

San Joaquin County and Delta Water Quality Coalition

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April 1, 2014

Pamela Creedon
Chris Jimmerson
Central Valley Regional Water Quality Control Board
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Dear Ms. Creedon,

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC) is submitting the 2014 Management Plan Update Report (MPUR) which updates the SJCDWQC Management Plan approved on January 23, 2009. The report includes information on activities conducted during 2013. The 2014 MPUR is being submitted to inform the Regional Board of progress made on the management of water quality within the Coalition region. The 2014 MPUR includes:

- A status update of constituents and site subwatersheds requiring management plans,
- An evaluation of the current Management Plan strategy including a status update of High Priority Site Subwatershed Performance Goals,
- A summary of completed focused outreach in the first (2008-2010), second (2010-2012), and third (2011-2013) priority site subwatersheds,
- A summary of newly implemented management practices in the fourth (2012-2014) priority site subwatersheds,
- A summary of current management practices in fifth (2013-2015) priority site subwatersheds,
- A Coalition wide evaluation and an evaluation of management practice effectiveness, and
- A status review of TMDL constituents and Basin Plan requirements.

Submitted respectfully,



Michael L. Johnson
Technical Program Manager

Management Plan Update Report



San Joaquin County & Delta Water Quality Coalition



January 2013 – December 2013

April 1, 2014

Irrigated Lands Regulatory Program

Central Valley Regional Water Quality Control Board

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APPENDICES

Appendix I	High Priority Site Subwatershed Analysis
Appendix II	High Priority Site Subwatershed Exceedance Tables

LIST OF ACRONYMS

A	Assessment
AI	Active Ingredient
AMR	Annual Monitoring Report
APN	Assessor Parcel Number
AWEP	Agricultural Water Enhancement Program
BMP	Best Management Practice
C	Core
CALPIP	California Pesticide Information Portal
CURES	Coalition for Urban/Rural Environmental Stewardship
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	Dissolved Oxygen
DPR	Department of Pesticide Regulation
DWSC	Deep Water Ship Channel
EQIP	Environmental Quality Incentives Program
HCH	Hexachlorocyclohexane
ILRP	Irrigated Lands Regulatory Program
MERP	Mercury Exposure Reduction Program
MLJ-LLC	Michael L. Johnson, LLC
MPM	Management Plan Monitoring
MPUR	Management Plan Update Report
MRP	Monitoring and Reporting Program Order No. R5-2008-0005
MRPP	Monitoring and Reporting Program Plan
NA	Not Applicable
ND	Not Detected
NM	Normal Monitoring
NPS	Nonpoint Sources
NRCS	Natural Resource Conservation Service
PCA	Pesticide Control Advisor
pH	Power of Hydrogen
PUR	Pesticide Use Report
RPD	Relative Percent Difference

SC	Specific Conductance
SG	Statistically significantly different from control; Greater than 80% threshold
SJCDWQC	San Joaquin County & Delta Water Quality Coalition
SL	Statistically significantly different from control; Less than 80% threshold
TAC	Technical Advisory Committee
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRS	Township, Range, Section
UC ANR	University of California Division of Agriculture and Natural Resources
WQO	Water Quality Objective
WQTL	Water Quality Trigger Limit

LIST OF UNITS

cfs	cubic feet per second
cm	centimeter
L	Liter
lbs	pounds
mg	milligram
MPN/100mL	most probable number per 100 milliliters
sec	second
µg	microgram
µS	microsiemens
µg/kg dw	microgram per kilogram of dry weight

SJCDWQC MANAGEMENT PLAN UPDATES AND AMENDMENTS

Table A. SJCDWQC Management Plan Updates and Amendments Summary.

ITEM NUMBER	AMENDMENTS DESCRIPTIONS	DATE SUBMITTED ¹	MANAGEMENT PLAN PAGE NUMBER	DATE APPROVED
Original SJCDWQC Management Plan Report		September 30, 2008		January 23, 2009
1	2009 Management Plan Update Report	April 1, 2009	NA	October 14, 2009
2	Request for additional guidance for Management Plan Update Reports	May 20, 2009	NA	October 22, 2009
3	Request to modify Management Plan schedules	August 3, 2009	NA	December 29, 2009
4	2010 Management Plan Update Report	April 1, 2010	NA	August 24, 2010
5	2010 Management Plan Update Report Addendum to Management Practice Summary section	June 1, 2010	Pages 1-16 of Addendum	August 24, 2010
6	Submittal of updated Addendum to 2010 Management Plan Update Report to correct Exceedance Tally results, Performance Goals table, and Appendix I Site Subwatershed table and verbiage	June 4, 2010	Table 4, page 9, Table 11, page 32-33, Appendix I Table IV-5, pages 102-104	August 24, 2010
7	Request to update Management Plan Performance Goals for 3rd priority	December 14, 2010	NA	January 10, 2011
8	2011 Management Plan Update Report	April 1, 2011	NA	June 8, 2011
9	Request to update Management Plan Performance Goals table for 4th priority	October 24, 2011	NA	November 14, 2011
10	Request to remove constituents from site specific management plans	January 6, 2012	NA	March 22, 2012 April 17, 2012 May 21, 2012
11	2012 Management Plan Update Report	April 1, 2012	NA	June 25, 2012
12	Due to a typo and inconsistency between Figures 1 and 2, follow-up due dates have been updated in Figure 1 to be consistent with the Coalitions approved Performance Goal deadline schedule	April 1, 2012	MPUR 2012, page 18	NA
13	Request to update Management Plan Performance Goals for 5 th priority	October 31, 2012	NA	November 6, 2012
14	Request to remove constituents from site specific management plans	November 13, 2012	NA	February 27, 2013
15	Request to extend the MPUR 2013 submittal deadline from April 1, 2013 to April 30, 2013	March 7, 2013	NA	March 15, 2013
16	2013 Management Plan Update Report	April 30, 2013	NA	March 11, 2014
17	Request to update Management Plan Performance Goals for 6 th priority	October 16, 2013	NA	November 15, 2013

¹All deliverables are submitted electronically (quarterly monitoring data reports, Annual Monitoring Report, Annual Management Plan Update Report).

NA-Not applicable.

EXECUTIVE SUMMARY

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or Coalition) is submitting a Management Plan Update Report (MPUR) on the status and methods used to identify agricultural sources of discharges resulting in exceedances of Water Quality Trigger Limits (WQTL), track implemented management practices, and progress toward meeting its performance goals as outlined in the SJCDWQC Management Plan. A Management Plan Update is submitted every April 1 to report on the previous year's activities and update management plan implementation schedules and timelines for reporting to the Central Valley Regional Water Quality Control Board (CVRWQCB or Regional Board).

This is the sixth yearly update to the Coalition's Management Plan. In this report, previous year's monitoring data are reviewed and assessed for exceedances and water quality improvements. This update includes an assessment of water quality based on 2013 monitoring results, including new exceedances and new site/constituents requiring management plans.

To date, the Coalition received approval to remove 39 constituents from active management plans at eleven high priority site subwatersheds (Table 1A, approved March 22, April 17, May 21, 2012, and February 27, 2013).

Table 1A. Constituents removed from active management plans per site subwatershed.

SITE SUBWATERSHED	DO	PH	SC	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY	TOTAL (PER SITE)
Duck Creek @ Hwy 4		•					•							•	3
French Camp Slough @ Airport Way				•	•		•	•	•		•			•	7
Grant Line Canal @ Clifton Court Rd		•		•	•										3
Grant Line Canal near Calpack Rd						•									1
Kellogg Creek along Hoffman Ln	•			•	•						•				4
Littlejohns Creek @ Jack Tone Rd							•							•	2
Lone Tree Creek @ Jack Tone Rd	•		•	•			•		•			•		•	7
Mokelumne River @ Bruella Rd	•			•							•			•	4
Sand Creek @ Hwy 4 Bypass						•	•				•				3
Terminus Tract Drain @ Hwy 12													•	•	2
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd										•	•			•	3
TOTAL (PER CONSTITUENT)	3	2	1	5	2	3	5	1	2	1	5	1	1	7	39

Water quality monitoring was conducted during every month from January through December 2013 as described in the SJCDWQC Monitoring and Reporting Program Plan (MRPP, pages 32-39). Management Plan sampling was conducted based on prior exceedances of the WQTLs of high priority constituents at Coalition monitoring sites. Monitoring was performed at 16 Management Plan Monitoring (MPM) sites; Duck Creek @ Highway 4, Lone Tree Creek @ Jack Tone Road, and Unnamed Drain to Lone Tree Creek @

Jack Tone Road (also known as Temple Creek), Grant Line Canal @ Clifton Court Rd, Grant Line Canal near Calpack Rd, Littlejohns Creek @ Jack Tone Rd, French Camp Slough @ airport Way, Mokelumne River @ Bruella Rd, Terminous Tract Drain @ Hwy 12, Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd, Sand Creek along Hwy 4 Bypass, Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump, Walthall Slough @ Woodward Ave, and Drain @ Woodbridge Rd. Based on the prioritization of constituents with exceedances, MPM was conducted for water column toxicity to *Ceriodaphnia dubia* and *Selenastrum capricornutum*, and sediment toxicity to *Hyalella azteca*, chlorpyrifos, copper, diazinon, dieldrin, diuron, disulfoton, HCH, and malathion.

As a result of monitoring from January through December 2013, several new site/constituent specific management plans are required:

- Arsenic
 - Drain to Bishop cut @ North Rio Blanco Rd
 - Empire Tract @ 8 Mile Rd
- DO
 - Drain to Bishop Cut @ North Rio Blanco Rd
 - Empire Tract @ 8 Mile Rd
- SC
 - Drain to Bishop Cut @ North Rio Blanco Rd
- TDS
 - Drain to Bishop Cut @ North Rio Blanco Rd
 - Empire Tract @ 8 Mile Rd

The Coalition developed an updated flow chart for its MPM strategy. The strategy includes MPM for high priority site subwatersheds during Year 0, Year 1, and Year 2. Year 0 refers to the year prior to when the site subwatershed becomes high priority, and allows the Coalition to utilize results from recent monitoring when contacting growers in the site subwatershed. When a site subwatershed rotates into high priority status, the Coalition makes contacts with individuals who have the potential for direct drainage, and are known to apply constituents of concern. Contacts occur between January 1 and March 30 of Year 1 or growers schedule meetings with Coalition representatives to fill out surveys between February 1 and September 30.

During meetings, growers are informed about current water quality impairments and potential management practices that can be implemented to reduce impairments of water quality due to agricultural discharge. At the meetings, growers are encouraged to complete surveys and return them to Coalition representatives (either at the meeting or by mail). It is anticipated that all surveys are completed by October 1 and entered into the survey database by October 31 of Year 1. Surveys document the current management practices, and they identify additional management practices that the member intends to implement in Year 1 and/or Year 2.

The Coalition conducts follow-up surveys with growers between September 1 of Year 1 and March 30 of Year 2. Follow-up may be extended to Year 3 depending on information obtained from the grower on

when they plan to implement practices; in some cases a third year or more may be necessary for funds to be available for structural improvements. Follow-up surveys document what practices growers have implemented since initial contacts were complete. The returned surveys document whether growers implemented those practices in Year 1 and if not, whether they plan to implement those practices in Year 2. If the grower indicates that they do not intend to implement additional practices despite their previous declaration that they would, they are queried as to why they decided not to implement practices (e.g. they no longer farm, no available funds).

The Coalition developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for the first four high priority site subwatersheds. Performance goals are submitted for approval each time a new set of site subwatersheds rotates into high priority status and are built on the following actions essential to the Management Plan strategy:

1. Determine number/type of management practices currently in place, based on Assessor Parcel Number (APN) associated with baseline survey responses
2. Grower Group Contacts / Individual Contacts
3. Implementation of new management practices
4. Assess number/type of new management practices implemented
5. Evaluate effectiveness of new management practices

The goals were developed in coordination with Regional Board staff after the evaluation of the effectiveness of the Coalition's Management Plan strategy.

The Coalition targeted additional growers in the Duck Creek @ Hwy 4 site subwatershed in the first set of priority site subwatersheds during 2010 that may have been contributing to continued water quality impairments, specifically the exceedances of the WQTL for chlorpyrifos. In 2012, additional outreach occurred in all first priority site subwatersheds (Duck Creek @ Hwy 4, Lone Tree Creek to Jack Tone Rd, and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd) as well as Littlejohns Creek @ Jack Tone Rd in the second priority site subwatersheds. Topics discussed during additional focused outreach meetings included managing storm and irrigation runoff (including improving water infiltration, capturing and/or recycling runoff water, and treating runoff with PAM), reducing drift to water sources (including noting application conditions, equipment, product choice, buffer zones, and application method) as well as discontinuing, reducing, or changing the type of pesticide used (switching from liquid to granule form). A complete analysis of the additional outreach to growers in the first set of priority site subwatersheds is included in the 2013 MPUR.

Performance goals, measures, outputs and completion dates for fourth priority site subwatersheds were approved by the Regional Board on November 14, 2011. For the fourth set of high priority sites (2012–2014), the Coalition completed Performance Measure 1.1 (100% of identified growers contacted), and Performance Measure 1.2 (Contact owners/operators with direct drainage acreage) of Performance Goal 1; Performance Measure 2.1 (document current management practices at 100% of identified growers), and performance measure 2.2 (document management practices that growers were encouraged to implement) of Performance Goal 2. Performance Measure 3.1 (document new

management practices implemented by growers) of Performance Goal 3, Performance Measure 4.1 (Assess water quality results from Coalition monitoring locations) of Performance Goal 4, and Performance Goal 5 are complete.

Performance goals, measures, outputs and completion dates for fifth priority site subwatersheds were approved by the Regional Board on November 6, 2012. For the fifth set of high priority sites (2013–2015), the Coalition completed Performance Measure 1.1 (100% of identified growers contacted), and Performance Measure 1.2 (contact owners/operators with direct drainage acreage) of Performance Goal 1; Performance Measure 2.1 (document current management practices at 100% of identified growers), and Performance Measure 2.2 (document management practices that growers were encouraged to implement) of Performance Goal 2. Performance Measure 3.1 (document new management practices implemented by growers) of Performance Goal 3, Performance Measure 4.1 (Assess water quality results from Coalition monitoring locations) of Performance Goal 4, and Performance Goal 5 are in progress.

Performance goals, measures, outputs and completion dates for sixth priority site subwatersheds were approved by the Regional Board on November 15, 2013. For the sixth set of high priority sites (2013–2015), the Coalition completed Performance Measure 1.1 (100% of identified growers contacted), and Performance Measure 1.2 (contact owners/operators with direct drainage acreage) of Performance Goal 1. Performance Measure 2.1 (document current management practices at 100% of identified growers), and Performance Measure 2.2 (document management practices that growers were encouraged to implement) of Performance Goal 2 are in progress.

The SJCDWQC is responsible for determining compliance with the Sacramento and San Joaquin Delta chlorpyrifos and diazinon TMDL, which was approved by the US EPA on October 10, 2007 and documented in an amendment to the Basin Plan (Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta). As dictated by the Basin Plan Amendment, the Coalition worked with the Regional Board to develop surveillance and monitoring program to collect information necessary to assess compliance with the seven Monitoring Objectives. The Monitoring Objectives are 1) determine load capacity compliance, 2) determine load allocation compliance, 3) determine degree of implemented management practices, 4) determine effectiveness of implemented management practices, 5) determine if alternative pesticides are impairing water quality, 6) determine if additive or synergistic effects of multiple pollutants are causing toxicity, and 7) demonstrate management practices achieve the lowest pesticide levels technically and economically achievable.

During 2013, the Coalition evaluated compliance with Water Quality Objectives (WQOs) through representative monitoring within the Delta subareas and waterbodies to assess loading capacity and load allocations. In 2013, the Coalition transitioned between two different monitoring strategies. Before March 15, 2013 the Coalition associated monitoring results from tributary sites with the Delta subareas and/or waterbodies within that zone (see 2013 MPUR, Table 32, Pages 101-102). On March 15, 2013, the Coalition received approval to monitor four (three new) Delta monitoring locations to

assess compliance with load capacity as determined in the Sacramento San Joaquin Delta Diazinon and Chlorpyrifos TMDL. Three of the four locations had not been monitored previously by the Coalition, Old River at the West End of Clifton Court Rd, San Joaquin River @ West Neugerbauer Rd, Light House Restaurant @ West Brannon Island Rd. Monitoring began at the new TMDL locations on April 2, 2013. The new TMDL compliance monitoring strategy allows the monitoring program to better meet the TMDL monitoring requirements by using representative monitoring in Delta Waterways. The new monitoring schedule focuses on periods of peak pesticide use. In addition to the April through August 2013 TMDL compliance monitoring, the Coalition collected samples for chlorpyrifos and diazinon monthly at both Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave. Data from all chlorpyrifos and diazinon monthly monitoring events from these two sites is included in the Status of TMDL Constituents section of this report.

Monitoring resulted in a single exceedance of the WQO for chlorpyrifos at French Camp Slough @ Airport Way (Zone 2). The sample represents the eastern Delta subarea, over three miles upstream of the legal Delta boundary. Aside from the single exceedance, chlorpyrifos was not detected in any other samples that drains directly to the Delta Waterways. Diazinon was not detected in any sample collected during 2013. Growers in the SJCDWQC region have implemented several management practices that are effective at reducing the offsite movement of chlorpyrifos and diazinon. Pyrethroids are an applicable alternative to chlorpyrifos and diazinon, and the chemicals were found in toxic sediment samples in the SJCDWQC region in 2013. There is evidence of the potential for additive or synergistic interactions between chlorpyrifos and other agricultural chemicals as chlorpyrifos and pyrethroids were present in samples resulting in sediment toxicities in 2013. Management practices implemented by growers are resulting in a reduction of discharges, and growers are in the process of achieving the lowest pesticide levels technically and economically achievable.

The Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Salt and Boron Discharges into the Lower San Joaquin River was approved by the US EPA on February 7, 2007 and established load allocations to meet the existing WQOs for salt and boron in the San Joaquin River at Airport Way (Vernalis). The approved amendment includes a requirement for a second phase TMDL to prepare and implement new salt and boron objectives in the San Joaquin River upstream of Airport Way (Vernalis). The SJCDWQC recognizes that salt, nitrate, and boron water quality impairments are a Central Valley wide concern. The Coalition closely follows the planning and reviewing of studies relevant to the development of a Basin Plan amendment for salt and boron. The Coalition will participate in the efforts concerning the Delta area once the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) process is complete. In addition, the Coalition monitored for salt (SC and/or TDS), and nitrate in every zone and boron in two zones during 2013 and includes these constituents in conversations with growers about water quality impairments, and applicable management practices.

The EPA approved the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel (hereafter, DO Basin Plan Amendment) on

February 27, 2007. Agriculture is identified as a contributing source to low dissolved oxygen (DO) levels in the Stockton DWSC. The Coalition reviews DO monitoring results in the Stockton DWSC and from within its tributaries to assess compliance with the DO WQOs required in the TMDL. The measured DO concentration was less than the WQO of 6.0 mg/L (requirements for September through November) during 3 days in September 2013. These WQTL exceedances lasted from 0.5 to 1.75 hours. The Coalition reviewed tributary monitoring results from the sampling events prior to the noncompliant DO measurements in the Stockton DWSC. Zone 2 contains agriculturally-influenced tributaries that may drain to the Stockton DWSC and could contribute oxygen demanding substances. There were 2 exceedances of the WQTL for DO at two SJCDWQC tributary sites in Zone 2 on August 20. Given other factors that could affect DO levels in water en route to the Delta, such as changing flow rates and water temperature, it is unlikely these low DO levels contributed to the noncompliant measurements of DO in the Stockton DWSC. The Coalition includes discussions of DO water quality concerns during outreach to growers and encourages the implementation of management practices to reduce the offsite movement of agricultural constituents, which will aid in reducing offsite movement of organic matter. In addition, the Coalition continues to follow developments in achieving DO WQOs in the Stockton DWSC.

On October 20, 2011, the US EPA approved the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methyl Mercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary (hereafter, Methyl Mercury Basin Plan Amendment). The program put forth in the Methyl Mercury Basin Plan Amendment intends to reduce the amount of methyl mercury in the Sacramento-San Joaquin Delta and is to be implemented through a phased, adaptive management approach. Coalition representatives participated in Delta Methyl Mercury TMDL Nonpoint Sources (NPS) Workgroup and Methyl Mercury TMDL for the Delta Technical Advisory Committee (Methyl Mercury TAC) meetings throughout 2013, and Coalition representative, Mike Wackman, serves on the NPS Workgroup Steering Committee. The Coalition contributed to the Methyl Mercury Control Study Work Plan prepared by the NPS Workgroup, which was submitted on April 19, 2013. The Coalition submitted a Discharger Commitment Letter to the Regional Board on July 25, 2013. In addition, Coalition representatives are participating in the Mercury Exposure Reduction Program (MERP).

Overall, the following conclusions can be drawn regarding Coalition efforts under its focused management plan outreach and tracking strategy and per the requirements of TMDLs:

1. Compared to previous years, fewer exceedances occurred in 2013 in high priority site subwatersheds receiving focused outreach.
2. Growers in the SJCDWQC region are taking advantage of available funding resources to be used to implement management practices that improve water quality.
3. Growers across the SJCDWQC region are aware of water quality impairments and are implementing management practices designed to address these impairments even if the Coalition has yet to conduct focused outreach in the site subwatershed.
4. The decrease in exceedances and water column toxicity coincides with additional focused outreach and the implementation of management practices encouraged by the Coalition.

5. The Coalition's focused management practice tracking and outreach strategy is effective at improving water quality. Monitoring results indicate two consecutive years of monitoring with no exceedances of the WQTL for several specific site subwatershed/constituent pairs, which indicates improved grower awareness of the offsite movement of agricultural constituents and/or newly implemented management practices. To date, the Coalition has received approval for the removal of 39 constituents from eleven high priority site subwatersheds (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013).
6. Due to effective outreach and education, diazinon has been completely removed from all SJCDWQC site subwatershed management plans.
7. Growers continue to help prevent offsite movement of agricultural constituents into adjacent waterways.
8. During 2013, the SJCDWQC was in compliance with load capacity requirements of the chlorpyrifos and diazinon TMDL. A single sample with elevated concentrations of chlorpyrifos resulted in a single noncompliant load allocation in 2013. Diazinon was not detected in any sample collected during 2013.

The Coalition includes brief descriptions of all site subwatersheds listed in the SJCDWQC Management Plan as of April 1, 2014 at the end of this report. Further analysis of the first (2008-2010), second (2010-2012), third (2011-2013), fourth (2012-2014), fifth (2013-2015) and sixth (2014-2016) high priority site subwatersheds is included in Appendix I. A record of all exceedances for each site subwatershed since monitoring began is provided in Appendix II.

INTRODUCTION

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or Coalition) is submitting a Management Plan Update Report (MPUR) on the status of water quality in the region. In accordance with the SJCDWQC Management Plan, this report includes methods used to identify the sources of agricultural discharges, tracking of implemented management practices, and an evaluation of performance goals and measures.

The MPUR includes the following:

1. Status of constituents and site subwatersheds requiring a management plan
2. Evaluation of the current Management Plan strategy
3. Status of high priority site subwatershed performance goals
4. Summary of newly implemented management practices
5. Evaluation of management practice effectiveness
6. Status of Total Maximum Daily Load (TMDL) constituents and Basin Plan requirements

The Coalition compiled a detailed analysis of high priority site subwatersheds including monitoring and exceedance histories, identification of sources of exceedances, outreach and management practice tracking. The site subwatershed analysis is supplemental to this report and is attached as Appendix I and Appendix II.

OVERVIEW OF MONITORING AND RESULTS

This is the sixth annual update to the Coalition's Management Plan. This report details exceedances that occurred during the previous year and the improvements in water quality that also occurred. This update includes an assessment of water quality based on 2013 monitoring results including new exceedances and new site/constituents requiring management plans.

During 2013, monitoring was conducted from January through December as outlined in the Coalition's Monitoring and Reporting Program Plan (MRPP, pages 32-60). In addition, Management Plan Monitoring (MPM) in 2013 was conducted at high priority locations for high priority constituents requiring a management plan. The Coalition's Annual Monitoring Report (AMR) submitted on March 1, 2014 provides the locations, dates and types of sampling conducted 2013.

Sixteen sites were monitored for management plan constituents from January through December 2013 (Table 1). Management Plan Monitoring was conducted for copper, chlorpyrifos, diazinon, dieldrin, diuron, disulfoton, Hexachlorocyclohexane (HCH), malathion, water column toxicity (*C. dubia* and *S. capricornutum*), and sediment toxicity (*H. azteca*).

Table 1. SJCDWQC January through December 2013 sample locations (sorted by zone and site name).

ZONE	SITE TYPE ¹	JANUARY-DECEMBER 2013 MONITORING	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
Zone 1	Assessment	MPM	Bear Creek @ North Alpine Rd	531BCANAR	38.07386	-121.21215
	Core	C, MPM	Mokelumne River @ Bruella Rd	531XMRABR	38.16022	-121.20643
Zone 2	Assessment	MPM	Duck Creek @ Highway 4	531XDCAHF	37.94949	-121.18208
	Core	C, MPM	French Camp Slough @ Airport Way	531SJC504	37.88172	-121.24933
	Assessment	MPM	Littlejohns Creek @ Jack Tone Rd	531XLCAJR	37.88958	-121.14727
	Assessment	MPM	Lone Tree Creek @ Jack Tone Rd	531XLT CJR	37.83754	-121.14460
	Assessment	MPM	Mormon Slough @ Jack Tone Rd	544MSAJTR	37.96470	-121.14880
	Assessment	MPM	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	531UDLTAJ	37.85360	-121.14570
Zone 3	Assessment	MPM	Drain @ Woodbridge Rd	544DAWRXX	38.15246	-121.50220
	Assessment	A	Drain to Bishop Cut @ North Rio Blanco Rd ²	544DBCRBR	38.05055	-121.41753
	Assessment	A	Empire Tract @ 8 Mile Rd ²	544ETAEMR	38.06012	-121.49912
	Core	A, MPM	Terminus Tract Drain @ Hwy 12	544XTTHWT	38.11558	-121.49380
Zone 4	Assessment	MPM	Grant Line Canal @ Clifton Court Rd	544XGLCAA	37.84182	-121.52999
	Assessment	MPM	Grant Line Canal near Calpack Rd	544XGLCCR	37.82084	-121.50009
	Assessment	MPM	Kellogg Creek along Hoffman Ln	544XKCAHL	37.88188	-121.65221
	Core	C, MPM	Roberts Island @ Whiskey Slough Pump	544RIAWSP	37.96737	-121.46434
Zone 5	Core	A, MPM, TMDL	Walthall Slough @ Woodward Ave	544WSAWAV	37.77046	-121.29227
Zone 6	NA	MPM	Sand Creek @ Hwy 4 Bypass	544SCAHFB	37.94750	-121.74300
Zone 4	TMDL	TMDL	Light House Restaurant @ West Brannon Island Rd	510LHRWBI	38.10487	-121.59299
Zone 4	TMDL	TMDL	Old River @ the West End of Clifton Court Rd	544ORAWCC	37.84195	-121.53721
Zone 4	TMDL	TMDL	San Joaquin River @ West Neugerbauer Rd	544SJCawn	37.99493	-121.44173

A-Assessment Monitoring

C-Core Monitoring

MPM-Management Plan Monitoring

TMDL-Total Maximum Daily Load; these sites are monitored for load capacity compliance with the Chlorpyrifos and Diazinon TMDL.

¹Site types are either Assessment or Core based on the MRPP (Pages 33-35). The type of monitoring conducted at sample locations depends on the rotation schedule outlined in the MRPP (Table 9, page 55).

²Drain to Bishop Cut @ North Rio Blanco Rd (monitored January-March) was approved on July 5, 2013 to be replaced by Empire Tract @ 8 Mile Rd (monitored July-December) due to no access.

Water quality results from MPM are used to evaluate effectiveness of Coalition outreach and management practices implemented by growers within priority site subwatersheds (Table 2). In 2013, no exceedances of the Water Quality Trigger Limit (WQTL) for copper, diazinon, dieldrin, disulfoton, diuron, HCH or malathion occurred during MPM. Samples collected for MPM for toxicity to *C. dubia* (13 samples collected) were not toxic and samples for toxicity to *S. capricornutum* (20 samples collected) were toxic once (Grant Line Canal near Calpack Rd in January 2013). Of the 52 samples collected for chlorpyrifos analysis, three exceedances occurred (6%); one each at Lone Tree Creek @ Jack Tone Rd, French Camp Slough @ Airport Way and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, all in July 2013. Sediment toxicity to *H. azteca* occurred in six out of 20 management plan samples collected (30%). There were exceedances of other WQTLs for other constituents during Core and Assessment Monitoring; all 2013 monitoring results were reported in the SJCDWQC AMR submitted March 1, 2013.

Appendix I includes a more detailed discussion of each high priority site subwatershed including exceedances of WQTLs, locating sources of exceedances, outreach, and evaluation of management practice effectiveness.

Table 2. January through December 2013 MPM results including percentage of samples with exceedances.

“X” indicates that a sample was collected for a management plan constituent and no exceedance of a WQTL occurred. Red numbers indicate exceedances of a WQTL in a MPM sample. Dark grey shaded cells indicate no MPM was conducted on that date for that constituent.

Site Name	Month	Copper	Chlorpyrifos	Diazinon	Dieldrin	Disulfoton	Diuron	HCH	Malathion	<i>Ceriodaphnia</i> % Control	<i>Selenastrum</i> % Control	<i>Hyalella</i> % Control
Bear Creek @ North Alpine Rd	1/15/2013		X						X			
French Camp Slough @ Airport Way	1/15/2013			X			X					
Grant Line Canal @ Clifton Court Rd	1/15/2013		X								X	
Grant Line Canal near Calpack Rd	1/15/2013										37	
Lone Tree Creek @ Jack Tone Rd	1/15/2013		X									
Roberts Island @ Whiskey Slough Pump	1/15/2013		X				X				X	
Sand Creek @ Hwy 4 Bypass	1/15/2013			X [†]								
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1/15/2013		X				X					
Walthall Slough @ Woodward Ave ¹	1/15/2013							X				
French Camp Slough @ Airport Way	2/21/2013	X [†]	X	X [†]			X [†]			X [†]	X [†]	
Grant Line Canal @ Clifton Court Rd	2/21/2013		X									
Grant Line Canal near Calpack Rd	2/21/2013										X	
Kellogg Creek along Hoffman Ln	2/21/2013	X [†]	X [†]							X [†]		
Littlejohns Creek @ Jack Tone Rd	2/21/2013	X	X	X [†]								
Lone Tree Creek @ Jack Tone Rd	2/21/2013		X									
Mokelumne River @ Bruella Rd	2/21/2013									X [†]		
Roberts Island @ Whiskey Slough Pump	2/21/2013		X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2/21/2013		X				X					
Duck Creek @ Hwy 4	3/19/2013											91
French Camp Slough @ Airport Way	3/19/2013											X
Grant Line Canal @ Clifton Court Rd	3/19/2013		X									36
Grant Line Canal near Calpack Rd	3/19/2013								X			41
Kellogg Creek along Hoffman Ln	3/19/2013											X

Site Name	Month	Copper	Chlorpyrifos	Diazinon	Dieldrin	Disulfoton	Diuron	HCH	Malathion	Ceriodaphnia % Control	Selenastrum % Control	Hyaella % Control
Roberts Island @ Whiskey Slough Pump	3/19/2013									X		X
Sand Creek @ Hwy 4 Bypass	3/19/2013											90
Terminus Tract Drain @ Hwy 12 ¹	3/19/2013											X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	3/19/2013											94
Walthall Slough @ Woodward Ave ¹	3/19/2013											X
Duck Creek @ Hwy 4	4/2/2013		X							X		
Drain @ Woodbridge Rd	4/2/2013		X									
French Camp Slough @ Airport Way	4/2/2013		X									
Grant Line Canal near Calpack Rd	4/2/2013										X	
Kellogg Creek along Hoffman Ln	4/2/2013										X	
Littlejohns Creek @ Jack Tone Rd	4/2/2013		X									
Mormon Slough @ Jack Tone Rd	4/2/2013										X	
Roberts Island @ Whiskey Slough Pump	4/2/2013										X	
Sand Creek @ Hwy 4 Bypass	4/2/2013										X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	4/2/2013	X										
Bear Creek @ North Alpine Rd	5/21/2013								X			
Duck Creek @ Hwy 4	5/21/2013		X									
French Camp Slough @ Airport Way	5/21/2013		X									
Grant Line Canal @ Clifton Court Rd	5/21/2013										X	
Grant Line Canal near Calpack Rd	5/21/2013									X	X	
Kellogg Creek along Hoffman Ln	5/21/2013										X	
Littlejohns Creek @ Jack Tone Rd	5/21/2013	X										
Mormon Slough @ Jack Tone Rd	5/21/2013		X							X	X	
Roberts Island @ Whiskey Slough Pump	5/21/2013										X	
Sand Creek @ Hwy 4 Bypass	5/21/2013				X	X						
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	5/21/2013	X	X									
Duck Creek @ Hwy 4	6/18/2013		X									
Littlejohns Creek @ Jack Tone Rd	6/18/2013	X	X									
Sand Creek @ Hwy 4 Bypass	6/18/2013				X	X						
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	6/18/2013		X									
Duck Creek @ Hwy 4	7/16/2013		X							X		
French Camp Slough @ Airport Way	7/16/2013		0.042									
Grant Line Canal near Calpack Rd	7/16/2013										X	
Littlejohns Creek @ Jack Tone Rd	7/16/2013		X									
Lone Tree Creek @ Jack Tone Rd	7/16/2013		0.026									
Mormon Slough @ Jack Tone Rd	7/16/2013		X								X	
Roberts Island @ Whiskey Slough Pump	7/16/2013						X			X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	7/16/2013	X	0.041									
Duck Creek @ Hwy 4	8/20/2013		X									
French Camp Slough @ Airport Way	8/20/2013		X									
Grant Line Canal near Calpack Rd	8/20/2013									X		
Kellogg Creek along Hoffman Ln	8/20/2013										X	
Lone Tree Creek @ Jack Tone Rd	8/20/2013		X									
Mormon Slough @ Jack Tone Rd	8/20/2013		X									
Roberts Island @ Whiskey Slough Pump	8/20/2013		X									
Sand Creek @ Hwy 4 Bypass	8/20/2013				X	X					X	
Terminus Tract Drain @ Hwy 12 ¹	8/20/2013		X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	8/20/2013	X	X									
Bear Creek @ North Alpine Rd	9/17/2013		X						X			
Duck Creek @ Hwy 4	9/17/2013		X							X		X
French Camp Slough @ Airport Way	9/17/2013		X									X
Grant Line Canal @ Clifton Court Rd	9/17/2013		X									X
Grant Line Canal near Calpack Rd	9/17/2013											X

Site Name	Month	Copper	Chlorpyrifos	Diazinon	Dieldrin	Disulfoton	Diuron	HCH	Malathion	Ceriodaphnia % Control	Selenastrum % Control	Hyalella % Control
Kellogg Creek along Hoffman Ln	9/17/2013											X
Littlejohns Creek @ Jack Tone Rd	9/17/2013	X										
Mormon Slough @ Jack Tone Rd	9/17/2013		X							X		
Roberts Island @ Whiskey Slough Pump	9/17/2013		X									X
Sand Creek @ Hwy 4 Bypass	9/17/2013											X
Terminus Tract Drain @ Hwy 12 ¹	9/17/2013		X									48
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/17/2013	X	X									X
Walthall Slough @ Woodward Ave ¹	9/17/2013		X									X
Bear Creek @ North Alpine Rd	10/15/2013		X									
French Camp Slough @ Airport Way	10/15/2013		X									
Walthall Slough @ Woodward Ave ¹	10/15/2013		X									
Littlejohns Creek @ Jack Tone Rd	11/19/2013		X									
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	11/19/2013		X									
Walthall Slough @ Woodward Ave ¹	11/19/2013							X				
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	12/17/2013		X									
Walthall Slough @ Woodward Ave ¹	12/17/2013							X				
Total MPM Exceedances		0	3	0	0	0	0	0	0	0	1	5
Total MPM Samples to be Collected		11	52	4	3	3	6	3	3	13	20	20
Total MPM Samples Collected		11	52	4	3	3	6	3	3	13	20	20
% Exceedances		0%	6%	0%	0%	0%	0%	0%	0%	0%	5%	30%

Grey cells- indicate no MPM conducted for that site and constituent.

MPM-Management Plan Monitoring

X - No exceedance (only refers to samples that have been collected and results have been received).

X¹- Constituent has been removed from the site's active management plan but was sampled for MPM before approval to remove.

X*- Indicates site was 'Dry' during sampling event.

2004 - 2013 EXCEEDANCES

One objective of the SJCDWQC Management Plan is to provide yearly updates of exceedances of WQTLs. Based on water quality improvements, the Coalition received approval to remove 39 constituents from eleven high priority site subwatershed management plans (approvals March 22, April 17, May 21, 2012, and February 27, 2013). Table 8 lists all constituents removed from active management plans per site subwatershed.

The DO measurements at Kellogg Creek along Hoffman Ln (6.99 mg/L) on August 21, 2012 and Lone Tree Creek @ Jack Tone Rd (5.82 mg/L) on July 16, 2013 were reported as exceedances after these constituents were approved for removal from the site subwatershed's management plans.

Management plans were not reinstated for DO in the site subwatersheds based on the Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins (Page III-5) which indicates the lower DO trigger limit of 5 mg/L should be utilized for Delta waterways that are 'warm' and/or not considered a resource for fisheries. Therefore, the Coalition reevaluated the DO measurements at the two sites based on the lower DO trigger limit and neither was considered an exceedance (Table 3). The DO measurements for the two sites are not included in exceedance tallies Tables 5 and 6.

The Coalition reevaluated the SC measurement at Lone Tree Creek @ Jack Tone Rd (799 $\mu\text{mhos/cm}$) from February 14, 2012 based on the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Basin Plan (Table 2, Page 13) which indicates detections of SC from September through March are not considered exceedances when they are below 1,000 $\mu\text{mhos/cm}$ (Table 4) Therefore, 799 $\mu\text{mhos/cm}$ was not considered an exceedance and is not included in exceedance tallies (Table 5). The management plan for SC was not reinstated at Lone Tree Creek @ Jack Tone Rd (Table 6).

The Coalition is in the process of reevaluating all previously reported exceedances of DO and SC based on the criteria outlined in Tables 4 and 5. The Coalition will submit an amendment to the SJCDWQC Management Plan on July 1, 2014.

Table 3. Criteria for reevaluation of DO upper and lower WQTLs.

ZONE	MONITORING SITE	SITE LOCATED IN LEGAL DELTA?	AQUATIC LIFE BU ¹	WATERBODY (SECTION) ¹	DECISION ²	DO CRITERIA MG/L	JUSTIFICATION ²
4	Kellogg Creek along Hoffman Ln	yes	COLD	Kellogg Creek (Los Vaqueros Reservoir to Discovery Bay; partly in Delta Waterways, western portion)	Sample location is in legal Delta waters.	5	Kellogg Creek is designated as COLD Aquatic Use. However the sampling location is within the legal Delta boundary, therefore DO criteria is 5 mg/L.
2	Lone Tree Creek @ Jack Tone Rd	no	WARM	Lone Tree Creek	Waterbody is not considered important to fisheries.	5	Site outside Delta waterways designated as WARM aquatic use.

¹ –Information provided by State Water Resources Control Board 2010 Integrated Report on Water Quality http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

² –Decision based on DO criteria outlined in the Basin Plan Water Quality Objectives (WQO) for DO, page III-5.00.

Table 4. Criteria for reevaluation of SC upper and lower WQTLs.

ZONE	MONITORING SITE	COMPLIANCE LOCATION	SC CRITERIA $\mu\text{S}/\text{CM}^1$	COMMENTS
2	Lone Tree Creek @ Jack Tone Rd	Southern Delta San Joaquin River at Airport Way Bridge, Vernalis	700 (Apr-Aug)	The level of SC measured at Lone Tree Creek on February 14, 2012 was 799 $\mu\text{S}/\text{CM}$ (which was below the trigger limit of 1,000 $\mu\text{S}/\text{CM}$ required for Sept-Mar) is not considered an exceedance based on the Basin Plan requirements.
			1,000 (Sept-Mar)	

¹ –Decision based on SC criteria outlined in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Basin Plan; Table 2, Page 13.

Table 5 provides a tally of exceedances of WQTLs for 2004 through 2013; grey cells indicate constituents approved for removal from site specific management plans. Table 6 is a tally of 2013 exceedances that occurred since the last update (April 1, 2013). In both Tables 5 and 6, cells with blue shading indicate constituents that are currently in management plans and in Table 6 cells with green shading indicate sites/constituents that have been added to a management plan due to 2013 exceedances.

Table 5. SJCDWQC exceedance tally based on all results through December 2013.

Sites are listed alphabetically; constituents are listed alphabetically within the following groups: field parameters (F), inorganics (I), bacteria (B), metals (M), pesticides (P) and toxicity (T). Constituents under a management plan are highlighted blue; constituents removed from a management plan are highlighted grey. The tally only includes field duplicate exceedances if no exceedances occurred in the environmental sample.

SITE NAME	F			I			B	M														P														T								
	OXYGEN, DISSOLVED	PH	SPECIFIC CONDUCTIVITY	TOTAL DISSOLVED SOLIDS	AMMONIA	NITRATE AS N	NITRATE + NITRITE AS N	E. COLI	ARSENIC	BORON	COPPER DISSOLVED†	COPPER TOTAL†	LEAD	MOLYBDENUM	NICKEL	AZINPHOS METHYL	CARBOFURAN	CHLORPYRIFOS	CYPERMETHRIN	DDD (p,p')	DDE (p,p')	DDT (p,p')	DIAZINON	DIELDRIN	DIETHOATE	DISULFOTON	DIURON	ENDRIN	HCH, DELTA	LINURON	MALATHION	METHIDATHION	METHOMYL	METHYL PARATHION	PARAQUAT DICHLORIDE	PERMETHRIN, TOTAL	THIOBENCARB	SIMAZINE	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA		
Bear Creek @ North Alpine Rd	14	2					2										3													3														
Drain @ Woodbridge Rd	17		16	15			2	13									1																											1
Drain to Bishop Cut @ North Rio Blanco Rd	2		3	3				2																																				
Duck Creek @ Hwy 4	50	3					7			1							18				1									1								7		3	4			
Empire Tract @ 8 Mile Rd	7			2			1	3																																				
French Camp Slough @ Airport Way	19	7					37				12	2			1	1	13					2	2	1		2				1					2		2		2		2	5		
Grant Line Canal @ Clifton Court Rd	37	7	37	16	1		19	10			6	3		1	1	6				2	1			1													1		4	7				
Grant Line Canal near Calpack Rd	50		69	25	1		19	4								4				1					1	1			1	1							4		12	10				
Kellogg Creek @ Hwy 4	3	1	8	5			5										1 ¹																		1		1	2 ¹	1	3				
Kellogg Creek along Hoffman Ln	8	15	4	3	1		4				3						0 ¹		3	2															2	0 ¹	4	6						
Littlejohns Creek @ Jack Tone Rd	29	2 ¹					6		2	5					1	9						1															1	5	2 [*]					
Lone Tree Creek @ Jack Tone Rd	18	5		1	4		26				7	1				10		1	1	1	2					3								2	1	1	2	7	2					
Mokelumne River @ Bruella Rd	5	11					6				3										1															5		10						
Mormon Slough @ Jack Tone Rd	14	9					1									8																			1	2		4	1					
Roberts Island Drain @ Holt Rd	36	1	59	45			12	1								4			3							2									2		5	2						
Roberts Island Drain along House Rd	23	3	22	14			7	1								2	1		2	1															2 [*]		4	4						
Roberts Island @ Whiskey Slough Pump ³	14		24	23		1	4																																					
Sand Creek @ Hwy 4 Bypass	42		59	19			17									2		1	5	3	2	6	3		1											3	1	3	14					
South Webb Tract Drain	17	1	5	5	1		5	12	1				1																							1								
Terminus Tract Drain @ Hwy 12 ⁴	61	1	50	41		1	15	8								3				1																		1	4	2				
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9	1	3	1			10			2	5	2			1	20				1						4									3	2	5		5	9				
Walthall Slough @ Woodward Ave	45		16	15	1	7	6									2				1								3												1	2			
GRAND TOTAL	520	69	375	233	8	1	9	211	54	1	5	41	8	1	1	1	4	106	2	1	19	10	8	8	2	4	12	1	3	1	6	2	1	1	1	1	1	7	4	38	7	74	74	

¹Exceedances from the Kellogg Creek @ Hwy 4 site count toward the management plan for Kellogg Creek along Hoffman Ln (site location was moved in May 2006 due to urban influences).
²All MPM for the three Roberts Island monitoring locations takes place at the Roberts Island @ Whiskey Slough Pump Core Monitoring site (as of January 2012).
³Exceedances from Delta Drain-Terminus Tract off Guard Rd and off Glasscock Rd count toward the management plan for Terminus Tract Drain @ Hwy 12 (*H. azteca*, *P. promelas*, and *S. capricornutum*), tally only includes count of exceedances from Terminus Tract Drain @ Hwy 12.
^{*}Not prioritized for MPM; either the exceedances were not within a three year period or both toxic samples were from the same sampling event (sample and resample to test for persistence).
[†] Exceedances of the hardness based WQTL for dissolved and total copper are evaluated under the same management plan

Table 6. SJCDWQC exceedance tally based 2013 sampling events.

All sites are listed that have had at least one exceedance in 2013. Sites are listed alphabetically by site name and constituents are listed alphabetically within each of the following groups: field parameters (F), inorganics (I), bacteria (B), metals (M), pesticides (P) and toxicity (T). Green highlighted cells refer to sites/constituents that require a management plan due to 2013 exceedances; blue highlights refer to sites/constituents already in a management plan. The tally only includes field duplicate exceedances if no exceedances occurred in the environmental sample.

