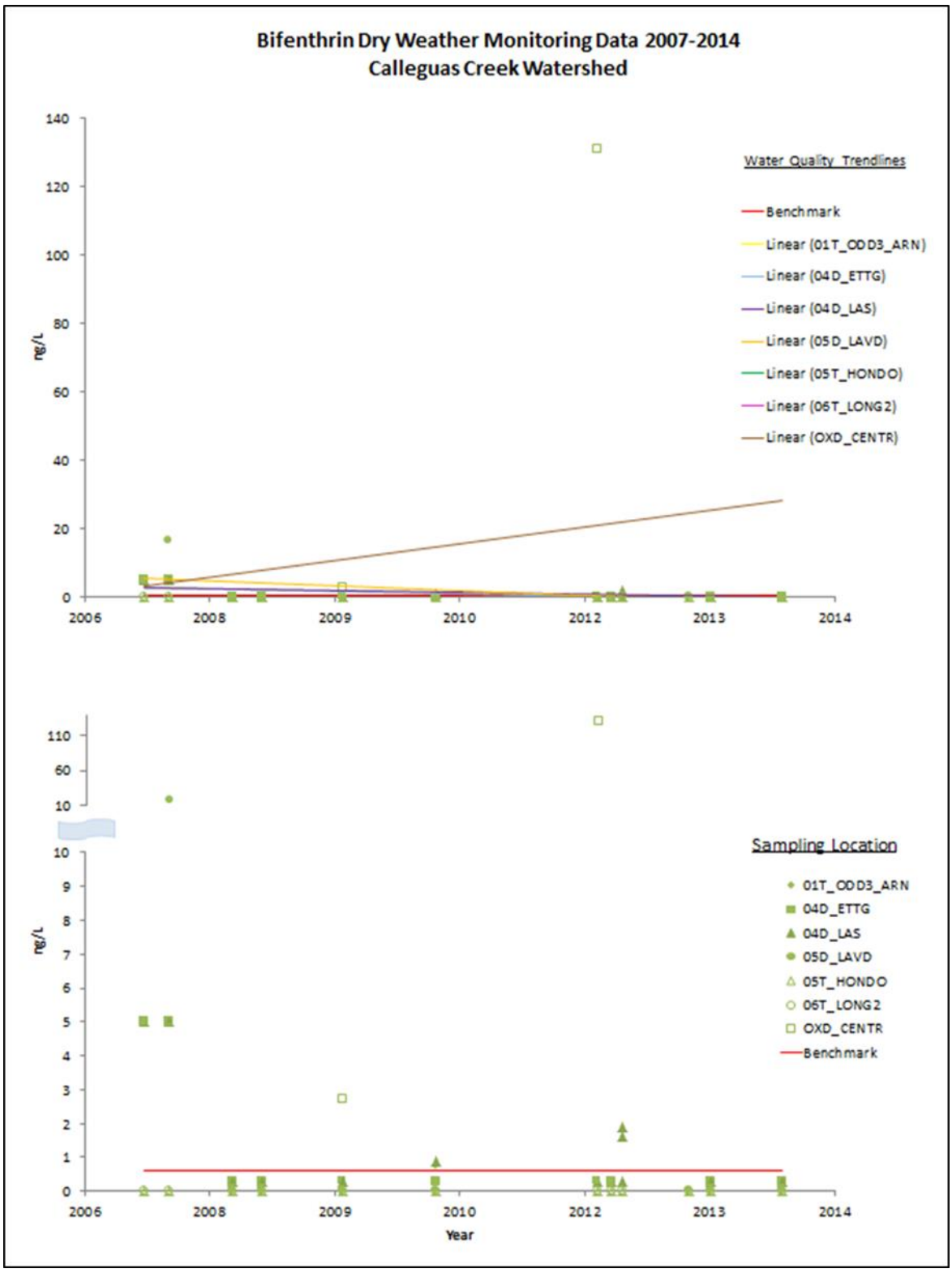

Figure 20 Bifenthrin dry weather monitoring data 2007-2014, Calleguas Creek Watershed (Note: Y-axis on bottom graph is split to show detail.)

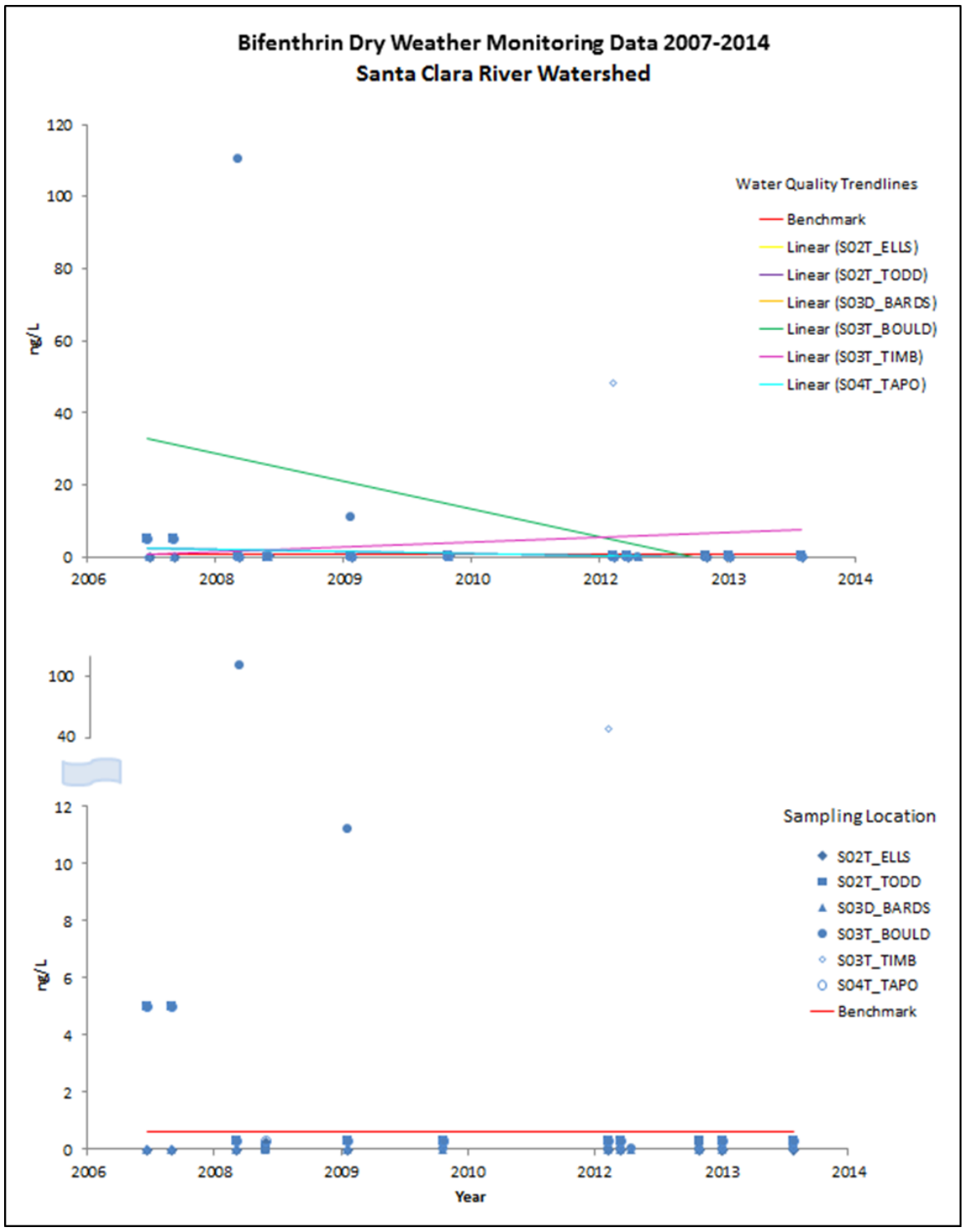

Figure 21 Bifenthrin dry weather monitoring data 2007-2014, Santa Clara River Watershed (Note: Y-axis on bottom graph is split to show detail.)

5.2.5 Toxicity Data Analysis

During the 2005 Waiver term, the toxicity benchmark of 1 TUc[6] was exceeded in in five out of 53 samples collected from the Calleguas Creek Watershed and 12 out of 46 samples collected from the Santa Clara River Watershed. During the 2010 Waiver term, the toxicity benchmark was exceeded in three out of 52 samples in the Calleguas Creek Watershed. These three exceedances were from samples taken at three monitoring locations (05D_LAVD, 06T_LONG2 and 05T_HONDO) during one wet-weather event in January 2012. In the Santa Clara River Watershed, the toxicity benchmark was exceeded in seven out of 32 samples collected. Five of these seven exceedances were from samples collected in wet weather during a monitoring event in 2012 (S02T_ELLS, S02T_TODD, and S04T_TAPO) and in 2014 (S02T_TODD and S03D_BARDS). Two of the seven exceedances were from samples collected from S02T_TODD in dry weather during two monitoring events in 2013 and 2014. Figure 22 and Figure 23 present the toxicity benchmark exceedances from 2007 to 2014 during dry and wet weather events as a percent exceedance of the total number of collected samples.

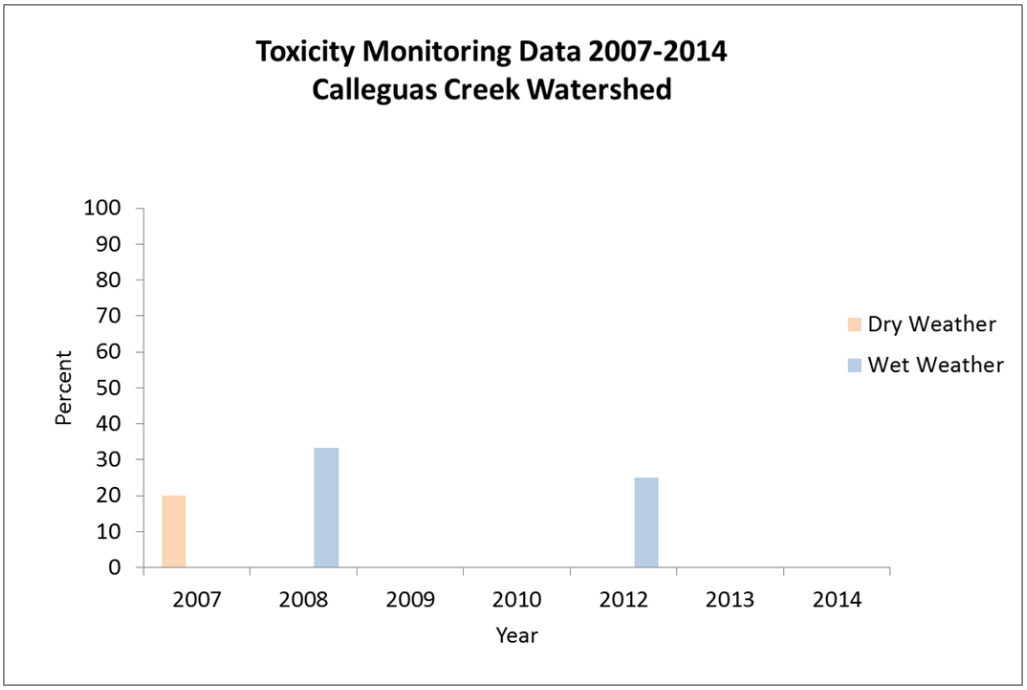

Figure 22 Percentage of toxicity benchmark exceedances per total number of collected samples in Calleguas Creek Watershed

[6] TUc or Toxic Unit-Chronic is the reciprocal of the effluent concentration that causes no observable effects (i.e., no mortality) on the test organisms by the end of a chronic toxicity test.

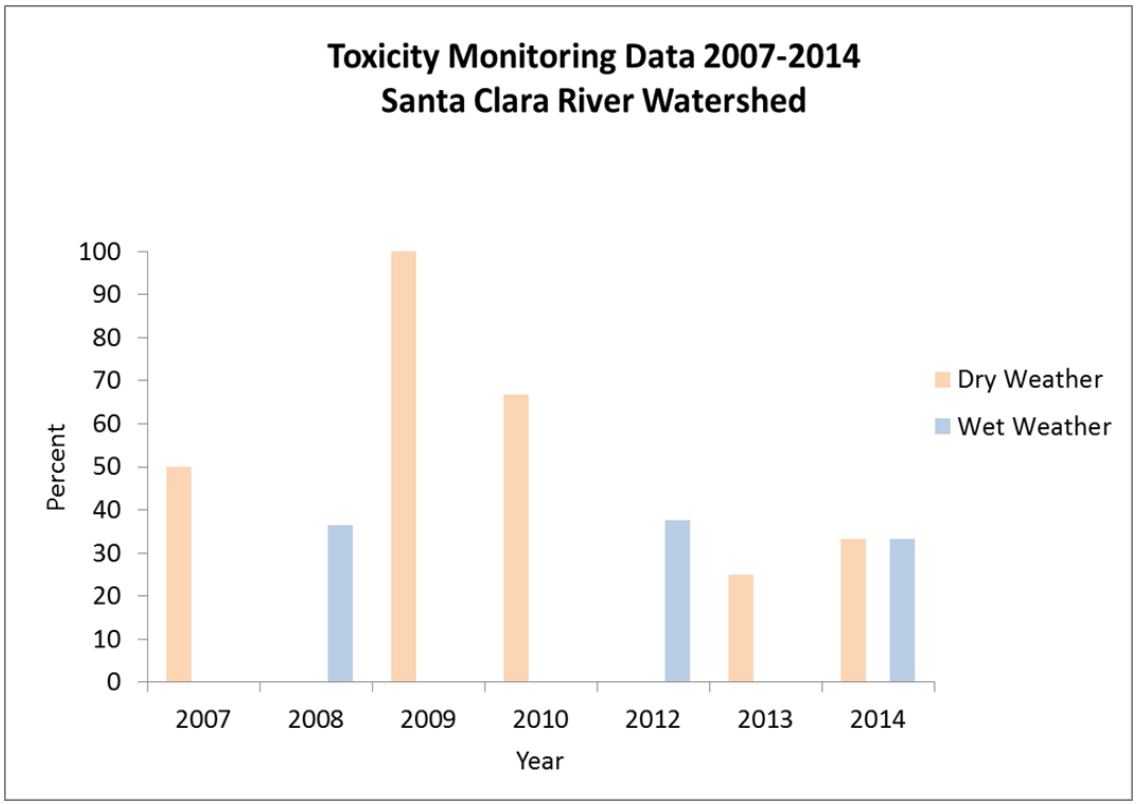

Figure 23 Percentage of toxicity benchmark exceedances per total number of collected samples in Santa Clara River Watershed

5.2.6 VENTURA RIVER DATA ANALYSIS

During the 2005 Waiver term, there was only one water quality benchmark exceedance (4,4'-DDT) in the Ventura River Watershed, which occurred during a wet-weather monitoring event in January 2008. In 2007 and 2009, there was insufficient flow for sample collection in either dry or wet weather; therefore, samples were not collected. Samples were collected during one wet-weather monitoring event in 2010. There were no water quality benchmark exceedances of any constituents for that event. During the 2010 Waiver term, the two sampling sites located in the Ventura River Watershed were not sampled due to insufficient flow or no flow. To obtain sampling data and analyze water quality in the Ventura River Watershed, the two existing sampling sites must be relocated in the next Waiver term.

