

# Management Plan Update Report



January 2012 – December 2012

April 1, 2013

**Irrigated Lands Regulatory Program**

**Central Valley Regional Water Quality Control Board**

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## ATTACHMENTS

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Appendix I. High Priority Site Subwatershed Analysis

Appendix II. High Priority Site Subwatershed Exceedance Tables

## LIST OF ACRONYMS

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A	Assessment
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
CVSC	Central Valley Salinity Coalition
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	Dissolved Oxygen
DWSC	Deep Water Ship Channel
EQIP	Environmental Quality Incentives Program
ESJWQC	East San Joaquin Water Quality Coalition
F	Field
HCH	Hexachlorocyclohexane
ILRP	Irrigated Land and Regulatory Program
MLJ-LLC	Michael L. Johnson, LLC
MPUR	Management Plan Update Report
MPM	Management Plan Monitoring
MRP	Monitoring and Reporting Program Order No. R5-2008-0005
MRPP	Monitoring and Reporting Program Plan
NA	Not Applicable
NM	Normal Monitoring
NRCS	Natural Resource Conservation Service
PAM	Polyacrylamide
PCA	Pesticide Control Adviser
pH	Power of Hydrogen
PUR	Pesticide Use Report

SC	Specific Conductance
TBD	To Be Determined
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
US EPA	United States Environmental Protection Agency
WQO	Water Quality Objective
WQTL	Water Quality Trigger Limit

## LIST OF UNITS

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

## ESJWQC MANAGEMENT PLAN UPDATES AND AMENDMENTS

**Table A. ESJWQC Management Plan Updates and Amendments Summary.**

ITEM NUMBER	AMENDMENTS DESCRIPTIONS	DATE SUBMITTED <sup>1</sup>	MANAGEMENT PLAN PAGE NUMBER	DATE APPROVED
<b>Original ESJWQC Management Plan Report</b>		<b>October 30, 2008</b>		<b>November 25, 2008</b>
1	2009 Management Plan Update Report.	April 1, 2009	NA	September 28, 2009
2	Request to exchange priority sites: Hilmar Drain @ Central Ave for Bear Creek @ Kibby Rd.	October 23, 2009	Table B Pages 23-25 Pages 35-36	November 18, 2009
3	Request to modify Management Plan schedules to review status of current and the next set of high priority subwatersheds and proposed schedule for year of focused approach.	June 5, 2009	Verbiage, Page 65 Table B	December 16, 2009
4	Request to exchange sites: Exchanged Mootz Drain @ Langworth Rd for Mootz Drain downstream of Langworth Pond.	September 8, 2009	Table B	November 18, 2009
5	2010 Management Plan Update Report.	April 1, 2010	NA	June 21, 2010
6	Request to modify Management Plan Performance Goal schedule to address the remaining site subwatersheds.	June 5, 2010	Table 8, Table 9 Pages 28-31 Table 18, pgs 77-79	June 8, 2010
7	Request to exchange priority sites: Ash Slough @ Ave 21 with Lateral 2 ½ near Keyes Rd and update Management Plan Performance Goals table for 3rd priority.	October 12, 2010	Table B	November 17, 2010
8	2011 Management Plan Update Report.	April 1, 2011	NA	May 17, 2011
9	Request to update Management Plan Performance Goals table for 4th priority.	October 17, 2011	NA	November 14, 2011
10	Request to remove constituents from site specific management plans.	January 6, 2012	NA	May 30, 2012
11	2012 Management Plan Update Report.	April 1, 2012	NA	June 25, 2012
12	Request to extend 4th priority Management Plan Performance Goals deadlines for Performance Measures 2.1 and 2.2.	July 23, 2012	NA	July 30, 2012
13	Request to remove constituents from site specific management plans.	November 7, 2012	NA	TBD

<sup>1</sup>All deliverables are submitted electronically (quarterly monitoring data reports, Annual Monitoring Report, Annual Management Plan Update Report)

NA-Not applicable

TBD-To Be Determined; Regional Board is still reviewing.