Zone	SITE NAME	F			I		B	M	P	T	
		OXYGEN, DISSOLVED	PH	SPECIFIC CONDUCTIVITY	TOTAL DISSOLVED SOLIDS	NITRATE + NITRITE AS N	E. COLI	ARSENIC	CHLORPYRIFOS	S. CAPRICORNUTUM	H. AZTECA
1	Bear Creek @ North Alpine Rd	3									
3	Drain @ Woodbridge Rd	1									
3	Drain to Bishop Cut @ North Rio Blanco Rd	2		3	3			2			
2	Duck Creek @ Hwy 4	6									1
3	Empire Tract @ 8 Mile Rd	7			2		1	3			
2	French Camp Slough @ Airport Way	2					1		1		
4	Grant Line Canal @ Clifton Court Rd	2		4							1
4	Grant Line Canal near Calpack Rd	4		8						1	1
4	Kellogg Creek along Hoffman Ln		3								
2	Littlejohns Creek @ Jack Tone Rd	4									
2	Lone Tree Creek @ Jack Tone Rd								1		
1	Mokelumne River @ Bruella Rd		1				1				
2	Mormon Slough @ Jack Tone Rd	1	2								
4	Roberts Island @ Whiskey Slough Pump	5		12	12						
6	Sand Creek @ Hwy 4 Bypass	6		7							1
3	Terminus Tract Drain @ Hwy 12	7		4	4		1	1			1
2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2							1		1
5	Walthall Slough @ Woodward Ave	9		3	4	3					
GRAND TOTAL		61	6	41	25	3	4	6	3	1	6

2013 NEW SITE/CONSTITUENTS REQUIRING MANAGEMENT PLANS

As a result of monitoring from January through December 2013, several new site/constituent specific management plans are required (see green highlights in Table 6). Below is a list of constituents with exceedances of WQTLs that triggered new site/constituent specific management plans following January through December 2013 monitoring:

- DO
 - Drain to Bishop Cut @ North Rio Blanco Rd
 - Empire Tract @ 8 Mile Rd
- SC
 - Drain to Bishop Cut @ North Rio Blanco Rd
- TDS
 - Drain to Bishop Cut @ North Rio Blanco Rd
 - Empire Tract @ 8 Mile Rd
- Arsenic
 - Drain to Bishop cut @ North Rio Blanco Rd
 - Empire Tract @ 8 Mile Rd

New sites that require a focused management plan approach were added to the priority list (Table 7). Source identification, outreach, and evaluation of management practices will be addressed at all new site subwatersheds based on the schedule in Table 7.

MANAGEMENT PLAN PROCESS

The SJCDWQC Management Plan process was first outlined in the SJCDWQC Management Plan submitted on September 30, 2008 and updated in the 2010 MPUR. Updates were made to reflect the monitoring strategy outlined in the SJCDWQC MRPP (Pages 32-34) of rotating Core and Assessment Monitoring locations. The Coalition has focused its efforts on documenting changes in management practices and performing outreach at both an individual and grower group level.

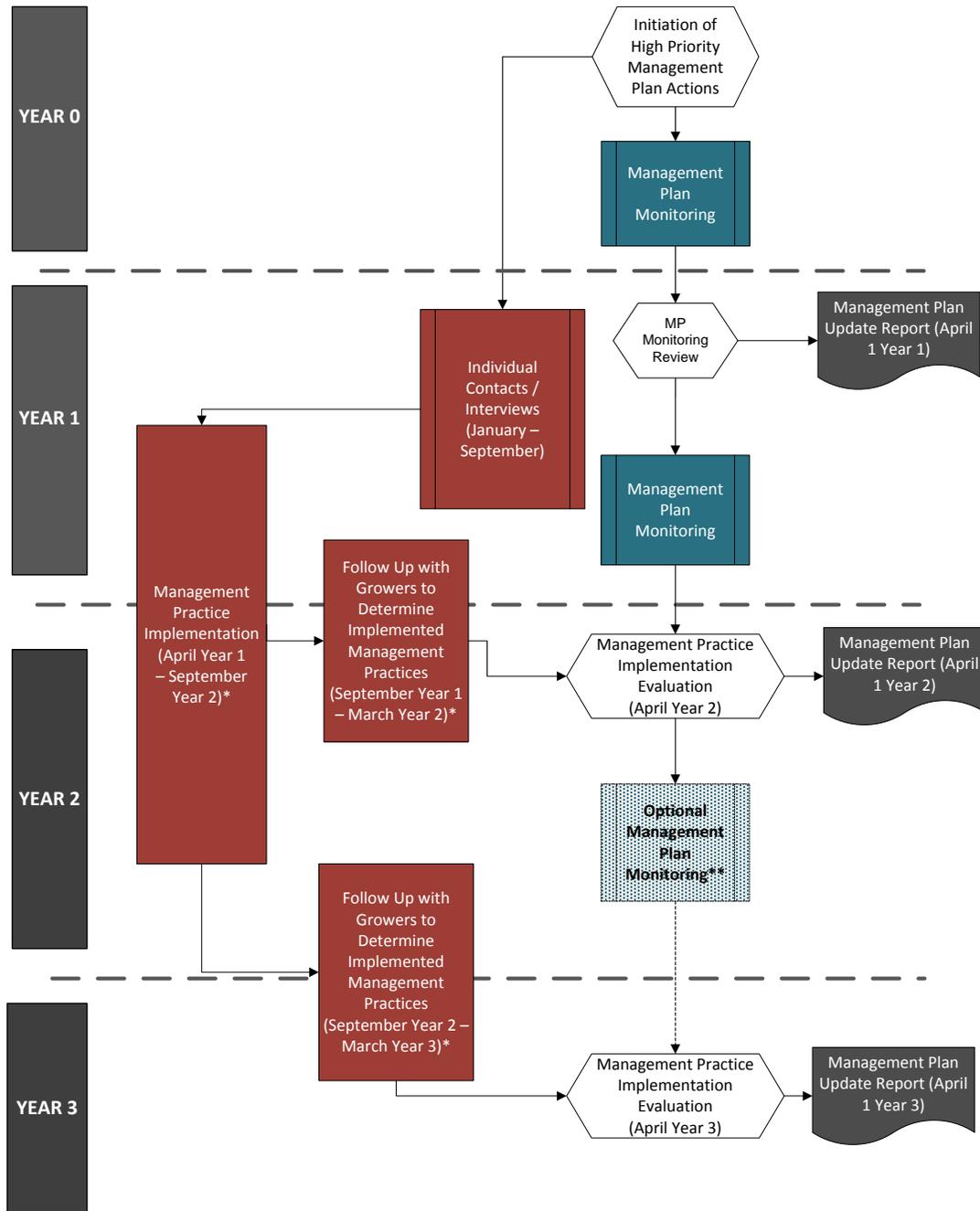
MANAGEMENT PLAN MONITORING STRATEGY

The Coalition developed an updated flow chart for its MPM strategy (Figure 1). Sites are rotated to high priority based on a schedule approved by the Regional Board (Table 7). The strategy updates included adding MPM during months of past exceedances for high priority site subwatersheds in Year 0, Year 1, and Year 2. Year 0 refers to the year before the site subwatershed becomes high priority and allows the Coalition time to obtain recent water quality data before contacting growers in the site subwatershed. Year 0 monitoring began in 2010 at sites scheduled for focused outreach in 2011 through 2013.

If there are two years of monitoring with no exceedances of the WQTLs of high priority constituents (either in Year 0 and Year 1 or Year 1 and Year 2), the Coalition can petition to remove that site/constituent from an active management plan. Monitoring will occur for those constituents when the site is rotated back into Assessment Monitoring. Management Plan Monitoring may continue beyond two years if the Coalition determines that an extra year of monitoring is necessary to evaluate improvements in water quality and/or the effectiveness of newly implemented management practices.

Figure 1. SJCDWQC high priority subwatershed Management Plan Monitoring strategy and management practice evaluation.

SJCDWQC High Priority Management Practice Evaluations



*Structural management practices may take longer to implement due to cost and time required to install; such cases will be reported to the Regional Board and followed up with individually.

**The Coalition may choose to continue conducting Management Plan Monitoring during the third year if water quality problems persist; if no exceedances occur during Year 0 and Year 1 MP Monitoring, the Coalition will not continue monitoring during Year 2.

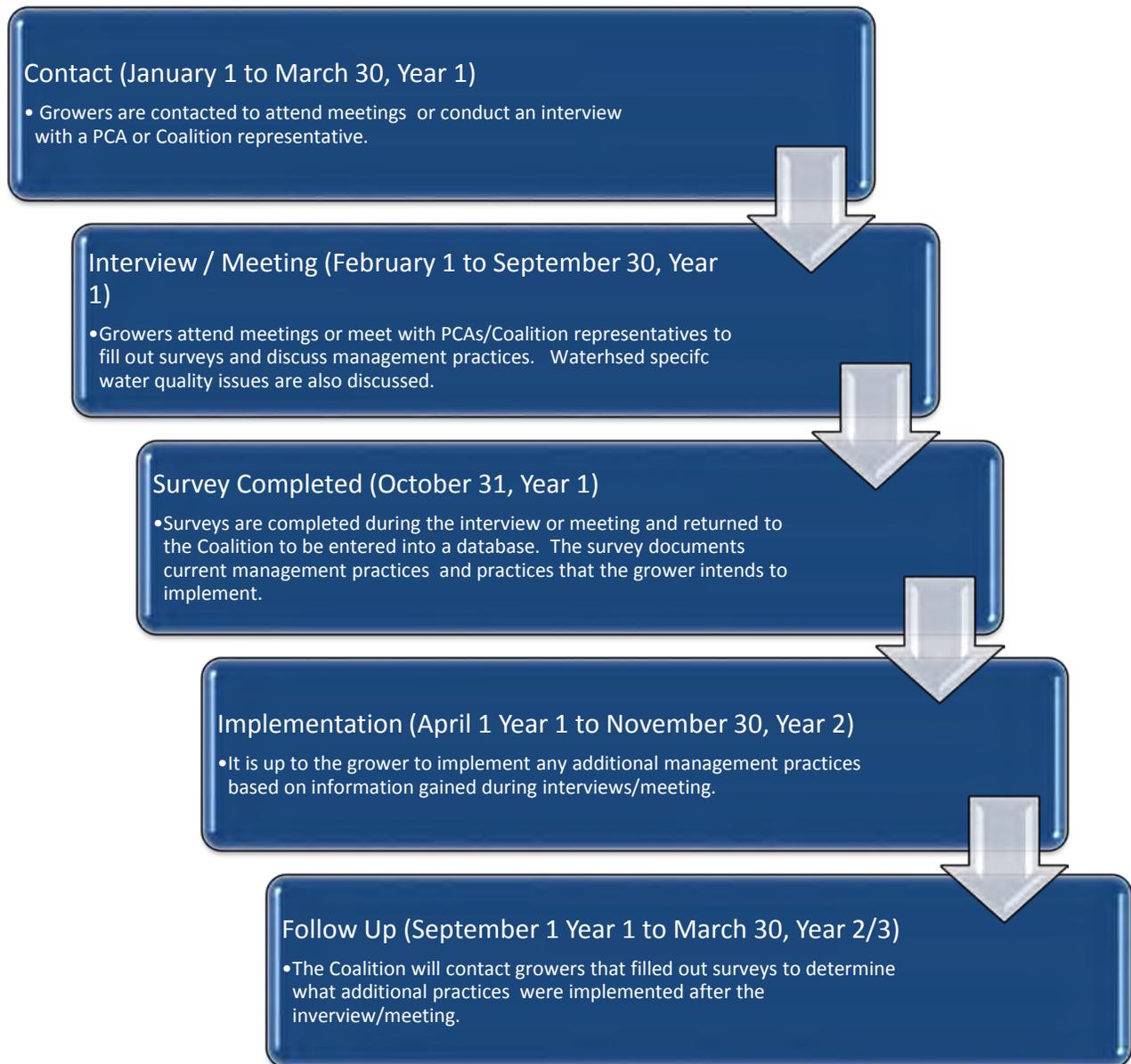
MANAGEMENT PRACTICE TRACKING STRATEGY

The schedule outlined in Figure 2 lists a timeline of actions from Years 1, 2 and 3 of the flow chart represented in Figure 1. When a waterbody becomes a high priority site subwatershed, the Coalition contacts individuals within the site subwatershed who have the potential to directly drain to the creek and who have applied the constituents of concern. Growers are contacted between January 1 and March 30 of Year 1 to schedule meetings which are held between February 1 and September 30. Meetings inform growers of current water quality concerns and management practices that can be implemented to reduce water quality impairments due to agricultural inputs.

At the meetings, growers are asked to complete surveys and return them to Coalition representatives (either at the meeting or by mail). The Coalition's goal is that all surveys will be completed by October 31 of Year 1. Surveys document current management practices and are used to identify additional management practices that the member intends to implement in Year 1 and/or Year 2. Implementation is anticipated to occur between April of Year 1 and November of Year 2. It is difficult to predict when implementation will occur because structural management practices may take multiple years to fund and construct.

The Coalition conducts follow-up surveys with growers between September of Year 1 and March of Year 2. Follow-up may be extended to Year 3 depending on information obtained from the grower on when they plan to implement practices. Follow-up surveys document the additional practices that the grower planned to implement. The returned surveys document whether or not growers implemented those practices in Year 1 and if not, whether they plan to implement the practices in Year 2. If the grower indicates that they do not intend to implement additional practices despite their previous declaration that they would, they are asked to provide an explanation for not implementing the practice(s) (e.g. they no longer farm that parcel, no available funds).

Figure 2. Schedule for Coalition Management Plan strategy activities to document management practices for high priority subwatersheds.



PRIORITIZATION OF CONSTITUENTS WITH EXCEEDANCES

The SJCDWQC developed a prioritization process (Figure 3) which allows the Coalition to focus on constituents of the greatest concern. The prioritization process was developed in collaboration with the Regional Board and allows the Coalition to focus on constituents where sourcing is possible (i.e. pesticides) and for which management practices are available. Following the process outlined in Figure 3, a priority level is assigned to all constituents with two or more past exceedances in a site subwatershed. Priority levels assigned to a constituent determine the level of effort used for sourcing, outreach, and evaluation.

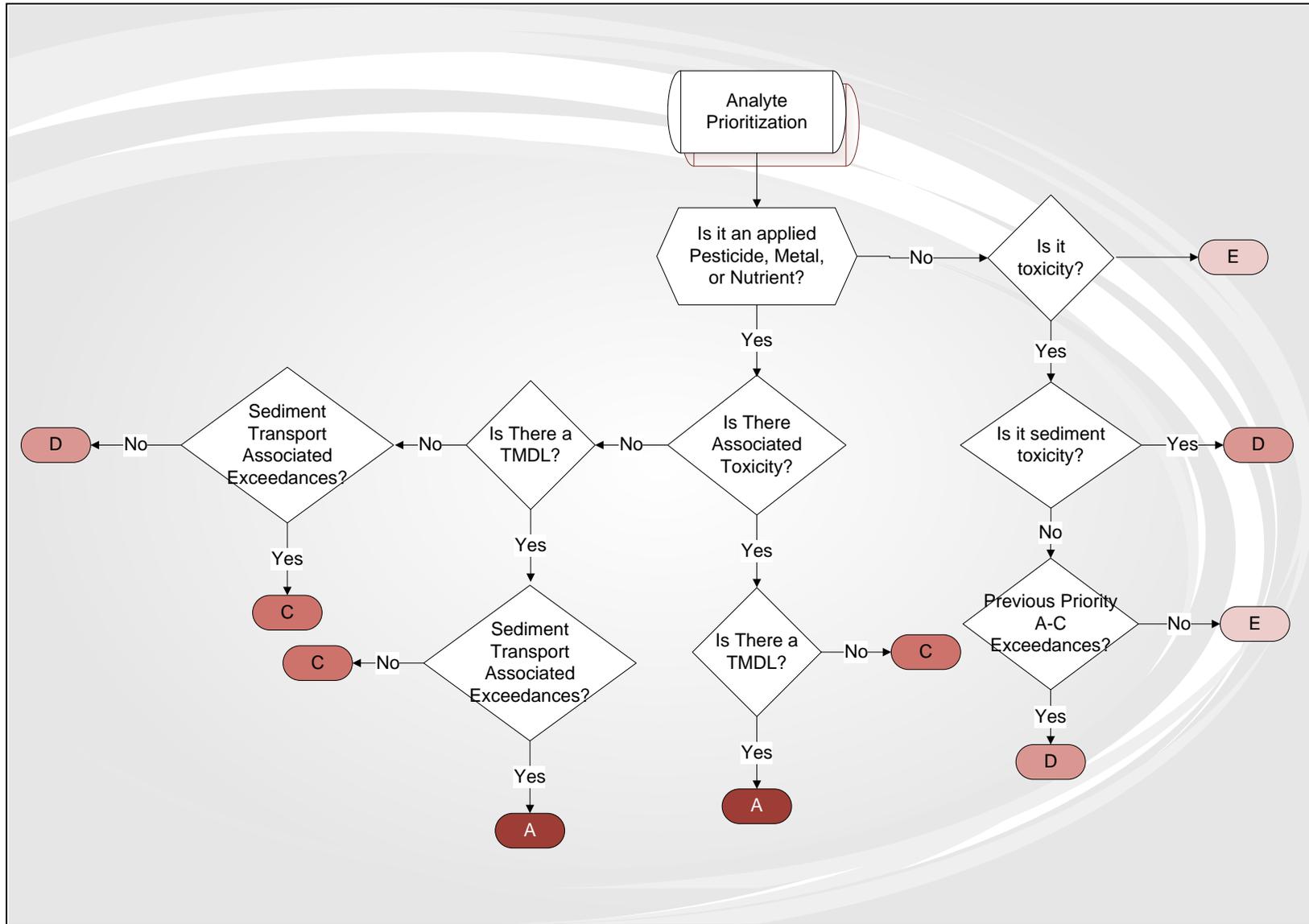
Identifying the source of pesticides found in samples is conducted by utilizing Pesticide Use Reports (PUR) available from the offices of the County Agricultural Commissioners. These PUR data are considered preliminary and may contain some level of inaccuracy until they have been finalized and made available through California Pesticide Information Portal (CalPIP). The most recently available CalPIP data for PURs are through December 2011. Preliminary PUR data associated with 2013 exceedances that were available for review include data from Contra Costa (January through October), San Joaquin (January through July) and Stanislaus counties (January through September). Any outstanding PUR data that become available after this report is submitted will be included in an addendum to the Coalition's AMR to be submitted on September 1, 2014.

Source analysis is also conducted by analyzing any relevant MPM data (may include upstream and/or increased frequency of monitoring conducted in previous years). Monitoring is conducted for priority constituents A through D. Priority E constituents do not have MPM except for field parameters which are collected each time monitoring occurs.

The Coalition continues to provide information to growers regarding management practices and exceedances of WQTLs during annual meetings held by the County Agricultural Commissioners and site subwatershed meetings as needed. Outreach occurs for all constituents; however, growers using high priority constituents (e.g. TMDL pesticides such as chlorpyrifos) are targeted for individual contacts.

The Coalition evaluates information about management practices obtained from individual surveys including follow-up surveys that document newly implemented practices. The Coalition expects that as a result of individual contacts and newly implemented practices, downstream water quality will improve. However, it is possible that due to discharges by non-members, there may continue to be downstream water quality impairments. Therefore, evaluation of management practices involves both an assessment of water quality and the degree of implementation of management practices at the site subwatershed level.

Figure 3. SJCDWQC constituent prioritization process.



MANAGEMENT PLAN DEVELOPMENT TIMELINES

The Coalition developed a schedule (Table 7) establishing when sites become high priority and undergo a focused management plan approach as described in the previous section. This schedule was submitted as an addendum to the SJCDWQC Management Plan and was approved on January 23, 2009 (Table C); a request to extend the dates in the Coalition's prioritization schedule by one year was submitted on June 5, 2009. The schedule is evaluated and updated in each yearly MPUR with the inclusion of 1) new sites requiring a management plan, and 2) changes involving focused outreach. Based on the Management Plan process, any new site that requires a management plan is added to the schedule. Changes such as timeline extensions, removal of sites and/or changing the year of prioritization must be approved by the Regional Board's Executive Officer.

Table 7 is an updated schedule including the approved changes to the prioritization scheme. There are currently 18 site subwatersheds included in the SJCDWQC Management Plan scheduled for high priority status between 2008 and 2017. Management Plan Monitoring occurs during years of focused outreach to evaluate the effectiveness of management practices. The Coalition initiated MPM in the year before focused outreach (Year 0) to evaluate current water quality and document any improvements since the last time the waterbody was monitored (Table 7).

Upon completion of 2009 Assessment Monitoring at South Webb Tract Drain, several constituents were placed in the South Webb Tract Drain management plan due to multiple exceedances (DO, SC, TDS, *E. coli* and arsenic). However, the site was not added to the priority schedule because at the time no parcels on the island were being farmed, the growers on the island were selling their water rights, and were not applying any agricultural constituents of concern.

As a result of 2013 monitoring, new site/constituent specific management plans are required; Drain to Bishop Cut @ North Rio Blanco Rd and Empire Tract @ 8 Mile Rd have been added to the priority schedule (Table 7).

Table 7. Schedule for addressing each site subwatershed with a detailed focused Management Plan approach.

SITE SUBWATERSHED NAME	PRIORITY SET	YEAR FOR FOCUSED APPROACH	MANAGEMENT PLAN MONITORING INITIATION YEAR ¹
Duck Creek @ Hwy 4	First Priority	2008-2010	NA
Lone Tree Creek @ Jack Tone Rd		2008-2010	NA
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd		2008-2010	NA
Grant Line Canal @ Clifton Court Rd	Second Priority	2010-2012	NA
Grant Line Canal near Calpack Rd		2010-2012	NA
Littlejohns Creek @ Jack Tone Rd		2010-2012	NA
French Camp Slough @ Airport Way	Third Priority	2011-2013	2010
Mokelumne River @ Bruella Rd		2011-2013	2010
Terminus Tract Drain @ Hwy 12		2011-2013	2010
Kellogg Creek along Hoffman Ln	Fourth Priority	2012-2014	2011
Mormon Slough @ Jack Tone Rd		2012-2014	2011
Sand Creek @ Hwy 4 Bypass		2012-2014	2011
Bear Creek @ North Alpine Rd	Fifth Priority	2013-2015	2012
Roberts Island @ Whiskey Slough Pump ²		2013-2015	2012
Walthall Slough @ Woodward Ave		2013-2015	2012
Drain @ Woodbridge Rd	Sixth Priority	2014-2016	2013
Drain to Bishop Cut @ North Rio Blanco Rd	Seventh Priority	2015-2017	NA
Empire Tract @ 8 Mile Rd		2015-2017	NA
RE-EVALUATE ALL SITE SUBWATERSHEDS AND REVISE SCHEDULE		ANNUALLY	

¹Year 0 monitoring was incorporated into the Coalition’s Management Plan Process beginning in 2010.

²Roberts Island @ Whiskey Slough Pump monitoring occurred for all management plan constituents from the two previous sites.

NA- Not Applicable; all constituents in a management plan for these sites are Priority E and do not have scheduled MPM.

PRIORITY SITE MANAGEMENT

MANAGEMENT OBJECTIVES

The Coalition prioritizes constituents and site subwatersheds to allow for focused source identification, outreach, and evaluation of management practices. Prioritization of site subwatersheds currently is based on the number, frequency and magnitude of exceedances. The objective of the prioritization process is to identify watersheds where exceedances are common and where management practices can be implemented to decrease discharges that contribute to downstream impairments. Although the Coalition is focusing on chlorpyrifos and diazinon exceedances and the applications of these chemicals, management practices implemented to reduce the runoff of these constituents will also reduce the runoff of other pesticides, nutrients, salts, and metals.

The Coalition monitors for Priority A - D constituents the year before a site becomes a high priority site subwatershed (Figure 1). In 2013, Year 0 MPM began in the sixth priority site subwatershed, Drain @ Woodbridge Rd. The purpose of monitoring is to evaluate improvements in water quality and the effectiveness of management practices. A site subwatershed analysis is included in Appendix I for all high priority site subwatersheds.

2014 MANAGEMENT PLAN MONITORING SCHEDULE

In 2014, the SJCDWQC will conduct MPM at the following high priority sites:

First Priority (2008 – 2010)

- Duck Creek @ Hwy 4
- Lone Tree Creek @ Jack Tone Rd
- Unnamed Drain to Lone Tree Creek

Second Priority (2010 – 2012)

- Grant Line Canal near Calpack Rd
- Grant Line Canal @ Clifton Court Rd
- Littlejohns Creek @ Jack Tone Rd

Third Priority (2011 – 2013)

- French Camp Slough @ Airport Way
- Mokelumne River @ Bruella Rd
- Terminous Tract @ Hwy 12

Fourth Priority (2012 – 2014)

- Kellogg Creek along Hoffman Ln
- Mormon Slough @ Jack Tone Rd
- Sand Creek @ Hwy 4 Bypass

Fifth Priority (2013 – 2015)

- Bear Creek @ North Alpine Rd
- Roberts Island @ Whiskey Slough Pump
- Walthall Slough @ Woodward Ave

Sixth Priority (2014 – 2016)

- Drain @ Woodbridge Rd

The Coalition received approval to remove 39 constituents from eleven high priority site subwatershed management plans (approval March 22, April 17, May 21, 2012, and February 27, 2013). Table 8 lists all constituents removed from active management plans per site subwatershed.

As sites were approved for the removal of specific constituents from active management plans, the MPM schedule was updated accordingly. Table 9 includes the 2014 MPM monthly monitoring schedule.

Table 8. Constituents removed from active management plans per site subwatershed.

SITE SUBWATERSHED	DO	PH	SC	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	CHLORPYRIFOS	DIAZINON	DIELDRIN	DIURON	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY	TOTAL (PER SITE)
Duck Creek @ Hwy 4		•					•							•	3
French Camp Slough @ Airport Way				•	•		•	•	•		•			•	7
Grant Line Canal @ Clifton Court Rd		•		•	•										3
Grant Line Canal near Calpack Rd						•									1
Kellogg Creek along Hoffman Ln	•			•	•						•				4
Littlejohns Creek @ Jack Tone Rd							•							•	2
Lone Tree Creek @ Jack Tone Rd	•		•	•			•		•			•		•	7
Mokelumne River @ Bruella Rd	•			•							•			•	4
Sand Creek @ Hwy 4 Bypass						•	•				•				3
Terminus Tract Drain @ Hwy 12													•	•	2
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd										•	•			•	3
TOTAL (PER CONSTITUENT)	3	2	1	5	2	3	5	1	2	1	5	1	1	7	39

Table 9. January through December 2014 MPM schedule; sorted by Month and Site Name.

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	CHLORPYRIFOS	DIELDRIN	DISULFOTON	DIURON	HCH	MALATHION	CERIODAPHNIA DUBIA	SELENASTRUM CAPRICORNUTUM	HYALELLA AZTECA
Bear Creek @ North Alpine Rd	5th	January		X					X			
Grant Line Canal @ Clifton Court Rd	2nd	January		X							X	
Grant Line Canal near Calpack Rd	2nd	January									X	
Lone Tree Creek @ Jack Tone Rd	1st	January		X								
Roberts Island @ Whiskey Slough Pump	5th	January		X			X				X	
Sand Creek @ Hwy 4 Bypass	4th	January										
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	January		X			X					
Walthall Slough @ Woodward Ave	5th	January						X				
French Camp Slough @ Airport Way	3rd	February		X								
Grant Line Canal @ Clifton Court Rd	2nd	February		X								
Grant Line Canal near Calpack Rd	2nd	February									X	
Littlejohns Creek @ Jack Tone Rd	2nd	February	X	X								
Lone Tree Creek @ Jack Tone Rd	1st	February		X								
Roberts Island @ Whiskey Slough Pump	5th	February		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	February		X			X					
Duck Creek @ Hwy 4	1st	March										X
French Camp Slough @ Airport Way	3rd	March										X
Grant Line Canal @ Clifton Court Rd	2nd	March		X								X
Grant Line Canal near Calpack Rd	2nd	March							X			X
Kellogg Creek along Hoffman Ln	4th	March										X
Roberts Island @ Whiskey Slough Pump	5th	March							X			X
Sand Creek @ Hwy 4 Bypass	4th	March										X
Terminus Tract Drain @ Hwy 12	3rd	March										X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	March										X
Walthall Slough @ Woodward Ave	5th	March										X
Drain @ Woodbridge Rd	6th	April		X								
Duck Creek @ Hwy 4	1st	April		X					X			
French Camp Slough @ Airport Way	3rd	April		X								
Grant Line Canal near Calpack Rd	2nd	April									X	
Kellogg Creek along Hoffman Ln	4th	April									X	
Littlejohns Creek @ Jack Tone Rd	2nd	April		X								
Mormon Slough @ Jack Tone Rd	4th	April									X	
Roberts Island @ Whiskey Slough Pump	5th	April									X	
Sand Creek @ Hwy 4 Bypass	4th	April									X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	April	X									
Bear Creek @ North Alpine Rd	5th	May							X			
Duck Creek @ Hwy 4	1st	May		X								
French Camp Slough @ Airport Way	3rd	May		X								
Grant Line Canal @ Clifton Court Rd	2nd	May									X	
Grant Line Canal near Calpack Rd	2nd	May							X		X	
Kellogg Creek along Hoffman Ln	4th	May									X	
Littlejohns Creek @ Jack Tone Rd	2nd	May	X									
Mormon Slough @ Jack Tone Rd	4th	May		X					X		X	
Roberts Island @ Whiskey Slough Pump	5th	May									X	
Sand Creek @ Hwy 4 Bypass	4th	May			X	X						
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	May	X	X								
Duck Creek @ Hwy 4	1st	June		X								
Littlejohns Creek @ Jack Tone Rd	2nd	June	X	X								
Sand Creek @ Hwy 4 Bypass	4th	June			X	X						
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	June		X								

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	CHLORPYRIFOS	DIELDRIN	DISULFOTON	DIURON	HCH	MALATHION	CERIODAPHNIA DUBIA	SELENASTRUM CAPRICORNUTUM	HYALELLA AZTECA
Duck Creek @ Hwy 4	1st	July		X						X		
French Camp Slough @ Airport Way	3rd	July		X								
Grant Line Canal near Calpack Rd	2nd	July									X	
Littlejohns Creek @ Jack Tone Rd	2nd	July		X								
Lone Tree Creek @ Jack Tone Rd	1st	July		X								
Mormon Slough @ Jack Tone Rd	4th	July		X							X	
Roberts Island @ Whiskey Slough Pump	5th	July					X			X	X	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	July	X	X								
Duck Creek @ Hwy 4	1st	August		X								
French Camp Slough @ Airport Way	3rd	August		X								
Grant Line Canal near Calpack Rd	2nd	August								X		
Kellogg Creek along Hoffman Ln	4th	August									X	
Lone Tree Creek @ Jack Tone Rd	1st	August		X								
Mormon Slough @ Jack Tone Rd	4th	August		X								
Roberts Island @ Whiskey Slough Pump	5th	August		X								
Sand Creek @ Hwy 4 Bypass	4th	August			X	X					X	
Terminus Tract Drain @ Hwy 12	3rd	August		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	August	X	X								
Bear Creek @ North Alpine Rd	5th	September		X					X			
Duck Creek @ Hwy 4	1st	September		X						X		X
French Camp Slough @ Airport Way	3rd	September		X								X
Grant Line Canal @ Clifton Court Rd	2nd	September		X								X
Grant Line Canal near Calpack Rd	2nd	September										X
Kellogg Creek along Hoffman Ln	4th	September										X
Littlejohns Creek @ Jack Tone Rd	2nd	September	X									
Mormon Slough @ Jack Tone Rd	4th	September		X						X		
Roberts Island @ Whiskey Slough Pump	5th	September		X								X
Sand Creek @ Hwy 4 Bypass	4th	September										X
Terminus Tract Drain @ Hwy 12	3rd	September		X								X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	September	X	X								X
Walthall Slough @ Woodward Ave	5th	September		X								X
Bear Creek @ North Alpine Rd	5th	October		X								
French Camp Slough @ Airport Way	3rd	October		X								
Walthall Slough @ Woodward Ave	5th	October		X								
Littlejohns Creek @ Jack Tone Rd	2nd	November		X								
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	November		X								
Walthall Slough @ Woodward Ave	5th	November						X				
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	1st	December		X								
Walthall Slough @ Woodward Ave	5th	December						X				

PERFORMANCE GOALS AND SCHEDULES

The Coalition Strategic Plan is outlined in Table 18 of the original Management Plan (approved on January 23, 2009) and is designed to meet the following management goal:

“To continue to monitor and analyze the water and sediment quality of SJCDWQC site subwatersheds and to facilitate the implementation of management practices by providing outreach and support to growers in order to effectively enhance water quality in the Coalition region.”

The Coalition developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for its first six sets of high priority site subwatersheds: first priority (2008-2010), second priority (2010-2012), third priority (2011-2013), fourth priority (2012-2014), fifth priority (2013-2015), and sixth priority (2014-2016). Performance goals are submitted for approval each time a new set of site subwatersheds rotates into high priority status. Performance Goals are built on the following actions essential to the Management Plan strategy:

1. Determine number/type of management practices currently in place, based on APN (Assessor Parcel Number) associated with baseline survey responses
2. Grower Group Contacts / Individual Contacts to recommend additional practices
3. Implementation of new management practices by growers
4. Assess number/type of new management practices implemented
5. Evaluate effectiveness of new management practices using MPM data

Performance Goals were approved for each group of priority site subwatersheds by the Regional Board as amendments to the SJCDWQC Management Plan on December 29, 2009 (first priority), December 29, 2009 (second priority), January 10, 2011 (third priority), November 14, 2011 (fourth priority), November 6, 2012 (fifth priority), and November 15, 2013 (six priority). Performance Goals 1-5 are complete and each goal was discussed in detail for the first priority (MPUR 2013, Pages 30-32), second priority (MPUR 2013, Pages 33-34), and third priority (MPUR 2013, Pages 35-37). The following sections describe Coalition actions to meet the approved Performance Goals and the status of each of the Performance Goals and associate measure/outputs for the fourth, fifth and sixth high priority site subwatersheds. A site subwatershed analysis has been included in Appendix I and II for all high priority site subwatersheds.

Fourth Priority Subwatersheds (2012 – 2014)

The fourth high priority site subwatersheds include Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd and Sand Creek @ Hwy 4 Bypass. Performance Goals for the fourth priority subwatersheds are similar to those for the second and third priority subwatershed Performance Goals and were approved November 14, 2011 (Table 10).

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.

As reported in the 2012 MPUR, the Coalition conducted grower group meetings in January 2012 at which time targeted members filled out surveys and Coalition representatives discussed water quality impairments and management practices that could be implemented. All initial contacts with targeted growers were complete before March 30, 2012.

A total of 40 growers were contacted representing 2,307 acres or 18% of the acreage with the potential for direct drainage in the fourth priority subwatersheds. Of the three subwatersheds, Mormon Slough @ Jack Tone Rd had the highest percentage of acreage with direct drainage represented by contacted growers (43%), followed by Kellogg Creek (8%), and Sand Creek @ Hwy 4 Bypass (3%).

Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.

The Coalition received 100% of the completed surveys from the fourth priority site subwatershed members that participated in outreach. Responses were recorded in an Access database. A complete summary of currently implemented management practices ('current') in 2011, management practices to be implemented ('planned') in 2012 and newly implemented practices ('new') in 2012 is included in the Fourth Priority Subwatersheds Summary of Management Practices section of this report.

Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.

The Coalition mailed follow-up postcards to growers in the fourth priority site subwatersheds on February 1, 2013 requesting them to document newly implemented management practices. One hundred percent of the management practices growers implemented in 2012 and 2013 were recorded in an Access database (Table 10). A summary of implemented management practices is included in the Fourth Priority Subwatersheds Summary of Management Practices section of this report.

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.

The Coalition conducted Year 2 of MPM in the fourth priority subwatersheds during 2013 to assess changes in water quality. The Evaluation of Management Plan Effectiveness section of this report includes the water quality results from 2013 monitoring in the fourth priority subwatersheds. The Coalition will also conduct MPM in the fourth priority subwatersheds in 2014.

Performance Goal 5: Consult with the CVRWQCB at least to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.

Coalition representatives met with Regional Board staff throughout 2013 to discuss the development of the Waste Discharge Requirements General Order for growers in the San Joaquin County and Delta Watershed Region (WDR). Due to the amount of effort and time required to develop the WDR, three of the four quarterly meetings were postponed. Coalition representatives met with the Regional Board staff on March 12, 2013 for the first scheduled quarterly meeting and communicated via email and phone calls throughout 2013 regarding performance goals and measures. There were no delays in meeting the performance goals and measures during 2013 and therefore it was not necessary to hold additional meetings. Quarterly meetings in 2014 with the Regional Board staff have yet to be scheduled.

All Coalition activities related to outreach that occurred in 2013 and 2014 (including mailings, grower meetings, individual meetings, etc.) for the fourth priority site subwatersheds are listed in Table 13. A complete list of outreach activities is included in Table 16 of the 2013 MPUR.

Table 10. High Priority Performance Goals status for 2012 - 2014 high priority subwatersheds (Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd and Sand Creek @ Hwy 4 Bypass), approved on November 14, 2011.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			KELLOGG CREEK ^{2,3}	MORMON SLOUGH @ JACK TONE RD ³	SAND CREEK @ HWY 4 BYPASS
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	10 of 10 (100%) March 30, 2012	29 of 29 (100%) March 30, 2012	1 of 1 (100%) March 30, 2012
Performance Measure 1.2 – Contact owners/operators in the site subwatershed with direct drainage membership acreage.	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	402 of 5,147¹ (8%)	1,789 of 4,209¹ (43%)	116 of 3,758¹ (3%)
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	10 of 10 (100%)	29 of 29 (100%)	1 of 1 (100%)
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices (Access database).	Mike Wackman / MLJ-LLC	Complete	Complete	Complete
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	Complete April 1, 2014	Complete April 1, 2014	Complete April 1, 2014
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.					

¹Overall irrigated direct drainage acreage for fourth priority site subwatersheds comes from 2011 parcel data layers.

²Kellogg Creek includes members who have potential for direct drainage from both Kellogg Creek along Hoffman Ln and Kellogg Creek @ Hwy 4 site subwatersheds.

³Targeted contacts and acreages updated based on one member in Kellogg Creek and two members in Mormon Slough @Jack Tone Rd being removed from the Coalition for not responding to their initial survey.

Fifth Priority Subwatersheds (2013 – 2015)

The fifth high priority site subwatersheds include Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave. Performance Goals (approved November 6, 2012) for this set of site subwatersheds are similar to those for the second, third, and fourth sets of high priority site subwatersheds (Table 11).

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.

The Coalition contacted 100% of targeted members in the fifth priority subwatersheds. Members were mailed survey packets and notification regarding grower meetings to discuss the Coalition's Management Plan strategy, water quality results and management practices. Growers from all three site subwatersheds were asked to attend the meeting held on January 22, 2013 and bring the survey with them to complete. Members who did not attend the meeting were advised to mail in the completed survey. All initial contacts were complete before March 30, 2013 (Table 11).

A total of 22 growers were contacted representing 3,763 acres or 13% of the acreage with the potential for direct drainage in the fifth priority subwatersheds. Of the three subwatersheds, Walthall Slough @ Woodward Ave had the highest percentage of acreage with direct drainage represented by contacted growers (61%), followed by Roberts Island @ Whiskey Slough Pump (12%), and Bear Creek @ North Alpine Rd (5%).

Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.

The Coalition received 100% of the completed surveys from the fifth priority site subwatershed members that participated in outreach. Responses were recorded in an Access database. A summary of currently implemented management practices and management practices to be implemented ('planned') in 2013/2014 is included in the Fifth Priority Subwatersheds Summary of Management Practices section of this report.

Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.

During the January 2013 meeting, irrigation management specialists discussed management practices that could be used to help reduce the impact of agriculture on downstream waterbodies. The meetings focused on watershed-specific water quality impairments, crops of targeted growers, and reviewing efficacy of the various practices. The Coalition reviewed the responses provided in the surveys regarding the management practices growers intended to implement in 2013 and 2014. The Coalition mailed follow-up postcards to growers in the fifth priority site subwatersheds on February 14, 2014 requesting them to document newly implemented management practices. The Coalition will receive follow-up surveys in 2014 and document newly implemented management practices in the 2015 MPUR (Table 11).

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.

The Coalition conducted Year 0 MPM in 2012 for the fifth priority site subwatersheds. The Coalition conducted MPM in the fifth priority subwatersheds in 2013 and will continue through 2015 to assess water quality. The Coalition will evaluate effectiveness of new management practices implemented in 2013 and 2014 using water quality data obtained from MPM. An interim evaluation of effectiveness of new management practices is included in this report and a final evaluation will be included in the 2015 MPUR if additional practices are implemented in 2014.

Performance Goal 5: Consult with the CVRWQCB at least to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.

All Coalition activities related to outreach that occurred in 2013 and 2014 (including mailings, grower meetings, individual meetings, etc.) for the fifth priority site subwatersheds are listed in Table 13. A complete list of outreach activities is included in Table 16 of the 2013 MPUR.

Table 11. High Priority Performance Goals status for 2013 - 2015 high priority subwatersheds (Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave) approved on November 6, 2012.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013		
			BEAR CREEK @ NORTH ALPINE RD	ROBERTS ISLAND @ WHISKEY SLOUGH PUMP	WALTHALL SLOUGH @ WOODWARD AVE
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	7 of 7 (100%) March 30, 2013	7 of 7 (100%) March 30, 2013	8 of 8 (100%) March 30, 2013
Performance Measure 1.2 – Contact owners/operators in the site subwatershed with direct drainage membership acreage.	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	655 of 13,448¹ (5%)	1,618 of 13,711¹ (12%)	1,490 of 2,436¹ (61%)
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	7 of 7 (100%)	7 of 7 (100%)	8 of 8 (100%)
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	Complete	Complete	Complete
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices based on survey information in an Access database.	MLJ-LLC	In Progress: November 30, 2014	In Progress: November 30, 2014	In Progress: November 30, 2014
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015	In Progress: April 1, 2014/2015
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.					

¹Overall irrigated direct drainage acreage for fifth priority site subwatersheds comes from 2011 parcel data layers.

Sixth Priority Subwatersheds (2014 – 2016)

The sixth high priority site subwatershed is Drain @ Woodbridge Rd. Performance Goals (approved November 15, 2013) for this site subwatershed are similar to those for the second, third, fourth and fifth sets of high priority site subwatersheds (Table 12).

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.

The Coalition contacted 100% of targeted members within the Drain @ Woodbridge site subwatershed. Members were mailed survey packets and notification regarding grower meetings to discuss the Coalition's Management Plan strategy, water quality results and management practices. Growers were asked to attend a meeting held on January 22, 2014 and bring the survey with them to complete. Members who did not attend the meeting were advised to mail in the completed survey.

Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.

The Coalition is in the process of receiving and recording all completed surveys from the sixth priority site subwatershed members who were unable to attend the meeting held on February 5, 2014. To date, the Coalition has received 25% of completed management practice surveys from growers in the Drain @ Woodbridge Rd site subwatershed. These surveys have been entered into an Access database. A summary of currently implemented management practices and management practices to be implemented in 2014 within the Drain @ Woodbridge site subwatershed will be included in the 2015 MPUR.

Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.

During the January 2014 meeting, the Coalition focused on watershed-specific water quality impairments, crops of targeted growers, and reviewing efficacy of the various practices. The Coalition is reviewing the responses provided in the surveys regarding the management practices growers intend to implement in 2014 and 2015. The Coalition will follow-up with growers in the Drain @ Woodbridge Rd site subwatershed in 2015 to document newly implemented management practices and will report its findings in future MPURs submitted annually on April 1. In addition to the meeting in January, the Coalition sent informational letters to the remaining members within the subwatershed. The letters included a summary of the chlorpyrifos exceedances at this location and information on management practices effective in reducing chlorpyrifos movement from fields to waterways.

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.

The Coalition conducted Year 0 MPM in 2013 for the Drain @ Woodbridge Rd site subwatershed. The Coalition will also conduct MPM in Drain @ Woodbridge Rd in 2014 through 2016 to assess water quality. The Coalition will evaluate effectiveness of new management practices implemented in 2014 and 2015 with water quality data obtained from MPM. An interim evaluation will be included in the

2015 MPUR and a final evaluation will be included in the 2016 MPUR if additional practices are implemented in 2015.

Performance Goal 5: Consult with the CVRWQCB at least to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), for the sixth priority site subwatersheds are listed in Table 13.

Table 12. High Priority Performance Goals status for 2014 - 2016 high priority subwatershed (Drain @ Woodbridge Rd) approved on November 15, 2013.

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	COMPLETION DEADLINES
			DRAIN @ WOODBRIDGE RD
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.			
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	Mike Wackman	4 of 4 (100%) March 30, 2014
Performance Measure 1.2 – Contact owners/operators in the site subwatershed with direct drainage membership acreage.	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	1559 of 4785 (33%) Quarterly
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.			
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record current management practices used that may reduce agricultural impact on water quality.	Mike Wackman	October 31, 2014
Performance Measure 2.2 – Document management practices that the identified growers were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	May 1, 2015
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.			
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices based on survey information in an Access database.	MLJ-LLC	November 30, 2014* November 30, 2015
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	May 1, 2015 May 1, 2016
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.			
Performance Measure 4.1 – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from Management Plan Monitoring.	MLJ-LLC	May 1, 2015 May 1, 2016
Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in the Management Plan strategy for high priority waterbodies.			

*Initial documentation of implemented practices will be completed by this date; it is anticipated that not all growers will be able to implement practices within the first year and additional follow-up will be conducted the following year.

Table 13. Coalition education and outreach activities January 2013-February 2014.

Categories of outreach include Management Practice Tracking, Best Management Practice (BMP) Outreach and Education, Grower Notification, and Collaborations and Special Studies.