5.2.7 VCAILG Trend Analysis

VCAILG conducted a trend analysis of its water quality monitoring as part of its 2014-2015 annual monitoring report (VCAILG, 2015). VCAILG analyzed data from 2007 through 2015 using Kendall's Tau to determine concentration trends over time. Statistically significant downward trends were demonstrated for pesticides (4-4'-DDD, 4-4'-DDE, and chlorpyrifos at five sites), nitrate (at one site), and one or more salts (at two sites). Statistically significant increasing trends were observed for dissolved copper (at one site), nutrients (at two sites), and one or more salts (at three sites).

5.3 Los Angeles County Monitoring Results

The NGA-LAILG monitors 20 sampling sites throughout Los Angeles County (Table 3). There are sixteen fixed sites and four additional revolving sites selected randomly on a yearly basis. Samples are collected from these 20 sites on a rotating schedule. Four events take place each year.

Table 3 Sampling sites in Los Angeles County watersheds

Watershed	Number of Sampling Sites
Los Angeles River	5
San Gabriel River	7
Dominguez Channel	1
Santa Monica Bay	2
Los Cerritos Channel	1
Annual Rotating Sites	4

Sampling sites were selected to represent the NGA-LAILG group as a whole based on various crop types, water practices, fertilizer and pesticide use, management practices and locations. Samples are collected at the edge of field to exclude contributions from other discharges to the stormdrain system. Reasonable efforts were made to collect dry-weather samples during irrigation events at the sites. Monitoring was conducted from 2007-2014. Sixty-nine samples were collected. The majority of the samples were collected during the first two years of the waiver, prior to suspension of monitoring by the group in 2009 due to enrollment issues, which lasted through the beginning of 2010. Samples were primarily from storm water runoff during the wet season, but in 2013, no samples were collected in dry or wet weather due to no runoff. NGA-LAILG has not

encountered irrigated runoff in the dry season since 2008. During the 2007-2014 monitoring period, sampling locations were visited multiple times in dry weather, but samples were not collected due to insufficient or no flow. The number of samples that would have been collected is 122. For the purpose of this analysis, they are represented as zero concentrations for all constituents because no dry-weather discharge constitutes attainment of benchmarks. In addition, half the value of a constituent's MDL was assigned to all non-detect samples. The y axes of the lower graphs in several of the figures are split to show detail because of the wide range in constituent concentrations.

5.3.1 Nitrogen Data Analysis

Nitrate-nitrogen water quality benchmark exceedances are observed during dry and wet weather primarily in the Los Angeles River and San Gabriel River Watersheds. The highest nitrate-nitrogen concentrations have been identified during dry weather in the San Gabriel River Watershed and the trend line indicates an increase in values above the water quality benchmark (Figure 24). Nitrate-nitrogen concentration trend lines show a decrease in dry weather in the Dominguez Channel and Los Angeles River Watersheds. Trend lines for the wet-weather monitoring indicate an increase in nitrate-nitrogen concentrations in the San Gabriel River and a stable, but above benchmark trend for the Los Angeles River. The rest of the watersheds generally have nitrate-nitrogen concentrations below the water quality benchmark (Figure 25).

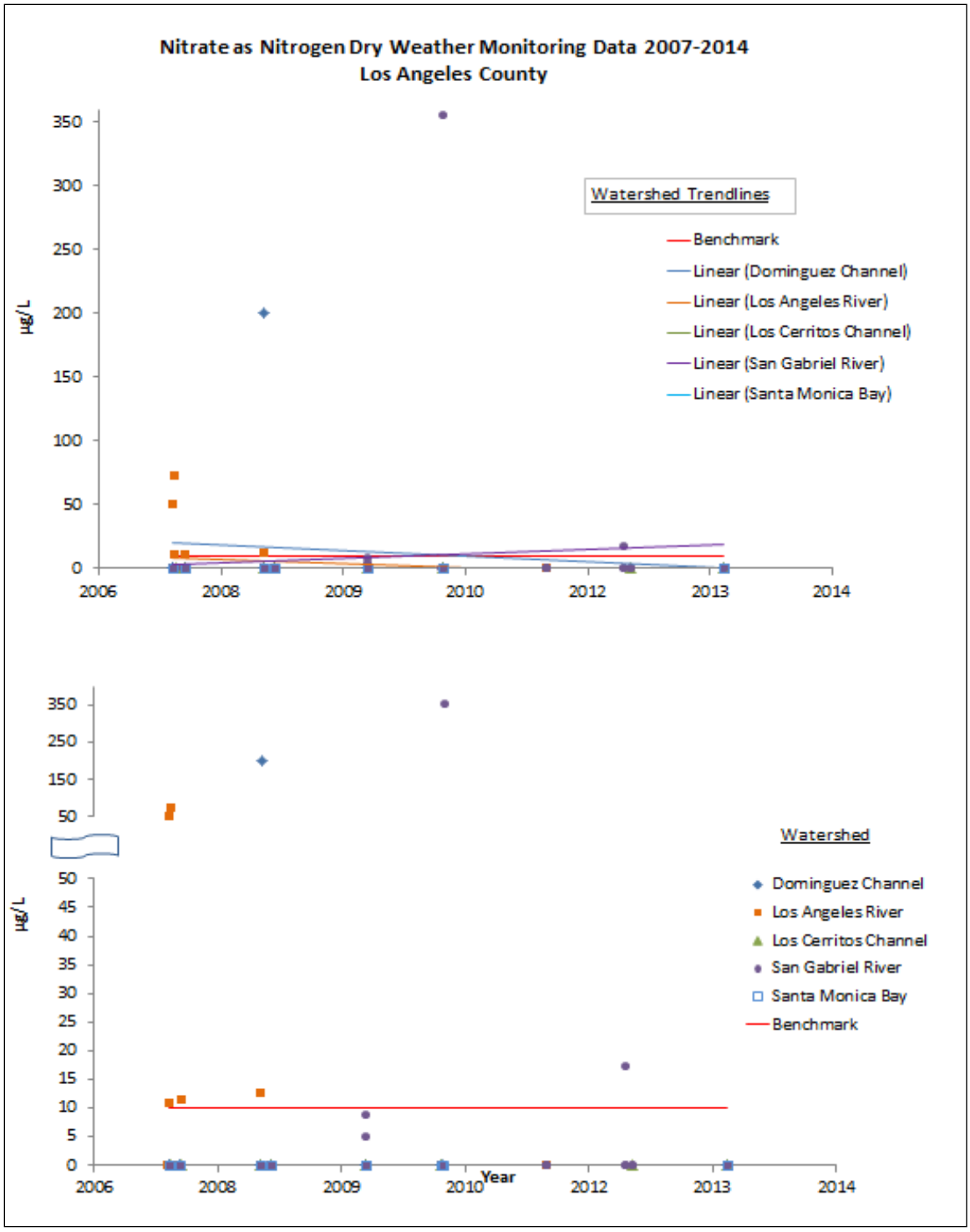

Figure 24 Nitrate as Nitrogen dry weather monitoring data 2007-2014, Los Angeles County (Y-axis on bottom graph is split to show detail.)

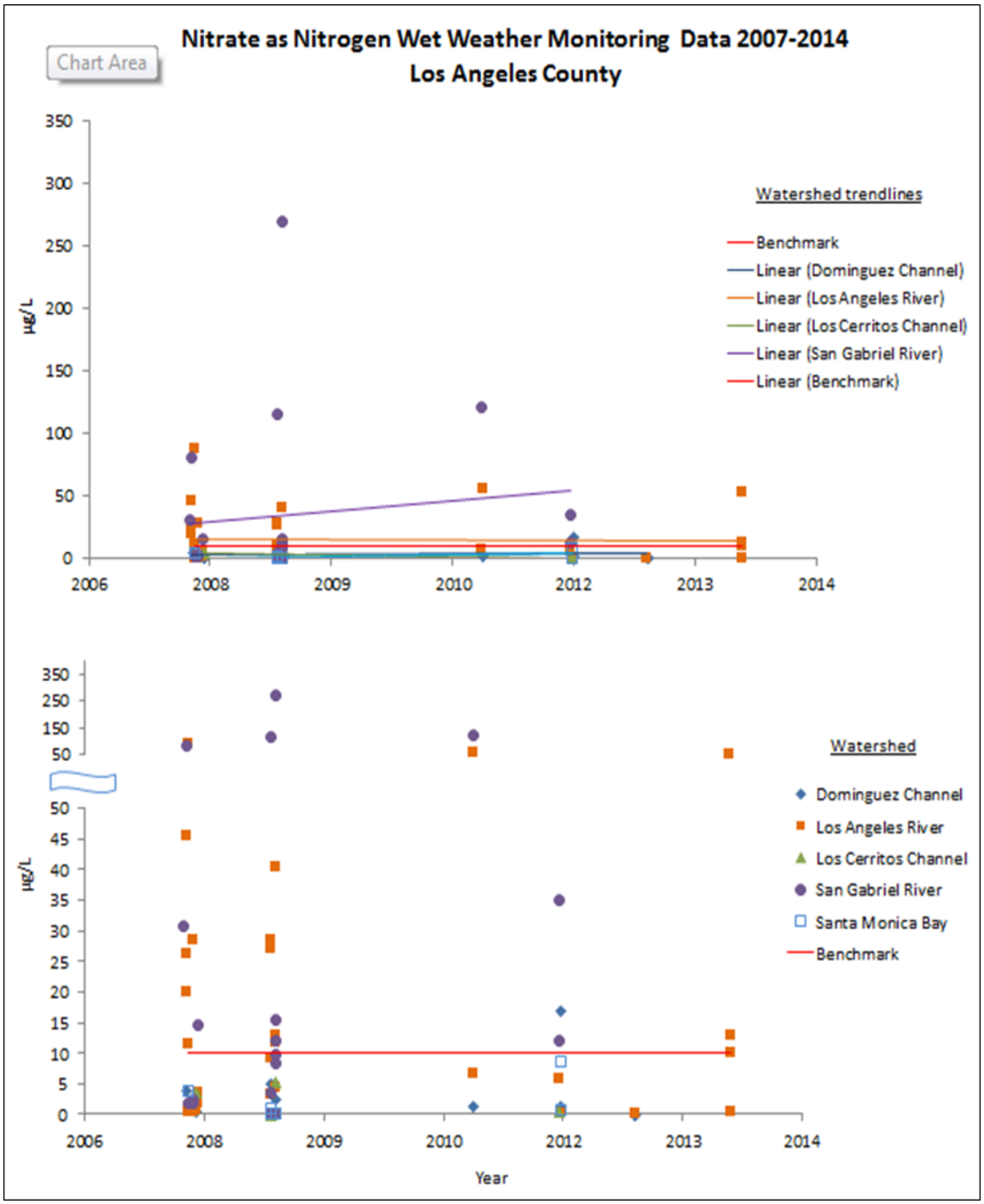

Figure 25 Nitrate Nitrogen wet weather monitoring data 2007-2014, Los Angeles County (Note: Y-axis on bottom graph is split to show detail.)

5.3.2 Pesticide Data Analysis

The majority of the organochlorine pesticides benchmark exceedances, DDT in particular, are observed in the Los Angeles River Watershed during the first year of the 2005 Waiver term. There are no DDT exceedances since then during wet or dry weather with the exception of a single exceedance in wet weather in 2010 in the Dominguez Channel (Figures 26 and 27).