AREA	DATE	CATEGORY	DETAILS	WHO
Bear Creek, Roberts Island, and Walthall Slough subwatersheds (5th P)	1/8/2013	Grower Notification / Management Practice Tracking	5th Priority Initial Contact Grower Meeting Announcement Mailing: sent to 8 Bear Creek members, 7 Roberts Island members, and 9 Walthall Slough members. Packet contained a cover letter and letter from the Regional Board explaining the management plan process and grower responsibilities, meeting details and agenda, and grower survey.	Mike Wackman
Bear Creek, Roberts Island, and Walthall Slough subwatersheds (5th P)	1/22/2013	BMP Outreach and Education / Management Practice Tracking	5th Priority Initial Contact Grower Meeting: 14 of the 22 members attended the meeting (5 from Bear Creek, 5 from Roberts Island and 4 from Walthall Slough). Past exceedances of Chlorpyrifos (Lorsban) and malathion were discussed. Growers that used these products in the past couple of years were required to attend the grower meeting. Survey questions were also addressed at the meeting.	Terry Prichard, Mike Wackman
Kellogg Creek and Mormon Slough subwatersheds (4th P)	1/25/2013	Grower Notification / Management Practice Tracking	4th Priority Initial Contact Grower Surveys Final Mailing: sent to 4 Kellogg Creek members and 2 Mormon Slough members who had yet to return their initial grower survey. Cover letter indicated the growers would be dropped from the Coalition if they did not respond by Feb. 15, 2013.	Mike Wackman
Kellogg Creek and Mormon Slough subwatersheds (4th P)	2/1/2013	Grower Notification / Management Practice Tracking	4th Priority Follow-up Mailing: sent to 10 Kellogg Creek members, 23 Mormon Slough members, and 1 Sand Creek members. Mailing included follow-up survey with instructions to complete and return the survey to the Coalition.	Mike Wackman
Stockton	2/20/2013	BMP Outreach and Education	Spray Safe Grower Meeting: 312 growers attended. Meeting topics included management practices and water quality, applicable laws and regulations, and new technologies.	Terry Prichard
Entire Coalition Region	May, 2013	Grower Notification	Coalition Newsletter: mailed to all members. Included articles on the upcoming new WDR, new nutrient regulations, continued pesticide impairments in surface waterways, and management practices to reduce pesticide water quality impairments.	Mike Wackman, John Brodie, MLJ-LLC
Entire Coalition Region	7/29/2013	Grower Notification	Proposed SJCDWQC Waste Discharge Requirements Meeting Announcement mailed to growers and posted on the RDC website: Manteca Library, Grape Festival Grounds, Linden Library and Roberts Union Island Center (Around 400 attendees).	Mike Wackman, John Brodie
Tracy, Manteca and Southwest Region of Coalition	8/5/2013	Grower Notification	Proposed SJCDWQC Waste Discharge Requirements Meeting: Manteca Library.	Mike Wackman, Jennifer Spaletta
Lodi	8/6/2013	Grower Notification	Proposed SJCDWQC Waste Discharge Requirements Meeting: Grape Festival Grounds.	Mike Wackman, Jennifer Spaletta
Eastern San Joaquin County Region of Coalition	8/7/2013	Grower Notification	Proposed SJCDWQC Waste Discharge Requirements Meeting: Linden Library.	Mike Wackman, Jennifer Spaletta
The Delta and Contra Costa County	8/8/2013	Grower Notification	Proposed SJCDWQC Waste Discharge Requirements Meeting: Roberts Union Island Center.	Mike Wackman, Jennifer Spaletta
Bear Creek, Roberts Island, and Walthall Slough subwatersheds (5th P)	10/3/2013	Grower Notification	5th Priority Initial Contact Grower Surveys Final Mailing: sent to 9 growers (1 Bear Creek member, 4 Roberts Island members and 4 Walthall Slough members) in the 5th p subwatersheds who had yet to return their initial grower survey. Cover letter indicated the growers would be dropped from the Coalition if they did not respond by October 25, 2013.	Mike Wackman
San Joaquin County (Simms Staff)	11/19/2013	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meetings: 331 attendees at daytime meeting and 117 at night meeting. Reviewed Coalition monitoring results and status of management plan strategy. Discussed updates in regulations, the long term Irrigated Lands Program, and implications for members.	Mike Wackman

AREA	DATE	CATEGORY	DETAILS	WHO
Contra Costa County	11/20/2013	BMP Outreach and Education	Contra Costa County Agricultural Commissioner Continuing Education Course: ~25 attendees at meeting. Reviewed water quality and exceedances, grower responsibilities, management practices and management practice funding.	Mike Wackman
San Joaquin County (Lodi Staff)	11/26/2013	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 164 attendees at meeting. Reviewed Coalition monitoring results and status of management plan strategy. Discussed updates in regulations, the long term Irrigated Lands Program, and implications for members.	Mike Wackman
San Joaquin County (Stockton Staff)	11/27/2013	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 107 attendees at meeting. Reviewed Coalition monitoring results and status of management plan strategy. Discussed updates in regulations, the long term Irrigated Lands Program, and implications for members.	Mike Wackman
San Joaquin County (Simms Staff)	12/4/2013	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 181 attendees at daytime meeting and 59 at night meeting. Reviewed Coalition monitoring results and status of management plan strategy. Discussed updates in regulations, the long term Irrigated Lands Program, and implications for members.	Mike Wackman
Contra Costa County	12/7/2013	BMP Outreach and Education	Contra Costa County Agricultural Commissioner Continuing Education Course: 72 attendees at meeting. Reviewed water quality and exceedances, grower responsibilities, management practices and management practice funding.	John Brodie
San Joaquin County (Lodi Staff)	12/11/2013	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 117 attendees at meeting. Reviewed Coalition monitoring results and status of management plan strategy. Discussed updates in regulations, the long term Irrigated Lands Program, and implications for members.	Mike Wackman
San Joaquin County (Stockton Staff)	12/12/2013	BMP Outreach and Education	San Joaquin County Agricultural Commissioner Meeting: 125 attendees at meeting. Reviewed Coalition monitoring results and status of management plan strategy. Discussed updates in regulations, the long term Irrigated Lands Program, and implications for members.	Mike Wackman
Drain @ Woodbridge Rd	1/27/2014	Grower Notification/Management Practice Tracking	6th Priority Initial Contact Grower Meeting Announcement Mailing: sent to 4 Drain @ Woodbridge members. Packet contained a cover letter and letter from the Regional Board explaining the management plan process and grower responsibilities, meeting details and agenda, and grower survey.	Mike Wackman
Drain @ Woodbridge Rd	1/27/2014	BMP Outreach and Education	Information sent to all 7 members within the Drain @ Woodbridge subwatershed regarding chlorpyrifos issues and BMPs; not all members were required to fill out surveys due to lack of chlorpyrifos use within the last 2 years.	Terry Prichard, Mike Wackman
Drain @ Woodbridge Rd	2/5/2014	BMP Outreach and Education / Management Practice Tracking	6th Priority Initial Contact Grower Meeting: 1 of the 4 targeted members attended the meeting. Past exceedances of Chlorpyrifos (Lorsban) were discussed. Growers that used these products in the past couple of years were required to attend the grower meeting. Survey questions were also addressed at the meeting.	Terry Prichard, Mike Wackman
Bear Creek, Roberts Island, and Walthall Slough subwatersheds (5 th P)	2/14/2014	Grower Notification/Management Practice Tracking	5 th Priority Follow-up Mailing: sent to 6 Bear Creek members, 6 Roberts Island members, and 5 Walthall Slough members. Mailing included follow-up survey with instructions to complete and return the survey to the Coalition.	Mike Wackman

BMP- Best Management Practice
ILRP- Irrigated Lands Regulatory Program
P- Priority
PCA-Pesticide Control Advisor

MANAGEMENT PRACTICES

The Coalition documents current management practices and newly implemented practices based on survey results for each high priority site subwatershed. Table 14 includes a list of the management practices documented by the Coalition and grouped by either pesticide application or runoff management practices.

Table 14. Management practice categories and associated management practices recommended to growers.

MANAGEMENT PRACTICE CATEGORY	MANAGEMENT PRACTICE
Pesticide Application Management Practices	Reduction in application rates
	Alternative material application
	Spot treating
Runoff Management Practices	Sprinkler or microspray irrigation
	Retention pond/holding basin
	Grass waterways or grass filter strips
	Reduce water volumes using irrigation management
	Treat runoff waters with PAM or other materials

Coalition members with direct drainage and past applications of pesticide types found in exceedances were contacted to attend grower meetings and complete surveys. Growers recorded their current management practices and whether they planned to implement additional management practices in the next year. Growers that indicated they would implement one or more new management practices are contacted again and asked 1) if they implemented the practice(s) in the last year, 2) if they did not implement the practice(s) in the last year, they are asked why not, and 3) if they implemented other/additional practices not listed.

The 2013 MPUR includes an analysis of current management practices, management practices planned to be implemented and newly implemented management practices for first, second, third, and fourth priority site subwatersheds. Due to continued water quality impairments throughout 2010 and 2011, the Coalition initiated additional focused outreach in 2012 with growers in all three first priority watersheds and the Littlejohns Creek @ Jack Tone Rd site subwatershed. A summary of focused outreach for these 2012 additional contacts is included in the 2013 MPUR.

Follow-up contacts within fourth priority site subwatersheds were initiated in early 2013 and are complete. The analysis of the newly implemented management practices within fourth priority site subwatersheds was preliminary in the 2013 report; a final analysis is included in the following sections.

The Coalition began focused outreach in the fifth set of priority site subwatersheds (Bear Creek @ North Alpine Rd, Roberts Island @ Whiskey Slough Pump and Walthall Slough @ Woodward Ave) in early 2013 and 100% of contacts have been made with individual growers. Management practices that growers in fifth priority site subwatersheds implemented in 2012 and plan to implement in 2013 are summarized in

the following sections. Follow-up contacts were initiated in January 2014 with growers who indicated they were planning to implement additional management practices in 2013. Results of the follow-up contacts within the fifth priority site subwatersheds will be reported in the 2015 MPUR.

The Coalition initiated focused outreach in the single sixth priority site subwatershed, Drain @ Woodbridge Rd, in January 2014. Growers were targeted in this site subwatershed based on their proximity to the waterway and recent use of chlorpyrifos. In early January 2014 management practice surveys were sent to four members in the Drain @ Woodbridge Rd site subwatershed. On January 22, 2014 the Coalition held a grower meeting with the targeted growers from the site subwatershed. Current management practices (2013) and management practices that the growers plan to implement in 2014 will be reported in the 2015 MPUR.

FIRST, SECOND, AND THIRD PRIORITY SUBWATERSHED SUMMARY OF MANAGEMENT PRACTICES

First Priority Site Subwatersheds

Focused outreach to document current management practices and track implementation of additional management practices began in the fall of 2008 and continued through 2012. The first priority site subwatersheds are Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd. The Coalition completed initial and follow-up surveys with 100% of targeted growers in the Duck Creek @ Hwy 4 (35 growers), Lone Tree Creek @ Jack Tone Rd (43 growers) and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (34 growers) site subwatersheds (2013 MPUR, Table 9). Based on survey results, the Coalition reported a final analysis of current practices from 2008 as well as practices implemented from 2009 through 2010 on a site subwatershed level in the 2011 MPUR (Pages 43-58).

Due to continued exceedances of the chlorpyrifos WQTL within the Duck Creek @ Hwy 4 site subwatershed, the Coalition conducted additional individual meetings in 2010 with growers. Coalition representatives discussed the importance of management practices such as reducing the use of chlorpyrifos or using alternatives to chlorpyrifos. Results from these contacts were reported in the 2013 MPUR (Pages 50-51) and have been added into the overall assessment of new management practices implemented within first priority site subwatersheds.

Second Priority Site Subwatersheds

Focused outreach to document current management practices and track implementation of new management practices in the second priority site subwatersheds began in 2010 and concluded in 2011. One hundred percent of targeted growers completed surveys in 2009 documenting their current management practices and indicated management practices they would implement in the following year in the Grant Line Canal @ Clifton Court Rd (2 growers), Grant Line Canal @ Calpack Rd (2 growers), and Littlejohns Creek @ Jack Tone Rd (16 growers) site subwatersheds (2013 MPUR, Table 10). Follow-up contacts were completed with all targeted growers who indicated they intended to implement a new practice in 2010. The Coalition reported an analysis of practices from 2009 as well as newly

implemented management practices for all second priority site subwatersheds in the 2011 MPUR (Pages 59-71).

In 2012, the Coalition initiated additional outreach in the first and second priority site subwatersheds due to continued water quality impairments, specifically exceedances of the WQTL for chlorpyrifos. Growers were targeted in a total of four site subwatersheds; Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd, Unnamed Drain to Lone Tree Creek, and Littlejohns Creek @ Jack Tone Rd. A complete summary of the additional outreach conducted in 2012 is reported in the 2013 MPUR.

Third Priority Site Subwatersheds

Focused outreach to document current management practices and track implementation of new management practices in the third priority site subwatersheds began in 2011 and concluded in 2012. One hundred percent of targeted growers completed surveys in 2011 documenting their management practices and indicated management practices they would implement in the following year in the French Camp Slough @ Airport Way (13 growers), Mokelumne River @ Bruella Rd (12 growers), and Terminous Tract Drain @ Hwy 12 (4 growers) site subwatersheds (2013 MPUR, Table 11). In 2012, follow-up surveys were sent to all targeted growers who indicated they intended to implement a new practice in 2012. The Coalition reported an analysis of practices from 2011 as well as newly implemented management practices for all third priority site subwatersheds in the 2013 MPUR (Pages 56-65).

FOURTH PRIORITY SUBWATERSHED SUMMARY OF MANAGEMENT PRACTICES (2012-2014)

Focused outreach to document current management practices and track implementation of additional management practices in fourth priority site subwatersheds began in 2012 and is scheduled to continue through 2014. The fourth priority site subwatersheds are: Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd, and Sand Creek @ Hwy 4 Bypass. The Coalition initiated outreach with targeted growers in the Kellogg Creek along Hoffman Ln (10 growers), Mormon Slough @ Jack Tone Rd (29 growers) and Sand Creek @ Hwy 4 Bypass (1 grower) site subwatersheds by way of grower meetings held in January 2012 (Table 15).

In early 2013, follow-up survey postcards were sent to growers who indicated on their initial surveys that they would be implementing additional management practices by the end of 2012. Growers recorded newly implemented management practices on the surveys and returned them to the Coalition. By October 2013, all follow-up surveys had been received by the Coalition. The following section includes the complete analysis of newly implemented management practices.

Table 15. Tally of members who participated in focused outreach in the fourth set of high priority site subwatersheds (2012-2014).

	KELLOGG CREEK ALONG HOFFMAN LN	MORMON SLOUGH @ JACK TONE RD	SAND CREEK @ HWY 4 BYPASS
Targeted Growers	10	29	1
Completed Individual Meeting	10	29	1
Follow-up Contacts Required (new management practices planned to be implemented)	10	23	1
Completed Follow-up Contact	10	23	1
Growers with Newly Implemented Practices	9	23	1
PERCENT COMPLETE (INITIAL CONTACT)	100%	100%	100%
PERCENT COMPLETE (FOLLOW-UP CONTACT)	100%	100%	100%

Kellogg Creek along Hoffman Ln

In 2012, the Coalition contacted 10 targeted growers representing 402 acres in the Kellogg Creek along Hoffman Ln site subwatershed (Table 10). Management practices were documented for 8% of the acreage identified as having direct drainage (Figure 4). Grower meetings were conducted in 2012 and 100% of targeted members returned surveys with their management practice information. A full summary of their management practices (2011) and management practices they planned to implement (2012) can be found in the 2013 MPUR, pages 61-65. Follow-up surveys were sent in early 2013 and 100% of follow-up surveys were returned. The following section contains a final summary of 2012 newly implemented management practices.

Summary of Implemented Management Practices (2012)

Table 16 includes the number of targeted growers and member acreage associated with planned practices to be implemented (documented in initial surveys) compared to the number of growers and member acreage with newly implemented practices (documented in follow-up surveys). Not all practices were implemented that were planned to be implemented such as installing a retention pond (1 member) or treating waters with materials such as PAM (2 members, Table 16). Many times a delay in implementation can be due to lack of funding and/or a change in other practices that serve the same purpose and therefore make the planned practice redundant and unnecessary. For example, one member indicated that they planned to treat runoff water with PAM however in their follow-up survey they instead reduced the volume of water used in irrigation. In some cases, a member implemented practices that were not planned based on their survey responses and therefore the Percent Implemented Compared to Planned percentage in Table 16 is greater than 100%. An example is reducing the amount of tailwater during an irrigation event; one member with 32 acres implemented this practice even though they did not indicate that they planned to on their survey. One member representing 15 irrigated acres indicated management practices would be implemented in 2012, however; the follow-up survey was returned blank. Since the grower's initial survey indicated four out of the five management practices were currently implemented, only one planned management practice (treating runoff waters with PAM or other materials) was not newly implemented in 2012.

A final analysis of the follow-up surveys indicates that the two most implemented practices were: 1) reducing runoff water volumes using irrigation management (42% of the acreage with new practices) and 2) installing sprinkler or micro irrigation (34% of the acreage with new practices, Figure 5). When comparing the acreage associated with planned management practices and the acreage associated with the implemented management practices, these two practices had the highest percentage implementation (105% and 99% respectively, Table 16). Other management practices implemented in 2012 included reducing the use of the targeted pesticide and using center grass rows, waterways or filter strips (Figure 5). Of the acreage associated with members contacted in Kellogg Creek along Hoffman Ln, 88% is associated with increased irrigation management and 72% is associated with the installation of sprinkler or micro irrigation (Table 16). The continued and newly implemented management practices have been successful in improving the water quality in the Kellogg Creek along Hoffman Ln site subwatershed; chlorpyrifos, copper and toxicity to *C. dubia* have been removed from the site's management plan due to three years of no exceedances or toxicity. If no toxicity occurs during the 2014 MPM for the remaining high priority constituents, the Coalition will petition to remove toxicity to *S. capricornutum* and sediment toxicity to *H. azteca* from the site's active management plan.

Table 16. Growers and acreage of 2012 planned and newly implemented practices in the Kellogg Creek along Hoffman Ln site subwatershed.

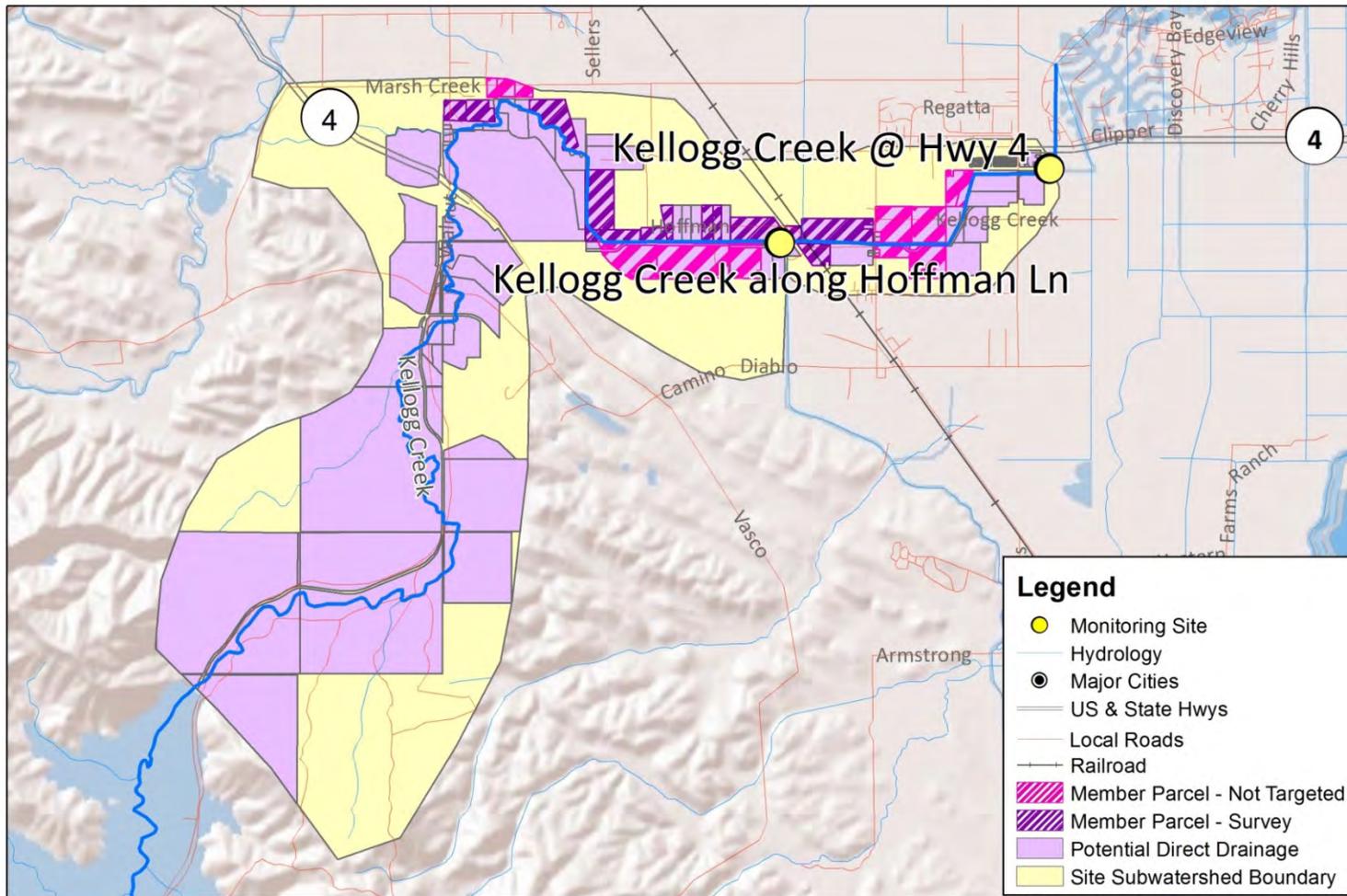
Results are based on initial surveys and follow-up surveys.

MANAGEMENT PRACTICE	GROWERS: PLANNED PRACTICES IN 2012 ¹	ACREAGE: PLANNED PRACTICES IN 2012	GROWERS: IMPLEMENTED PRACTICE IN 2012 ¹	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2012	PERCENT ACREAGE WITH IMPLEMENTED PRACTICES COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ²
Installation of retention pond / holding basin / return systems	1	15	0	0	0%	0%
Installation of sprinkler or micro irrigation when an option	5	293	3	290	99%	72%
Reduce runoff water volumes using irrigation management	8	339	8	356	105%	88%
Reduce use of the pesticide types found in exceedance	8	308	5	152	49%	37%
Treat runoff waters with PAM or other materials	2	89	0	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	3	186	1	52	28%	12%

¹Growers can select multiple management practice categories.

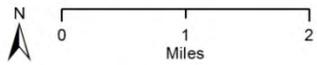
²Based on 402 member acres targeted within direct drainage.

Figure 4. Kellogg Creek along Hoffman Ln member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County, 2011, San Joaquin County, 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/05/13
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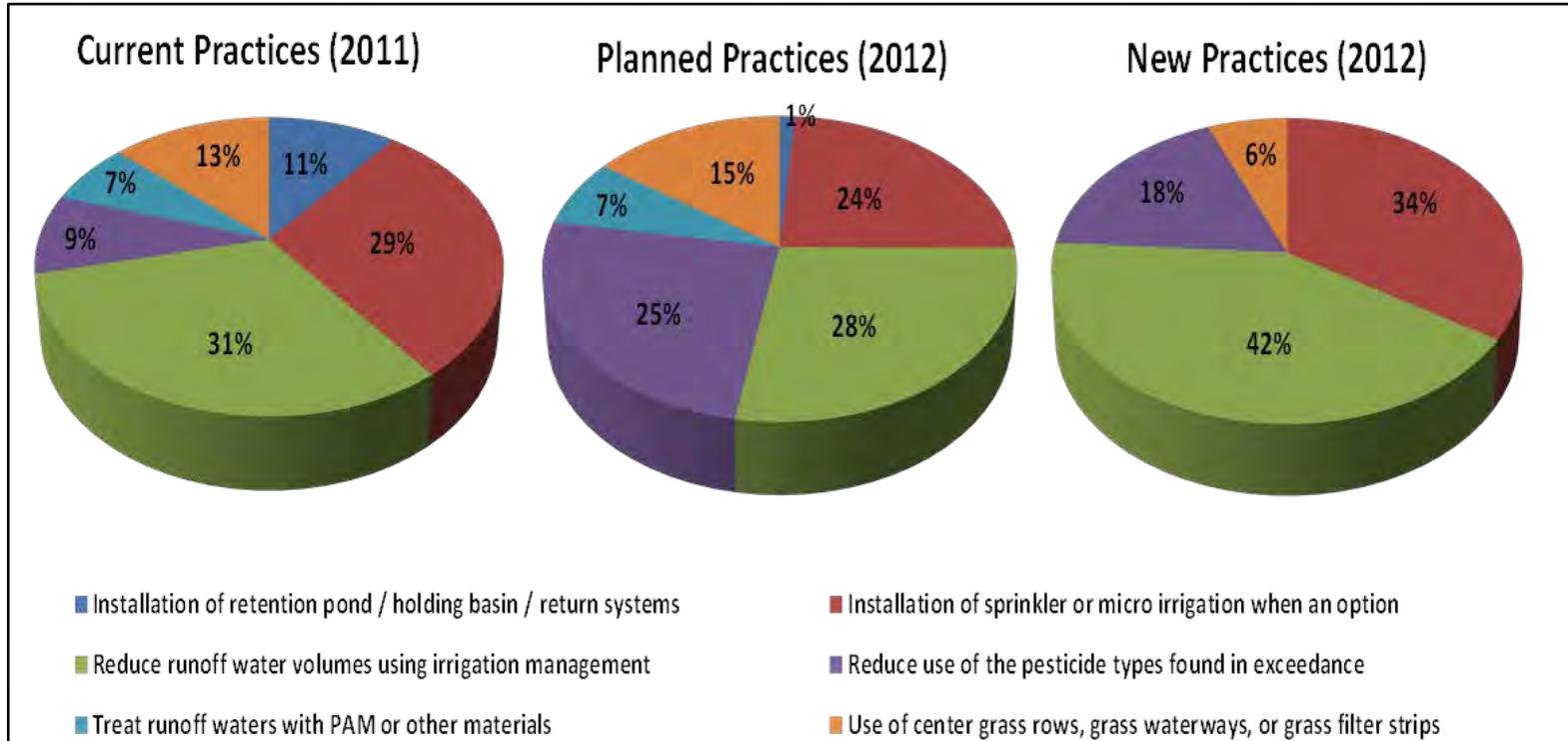


**Kellogg Creek along Hoffman Ln & @ Hwy 4 -
 4th Priority Subwatershed Parcels**

SJCDWQC_2012

Figure 5. Kellogg Creek along Hoffman Ln summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



Mormon Slough @ Jack Tone Rd

In 2012, the Coalition contacted 29 targeted growers representing 1,789 acres in the Mormon Slough @ Jack Tone Rd site subwatershed (Table 10). Grower meetings were conducted in 2012 and 100% of targeted members returned surveys with their management practice information. A full summary of management practices (2011) and management practices to be implemented (2012) can be found in the 2013 MPUR, pages 66-70. Growers in the Mormon Slough @ Jack Tone Rd site subwatershed were sent a follow-up survey in early 2013 and all follow-up surveys have been returned. The following section contains a complete summary of management practices implemented in 2012 as a result of the outreach.

Summary of Implemented Management Practices (2012)

A majority of the practices that were to be implemented were documented as actually implemented in follow-up surveys except for treating tailwater with PAM (Table 18). Management practices were documented for 43% of the acreage identified as having direct drainage (Figure 6). Both members who indicated that they planned to treat tailwater with PAM (or similar materials) did not do so in 2012 (Table 17). Instead, these two growers reduced tailwater volume using irrigation management, reduced the use of targeted pesticides, and used center grass rows, waterways, or filter strips. Overall, 88% of all planned management practices were implemented in 2012. Six growers indicated on their initial survey that they implement one or more management practices and did not plan on implementing any new management practices in 2012.

A final analysis of follow-up surveys indicate that reducing the use of the chlorpyrifos and reducing tailwater volume using irrigation management were the most commonly implemented practices occurring on 51% and 31% of the acreage with new management practices, respectively (Figure 7). Installation of sprinkler or micro irrigation was the third most implemented practice (15%) and the use of center grass rows, waterways or filter strips made up the remaining 3% of newly implemented management practices (Figure 7). Of the direct drainage acreage associated with members contacted in the Mormon Slough @ Jack Tone Rd site subwatershed, 70% is associated with reduced use of pesticides such as chlorpyrifos and 63% is associated with irrigation management, including installing sprinkler or micro irrigation (Table 17). The continued and newly implemented management practices have been successful in improving the water quality in the Mormon Slough @ Jack Tone Rd site subwatershed; chlorpyrifos, toxicity to *C. dubia* and *S. capricornutum* were monitored during 2013 MPM and no exceedances or toxicities occurred. If no exceedances or toxicity occurs during the 2014 MPM, the Coalition will petition to remove chlorpyrifos, toxicity to *C. dubia* and *S. capricornutum* from the site's active management plan due to more than three years of no exceedances.

Table 17. Growers and acreage of 2012 planned and newly implemented practices in the Mormon Slough @ Jack Tone Rd site subwatershed.

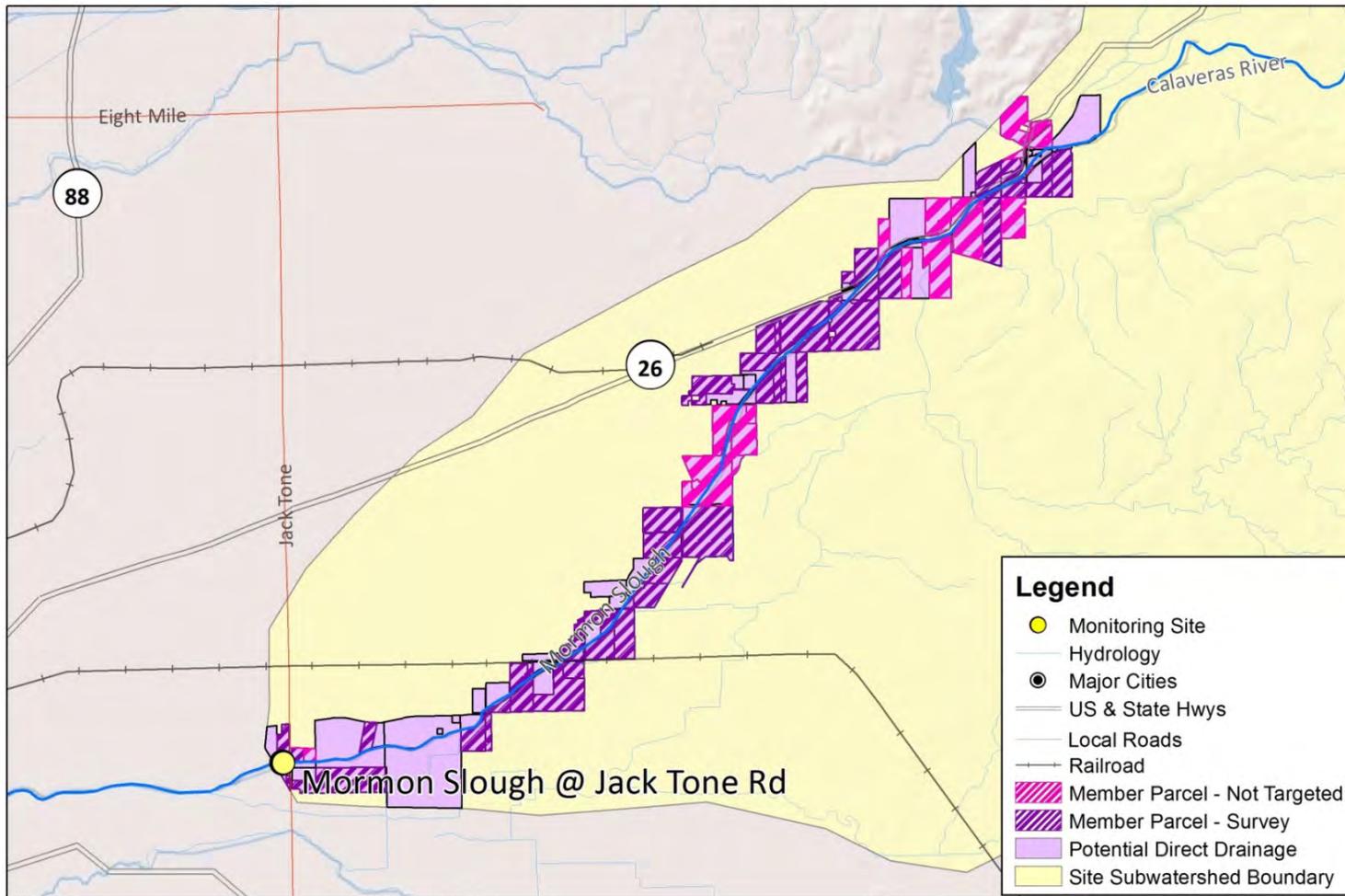
Results are based on initial surveys and follow-up surveys.

MANAGEMENT PRACTICE	GROWERS: PLANNED PRACTICES IN 2012 ¹	ACREAGE: PLANNED PRACTICES IN 2012	GROWERS: NEWLY IMPLEMENTED PRACTICE IN 2012 ¹	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2012 ¹	PERCENT ACREAGE WITH IMPLEMENTED PRACTICES COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ²
Installation of retention pond / holding basin / return systems	0	0	0	0	NA	NA
Installation of sprinkler or micro irrigation when an option	4	362	3	359	99%	20%
Reduce runoff water volumes using irrigation management	11	784	10	773	99%	43%
Reduce use of the pesticide types found in exceedance	22	1,255	22	1,255	100%	70%
Treat runoff waters with PAM or other materials	2	63	0	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	4	93	3	81	88%	5%

¹Growers can select multiple management practice categories.

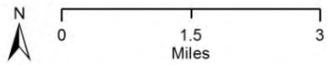
²Based on 402 member acres targeted within direct drainage.

Figure 6. Mormon Slough @ Jack Tone Rd member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Parcel Layer - Contra Costa County, 2011, San Joaquin County, 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/06/13
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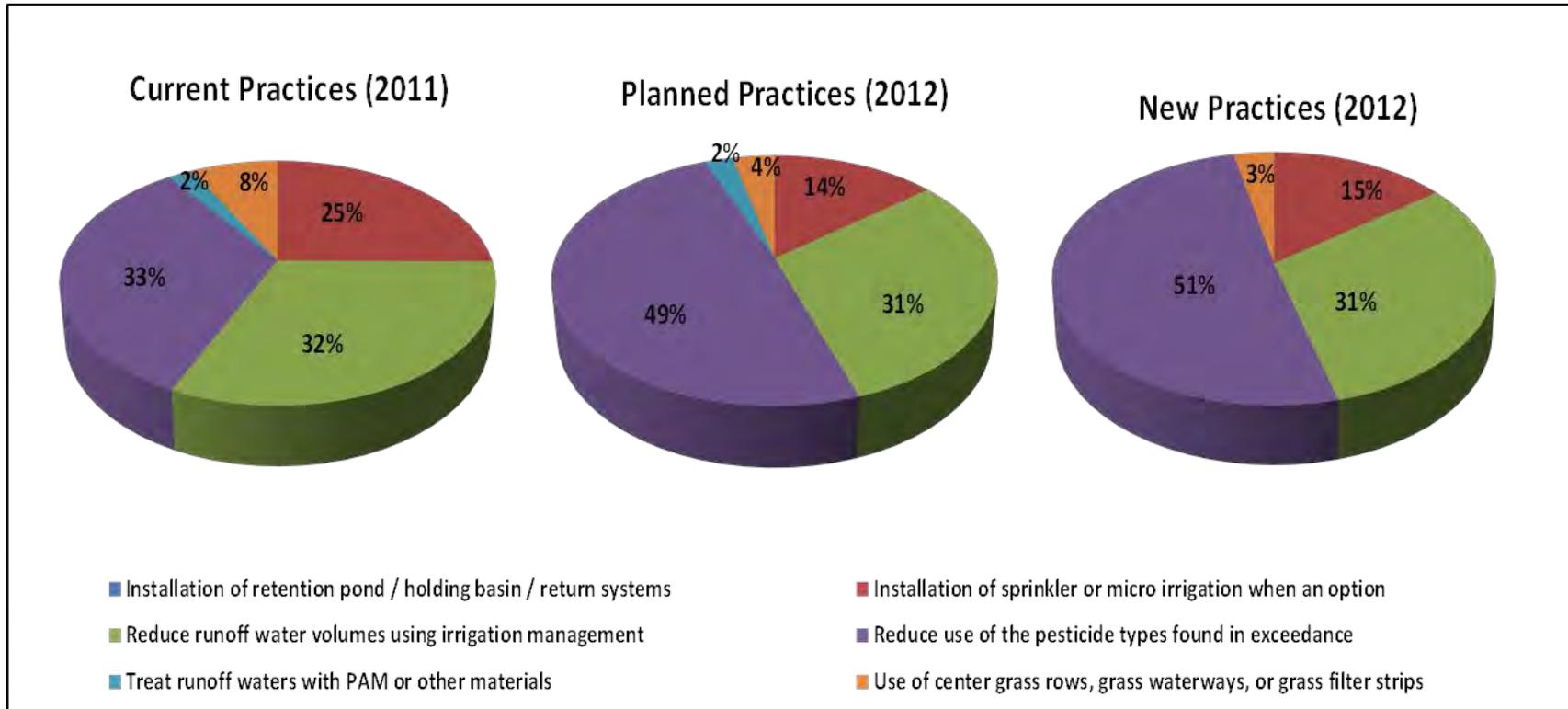


**Mormon Slough @ Jack Tone Rd -
 4th Priority Subwatershed Parcels**

SJCDWQC_2012

Figure 7. Mormon Slough @ Jack Tone Rd summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



Sand Creek @ Hwy 4 Bypass

In 2012, the Coalition contacted a single member representing 116 acres in the Sand Creek @ Hwy 4 Bypass site subwatershed (Table 10). Management practices on 3% of the acreage identified as having direct drainage were documented (Figure 8). A majority of the land use upstream of the monitoring location is not irrigated agriculture; this site subwatershed is not included in the SJCDWQC MRPP list of rotating Assessment Monitoring locations for this reason. The grower returned a survey with current management practices and management practices planned for 2012. A full summary of 2011 current management practices and management practices to be implemented (2012) can be found in the 2013 MPUR, pages 71-75. The Grower was sent a follow-up survey in early 2013 and the survey has been returned. The following section contains a final summary of 2012 newly implemented management practices.

Summary of Implemented Management Practices (2012)

The grower in the Sand Creek @ Hwy 4 Bypass site subwatershed indicated that in 2012 he intended to implement five of the six management practices (Table 18). The only recommended management practice the grower did not plan to implement in 2012 was the installation of a retention pond/holding basin/return system. On the follow-up survey returned in January 2013, the grower indicated that they implemented three out of the five practices planned. A final analysis of the follow-up survey indicates that the grower installed a sprinkler or micro irrigation system, reduced runoff water volume using irrigation management, and reduced use of the pesticide types found in exceedances on 100% of the reported acres (Table 18 and Figure 9). The continued and newly implemented management practice along with three years of focused outreach and education in the subwatershed have been successful in improving the water quality in the Sand Creek @ Hwy 4 Bypass site subwatershed; chlorpyrifos, diazinon, and toxicity to *C. dubia* have been removed from the site's active management plan due to three years of no exceedances or toxicity.

Table 18. Growers and acreage of 2012 planned and newly implemented practices in the Sand Creek @ Hwy 4 Bypass site subwatershed.

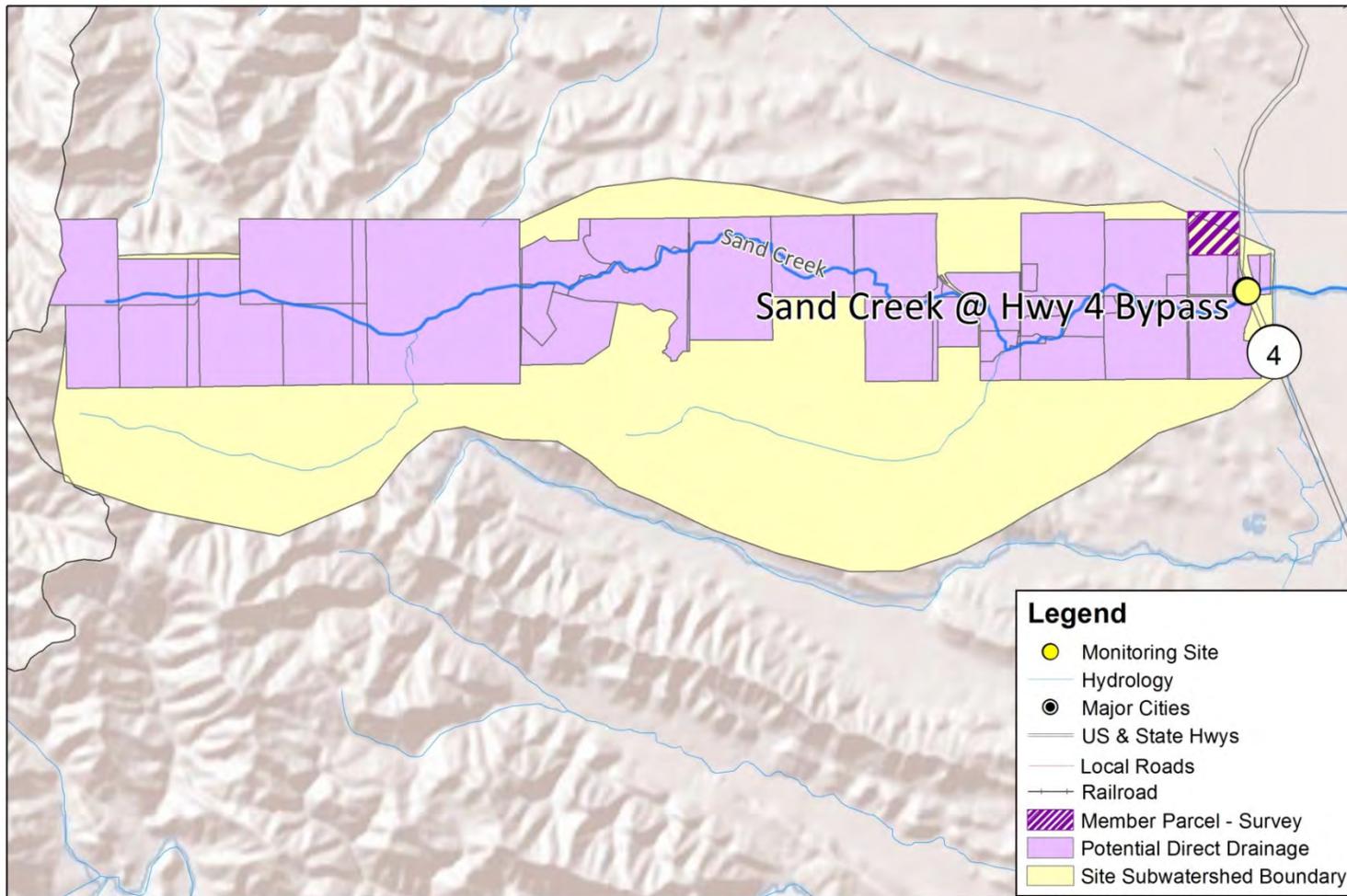
Results are based on initial surveys and follow-up surveys.

MANAGEMENT PRACTICE	GROWERS: PLANNED PRACTICES IN 2012 ¹	ACREAGE: PLANNED PRACTICES IN 2012	GROWERS: NEWLY IMPLEMENTED PRACTICE IN 2012 ¹	ACREAGE: NEWLY IMPLEMENTED PRACTICE IN 2012 ¹	PERCENT ACREAGE WITH IMPLEMENTED PRACTICES COMPARED TO PLANNED	PERCENT IMPLEMENTED COMPARED TO DIRECT DRAINAGE ACREAGE ²
Installation of retention pond / holding basin / return systems	0	0	0	0	NA	NA
Installation of sprinkler or micro irrigation when an option	1	116	1	116	100%	100%
Reduce runoff water volumes using irrigation management	1	116	1	116	100%	100%
Reduce use of the pesticide types found in exceedance	1	116	1	116	100%	100%
Treat runoff waters with PAM or other materials	1	116	0	0	0%	0%
Use of center grass rows, grass waterways, or grass filter strips	1	116	0	0	0%	0%

¹Growers can select multiple management practice categories.

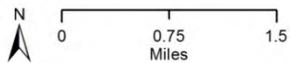
²Based on 402 member acres targeted within direct drainage.

Figure 8. Sand Creek @ Hwy 4 Bypass member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
 Parcel Layer - Contra Costa County: 2011, San Joaquin County: 2011
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 03/06/13
 SJCDWQC

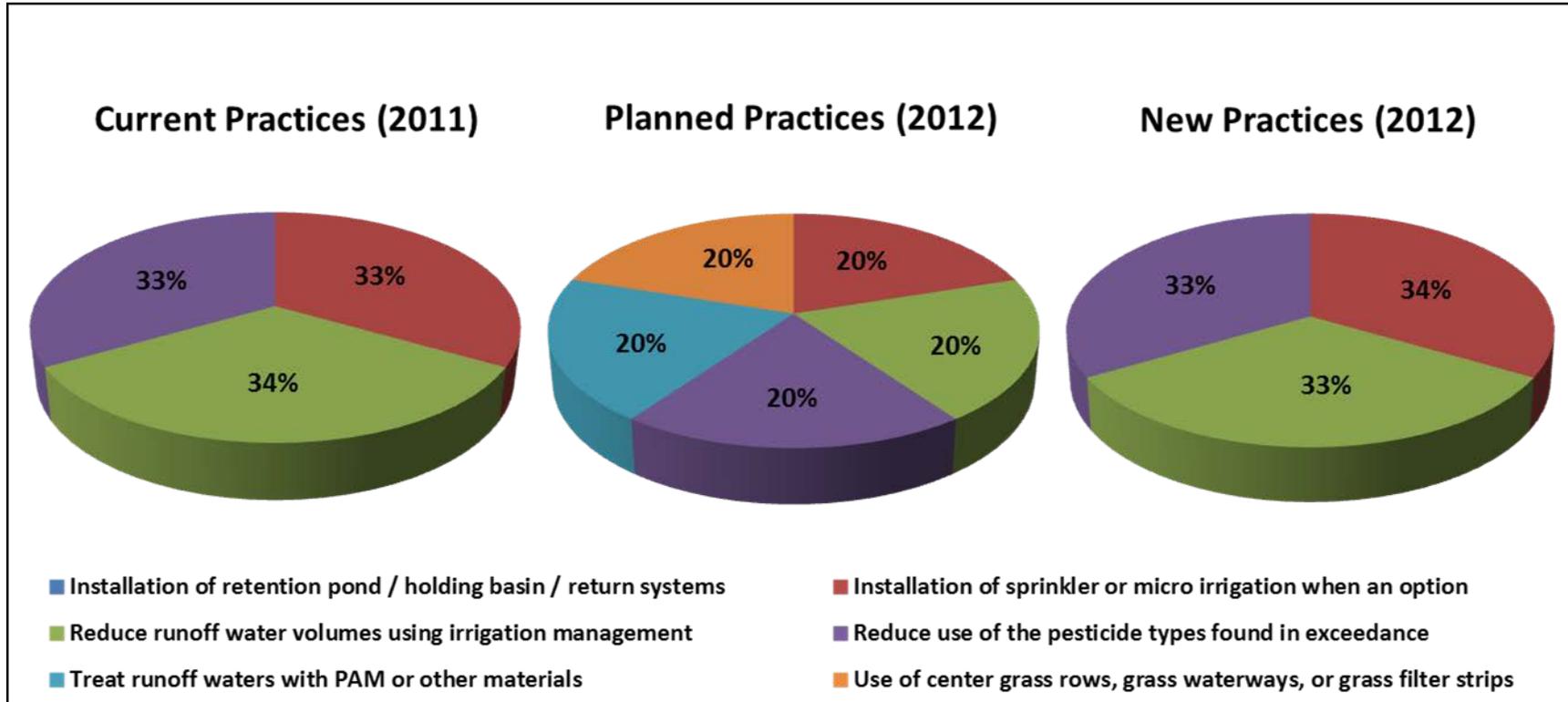


**Sand Creek @ Hwy 4 Bypass -
 4th Priority Subwatershed Parcels**

SJCDWQC_2012

Figure 9. Sand Creek @ Hwy 4 Bypass summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



**FIFTH PRIORITY SUBWATERSHED SUMMARY OF MANAGEMENT PRACTICES
(2013-2015)**

Focused outreach to document current management practices and track implementation of additional management practices in fifth priority site subwatersheds began in 2013 and is scheduled to continue through 2015. The Coalition initiated outreach with targeted growers in the Bear Creek @ North Alpine Rd (7 growers), Roberts Island @ Whiskey Slough Pump (7 growers) and Walthall Slough @ Woodward Ave (8 growers) site subwatersheds and conducted a grower meeting held on January 22, 2013. Management practices are documented for the acreage identified as having direct drainage in the Bear Creek @ North Alpine Rd (5%), Roberts Island @ Whiskey Slough Pump (12%) and Walthall Slough @ Woodward Ave (61%) site subwatersheds (Table 11). Current management practices (2012) and planned practices (2013) are summarized in this section.

On February 14, 2014, follow-up survey postcards were sent to growers who indicated on their initial surveys that they would be implementing additional management practices by the end of 2013. During 2014, growers will record management practices that were implemented in 2013 and return the surveys to the Coalition. Prior to March 31, 2014, the Coalition received follow-up surveys from targeted growers in the Bear Creek @ North Alpine Rd (66%), Roberts Island @ Whiskey Slough Pump (50%), and Walthall Slough @ Woodward Ave (100%, Table 19). A Coalition representative is in the process of following up with members who did not return their follow-up surveys by March 2nd, 2014. The results from outstanding follow-up contacts will be reported during the quarterly meetings, and a complete analysis of newly implemented management practices will be included in the 2015 MPUR.

Table 19. Tally of growers who participated in focused outreach in the fifth set of high priority site subwatersheds (2013-2015).

	BEAR CREEK @ NORTH ALPINE RD	ROBERTS ISLAND @ WHISKEY SLOUGH PUMP	WALTHALL SLOUGH @ WOODWARD AVE
Targeted Growers	7	7	8
Completed Individual Meeting	7	7	8
Follow-up Contacts Required (new management practices planned to be implemented)	6	6	5
Completed Follow-up Contact by March 31, 2014	4	3	5
PERCENT COMPLETE (INITIAL CONTACT)	100%	100%	100%
PERCENT COMPLETE (FOLLOW-UP CONTACT)	66%	50%	100%

Bear Creek @ North Alpine Rd

In 2013, the Coalition contacted seven targeted growers representing 655 acres in the Bear Creek @ North Alpine site subwatershed (Table 11). Management practices were documented for 5% of the acreage identified as having direct drainage (Figure 10). One-hundred percent of the contacted growers returned an initial survey, and six growers indicated they were going to implement new practices in 2013. Growers in the Bear Creek @ North Alpine site subwatershed were sent a follow-up survey on February 14, 2014. The Coalition received four out of six follow-up surveys as of March 31, 2014 and

growers indicated that they implemented management practices in 2013; all follow-up results will be reported in the 2015 MPUR. The following section contains a summary of 2012 current management practices and 2013 planned management practices.

Current (2012), Planned (2013) Management Practices

Survey responses by members in the Bear Creek @ North Alpine Rd site subwatershed indicate that in 2012, 204 acres have irrigation runoff leaving the fields, 382 acres have storm water runoff leaving the fields, and two members representing 335 acres do not have irrigation runoff and therefore tailwater does not leave their field (Not Applicable, Figure 11). The most common management practices that members were implementing in 2012 were reducing runoff water volumes, reducing the use of the pesticide types found in exceedances, and use of center grass rows/grass waterways/grass filter strips (Table 20). In 2012, all targeted members in the Bear Creek @ North Alpine Rd site subwatershed had one or more management practice currently in place that were specific to runoff management or pesticide application management.

Returned initial surveys indicate that six out of seven growers plan to implement five of the six management practices listed on the survey in 2013 (Table 20). The most common management practices planned for implementation in 2013 were: reducing runoff water volume, reducing the use of the pesticide types found in exceedances, and use of center grass rows/grass waterways/grass filter strips (Figure 12).

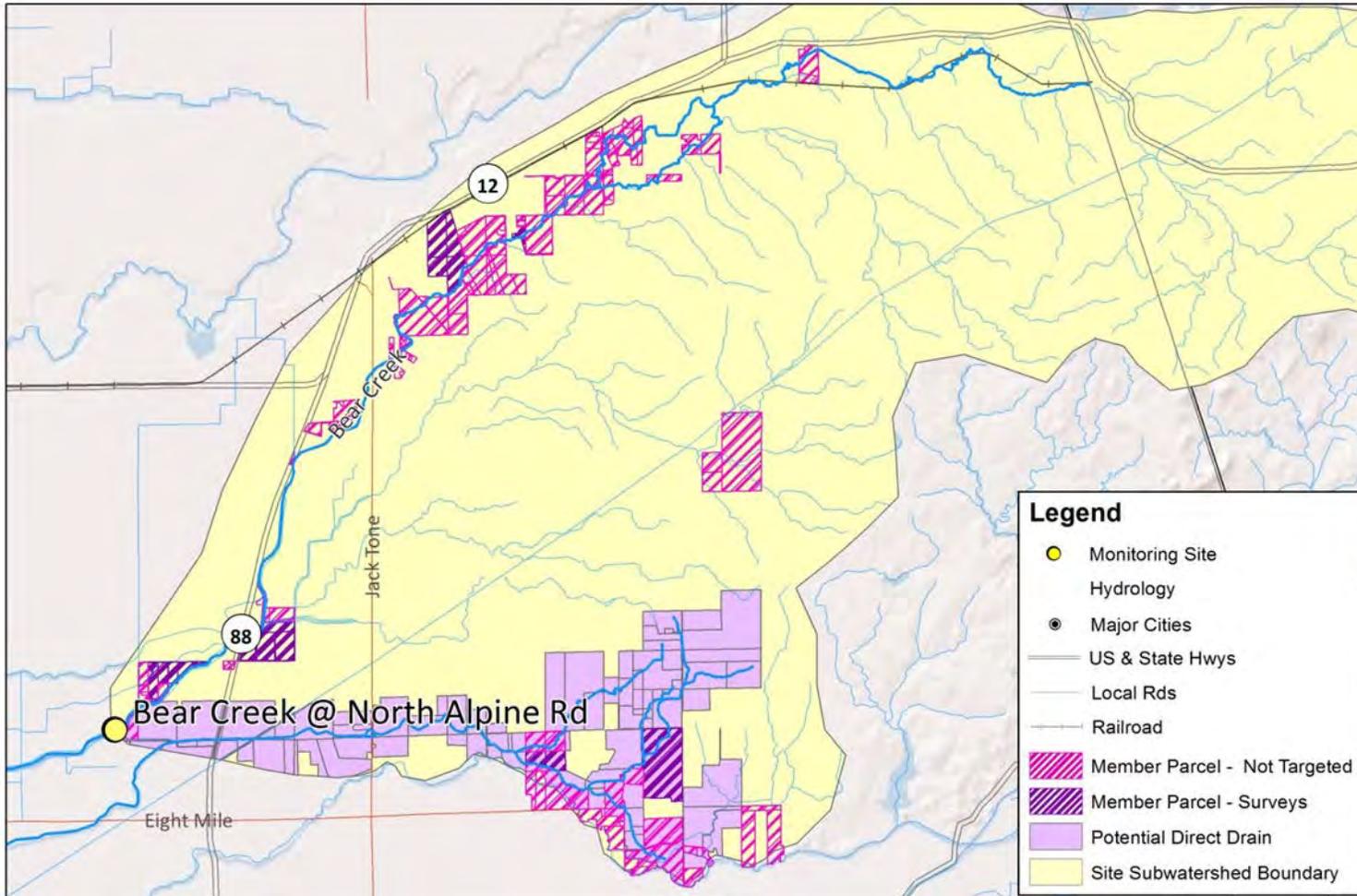
Table 20. Growers and preliminary acreage of 2013 current and planned practices in the Bear Creek @ North Alpine Rd site subwatershed (preliminary).

Results are based on initial surveys.

MANAGEMENT PRACTICE	GROWERS: CURRENT PRACTICES IN 2012 ¹	ACREAGE: CURRENT PRACTICES IN 2012	GROWERS: PLANNED PRACTICES IN 2013 ¹	ACREAGE: PLANNED PRACTICES IN 2013
Installation of retention pond / holding basin / return systems	1	279	1	279
Installation of sprinkler or micro irrigation when an option	4	438	3	381
Reduce runoff water volumes using irrigation management	7	655	5	588
Reduce use of the pesticide types found in exceedance	4	546	5	643
Use of center grass rows, grass waterways, or grass filter strips	4	530	3	525
Treat runoff waters with PAM or other materials	0	0	0	0

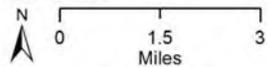
¹Growers can select multiple management practice categories.

Figure 10. Bear Creek @ North Alpine Rd member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
 TRS - Teale Public Land Survey System, Pub. date 20090101, California Spatial Information Library
 Parcel Layer - Contra Costa County, 2013, San Joaquin County, 2013
 Basemap, Shaded Relief - ESR
 Datum - NAD 1983

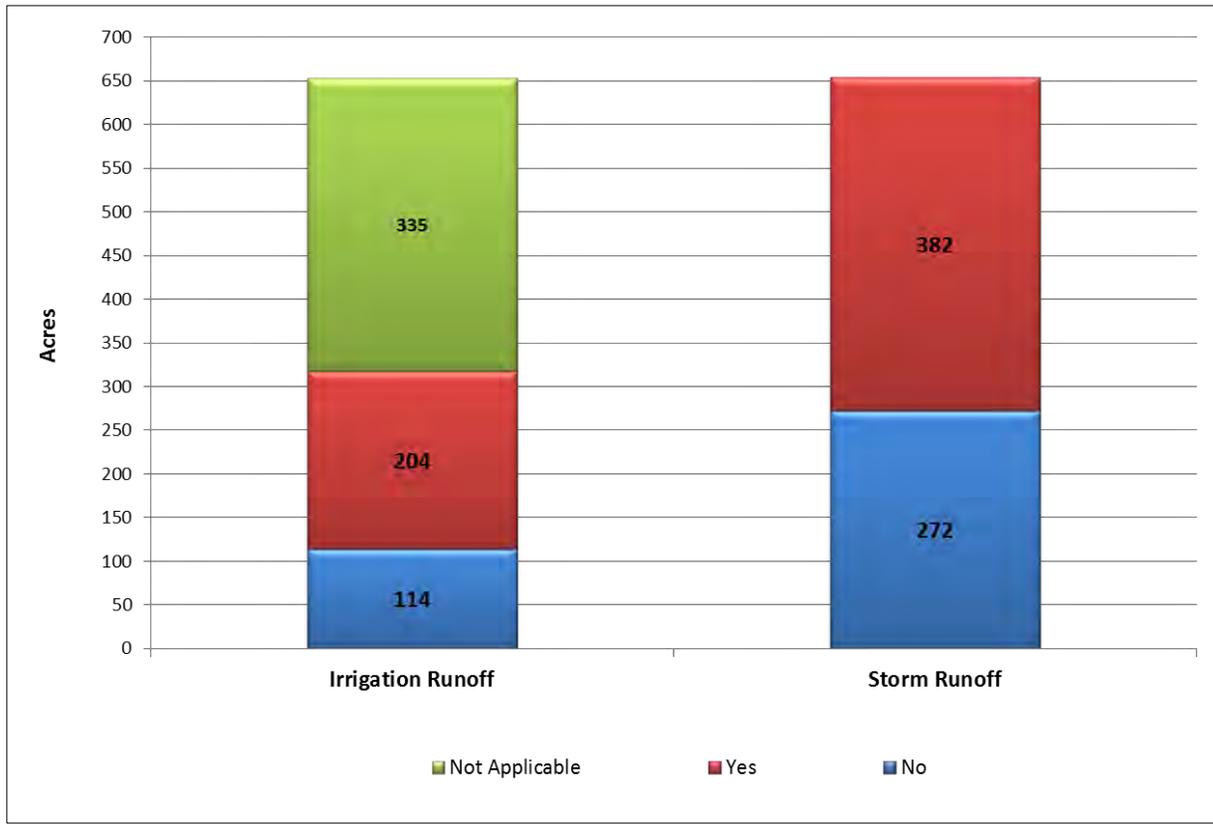
Date Prepared: 02/13/14
 SJCDWQC



**Bear Creek @ North Alpine Rd -
 5th Priority Subwatershed Parcels**

SJCDWQC_2013

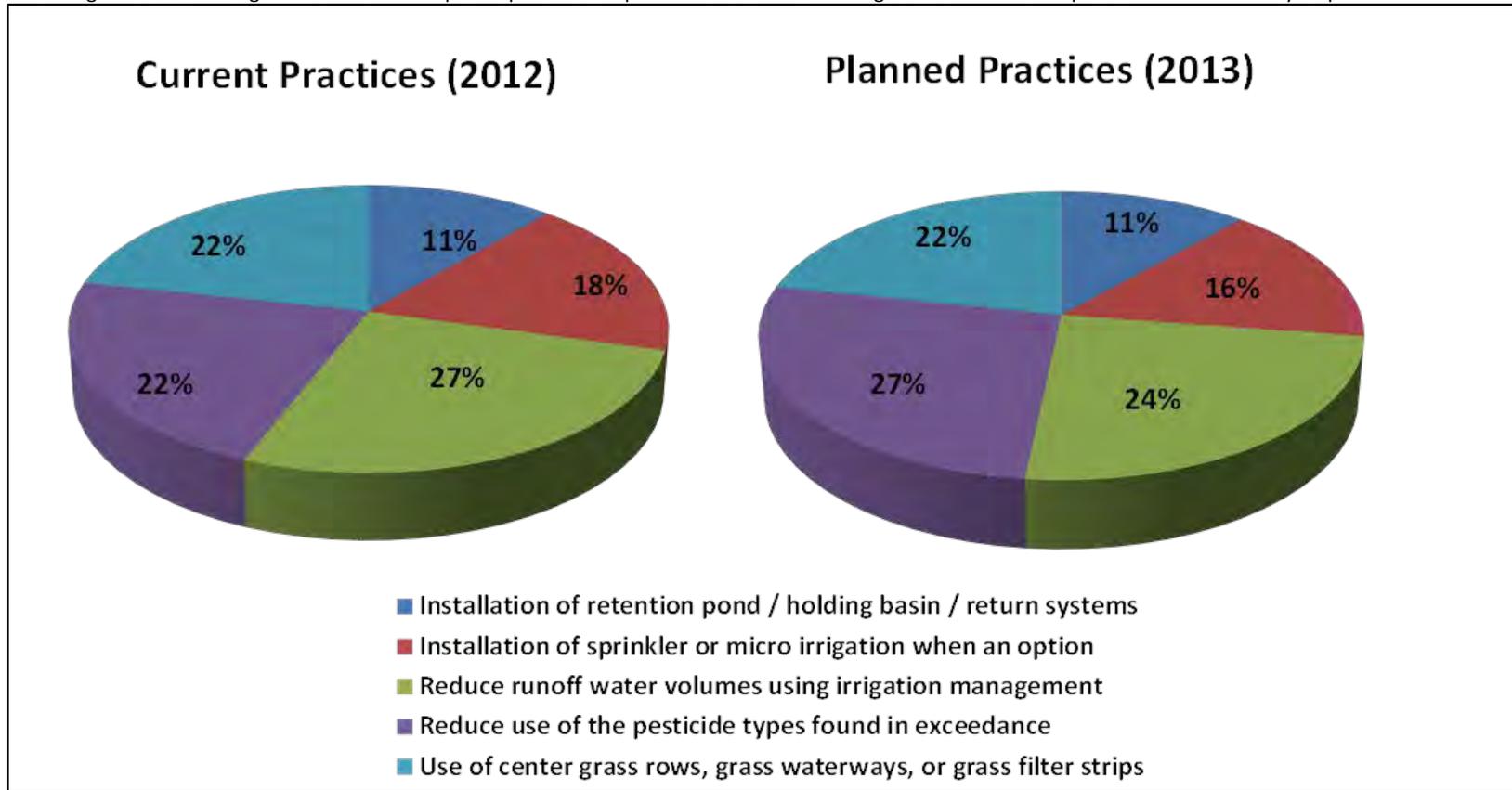
Figure 11. Bear Creek @ North Alpine Rd targeted member acreage with irrigation or storm runoff.



Not Applicable-grower does not have irrigation tailwater and therefore no runoff leaves their field.

Figure 12. Bear Creek @ North Alpine Rd summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



Roberts Island @ Whiskey Slough Pump

In 2013, the Coalition contacted seven targeted growers representing 1,618 acres in the Roberts Island @ Whiskey Slough Pump site subwatershed (Table 11). Management practices were documented for 12% of the acreage identified as having direct drainage (Figure 13). One hundred percent of the contacted growers returned an initial survey, and all but one grower indicated they were going to implement new practices in 2013 (Table 19). Growers in the Roberts Island @ Whiskey Slough Pump site subwatershed were sent a follow-up survey on February 14, 2014. The Coalition received three out of six follow-up surveys as of March 31, 2014 and growers indicated management practices were implemented in 2013; all follow-up results will be reported in the 2015 MPUR. The following section contains a summary of 2012 current management practices and 2013 planned management practices.

Current (2012), Planned (2013) Management Practices

Survey responses by members in the Roberts Island @ Whiskey Slough Pump site subwatershed indicate that 852 acres have irrigation runoff leaving their fields, 1,100 acres have storm water runoff leaving the fields, and one member representing 517 acres did not indicate either storm or irrigation runoff leaving the fields (No Response, Figure 14). The most common management practices already implemented by members in 2012 include reducing the use of the pesticide types found in exceedances and reducing runoff water volumes with irrigation management (Figure 15). In 2012, all targeted members in the Roberts Island @ Whiskey Slough Pump site subwatershed were implementing runoff management or pesticide application management. Six out of the seven members contacted indicated on the initial surveys that they planned to implement one or more management practices in 2013 (Table 21).

Returned initial surveys from three out of six growers indicate that growers plan to implement new management practices in 2013 (Table 21). The most common practices planned for implementation in 2013 include reducing the use of the pesticide types found in exceedances and reducing runoff water volume (Figure 15).

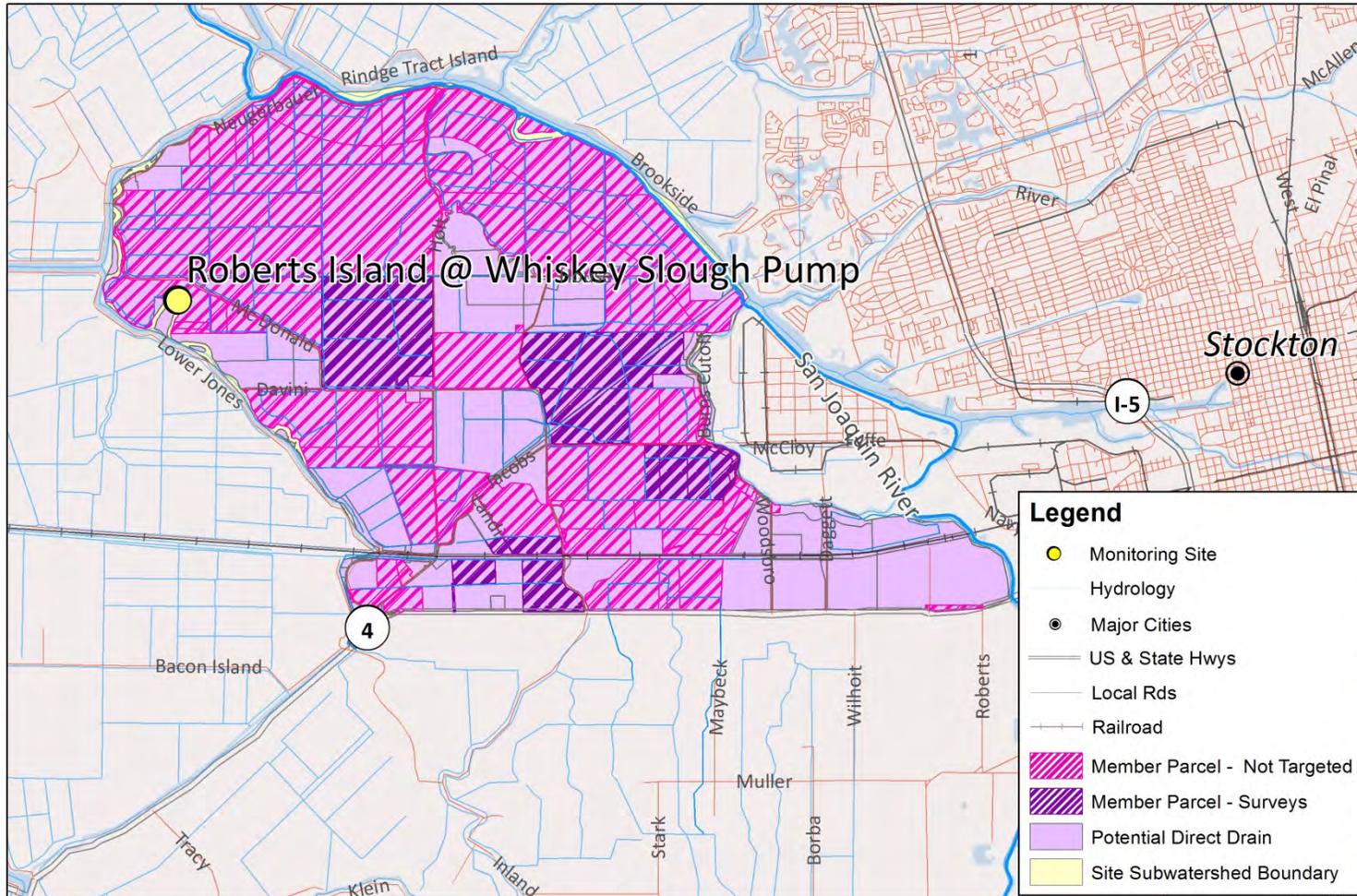
Table 21. Growers and preliminary acreage of 2013 planned practices in Roberts Island @ Whiskey Slough Pump site subwatershed.

Results are based on initial surveys.

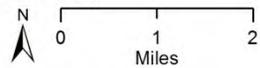
MANAGEMENT PRACTICE	GROWERS: CURRENT PRACTICES IN 2012 ¹	ACREAGE: CURRENT PRACTICES IN 2012	GROWERS: PLANNED PRACTICES IN 2013 ¹	ACREAGE: PLANNED PRACTICES IN 2013
Installation of retention pond / holding basin / return systems	1	61	0	0
Installation of sprinkler or micro irrigation when an option	1	128	1	128
Reduce runoff water volumes using irrigation management	7	1617	6	1014
Reduce use of the pesticide types found in exceedance	6	1559	6	1014
Use of center grass rows, grass waterways, or grass filter strips	1	120	2	637
Treat runoff waters with PAM or other materials	0	0	0	0

¹Growers can select multiple management practice categories

Figure 13. Roberts Island @ Whiskey Slough Pump member parcels with direct drainage potential.



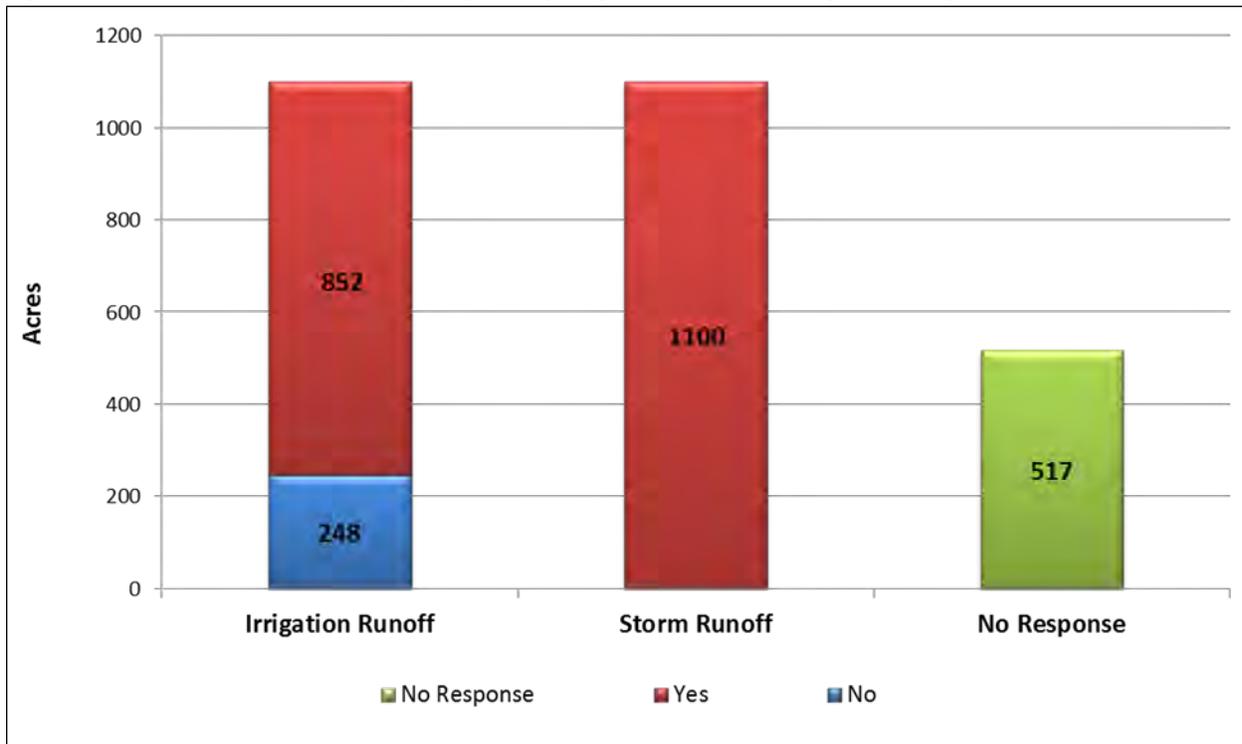
Date Prepared: 02/13/14
 SJCDWQC



Roberts Island @ Whiskey Slough Pump - 5th Priority Subwatershed Parcels

SJCDWQC_2013

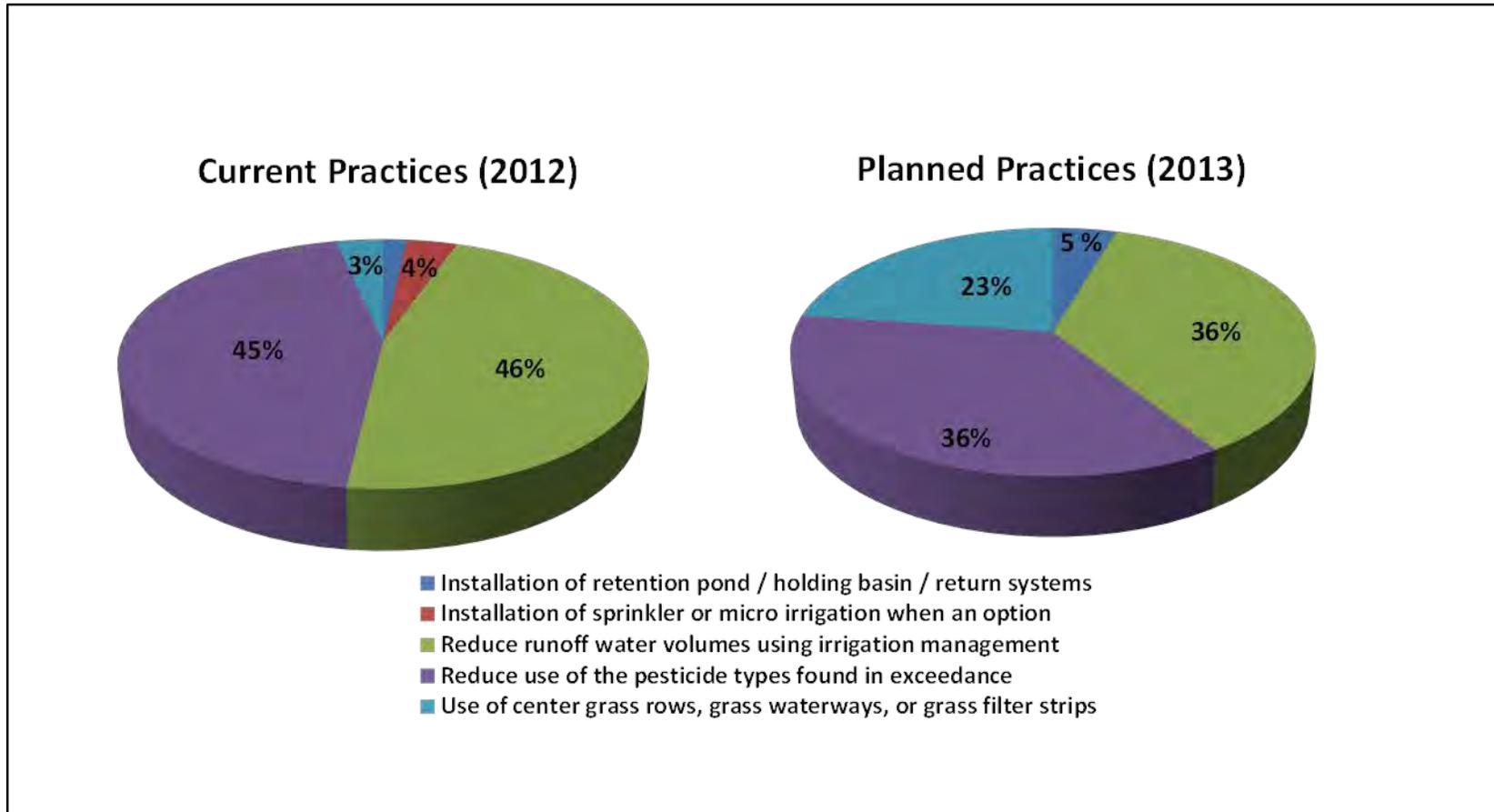
Figure 14. Roberts Island @ Whiskey Slough Pump targeted member acreage with irrigation or storm runoff.



No Response-grower left questions asking if storm water runoff or irrigation tailwater leaves their field blank.

Figure 15. Roberts Island @ Whiskey Slough Pump summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



Walthall Slough @ Woodward Ave

In 2013, the Coalition contacted eight growers representing 1,490 acres in the Walthall Slough @ Woodward Ave site subwatershed (Table 11). Management practices were documented for 61% of the acreage identified as having direct drainage (Figure 16). One-hundred percent of the contacted growers returned an initial survey, and five growers indicated they were going to implement new practices in 2013 (Table 19). Five growers in the Walthall Slough @ Woodward Ave site subwatershed were sent a follow-up survey on February 14, 2014; 100% of growers returned their surveys by March 31st, 2014. The Coalition will provide an analysis of all follow-up survey results in the 2015 MPUR. The following section contains a summary of 2012 current management practices, a summary of the 2013 planned management practices, and a preliminary assessment of newly implemented management practices in 2013.

Current (2012), Planned (2013) Management Practices

The survey responses by the members in the Walthall Slough @ Woodward Ave site subwatershed indicate that 1,694 acres have irrigation runoff leaving their fields and 766 acres have storm water runoff leaving the fields (Figure 17). The most common management practices that were implemented in 2012 included reducing the use of the pesticide types found in exceedances, and reducing tailwater water volumes (Figure 18). In 2012, all targeted members in the Walthall Slough @ Woodward Ave site subwatershed implemented management practices currently in place that were specific to runoff management or pesticide application management.

Returned initial surveys indicate seven out of eight targeted growers currently implement one or more management practices. Five growers indicated that one or more management practices are planned to be implemented in 2013 (Table 22). The most common practices planned for implementation in 2013 include reducing the use of the pesticide types found in exceedances, reducing runoff water volume, and installing sprinkler or micro irrigation (Figure 17).

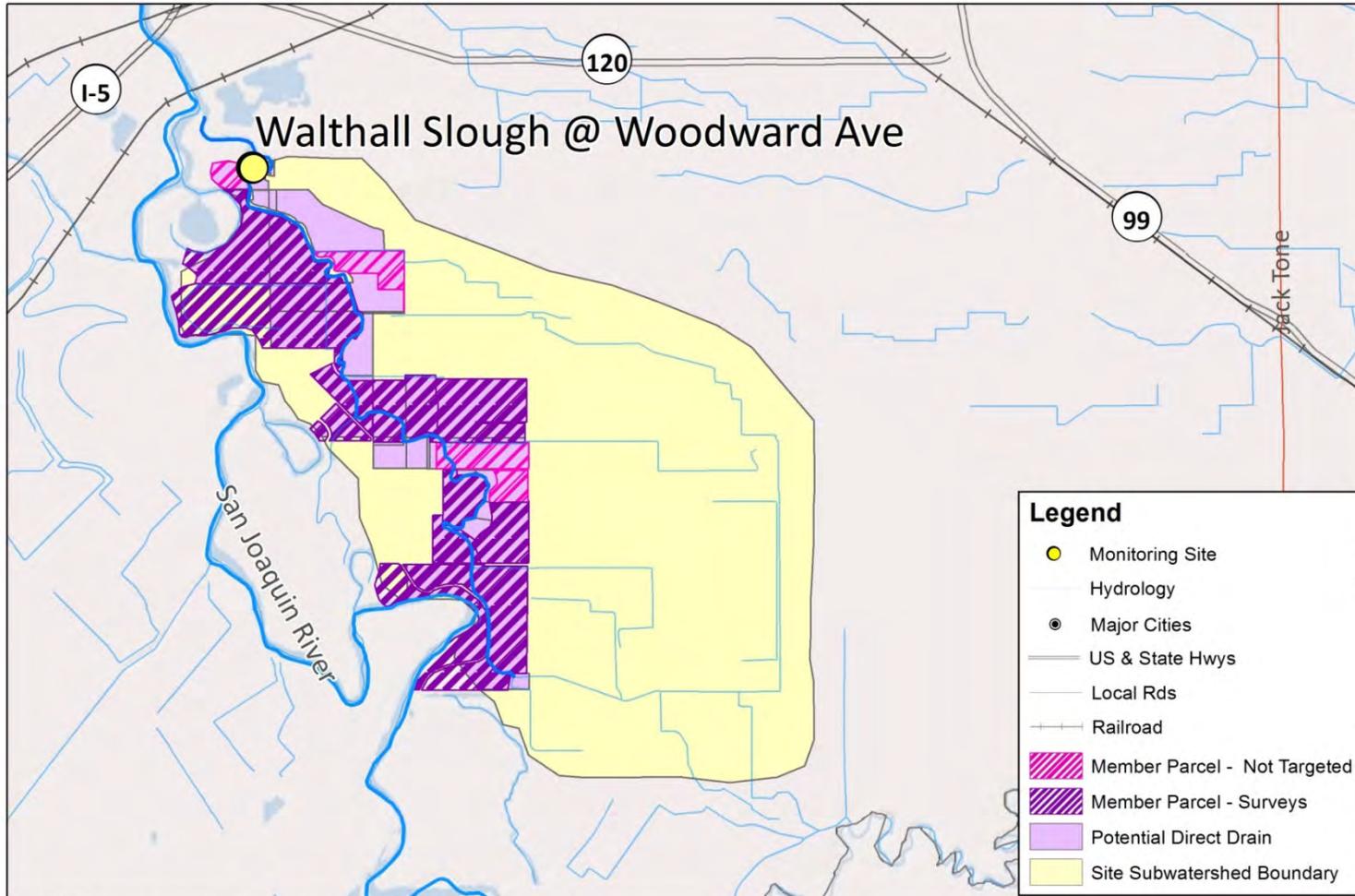
Table 22. Growers and preliminary acreage of 2013 planned management practices in the Walthall Slough @ Woodward Ave site subwatershed.

Results are based on initial surveys.

MANAGEMENT PRACTICE	GROWERS: CURRENT PRACTICES IN 2012 ¹	ACREAGE: CURRENT PRACTICES IN 2012	GROWERS: PLANNED PRACTICES IN 2013 ¹	ACREAGE: PLANNED PRACTICES IN 2013
Installation of retention pond / holding basin / return systems	1	235	1	235
Installation of sprinkler or micro irrigation when an option	5	1097	4	1003
Reduce runoff water volumes using irrigation management	6	1619	5	1127
Reduce use of the pesticide types found in exceedance	7	1694	4	1053
Use of center grass rows, grass waterways, or grass filter strips	2	331	1	238
Treat runoff waters with PAM or other materials	3	765	3	765

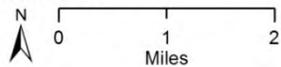
¹Growers can select multiple management practice categories.

Figure 16. Walthall Slough @ Woodward Ave member parcels with direct drainage potential.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 TRS - Teale Public Land Survey System, Pub. date. 20090101, California Spatial Information Library.
 Parcel Layer - Contra Costa County: 2013, San Joaquin County: 2013
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

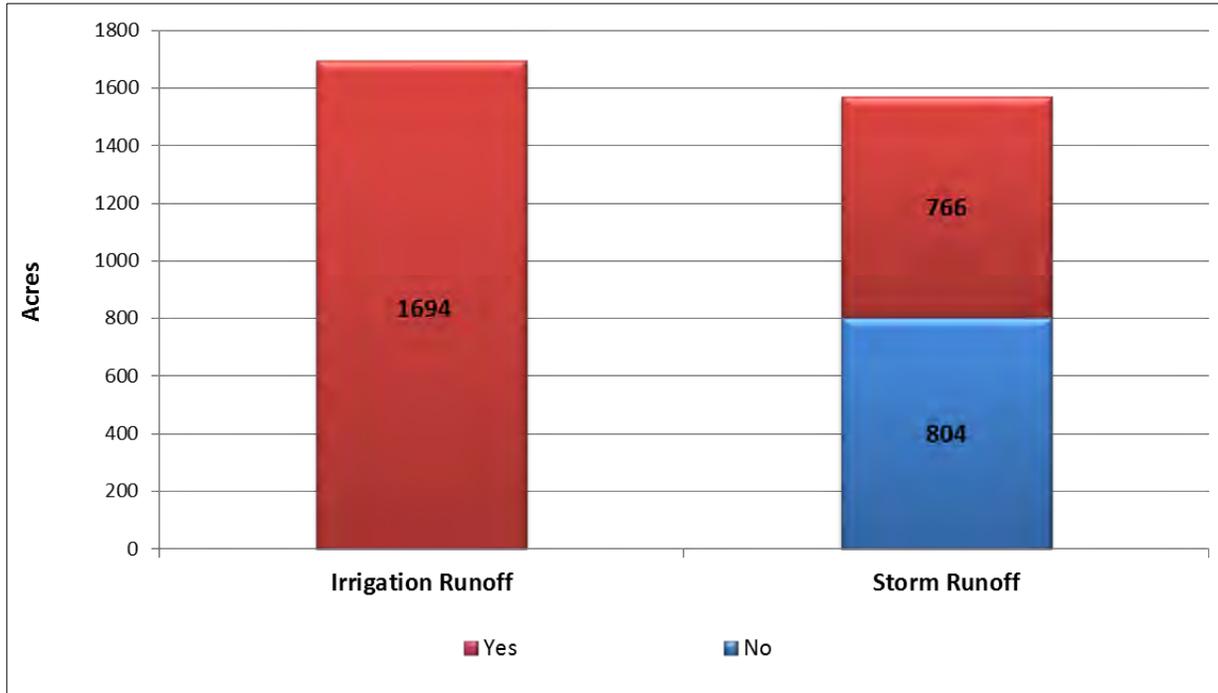
Date Prepared: 02/14/14
 SJCDWQC



**Walthall Slough @ Woodward Ave -
 5th Priority Subwatershed Parcels**

SJCDWQC_2013

Figure 17. Walthall Slough @ Woodward Ave targeted member acreage with irrigation or storm runoff.



Summary of Implemented Management Practices (2013)

One hundred percent of targeted growers in the Walthall Slough @ Woodward Ave site subwatershed completed their follow-up surveys as of March 31, 2014 (Table 19). The five targeted growers implemented one or more management practices in 2013 representing 2,301 irrigated acres. The most common practices implemented in 2013 include using irrigation management to reduce runoff, reducing the use of the pesticide types found in exceedances, and treating runoff waters with PAM or other materials; 100% of growers who planned to reduce runoff water volumes with irrigation management and to treat runoff waters with PAM or other materials implemented these practices in 2013 (Table 23). The Coalition will provide an analysis of all follow-up survey results in the 2015 MPUR.

Table 23. Growers and acreage of 2013 newly implemented management practices in the Walthall Slough @ Woodward Ave site subwatershed.

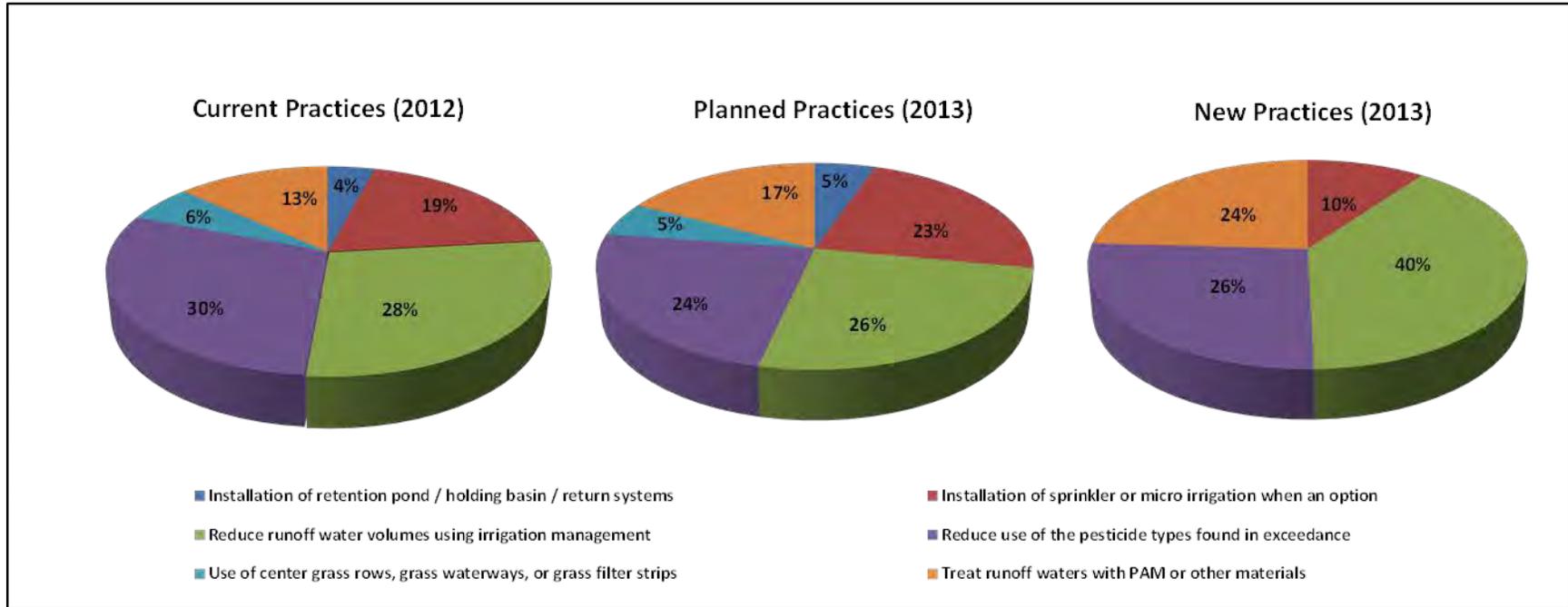
Results are based on initial surveys.

MANAGEMENT PRACTICE	GROWERS: PLANNED PRACTICES IN 2013 ¹	ACREAGE: PLANNED PRACTICES IN 2013	Growers: Newly Implemented practices in 2013 ¹	ACREAGE: NEWLY IMPLEMENTED PRACTICES IN 2013	Percent Acreage with Implemented Practices Compared to Planned
Installation of retention pond / holding basin / return systems	1	235	0	0	0
Installation of sprinkler or micro irrigation when an option	4	1003	1	231	23%
Reduce runoff water volumes using irrigation management	5	1127	5	910	80%
Reduce use of the pesticide types found in exceedance	4	1053	3	605	57%
Use of center grass rows, grass waterways, or grass filter strips	1	238	0	0	0%
Treat runoff waters with PAM or other materials	3	765	3	555	72%

¹Growers can select multiple management practice categories.

Figure 18. Walthall Slough @ Woodward Ave summary of management practices.

Percentage based on acreage associated with a specific practice compared to the summed acreage associated with all practices for each survey response.



SIXTH PRIORITY SUBWATERSHED SUMMARY OF MANAGEMENT PRACTICES (2014-2016)

Focused outreach to document current management practices and track implementation of additional management practices in the sixth priority site subwatershed began in 2014 and is scheduled to continue through 2016. Management practices are being documented for the acreage identified as having direct drainage in the Drain @ Woodbridge Rd site subwatershed (33% acreage identified as having direct drainage, Table 12). The Coalition initiated outreach with four targeted growers in the Drain @ Woodbridge Rd site subwatershed and conducted a grower meeting on February 5, 2014.

Surveys of current management practices (2013) as well as planned management practices (2014) will be summarized in the 2015 MPUR. Follow-up contacts with growers who indicate on their survey that they plan to implement additional practices in 2014 will take place in early 2015. A final analysis of the sixth priority site subwatersheds management practices will be included in the 2016 MPUR.

EVALUATION OF MANAGEMENT PRACTICE EFFECTIVENESS

The Coalition implemented its management plan process for four years in the first priority site subwatersheds and for three years in the second, third and fourth priority (Table 24). Since the initiation of focused outreach, there have been two or more years for growers to implement new management practices in these twelve site subwatersheds. In addition, water quality results have been collected for two or more years during MPM. The Coalition uses the results of all monitoring (Core, Assessment, and MPM) to evaluate the effectiveness of current and newly implemented management practices. The following evaluation of management practice effectiveness includes these twelve site subwatersheds. An evaluation of management practice effectiveness within the fifth priority site subwatersheds will be included in the 2015 MPUR.

The Coalition has been successful at informing growers of local water quality concerns and working with growers to actively address these concerns by encouraging the implementation of new management practices. In addition to recommending management practices, the Coalition continues to notify members about available funding opportunities and encourage them to take advantage of the application process.

Table 24. Years of current management practice assessment, newly implemented management practices and water quality assessment for evaluating management practice effectiveness.