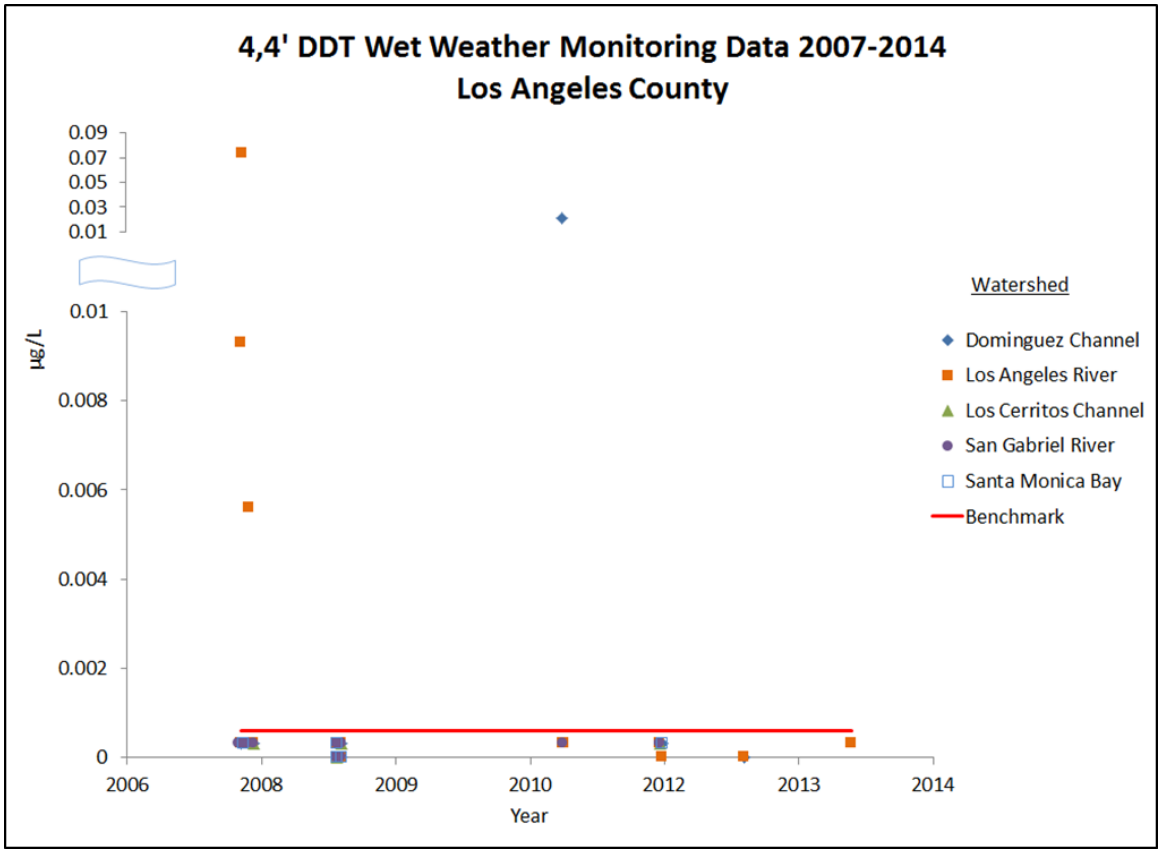

Figure 26 4,4' DDT wet weather monitoring data 2007-2014, Los Angeles County. (Note: Y-axis is split to show detail.)

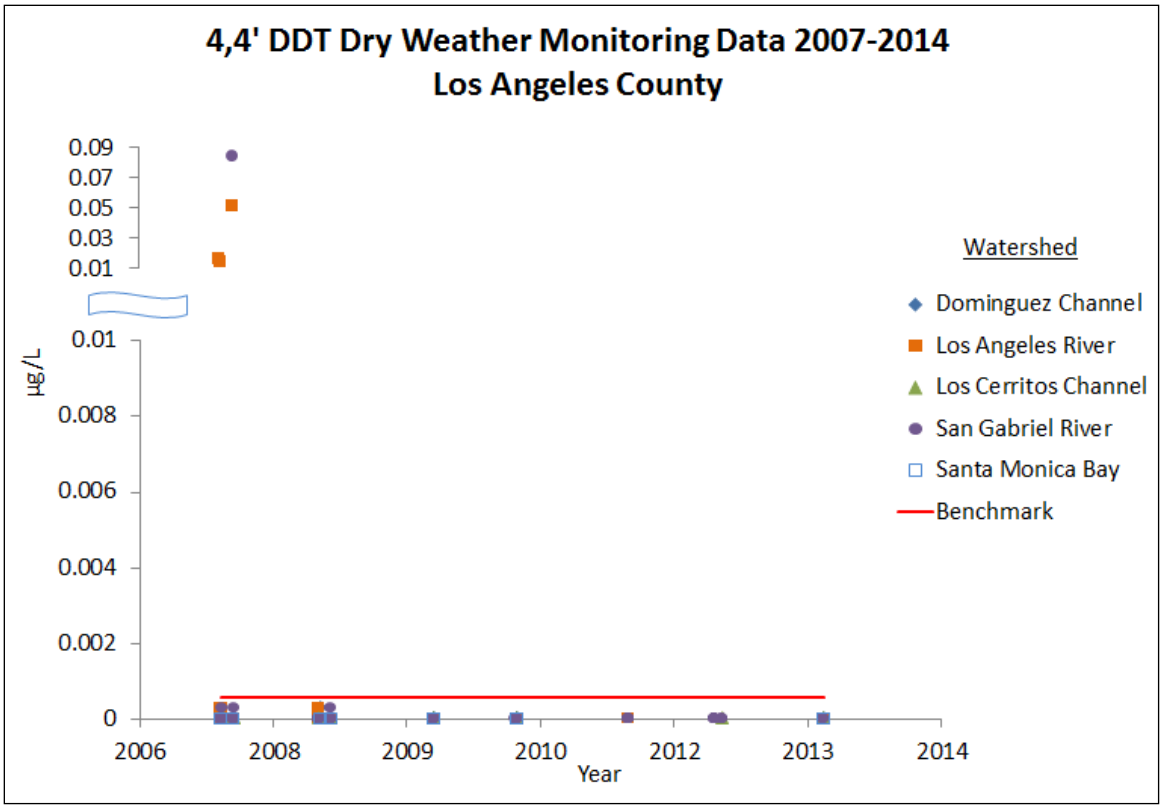

Figure 27 4,4'-DDT dry weather monitoring data 2007-2014, Los Angeles County. Axis is split to show detail.

Organophosphate pesticides, diazinion and chlorpyrifos, have not been detected in dry weather during either waiver term, with the exception of a single exceedance of diazinon in the Dominguez Channel in 2008 (Figures 28 and 29). In wet weather, the majority of organophosphate benchmark exceedances occur in the San Gabriel River Watershed and the Dominguez Channel (Figures 30 and 31). The trend lines for the Dominguez Channel show an increase in chlorpyrifos concentrations and a decrease in diazinon concentrations. In the San Gabriel Watershed, the trend lines indicate a decrease in concentrations of chlorpyrifos and diazinon. In the rest of the watersheds the concentrations of organophosphate pesticides are decreasing or maintaining values below the benchmark.

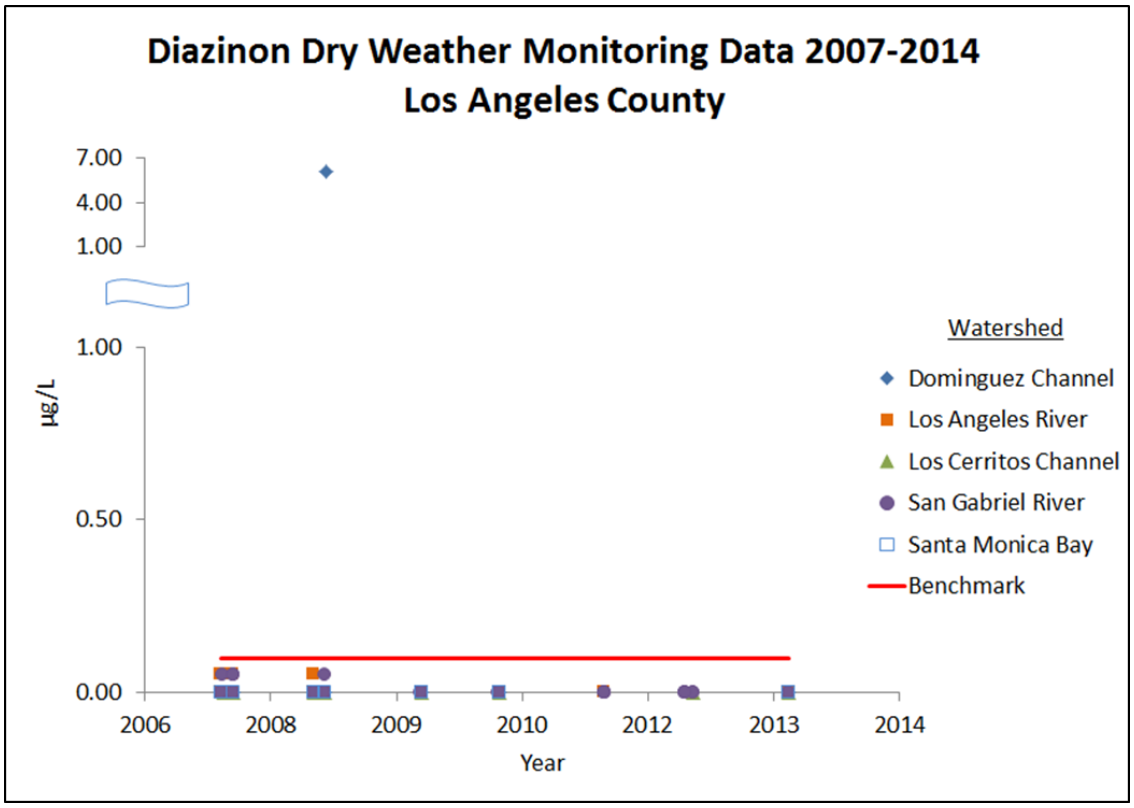

Figure 28 Diazinon dry weather monitoring data 2007-2014, Los Angeles County. (Note: Y-axis is split to show detail.)

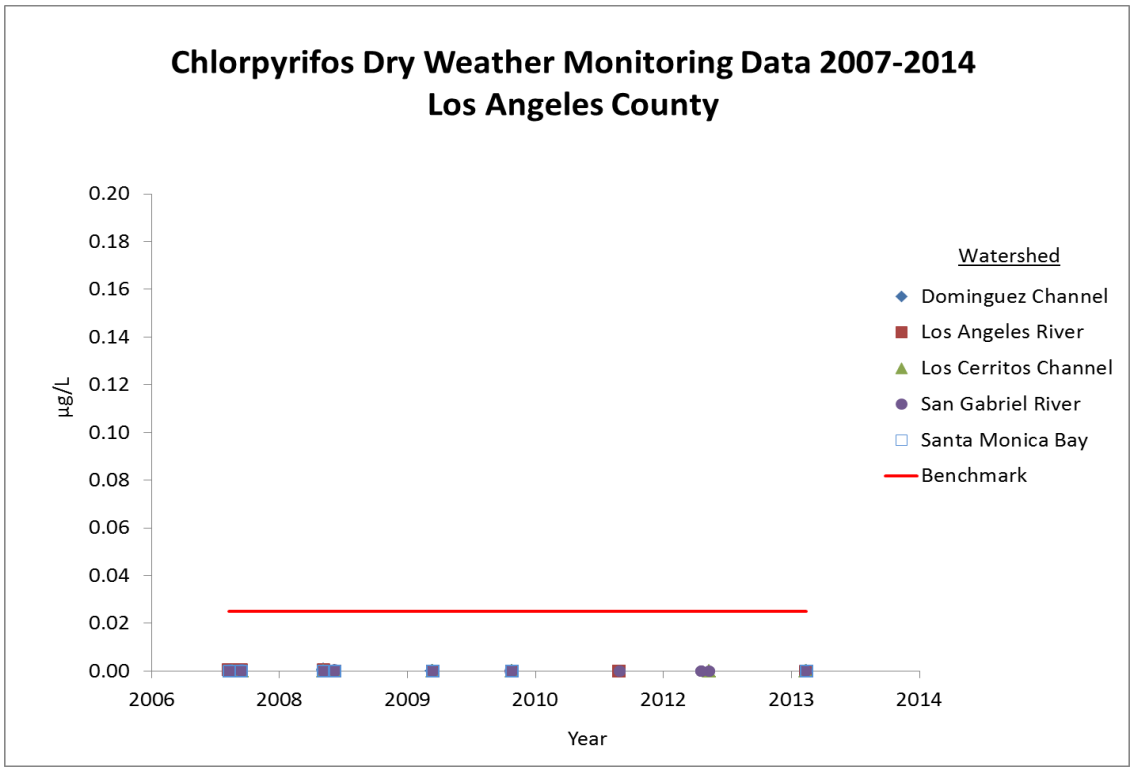

Figure 29 Chlorpyrifos dry weather monitoring data 2007-2014, Los Angeles County

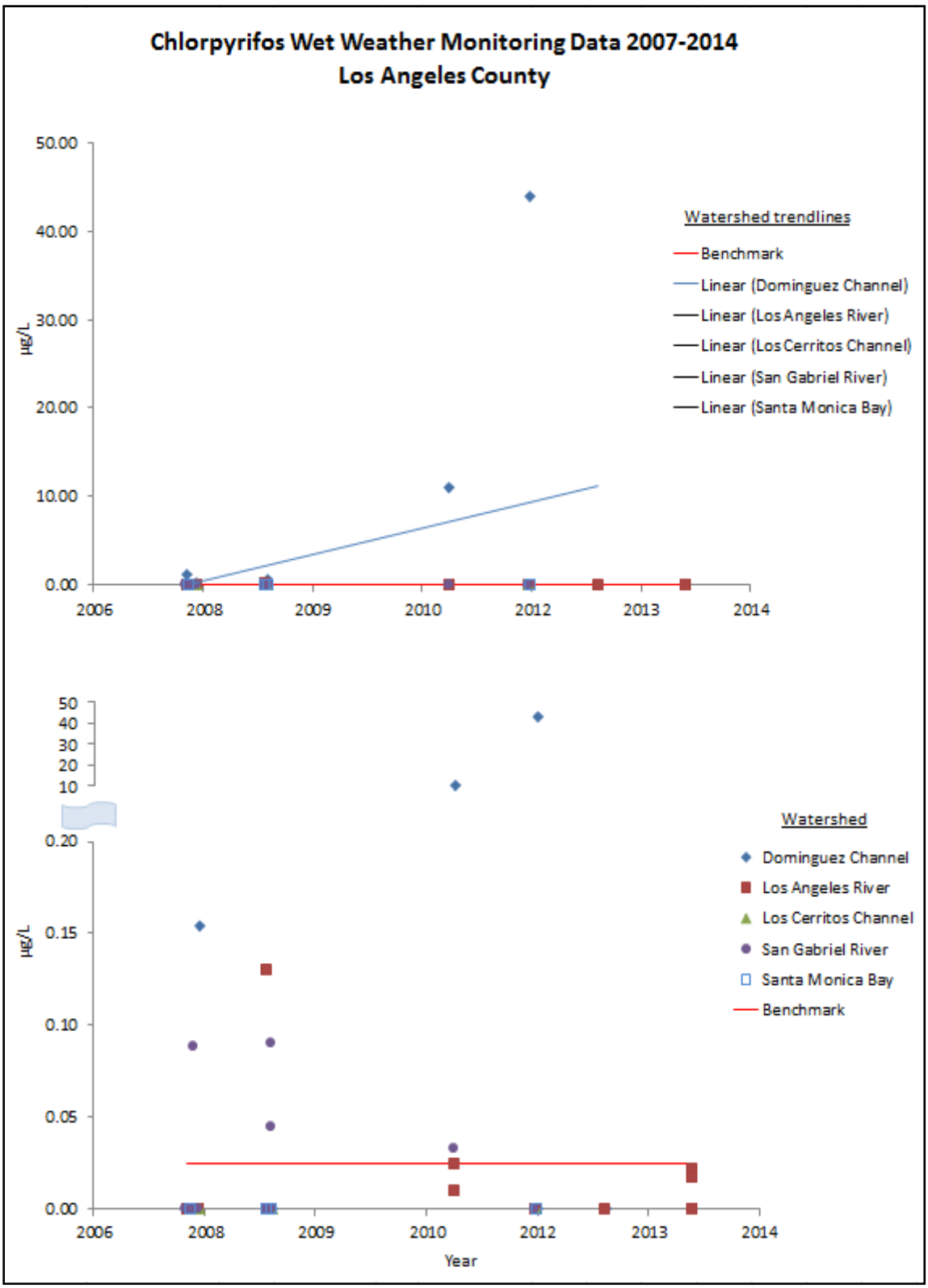

Figure 30 Chlorpyrifos wet weather monitoring data 2007-2014, Los Angeles County. (Note: Y-axis is split to show detail.)