PRIORITY GROUP	SITE NAME	CURRENT MANAGEMENT PRACTICE YEAR	YEAR(S) OF NEWLY IMPLEMENTED MANAGEMENT PRACTICES	YEARS OF WATER QUALITY ASSESSMENT FOR EVALUATION ¹
FIRST (2008-2010)	Duck Creek @ Hwy 4	2008	2009-2010, 2012	2009-2013
	Lone Tree Creek @ Jack Tone Rd	2008	2009-2010, 2012	2009-2013
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2008	2009-2010, 2012	2009-2013
SECOND (2010-2012)	Grant Line Canal @ Clifton Court Rd	2009	2010	2010-2013
	Grant Line Canal near Calpack Rd	2009	2010	2010-2013
	Littlejohns Creek @ Jack Tone Rd	2009	2010, 2012	2010-2013
THIRD (2011-2013)	French Camp Slough @ Airport Way	2010	2011	2011-2013
	Mokelumne River @ Bruella Rd	2010	2011	2011-2013
	Terminus Tract Drain @ Hwy 12	2010	2011	2011-2013
FOURTH (2012-2014)	Kellogg Creek along Hoffman Ln	2011	2012	2012-2013
	Mormon Slough @ Jack Tone Rd	2011	2012	2012-2013
	Sand Creek @ Hwy 4 Bypass	2011	2012	2012-2013

¹Year 0 monitoring began in 2010 and is used to evaluate effectiveness of current management practices.

As part of its management plan process, the Coalition documents all management practices implemented by its members. Management practices are documented by having growers complete management practice surveys. Practices can be divided into two groups, runoff management and pesticide application management. Management practices specific to runoff management include:

installing retention ponds or holding basins, installing sprinkler or micro spray irrigation, reducing runoff water volume, implementing center grass rows, grass waterways or grass filter strips, and treating runoff water with PAM or other materials. Management practices specific to pesticide application management includes reducing the use of pesticide types found in exceedances (i.e. chlorpyrifos).

An evaluation of management practice effectiveness for the first, second, and third sets of priority site subwatersheds was submitted in the Evaluation of Management Practice Effectiveness section of the 2013 MPUR (Pages 82-92). The Coalition targeted 112 growers in the first priority site subwatersheds, 20 growers in the second priority site subwatersheds, and 29 growers in third priority for focused outreach. New management practices were implemented by 48%, 85%, and 97% of growers in the first, second, and third priority site subwatersheds, respectively (Table 25). In 2010 and 2012, additional focused outreach occurred to 25 growers within 1st priority sites as well as Littlejohns Creek @ Jack Tone Rd due to continued exceedances of the WQTL for chlorpyrifos. Eighty eight percent of growers targeted for additional outreach implemented management practices across 90% of the targeted acreage (2013 MPUR, Table 28).

Within the 4th priority site subwatersheds, 40 members with 2,307 acres were targeted for focused outreach within Kellogg Creek, Mormon Slough, and Sand Creek site subwatersheds (Table 25). Thirty-three members, 90% of targeted members, implemented new management practices. New practices were implemented on 93% or 2,005 targeted acres (Table 25). The most common practices implemented in fourth priority site subwatersheds included: 1) reducing the use of the pesticide types found in the exceedance (1,523 acres) and 2) reducing tailwater volumes using irrigation management (1,245 acres, Table 26). The popularity of these two management practices is consistent in first through third priorities. In total (within first through fourth priorities) members have reduced the use of pesticides such as chlorpyrifos across 20,902 acres and have reduced runoff water volumes using irrigation management on 18,461 acres (Table 26). The third most common implemented management practice is the installation of sprinkler or micro irrigation which was implemented on 765 acres within fourth priority site subwatersheds and 10,915 acres in total (first through fourth priorities).

Table 25. Percentage of new management practices for first through fourth priority site subwatersheds.

	FIRST PRIORITY (2008-2010)	SECOND PRIORITY (2010-2012)	THIRD PRIORITY (2011-2013)	FOURTH PRIORITY (2012-2014)				FIRST THROUGH FOURTH PRIORITY TOTAL ¹
				KELLOGG CREEK	MORMON SLOUGH	SAND CREEK	FOURTH PRIORITY TOTAL	
# of Targeted Members	112	20	29	10	29	1	40	201
# Members with New Practices	54	17	28	9	23	1	33	132
Percent of Contacted Members with New Practices	48%	85%	97%	90%	79%	100%	90%	65%
Acreage of Targeted Members	15,183	6,496	6,482	402	1789	116	2,307	30,468
Acreage with New Practices	8,282	6,256	6,463	387	1502	116	2,005	23,006
Percent of Targeted Acreage with New Practices	55%	96%	94%	96%	83%	100%	93%	76%

¹The acreages and counts of all members are counted only once in the 'total' column, even if they are represented in more than one site subwatershed or were contacted more than once.

Table 26. First through fourth priority site subwatershed acreage with newly implemented management practices.

Includes additional contacts in first and second priority site subwatersheds from 2010 and 2012. Targeted acreage based on acreage of members contacted.

	FIRST PRIORITY (2008-2010)	SECOND PRIORITY (2010-2012)	THIRD PRIORITY (2011-2013)	FOURTH PRIORITY (2012-2014)				FIRST THROUGH FOURTH PRIORITY SUM OF ACREAGE	PERCENT OF TARGETED ACREAGE
				KELLOGG CREEK	MORMON SLOUGH	SAND CREEK	FOURTH PRIORITY TOTAL		
TARGETED ACRES	15,967	7,067	6,482	402	1789	116	2,307	31,823	NA
MANAGEMENT PRACTICES									
Installation of retention pond / holding basin / return systems	704	87	205	0	0	0	0	996	3%
Installation of sprinkler or micro irrigation when an option	4,998	1,643	3,509	290	359	116	765	10,915	34%
Reduce runoff water volumes using irrigation management	4,376	6,948	5,892	356	773	116	1,245	18,461	58%
Reduce use of the pesticide types found in exceedance	8,398	6,521	4,460	152	1255	116	1,523	20,902	66%
Use of center grass rows, grass waterways, or grass filter strips	2,310	2,572	2,130	52	81	0	133	7,145	22%
Treat runoff waters with PAM or other materials	0	1,748	0	0	0	0	0	1,748	5%

During focused outreach, management practices are suggested to growers within targeted priority site subwatersheds through mailings and grower meetings. Between 2009 and 2013, the Coalition monitored for the effectiveness of newly implemented management practices. The Coalition initiated MPM for high priority management plan constituents during months of past exceedances at first priority site subwatersheds in 2009, at second priority sites in 2010, at third priority sites in 2011, and at fourth priority sites in 2012 (Table 21). The number of samples collected for these constituents varied from year to year due to changes in MPM schedules and the rotation of Assessment and Core Monitoring constituents (Table 27 and 28). Nonetheless, the percentage of exceedances as well as the percentage of toxic samples relative to the number of samples collected has declined since focused outreach was implemented in 2008. High priority management plan constituents monitored to determine the effectiveness of management practices include: chlorpyrifos, copper, diazinon, diuron, disulfoton, simazine, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. To evaluate trends within particular areas of water quality these constituents were grouped into categories. For this analysis, organophosphates include chlorpyrifos, diazinon, and disulfoton; herbicides include diuron and simazine; toxicity includes water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. Table 27 includes a summary of all exceedances, samples, and pounds of Active Ingredient (AI) applied for high priority constituents in the first through fourth priority site subwatersheds.

Figure 19 depicts reductions in the number of exceedances for all groups of high priority constituents including organophosphates, herbicides, copper, and toxicity. A disproportionate number of toxicities and exceedances of WQTLs occurred in 2008, prior to the beginning of focused outreach for first priority site subwatersheds. Between 2009 and 2013 there has been a decrease in the number of exceedances for organophosphates, herbicides, copper and toxicity indicating improved water quality (Figure 19). The largest reduction in the number of water quality impairments overall was observed in toxicity. In 2008, there were 38 toxicities to *C. dubia*, *S. capricornutum* and *H. azteca* compared to eight toxicities in 2013. In 2013, the samples were only toxic to *C. dubia* (2) and *H. azteca* (6); there were no *S. capricornutum* toxicities (Table 28).

The largest reductions in the number of exceedances of WQTLs occurred within organophosphates (Figure 19, Table 27). Overall, the number of organophosphate exceedances have declined steadily in each priority subwatershed since 2009; of the organophosphates reviewed (chlorpyrifos, diazinon, and disulfoton), there were 33 exceedances in 2008 compared to three exceedances in 2013 (Figures 19 and 20). According to PUR data, the number of pounds of organophosphates applied in the first through fourth priority site subwatersheds has declined. The PUR data indicate that no applications of disulfoton occurred in 2011 and 2013, and applications of chlorpyrifos and diazinon have declined by nearly a third since 2006 (Table 27). Chlorpyrifos is still the most widely applied organophosphate in first through fourth priority site subwatersheds; however, since 2009, exceedances of the WQTL have reduced over time, demonstrating that the outreach strategy and implemented management practices are successful in improving the water quality (Table 27).

Exceedances of WQTLs for herbicides occurred in 2007 (8) and in 2008 (5). Nearly half of these exceedances (6 out of 13) were in first priority site subwatersheds. Since 2008, no exceedances of herbicide WQTL have occurred. The pounds of simazine applied in the first, second, third and fourth priority subwatersheds from 2006 to 2013 has decreased by nearly half (Table 27). Applications of diuron decreased from 2006 through 2010; however there were increases in use in 2011 and 2013 (Table 27).

Exceedances of the WQTL for copper have also decreased over time with 2007 representing the year with the highest number of exceedances (22). In 2013 and 2009 there were no exceedances of the WQTL for copper. In 2006, the percentage of exceedances of the WQTL for copper relative to the number of samples collected was 26% for first through fourth priority site subwatersheds. Comparatively, in 2013 the percentage of copper WQTL exceedances was zero percent in first through fourth priorities (Table 28).

Due to improved water quality across the SJCDWQC region, many constituents within priority site subwatersheds were approved by the Regional Board for removal from management plans including diazinon which has been removed from all management plans in the Coalition region. Table 29 provides the status of management plan constituents within all high priority site subwatersheds where focused outreach has been initiated or is complete. To date, the Coalition has received approval for the removal of 39 constituents from management plans at eleven high priority site subwatersheds (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013).

Table 27. Exceedances, samples, and pounds AI applied for chlorpyrifos, diazinon, copper, diuron, disulfoton, and simazine in first through fourth priority site subwatersheds.

PUR data only complete through July 2013 for San Joaquin County; PUR data are complete through September 2013 for all other counties.

YEAR	CHLORPYRIFOS				DIAZINON				COPPER ¹				DIURON				SIMAZINE				DISULFOTON			
	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED
2006	13	74	18%	61,877	1	74	1%	5,522	9	35	26%	304,669	0	56	0%	18,640	0	45	0%	15,310	0	55	0%	401
2007	15	107	14%	46,730	4	96	4%	2,064	22	76	29%	259,213	6	97	6%	13,049	2	79	3%	13,128	1	95	1%	1,157
2008	27	102	26%	28,028	3	89	3%	2,384	11	101	11%	185,259	3	90	3%	4,437	2	86	2%	5,541	3	82	4%	153
2009	8	27	30%	48,295	0	15	0%	1,418	0	11	0%	213,989	0	4	0%	7,837	0	4	0%	10,308	0	22	0%	539
2010	12	57	21%	45,652	0	43	0%	4,215	2	37	5%	236,426	0	16	0%	4,026	0	14	0%	4,876	0	12	0%	153
2011	8	67	12%	21,497	0	34	0%	1,591	2	44	5%	210,577	0	28	0%	12,892	0	26	0%	6,851	0	27	0%	0
2012	1	54	2%	27,357	0	19	0%	597	1	33	3%	193,063	1	18	0%	5,081	0	14	0%	3,621	0	15	0%	330
2013	3	52	6%	24,108	0	16	0%	1,821	0	28	0%	209,472	0	16	0%	15,042	0	12	0%	7,003	0	15	0%	0
TOTAL	87	540	16%	303,544	8	386	2%	19,621	47	365	13%	1,812,668	10	325	3%	81,004	4	280	1%	66,638	4	323	1%	2,733

¹Since October 2008, the Coalition analyzes for both the total and dissolved fraction of copper. For counting exceedances and samples scheduled for copper analysis, this table ignores fraction (e.g. if site A is scheduled for copper total and copper dissolved analysis in Event 1, the table counts only one sample for copper). There has never been an exceedance of both the total and dissolved WQTLs for copper at any one site.

²Refers to all samples scheduled for constituent analysis (dry sites are included).

Table 28. Toxicity count and samples collected for toxicity analysis in the first through fourth priority site subwatersheds.

Year	<i>C. DUBIA</i> TOXICITY			<i>S. CAPRICORNUTUM</i> TOXICITY			<i>H. AZTECA</i> TOXICITY		
	TOXICITIES	SAMPLES ¹	% TOXIC	TOXICITIES	SAMPLES ¹	% TOXIC	TOXICITIES	SAMPLES ¹	% TOXIC
2008	7	93	8%	25	95	26%	6	25	24%
2009	2	7	29%	0	8	0%	0	0	NA
2010	0	18	0%	1	31	3%	6	10	60%
2011	1	24	4%	1	43	2%	8	12	67%
2012	1	31	3%	1	50	2%	6	17	35%
2013	0	22	0%	2	28	7%	6	20	30%
TOTAL	11	195	6%	30	255	12%	32	84	38%

¹Refers to all samples scheduled for constituent analysis (dry sites are included). Resampling events are not scheduled monitoring events and are not included.

Figure 19. Number of exceedances of high priority constituents and toxic samples from 2006 through 2013 in first, second, third, and fourth priority site subwatersheds.

Organophosphates include results of chlorpyrifos, diazinon, and disulfoton. Herbicides include results of simazine and diuron. Toxicity includes results of water column toxicity to *S. capricornutum*, *C. dubia* and sediment toxicity to *H. Azteca*.

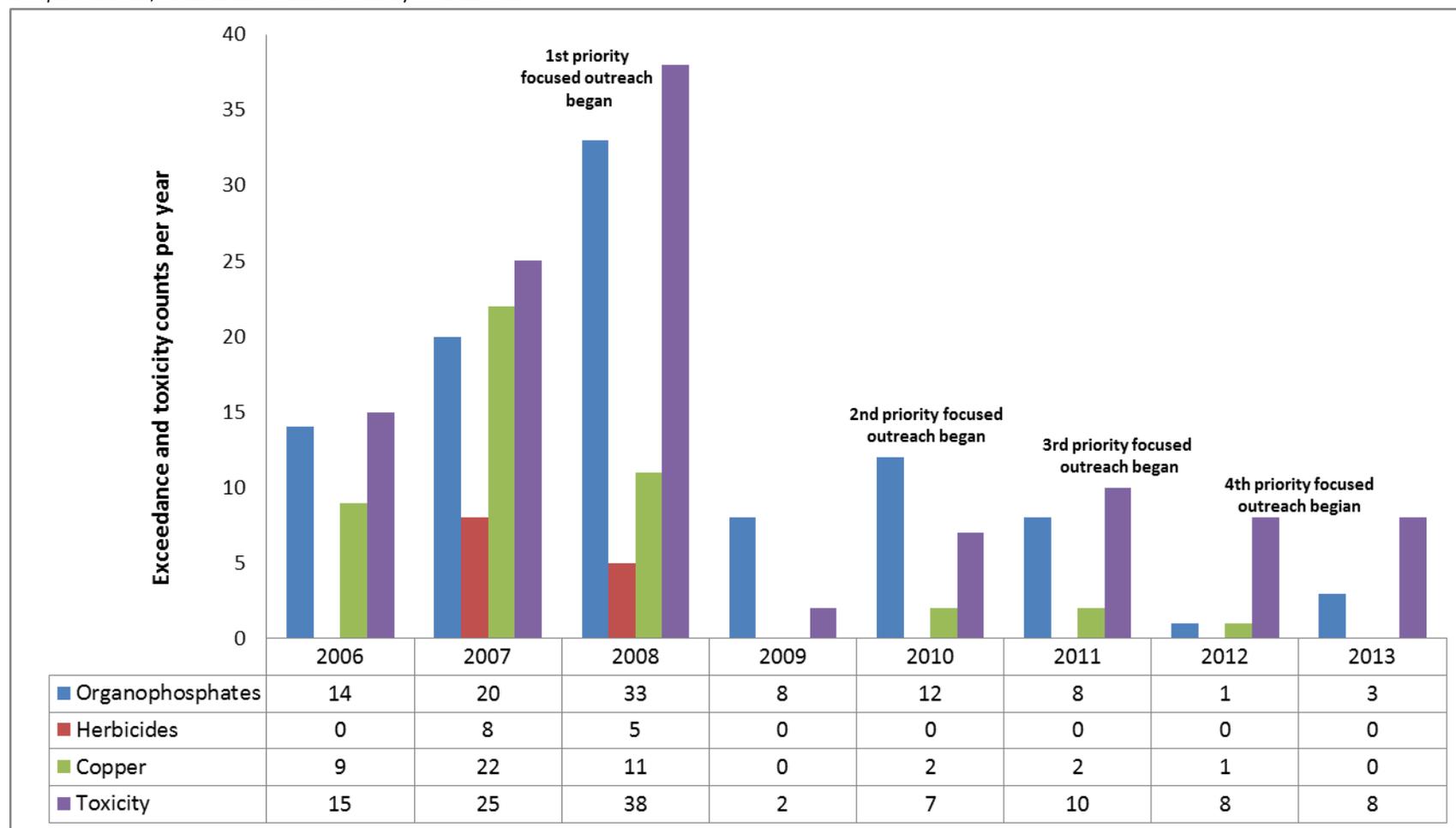


Figure 20. Percentage of organophosphate exceedances relative to the number of samples collected by priority since focused outreach began in first, second, third, and fourth priority site subwatersheds.

Organophosphates include chlorpyrifos, diazinon, and disulfoton. These constituents represent high priority constituents under a management plan at one or more site subwatersheds. 'NA' indicates that samples were not collected for these constituents during that year.

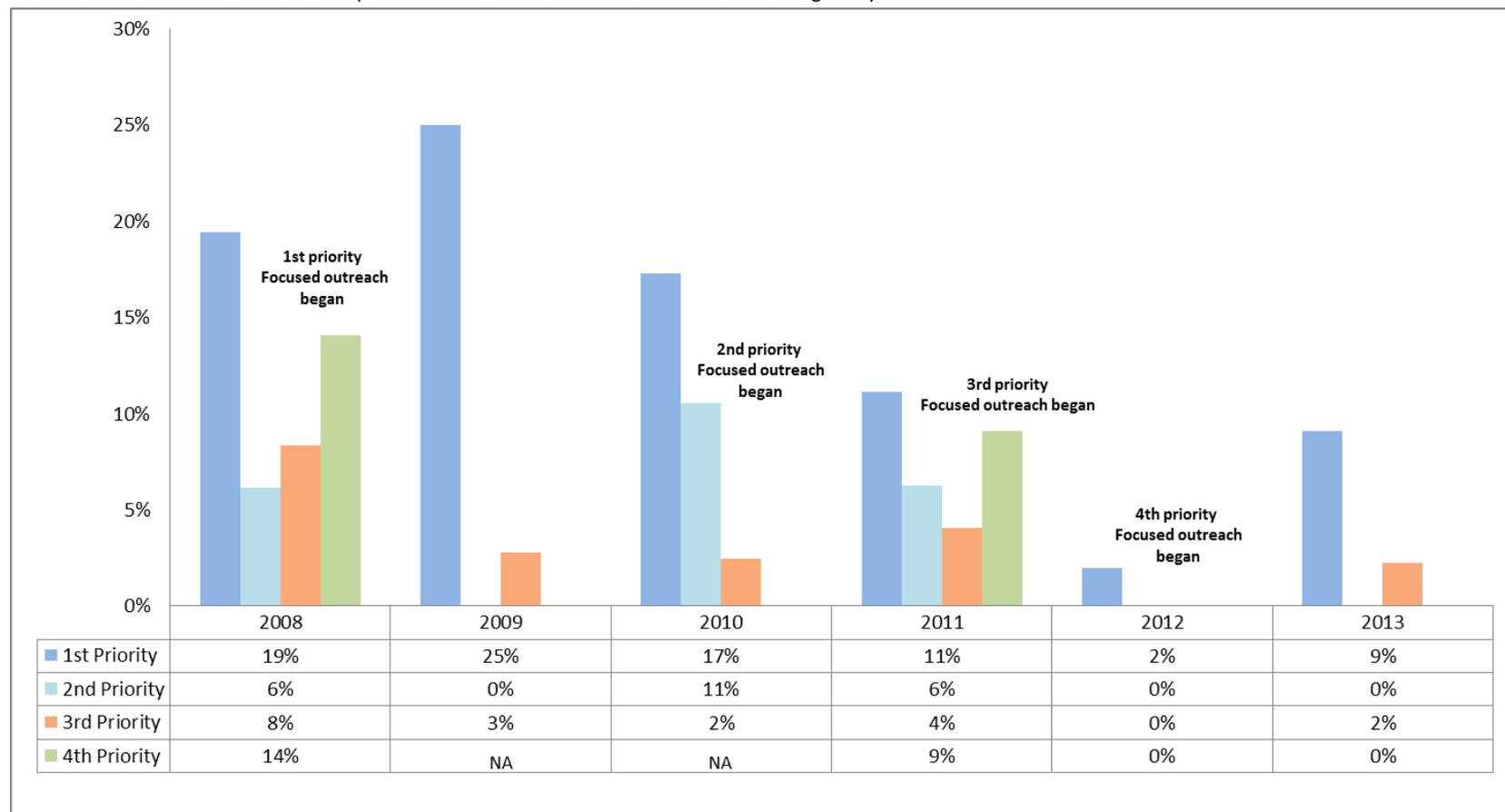


Table 29. Status of management plan constituents in all high priority site subwatersheds where focused outreach has been initiated.

PRIORITY SET	SITE SUBWATERSHED	MOST RECENT ASSESSMENT MONITORING	FUTURE ASSESSMENT MONITORING	DO*	pH*	SC*	ARSENIC	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	AMMONIA	E. COLI	NITRATE/NITRITE	TDS	CHLORPYRIFOS	DDE	DDT	DIAZINON	DIELDRIN	DIURON	DISULFOTON	HCH, DELTA	MALATHION	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY
				First	Duck Creek @ Hwy 4	2012	2035	X							X			X									
	Lone Tree Creek @ Jack Tone Rd	2008†	2026		X					X	X		X	X												X	
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	2008†	2030	X		X		X	X	X			X	X					X						X		
Second	Grant Line Canal @ Clifton Court Rd	2008†	after 2035	X		X	X				X		X	X	X										X	X	X
	Grant Line Canal near Calpack Rd	2008†	after 2035	X		X	X				X		X											X	X		X
	Littlejohns Creek @ Jack Tone Rd	2008†	2021	X	X			X			X			X													
Third	French Camp Slough @ Airport Way	2011	2014	X	X						X			X											X		
	Mokelumne River @ Bruella Rd	2011	2014		X						X																
	Terminus Tract Drain @ Hwy 12	2010	2013	X		X	X				X		X	X											X		
Fourth	Kellogg Creek along Hoffman Ln	2008†	after 2035		X	X					X		X		X	X									X	X	X
	Mormon Slough @ Jack Tone Rd	2008†	2017	X	X									X										X			X
	Sand Creek @ Hwy 4 Bypass	2008†	NA	X		X					X		X		X	X		X		X					X		X
Fifth	Bear Creek @ North Alpine Rd	2011	after 2035	X	X						X			X								X					
	Roberts Island @ Whiskey Slough Pump	2014	2017	X	X	X					X		X	X	X				X					X	X		X
	Walthall Slough @ Woodward Ave	2010	2013	X		X					X	X	X	X							X				X		
Sixth	Drain @ Woodbridge Rd	2010	after 2035	X		X	X				X		X	X													
Total Management Plan Constituents Removed (Grey Cells)				3	2	1	0	5	2	0	0	0	0	3	0	0	5	1	2	0	0	0	1	5	1	1	7
Total Management Plan Constituents Remaining Active (X)				13	7	9	4	2	1	1	15	1	10	12	4	2	0	1	2	1	1	1	0	3	10	1	6

*Field parameters will continue to be monitored during Assessment, Core and Management Plan Monitoring events.

†Site was monitored for Assessment Monitoring constituents under the 2006 MRPP where monitoring was not defined as Core or Assessment Monitoring.

"X" the constituent is still in an active management plan.

Grey shaded cells indicate the constituent has been approved for removal from the site subwatershed management plan.

NA-No Assessment Monitoring will occur in Zone 6 due to large urban influence

Chlorpyrifos

Chlorpyrifos has been removed from the management plans for one site subwatershed within the second priority set of site subwatersheds (Grant Line Canal near Calpack Rd) and two site subwatersheds within the fourth priority set of site subwatersheds (Kellogg Creek along Hoffman Ln and Sand Creek @ Hwy 4 Bypass) based on the approval received February 27, 2013.

Management plans for chlorpyrifos have been implemented within first, second, third, and fourth priority site subwatersheds, with the exception of Mokelumne River @ Bruella Rd subwatershed which has not had any exceedances of the chlorpyrifos WQTL. Since 2006, 16% of the samples collected at first, second, third and fourth priority subwatersheds have been in exceedance of the WQTL for chlorpyrifos (87 of 540 samples, Table 27). Of those samples with exceedances, 63% of them were collected between 2006 and 2008 prior to the start of focused outreach; 2008 had the most exceedances of the chlorpyrifos WQTL (27 exceedances, Table 27). By the start of 2013, the first through fourth priority sites received focused outreach with additional focused outreach occurring within four priority subwatersheds in 2010 and 2012 due to continued exceedances of the chlorpyrifos WQTL. During outreach with growers, the Coalition discussed the importance of irrigation management to reduce runoff into downstream surface waters and encouraged growers to implement additional practices to reduce spray drift.

The majority of targeted growers in the first through fourth priority site subwatersheds implemented management practices to prevent chlorpyrifos from entering the waterway; the most common practice was reducing the use of products containing chlorpyrifos. From 2006 to 2013, there was a 61% reduction in use of chlorpyrifos (61,877 pounds in 2006 compared to 24,108 pounds applied in 2013; Table 27). There were 55 exceedances of the WQTL for chlorpyrifos that occurred before the start of focused outreach while only four exceedances of the WQTL for chlorpyrifos occurred between 2012 and 2013 (6%, Table 27).

Despite completed focused outreach in all third priority site subwatersheds, one exceedance of the WQTL for chlorpyrifos occurred in 2013 during July MPM at French Camp Slough @ Airport Way (0.042 µg/L). Applications of chlorpyrifos on walnuts are common during the irrigation season to control codling moth. July is an irrigation month and flow levels in these waterways tend to increase during the irrigation season compared to non-irrigation months throughout the year. Discharge recorded during the July monitoring event was 35.68 cfs at French Camp Slough @ Airport Way. The PUR data associated with the July exceedance indicate there were 22 applications of chlorpyrifos ranging from 9.40 to 344 lbs AI (1755 total lbs AI) across 996 acres of almonds and walnuts from June 22, 2013 through July 13, 2013 (2014 AMR, Appendix IV). Of the 10 applications associated with the exceedance at French Camp Slough @ Airport Way, nine applications were on parcels not previously contacted due to not meeting one or more of the targeted grower criteria for determining high priority focused outreach and education: 1) member of the Coalition, 2) parcels directly drain to the creek, 3) PUR data indicate past applications of constituents of concern, and 4) applications of constituent were associated with past exceedances.

Two exceedances of the WQTL for chlorpyrifos occurred during MPM on July 16, 2013; one at Lone Tree Creek @ Jack Tone Rd (0.026 µg/L) and one at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (0.041 µg/L). All parcels with applications associated with the exceedance in the Lone Tree Creek @ Jack Tone Rd site subwatershed were parcels not previously targeted for focused outreach due to not meeting one or more of the targeted grower criteria as listed above. The Coalition determined previous outreach was effective; however, applications by new members are occurring and further outreach may be necessary. In addition, applications of chlorpyrifos may be occurring from non-members. Applications associated with the July exceedance at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd occurred on almonds and walnuts. Approximately 60% of the parcels with application were not associated with a members contacted during high priority focused outreach or additional outreach. Further discussion of potential sources of the exceedances is included in the High Priority Site Subwatershed Appendix (Appendix I).

Diazinon

Diazinon has been removed from all SJCDWQC site subwatershed management plans: French Camp Slough @ Airport Way, Sand Creek @ Hwy 4 Bypass, Duck Creek @ Hwy 4, Lone Tree Creek @ Jack Tone Rd, Littlejohns Creek @ Jack Tone Rd (May 21, 2012 and February 27, 2013). The highest number of exceedances of the WQTL for diazinon (3) occurred in first priority site subwatersheds in 2008. From 2009 to 2013, 127 samples have been collected to test for the presence of diazinon in the first through fourth priority site subwatersheds; no exceedances of the WQTL for diazinon occurred in samples collected in any of the site subwatersheds (Table 27). Although diazinon use decreased by nearly half from 2006 to 2009, diazinon use has been relatively consistent since 2009 (Table 27). Results from MPM indicate that diazinon is not entering the waterways in first through fourth priority site subwatersheds. The Coalition believes that management practices implemented as a result of focused outreach contributed to water quality improvements. While diazinon is still monitored during TMDL and Assessment Monitoring, it is no longer in an active management plan for any site subwatershed.

Copper

Copper remains in an active management plan for the Littlejohns Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatersheds. The Coalition received approval to remove copper from the Grant Line Canal @ Clifton Court Rd, Mokelumne River @ Bruella Rd, Lone Tree Creek @ Jack Tone Rd, French Camp Slough @ Airport Way, and Kellogg Creek along Hoffman Ln management plans (April 17, 2012, May 21, 2012, and February 27, 2013). There have been 47 exceedances of the hardness based WQTL for copper at first, second, third, and fourth priority sites since 2006. Since focused outreach was initiated in 2008, there have only been five exceedances: two in 2010, two in 2011, and one in 2012 (Table 27). In 2013, no exceedances of the hardness based WQTL for copper occurred across the entire coalition region (2014 AMR, Table 37). The recent improvements in water quality concerning copper are most likely due to growers implementing management practices that prevent copper applications from entering the waterway via runoff or spray drift.

Disulfoton

From 2006 through 2013, 1% of samples collected exceeded the WQTL for disulfoton. In two of the eight years, there has been no use of disulfoton within the Coalition region; the highest use occurred in 2007 with 1,157 pounds applied (Table 27). Two of the four exceedances of the WQTL for disulfoton occurred in the Sand Creek @ Hwy 4 Bypass site subwatershed (priority four). Sand Creek @ Hwy 4 Bypass is the only site subwatershed requiring a disulfoton management plan which was the result of exceedances occurring in June and August of 2008. From 2011 through 2013, MPM for disulfoton occurred within the Sand Creek @ Hwy 4 Bypass site subwatershed and no exceedances of the WQTL occurred.

Diuron

Diuron has been removed from two out of three SJCDWQC site subwatershed management plans: Lone Tree Creek @ Jack Tone Rd and French Camp Slough @ Airport Way (May 21, 2012 and February 27, 2013). Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is the only remaining site subwatershed with diuron in an active management plan. There have been a total of ten exceedances of the WQTL for diuron representing 3% of the samples collected (Table 27). A majority of the exceedances occurred during January or February (9 of 10 samples).

Simazine

Simazine has been removed from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed management plan (May 21, 2012); there are no active management plans for simazine within the Coalition region. Since 2006, only 1% of the samples collected exceeded the WQTL for simazine (4 out of 280 samples, Table 27). The four exceedances occurred in 2007 and 2008 and since then there have been no samples collected with simazine concentrations greater than the WQTL. The Coalition believes that management practices implemented as a result of focused outreach have contributed to the improved water quality results in addition to the decreasing use of products containing simazine and/or diuron.

C. dubia toxicity

On May 21, 2012 the Coalition received approval to remove toxicity to *C. dubia* from the Lone Tree Creek @ Jack Tone Rd, French Camp Slough @ Airport Way, Mokelumne River @ Bruella Rd, Kellogg Creek along Hoffman Rd, and Sand Creek @ Hwy 4 Bypass management plans (May 21, 2012 and February 27, 2013). In 2013, there were 22 samples collected within first through fourth priority site subwatersheds to test for toxicity to *C. dubia*; none of these samples were toxic.

Toxicity to *C. dubia* is listed in active management plans for Duck Creek @ Hwy 4, Grant Line Canal near Calpack Rd, and Mormon Slough @ Jack Tone Rd site subwatersheds. Across the SJCDWQC region, water toxicity to *C. dubia* is often associated with organophosphates. Therefore, the Coalition's strategy has been to focus on chlorpyrifos and diazinon water quality impairments to address the toxicity. The Coalition believes its strategy of focusing on chlorpyrifos and diazinon is effective in reducing toxicity to *C. dubia*. The Coalition emphasizes during general and focused outreach that all pesticides carry risks to water quality and preventing the offsite movement of all pesticides through storm water, irrigation

tailwater, and sediment management is the most effective method to reduce/eliminate agriculturally induced water quality impairments. Since 2010, there have been two toxicities to *C. dubia* in the high priority site subwatersheds (Table 28). In 2011 one sample collected from Duck Creek @ Hwy 4 was toxic to *C. dubia* which coincided with an exceedance of the WQTL for chlorpyrifos. However, the Toxicity Identification Evaluation (TIE) was inconclusive since the sample lost all detectable toxicity prior to the TIE. During MPM in August 2012, a sample from Grant Line Canal near Calpack Rd was toxic to *C. dubia* for the first time since focused outreach began at second priority sites in 2010. A TIE was not initiated on the 2012 sample because survival was 60% compared to the control. Despite chlorpyrifos applications being previously associated with *C. dubia* toxicity, the Coalition determined that chlorpyrifos was not the cause of the toxicity that occurred in August 2012; the PUR data indicate that no chlorpyrifos was applied in the Grant Line near Calpack Rd subwatershed in 2012. In addition, chlorpyrifos has been removed from the Grant Line Canal near Calpack Rd management plan due to at least two years with no exceedances of the WQTL; the last exceedance occurred in May 2006. The Coalition reviewed the PUR data and found that disulfoton was applied on the same day Grant Line near Calpack Rd was sampled in August 2012 and that malathion, dimethoate, chlorantraniliprole, methomyl, thiophanate-methyl, and methoxyfenozide were also applied to watermelons and/or asparagus during the month of August 2012 and could have contributed to the reduction of survival of *C. dubia*. Toxicity to *C. dubia* has not occurred at any SJCD sites since the 2012 toxicity at Grant Line near Calpack Rd.

***S. capricornutum* toxicity**

Toxicity to *S. capricornutum* is listed in active management plans for Grant Line Canal @ Clifton Ct, Grant Line Canal near Calpack Rd, Kellogg Creek along Hoffman Ln, Mormon Slough @ Jack Tone Rd, Roberts Island @ Whiskey Slough Pump, and Sand Creek @ Hwy 4 Bypass. The Coalition received approval to remove toxicity to *S. capricornutum* from the management plans at all first, second, and third priority sites except Grant Line Canal @ Clifton Court Rd and Grant Line Canal near Calpack. Toxicity to *S. capricornutum* has not occurred at any first or third priority sites since focused outreach began in 2009 (Table 28). There have been four toxicities to *S. capricornutum* at second priority sites since outreach began: two at Grant Line Canal @ Clifton Court Rd during MPM in May 2010 and May 2012 and two at Grant Line near Calpack Rd, both during MPM in January 2011 and 2013. No toxicities to *S. capricornutum* have occurred at any third priority site subwatersheds since focused outreach began in 2011; the last toxicity occurred in 2008. In 2013, MPM occurred at six sites. One of 16 samples was toxic to *S. capricornutum* at Grant Line Canal near Calpack Rd in January. A TIE conducted on the toxic sample from Grant Line near Calpack Rd concluded that organics and cationic metals were the cause of the toxicity. No TIE was conducted on the toxic sample collected at Kellogg Creek along Hoffman Ln because toxicity was above 50% compared to the control.

***H. azteca* toxicity**

Management plans have been implemented for sediment toxicity to *H. azteca* for all first, second, third, and fourth priority site subwatersheds except for three: Littlejohns Creek @ Jack Tone Rd (second priority), Mokelumne River @ Bruella Rd (third priority), and Mormon Slough @ Jack Tone Rd (fourth priority). The Coalition received approval to remove sediment toxicity from the Lone Tree Creek @ Jack

Tone Rd active management plan on May 21, 2012; toxicity to *H. azteca* has not occurred at the site since 2006.

There have been 26 sediment samples toxic to *H. azteca* since the initiation of focused outreach in 2009; toxicity to *H. azteca* has occurred three times at Duck Creek @ Hwy 4, five times at Unnamed Drain to Lone Tree Creek @ Jack Tone Road, five times at Grant Line Canal @ Clifton Court Rd, three times at Grant Line Canal near Calpack Rd, twice at French Camp Slough @ Airport Way, twice at Terminous Tract Drain @ Hwy 12, twice at Kellogg Creek along Hoffman Ln, and four times at Sand Creek @ Hwy 4 Bypass. In 2013, the samples collected during sediment monitoring in March at Duck Creek @ Hwy 4, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, Grant Line Canal @ Clifton Court Rd, Grant Line Canal near Calpack Rd, Terminous Tract Drain @ Hwy 12, and Sand Creek @ Hwy 4 Bypass were toxic to *H. azteca*; however, three of the toxic samples collected had above 90% survival compared to the control, and therefore the difference between the survival of the samples and control was not considered ecologically relevant. In fact, if these samples were used as the control for toxicity testing, both samples would have passed the test acceptability criteria.

The Coalition included discussions of sediment-bound constituents (e.g. pyrethroids) and management practices to address sediment toxicity during its focused outreach with growers in the first, second, third, and fourth priority site subwatersheds.

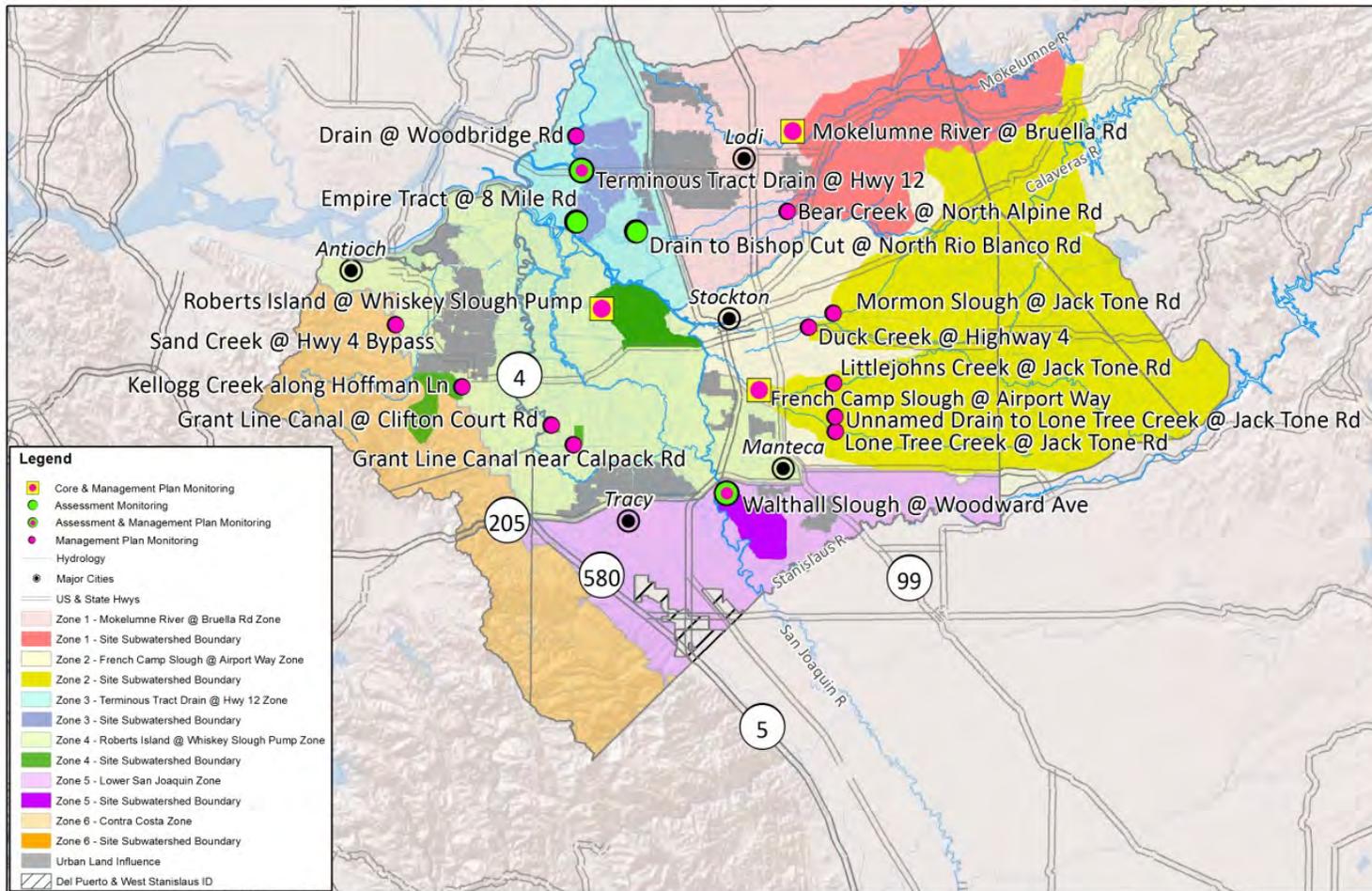
The Coalition will continue to discuss the risks associated with offsite movement of storm water, irrigation tailwater, and sediment regardless of the pesticides or herbicides applied. Growers are also encouraged to take further steps to eliminate all discharges that lead to sediment toxicity.

COALITION WIDE EVALUATION

During 2013, the Coalition conducted monitoring at 18 sites within the SJCDWQC region. Core Monitoring occurred at Core sites for Zones 1-5, Assessment Monitoring occurred at Drain to Bishop Cut @ North Rio Blanco Rd (January through March), Empire Tract @ 8 Mile Rd (July through December), and Terminus Tract Drain @ Hwy 12 (January through December). Management Plan Monitoring occurred at 16 of the 18 sites (Table 1, Figure 21). The Coalition also monitored at three new sites for chlorpyrifos and diazinon TMDL compliance monitoring (Figure 22).

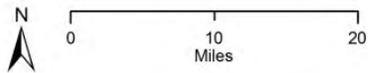
Coalition wide management practices were documented in 2007 for practices growers were implementing in 2006. Focused outreach at the first set of high priority site subwatersheds began in 2008; however the first meetings were held in 2009). Since then, focused outreach has occurred at 16 of the 18 site subwatersheds monitored in 2013 (Table 7). Growers in the Drain @ Woodbridge site subwatershed are scheduled for focused outreach in 2014, and Drain to Bishop Cut @ North Rio Blanco Rd and Empire Tract @ 8 Mile Rd is scheduled for focused outreach in 2015. The priority years for management plan site subwatersheds is not based on where they are located (e.g. zones) but rather on number and magnitude of exceedances. Growers across all zones recognize the effect of management practices on water quality and are implementing new management practices as a result of, and in some cases prior to, focused outreach. As a result, water quality across the entire SJCDWQC region has improved. Table 30 demonstrates an overall significant decrease in the number of exceedances of the WQTLs for chlorpyrifos, diazinon, and copper across the SJCDWQC region.

Figure 21. SJCDWQC January through December 2013 sample locations and zone boundaries.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

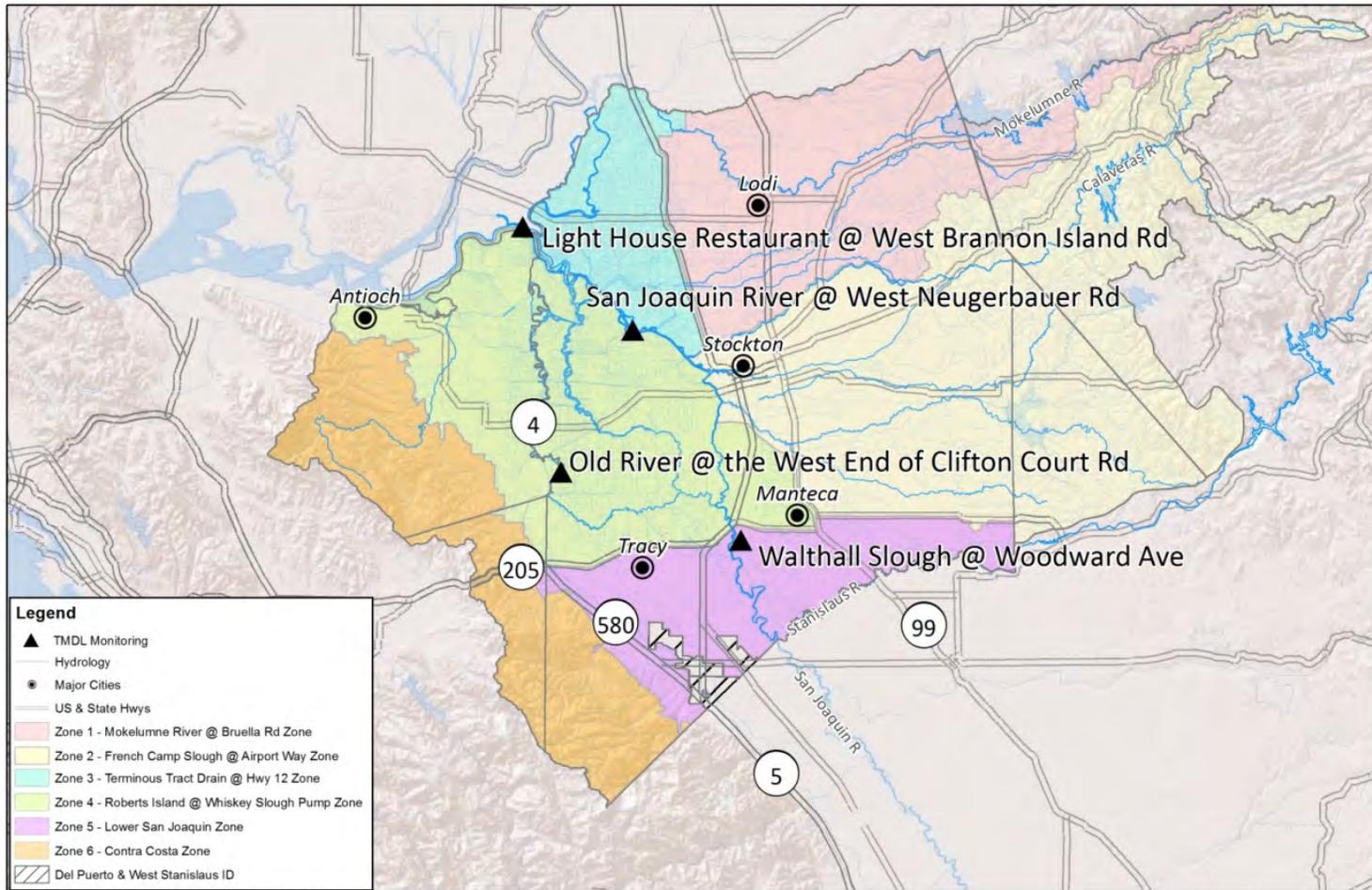
Date Prepared: 09/04/13
 SJCDWQC



SJCDWQC January - December 2013 Monitoring Sites Zone Boundaries & Urban Land Influence

SJCDWQC_2013_anr

Figure 22. SJCDWQC January through December 2013 Chlorpyrifos and Diazinon TMDL compliance locations.

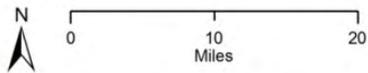


Legend

- ▲ TMDL Monitoring
- Hydrology
- Major Cities
- US & State Hwys
- Zone 1 - Mokelumne River @ Bruella Rd Zone
- Zone 2 - French Camp Slough @ Airport Way Zone
- Zone 3 - Terminus Tract Drain @ Hwy 12 Zone
- Zone 4 - Roberts Island @ Whiskey Slough Pump Zone
- Zone 5 - Lower San Joaquin Zone
- Zone 6 - Contra Costa Zone
- Del Puerto & West Stanislaus ID

Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
 Basemap, Shaded Relief - ESRI
 Datum - NAD 1983

Date Prepared: 09/04/13
 SJCDWQC



SJCDWQC January - December 2013 Chlorpyrifos and Diazinon TMDL Compliance Monitoring Sites

SJCDWQC_2013_ann

Monitoring results from recent years indicate that water quality has improved in most SJCDWQC high priority management plan site subwatersheds. Monitoring results in eleven site subwatersheds demonstrated two or more consecutive years without exceedances for several management plan constituents. The Coalition submitted letters to the Regional Board on January 6, 2012 and November 13, 2012 petitioning for the removal of constituents from the management plans of these high priority site subwatersheds. To date, the Coalition has received approval for the removal of 39 constituents from eleven high priority site subwatersheds (approved on March 22, April 17, May 21, 2012, and February 27, 2013).

The percentage of chlorpyrifos, diazinon, and copper WQTL exceedances by zone and year were evaluated for trends in water quality across the entire SJCDWQC region (Figures 23-25). The Coalition focuses on these three constituents because they are widely used, high priority, and the most common pesticides requiring management plans. The SJCDWQC developed site subwatershed management plans and implemented focused outreach for chlorpyrifos (14), diazinon (5) and copper (7). As a result of improved water quality, the Coalition eliminated three chlorpyrifos, five diazinon and five copper site subwatershed management plans. Not all zones were monitored for chlorpyrifos, diazinon, or copper during every year; the zones with years of no monitoring are noted in Figures 23-25. The number of samples collected changes from year to year as a result of rotating Assessment Monitoring and MPM schedules. Years with only MPM may result in a higher percentage of exceedances due to 1) monitoring in areas with known water quality impairments and 2) fewer samples being collected based on monitoring during only months of past exceedances.

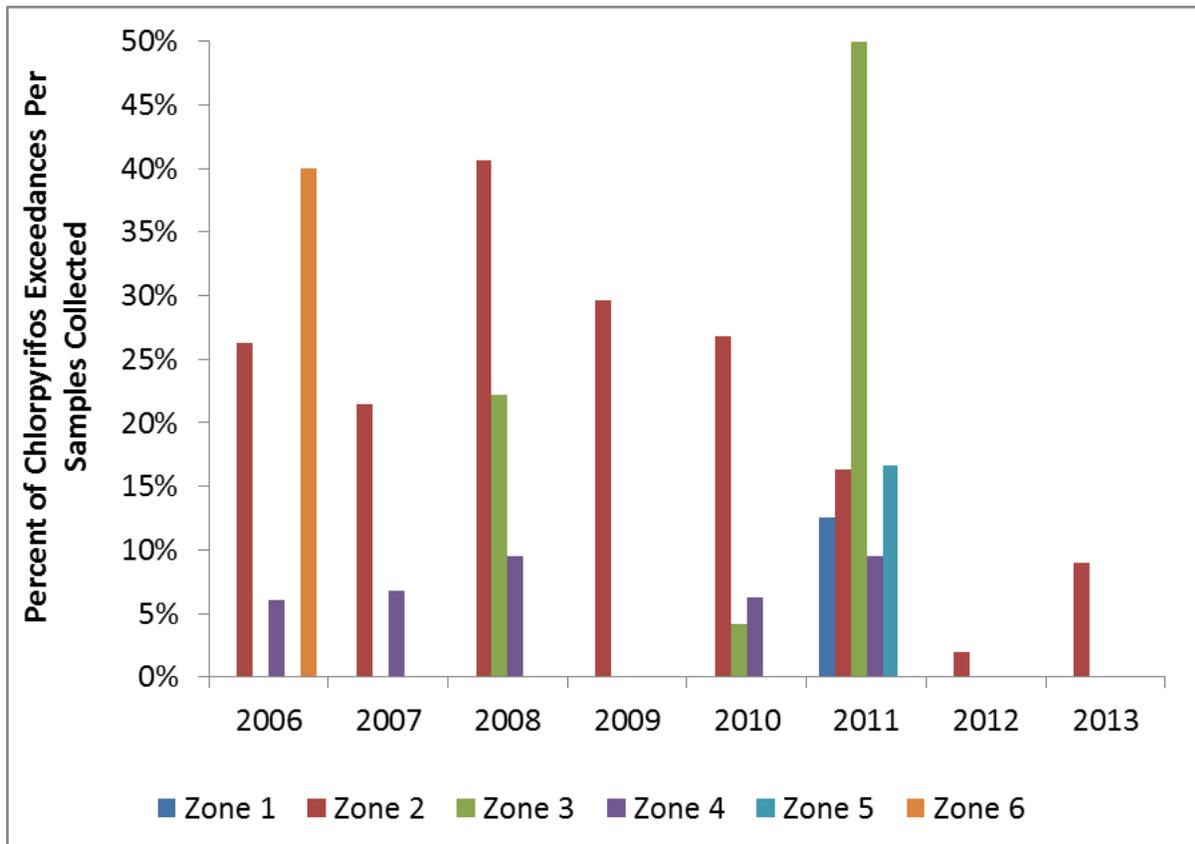
Chlorpyrifos

On February 27, 2013 the Coalition received approval from the Regional Board to remove chlorpyrifos from Grant Line Canal near Calpack Rd, Kellogg Creek along Hoffman Ln, and Sand Creek @ Hwy 4 Bypass management plans. The frequency of exceedances that occurred in 2013 is an improvement from the number of chlorpyrifos exceedances that occurred in 2011 (15 out of 104 samples, Table 30). During 2013, there were three exceedance of the WQTL for chlorpyrifos out of 102 samples collected throughout the year (Table 30). The three exceedances occurred during July MPM at two of the first priority site subwatersheds (Lone Tree Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd) and one third priority site subwatershed (French Camp Slough @ Airport Way). Lone Tree Creek and Unnamed Drain (Temple Creek) both drain into French Camp Slough and applications in all three subwatersheds could have contributed to the exceedance at French Camp Slough. Of the parcels with chlorpyrifos applications within the French Camp Slough @ Airport Way site subwatershed, nine out of 10 were not associated with members previously contacted for education and outreach. All parcels associated with chlorpyrifos applications within the Lone Tree Creek @ Jack Tone Rd and 60% of the parcels in the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed were not previously targeted for education and outreach. Initial contacts in the first priority subwatersheds were complete in 2009; the Coalition contacted growers in the Lone Tree Creek @ Jack Tone Rd (43; 3,742 acres) and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (34; 6,463 acres) site subwatersheds (2013 MPUR). Initial contacts were complete in the third priority subwatersheds in 2011; the Coalition contacted 13 members representing 3,767 acres in the French Camp Slough @ Airport Way site

subwatershed (2013 MPUR). Due to continued exceedances of the WQTL for chlorpyrifos within the first priority site subwatersheds, the Coalition conducted additional individual meetings with growers in the Lone Tree Creek @ Jack Tone Rd (two previously contacted; 264 acres) and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (one previously contacted and one not previously contacted; 1,238 acres total) site subwatersheds during 2012; results were reported in the 2013 MPUR. Coalition representatives discussed the importance of management practices such as reducing the use of chlorpyrifos or using alternatives to chlorpyrifos. Results from these contacts have been added into the overall assessment of new management practices implemented within first priority site subwatersheds. Therefore, the Coalition determined that previous outreach was effective; however, applications by new members are occurring and further outreach may be necessary. During 2014, MPM for chlorpyrifos will continue at all three monitoring locations during months of past exceedances.

Figure 23. SJCDWQC 2006-2013 percentage of exceedances of the WQTL for chlorpyrifos in Zones 1-6.

Zone 5 was not sampled for chlorpyrifos from 2006-2008; Zone 6 from 2009-2010. Assessment and MPM results included.

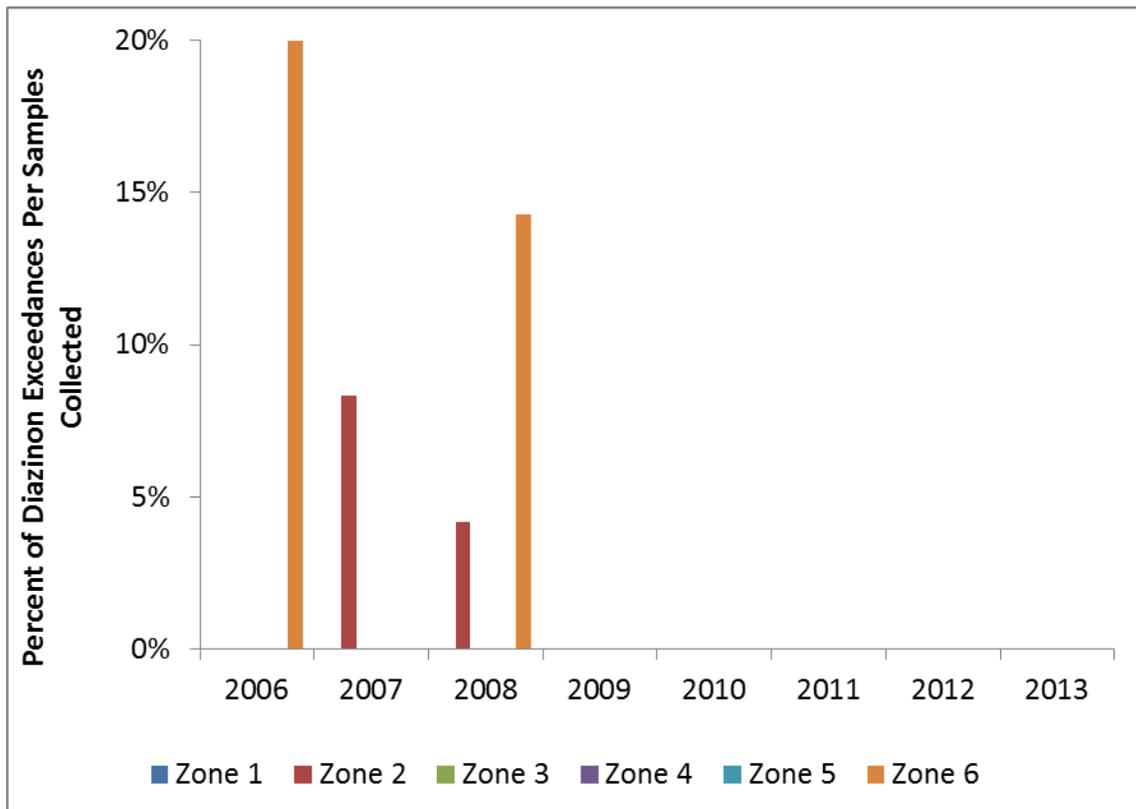


Diazinon

Only eight exceedances of the WQTL for diazinon occurred within the SJCDWQC region from 2006 through 2013; none since early 2008 (Table 30). Six of the eight exceedances occurred in Zone 2 site subwatersheds; the other two occurred at Sand Creek @ Hwy 4 Bypass in Zone 6 (Figure 24). All five sites that have required a management plan for diazinon also have a management plan for chlorpyrifos. The PUR data indicate that throughout the Coalition region, the pounds of diazinon applied yearly is much less than chlorpyrifos and use has declined in recent years (Table 30). In addition, focused outreach occurred at all of these areas and the growers implemented management practices to reduce the amount of chlorpyrifos and diazinon discharged into the waterway. The Coalition was approved to remove diazinon from the management plan of two site subwatersheds in Zone 2 (Duck Creek @ Hwy 4 on March 22, 2012 and Lone Tree Creek @ Jack Tone Rd on May 21, 2012). The Coalition petitioned the Regional Board to remove diazinon from the management plans of the three remaining site subwatersheds on November 13, 2012 (French Camp Slough @ Airport Way, Littlejohns Creek @ Jack Tone Rd, and Sand Creek @ Hwy 4 Bypass). The Coalition received approval on February 27, 2013 and diazinon is no longer a high priority constituent in the SJCDWQC region (Table 29). Sites in the SJCDWQC will be monitored for diazinon as part of TMDL compliance and Assessment Monitoring events.

Figure 24. SJCDWQC 2006-2013 percentage of exceedances of the WQTL for diazinon in Zones 1-6.

Zone 1 was not sampled for diazinon in 2010, 2012 or 2013; Zone 3 in 2011-2012; Zone 5 from 2006-2008; Zone 6 from 2009-2010. Assessment and MPM results included.

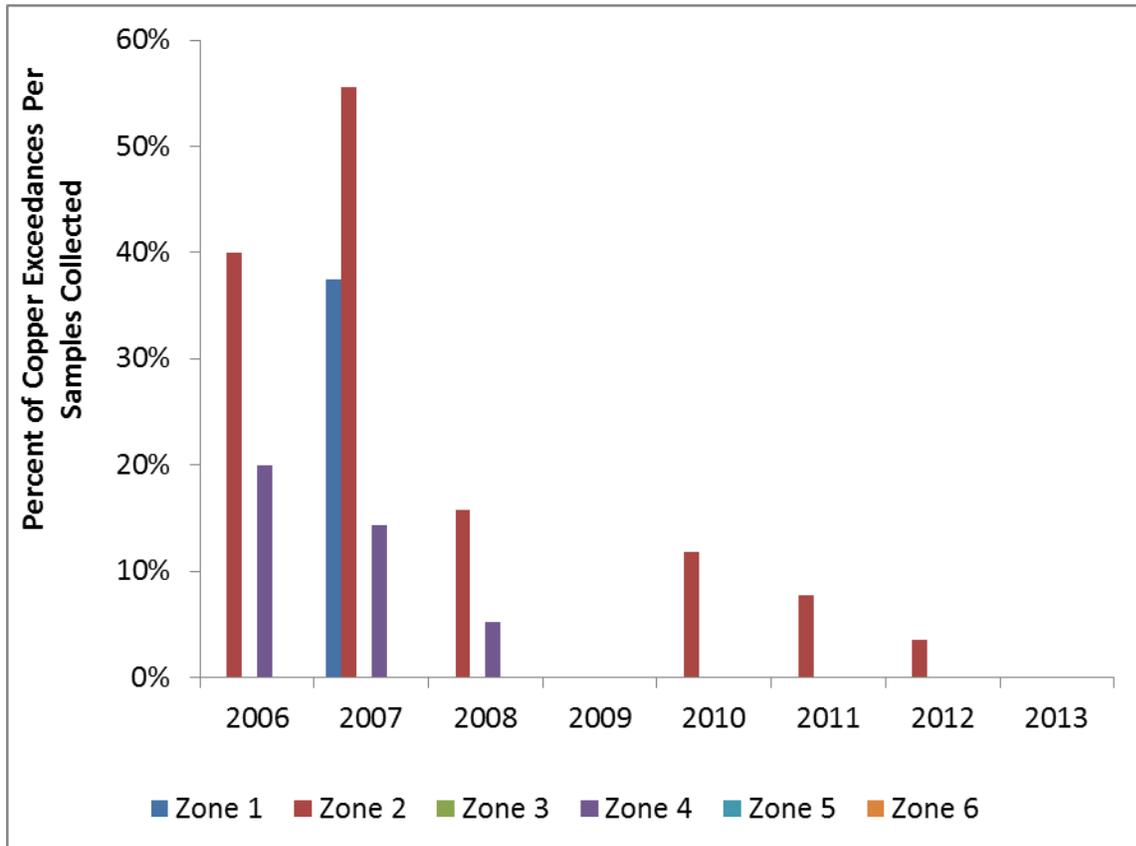


Copper

During 2013 monitoring, there were 44 samples analyzed for copper and no exceedance of the copper WQTL occurred (Table 30). Focused outreach first began in the Coalition at the end of 2008 and has expanded to new subwatersheds every year since. Copper applications have remained relatively steady in the region; however, there has been a decrease in the percent of samples collected that resulted in exceedances (Table 30 and Figure 25). When monitoring began in 2012, copper was listed in seven site subwatershed management plans. The Regional Board approved the removal of copper from two site subwatersheds on April 17, 2012, and one site subwatershed on May 21, 2012. On February 27, 2013 the Coalition received approved to remove copper from management plans for two more site subwatersheds (French Camp Slough @ Airport Way and Kellogg Creek along Hoffman Ln). Copper remains in the management plans of Littlejohns Creek @ Jack Tone Rd and Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (last exceedance occurred at both sites in May 2011); both sites are in Zone 2.

Figure 25. SJCDWQC 2006-2013 percentage of exceedances of the WQTL for copper in Zones 1-6.

Zone 1 was not sampled for copper in 2012, 2013; Zone 3 from 2011-2012; Zone 5 from 2006-2008 and 2011-2012; Zone 6 from 2006-2007 and 2009-2013. Assessment and MPM results included.



Monitoring data from 2013 indicate the Coalition’s outreach efforts have improved water quality in the first through fifth high priority subwatersheds. There has been a decrease in the number and percentage of exceedances of WQTLs, especially since the beginning of focused outreach. While chlorpyrifos remains a constituent of concern in waterways in the Coalition region, the number of samples resulting in exceedances of the WQTL for chlorpyrifos has drastically decreased from a high of 30 in 2008 to a single exceedance in 2012 and three exceedances in 2013. Likewise, exceedances of the hardness based WQTL for copper have decreased from a high of 22 in 2007 to one in 2012 and no exceedances in 2013. Based on monitoring data from the past several years, the Coalition received approval on February 27, 2013 to remove specific site/constituent pairs from active management plans based on two years of monitoring with no exceedances; diazinon has been completely removed from active SJCDWQC management plans (Table 29). The Coalition anticipates seeing further improvement of water quality in 2014 and 2015 when the fifth and sixth priority subwatersheds enter Year 2 and Year 1 of monitoring and focused outreach.

Table 30. Count of exceedances and samples collected for high priority pesticides (chlorpyrifos, diazinon and copper) across SJCDWQC region.

YEAR	CHLORPYRIFOS				DIAZINON				COPPER ¹			
	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED	EXCEEDANCE COUNT	SAMPLES ²	% EXCEEDANCE	LBS APPLIED
2006	14	94	15%	92,672	1	94	1%	10,257	9	40	23%	460,834
2007	15	125	12%	81,123	4	114	4%	9,561	22	71	31%	387,484
2008	30	129	23%	50,150	3	116	3%	6,520	11	123	9%	238,364
2009	8	61	13%	78,791	0	49	0%	5,826	0	41	0%	263,895
2010	13	93	14%	63,848	0	79	3%	17,576	2	61	3%	314,325
2011	15	104	14%	46,957	0	70	0%	5,198	2	69	3%	286,749
2012	1	80	1%	32,085	0	43	0%	5,280	1	60	2%	330,346
2013	3	102	3%	33,967 ³	0	64	0%	5,659 ³	0	44	0%	246,465 ³

¹Since October 2008, the Coalition analyzes for both the total and dissolved fraction of copper in every event. For counting exceedances and samples scheduled for copper analysis, this table ignores fraction (e.g. if site A is scheduled for copper total and copper dissolved analysis in Event 1, the table counts only one sample for copper). There has never been an exceedance of both the total and dissolved copper WQTLs at any one site.

² Refers to all samples collected for constituent analysis (dry sites not included).

³PUR data only available through May 2013 for San Joaquin County.

Funding Resources

In addition to focused outreach, the Coalition strives to secure unique opportunities to assist growers in achieving their goal of reducing the impact of agricultural discharge on water quality. The Coalition reviewed funding data provided by organizations managing the distribution of financial support to growers for the implementation of management practices. In 2013, growers across the Coalition region utilized external funding resources from two organizations to aid in funding the implementation of management practices designed to address water quality impairments caused by agriculture. The two main organizations that manage funding are the Natural Resource Conservation Service (NRCS) and the Coalition for Urban/Rural Environmental Stewardship (CURES). The NRCS offices manage the distribution of the Agricultural Water Enhancement Program (AWEP) and the Environmental Quality Incentives Program (EQIP) funding cost share programs. The CURES manages the distribution of Proposition 84 funds and the associated cost share program. Data from CURES and the NRCS offices

provide insight as to the type of management practices growers are implementing in the SJCDWQC region.

AWEP and EQUIP funding is distributed through the county NRCS offices. The AWEP funds are specific to agriculture and an organization must apply for the funds before they are made available. On July 30, 2009, AWEP funding of \$10 million was awarded to the Coalition, CURES, the Westside San Joaquin River Watershed Coalition, the West and East Stanislaus Resource Conservation District and NRCS. Funds were made available to support management practice implementation on farms and dairies with operations bordering waterways within site subwatersheds covered by management plans. EQIP funds are regularly allocated to counties from the federal government for any projects focused on implementing management practices designed to protect and/or improve the quality of surface water, groundwater, soil, and/or air. The NRCS offices for the three counties in the SJCDWQC region award 100% of their appropriated AWEP and EQIP funds. Table 31 summarizes total acreage of projects planned for 2013 with AWEP and EQIP funds awarded by the NRCS offices in Contra Costa, Stanislaus, and San Joaquin County. During 2013, these NRCS offices funded management practice projects in 44648.8 acres of land (Table 31). Overall, the NRCS offices allocated \$186,301.36 to Contra Costa County growers, and \$2,592,276.13 to San Joaquin County growers. Dollar investment data from Stanislaus County could not be obtained for this report.

In 2013 micro irrigation and tailwater return systems were the only practices funded by Proposition 84. Funding data obtained from CURES are reported by fiscal year. Table 31 reflects contracts awarded during the 2012-2013 and 2013-2014 funding cycles. During those two cycles there were 9 contracts awarded in the Contra Costa and San Joaquin Counties. Growers in the SJCDWQC region implemented micro irrigation and tailwater return systems across 896 acres of agricultural land with the assistance of \$735,979.92 of Proposition 84 funding (Table 32). Some of these contracts might have been implemented during the 2012 calendar year; results from the 2012-2013 funding contracts were included in the 2013 MPUR.

Table 31. Management practices implemented with AWEP and EQIP funds indicating the estimated total acreage of the projects in Contra Costa, Stanislaus, and San Joaquin Counties.

Data provided to the Coalition are considered preliminary since counties may still be updating funding award records.

MANAGEMENT PRACTICES PLANNED FOR 2013	AWEP		EQIP			TOTAL ACREAGE
	SAN JOAQUIN	STANISLAUS	CONTRA COSTA	SAN JOAQUIN	STANISLAUS	
Heavy Use Area Protection				83.1	109.7	192.8
Integrated Pest Management (IPM)					2161.3	2161.3
Irrigation Land Leveling		26.1	126.0	344.0	1101.5	1597.6
Irrigation Reservoir		36.0				36.0
Irrigation Water Conveyance		311.8	13200.0	6520.0	1172.2	21204.0
Irrigation Water Management	1.0				1513.5	1514.5
Micro Irrigation	2.2	1874.0	95.5	943.8	4810.2	7725.7
Mulching			2.0		121.8	123.8
Nutrient Management			57.8		2115.3	2173.1
Obstruction Removal					168.3	168.3
Precision Pest Control Application	3.0			125.3	4145.5	4273.8

MANAGEMENT PRACTICES PLANNED FOR 2013	AWEP		EQIP			TOTAL ACREAGE
	SAN JOAQUIN	STANISLAUS	CONTRA COSTA	SAN JOAQUIN	STANISLAUS	
Pumping Plant			1.0	2.0	267.1	270.1
Seasonal High Tunnel System for Crops					1.9	1.9
Sprinkler System		16.7	30.0	68.0	52.1	166.8
Structure for Water Control		75.3	2.0	8.0	203.6	288.9
Tailwater Return System					172.0	172.0
Underground Outlet					61.2	61.2
Waste Recycling					487.6	487.6
Woody Residue Treatment					1519.6	1519.6
Manure/Waste Transfer		170.4		1.0	338.4	509.8
Total acreage						44648.8

Table 32. Management practices implemented with Proposition 84 funds in Contra Costa, Stanislaus, and San Joaquin Counties during the 2012-2013 and 2013-2014 funding cycles.

Table indicates the number of contracts awarded, their acreage, and contract cost.

COUNTY	PRACTICE NAME	FUNDING YEAR	NUMBER OF CONTRACTS AWARDED	TOTAL CONTRACT ACREAGE	TOTAL CONTRACT DOLLARS ¹
Contra Costa	Micro Irrigation	2012-2013	3	76	\$71,046
San Joaquin	Micro Irrigation	2012-2013	4	658	\$547,670
		2013-2014	1	62	\$94,000
	Tailwater Return System	2012-2013	1	100	\$23,264
Total			9	896	\$735,980

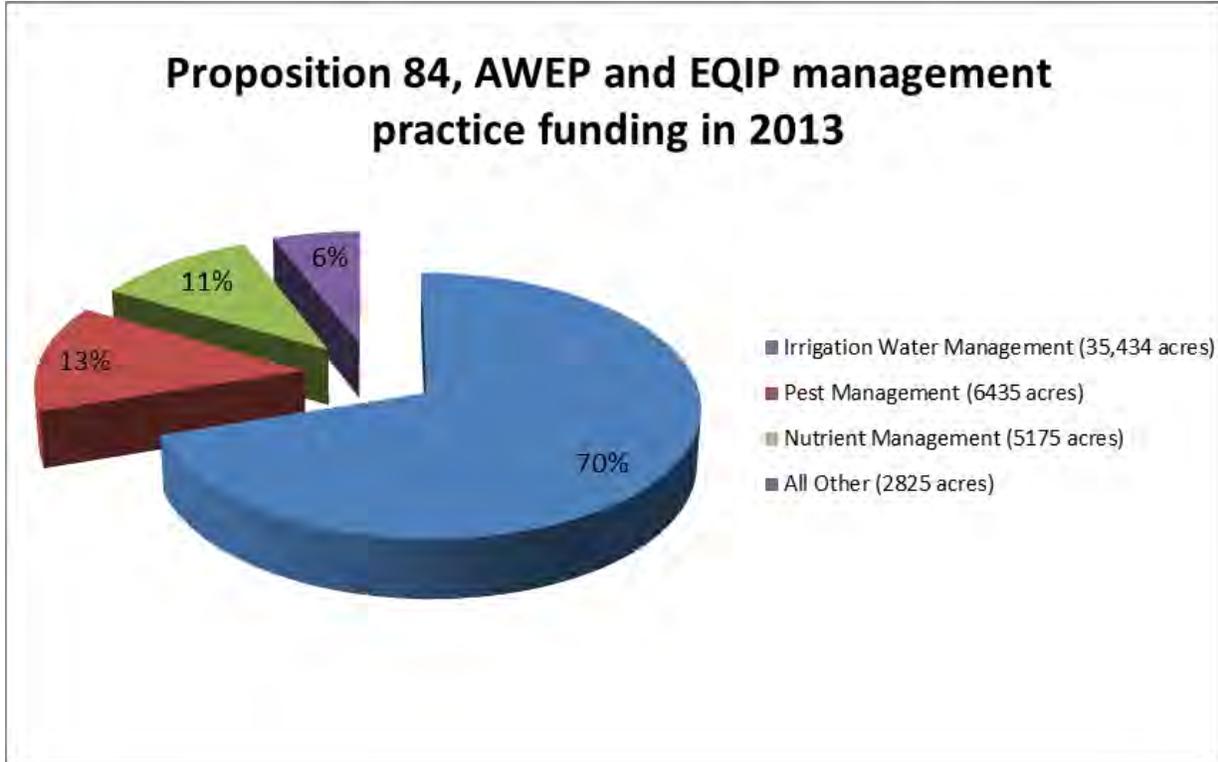
¹ Proposition 84 funding is a 50% cost share program, therefore the total cost of the management practices is twice the amount listed.

During 2013, AWEP, EQIP, and Proposition 84 programs funded the implementation of management practices across 47,378 acres of land in the Coalition region (Tables 31 and 32). Figure 26 indicates the main management practices by percentages of acreage implemented. During this year the most important practices (covering 35,435 acres, 75% of total) involved irrigation water management (water management, land leveling, micro irrigation, sprinkler systems and tailwater return systems, Figure 26). Pest control practices (including precision pest control, and IPM; 6,435 acres) and nutrient management practices (including nutrient management, and manure transfer; 5,175 acres) include only 13% and 10% of the area respectively. All other practices (such as heavy use area protection, pumping plant, mulching, and waste recycling) represent 2,825 of all project acreage (6%, Figure 26).

The practices funded by Proposition 84, AWEP and EQIP programs to date include several of the practices recommended by the Coalition during focused outreach. These data indicate that growers in the Coalition region are taking steps to implement additional management practices that are recommended. Growers in the SJCDWQC region have several different options for obtaining financial resources to aid in implementing recommended practices designed to improve water quality.

Figure 26. Main management practices as percent of total acreage that received funding from Proposition 84, AWEF and EQIP in Contra Costa, San Joaquin, and Stanislaus Counties in 2013.

Irrigation Water Management includes land leveling, water management, micro irrigation, sprinkler system and tailwater return systems. Pest Management includes precision pest control, and IPM. Nutrient management includes manure transfer. All other includes heavy use area protection, pumping plant, mulching, waste recycling, and others (Table 31).



STATUS OF TMDL CONSTITUENTS

The Basin Plan includes TMDL monitoring and reporting requirements, and dischargers must comply with the monitoring and management criteria specified per each TMDL. If an exceedance of the WQTL for an USEPA approved TMDL constituent occurs, a management plan is required for that constituent in that site subwatershed. Actions taken as part of a management plan for a TMDL constituent include additional focused monitoring, analysis to determine the source of the exceedance, and outreach within the site subwatershed. Coalition efforts include: 1) MPM, 2) conducting site subwatershed grower meetings, 3) encouraging the implementation of and evaluating the efficacy of management practices, and 4) addressing the seven surveillance and Monitoring Objectives described in the Basin Plan. These actions allow the Coalition to address water quality issues and meet the TMDL requirements in the Basin Plan.

Table 33 lists all constituents with TMDLs in one or more waterbodies within the Coalition boundary, and the USEPA approved documents that apply to these TMDLs. In the following sections, a narrative is provided concerning each USEPA approved TMDL constituent, the Coalition’s strategy, and actions taken to meet the TMDL requirements during 2013 monitoring.

Table 33. USEPA approved TMDL documents that apply to waterbodies within the SJCDWQC boundaries and that list agriculture as one of the potential sources.

CONSTITUENTS	BASIN PLAN AMENDMENT NAME	DATE APPROVED	APPLICABLE WATERBODY WITHIN THE COALITION
Diazinon and Chlorpyrifos	Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta	October 10, 2007	Sacramento-San Joaquin Delta named waterways listed in Appendix 43 of the Basin Plan
Diazinon and Chlorpyrifos	Diazinon and Chlorpyrifos Runoff into the Lower San Joaquin River	December 20, 2006	San Joaquin River (Mendota Dam to Airport Way Bridge near Vernalis)
Methyl mercury and Total Mercury	Methyl Mercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary	October 20, 2011	Sacramento-San Joaquin Delta named waterways listed in Appendix 43 of the Basin Plan
Low Dissolved Oxygen	Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel	February 27, 2007	San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November)
Electrical Conductivity and Boron	Salt And Boron Discharges into the Lower San Joaquin River	February 8, 2007	San Joaquin River (Mendota Dam to Airport Way Bridge near Vernalis)

CHLORPYRIFOS AND DIAZINON TMDL

There are two approved chlorpyrifos and diazinon TMDLs applicable to waterbodies in the SJCDWQC region (Table 33). The SJCDWQC is responsible for determining compliance only with the Sacramento and San Joaquin Delta chlorpyrifos and diazinon TMDL. The Lower San Joaquin River chlorpyrifos and diazinon TMDL includes one compliance point within the SJCDWQC boundary (the San Joaquin River @ Vernalis). However, this compliance point receives most of its drainage from areas outside of the Coalition region. Therefore, it was agreed this monitoring location and the associated compliance and reporting responsibilities would be managed by the East San Joaquin Water Quality Coalition and the Westside San Joaquin River Watershed Coalition.

The Coalition collaborated with the Regional Board to establish a monitoring and reporting strategy to demonstrate compliance with the chlorpyrifos and diazinon TMDL. The strategy includes assessing compliance with the chlorpyrifos and diazinon TMDL program Monitoring Objectives:

1. Determine compliance with established water quality objectives and the loading capacity applicable to diazinon and chlorpyrifos in the Delta Waterways.
2. Determine compliance with the load allocations applicable to discharges of diazinon and chlorpyrifos into the Delta Waterways.
3. Determine the degree of implementation of management practices to reduce offsite movement of diazinon and chlorpyrifos.
4. Determine the effectiveness of management practices and strategies to reduce offsite migration of diazinon and chlorpyrifos.
5. Determine whether alternatives to diazinon and chlorpyrifos are causing surface water quality impacts.
6. Determine whether the discharge causes or contributes to toxicity impairment due to additive or synergistic effects of multiple pollutants.
7. Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable.

On March 15, 2013, the Coalition received approval to monitor four Delta monitoring locations to assess compliance with loading capacity. Three of the four locations had not been monitored previously by the Coalition: Old River at the West End of Clifton Court Rd, San Joaquin River @ West Neugerbauer Rd, Light House Restaurant @ West Brannon Island Rd (Table 34). The fourth location, Walthall Slough @ Woodward Ave, had been monitored monthly as a loading capacity site before the March 15 approval. Monitoring for chlorpyrifos and diazinon TMDL compliance at the four locations is required during one storm event and from May through August annually. The new TMDL compliance monitoring strategy focuses on periods of peak pesticide use, and allows the monitoring program to better meet the TMDL monitoring requirements by using representative monitoring in Delta Waterways. Monitoring began at the new TMDL locations on April 2, 2013 (storm monitoring). In addition, the Coalition collected samples for chlorpyrifos and diazinon monthly at Walthall Slough @ Woodward Ave. Data from all months were used when assessing loading capacity compliance.

Table 34. Representative monitoring sites used to assess loading capacity of Chlorpyrifos and Diazinon during 2013 by the SJCDWQC, and the Delta segments that they represent.

SITE NAME	DELTA SEGMENT REPRESENTED	LATITUDE	LONGITUDE
Light House Restaurant @ West Brannon Island Rd	Delta Waterways (central and eastern portions), Mosher Slough (downstream of I-5) and Five Mile Slough (Alexandria Place to Fourteen Mile Slough)	38.10487	-121.59299
Old River @ the West End of Clifton Court Rd	Delta Waterways (export area, southern and western portions)	37.84195	-121.53721
San Joaquin River @ West Neugerbauer Rd	Delta Waterways (Stockton Ship Channel)	37.99493	-121.44173
Walthall Slough @ Woodward Ave	San Joaquin River (Stanislaus River to Delta Boundary) ¹	37.77046	-121.29227

¹ This section is addressed in the Lower San Joaquin River Diazinon and Chlorpyrifos TMDL and is associated with the compliance location San Joaquin River @ Vernalis. This waterbody section was delisted from the 303(d) list for diazinon in 2008.

During 2013, the Coalition assessed load allocation compliance at eleven tributary sites for chlorpyrifos and diazinon as part of Assessment Monitoring or MPM (Table 35). Sites monitored for load allocation include named Delta waterways and tributaries that drain to named Delta waterways from both inside and outside the legal Delta boundary. The Basin Plan amendment suggests that *“For Delta Waterways that flow into the Legal Delta from outside, the Load Allocations for the discharges to each waterbody upstream of the Legal Delta would be defined at the point where the waterway enters the legal Delta”*. Some of the Coalition sample sites are located upstream of the legal Delta; therefore, compliance was evaluated by using water quality data from the most downstream waterbody. For instance, Littlejohns Creek, Lone Tree Creek, and Unnamed Drain (Temple Creek) all drain into French Camp Slough and therefore load allocation compliance was evaluated at French Camp Slough @ Airport Way which is the most downstream monitoring location.

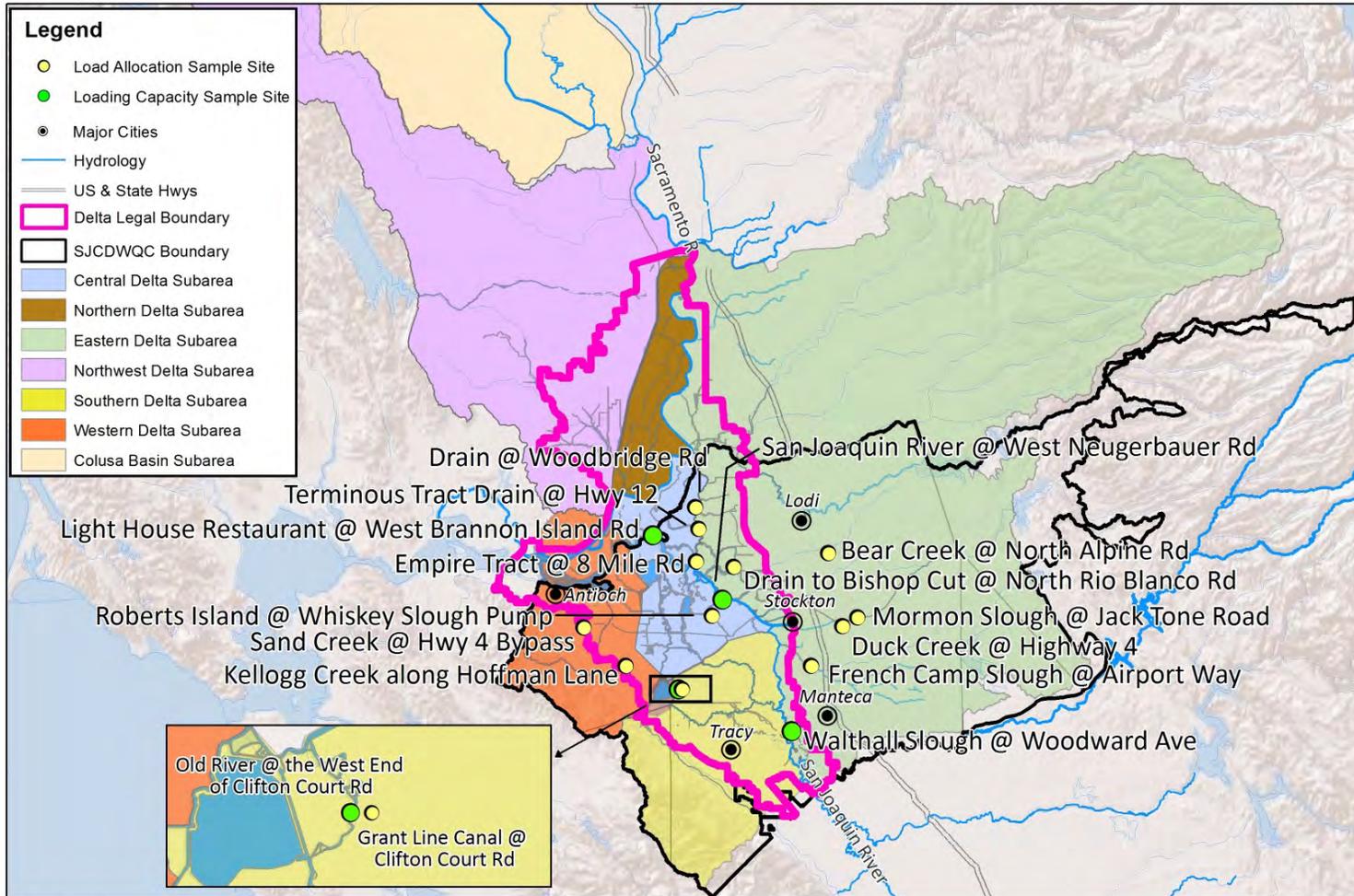
Monitoring at load allocation sites varied throughout 2013 depending on the monitoring type (Assessment or MPM). The 2013 chlorpyrifos and diazinon monitoring schedule for both loading capacity and load allocation sites is detailed in Table 36 and Figure 27.

Table 35. Monitoring sites used to assess chlorpyrifos and diazinon load allocation compliance in 2013 and the Delta segments that they represent; sorted by Delta Segment.

SITE NAME	DELTA SEGMENT	LATITUDE	LONGITUDE	CONSTITUENT MONITORED
Roberts Island @ Whiskey Slough Pump	Drain to Delta Waterways (central portion)	37.96737	-121.46434	Chlorpyrifos, Diazinon
Terminus Tract Drain @ Hwy 12	Drain to Delta waterways (eastern portion)	38.11558	-121.49380	Chlorpyrifos, Diazinon
Empire Tract @ 8 Mile Rd	Drain to Delta waterways (eastern portion)	38.06012	-121.49912	Chlorpyrifos
Drain to Bishop Cut @ North Rio Blanco Rd	Drain to Delta waterways (eastern portion)	38.05055	-121.41753	Chlorpyrifos, Diazinon
Drain @ Woodbridge Rd	Drain to Delta waterways (eastern portion)	38.15256	-121.50095	Chlorpyrifos, Diazinon
Grant Line Canal @ Clifton Court Rd ¹	Drain to Delta waterways (southern portion)	37.84182	-121.52999	Chlorpyrifos
Kellogg Creek along Hoffman Lane	Delta waterways (western portion)	37.88188	-121.65221	Chlorpyrifos
Sand Creek @ Hwy 4 Bypass	Delta waterways (western portion)	37.94750	-121.74300	Diazinon
Bear Creek @ North Alpine Rd	Delta eastern portion, outside legal Delta	38.07386	-121.21215	Chlorpyrifos
Duck Creek @ Highway 4	Delta eastern portion, outside legal Delta	37.94949	-121.18208	Chlorpyrifos
Mormon Slough @ Jack Tone Road	Delta eastern portion, outside legal Delta	37.96470	-121.14880	Chlorpyrifos
French Camp Slough @ Airport Way	Delta eastern portion, outside legal Delta	37.88172	-121.24933	Chlorpyrifos, Diazinon

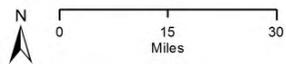
¹Grant Line Canal is a named Delta waterbody. However, the sampling site is located on Union Island and not within Grant Line Canal.

Figure 27. Monitoring sites used to assess loading capacity (green) and load allocation (yellow) of Chlorpyrifos and Diazinon during 2013 by the SJCDWQC, with legal Delta boundary, Delta subareas, and SJCDWQC boundary.



Source of Layers:
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library.
 Delta Subareas - ILRP
 Basemap, Shaded Relief - ESRI
 Datum: NAD 1983

Date Prepared: 03/29/14
 SJCDWQC



Delta Subareas & SJCDWQC 2013 Monitoring Sites

Delta_Waterways_2014

Table 36. Monitoring schedule for 2013 loading capacity and load allocation sites. Sites were monitored for chlorpyrifos (C) and/or diazinon (D).

SITE NAME	TMDL COMPLIANCE TYPE	JAN 15	FEB 21	MAR 19	APR 2	MAY 21	JUN 18	JUL 16	AUG 20	SEPT 17	OCT 8	NOV 19	DEC 17
Walthall Slough @ Woodward Ave	Loading Capacity	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D
San Joaquin River @ West Neugerbauer Rd	Loading Capacity		C,D			C,D	C,D	C,D	C,D	C,D			
Old River @ the West End of Clifton Court Rd	Loading Capacity		C,D			C,D	C,D	C,D	C,D	C,D			
Light House Restaurant @ West Brannon Island Rd	Loading Capacity		C,D			C,D	C,D	C,D	C,D	C,D			
Terminus Tract Drain @ Hwy 12	Load Allocation	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D
Empire Tract @ 8 Mile Rd	Load Allocation							C,D	C,D	C,D	C,D	C,D	C,D
Drain to Bishop Cut @ North Rio Blanco Rd	Load Allocation	C,D	C,D	C,D									
Drain @ Woodbridge Rd	Load Allocation				C								
Grant Line Canal @ Clifton Court Rd	Load Allocation	C	C	C						C			
Kellogg Creek along Hoffman Lane	Load Allocation		C										
Sand Creek @ Hwy 4 Bypass	Load Allocation	D											
Bear Creek @ North Alpine Rd	Load Allocation	C								C	C		
Duck Creek @ Highway 4	Load Allocation				C	C	C	C	C	C			
Mormon Slough @ Jack Tone Road	Load Allocation					C		C	C	C			
French Camp Slough @ Airport Way	Load Allocation		C,D		C	C		C	C	C	C		
Roberts Island @ Whiskey Slough Pump	Load Allocation	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D	C,D

Compliance with Chlorpyrifos and Diazinon WQOs

During 2013, the Coalition evaluated compliance with chlorpyrifos and diazinon WQOs by reviewing monitoring results from the sites listed in Table 36. There were three exceedances of the WQO for chlorpyrifos in tributaries within the coalition region (Table 2). However, only one of those locations, French Camp Slough @ Airport Way, drains directly to the Delta Waterways (Table 37). The other two locations are upstream from it, and as a result the Coalition did not include them as load allocation compliance sites. French Camp Slough @ Airport Way is in the eastern Delta subarea approximately three miles upstream of the legal Delta boundary (Figure 27). Aside from this exceedance, chlorpyrifos was not detected in any other samples collected from waterbodies that drain directly to the Delta Waterways. Diazinon was not detected in any sample collected during 2013.

Table 37. SJCDWQC 2013 exceedances of the WQO for chlorpyrifos at sites assessed for TMDL compliance.

There were no exceedances of the WQO for diazinon at any site in the SJCDWQC region in 2013.