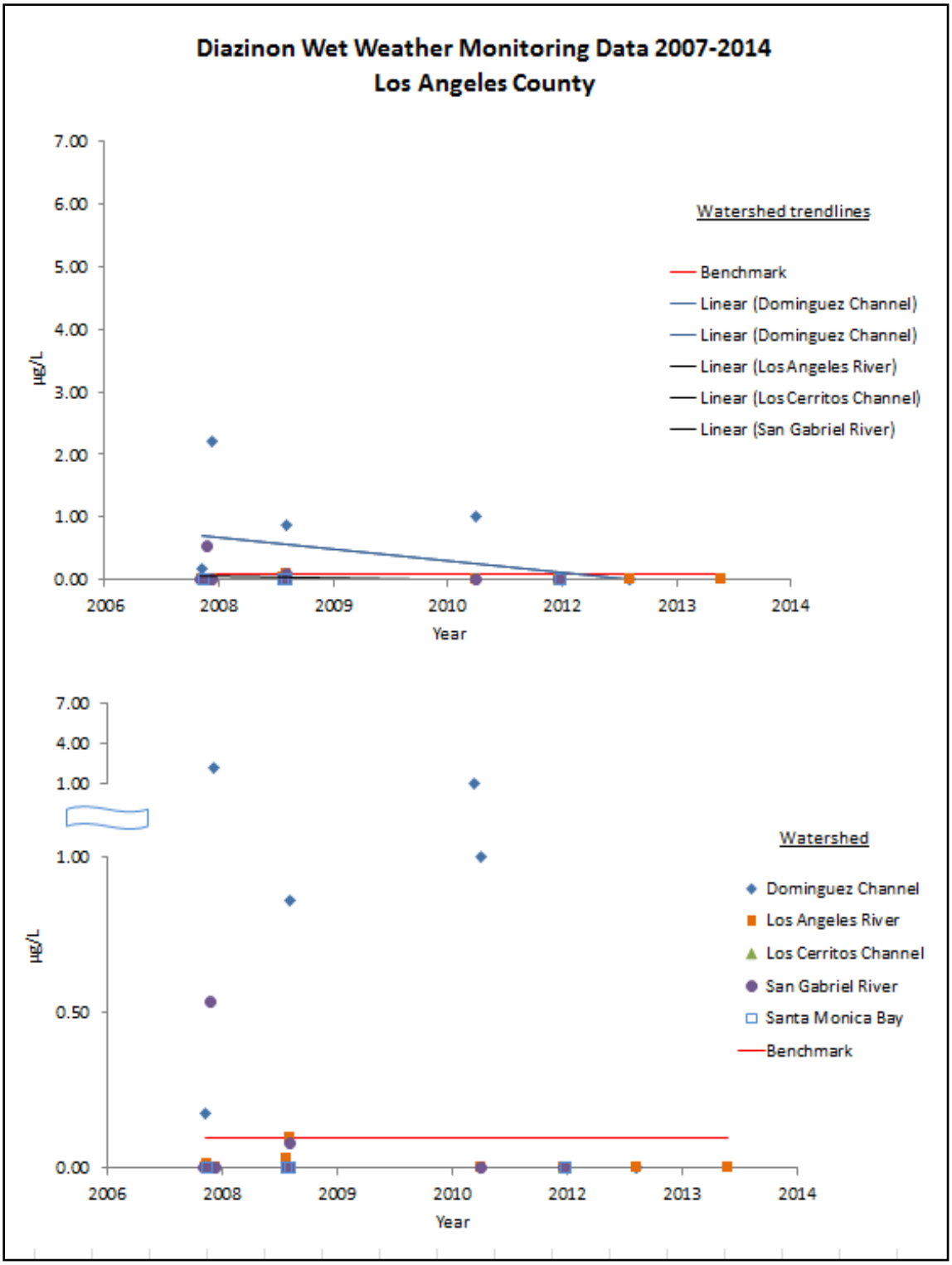

Figure 31 Diazinon wet weather monitoring data 2007-2014, Los Angeles County. (Note: Y-axis is split to show detail.)

5.4 Toxicity Data Analysis

During the 2005 Waiver term, a total of 43 samples were collected at 30 sampling locations in four watersheds (Dominguez Channel, Los Angeles River, San Gabriel River and Santa Monica Bay) in 2007 and 2008. Each of these 43 samples was tested for five toxicity criteria; thus, one sample could show multiple toxicity exceedances. During the 2005 waiver term, 44 toxicity benchmark exceedances were observed in the 43 samples collected from 22 sampling sites. During the 2010 Waiver term, a total of 13 samples collected at 11 sites showed 16 toxicity exceedances. For example, in March 2011, one sample was collected at sample site #4 located in the Dominguez Channel and for the purpose of toxicity analysis, *Ceriodaphnia dubia* was tested for survival, Fathead Minnow was tested for reproduction, survival, and growth, and *Selenastrum* was tested for growth. This sample result shows exceedances for each criteria/test (two tests for survival, two for growth and one for reproduction). Thus, five exceedances are counted for this sample.

Figure 32 shows the percentage of toxicity benchmark exceedances in each watershed for each year when samples were collected during both the 2005 and 2010 Waiver terms. There is a decrease in toxicity exceedances in all watersheds. However, during the 2005 and 2010 Waiver terms, toxicity benchmark exceedances were observed in two samples when no other constituent exceeded a water quality benchmark. The two samples were collected in November 2008 and February 2014, from site #184 located in the Los Angeles River Watershed. Thus, it is necessary to continue requiring toxicity sampling in the next waiver term.

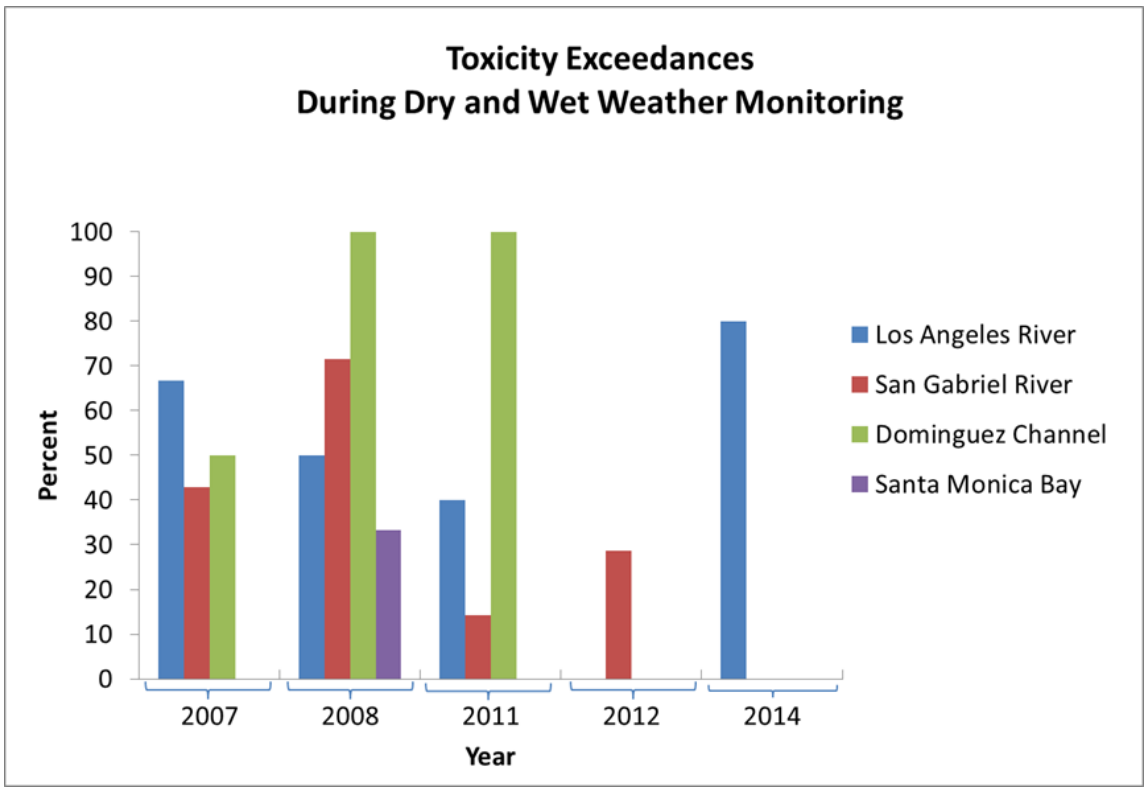

Figure 32 Percentage of toxicity exceedances in dry and wet weather monitoring 2007-2014, Los Angeles County

5.5 Bacteria Study and Monitoring Requirements

The 2010 Waiver required a Bacteria Special Study to characterize potential discharges of bacteria from irrigated agricultural lands. Both discharger groups conducted studies to comply with the Conditional Waiver.

5.5.1 NGA Bacteria Study

The Regional Board approved NGA's Bacteria Special Study work plan on June 22, 2012. The study collected samples for *E. coli* from a subset of NGA's regular monitoring sites. On February 28, 2014, five locations were sampled for bacteria, but due to no qualifying storm events due to drought conditions, no follow up sampling was performed. The sampling results are presented in Table 4. The numbers in bold represent levels above the water quality objective of 235/100 ml for a single sample. The report concluded that at three of the sites, the sources of E. coli were incompletely composted

or un-composted horse manure either on-site or on adjacent lands (a horse ranch and a community garden). For one sample the source of E. coli was unknown.

Table 4 Bacteria sampling results, NGA Bacteria Special Study

Site	Sample #	Date	E. coli (MPN/100 ml)
NGA #19	LAILG-NGA19-7	2/28/14	20
NGA #26	LAILG-NGA26-1	2/28/14	**130,000**
NGA #124	LAILG-NGA124-7	2/28/14	**55,000**
NGA #178	LAILG-NGA178-2	2/28/14	**2,000**
NGA #184	LAILG-NGA184-3	2/28/14	**560**

5.5.2 VCAILG BACTERIA STUDY

The initial draft Bacteria Special Study Work Plan was submitted by VCAILG on October 7, 2011. The Regional Board issued a comment letter on March 5, 2012. VCAILG revised the work plan on March 19, 2012, which the Regional Water Board approved on April 9, 2012. After a year of implementing this study, VCAILG requested to change their sampling approach due to issues collecting consistent tail water samples. On March 15, 2013 VCAILG submitted a revised work plan, which the Regional Board conditionally approved on August 9, 2013. VCAILG submitted its final Bacteria Special Study Work Plan in September, 2013. VCAILG is expected to submit the final report in February 2016.

6. SUMMARY OF WQMPS

As stated in Section 2, if monitoring showed exceedances of water quality benchmarks, the 2010 Waiver required dischargers to develop WQMPs. WQMPs were required to include specific, targeted steps with milestones to attain water quality benchmarks through the use of management practices (MPs), and to be updated each year based on monitoring results from the previous year. Some of the required elements of a WQMP were:

- A description and documentation of existing MPs, including the degree and location of implementation
- A description and general location of new or revised MPs that will be implemented to address water quality impairments, based on a quantitative assessment of MP performance and expected attainment of water quality benchmarks
- A time-certain schedule and strategy for the implementation of new and/or revised MPs
- Tracking of MP implementation and maintenance
- An evaluation of compliance with water quality benchmarks to determine if implementation of additional or upgraded MPs are necessary

Monitoring conducted under the 2005 and 2010 Waiver terms documented water quality benchmark exceedances. Therefore, both VCAILG and NGA-LAILG developed WQMPs. The sections below provide a summary of each discharger group's WQMPs.

6.1 VCAILG WQMPS

VCAILG's approach for its WQMPs during both the 2005 and 2010 Waiver terms focused on surveying its members about the MPs they had already implemented in combination with outreach and educational classes about MPs needed to address water quality benchmark exceedances. In the 2005 Waiver term, VCAILG developed the MP survey and surveyed its members once. In the 2010 Waiver term, VCAILG revised the MP survey and surveyed its members in 2014 and 2015 to track changes in MP implementation both prior to 2010 and within the 2010 Waiver term.

Over the term of the 2010 Waiver, VCAILG submitted four WQMPs. Regional Board staff provided written comments on the WQMPs and met with VCAILG several times to convey the need to report quantifiable MP information, such as area addressed by MPs for each monitoring site, in order to correlate MP implementation with water quality data and to determine if additional or upgraded MPs were necessary. In response, the WQMPs have evolved over the term of the 2010 Waiver, such that by the 2014 WQMP, VCAILG was able to report MP adoption rates by monitoring site drainage area. However, as of the latest WQMP submitted in December 2015, VCAILG has not ~~attempted to~~ associate~~d~~ drianage area MP adoption rates with water quality at drainage area monitoring sites. Instead, the latest WQMP aggregated MP adoption rates by larger hydrologic units and compared those adoption rates with Water Quality Indices, which are metrics that combine data for multiple constituents over mutiple years. While this approach can identify broad patterns, it is not specific enough to evaluate MP effectiveness, or provide a mechanism for ensuring that members will implement additional and upgraded MPs if water quality is not improving.

Therefore, the proposed Waiver renewal includes more specific and detailed WQMP requirements that clarify what type of MP information needs to be collected, how the MP information must be reported, and the process for ensuring that growers implement additional MPs as necessary in order to attain water quality benchmarks within a reasonable timeframe. The proposed Waiver renewal also contains a schedule for attainment of those water quality benchmarks specifically associated with TMDL load allocations assigned to irrigated agricultural discharges. For these TMDL-associated water quality benchmarks, the proposed Waiver renewal also includes a provision that the TMDL-associated water quality benchmarks may be converted to discharge limitations[7] if the water quality benchmarks are not attained by the compliance deadline set forth in the Waiver.

[7] "Discharge limitations" means a numeric restriction or a numerically expressed narrative restriction, on the quantity, discharge rate, concentration, or toxicity units of a pollutant or pollutants that may be discharged from an authorized location as set forth in Appendices 4 and 5. A discharge limitation may be final or interim, and may be expressed as a prohibition. A discharge limitation does not include a receiving water limitation, a compliance schedule, or a management practice.

6.2 NGA – LAILG WQMP

Because NGA-LAILG is a smaller group (approximately 200 members) and monitoring is conducted at the edge of field, rather than in receiving waters, the NGA-LAILG WQMP follows a different approach than the VCAILG WQMP. The NGA-LAILG WQMP separates members into various groups based on their operational patterns and prescribes WQMP implementation guidelines specific to each operational group. Table 5 below summarizes the WQMP implementation tasks and timeline.

Table 5 Summary of NGA-LAILG WQMP Implementation Tasks and Timeline

Task	Implementation Actions and Timeline
Implement MPs at sampling site locations	January 2010 – ongoing. Sampling site locations will continue to initiate MPs as long as sampling results show exceedances.
Submit operational pattern questionnaire to members	July 2013
MP implementation and site grouping	Sort growers into the following groups: large operation, medium operation, and small operation; and implement MPs in June, 2014, September, 2014 and December 2014, respectively
Training and outreach	Conduct ongoing outreach and training
Additional MP implementation and tracking at all sites (as needed)	Ongoing. If implemented MPs are not improving water quality, work with individual growers to develop and implement additional MPs, or to improve existing MPs
Evaluate monitoring data and MP effectiveness	Results submitted in Annual Monitoring Reports and WQMPs

The NGA-LAILG WQMP approach is sufficient to evaluate MP effectiveness and attain water quality benchmarks within a reasonable timeframe at those properties that reported. NGA-LAILG WQMP has received only a 25 percent response rate for the original mailed questionnaire. Due to the low response rate, NGA-LAILG began developing a more user friendly web-based questionnaire that also accepts text message answers for growers who do not have internet access and is translated into Spanish. NGA-LAILG also recently hired a full time Director of Member Relations who

will work with consultants and partners to ensure that members are receiving necessary outreach and training and are implementing the required MPs. These actions have not yet been completed or have been too recently implemented to gauge their effect at the time of this Staff Report. In addition, the reduction in monitoring in recent years due to drought conditions and other issues has hindered the evaluation of MP effectiveness at the sampling site locations.

To address outreach, the proposed Waiver renewal contains more specific requirements for outreach by discharger groups. It also includes enforceable requirements for discharger group members to respond to questionnaires and submit other information that the group requires to develop and implement WQMPs.

7. SUMMARY OF MANAGEMENT PRACTICE IMPLEMENTATION

During the 2010 Waiver term, discharger groups reported management practice (MP) implementation by their members in a fairly general way. For example, VCAILG grouped MPs implemented by monitoring site drainage area because members were concerned about anonymity. Staff has been working with discharger groups to better present MP implementation information with water quality data in order to track water quality improvements under the Conditional Waiver. As a result, WQMPs for VCAILG and NGA-LAILG have continuously improved during the 2010 Waiver term. In the meantime, staff has been tracking MPs that have been implemented under various state and federal funding sources. The tracking is done using GIS to overlay enrollment numbers and implemented MPs with monitoring locations and associated drainage areas in an attempt to correlate MP implementation and grower participation with water quality data. The MPs funded by the various programs are summarized below.

7.1 Calleguas Creek Grant

In order to assist growers comply with the Conditional Waiver, UC Riverside, the Ventura County Resource Conservation District (VCRCD), and the UC Cooperative Extension received funding through section 319(h) of the Clean Water Act. This grant funded a project from May 2009 to March 2012 to assist growers with implementation of MPs in the Calleguas Creek watershed. Approximately 100 MPs were implemented on 53

properties covering 9,800 acres of irrigated farmland (Figure 33). Most growers chose to implement irrigation management MPs. The next most frequently implemented class of MPs were sediment and erosion control MPs. Approximately 70% of the MPs were implemented in the Revolon Slough and Beardsley Wash area, which has approximately 18,000 acres of irrigated agricultural lands.

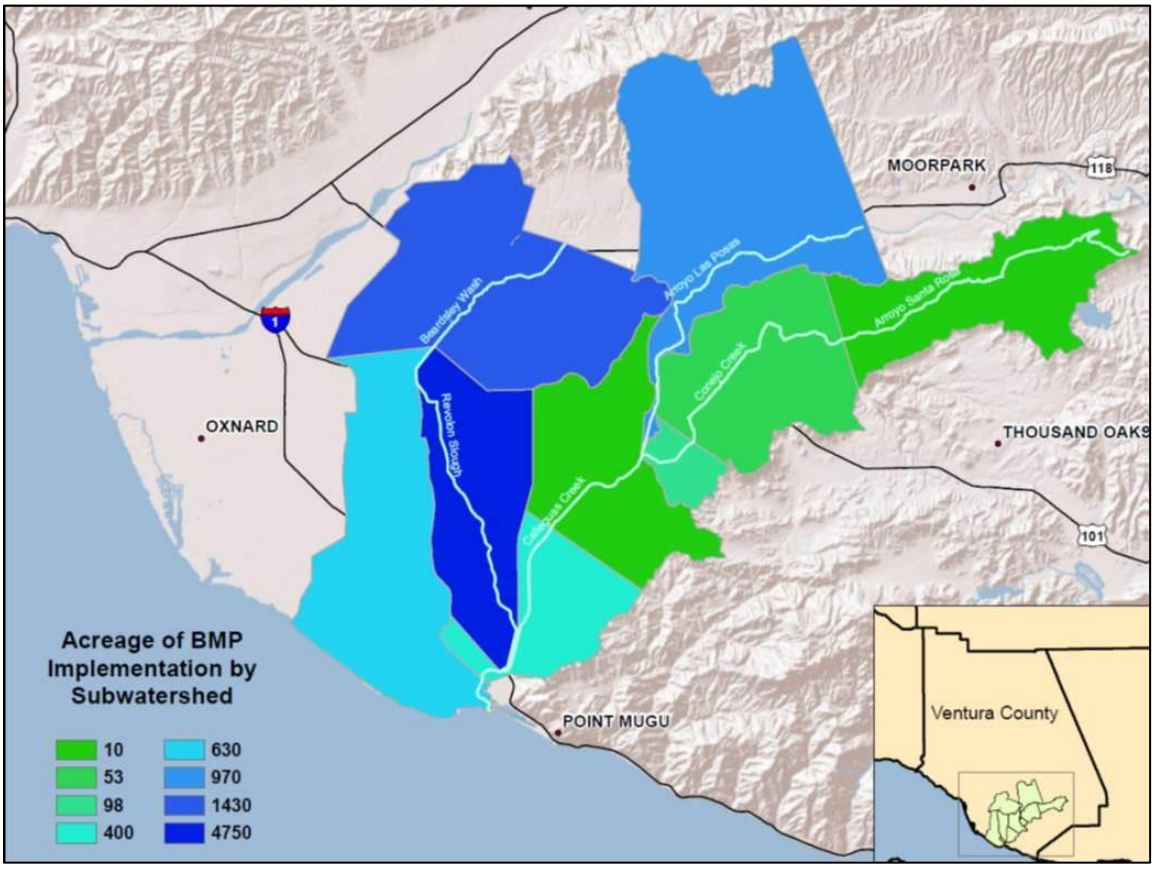

Figure 33 Calleguas Creek BMP Grant

7.2 Mobile Irrigation Lab

The VCRCD Mobile Irrigation Lab (MIL) program was developed under the Proposition 84 Agricultural Water Quality Grant to help farmers improve water quality by decreasing irrigation runoff and nutrient leaching. The VCRCD Mobile Irrigation Lab staff evaluates irrigation systems, pumps, and energy usage at the field level and provides a report of results, including recommendations on how to improve distribution uniformity, energy savings, seasonal irrigation efficiency, and irrigation scheduling. A certain amount of cost-share funding was available to assist farmers in implementing recommended

improvements based on the evaluations. VCRCD performed 133 irrigation evaluations and assisted 14 growers with irrigation efficiency improvements using the cost-share program, resulting in a water use reduction of approximately 200 acre-feet per year. Figure 34 shows parcels where the cost-share MPs were implemented. This program will continue with additional funding provided by the California Department of Water Resources.

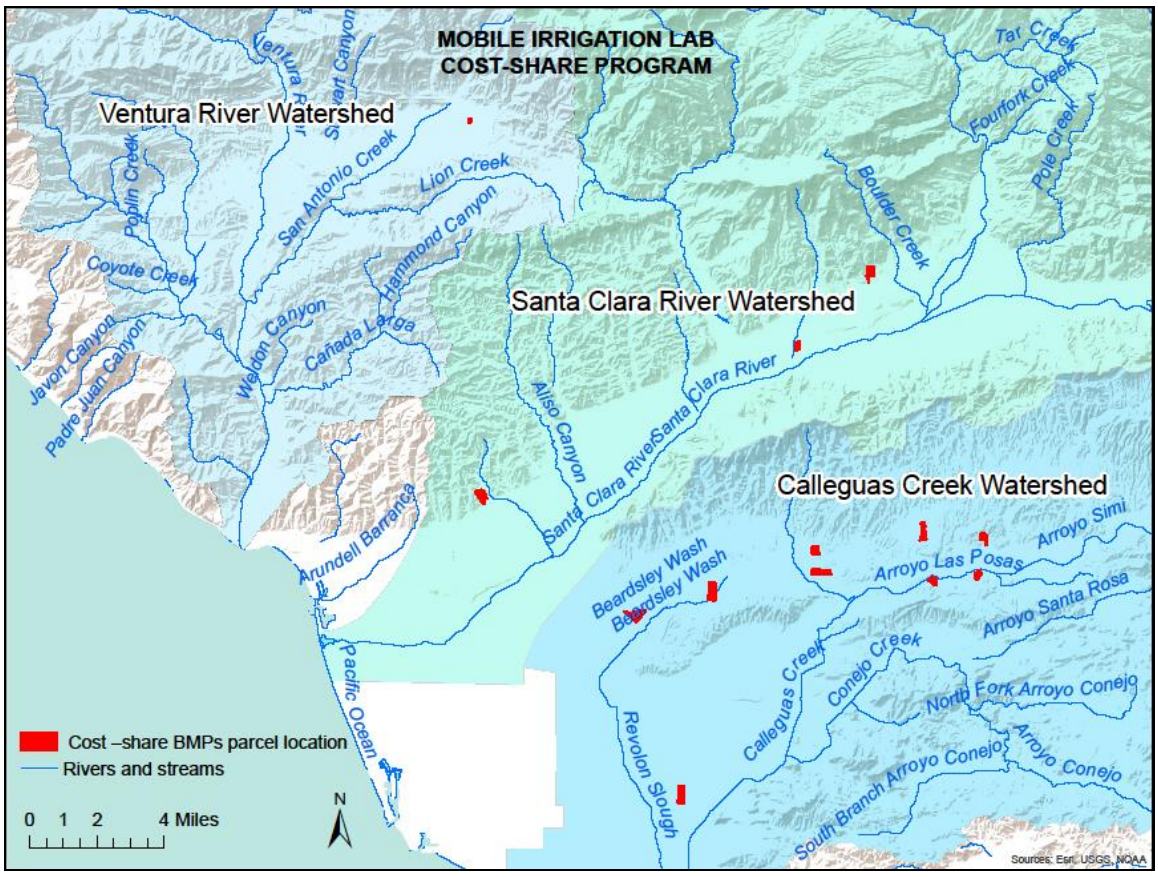

Figure 34 Mobile Irrigation Lab, cost-share parcel location

7.3 National Water Quality Initiative (NWQI)

The National Water Quality Initiative (NWQI) was established as a joint initiative with the Natural Resources Conservation Service (NRCS) and the United States Environmental Protection Agency (USEPA) in 2012 to address agricultural sources of water pollution in priority watersheds, including the Arroyo Los Posas, Beardsley Wash, Revolon Slough, and Mugu Lagoon subwatersheds within the Calleguas Creek watershed. The MPs funded by NWQI include irrigation management, erosion control, and nutrient

management. NWQI has obligated $2.6 million for these MPs from 2012 to 2015 and the majority of the funds have been spent, meaning that the MPs have been implemented (Table 6).