STATION NAME	TMDL COMPLIANCE TYPE	SAMPLE DATE	ANALYTE	RESULT	WQO
French Camp Slough @ Airport Way	Load Allocation	7/16/2013	Chlorpyrifos	0.042 µg/L	0.015 µg/L

Compliance with Chlorpyrifos and Diazinon Loading Capacity and Load Allocations

Loading capacity and load allocations for nonpoint source discharges, including agricultural discharges, are based on the following equation for discharges to Sacramento-San Joaquin Delta Waterways:

$$S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$$

S = load capacity

C_D = diazinon concentration in µg/L

C_C = chlorpyrifos concentration in µg/L

WQO_D = diazinon water quality objective; 0.1 µg/L

WQO_C = chlorpyrifos water quality objective; 0.015 µg/L

The Coalition assessed load capacity compliance from the sites listed in Table 35. The Coalition did not detect chlorpyrifos or diazinon in any of the samples assessed for loading capacity (Table 38); therefore all samples collected in 2013 were in compliance with the established loading capacity (Table 38).

The Coalition assessed load allocation compliance at monitoring sites listed in Table 36. A single sample collected from French Camp Slough @ Airport Way in July 2013 was out of compliance with the established load allocation (Table 39). The French Camp Slough @ Airport Way site subwatershed represents water quality in the Delta eastern portion (outside of the legal Delta) and drains to the Stockton Ship Channel. Aside from the single exceedance, chlorpyrifos was not detected in any other sample and diazinon was not detected in any sample assessed for load allocation compliance during 2013 (Table 39). Table 40 provides a summary of loading capacity and load allocation compliance by Delta subarea and waterbody for 2013.

Table 38. Sacramento-San Joaquin Delta Waterways TMDL load capacity compliance calculations for diazinon and chlorpyrifos runoff for nonpoint source discharges in 2013.

If a site was scheduled for chlorpyrifos and/or diazinon analysis during an event and the result is not included in this table, the site was dry during the event.

STATION NAME	SAMPLE DATE	CHLORPYRIFOS	DIAZINON	LOAD	LOAD CAPACITY COMPLIANCE
Walthall Slough @ Woodward Ave	1/15/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	2/21/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	3/19/2013	<0.0026	<0.004	0	In compliance
Light House Restaurant @ West Brannon Island Rd	4/2/2013	<0.0026	<0.004	0	In compliance
Old River @ the West End of Clifton Court Rd	4/2/2013	<0.0026	<0.004	0	In compliance
San Joaquin River @ West Neugerbauer Rd (Roberts Island off Windmill Cove)	4/2/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	4/2/2013	<0.0026	<0.004	0	In compliance
Light House Restaurant @ West Brannon Island Rd	5/21/2013	<0.0026	<0.004	0	In compliance
Old River @ the West End of Clifton Court Rd	5/21/2013	<0.0026	<0.004	0	In compliance
San Joaquin River @ West Neugerbauer Rd (Roberts Island off Windmill Cove)	5/21/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	5/21/2013	<0.0026	<0.004	0	In compliance
Light House Restaurant @ West Brannon Island Rd	6/18/2013	<0.0026	<0.004	0	In compliance
Old River @ the West End of Clifton Court Rd	6/18/2013	<0.0026	<0.004	0	In compliance
San Joaquin River @ West Neugerbauer Rd (Roberts Island off Windmill Cove)	6/18/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	6/18/2013	<0.0026	<0.004	0	In compliance
Light House Restaurant @ West Brannon Island Rd	7/16/2013	<0.0026	<0.004	0	In compliance
Old River @ the West End of Clifton Court Rd	7/16/2013	<0.0026	<0.004	0	In compliance
San Joaquin River @ West Neugerbauer Rd (Roberts Island off Windmill Cove)	7/16/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	7/16/2013	<0.0026	<0.004	0	In compliance
Light House Restaurant @ West Brannon Island Rd	8/20/2013	<0.0026	<0.004	0	In compliance
Old River @ the West End of Clifton Court Rd	8/20/2013	<0.0026	<0.004	0	In compliance
San Joaquin River @ West Neugerbauer Rd (Roberts Island off Windmill Cove)	8/20/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	8/20/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	9/17/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	10/8/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	11/19/2013	<0.0026	<0.004	0	In compliance
Walthall Slough @ Woodward Ave	12/17/2013	<0.0026	<0.004	0	In compliance

Table 39. Sacramento-San Joaquin Delta Waterways TMDL load allocation compliance calculations for diazinon and chlorpyrifos runoff for nonpoint source discharges in 2013.

If a site was scheduled for chlorpyrifos and/or diazinon analysis during an event and the result is not included in this table, the site was dry during the event.

STATION NAME	SAMPLE DATE	CHLORPYRIFOS	DIAZINON	LOAD	LOAD CAPACITY COMPLIANCE
Bear Creek @ North Alpine Rd	1/15/2013	<0.0026	NS	0	In Compliance
Drain to Bishop Cut @ North Rio Blanco Rd	1/15/2013	<0.0026	<0.004	0	In Compliance
French Camp Slough at Airport Way	1/15/2013	<0.0026	<0.004	0	In Compliance
Grant Line Canal @ Clifton Court Rd	1/15/2013	<0.0026	NS	0	In Compliance
Sand Creek @ Hwy 4 Bypass	1/15/2013	<0.0026	<0.004	0	In Compliance
Terminus Tract Drain @ Hwy 12	1/15/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	1/15/2013	<0.0026	<0.004	0	In compliance
Drain to Bishop Cut @ North Rio Blanco Rd	2/21/2013	<0.0026	<0.004	0	In Compliance
French Camp Slough at Airport Way	2/21/2013	<0.0026	<0.004	0	In Compliance
Grant Line Canal @ Clifton Court Rd	2/21/2013	<0.0026	NS	0	In Compliance
Kellogg Creek along Hoffman Ln	2/21/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	2/21/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	2/21/2013	<0.0026	<0.004	0	In compliance
Drain to Bishop Cut @ North Rio Blanco Rd	3/19/2013	<0.0026	<0.004	0	In Compliance
Grant Line Canal @ Clifton Court Rd	3/19/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	3/19/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	3/19/2013	<0.0026	<0.004	0	In compliance
Drain @ Woodbridge Rd	4/2/2013	<0.0026	NS	0	In Compliance

STATION NAME	SAMPLE DATE	CHLORPYRIFOS	DIAZINON	LOAD	LOAD CAPACITY COMPLIANCE
Duck Creek @ Hwy 4	4/2/2013	<0.0026	NS	0	In Compliance
French Camp Slough at Airport Way	4/2/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	4/2/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	4/2/2013	<0.0026	<0.004	0	In compliance
Duck Creek @ Hwy 4	5/21/2013	<0.0026	NS	0	In Compliance
French Camp Slough at Airport Way	5/21/2013	<0.0026	NS	0	In Compliance
Mormon Slough @ Jack Tone Rd	5/21/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	5/21/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	5/21/2013	<0.0026	<0.004	0	In compliance
Duck Creek @ Hwy 4	6/18/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	6/18/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	6/18/2013	<0.0026	<0.004	0	In compliance
Duck Creek @ Hwy 4	7/16/2013	<0.0026	NS	0	In Compliance
Empire Tract @ 8 Mile Rd	7/16/2013	<0.0026	<0.004	0	In Compliance
French Camp Slough at Airport Way	7/16/2013	0.042	NS	3	Out of Compliance
Mormon Slough @ Jack Tone Rd	7/16/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	7/16/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	7/16/2013	<0.0026	<0.004	0	In compliance
Duck Creek @ Hwy 4	8/20/2013	<0.0026	NS	0	In Compliance
Empire Tract @ 8 Mile Rd	8/20/2013	<0.0026	<0.004	0	In Compliance
French Camp Slough at Airport Way	8/20/2013	<0.0026	NS	0	In Compliance
Mormon Slough @ Jack Tone Rd	8/20/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	8/20/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	8/20/2013	<0.0026	<0.004	0	In compliance
Bear Creek @ North Alpine Rd	9/17/2013	<0.0026	NS	0	In Compliance
Duck Creek @ Hwy 4	9/17/2013	<0.0026	NS	0	In Compliance
Empire Tract @ 8 Mile Rd	9/17/2013	<0.0026	<0.004	0	In Compliance
French Camp Slough at Airport Way	9/17/2013	<0.0026	NS	0	In Compliance
Grant Line Canal @ Clifton Court Rd	9/17/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	9/17/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	9/17/2013	<0.0026	<0.004	0	In compliance
Bear Creek @ North Alpine Rd	10/8/2013	<0.0026	NS	0	In Compliance
Empire Tract @ 8 Mile Rd	10/8/2013	<0.0026	<0.004	0	In Compliance
French Camp Slough at Airport Way	10/8/2013	<0.0026	NS	0	In Compliance
Terminus Tract Drain @ Hwy 12	10/8/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	10/8/2013	<0.0026	<0.004	0	In compliance
Empire Tract @ 8 Mile Rd	11/19/2013	<0.0026	<0.004	0	In Compliance
Terminus Tract Drain @ Hwy 12	11/19/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	11/19/2013	<0.0026	<0.004	0	In compliance
Empire Tract @ 8 Mile Rd	12/17/2013	<0.0026	<0.004	0	In Compliance
Terminus Tract Drain @ Hwy 12	12/17/2013	<0.0026	<0.004	0	In Compliance
Roberts Island @ Whiskey Slough Pump	12/17/2013	<0.0026	<0.004	0	In compliance

NS-Not sampled; analyte not scheduled for analysis during event.

Table 40. Summary of 2013 load capacity and allocation compliance in the Sacramento-San Joaquin Delta Subareas and TMDL Listed Waterways.

Samples may represent multiple subareas/waterbodies and therefore counts may be repeated.

TYPE OF LOAD COMPLIANCE	DELTA SEGMENT REPRESENTED	SITE NAME	COUNT OF SAMPLES:		TOTAL SAMPLES
			IN COMPLIANCE	OUT OF COMPLIANCE	
Loading Capacity	San Joaquin River (Stanislaus River to Delta Boundary)	Walthall Slough @ Woodward Ave	12	0	12
	Delta Waterways (Stockton Ship Channel)	San Joaquin River @ West Neugebauer Rd	5	0	5
	Delta Waterways (export area, southern and western portions)	Old River @ the West End of Clifton Court Rd	5	0	5
	Delta Waterways (central and eastern portions), Mosher Slough (downstream of I-5) and Five Mile Slough (Alexandria Place to Fourteen Mile Slough)	Light House Restaurant @ West Brannon Island Rd	5	0	5
Load Allocation	Drain to Delta waterways (eastern portion)	Terminus Tract Drain @ Hwy 12	12	0	12
	Drain to Delta waterways (eastern portion)	Empire Tract @ 8 Mile Rd ²	6	0	6
	Drain to Delta waterways (eastern portion)	Drain to Bishop Cut @ North Rio Blanco Rd ²	3	0	3
	Drain to Delta waterways (eastern portion)	Drain @ Woodbridge Rd	1	0	1
	Drain to Delta waterways (southern portion)	Grant Line Canal @ Clifton Court Rd ¹	4	0	4
	Delta waterways (western portion)	Kellogg Creek along Hoffman Lane	1	0	1
	Delta waterways (western portion)	Sand Creek @ Hwy 4 Bypass	1	0	1
	Delta eastern portion, outside legal Delta	Bear Creek @ North Alpine Rd	3	0	3
	Delta eastern portion, outside legal Delta	French Camp Slough at Airport Way	7	1	8
	Delta eastern portion, outside legal Delta	Duck Creek @ Hwy 4	6	0	6
	Delta eastern portion, outside legal Delta	Mormon Slough @ Jack Tone Rd	3	0	3

¹Grant Line Canal is a named Delta waterbody. However, the sampling site is located on Union Island and not within Grant Line Canal.

Implementation and Effectiveness of Management Practices to Reduce Chlorpyrifos and Diazinon Offsite Movement

As of 2013, the Coalition has initiated focused outreach in 16 of the 18 site subwatersheds monitored in 2013 (Table 7). The Coalition documented currently implemented management practices and made recommendations about additional management practices to growers in all 16 site subwatersheds (refer to First through Sixth Priority Subwatersheds Summary of Management Practices sections of this report). The Coalition documented that new management practices were implemented in 12 of the 16 site subwatersheds; not all practices were implemented that were planned to be implemented such as installing a retention pond (1 member) or treating waters with materials such as PAM (2 members). Many times a delay in implementation can be due to lack of funding and/or a change in other practices that serve the same purpose and therefore make the planned practice redundant and unnecessary (refer to First through Fourth Priority Subwatersheds Summary of Management Practices sections in this report). The management practices recommended by the Coalition and implemented by targeted growers are designed to improve water quality by preventing the offsite movement of agricultural constituents, including chlorpyrifos and diazinon. The Coalition evaluates the effectiveness of implemented management practices by relating data of implemented management practices to

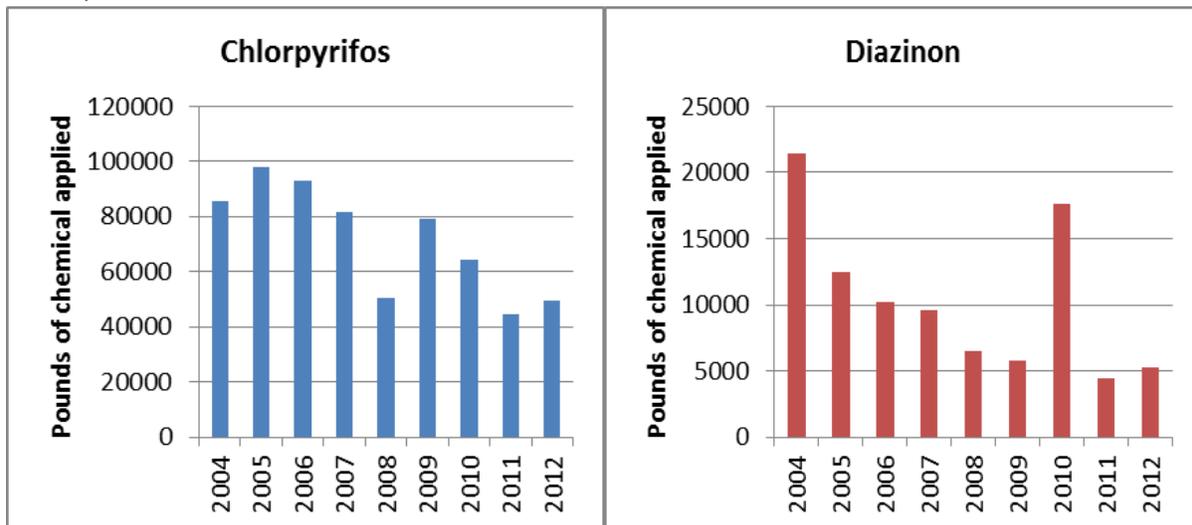
monitoring results within high priority site subwatersheds (refer to the Evaluation of Management Practice Effectiveness section of this report). In addition, the Coalition evaluates effectiveness of implemented management practices across the entire SJCDWQC region on a zone by zone basis by associating water quality with newly implemented management practices per each zone (refer to the Coalition Wide Evaluation section of this report).

Alternatives to Chlorpyrifos and Diazinon

The pounds of diazinon and chlorpyrifos applied in the SJCDWQC region has declined since 2004 (Figure 28). The decline in diazinon use has been steady over the years, with the exception of an increase in use during 2010 (Figure 28). This increase in use was most likely due to a large outbreak of a relatively new pest (spotted winged drosophila) that occurred during 2010 in cherry orchards within the SJCDWQC region (Lee et al., 2011).

Figure 28. Pounds of diazinon and chlorpyrifos applied in the SJCDWQC region from 2004 through 2012.

All PUR data are considered preliminary until received from CalPIP; CalPIP data are available through December 2010. PUR data are incomplete for 2013 at this time and were not included.



Several pesticides and product options exist that are alternatives to chlorpyrifos and diazinon (other organophosphates, pyrethroids, and neonicotinoids). During outreach, the Coalition encourages growers to switch to lower-risk, alternative products. However, alternatives to chlorpyrifos and diazinon depend on the product registration, commodity, pest pressures, and time of year applications need to be made, among other factors.

To evaluate which pesticides are most used as alternatives to chlorpyrifos and diazinon, the Coalition evaluated PUR data and identified top five commodities in the SJCDWQC region with the most chlorpyrifos and/or diazinon applications between 2004 and 2012 (Table 41). All PUR data are considered preliminary and may contain some level of inaccuracy until they are finalized and made available through CalPIP. The most recent data available from the CalPIP website are through December 2011. Table 41 includes preliminary PUR data through 2012 for Contra Costa, San Joaquin, and

Stanislaus Counties. For these five commodities the Coalition identified the pests of major concern, and geographically widespread (high priority pests; University of California Agriculture and Natural Resources (UC ANR). The Coalition reviewed alternative pesticides and other management strategies (i.e. applications of plant growth regulators) for each of the top five commodities and their high priority pests (CA DWR 2013; Elliott et al., 2004; IRAC, 2005; Summers et al., 2007; UC ANR; Zalom et al., 1999).

Several alternatives exist to manage the pests of concern for each commodity (Table 42). For example, over 10 different classes of pesticides can be used to manage pests of high concern in almonds; and even more are available to manage pests of concern in walnuts. In addition, the timing of application varies both by pesticide choice and target pest (Table 42). For example, in almonds, pyrethroids are applied in August to treat navel orange worms, and in November through February to target peach twig borers. In walnuts, spinosyns are applied in March through May, August, and October to treat codling moths, and in June through August to manage walnut husk flies.

Table 41. Commodities in the SJCDWQC region with the most pounds of diazinon applied from 2004 to 2012

All PUR data are considered preliminary until received from CalPIP; CalPIP data are available through December 2010. PUR data are incomplete for 2013 at this time and were not included.

COMMODITY	TOTAL POUNDS CHLORPYRIFOS	TOTAL POUNDS DIAZINON
Walnuts	171,848	433
Alfalfa	59,989	0
Grapes	45,402	124
Almonds	32,322	8,052
Cherries	563	26,312

Table 42. High priority pests for the five commodities in the SJCDWQC region that receive the most diazinon and chlorpyrifos applications since 2004.

For each pest, the table lists alternatives to chlorpyrifos and/or diazinon for the recommended application period.

COMMODITY	PEST	PEST APPEARANCE	PESTICIDE CLASS ¹	ACTIVE INGREDIENT	COMMON PRODUCT NAME	RECOMMENDED APPLICATION PERIOD
Almond	Navel orange worm	All months	Avermectin	Emamectin benzoate	NA	Mar-May
			Bacterium	Bacillus thuringiensis	Vectobac	Mar-May, Aug
			Diacylhydrazine	Methoxyfenozide	Intrepid	Mar-May, Aug
			Diamide	Chlorantraniliprole	Voliam Xpress	Mar-May, Aug
				Flubendiamide	NA	Mar-May, Aug
			Organophosphate	Phosmet	Imidan	Aug
			Pyrethroid	Bifenthrin	Athena	Aug
				Esfenvalerate	Asana	Aug
				Fenpropathrin	NA	Aug
	Lambda-cyhalothrin	Warrior		Aug		
	Spinosyn	Spinetoram	Delegate	Mar-May, Aug		
		Spinosad	Success	Mar-May, Aug		
	Unclassified	Buprofezin	Tourismo	Mar-May, Aug		
	Peach twig borer	Feb-Oct	Avermectin	Emamectin benzoate	NA	Mar-May
			Bacterium	Bacillus thuringiensis	Javelin	Mar-May
			Benzoylurea	Diflubenzuron	Dimlin	Nov-Mar
			Diacylhydrazine	Methoxyfenozide	Intrepid	Mar-May
			Diamide	Chlorantraniliprole	Voliam Xpress	Nov-May
Flubendiamide				NA	Mar-May	
Neonicotinoid			Acetamid	Assail	Nov-May	
Pyrethroid			Bifenthrin	Athena	Nov-Feb	

COMMODITY	PEST	PEST APPEARANCE	PESTICIDE CLASS ¹	ACTIVE INGREDIENT	COMMON PRODUCT NAME	RECOMMENDED APPLICATION PERIOD
				Cyfluthrin	Leverage	Nov-Feb
				Esfenvalerate	Asana	Nov-Feb
				Lambda-cyhalothrin	Warrior	Nov-Feb
			Spinosyn	Spinetoram	Delegate	Nov-May
			Spinosad	Success	Nov-May	
	Unclassified	Buprofezin	Tourismo	Mar-May		
	San Jose scale	Feb-Aug	Carbamate	Carbaryl	Sevin	Nov-Jan
			Organophosphate	Methodathion	Supracide	May
			Unclassified	Buprofezin	Tourismo	Apr
					Pyriproxyfen	NA
Cherry	Cherry leafhopper	Apr-Oct	Neonicotinoid	Thiamethoxam	Cruiser	Nov-Jan, Jun-Aug
			Organophosphate	Methodathion	Supracide	Nov-Jan
			Pyrethroid	Esfenvalerate	Asana	Nov-Jan, Jun-Aug
				Lambda-cyhalothrin	Warrior	Nov-Jan, Jun-Aug
	Fruit tree leafhopper	Mar-Jun	Bacterium	Bacillus thuringiensis	Javelin	Apr-May
			Carbamate	Carbaryl	Sevin	Apr-May
			Diacylhydrazine	Methoxyfenozone	Intrpeid	Apr-May
				Chlorantraniliprole	Altacor	Apr-May
			Diamide	Flubendiamide	Belt	Apr-May
				Organophosphate	Methodathion	Supracide
			Pyrethroid	Esfenvalerate	Asana	Jan-Feb
				Lambda-cyhalothrin	Warrior	Jan-Feb
	Spinosyn	Spinetoram	Delegate	Apr-May		
		Spinosad	GF-120 Naturalyte	Apr-May		
	Mountain leafhopper	May-Jul	Neonicotinoid	Thiamethoxam	Cruiser	May-Jul
			Pyrethroid	Esfenvalerate	Asana	May-Jul
				Lambda-cyhalothrin	Warrior	May-Jul
Walnut	Codling moth	May-Nov	Avermectin	Emamectin benzoate	Proclaim	Mar-May, Aug, Oct
			Bacterium	Bacillus thuringiensis	Javelin	Mar-May, Aug, Oct
			Benzoylurea	Diflubenzuron	Dimlin	Mar-May, Aug, Oct
			Carbamate	Carbaryl	Sevin	Mar-May, Aug, Oct
			Diacylhydrazine	Methoxyfenozone	Intrpeid	Mar-May, Aug-Oct
				Chlorantraniliprole	Altacor	Mar-May, Aug, Oct
			Diamide	Flubendiamide	Belt	Mar-May, Aug, Oct
				Organophosphate	Phosmet	Imidan
			Pyrethroid	Bifenthrin	Brigade	Mar-May, Aug, Oct
				Cyfluthrin	Leverage	Mar-May, Aug, Oct
				Lambda-cyhalothrin	Warrior	Mar-May, Aug, Oct
			Spinosyn	Permethrin	Perm-Up	Mar-May, Aug, Oct
				Spinetoram	Delegate	Mar-May, Aug, Oct
	Spinosad	GF-120 Naturalyte	Mar-May, Aug, Oct			
	Walnut husk fly	Jun-Sept	Neonicotinoid	Imidacloprid	Pasada	Jun-Aug
			Organophosphate	Malathion	Clean Crop	Jun-Aug
				Phosmet	Imidan	Jun-Aug
			Plant growth regulator	Ethephon	Ethrel	Jun-Aug
			Pyrethroid	Esfenvalerate	Asana	Jun-Aug
			Spinosyn	Spinetoram	Delegate	Jun-Aug
Spinosad	GF-120 Naturalyte	Jun-Aug				
Alfalfa	Alfalfa weevil	Feb-Jun	Organophosphate	Malathion	Clean Crop	Mar-May
				Phosmet	Imidan	Mar-May
			Oxadiazine	Indoxacarb	Steward	Mar-May
				Pyrethroid	Cyfluthrin	Leverage
				Lambda-cyhalothrin	Warrior	Mar-May
	Blue, pea aphid	Feb-Jun	Botanical	Azadirachtin	Azatin (various)	Mar-May
				Pyrethrin	NA	Mar-May
			Organophosphate	Dimethoate	Drexel	Mar-May
	Spotted	Jun-Sept	Botanical	Azadirachtin	Azatin (various)	Jun-Nov

COMMODITY	PEST	PEST APPEARANCE	PESTICIDE CLASS ¹	ACTIVE INGREDIENT	COMMON PRODUCT NAME	RECOMMENDED APPLICATION PERIOD
	alfalfa aphid			Pyrethrin	NA	Jun-Nov
			Organophosphate	Dimethoate	Drexel	Jun-Nov
Grapes	Vine mealybug	May-Oct	Carbamate	Methomyl	Lannate	Jun-Nov
			Neonicotinoid	Acetamiprid	Assail	Jun-Aug
				Imidacloprid	Provado	Apr-Aug
			Organophosphate	Dimethoate	Drexel	Jun-Nov
			Unclassified	Buprofezin	Applaud	Feb, Jun-Aug

¹For organization purposes, the Pesticide Class column includes categories that are not pesticides, such as bacterium.

Source: CA DWR 2013; IRAC, 2005; Summers et al., 2007; UC ANR, 2013; Zalom et al., 1999

The Coalition reviewed PUR data for trends in use of chlorpyrifos, diazinon, and the alternative pesticides listed in Table 43 per each commodity in the SJCDWQC region. Table 41 includes the pounds of chlorpyrifos, diazinon, and alternative pesticides (grouped by class of pesticide) applied per year on each commodity within the SJCDWQC region. The Coalition included 2007 through 2012 in the analysis; 2007 was chosen as a baseline since it was the year in which general outreach became more focused on management plan constituents, which included discussing alternatives to chlorpyrifos and diazinon with growers.

The trends in pesticide use differ among crops (Table 43). For alfalfa, there was a small decrease in the use of chlorpyrifos; and a similar increase in the use of other organophosphates. In almonds, there was a decrease in the use of chlorpyrifos, diazinon, and alternative organophosphates, which may have been replaced by the use of avermectin, diacylhydrazine, diamide, and buprofezine. In cherries, the pounds of chlorpyrifos and diazinon applied increased; however, this could be largely explained by the peak in diazinon use in 2010 as a response to the spotted wing drosophila outbreak. Alternatively the use of organophosphates, pyrethroids, and spinosyns increased. In grapes, a decrease in the use of chlorpyrifos and an increase in the use of neonicotinoids occurred. Chlorpyrifos use in walnuts remained fairly constant, while most other alternative pesticide use increased. It is possible that these trends could be influenced by changes in crops and acreages over time.

Table 43. Changes in the amount of chlorpyrifos, diazinon, and alternative pesticides (as pounds of active ingredient) applied to five crops in the SJCDWQC region since 2007.

Chlorpyrifos and diazinon are listed in green. Rate of change is the average percent change per year¹. Active Ingredients of each pesticide class is listed in Table 42. Values are not corrected for changes in crop acreage over time.

COMMODITY	PESTICIDE CLASS	LBS AI APPLIED						RATE OF CHANGE ¹
		2007	2008	2009	2010	2011	2012	
Alfalfa	Chlorpyrifos	12557	7158	14831	8570	9750	7124	-7%
	Other Organophosphates ²	10532	4490	9262	12001	13093	10730	8%
	Oxadiazine	297	240	1146	279	277	146	-11%
	Pyrethroid	1411	1358	2022	1654	1248	1346	-2%
Almonds	Chlorpyrifos	8171	5549	6676	6357	2327	3240	-18%
	Diazinon	3765	2661	727	340	231	327	-53%
	Avermectin	0	0	0	0	3	0	55%
	Bacterium	220	158	150	162	76	70	-20%
	Benzoylurea	571	704	623	554	513	432	-7%
	Diacylhydrazine	334	352	348	966	1446	2131	40%
	Diamide	0	0	172	63	177	221	41%
	Neonicotinoid	0	1	57	53	20	13	14%
	Other Organophosphates ²	3837	2272	10	21	20	0	-72%
	Pyrethroid	4999	4267	3297	5302	4370	4723	1%

COMMODITY	PESTICIDE CLASS	LBS AI APPLIED						RATE OF CHANGE ¹
		2007	2008	2009	2010	2011	2012	
	Spinosyn	30	48	2	5	4	12	-37%
	Unclassified-Buprofezin	0	0	0	0	16	16	69%
Cherry	Chlorpyrifos	51	26	0	486	0	0	5%
	Diazinon	3028	1574	1551	15449	2206	2504	9%
	Bacterium	80	268	62	99	432	97	10%
	Carbamate	589	280	70	1383	326	180	-4%
	Diacylhydrazine	1572	1611	1684	1397	1643	1800	2%
	Diamide	0	0	0	1	2	16	78%
	Neonicotinoid	404	357	511	522	906	732	16%
	Other Organophosphate ²	917	53	83	15470	16614	16662	50%
	Pyrethroid	722	555	1049	3462	1588	4672	36%
	Spinosyn	19	11	23	261	775	757	58%
Grapes	Chlorpyrifos	11291	6462	16886	7711	604	2448	-27%
	Carbamate	272	254	509	419	34	30	-22%
	Neonicotinoid	2206	2744	5767	6955	8167	5710	19%
	Other Organophosphates ²	1402	696	107	60	34	184	-56%
	Unclassified-Buprofezin	1913	1356	8472	10142	939	328	-6%
Walnuts	Chlorpyrifos	31043	20283	33668	34757	24455	27643	0%
	Diazinon	365	5	38	26	0	0	-73%
	Avermectin	0	0	0	0	0.43	0.17	61%
	Bacterium	364	259	181	198	513	303	5%
	Benzoylurea	458	443	622	393	425	694	5%
	Carbamate	0	0	42	26	99	0	29%
	Diacylhydrazine	446	149	413	765	851	1725	35%
	Diamide	0	0	29	116	396	626	65%
	Neonicotinoid	10	316	1282	1467	1408	3336	44%
	Other Organophosphates ²	11209	5820	8274	12795	13428	7903	3%
	Plant growth regulator	2669	978	3407	5765	8819	6727	28%
	Pyrethroid	1312	966	1391	1664	2156	3996	26%
	Spinosyn	70	69	83	151	116	151	16%

¹ Linear rate of change was calculated as the slope of the regression of pounds of pesticide as a function of year, divided by the average pounds over the 6 years.

² Other organophosphates refer to all pesticides classified as organophosphates except chlorpyrifos and diazinon.

The 2013 MPUR includes an analysis of pesticide use by month and found that growers relied more on alternatives to diazinon and chlorpyrifos in 2011 when compared to use in 2007 to manage high priority pests. Refer to the 2013 MPUR Alternatives to Chlorpyrifos and Diazinon section for further details on the Relative Percent Difference (RPD) of pounds applied from 2007 through 2011 where the Coalition linked pesticide applications to pest pressures by evaluating use on a monthly basis. Based on the rate of change between 2007 and 2012, this trend appears to continue (Table 43).

In the course of Assessment Monitoring and MPM, the Coalition assessed organophosphates, carbamates, and pyrethroids to effectively characterize the water quality in each zone (Table 44). The Coalition also evaluated sediment and water column toxicity related to pesticide use. Table 44 lists the site monitored for the specific pesticide or toxicity and whether monitoring was Assessment Monitoring which occurs monthly (A) or MPM which occurs during months of past exceedances or toxicity (M). In 2013 there was a single detection of an alternative pesticide in the water column (Table 45). There were no samples toxic to *C. dubia* or *P. promelas* and five toxic sediment samples (Table 46).

During Assessment Monitoring in April 2013, dimethoate (organophosphate) was detected in samples collected from the Walthall Slough @ Woodward Ave. The Walthall Slough @ Woodward Ave site

subwatershed is representative of water quality in the San Joaquin River (Stanislaus River to Delta Boundary). The concentration of dimethoate was not above the WQTL (Table 44).

Table 44. Sites monitored during 2013 for organophosphates and carbamates in the water column, including alternatives to chlorpyrifos and diazinon, and for toxicity in the water column and sediments.

SITE NAME	ORGANOPHOSPHATES											CARBAMATES					TOXICITY			
	AZINPHOS-METHYL	DICHLORVOS	DIMETHOATE	DEMETON-S	DISULFOTON	MALATHION	METHAMIDOPHOS	METHIDATHION	PARATHION, METHYL	PHORATE	PHOSMET	ALDICARB	CARBARYL	CARBOFURAN	METHIOCARB	METHOMYL	OXAMYL	C. DUBIA	P. PROMELAS	H. AZTECA ¹
Bear Creek @ North Alpine Rd						M														
Duck Creek @ Hwy 4																			M	
French Camp Slough at Airport Way															M				M	
Mormon Slough @ Jack Tone Rd																			M	
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd															M					
Terminus Tract Drain @ Hwy 12	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M ²
Drain to Bishop Cut @ North Rio Blanco Rd5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Empire Tract @ 8 Mile Rd5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Grant Line Canal @ Clifton Court Rd																				
Grant Line Canal near Calpack Rd																			M	
Kellogg Creek along Hoffman Ln																			M	
Roberts Island @ Whiskey Slough Pump															M				M	
Walthall Slough @ Woodward Ave	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M ²
Sand Creek @ Hwy 4 Bypass					M															
Bear Creek @ North Alpine Rd						M														

A - Assessment Monitoring, conducted monthly.

M - Management Plan Monitoring, conducted during months of past exceedances.

¹ If *H. azteca* survival is 80% or less compared to the control, sediment sample is analyzed for pyrethroids (bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, lambda-cyhalothrin, permethrin, fenpropathrin) and chlorpyrifos.

²MPM at sites under Assessment Monitoring in 2013.

Table 45. Detections of potential alternative pesticides during 2013 SJCDWQC tributary monitoring.

Site Name	Sample Date	Dimethoate	WQO
Walthall Slough @ Woodward Ave	4/2/2013	0.71 µg/L	1.0 µg/L

Five sediment samples collected from five different sites were toxic to *H. azteca* during 2013; four were collected in March and one in September (Table 46). Duck Creek @ Hwy 4 monitoring location is in the Delta eastern portion, but outside the legal Delta boundary (Figure 27). The other four locations are within the legal Delta boundaries, but only one, Sand Creek @ Hwy 4 Bypass in the western Delta portion, is a Delta waterway (Figure 27). The other three are drains (Grant Line Canal near Calpack Rd, Grant Line Canal @ Clifton Court and Terminus Tract Drain @ Hwy 12), and water must be pumped out before it reaches a main Delta channel. Two of the samples (Sand Creek @ Hwy 4 Bypass and Duck Creek @ Hwy 4) had survivals above 90% and analysis of pesticides was not conducted on these samples (Table 46). Analysis of toxic sediment in the three samples with survival below the 80% threshold indicated the presence of chlorpyrifos (two samples) and several pyrethroids (all three samples; Table 47).

In 2013, the Coalition did not find concentrations of alternative pesticides in water column samples above levels that would cause water quality impairments. However, there were sediment samples collected that were toxic to *H. azteca* that also contained pyrethroids and in some cases chlorpyrifos. These samples were collected within the interior Delta island drain channels and may not reflect conditions within the main Delta channels. During outreach and education, growers in the Coalition region receive recommendations to implement management practices designed to protect water quality and prevent the offsite movement of all agricultural constituents in both the water and sediment including chlorpyrifos, diazinon, alternative pesticides. Management practices recommended to growers are designed to prevent spray drift, reduce irrigation tailwater, sediment, and storm water runoff from carrying pesticides to surface waterways. A complete analysis of the Coalition's management practice tracking and outreach strategy is provided in the Management Practice section of this report.

Table 46. Toxicity analysis summary for samples with survival that was statistically significantly different from control.

STATION NAME	SAMPLE DATE	SEASON & MONITORING TYPE ¹	SPECIES	TOXICITY END POINT	MEAN	PERCENT CONTROL	TOXICITY SIGNIFICANCE	SUMMARY COMMENTS
Grant Line Canal near Calpack Rd	3/19/2013	Winter3, SED,MPM	<i>H. azteca</i>	Survival (%)	39	41	SL	Pyrethroids detected.
Sand Creek @ Hwy 4 Bypass	3/19/2013	Winter3, SED, MPM	<i>H. azteca</i>	Survival (%)	88	90	SG	
Duck Creek @ Hwy 4	3/19/2013	Winter3, SED, MPM	<i>H. azteca</i>	Survival (%)	89	91	SG	
Grant Line Canal @ Clifton Court Rd	3/19/2013	Winter3, SED, MPM	<i>H. azteca</i>	Survival (%)	34	36	SL	Pyrethroids and chlorpyrifos detected.
Terminus Tract Drain @ Hwy 12	9/17/2013	Irrigation5,SED, MPM	<i>H. azteca</i>	Survival (%)	46	48	SL	Pyrethroids and chlorpyrifos detected.

MPM – Management Plan Monitoring

SED – Sediment monitoring

SG-Statistically significantly different from control; Greater than 80% threshold

SL-Statistically significantly different from control; Less than 80% threshold

¹Season & Sample Type column includes the type of monitoring the toxic species was undergoing during the month of monitoring.

Table 47. Sediment chemistry results for samples with 80% or less survival compared to control. Sediment analysis includes Pesticides, Total Organic Carbon (TOC), and grain size.

STATION NAME	SAMPLE DATE	MONITORING TYPE	H. AZTECA (%CONTROL)	SEDIMENT PESTICIDES (µg/kg)									TOC (mg/kg dw)	PERCENT TOC	MEAN GRAIN SIZE DESCRIPTION	MEDIAN GRAIN SIZE (mm)
				BIFENTHRIN	CHLORPYRIFOS	CYFLUTHRIN	CYHALOTHRIN, LAMBDA	CYPERMETHRIN	DELTAMETHRIN: TRALOMETHRIN	ESFENVALERATE/ FENVALERATE	FENPROPATHRIN, PERMETHRIN					
Grant Line Canal @ Clifton Court Rd	3/19/2013	MPM, SED	36	J0.92	J0.91	ND	22	ND	ND	24	ND	ND	36,000	3.6	Silt ²	0.024
Grant Line Canal near Calpack Rd	3/19/2013	MPM, SED	41	3.2	ND	ND	J0.25	ND	ND	ND	ND	ND	20,000	2.0	Silt ²	0.011
Terminus Tract Drain @ Hwy 12	9/17/2013	MPM, SED	48	5.8	2.8	ND	J0.093	ND	ND	J0.34	ND	1.1	20,000	2.0	Fine Sand ¹	0.087

MPM-Management Plan Monitoring

ND- Not Detected

SED-Sediment monitoring

TOC- Total Organic Carbon

¹Sand (Fine): 0.075 to <0.425 mm

²Silt: 0.005 to <0.075 mm

Toxicity Impairment Due to Additive or Synergistic Effects of Multiple Pollutants

To completely understand whether there is additivity or synergy in toxicity caused by different chemicals in an ambient sample, the number of toxic units of each chemical in the ambient sample must be known. While the Coalition analyzes for numerous pesticides, there are far more pesticides applied and potentially in a sample than are included in the water chemistry analyses performed by the laboratories for the Coalition. A full TIE isolates the organic compounds by a solid phase extraction column and then characterizes the compounds by mass spectrometry analysis. The Coalition performs a Phase I and Phase III TIE which allows for the isolation of a compound type (i.e. non-polar organic, metals) but does not analyze the eluate to identify the specific compound. The cost of a full TIE is quite high and the Coalition has found that it can still perform targeted outreach using the results of the Phase I and Phase III TIEs. Consequently, there may always be chemicals in the sample that remain unidentified.

If all chemicals in a sample were quantified with confidence, the toxic units in the sample quantified, and the LC_{50} is available for the test species for all quantified chemicals, it is possible to determine if the toxicity observed is matched by the sum of the toxic units of the chemicals in the sample. If the toxic units are accounted for by the toxic units of the individual chemicals and the chemicals have the same mode of action, the toxicity is additive. If the number of toxic units quantified from the ambient sample is greater than the sum of the toxic units of the quantified chemicals, the chemicals are synergistic or there are additional chemicals in the water that are not identified. If the sum of the toxic units calculated from the concentrations of the chemicals known to be present in the sample is lower than the number of toxic units in the ambient sample determined by toxicity testing, and if there are unknown chemicals in the ambient sample, it cannot be determined if synergy among chemicals is present. Given the chemical analyses performed by the Coalition on each sample, it is unlikely that true synergy can be identified.

The Coalition conducted monitoring of *C. dubia*, *P. promelas*, and/or *H. azteca* at sites in the SJCDWQC during 2013 (Table 44). The Coalition reviewed water column toxicity to *C. dubia* and *P. promelas* to assess toxicity due to pesticides, and sediment toxicity to *H. azteca* for toxicity due to chlorpyrifos and/or pyrethroids (Tables 46 and 47). During 2013, water column analyses did not yield evidence of additivity or synergy in toxicity caused by different chemicals. Diazinon was not detected in any of the samples collected in 2013. Chlorpyrifos was detected in one (of seven) samples collected from French Camp Slough @ Airport Way (Table 37). The sample containing chlorpyrifos from French Camp Slough @ Airport Way was collected for chlorpyrifos MPM only; it is unknown if other pesticides or metals were present in the sample and therefore is not known if the chlorpyrifos could have interacted in an additive or synergistic manner with other constituents in the waterway. During 2013, there were no instances of toxicity to *C. dubia* or *P. promelas* in the Coalition tributary sites.

Sediment analysis indicated evidence of the potential for additive or synergistic interactions between chlorpyrifos and pyrethroids. Pyrethroids (bifenthrin, esfenvalerate, lambda-cyhalothrin, and permethrin) and/or chlorpyrifos were detected in all three of the samples analyzed for pesticides in the

sediment (Tables 46 and 47). Chlorpyrifos and any of the pyrethroids could have interacted to cause the sediment toxicity; however, the Coalition cannot be certain if those were the only constituents causing the toxicity or if the effect was additive or synergistic.

Demonstrate That Management Practices Are Achieving the Lowest Pesticide Levels Technically and Economically Achievable

A determination of technical and economic feasibility of achieving the lowest pesticide levels possible needs to be assessed at the individual farm level and consequently is expected to vary with the specific operation and commodity farmed. The goal of the Coalition is for its members to eliminate the discharge of pesticides to surface waters. Economic feasibility is determined by factors outside the control of the Coalition. Profitable operations can afford to implement expensive management practices such as sediment basins or pressurized irrigation. Both of these management practices can significantly reduce runoff of irrigation and storm water carrying agricultural discharges. Marginally profitable operations may not be able to afford these practices. The Coalition publicizes available funding information through the Proposition 84 grant program run by CURES and works with local NRCS offices to notify growers of available EQIP and AWEF funds (refer to Funding Resources section of this report). There remain many growers who are not members of the Coalition and improvements to their farming operations are not possible through Coalition efforts.

It is possible to reduce discharges to surface waters to the point that they do not impair beneficial uses. Within the SJCDWQC region, the percentage of samples with exceedance level detections of chlorpyrifos in 2013 was similar to 2012 (0.8% in 2012 vs 1.1% in 2013); in both years there was only a single exceedance of chlorpyrifos. Exceedances of the WQO for diazinon have not occurred in the Coalition region since 2008. Management practices implemented by growers are resulting in a reduction of discharges, and growers are in the process of achieving the lowest pesticide levels technically and economically achievable.

SALT AND BORON

The Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Salt and Boron Discharges into the Lower San Joaquin River was approved by the US EPA on February 7, 2007 and established load allocations to meet the existing WQOs for salt and boron in the San Joaquin River at Airport Way (Vernalis). The amendment includes a requirement for a second phase TMDL to prepare and implement new salt and boron objectives in the San Joaquin River upstream of Airport Way (Vernalis).

In 2006, the State Water Board, Regional Board and stakeholders initiated the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS), a collaborative effort to develop and implement a salinity and nitrate management program and Basin Plan Amendment. The Central Valley Salinity Coalition (CVSC) formed in July 2008 to organize, facilitate and fund efforts to fulfill goals of CV-SALTS.

The SJCDWQC recognizes that salt, nitrate, and boron water quality impairments are a Central Valley wide concern. The Coalition closely follows the planning and reviewing of studies relevant to the development of a Basin Plan amendment for salt and boron and will participate in the efforts concerning the Delta area once the CV-SALTS process is complete. In addition, the Coalition monitors salt (SC and/or TDS) and nitrate in every zone and boron in two zones (Table 48) and includes these constituents in discussions with growers about water quality impairments and applicable management practices.

The export area, southern, and western Delta waterways and the San Joaquin River (Stanislaus River to Delta Boundary) are within the SJCDWQC region and are 303(d) listed for salt (electrical conductivity). The Coalition is communicating with the growers in these areas about the Basin Plan requirements for compliance and the status of the CV-SALTS process.

Table 48. SJCDWQC sites monitored for salt, measured as specific conductance (SC) and total dissolved solids (TDS), nitrate, and boron during 2013.

ZONE	SITE NAME	SC	TDS	NITRATE + NITRITE (AS N)	BORON (TOTAL)
Zone 1	Bear Creek @ North Alpine Rd	F			
	Mokelumne River @ Bruella Rd	C	C	C	
Zone 2	Duck Creek @ Hwy 4	F			
	French Camp Slough at Airport Way	C	C	C	
	Littlejohns Creek @ Jack Tone Rd	F			
	Mormon Slough @ Jack Tone Rd	F			
	Lone Tree Creek @ Jack Tone Rd	F			
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	F			
Zone 3	Terminus Tract Drain @ Hwy 12	A	A	A	A
	Drain @ Woodbridge rd	F			
Zone 4	Drain to Bishop Cut @ North Rio Blanco Rd ¹	A	A	A	A
	Empire Tract @ 8 Mile Rd ¹	A	A	A	A
	Grant Line Canal @ Clifton Court Rd	F			
	Grant Line Canal near Calpack Rd	F			
Zone 5	Grant Line Canal near Calpack Rd	F			
Zone 6	Kellogg Creek along Hoffman Ln	F			

A—Constituent monitored as part of Assessment Monitoring.

C—Constituent monitored as part of Core Monitoring.

F—Constituent monitored as part of field parameter data collected at sites scheduled for MPM.

¹Drain to Bishop Cut @ North Rio Blanco Rd (monitored January-March) was approved on July 5, 2013 to be replaced by Empire Tract @ 8 Mile Rd (monitored July-December) due to no access.

DISSOLVED OXYGEN

The EPA approved the *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel* (hereafter, DO Basin Plan Amendment) on February 27, 2007 to address the low levels of DO in the Stockton Deep Water Ship Channel (DWSC). The Regional Board identifies three contributing factors to DO impairments in the DWSC: 1) loads of oxygen demanding substances from upstream sources, 2) geometry of the DWSC, and 3) reduced flow through the DWSC. All factors are considered 100% responsible for reducing DO concentrations in the DWSC. Discharges from irrigated lands are associated with 60% of the load allocation from upstream nonpoint sources.