Table 6 MPs funded by NWQI

Year	Contracts Obligated	Contracted Acres	Funds
2012	7	386.65	$402,000
2013	13	1649.8	$856,000
2014	20	1991.12	$844,000
2015	10	974.8	$514,000
Total	50	5002.37	$2,616,000

7.4 San Gabriel River Nurseries Grant

This Nurseries project was conducted by the Council for Watershed Health and supported by a Clean Water Act Section 319(h) grant. The goal of the project was to reduce pollutant loadings, primarily copper, from nurseries in the San Gabriel River Watershed through the implementation of non-structural MPs and to determine the effectiveness of those MPs. The project implemented MPs at five nurseries, including improved irrigation efficiency, the use of polyacrylamide to settle sediment, secondary containment for chemical storage, distribution of gravel on dirt roads to slow runoff and retain sediments, and installation of filter sox to retain sediments and filter runoff (Figure 35). The project sampled runoff before and after the installation of MPs. After implementation of the MPs, irrigation runoff was completely retained on all five nurseries during dry weather, and stormwater was completely retained on four out of five nurseries during wet weather. The stormwater collected from the one nursery with runoff showed a decrease of greater than 50% in the concentrations of 31 of the 135 measured analytes, and a greater than 95% reduction in 9 of the analytes. The concentration of total copper decreased by 26% from 43 µg/L to 32 µg/L. The project sites will also be used as education and training field sites for other nursery managers in Los Angeles County.

Figure 35 Filter Sox installed at San Gabriel River Nursery retains stormwater runoff from site

8. COMPLIANCE HISTORY

Compliance with regulatory programs is essential and enforcement actions have been taken against dischargers who have not enrolled in the Conditional Waiver program. The objective of the enforcement actions is to encourage compliance with the Conditional Waiver program and ensure that irrigated agricultural operations meet their legal responsibilities to protect water quality. Moreover, in order to preserve the long-term success of the program, it is necessary to respect the compliance of currently enrolled growers and discourage noncompliance by properly exercising enforcement authorities.

In conducting enforcement actions, the Regional Board takes actions consistent with the State Water Resources Control Board (State Water Board) Water Quality Enforcement Policy. During the 2010 Waiver term, Regional Board staff sent notices of violation (NOVs) to growers who had not enrolled in the Conditional Waiver program. In 2013, staff sent NOVs to 68 growers in Ventura and Los Angeles Counties and 52 of the NOVs were resolved by May of 2015. In June of 2015, staff re-sent NOVs to the remaining 16 growers and seven of those were resolved by August 2015. Staff followed up with nine

pre-prosecution letters to growers who received the NOVs, but did not respond. As a result, seven more growers enrolled and two are subject to follow up enforcement action. Enforcement is a resource intensive process, but enforcement staff continues to perform enforcement actions as necessary to ensure the integrity and success of the Conditional Waiver program.

9. NITRATE GROUNDWATER ANALYSIS

Nitrate groundwater monitoring results were discussed in detail in the staff report for the 2010 Conditional Waiver renewal. The purpose of the 2010 analysis was to evaluate the potential impacts of discharges from irrigated agriculture on groundwater quality. The approach for the current analysis is to review recent groundwater monitoring data from the same sources used in the 2010 staff report, determine if there are exceedances of nitrate groundwater quality objectives, evaluate the extent of exceedances in different groundwater basins, and present the changes in groundwater quality for the past five years. This is a broad analysis intended to determine long-term and large scale nitrate impacts and to direct groundwater monitoring requirements in the proposed Conditional Waiver renewal.

9.1 ANALYSIS OF DATA FROM THE GROUNDWATER AMBIENT MONITORING AND ASSESSMENT (GAMA) PROGRAM

The GAMA Program is California's comprehensive groundwater quality monitoring program. GAMA integrates, standardizes, and provides tools to analyze several datasets, including data from the State and Regional Water Boards, California Department of Public Health, Department of Pesticide Regulation, Department of Water Resources, United States Geological Survey, and Lawrence Livermore National Laboratory. The groundwater quality objective (also the State's Maximum Contaminant Limit (MCL) drinking water standard) for nitrate is 45 mg/L as nitrate (NO_3). According to the nitrate monitoring data from the GAMA program, in Ventura County, the percentage of samples with nitrate exceedances is 9.5% in the last 15 years. 87.7% of all samples collected during the 2000-2015 period have concentrations between 0.1 and 45 mg/L. Finally, 9.4% of the all samples have non-detectable concentrations of nitrate. In Los Angeles County, for the last 15 years, the percentage of samples with nitrate

exceedances is 12.3%. The percentages of samples with concentrations between 0.1 and 45 mg/L, and with non-detectable concentrations are 73.2% and 14.6%, respectively. A summary of nitrate exceedances for the last 15 years in groundwater basins is provided in Table 7. Columns (2000-2010) representing the analysis conducted for the 2010 Waiver renewal have been added to Table 7 for comparison. At least 1% of the land use overlying the groundwater basins listed in Table 7 is irrigated agricultural and there are representative groundwater wells. The highest percentages of exceedances of the nitrate MCL were found in the Arroyo Santa Rosa Valley Basin (54.6%) and the Ventura River Valley Upper Basin (46.7%). For the last five years (2011-2015), the maximum concentrations of nitrate observed increased in the Santa Clara River Valley – East Basin and the Las Posas Valley Basin. Additionally, the percent of samples that exceed 45 mg/L increased in the Ventura River Valley Upper Basin, Mound Basin, Santa Clara River Valley – East Basin, Oxnard Basin, Arroyo Santa Rosa Valley, Las Posas Valley, and San Gabriel Valley Basin. All the basins with the exception of the San Gabriel Valley Basin are located in Ventura County.

Table 7 Summary of nitrate MCL exceedances in the past 15 years in groundwater from wells in the GAMA Program (2000-2015)

Groundwater Basin	Max NO_3 Observed (mg/L)		No. of Samples		No. of Samples > 45 mg/L		Percent Samples > 45 mg/L		Condition of Groundwater Occurrence
	2000-2010	2000-2015	2000-2010	2000-2015	2000-2010	2000-2015	2000-2010	2000-2015	
Upper Ojai Valley	40.7	40.7	1	23	0	0	0%	0%	Unconfined
Ojai Valley	56.9	56.9	277	368	23	23	8.3%	6.3%	Mostly Unconfined
Ventura River Valley Upper	97	97	1287	1097	362	512	28.1%	46.7%	Unconfined
Ventura River Valley Lower	25.9	25.9	15	29	0	0	0%	0%	Unconfined
Santa Clara River Valley - Mound	172.4	172.4	722	908	84	92	1.6%	10.1%	Confined and Unconfined
Santa Clara River Valley - Santa Paula	103.5	103.5	651	695	46	46	7.1%	6.6%	Mostly Unconfined

Groundwater Basin	Max NO_3 Observed (mg/L)		No. of Samples		No. of Samples > 45 mg/L		Percent Samples > 45 mg/L		Condition of Groundwater Occurrence
	2000-2010	2000-2015	2000-2010	2000-2015	2000-2010	2000-2015	2000-2010	2000-2015	
Santa Clara River Valley-Fillmore	99.9	99.9	151	225	3	3	2%	1.3%	Mostly Unconfined
Santa Clara River Valley - Piru	33.3	33.3	59	94	0	0	0%	0%	Mostly Unconfined
Santa Clara River Valley - East	160	333	1514	2524	20	55	1.3%	2.1%	Confined and Unconfined
Acton Valley	56	56	319	467	17	21	5.3%	4.5%	Unconfined
Lockwood Valley	17.8	17.8	10	15	0	0	0%	0%	Unconfined
Santa Clara River Valley - Oxnard	2745	2745	6314	8916	228	477	3.6%	5.4%	Confined and Unconfined
Pleasant Valley	279	279	197	273	13	17	6.6%	6.2%	Confined
Arroyo Santa Rosa Valley	146	146	282	240	118	131	41.8%	54.6%	Mostly Unconfined
Las Posas Valley	44.3	403	324	490	0	4	0%	0.8%	Confined and Unconfined
Tierra Rejada	61.1	61.1	39	43	1	1	2.6%	2.3%	Mostly Unconfined
Hidden Valley	12.8	12.8	13	17	0	0	0%	0%	Unconfined
Malibu Valley	20.7	20.7	75	130	0	0	0%	0%	Unconfined
San Gabriel Valley	207	207	29301	33697	2946	4004	10.1%	11.9%	Confined and Unconfined

9.2 Analysis of Data from the Ventura County Watershed Protection District (VCWPD) Program

The VCWPD Groundwater Section Annual Reports provide an annual overview of the groundwater conditions for Ventura County. Data from the 2007-2014 reports are summarized and provided in Table 8. Columns (2007-2009) representing the analysis made for the 2010 Waiver renewal are added to Table 8 for comparison. The reports documented that nitrate concentrations exceed the MCL for drinking water in the Arroyo Santa Rosa Basin, Simi Valley Basin, Oxnard Plain Forebay Basin, Fillmore Basin, Tierra Rejada Basin, Las Posas Basin, Pleasant Valley Basin, Oxnard Plain Pressure Basin, Ojai Valley Basin, Upper Ojai Valley Basin, Mound Basin, and Piru Basin, and hypothesized that this was due to extensive use of fertilizers and septic system discharges. Furthermore, compared to 2007-2009 reports, the 2010-2014 reports documented that the maximum concentration observed increased in fifteen of the twenty six basins. In three of these fifteen basins, the maximum concentration reached levels above 45 mg/L. Also, the percent of samples with concentrations above 45 mg/L increased in ten basins during same time period.

Table 8 Summary of nitrate MCL exceedances in groundwater from wells in the VCWPD Program (2007-2014)

Groundwater Basin	Max NO_3 Observed		No. of Samples		No. of Samples > 45 mg/L		% Samples > 45 mg/L		Condition of Groundwater Occurrence
	2007-2009	2007-2014	2007-2009	2007-2014	2007-2009	2007-2014	2007-2009	2007-2014	
Upper Ojai Valley	44.6	46.2	5	24	0	1	0%	4.2%	Unconfined
Ojai Valley	49.1	49.1	42	87	3	3	7.1%	3.4%	Mostly Unconfined
Ventura River - Upper	41.6	41.6	9	11	0	0	0%	0%	Unconfined
Ventura River - Lower	0.6	2.7	8	10	0	0	0%	0%	Unconfined
Mound	40.9	85	14	40	0	3	0%	7.5%	Confined and Unconfined

Groundwater Basin	Max NO_3 Observed		No. of Samples		No. of Samples > 45 mg/L		% Samples > 45 mg/L		Condition of Groundwater Occurrence
	2007-2009	2007-2014	2007-2009	2007-2014	2007-2009	2007-2014	2007-2009	2007-2014	
Santa Paula	38.2	38.2	13	33	0	0	0%	0%	Mostly Unconfined
Fillmore	152	251	19	69	5	17	26.3%	24.6%	Mostly Unconfined
Piru	47.1	77	34	101	2	7	5.9%	6.9%	Mostly Unconfined
Lockwood Valley	21.4	21.4	11	29	0	0	0%	0%	Unconfined
Oxnard Plain Pressure	114	114	97	182	9	9	9.3%	4.9%	Confined and Unconfined
Oxnard Plain Forebay	70.1	70.1	9	10	3	3	33.3%	30%	Confined and Unconfined
Gillibrand/Tapo	11.4	22.7	6	14	0	0	0%	0%	Mostly Unconfined
Simi Valley	57.6	64.6	12	29	5	12	41.7%	41.4%	Mostly Unconfined
Pleasant Valley	100	140	27	93	3	7	11.1%	7.5%	Confined
Arroyo Santa Rosa	112	151	26	69	18	48	69.2%	69.6%	Mostly Unconfined
Las Posas - West	170	220	14	51	3	12	21.4%	23.5%	Confined and Unconfined
Las Posas - East	73.5	74.2	20	56	3	12	15.0%	21.4%	Confined and Unconfined
Las Posas - South	28.2	54.2	9	34	0	2	0.0%	5.9%	Unconfined
Tierra Rejada Valley	71.2	93	24	72	7	25	29.2%	34.7%	Mostly Unconfined

Groundwater Basin	Max NO_3 Observed		No. of Samples		No. of Samples > 45 mg/L		% Samples > 45 mg/L		Condition of Groundwater Occurrence
	2007-2009	2007-2014	2007-2009	2007-2014	2007-2009	2007-2014	2007-2009	2007-2014	
Thousand Oaks	0	0.6	5	14	0	0	0%	0%	Unconfined
Hidden Valley	3.4	21.6	10	28	0	0	0%	0%	Unconfined

9.3 Analysis of Data from United Water Conservation District (UWCD)

The UWCD project report, "Modifying Agricultural Practices, Nutrients and Pesticides, Calleguas Creek and Santa Clara River" (Grant Agreement No. 04-073-554-1), funded by the State Water Board, summarized lysimeter monitoring results in and below the root zone. Lysimeters (soil-moisture samplers) were used to collect percolating waters at one foot and six feet below ground. Nutrients detected at one foot below ground are generally available for crop uptake. Nutrients detected at six feet below ground have passed through the active root zone and are generally unavailable for crop uptake. The UWCD study collected more than 520 lysimeter samples over 3½ years. Over 900 nutrient samples were collected from shallow and deep soils in the study area. Overall, more sites have nitrate plus nitrite as nitrogen concentrations higher in six-foot lysimeters than in one-foot lysimeters. When nutrient concentrations are higher in deep soils, percolation of irrigation water and rainfall has driven nutrients below the crop's root zone. In areas with unconfined aquifers, this can result in agricultural waters percolating unimpeded to underlying aquifers. Nitrate plus nitrite was found in the lysimeters at levels exceeding the MCL for nitrate plus nitrite as nitrogen (10 mg/L) by an order of magnitude at both the one-foot and six-foot depths. These high detections are corroborated by the presence of high nitrates in some areas of unconfined aquifers (Tables 7 and 8), such as the Oxnard Plain Forebay Basin, where the percolating agricultural water can reach the aquifer.

The percolation of nutrients beyond the root zone can be reduced by proper application of fertilizers and improved irrigation efficiency to prevent over-watering of crops. The

UWCD study included lysimeter sampling at two sites where irrigation was controlled by real-time soil moisture measurements. At these sites, the nutrient concentrations were among the lowest in the study at both the one-foot and six-foot lysimeter depths. Thus, improved irrigation efficiency is an effective MP to prevent groundwater contamination by agriculture.

10. Ongoing and Future Groundwater Management Activities and Monitoring

10.1 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) requires the formation of Groundwater Sustainability Agencies (GSAs), which must develop Groundwater Sustainability Plans (GSPs) by 2020 in groundwater basins designated by the Department of Water Resources (DWR) as medium or high priority. DWR based the prioritization on many factors, including overlying irrigated acreage and water quality degradation. The SGMA also encourages and authorizes low and very-low priority basins to be managed under GSPs as well. There are 12 out of 32 groundwater basins in Ventura County designated as high or medium priority. In addition to groundwater supply concerns, a GSP is required to include actions to achieve groundwater quality within 20 years of implementation of a GSP and groundwater monitoring to detect changes in groundwater quality. DWR will develop guidelines for GSPs by June 2016 that will assist GSAs and local agencies in planning for groundwater sustainability.

10.2 Salt and Nutrient Management Plans

The State Water Board adopted a Recycled Water Policy in February 2009. The Recycled Water Policy requires that Salt and Nutrient Management Plans (SNMPs) be completed by 2016 to facilitate basin-wide management of salts and nutrients from all sources in a manner that optimizes recycled water use while ensuring protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. The Recycled Water Policy requires stakeholders to develop implementation plans to

meet these objectives for salts and nutrients. The implementation plans will then be adopted by Regional Boards as amendments to the region's Basin Plan.

The Regional Board adopted an amendment to incorporate the Lower Santa Clara River Basins SNMP into the Basin Plan on July 9, 2015. The Lower Santa Clara River Basins SNMP was developed to manage salt and nutrient loads to these basins, while increasing recycled water use in the area through a collaborative, stakeholder-led process. The SNMP estimated the relative TDS, chloride, and nutrient loading from various sources of water for each sub-basin in the Lower Santa Clara River Basins. Table 9 shows the relative loading from agriculture in these sub-basins.

Table 9 Nitrate load from agricultural irrigation in the Santa Clara River Basin

Lower Santa Clara River Sub-basins	Agricultural Irrigation with Surface Water (Percent of Nitrate Load)	Agricultural Irrigation with Groundwater (Percent of Nitrate Load)
Piru	13.6	27
Fillmore		49.4
Santa Paula	0.6	48.6
Oxnard Forebay		26.1
Mound		25.7

The SNMP found that while there are localized areas with higher salt and nutrient concentrations (particularly in the vicinity of wastewater treatment effluent percolation ponds), the average nitrate concentrations in the sub-basins are below the MCL of 45 mg/L as nitrate. The SNMP also found that the Lower Santa Clara River Basin is currently being managed to control salt and nutrient inputs through various actions and programs in the area. Existing salt and nutrient management measures identified for agriculture in in the SNMP are:

- Fertilizers are applied in multiple smaller applications, as opposed to one large application. Fertilizer applications are adjusted to account for other nutrient sources, such as: irrigation water, cover crops, and residuals from previous fertilizations. Fertilization rates are adjusted based on the results of soil fertility measurements.

- Leaching is performed only when necessary, as determined by measuring soil solution electrical conductivity. Saline or high selenium wells are decommissioned and other sources of water are used. Fertilizers and amendments with low salt index are used.

- Agricultural users may use “Efficiency Criteria” in place of historical groundwater allocations. Must have 20% or less of applied water going to leaching, deep percolation or runoff.

- Irrigation is varied to accommodate plant growth stage and weather. Irrigation is conducted by personnel who understand and practice irrigation practices related to runoff management. Irrigation is halted if significant runoff occurs.

The SNMP found that current management measures are expected to maintain nitrate levels in the long term and that assignment of allocations for salt and nutrient loading is not warranted at this time. However, the SNMP states, “Where projects have the potential to impact salt and/or nutrient loads to a basin, consideration will be given to water quality conditions and the corresponding assimilative capacity in localized areas during the permitting process or the development of other Regional Board regulatory actions.”

The SNMP includes a monitoring program with 15 wells to assess spatial and temporal changes in nutrient concentrations and to refine the source loading analysis and also relies on existing surface water and discharge quality data monitored VCAILG and other agencies.

11. COST CONSIDERATIONS

11.1 VCAILG COST

VCAILG administers the Conditional Waiver enrollment, monitoring, and reporting requirements for its landowner members. Landowners are billed for services on a per acre basis. Average costs per acre are presented in Table 10. Administrative costs, such

as report processing and overhead, are shared equally among all VCAILG members, whereas monitoring costs vary between watersheds due to differences in the number of monitoring sites and analysis required. In addition to administering the Conditional Waiver, VCAILG is also the mechanism by which TMDL monitoring and reporting costs are recovered from agriculture landowners. As TMDL requirements become effective in other watersheds, landowners in those areas will also be billed for both Conditional Waiver costs and TMDL compliance costs. Table 10 summarizes the total VCAILG program costs over the last five years.

Table 10 Summary of Annual VCAILG Budget and Cost per Acre for Enrolled Acreage

Year	VCAILG Budget	Enrolled Acreage	Average Cost per Acre
2010-2011	$2,026,179	88,002	$23.02
2011-2012	$1,788,936	83,661	$21.38
2012-2013	$1,616,404	79,003	$20.46
2013-2014	$1,313,657	77,019	$17.06
2014-2015	$1,774,801	78,664	$22.56

11.2 NGA-LAILG COST

Similarly, the NGA-LAILG administers the Conditional Waiver enrollment, monitoring, and reporting requirements for its members. All members of NGA-LAILG are also required to be members of NGA and must pay annual NGA dues. Annual NGA dues are $750 for growers grossing greater than $1 million per year and $375 for growers grossing less than $ 1 million per year. In addition to NGA dues, members are billed a base fee and a per acre fee to cover the costs of monitoring, reporting, ad administration of the program (Table 11).

Table 11 NGA-LAILG Member Fees

Years	Member Fees
2010-2013 (one billing for three years)	$850 per site plus $85 per acre (100 acre cap)
2014-2015 (one billing for two years)	$100 per site plus $125 per acre (70 acre cap)

Table 12 summarizes the NGA-LAILG budget over the term of the 2010 Conditional Waiver. Conditional Waiver monitoring and reporting costs are assessed approximately once per year.

Table 12 Summary of Annual NGA-LAILG Budget

Fiscal Year	NGA-LAILG Budget
2010-11	$83,945
2011-12	$175,970
2012-13	$128,783
2013-14	$155,474
2014-15	$93,981

11.3 Estimated MP Implementation Costs

In order to estimate the implementation costs of the Conditional Waiver program, the staff report supporting the 2010 Waiver renewal estimated the costs of four MP categories (nutrient management, pesticide management, erosion management, and irrigation management) on a per acre/year basis. MP cost information was based on estimates from NRCS Field Office Technical Guides (FOTG). Under the proposed Waiver renewal, growers will continue to implement MPs from these four categories. Thus, the MP cost estimates are included in this staff report as well, and have been updated with recent NRCS cost information (with the exception of tailwater recovery systems, which do not have updated costs). The costs for each MP category are summed by five common crop types in the Los Angeles Region, and the total MP cost is compared to the five-year average annual gross crop value for those crops (Table 13).

Table 13 Comparison of MP cost with five-year average annual gross crop values

Crop	Crop Value (per acre-year)	MP Cost (per acre-year)				Total MP Cost (per acre-year)	MP Cost/ Crop Value
		Nutrient Manage-ment	Pesticide Manage-ment	Erosion Manage-ment	Irrigation Manage-ment		
Strawberry	$52,150	$76	$110	$2	$99	$287	0.6%
Celery	$14,481	$76	$110	$2	$99	$287	2.0%
Nursery Stock	$54,709	$76	$110	$2	$99	$287	0.5%
Lemon	$12,944	$76	$110	$331	*	$517	4.0%
Avocado	$7,222	$76	$110	$331	*	$517	7.2%

*The irrigation management MP is the same as the erosion management MP for these crop types.

11.4 Nutrient Management

Nutrient management plans (NRCS Practice Code 590) are applicable to all crop types. The NRCS cost estimate for a nutrient management plan is $76 per acre-year (NRCS, 2016).

11.5 Pesticide Management

Pesticide management plans (NRCS Practice Code 595) are applicable to all crop types. The NRCS cost estimate for a pesticide management plan is $110 per acre-year (NRCS, 2016).

11.6 Sediment and Erosion Management

Staff assumed two types of erosion management MPs to estimate costs: mulching and filter strips. These MPs were selected because they are effective MPs to address sediment and erosion management and are reasonably expected to be implemented by growers. For orchard crops (avocado and lemon), the most applicable erosion control MP is mulching. For strawberry, celery, and nursery crops, the most applicable erosion control MP is filter strips.

Filter Strips

NRCS estimates that filter strips (NRCS Practice Code 393) planted with native plant material are $1,163 per acre of filter strip installed (NRCS, 2016). Staff estimated a ratio of treated agricultural land area to filter strip area of 60:1 using design methods described in *Design of Stormwater Filtering Systems* (CWP, 1996) and assuming a 99% pervious drainage area, a 1-inch storm, a minimum filter strip length of 25 feet, a berm height of six inches, and a 150-foot by 150-foot drainage area.

The calculated 60:1 ratio is consistent with the NRCS Conservation Practice Standard for Filter Strips (Code 393), which specifies that the ratio of the drainage area to filter strip area shall be less than 60:1 in regions with RUSLE-R (Revised Universal Soil Loss Equation- Rainfall-Erosivity) factor values of 35-175 (RUSLE-R factor values for California range from 60-100).

Assuming a ratio of treated agricultural land area to filter strip area of 60:1, the cost of filter strips is $19 per acre of agricultural land treated. According to Code 393, filter strips should be designed to have a 10-year lifespan. Assuming a 10-year lifespan and a 5 percent discount rate, the annual cost of filter strips is $2.46 per acre-year.

Mulching

NRCS estimates that mulching costs $1,292 per acre of mulch applied. The NRCS Conservation Practice Standard for Mulching (Code 484) specifies that mulching should be applied at a rate to achieve a minimum of 70 percent ground cover to provide erosion control. Therefore, the cost of mulching is $904 per acre of agricultural land treated.

According to the Mulching FOTG, the reported lifespan for this practice is one year, but local NRCS staff has reported that woody mulch can last two to three years and mulch residue can last up to five years. Assuming a lifespan of three years and a 5% discount rate, the annual cost of mulching is $331 per acre-year.

11.7 Irrigation Management

Staff assumed two types of irrigation management MPs to estimate costs: mulching and irrigation tailwater recovery (NRCS Practice Code 447). For orchard crops (avocado and lemon), mulching is an effective irrigation management practice in addition to being an

effective erosion control practice. For strawberry, celery, and nursery crops, the most applicable irrigation management MP is tailwater recovery.

NRCS estimates that tailwater recovery systems for cropland less than 100 acres cost $309 per acre of cropland treated (NRCS, 2010). According to the Tailwater Recovery System FOTG, the reported lifespan for this practice is 15 years. Assuming a 5% discount rate, the annual cost of a tailwater recovery system is $30 per acre-year.

11.8 Gross Annual Crop Values

The five-year average gross annual crop values for five common crops in the Los Angeles Region range from $7,222 to $54,709 per acre-year (Ventura County Agricultural Commissioner 2010-2015). Based on this costs analysis, MP costs range from 0.5% to 7.2% of the crop value per acre.

12. Conclusions and Recommendations for Conditional Waiver Renewal

The implementation of the Conditional Waiver program over the last ten years has resulted in extensive water quality monitoring, ongoing grower education and outreach, and implementation of new and improved MPs. Staff recommends that the appropriate approach for continued regulation of discharges from irrigated agriculture is to continue similar activities as those conducted under the first two terms of the Waiver, but with some enhancements and additions to provide assurance that discharges from irrigated agricultural lands will be adequately managed to attain water quality standards in receiving waters. These enhancements and additions include:

1) Incorporate recently established TMDL load allocations and additional water quality benchmarks for bacteria and pyrethroids,
2) Direct more detailed and specific WQMPs and management practice reporting in response to water quality data,
3) Trigger a detailed source investigation where water quality benchmarks are exceeded and water quality trends are not decreasing,

4) Allow TMDL-associated water quality benchmarks to be converted to discharge limitations if discharges do not attain the benchmarks within a reasonable time schedule, and

5) Implement nutrient management practices and conduct ~~studies~~ an evaluation to confirm that management practices effectively improve groundwater quality.

12.1 Incorporation of TMDL Load Allocations and Additional Water Quality Benchmarks

A significant component of the Conditional Waiver is the inclusion of TMDL load allocations that have been assigned to discharges from irrigated agricultural land as water quality benchmarks. Like all other water quality benchmarks in the waiver, if TMDL load allocation benchmarks are exceeded, MPs must be implemented to address the exceedances. The following are the effective TMDLs, which have become effective since the 2010 Waiver renewal and assign load allocations to agricultural dischargers:

- McGrath Lake PCBs, Pesticides, and Sediment Toxicity TMDL (Resolution No. R09-006)
- Oxnard Drain No. 3 Pesticides, PCBs, and Sediment Toxicity TMDL (U.S. EPA-established TMDL)
- Malibu Creek and Lagoon TMDLs for Sedimentation and Nutrients to Address Benthic Community Impairments (U.S. EPA-established TMDL)
- Ventura River Algae TMDL (Resolution No. R12-011)
- Santa Clara River Bacteria TMDL (Resolution No. R10-006)

Based on the NGA-LAIG Bacteria Special Study, discharges from irrigated agriculture are a source of bacteria, which requires monitoring and the addition of a bacteria water quality benchmark to the proposed Waiver renewal. The single sample water quality objective for *E. coli* of 235/100mL will be incorporated as a water quality benchmark.