The Coalition reviews DO monitoring results in the Stockton DWSC and from within its tributaries to assess compliance with the DO WQOs required in the TMDL. The DO Basin Plan Amendment specifies that DO concentrations in the Stockton DWSC shall not be reduced below 5.0 mg/L from December 1 through August 31 and below 6.0 mg/L from September 1 through November 30 in the legal boundaries of the Delta.

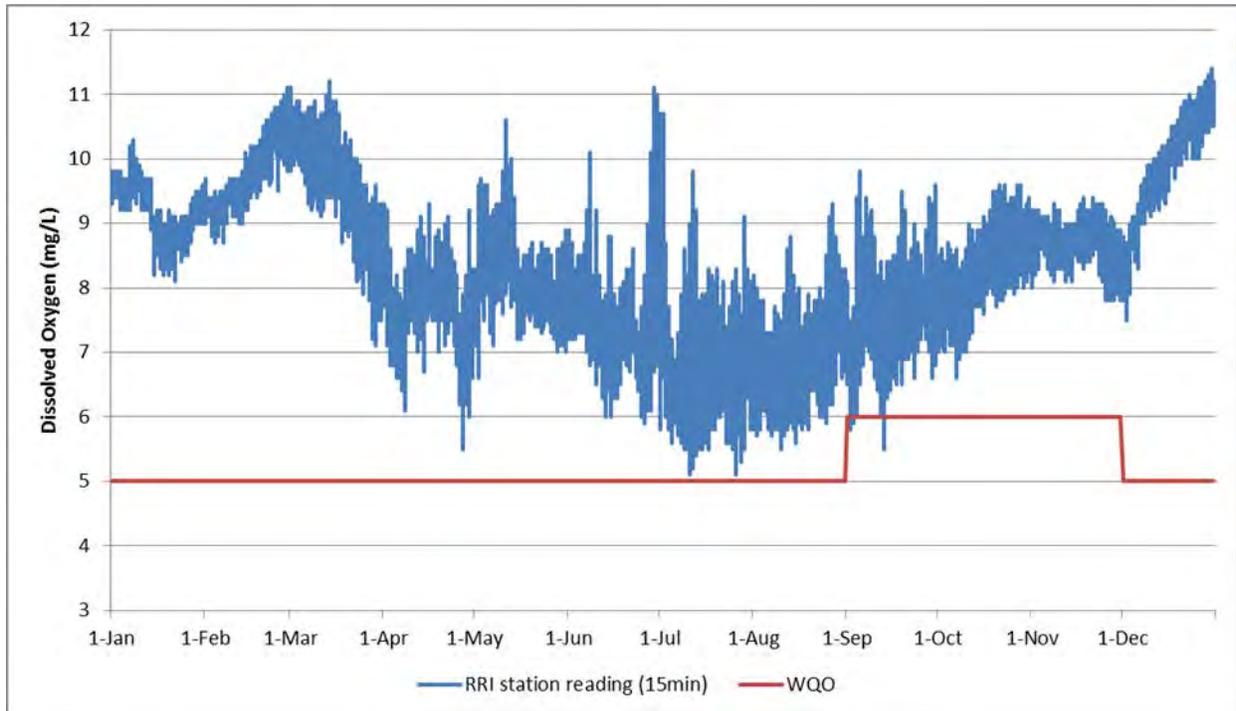
The Coalition reviewed monitoring data from the California Data Exchange Center (CDEC) Rough and Ready Island station to evaluate DO concentrations in the Stockton DWSC during 2013 (Table 49, Figure 29). This monitoring station is located within the Stockton DWSC and is therefore consistent with the Stockton DWSC Demonstration DO Aeration Facility reports (last report produced in June 2011). Dissolved oxygen measurements occur at the station on 15-minute intervals via an auto sampler.

If a DO measurement from one or more 15-minute event(s) is less than the WQO, the water quality is defined as noncompliant for the day. There were fewer exceedances of the WQO for DO in the Stockton DWSC during 2013 than in 2012. Noncompliant DO concentrations occurred a total of 12 times during September of 2013: September 2 (2 times), September 3 (3 times), and September 13 (7 times). Only one of the noncompliant DO measurements lasted more than an hour (September 13). The low levels of DO occurred at night and morning hours when air temperatures and, consequently, water temperature, are the lowest. None of the DO measurements were below 5 mg/L (Figure 29).

The Coalition reviewed tributary monitoring results from Zone 2, which contains agriculturally-influenced tributaries that may drain to the Stockton DWSC and could contribute oxygen demanding substances. Monitoring events on August 20 and September 17, 2013 bracket the noncompliant DO measurements from the Rough and Ready Island location. Coalition monitored for DO in Zone 2 at five site subwatersheds on August 20 and at four site subwatersheds on September 17 (Table 50). During these nine monitoring events, there were three exceedances, two at Duck Creek @ Hwy 4, and one at Littlejohns Creek @ Jack Tone Rd on September (Table 50). All three exceedances coincided with very low flow rates (less than 5 ft/s). Given the changing flow rates and hydrology, it is unlikely this low DO level contributed to the noncompliant measurements of DO in the Stockton DWSC in September. The Coalition did not review DO measurements from tributary monitoring during other months because no DO impairments in the Stockton DWSC occurred during any month except for early September. Even if low DO levels occurred in tributaries within the SJCDWQC boundaries, the exceedances did not contribute to impairments in the Stockton DWSC.

Figure 29. Rough and Ready Island (RRI) Dissolved Oxygen measurements and WQO from January 1 through December 31, 2013.

Dissolved oxygen is measured at the station on 15-minute intervals by an auto sampler.



Source: CA DWR, n.d.1. Data generated on Tue Mar 04 15:30:38 PST 2014

Table 49. Dissolved Oxygen (DO) monitoring results and WQO for tributary sites in Zone 2, the month prior to the exceedances of the WQO for DO in the Stockton DWSC.

Exceedances of the WQO for the DWSC are in bold.

STATION NAME	SAMPLE DATE	DISCHARGE (cfs)	DO (MG/L)	TEMPERATURE (C°)	OBSERVED FLOW RATE (FT/S)	WQO ¹ (MG/L)
Duck Creek @ Hwy 4	8/20/2013	NR	1.08	24.6	1-5	5
French Camp Slough at Airport Way	8/20/2013	38.5	5.71	24.9	20-50	5
Lone Tree Creek @ Jack Tone Rd	8/20/2013	41.0	7	22.0	5-20	5
Mormon Slough @ Jack Tone Rd	8/20/2013	NR	9.58	27.6	0	5
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	8/20/2013	27.4	5.85	24.2	20-50	5
Duck Creek @ Hwy 4	9/17/2013	NR	2.14	21.2	0.1-1	6
Littlejohns Creek @ Jack Tone Rd	9/17/2013	NR	3.28	20.9	0	6
French Camp Slough at Airport Way	9/17/2013	49.96	7.76	20.2	50-200	6
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	9/17/2013	4.08	7.26	20.5	1-5	6

NR – Not recorded; too deep to measure discharge.

¹ Since we are evaluating upstream DO exceedances potentially having an effect on the DWSC, we use the DWSC limit which is 5mg/L through August, and 6mg/L through September.

The Coalition is addressing exceedances of the WQTL for DO through its management plan process. Because DO sources are difficult to determine with the resources currently available to the Coalition, DO is classified as a Priority E constituent. The Coalition includes discussions of DO water quality concerns

during outreach to growers and encourages the implementation of management practices designed to reduce the offsite movement of agricultural constituents that will aid in reducing offsite movement of organic matter.

In addition, the Coalition continues to follow developments in achieving WQOs for DO in the Stockton DWSC. The Coalition participated in several DO TMDL Technical Working Group meetings during 2010 to discuss the progress of several studies and pilot programs (2011 MPUR, page 99, Table 28). These include the upper San Joaquin River DO project and the performance of the Aeration Facility, located at the west (downstream) end of Rough and Ready Island at the Port of Stockton. The *Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Aeration Facility Project Final Report* was released in December 2010 and indicates the Aeration Facility is a useful and effective tool to achieve the Basin Plan DO WQO in the DWSC. The Coalition will continue to participate in meetings and review technical documents as they are made available.

METHYL MERCURY

On October 20, 2011, the US EPA approved the *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methyl mercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary* (hereafter, Methyl Mercury Basin Plan Amendment). The program put forth in the Methyl Mercury Basin Plan Amendment intends to reduce the amount of methyl mercury in the Sacramento-San Joaquin Delta and is to be implemented through a phased, adaptive management approach. During Phase 1, stakeholders are to conduct studies and pilot projects to evaluate the effectiveness of management practices to control methyl mercury production and release. The Regional Board will evaluate the outcomes of Phase 1 during the Phase 1 Delta Mercury Control Program Review, which is expected to be complete by October 20, 2020. Phase 2 begins after the Phase 1 Delta Mercury Control Program Review is completed or after October 20, 2022, whichever comes first, and ends in 2030.

The Delta Methyl Mercury TMDL Nonpoint Sources (NPS) Workgroup was formed to provide nonpoint dischargers with an organizational structure for developing collaborative control studies and carrying out the actions dictated for Phase 1. Initial funding from a 319(h) planning grant is being applied to identify the potential management practices and potential study sites, support development of Control Study Workplans, and provide outreach and communications for the existing NPS Workgroup throughout the process. In April 2012, the Coalition submitted a letter confirming participation in the Phase 1 Methyl Mercury Control Studies through the Methyl Mercury Nonpoint Source Workgroup. The Coalition representatives participated in NPS Workgroup and Methyl Mercury TMDL for the Delta Technical Advisory Committee (Methyl Mercury TAC) meetings throughout 2013, and Coalition representative, Mike Wackman, serves on the NPS Workgroup Steering Committee (Table 50). The NPS Workgroup submitted a Methyl Mercury Control Study Workplan on April 19, 2013. The Coalition submitted a Discharger Commitment Letter to the Regional Board on July 25, 2013 stating the Coalition is willing to participate in the Delta Mercury Exposure Reduction Program (MERP).

In addition, Coalition representatives are participating in the MERP that was dictated in the Methyl Mercury Basin Plan Amendment. Coalition representatives participated in meetings regarding the development of the MERP Strategy (Table 51); the MERP Strategy final document was released on November 15, 2012. The Coalition participated in the development of the MERP Work Plan submitted in October 20, 2013.

Table 50. Deliverables pursuant to the requirements of the Methyl Mercury Basin Plan Amendment submitted during 2013.

AUTHOR	RECIPIENT	DATE	ITEM
SJCDWQC	Regional Board	4/19/2013	Methyl Mercury Workplan
SJCDWQC	Regional Board	7/25/2013	Discharger Commitment Letter
SJCDWQC	Regional Board	10/20/2013	MERP Workplan

NPS-Nonpoint Source

TAC-Technical Advisory Committee

Table 51. Meetings attended concerning the Methyl Mercury Basin Plan Amendment during 2013.

MEETING DATE	MEETING TITLE	COALITION REPRESENTATIVE IN ATTENDANCE
1/31/2013	NPS Workgroup Meeting	MW
2/26/2013	MERP Workplan Workgroup Meeting	MW
4/4/2013	NPS Workgroup Meeting	MW

MW – Mike Wackman, SJCDWQC

MERP-Mercury Exposure Reduction Program

NPS-Nonpoint Source

CONCLUSIONS

During 2013 monitoring data were collected from sites in the SJCDWQC region during Assessment Monitoring, MPM and Core Monitoring. Results from throughout the year indicate improved water quality in the Coalition region. Conclusions from data provided in the Management Practice Effectiveness, Coalition Wide Evaluation and Status of TMDL Constituents sections of this report indicate:

1. Compared to previous years, fewer exceedances occurred in 2013 in high priority site subwatersheds receiving focused outreach.
2. Growers in the SJCDWQC region are taking advantage of available funding resources to be used to implement management practices that improve water quality.
3. Growers across the SJCDWQC region are aware of water quality impairments and are implementing management practices designed to address these impairments even if the Coalition has yet to conduct focused outreach in the site subwatershed.
4. The decrease in exceedances and water column toxicity coincides with additional focused outreach and the implementation of management practices encouraged by the Coalition.
5. The Coalition's focused management practice tracking and outreach strategy is effective at improving water quality. Monitoring results indicate two consecutive years of monitoring with no exceedances of the WQTL for several specific site subwatershed/constituent pairs, which indicates improved grower awareness of the offsite movement of agricultural constituents and/or newly implemented management practices. To date, the Coalition has received approval for the removal of 39 constituents from eleven high priority site subwatersheds (approval letters received March 22, April 17, May 21, 2012, and February 27, 2013).
6. Due to effective outreach and education, diazinon has been completely removed from all SJCDWQC site subwatershed management plans.
7. Growers continue to help prevent offsite movement of agricultural constituents into adjacent waterways.
8. During 2013, the SJCDWQC was in compliance with load capacity requirements of the chlorpyrifos and diazinon TMDL. A single sample with elevated concentrations of chlorpyrifos resulted in a single noncompliant load allocation in 2013. Diazinon was not detected in any sample collected during 2013.

SITE SUBWATERSHED MANAGEMENT PLAN UPDATE

Brief descriptions of all site subwatersheds included in the SJCDWQC Management Plan as of April 1, 2014 are listed below. The descriptions include site subwatersheds that are listed as current high priority site subwatersheds and those that will reach high priority status in the future, in alphabetical order. Further analysis of the first (2008-2010), second (2010-2012), third (2011-2013), fourth (2012-2014), fifth (2013-2015), and sixth (2014-2016) high priority site subwatersheds is included in Appendix I of this report.

Bear Creek @ North Alpine Rd

Bear Creek @ North Alpine Rd (19,642 irrigated acres) is located on the northern edge of the Coalition region; its boundary starts in the north eastern region of San Joaquin County and portions of Calaveras County in its upstream region. The primary irrigated agriculture in the site subwatershed includes pasture, vineyards and deciduous orchards with some field crops, grains, and hay.

Bear Creek @ North Alpine Rd is a rotating Assessment Monitoring location within Zone 1. Normal Monitoring (NM) for Assessment Monitoring constituents began at the site in October 2008 and continued through March 2009. Monitoring was scheduled through 2009; however, the Coalition received approval to revise the monitoring schedule effective April 1, 2009, and Normal Monitoring was discontinued at the site beginning April 2009. Assessment Monitoring occurred at Bear Creek @ North Alpine Rd during 2011. Management Plan Monitoring for chlorpyrifos and malathion occurred in 2012 and 2013.

Bear Creek @ North Alpine Rd is a fifth priority site (2013-2015). Active management plan constituents include chlorpyrifos, malathion, DO, *E. coli*, and pH. During 2013, MPM resulted in no exceedances of the WQTL for chlorpyrifos or malathion.

The Coalition identified growers with the greatest likelihood of contributing to water quality impairments in the Bear Creek @ North Alpine Rd site subwatershed and began focused outreach in early 2013. A summary of current implemented practices is included in the Fifth Priority Subwatersheds Summary of Management Practices section of this report.

Drain @ Woodbridge Rd

Drain @ Woodbridge Rd (4,540 irrigated acres) drains an area of land to the east of the site, between Hog Slough and Sycamore Slough. The primary irrigated agriculture in the site subwatershed is a combination of field crops, truck/nursery/berry crops, vineyards, pasture, grains/hay, and dairy.

Drain @ Woodbridge Rd is a rotating Assessment Monitoring location within Zone 3. Monitoring began at Drain @ Woodbridge Rd in October 2008 and continued through 2010. Assessment Monitoring last occurred at the site in 2010; 2013 was the first year of MPM.

Drain @ Woodbridge Rd is a sixth priority (2014-2016). Active management plan constituents include chlorpyrifos, arsenic, DO, *E. coli*, SC, and TDS. During 2013, MPM for chlorpyrifos resulted in no exceedances of the WQTL.

The Coalition conducted general outreach and education in the Drain @ Woodbridge Rd site subwatershed and focused outreach will begin in 2014 as part of the Coalition's management plan strategy. In addition, 2014 MPM is schedule to occur for chlorpyrifos during months of past exceedances.

Drain to Bishop Cut @ North Rio Blanco Rd

Drain to Bishop Cut @ North Rio Blanco Rd (1,009 irrigated acres) drains the western portion of Bishop Tract. The eastern area includes a golf course while the south is bordered by urban development. The primary agriculture in the site subwatershed is row crops, with some grains, and truck/nursery/berry crops.

Drain to Bishop Cut @ North Rio Blanco Rd is a rotating Assessment Monitoring location within Zone 3. Assessment Monitoring began at the site in 2013; however, the Coalition received approval on July 5, 2013 to exchange the Drain to Bishop Cut @ North Rio Blanco Rd monitoring site with Empire Tract @ 8 Mile Rd due to restricted access related to construction activities by the Reclamation District. Samples were collected from Drain to Bishop Cut @ North Rio Blanco Rd January through March of 2013. Assessment Monitoring commenced in Zone 3 at Empire Tract @ 8 mile Rd in July and will continue through June 2014.

Drain to Bishop Cut @ North Rio Blanco Rd is a seventh priority (2015-2017). Active management plan constituents include arsenic, DO, SC, and TDS, based on exceedances of the WQTL that occurred January through March 2013. The Coalition plans to conduct general outreach and education in the site subwatershed and focused outreach in 2015 as part of the Coalition's management plan strategy.

Duck Creek @ Hwy 4

The Duck Creek @ Hwy 4 (12,958 irrigated acres) is located just to the east of the city of Stockton and drains a section of southern San Joaquin County between Stockton and the Lone Tree Creek site subwatershed. The primary irrigated agriculture in the site subwatershed consists of grains, hay, and field crops.

The Duck Creek @ Hwy 4 is a rotating Assessment Monitoring location within Zone 2. This site was first monitored in 2004; Normal Monitoring resumed in 2006 and continued through March 2009. Monitoring was scheduled to continue through 2009; however, the Coalition received approval to revise the monitoring schedule effective April 1, 2009, and Normal Monitoring was discontinued at the site beginning in April 2009. Assessment Monitoring occurred at Duck Creek @ Hwy 4 in 2012. Additional MPM began in 2007 and MPM occurred during months of past exceedances from 2009 through 2013. From June 2010 through February 2011, diazinon, chlorpyrifos and sediment toxicity to *H. azteca* were

monitored as a part of a Department of Pesticide Regulation (DPR) grant to reduce the impact of agricultural discharge on water quality.

Duck Creek @ Hwy 4 is a first high priority site (2008-2010). Active management plan constituents include chlorpyrifos, toxicity to *C. dubia*, sediment toxicity to *H. azteca*, DO, and *E. coli*. The Coalition received approval to remove diazinon, pH, and toxicity to *S. capricornutum* from the active management plan on March 22, 2012. During 2013, MPM resulted in no exceedances of the WQTL for chlorpyrifos, no toxicity to *C. dubia* and one sediment toxicity *H. azteca* in March. In 2014, MPM is scheduled to continue for chlorpyrifos, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca*.

In addition, the Coalition carried out its outreach strategy and management practice tracking which included contacting targeted growers in 2008 and following up with the growers in 2009 and 2010. A complete summary of implemented management practices was included in the 2011 MPUR under the First Priority Subwatersheds Summary of Implemented Management Practices section of the report. Additional contacts were made to twelve growers in 2010 and three growers in 2012 (2013 MPUR, page 50-55). Growers were targeted for supplementary focused outreach based on their recent use of chlorpyrifos associated with the September 2011 exceedance. Following focused outreach, all three growers indicated they discontinued use of chlorpyrifos and implemented management practices to control runoff and manage pesticide applications. Nineteen growers participated in follow-up contacts and documented newly implemented management practices in 2009 or 2010 (2013 MPUR page 49).

Empire Tract @ 8 Mile Rd

Empire Tract @ 8 Mile Rd (3,388 irrigated acres) is located at the western pumping station on 8 Mile Rd. The pump drains water into Little Connection Slough which in turn drains into Potato Slough and then the San Joaquin River. The primary agriculture in the site subwatershed is row crops, grains, and truck/nursery/berry crops.

Empire Tract @ 8 Mile Rd is a rotating Assessment site within Zone 3. Empire Tract @ 8 Mile Rd replaced Drain to Bishop Cut @ North Rio Blanco Rd in 2013; the Coalition received approval on July 5, 2013 to exchange Drain to Bishop Cut @ North Rio Blanco Rd with Empire Tract @ 8 Mile Rd for the 2013 monitoring year. Assessment Monitoring commenced in Zone 3 at Empire Tract @ 8 mile Rd in July and will continue through June 2014.

Empire Tract 8 Mile Rd is a seventh priority site (2015-2017). Active management plan constituents include only Priority E: arsenic, DO, SC and TDS. All management plan constituents will be monitored through June 2014 during Assessment Monitoring. The Coalition plans to conduct general outreach and education in the site subwatershed, and focused outreach in 2015 as part of the Coalition's management plan strategy.

French Camp Slough @ Airport Way

French Camp Slough @ Airport Way (83,229 irrigated acres) is created by the confluence of Littlejohns Creek and Lone Tree Creek. The French Camp Slough @ Airport Way site was selected as a downstream

companion site to the Littlejohns Creek @ Jack Tone Rd and Lone Tree Creek @ Jack Tone Rd sites. The site consist of all major types of agriculture present in the Coalition region including, field crops, orchards, grains, hay, rice, tomatoes, vineyards, and irrigated pasture.

French Camp Slough @ Airport Way is the Core Monitoring location within Zone 2. Normal Monitoring was conducted at the site from 2005 through September 2008. Under the 2008 MRPP, Assessment Monitoring took place at French Camp Slough @ Airport Way in 2011 and is next scheduled for 2014. Management Plan Monitoring at French Camp Slough @ Airport Way began in 2007 and resumed in 2010 through 2013.

French Camp Slough @ Airport Way is a third priority site (2011-2013). Active management plan constituents include chlorpyrifos, DO, *E. coli* and *H. azteca* sediment toxicity. On February 27, 2013 the Coalition received approval to remove copper, diazinon, diuron, lead, water column toxicity to *C. dubia* and toxicity to *S. capricornutum* from the active management plan. During 2013, MPM occurred for chlorpyrifos and sediment toxicity to *H. azteca*, copper, diazinon, diuron, toxicity to *C. dubia* and *S. capricornutum* (prior to their removal). One exceedance of the WQTL for chlorpyrifos occurred and no toxicity occurred in 2013. The single exceedance of the chlorpyrifos WQTL occurred in July; July is an irrigation month and flow levels in these waterways tend to increase during the irrigation season. The PUR data associated with the July exceedance at French Camp Slough @ Airport Way indicate there were 22 applications of chlorpyrifos ranging from 9.40 to 344 lbs AI (1755 total lbs AI) across 996 acres of almonds and walnuts from June 22, 2013 through July 13, 2013. Two additional exceedances of the chlorpyrifos WQTL occurred upstream at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd and at Lone Tree Creek @ Jack Tone Rd. Applications made in these subwatersheds could have contributed to the exceedances at French Camp Slough @ Airport Way. Of the 10 applications associated with the exceedance at French Camp Slough @ Airport Way, nine applications were on parcels not previously contacted due to not meeting the target criteria for high priority focused outreach and education. In 2014, MPM will continue for chlorpyrifos and sediment toxicity to *H. azteca* under Assessment Monitoring.

The Coalition initiated its outreach strategy and management practice tracking during 2011 with targeted growers and completed follow-up outreach at the end of 2012; a summary of current and newly implemented practices is included in the Third Priority Subwatersheds Summary of Management Practices section of the 2013 MPUR (Pages 56-59).

Grant Line Canal @ Clifton Court Rd

Grant Line Canal @ Clifton Court Rd (260 irrigated acres) is located west of the Grant Line Canal @ Calpack Rd site, immediately south of Clifton Court Rd, and drains fields east and south. The primary agriculture in the site subwatershed includes alfalfa, field crops, and grain.

Grant Line Canal @ Clifton Court Rd is a rotating Assessment Monitoring location within Zone 4. Monitoring at Grant Line Canal @ Clifton Court Rd began in the storm season of 2005 and continued through the storm and irrigation seasons of 2006 through 2008. Additional MPM for copper occurred in

2007 at Grant Line Canal @ Clifton Court Rd and MPM during months of past exceedances occurred from 2010 through 2013.

Grant Line Canal @ Clifton Court Rd is a second priority site (2010-2012). Active management plan constituents include chlorpyrifos, water column toxicity to *S. capricornutum*, and sediment toxicity to *H. azteca*, arsenic, DO, DDE, *E. coli*, SC and TDS. The Coalition received approval to remove copper and lead on April 17, 2012 and pH on February 27, 2013 from the active management plan. During 2013, MPM occurred at Grant Line Canal @ Clifton Court for chlorpyrifos, toxicity to *S. capricornutum*, and sediment toxicity to *H. azteca*; no exceedances of the WQTL occurred and a single sediment toxicity to *H. azteca* occurred in March. In 2014, MPM will continue for chlorpyrifos (January-March and September), water column toxicity to *S. capricornutum* (January and May), and sediment toxicity to *H. azteca* (March and September).

In addition, the Coalition carried out its outreach strategy and management practice tracking which included contacting targeted growers in 2010 and following up with the growers in 2011. A complete summary of current and newly implemented management practices in the Grant Line Canal @ Clifton Court Rd site subwatershed was included in the 2011 MPUR under the Second Priority Subwatersheds Summary of Management Practices section.

Grant Line Canal near Calpack Rd

Grant Line Canal near Calpack Rd (682 irrigated acres) is located on the southwest section of Union Island in the Bay-Delta tidal prism and receives water from east and west inputs. The primary agriculture in the site subwatershed includes alfalfa, field crops, grain, and hay.

Grant Line Canal near Calpack Rd is a rotating Assessment Monitoring location within Zone 4. Monitoring began in 2005 and continued through 2008. The most recent Assessment Monitoring for Grant Line Canal near Calpack Rd occurred in 2008. Additional MPM for chlorpyrifos and *C. dubia* occurred at Grant Line Canal near Calpack Rd in 2007. Management Plan Monitoring during months of past exceedances occurred in 2010 through 2013.

Grant Line Canal near Calpack Rd is a second priority site (2010-2012). Active management plan constituents include water column toxicity to *C. dubia*, *S. capricornutum*, and sediment toxicity to *H. azteca*, arsenic, DO, *E. coli*, SC and TDS. During 2013, the Coalition received approval to remove chlorpyrifos from the Grant Line Canal near Calpack Rd management plan. In 2013, MPM occurred for water column toxicity to *C. dubia*, *S. capricornutum*, and sediment toxicity to *H. azteca*. Toxicity to *S. capricornutum* occurred in January and sediment toxicity to *H. azteca* occurred in March. In 2014, MPM will continue for water column toxicity to *C. dubia* (March, May and August), *S. capricornutum* (January, February, April, May and July) and sediment toxicity to *H. azteca* (March and September).

In addition, the Coalition carried its outreach strategy and management practice tracking which included contacting targeted growers in 2010 and following up with the growers in 2011. A complete summary of current and newly implemented management practices in the Grant Line Canal near Calpack site

subwatershed was included in the 2011 MPUR under the Second Priority Subwatersheds Summary of Management Practices section.

Kellogg Creek along Hoffman Ln

Kellogg Creek along Hoffman Ln (1,831 irrigated acres) is located north of Livermore, CA and is surrounded by a mixture of agricultural, preserved, and urban landscapes. The primary agriculture in the site subwatershed includes deciduous orchards, truck crops, and field crops.

Kellogg Creek along Hoffman Ln is a rotating Assessment Monitoring location within Zone 4. Normal Monitoring began at Kellogg Creek @ Hwy 4 (downstream of Kellogg Creek along Hoffman Ln) in the storm season of 2005 and continued through the storm season of 2006; however, Kellogg Creek along Hoffman Ln replaced Kellogg Creek @ Hwy 4 in 2007 due to large urban inputs. No monitoring occurred from 2009 through 2010 at Kellogg Creek along Hoffman Ln, but resumed in 2011 and continued through 2013. Management Plan Monitoring occurred for high priority constituents during months of past exceedances in 2007 through 2008 and 2011 through 2013.

Kellogg Creek along Hoffman Ln is a fourth priority site (2012-2014). Active management plan constituents include water column toxicity to *P. promelas* and *S. capricornutum*, sediment toxicity to *H. azteca*, DDE, DDT, *E. coli*, pH, SC, and TDS. The Coalition received approval to remove chlorpyrifos, copper, water column toxicity to *C. dubia* and DO from the active management plan on February 27, 2013. During 2013, MPM occurred for chlorpyrifos, copper and water column toxicity to *C. dubia* (prior to removal), and toxicity to *S. capricornutum* and sediment toxicity to *H. azteca*; no exceedances of the WQTLs or toxicities occurred. In 2014, MPM will continue for water column toxicity to *S. capricornutum* (April, May and August), and sediment toxicity to *H. azteca* (March and September).

In addition, the Coalition identified growers with the greatest likelihood of contributing to water quality impairments in Kellogg Creek and began focused outreach in early 2012; focused outreach has been completed in the site subwatershed. Growers improved and/or implemented new management practices and no exceedances of high priority constituents have occurred since focused outreach began. A final analysis and evaluation of management practice effectiveness are included in the Management Practice section of this report.

Littlejohns Creek @ Jack Tone Rd

Littlejohns Creek @ Jack Tone Rd (16,167 irrigated acres) originates at the western edge of Woodward Reservoir, flowing east through the Farmington Flood Control basin and eventually confluences with Lone Tree Creek to form French Camp Slough. The primary agriculture in the site subwatershed includes field crops, orchards, grains, vineyards, and irrigated pasture.

Littlejohns Creek @ Jack Tone Rd is a rotating Assessment Monitoring location within Zone 2. Monitoring was initiated during the irrigation season of 2004 and continued through the 2008 irrigation season. Starting in October 2008, Littlejohns Creek @ Jack Tone Rd became a rotating Assessment site and Assessment Monitoring occurred. Additional MPM occurred at Littlejohns Creek @ Jack Tone Rd in

2007 and continued in 2008 at two upstream locations, Littlejohn's Creek @ 26 Mile Rd and Littlejohns Creek @ Escalon Bellota Rd. Additional DPR grant monitoring occurred from June 2010 through February 2011 for chlorpyrifos, diazinon and sediment toxicity to *H. azteca*. Management Plan Monitoring continued in 2010 through 2013 for high priority constituents during months of past exceedances.

Littlejohns Creek @ Jack Tone Rd is a second priority site (2010-2012). Active management plan constituents include chlorpyrifos, copper, DO, *E. coli*, and pH. In 2013, the Coalition received approval to remove diazinon and toxicity to *S. capricornutum* from the Littlejohns Creek @ Jack Tone Rd management plan. During 2013, MPM occurred for chlorpyrifos, copper and diazinon (prior to removal) and resulted in no exceedances of the WQTLs. Management Plan Monitoring is scheduled in 2014 for chlorpyrifos (February, April, June, July and November) and copper (February, May, June and September).

In addition, the Coalition carried out its outreach strategy and management practice tracking which included contacting targeted growers in 2010 and following up with the growers in 2011. Additional outreach occurred in Littlejohns Creek @ Jack Tone Rd in 2012. A summary of management practices implemented by growers in this site subwatershed is included in this report under the Management Practices section.

Lone Tree Creek @ Jack Tone Rd

Lone Tree Creek @ Jack Tone Rd (25,789 irrigated acres) flows through urban areas carrying natural storm runoff, agricultural supply and return flows to Littlejohns Creek during periods of high flow and irrigation before emptying into the Delta. The primary agriculture in the site subwatershed includes deciduous nuts, field crops, grains, irrigated pastures, and several dairies.

Lone Tree Creek @ Jack Tone Rd is a rotating Assessment Monitoring location within Zone 2. Monitoring was initiated at this location in 2004 and continued through 2012. Normal Monitoring was last conducted in 2008 under the previous MRPP. From 2009 through 2012, MPM occurred during months of past exceedances and from June 2010 through February 2011, additional samples were collected for chlorpyrifos, diazinon and sediment toxicity to *H. azteca* as part of DPR grant monitoring.

Lone Tree Creek @ Jack Tone Rd is a first priority site (2008-2010). Active management plan constituents include chlorpyrifos, water column toxicity to *P. promelas*, ammonia, *E. coli*, pH and TDS. The Coalition received approval to remove copper, diazinon, diuron, water column toxicity to *S. capricornutum*, sediment toxicity to *H. azteca*, and SC from the active management plan on May 21, 2012 and to remove DO on February 27, 2013. During 2013, MPM for chlorpyrifos resulted in a single exceedance of the WQTL in July. The PUR data associated with the July exceedance indicate there were seven applications of chlorpyrifos ranging from 9.40 to 94 lbs AI (249 total lbs AI) across 186 acres of almonds and walnuts from June 25, 2013 through July 11, 2013. Although targeted growers implemented management practices to reduce irrigation runoff and/or no longer apply chlorpyrifos, it is possible for chlorpyrifos to enter the site subwatersheds through applications by non-members who

have not implemented adequate management practices. All parcels with applications associated with the exceedance were either non-member parcels or parcels not previously contacted due to not meeting one or more of the targeted grower criteria for determining high priority focused outreach and education: 1) member of the Coalition, 2) parcels directly drain to the creek, 3) PUR data indicate past applications of constituents of concern, and 4) applications of constituent were associated with past exceedances. In 2014, MPM is scheduled to continue at Lone Tree Creek @ Jack Tone Rd for chlorpyrifos (January, February, July and August).

The Coalition completed its outreach strategy and management practice tracking to targeted growers within this site subwatershed in 2008 and followed up with growers in 2009 and 2010. Additional outreach to two targeted growers to address continued water quality impairments occurred at Lone Tree Creek @ Jack Tone Rd in 2012. A complete summary of implemented management practices was included in the 2011 MPUR under the First Priority Subwatersheds Summary of Implemented Management Practices section of the this report.

Mokelumne River @ Bruella Rd

Mokelumne River @ Bruella Rd (9,966 irrigated acres) integrates the water quality signal from a relatively large upstream area. The primary agriculture in the site subwatershed consists of vineyards that are primarily drip irrigated, orchards irrigated by microspray, and field crops.

Mokelumne River @ Bruella Rd is the Core Monitoring location within Zone 1. Monitoring began in August 2004 and occurred continuously through 2013. Management Plan Monitoring was initiated at Mokelumne River @ Bruella Rd in 2007 and additional MPM took place from 2007 through 2008. From 2010 through February 2013, MPM occurred for high priority constituents during months of past exceedances. Assessment Monitoring last occurred at the site in 2011.

Mokelumne River @ Bruella Rd is a third priority site (2011-2013). Active management plan constituents are priority E constituents *E. coli* and pH. The Coalition received approval on May 30, 2012 to remove copper and DO from the management plan, and toxicity to *C. dubia* and *S. capricornutum* on February 27, 2013. *E. coli* and pH will be monitored during 2014 Core Monitoring.

The Coalition initiated its outreach strategy and management practice tracking during 2011 with targeted growers. A final analysis of outreach results is included in the Third Priority Subwatersheds Summary of Management Practices section of the 2013 MPUR (Pages 60-62).

Mormon Slough @ Jack Tone Road

Mormon Slough @ Jack Tone Rd (24,615 irrigated acres) is located on the eastern portion of San Joaquin County and extends upstream into Calaveras County and primarily consists of deciduous trees with smaller amounts of vineyards, truck farm/nursery and berry crops.

Mormon Slough @ Jack Tone Rd is a rotating Assessment Monitoring location within Zone 2. Monitoring was initiated at Mormon Slough @ Jack Tone Rd in the irrigation season of 2006 and continued through

2008. No monitoring occurred from 2009 through 2010 at Mormon Slough @ Jack Tone Rd, but sampling resumed in 2011 and continued through 2013. Management Plan Monitoring was initiated in 2008 and resumed in 2011 for high priority constituents during months of past exceedances and continued in 2012 and 2013. Assessment Monitoring last occurred at the site in 2008.

Mormon Slough @ Jack Tone Rd is a fourth priority site (2014-2014). Active management plan constituents include chlorpyrifos, water column toxicity to *C. dubia* and *S. capricornutum*, DO, and pH. 2013 MPM resulted in no exceedances of the WQTL for any high priority constituents. In 2014, MPM is scheduled to continue for chlorpyrifos (May and July-September), toxicity to *C. dubia* (May and September) and toxicity to *S. capricornutum* (April, May and July).

Focused outreach began in 2012 through 2014 in the Mormon Slough @ Jack Tone Rd site subwatershed and the Coalition documented current management practices and tracked implementation of additional management practices. A summary of current and newly implemented practices and an evaluation of management practice effectiveness are included in the Management Practice section of this report.

Roberts Island @ Whiskey Slough Pump

Roberts Island @ Whiskey Slough Pump (11,716 irrigated acres) replaced two former sites in Zone 4, Roberts Island @ Holt Rd and Roberts Island Drain along House Rd, approved January 12, 2012. Roberts Island Drain along House Rd was monitored from 2006 through 2008 and Roberts Island Drain @ Holt Rd was monitored from 2006 through 2011, although monitoring did not occur in 2008. Management Plan Monitoring for high priority constituents at Roberts Island @ Whiskey Slough Pump began in 2012 and continued through 2013 during months of past exceedances. Assessment Monitoring and MPM is scheduled at Roberts Island @ Whiskey Slough Pump in 2014.

Roberts Island @ Whiskey Slough Pump is a fifth priority site (2013-2015). Active management plan constituents include chlorpyrifos, DDE, diuron, water column toxicity to *C. dubia* and *S. capricornutum* and sediment toxicity to *H. azteca*, DO, *E. coli*, pH, SC, and TDS. In 2013, MPM for chlorpyrifos, diuron, water column toxicity to *C. dubia*, *S. capricornutum* and sediment toxicity to *H. azteca* occurred at Roberts Island @ Whiskey Slough Pump. No exceedances of the WQTLs or toxicities occurred.

Focused outreach to document current management practices and track implementation of additional management practices in the Roberts Island @ Whiskey Slough Pump site subwatershed began in 2013 and will be complete in 2015. The Coalition contacted seven targeted growers that have the potential for direct drainage in the site subwatershed to document current management practices and discuss water quality concerns. A summary of current implemented practices is included in the Fifth Priority Subwatersheds Summary of Management Practices section of this report.

Sand Creek @ Hwy 4 Bypass

Sand Creek @ Hwy 4 Bypass (402 irrigated acres) is located west of Brentwood at the intersection of Hwy 4 Bypass and Sand Creek. The Roddy Ranch Golf Club located off Empire Mile Rd in Horse Valley is adjacent to an upstream tributary of Sand Creek. The DWR map for land use identifies deciduous nuts,

grains and hay; however, recent visits to the site subwatershed indicate the area consists of field crops, grains, hay and pasture. Areas to the east and west of Highway 4 Bypass have had significant urban development consisting of new residential neighborhoods and shopping outlets in recent years.

Sand Creek @ Hwy 4 Bypass is the only monitoring location within Zone 6. Because Zone 6 has high urban influence and Sand Creek @ Hwy 4 Bypass is the only MPM location within the zone, it is not scheduled for future Assessment Monitoring. Monitoring was initiated at the site in the irrigation season of 2006 and continued through the irrigation season of 2008. Monitoring did not occur in 2009 and 2010 but continued in 2011 through 2013.

Sand Creek @ Hwy 4 Bypass is a fourth priority site (2012-2014). Active management plan constituents include disulfoton, water column toxicity to *S. capricornutum*, sediment toxicity to *H. azteca*, DDE, DDT, dieldrin, DO, *E. coli*, SC, and TDS. The Coalition received approval to remove chlorpyrifos, diazinon and toxicity to *C. dubia* from the active management plan on February 27, 2013. In 2013, MPM for diazinon (prior to removal), dieldrin, disulfoton, water column toxicity to *S. capricornutum* and sediment toxicity to *H. azteca* occurred. No exceedances of the WQTLs for dieldrin or disulfoton and no water column toxicity to *S. capricornutum* occurred, however sediment collected in March 2013 was toxic to *H. azteca*. 2014 MPM is scheduled for dieldrin (May, June, and August), disulfoton (May, June and August), *S. capricornutum* toxicity (April and August) and *H. azteca* sediment toxicity (March and September).

Focused outreach began in early 2012 in the Sand Creek @ Hwy 4 Bypass site subwatershed and will be complete by 2014. There is only one grower in the site subwatershed that is a member of the Coalition and has parcels that drain directly into the creek. Monitoring results from future MPM will allow the Coalition to evaluate if its outreach strategy is making any progress toward improving water quality in the creek. A summary of current and newly implemented practices and an evaluation of management practice effectiveness are included in the Management Practice section of this report.

Terminus Tract Drain @ Hwy 12

Terminus Tract Drain @ Hwy 12 (9,728 irrigated acres) drains all of the acreage north of State Highway 12 and most of the acreage south of Highway 12 on Terminus Tract. The primary agriculture in the site subwatershed includes field crops, turf, truck/nursery/berry crops, grains, and hay. The Terminus Tract Drain @ Highway 12 site subwatershed includes two upstream locations, Delta Drain-Terminus Tract off Glasscock Rd and Delta Drain-Terminus Tract off Guard Rd.

Terminus Tract Drain @ Hwy 12 is the Core Monitoring location in Zone 3. Monitoring was initiated at the site in the storm season of 2005 and occurred continuously through 2013. Assessment Monitoring occurred during 2010 and 2013.

Terminus Tract Drain @ Hwy 12 is a third priority site (2011-2013). Active management plan constituents include arsenic, chlorpyrifos, DO, *E. coli*, SC, TDS, and sediment toxicity to *H. azteca*. The Coalition received approval to remove water column toxicity to *P. promelas* and *S. capricornutum* from the Terminus Tract Drain @ Hwy 12 management plan in April 17, 2012. In 2013, MPM occurred for

chlorpyrifos and sediment toxicity to *H. azteca*. No exceedances of the WQTL for chlorpyrifos occurred; however, one sediment toxicity to *H. azteca* occurred during September. 2014 MPM is scheduled for chlorpyrifos (August and September) and sediment toxicity to *H. azteca* (March and September).

The Coalition initiated its management practice tracking and outreach strategy during 2011 with targeted growers and followed up with the growers in 2012; a summary of outreach results is included in the Third Priority Subwatersheds Summary of Management Practices section of the 2013 MPUR (Pages 63-65).

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (27,900 irrigated acres) forms in the eastern portion of San Joaquin County, flows west, and eventually confluences with Lone Tree Creek just west of Jack Tone Road. The primary agriculture in the site subwatershed includes rice, grains, vineyards and irrigated pastureland.

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is a rotating Assessment Monitoring site within the French Camp Slough @ Airport Way Zone (Zone 2). Monitoring was initiated at Unnamed Drain to Lone Tree Creek during the irrigation season of 2006 and has continued through 2013. Management Plan Monitoring was initiated in 2007 and included additional monitoring for chlorpyrifos. During the 2008 irrigation season, MPM included upstream sampling at Unnamed Drain to Lone Tree Creek @ Wagner Rd for chlorpyrifos. Management Plan Monitoring occurred continuously from 2009 through 2013 during months of past exceedances for high priority constituents. From July 2010 through February 2011, additional monitoring for chlorpyrifos, diazinon and *H. azteca* sediment toxicity was conducted at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd as part of DPR grant monitoring.

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is a first priority site (2008-2010). Active management plan constituents include chlorpyrifos, copper, diuron, lead, DO, *E. coli*, SC, TDS and sediment toxicity to *H. azteca*. In 2012, the Coalition received approval to remove simazine and water column toxicity to *C. dubia* and *S. capricornutum* from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd management plan. Monitoring results from 2013 MPM included a single exceedance of the WQTL for chlorpyrifos during July. The PUR data associated with the July exceedance include seven applications of chlorpyrifos ranging from 10 to 344 lbs AI (1404 total lbs AI) across 770 acres of almonds and walnuts from June 28, 2013 through July 13, 2013. However, roughly 60% of the parcels with applications associated with the exceedance in the Unnamed Drain to Lone Tree Creek site subwatershed were parcels not previously contacted. In 2014, MPM is scheduled to continue at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd to monitor for chlorpyrifos (January, February, May-September, November and December), copper (April, May, July-September), diuron (January and February) and sediment toxicity to *H. azteca* (March and September).

In addition to MPM, the Coalition completed its outreach strategy and management practice tracking to targeted growers within this site subwatershed in 2008 and followed up with the growers in 2009 and 2010. Additional outreach to two growers to address continued water quality impairments occurred in

2012 and the frequency of exceedances of the WQTL of chlorpyrifos have decreased to a single exceedance in 2011, 2012, and 2013. However, 60% of the parcels with applications during the sampling event in 2013 were not associated with a members contacted during high priority focused outreach or additional outreach. The Coalition determined previous outreach was effective; however, applications by new members are occurring and further outreach may be necessary. In addition, applications of chlorpyrifos may be occurring from non-members. A complete summary of implemented management practices was included in the 2011 MPUR under the First Priority Subwatersheds Summary of Implemented Management Practices section.

Walthall Slough @ Woodward Ave

Walthall Slough @ Woodward Ave site subwatershed (8,426 irrigated acres) is located upstream of a residential area at the confluence of Walthall Slough and the San Joaquin River and drains land to the south and to the east. The primary agriculture in the site subwatershed consists of pasture, field crops, truck/nursery/berry crops, fruits and nuts, grains/hay, and dairy.

Walthall Slough @ Woodward Ave is a Core Monitoring location within the Lower San Joaquin Zone (Zone 5). After two years of Assessment Monitoring in 2009 and 2010, Walthall Slough @ Woodward Ave rotated into Core Monitoring in 2011 and Assessment Monitoring again in 2013. Management Plan Monitoring began at the site in 2012 and continued through 2013. Additionally, the site is a TMDL compliance location for the Sacramento-San Joaquin Delta TMDL monitoring program; since 2009, monitoring for chlorpyrifos and diazinon occurs monthly.

Walthall Slough @ Woodward Ave is a fifth priority site (2013-2015). Active management plan constituents include chlorpyrifos, *E. coli*, HCH-delta, nitrates, DO, SC, TDS and sediment toxicity to *H. azteca*. Chlorpyrifos and nitrates were most recently added to the list due to exceedances of WQTLs in 2011. Management Plan Monitoring occurred in 2013 for chlorpyrifos, HCH-delta, and sediment toxicity to *H. azteca* under Assessment Monitoring and no exceedances occurred. During 2013, monitoring for nitrates occurred monthly as part of Assessment Monitoring resulting in three exceedances of the WQTL during February, November and December. In 2014, MPM is scheduled for chlorpyrifos (September and October), HCH (January, November, and December) and *H. azteca* sediment toxicity (March and September).

The Coalition identified growers with the greatest likelihood of contributing to water quality impairments in Walthall Slough @ Woodward Ave site subwatershed and began focused outreach in early 2013. A summary of current implemented practices is included in the Fifth Priority Subwatersheds Summary of Management Practices section of this report.

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