Based on water quality monitoring conducted under the previous waiver terms, discharges from irrigated agriculture are a source of pyrethroids. The numeric target in the 2011 Oxnard Drain No. 3 Pesticides, PCBs, and Sediment Toxicity TMDL of 0.6 ng/L for bifenthrin will be incorporated as a water quality benchmark in the proposed Waiver

renewal. Criteria for other pyrethroids are currently under development in the Central Valley Region, but the numeric target for bifenthrin is the only approved numeric value for pyrethroids in the Los Angeles Region and is thus the only pyrethroid proposed for inclusion as a water quality benchmark in the Waiver renewal.

12.2 ADDITIONAL WQMP REQUIREMENTS

Based on a review of WQMPs prepared under the previous Waiver terms, it is not possible to correlate MP implementation with water quality data. This comparison is necessary in order to assess MP effectiveness to determine if additional or upgraded MPs are needed to meet water quality benchmarks. As discussed in Sections 5 and 6 of this report, it is apparent that growers are implementing MPs, actively participating in education events, and taking advantage of funding opportunities to assist with MP implementation. However, the current MP reporting makes it difficult to demonstrate success where water quality is improving or identify the need for additional MPs where water quality is not improving. Therefore, the proposed Waiver renewal includes more specific and detailed WQMP requirements that clarify what type of MP information needs to be collected, how the MP information must be reported, and the process for ensuring that growers implement additional MPs if needed to attain water quality benchmarks. The new WQMP requirements in the proposed Monitoirng and Reporting Plan specifiy that MP data be organized by monitoring site, and that the data include, in addition to adoption rates, the degree of MP implementation (e.g., size of area treated), for each type of MP. The current manner of reporting adoption rates is useful, but in situations where adoption rates for all types of MPs are high, while water quality still exceeds benchmarks, it is difficult to determine what additional MPs are needed. The proposed WQMP revisions require discharger groups to track trends in water quality and correlations between grower participation, MP implementation, and water quality improvements. The proposed WQMP revisions also contain a time-certain schedule for implementation of additional or upgraded MPs with a goal of attaining Water Quality Benchmarks in ten years and more specific requirements for outreach by discharger groups to ensure that members are informed of the newly required MPs. It also includes enforceable requirements for members to implement the MPs, respond to discharger group questionnaires, and submit other information that the group requires to implement WQMPs.

12.3 Source Investigation for Sites Without Decreasing Trends in Pollutant Concentrations

Review of the water quality data collected under the first two Waiver terms demonstrates some decreasing trends in waste concentrations, and several instances of specific monitoring sites attaining water quality benchmarks. However, there are also many instances where there has been little change in water quality and waste concentrations are still well above water quality benchmarks. In some rare cases, trends in waste concentrations appear to be increasing. Thus, in order to ensure that water quality benchmarks are ultimately attained, the proposed Waiver renewal includes a requirement that if a monitoring site does not show a decreasing trend in waste concentrations that exceed Water Quality Benchmarks, then the Discharger Group shall investigate the sources of the waste concentrations that exceed Water Quality Benchmarks. The investigation shall include some individual discharge monitoring of member sites that drain to the Discharger Group monitoring site based on an evaluation of relative locations, crop type, existing management practice implementation, pesticide application, fertilizer application, and irrigation practices of member sites. The specific investigation may include monitoring upstream of member sites to demonstrate that member sites that drain to the Discharger Group monitoring site are not causing or contributing to a Water Quality Benchmark exceedance at the Discharger Group monitoring site.

12.4 Schedule for Attainment of Water Quality Benchmarks

The proposed Waiver renewal contains a schedule for attainment of TMDL-associated water quality benchmarks and includes a provision that allows the Regional Board to convert water quality benchmarks to discharge limitations for purposes of compliance determination if water quality benchmarks are not achieved by the compliance deadlines set forth in the Waiver. The schedule is also needed to comply with the State Water Board's Nonpoint Source Enforcement Policy, which requires that a nonpoint source program, such as the Conditional Waiver program, include a specific time schedule and corresponding quantifiable milestones designed to measure progress toward attaining

water quality objectives. The proposed schedule (Table 14) takes into consideration the relative difficulty in achieving water quality benchmarks for different constituents and is based on TMDL compliance dates, where applicable. Some of the earlier adopted TMDLs have load allocation compliance dates that are sooner than the compliance dates proposed in Table 14. The TMDL compliance dates are presented in Appendix 5 to the proposed Conditional Waiver. However, in these earlier TMDLs, the implementation language and the suporting staff reports indicated that the load allocations would be achieved through the iterative MP process under the Conditional Waiver program. Because water quality standards must ultimately be attained, the deadlines in Table 14 represent the time when the iterative MP process should end. Additional time beyond the TMDL load allocation compliance dates is proposed for these earlier TMDLs. For example, the Calleguas Creek Nitrogen Compounds and Related Effects TMDL has a TMDL compliance date of July 2010, and the compliance date proposed in Table 14 is October 14, 2025, given the difficulty in achieving the water quality benchmarks for nitrogen. More recent TMDLs have indicated that the load allocation compliance dates are final compliance dates, such as the McGrath Lake OC Pesticides and PCBs TMDL, which has a proposed compliance date in Table 14 equal to the TMDL compliance date.

Table 14 Water Quality Benchmark Compliance Deadlines

TMDL Constituents	Compliance Date
Malibu Creek Watershed Nutrients TMDL	October 14, 2022
Santa Clara River Nitrogen Compounds TMDL	October 14, 2022
Ventura River Estuary Trash TMDL	October 14, 2020
Calleguas Creek Nitrogen Compounds and Related Effects TMDL	October 14, 2025
Revolon Slough and Beardsley Wash Trash TMDL	October 14, 2020
Upper Santa Clara River Chloride TMDL	October 14, 2020
Calleguas Creek Watershed and Mugu Lagoon Siltation TMDL*	March 24, 2015
Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL	March 24, 2022
Ventura River Algae TMDL	June 28, 2019
McGrath Lake OC Pesticides and PCBs TMDL	June 30, 2021
Malibu Creek Watershed Sedimentation and Nutrients TMDL	July 2, 2021
Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL	March 26, 2022

TMDL Constituents	Compliance Date
Calleguas Creek Watershed Boron, Chloride, Sulfate and TDS (Salts) TMDL	Dec. 23, 2023
Santa Clara River Estuary Toxaphene TMDL	October 7, 2025
Calleguas Creek Watershed and Mugu Lagoon OC Pesticides & PCBs TMDL	March 24, 2026
Oxnard Drain No. 3 Pesticides, PCBs, and Sediment Toxicity TMDL	April 14, 2026
Santa Clara River Bacteria TMDL	March 21, 2023 dry March 21, 2029 wet

*Additional time may be added to this TMDL deadline should a TMDL reconsideration revise the implementation schedule based on the results of special studies.

For water quality benchmarks not associated with a TMDL, the proposed Monitoring and Reporting Requirements require that Discharger Groups propose a schedule for implementation of additional or upgraded MPs to ultimately attain the water quality benchmarks within ten years from the date the WQMP is submitted.

12.5 Groundwater Monitoring Requirements and MPs

Based on the groundwater data analysis, the results of the UWCD study, and the findings of the stakeholder-developed SNMP that were presented in Sections 9 and 10, the groundwater underlying agricultural areas in Ventura County is polluted with nitrates, and agriculture is a source of that pollution. The 2010 Waiver found that MPs to control discharges of nutrients to surface water would also control discharges of nutrients to groundwater. In addition, the 2010 Waiver found that the extensive groundwater monitoring currently being conducted throughout the Region (Figure 36) is adequate to assess broad changes in groundwater quality over long periods of time. These findings still hold true to assess trends. However, it cannot be determined at this time if the existing monitoring is ~~not~~ adequate to assess the effectiveness of MPs at controlling the discharge of nutrients to groundwater over shorter time periods. For example, ~~T~~the monitoring that will be conducted through the SNMP process, based on the SNMP for the Lower Santa Clara River Basins, ~~also~~ focuses on deeper wells~~ that will not show short-term changes in groundwater quality~~. The SGMA regulations have not been finalized, and the scope of water quality monitoring under SGMA might not be adequate to meet the objectives of the waiver program. ~~Therefore, i~~It is necessary to ~~require additional~~evaluate groundwater monitoring data collected at varied depths to ~~better~~

~~assess~~evaluate impacts of agricultural activities on groundwater and verify MP effectiveness relative to groundwater protection in the proposed Waiver renewal.

Discharger Groups are encouraged to work with agencies implementing SNMPs or SGMA to coordinate their monitoring programs and avoid duplication. Revisions to the groundwater monitoring programs can be considered once SGMA or other monitoring programs are in place.

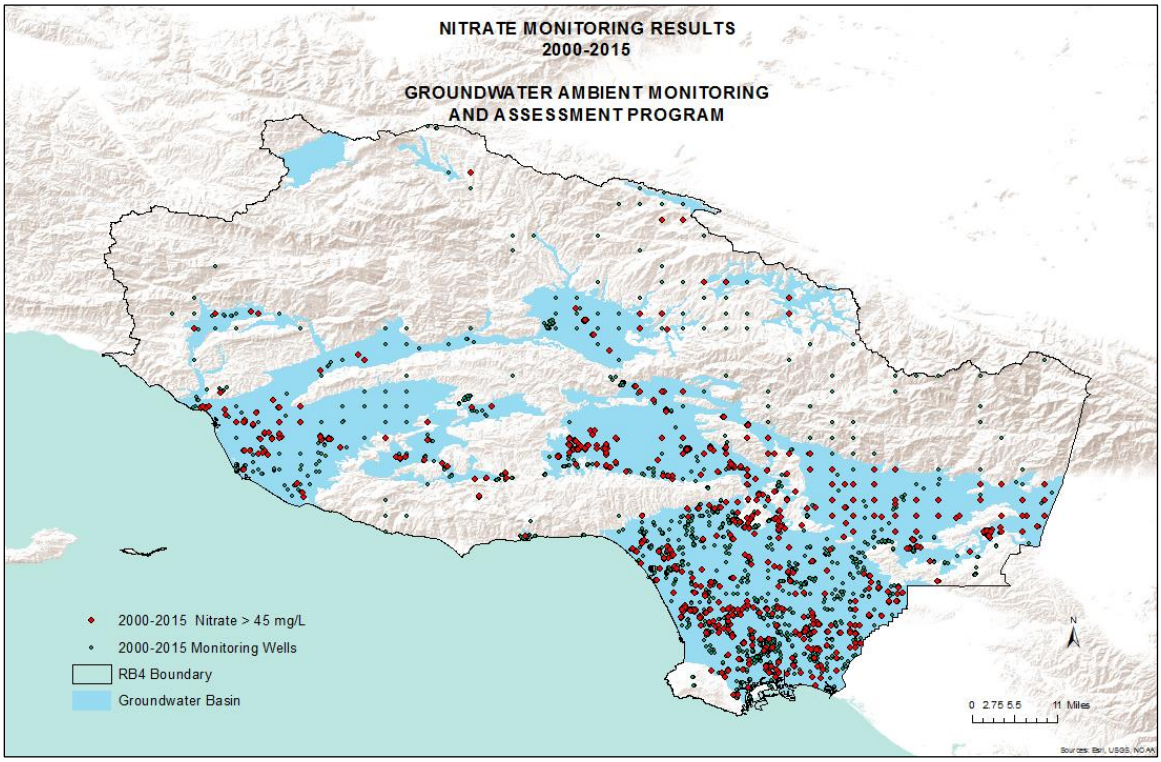

Figure 36 Nitrate monitoring results 2000-2015, GAMA

The proposed Monitoring and Reporting Program requires dischargers in Ventura County to submit a work plan to monitor areas where irrigated agricultural lands have the potential to impact groundwater basins, exceedances of nitrate have been confirmed, and groundwater is a significant drinking water source, to determine if management practices implemented on the land surface are protective of underlying groundwater quality. ~~conduct a study to correlate management practices implemented on the land surface with the effect of those activities on underlying groundwater quality. The study may use a variety of tools, such as vadose zone monitoring, modeling, and groundwater monitoring. Existing~~ The same monitoring wells used in the trend analysis and previous

studies can be used where available and appropriate for the ~~study~~ monitoring objectives. ~~Well locations and screening levels shall be considered in order to ensure that the study wells will respond to changes in management practices in a timeframe expected given site specific conditions that would affect water and pollutant movement through the soil and groundwater. The location of the study shall consider agricultural areas where high exceedances of nitrate have been confirmed in underlying groundwater basins and where groundwater is a significant drinking water source.~~ In addition, dischargers will be required to implement nutrient management practices that minimize and control excess nutrient application relative to crop need, including crop-specific applied/removed ratios for nitrogen, in order to protect groundwater beneficial uses, such as those identified in the stakeholder-led SNMP for the Lower Santa Clara River Basins, and the development and implementation of nutrient management plans.

13. California Environmental Quality Control Act

Regional Water Board staff has conducted an Initial Study in accordance with the California Environmental Quality Control Act to determine the potential environmental effects of renewal of the 2010 Waiver. Based on the Initial Study, Regional Water Board staff has prepared a Mitigated Negative Declaration. Adoption of a waiver for discharges from irrigated agricultural lands, as mitigated, will not have a significant adverse effect on the environment. The action to adopt a conditional waiver is intended to protect, maintain, and improve water quality. The waiver sets forth conditions that will require dischargers to implement management practices to protect water quality and to ensure through monitoring that such practices are effective and are improving water quality. The waiver requires monitoring and reporting to document compliance with mitigation measures that are set forth in the monitoring and requirements.

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