## EXECUTIVE SUMMARY

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The East San Joaquin Water Quality Coalition (ESJWQC or Coalition) is submitting a Management Plan Update Report on the status and methods used to identify agriculture 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 ESJWQC Management Plan. A Management Plan Update Report (MPUR) 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 fifth yearly update report 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 2012 monitoring results, including new exceedances and new site/constituents requiring management plans.

The ESJWQC monitored 18 sites in 2012. Of the 18, Management Plan Monitoring (MPM) took place at 14 sites between January and March 2012. From January through March 2012, MPM only occurred at six of the 14 sites (Bear Creek @ Kibby Rd, Deadman Creek @ Gurr Rd, Duck Slough @ Hwy 99, Dry Creek @ Rd 18, Hilmar Drain @ Central Ave and Livingston Drain @ Robin Ave), Core and MPM occurred at five sites (Dry Creek @ Wellsford Rd, Cottonwood Creek @ Rd 20, Duck Slough @ Gurr Rd, Highline Canal @ Hwy 99 and Prairie Flower Drain @ Crows Landing Rd) and Assessment Monitoring occurred at three sites (Berenda Slough along Ave 18 ½, Deadman Creek @ Hwy 59 and McCoy Lateral @ Hwy 140). Due to the April 17, 2012 letter giving approval to reduce Assessment Monitoring and temporarily suspend MPM and Core Monitoring, all monitoring for management plan constituents ceased at sites scheduled for MPM from April through December 2012 (except Bear Creek @ Kibby Rd and Assessment Monitoring sites).

Based on the prioritization of exceedances, MPM was conducted for chlorpyrifos, copper, diazinon, diuron and lead as well as toxicity to *Ceriodaphnia dubia*, *Pimephales promelas*, *Selenastrum capricornutum*, and *Hyalella azteca*.

As a result of 2012 monitoring, seven new site/constituent specific management plans are required including:

- pH
  - Deadman Creek @ Gurr Rd
- DO, SC, TDS, Ammonia, Nitrate and *E. coli*
  - Levee Drain @ Carpenter Rd

As described in the Coalition's MPM strategy, when a site subwatershed rotates into high priority status, the Coalition contacts individuals within the site subwatershed who have the potential for direct

drainage and have applied constituents of concern. Contacts occur between October 1 prior to Year 1 and March 30 of Year 1 in order to schedule meetings and conduct individual contacts/interviews between November 1 and July 30. Individual meetings inform growers of current water quality concerns and management practices that can be implemented to reduce impairments of water quality due to agricultural discharge.

During the interviews, growers are asked about their current farming operations. Growers complete surveys to document their current management practices and record recommended management practices. It is anticipated that all surveys will be completed and entered into a database by August 1 of Year 1. Implementation of management practices is anticipated to occur between April of Year 1 and November of Year 2. It is difficult to predict when implementation will occur since some practices, such as structural management practices, may take multiple years to fund and construct.

Follow up surveys document newly implemented practices since individual contacts, and if growers implemented those practices in Year 1 or if they plan to implement those practices in Year 2. The Coalition conducts follow up surveys with growers between February of Year 2 and April of Year 2. If the grower indicates that they do not intend to implement additional practices despite their previous declaration that they would do so, they are queried as to why (e.g. they no longer farm, no available funds). Follow up may be extended to Year 3 depending on information obtained from the growers as to when they plan to implement practices; in some cases, a third year may be necessary for funds to be available for structural improvements.

The Coalition prioritized constituents and site subwatersheds to allow for focused source identification, outreach, and evaluation. The Coalition prioritized site subwatersheds based on the number, frequency and magnitude of chlorpyrifos and diazinon exceedances. Other factors considered include size of the site subwatershed and known improvements in management practices that have already been implemented in those areas. Although the Coalition is focusing on chlorpyrifos and diazinon exceedances and associated applications, management practices implemented to reduce the runoff of these constituents will also reduce the runoff of other pesticides, nutrients, salts and metals.

The Coalition developed High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) for its high priority site subwatersheds. Performance goals are submitted for approval each time a new set of site subwatersheds rotate 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 Coalition submitted Performance Goals on November 24, 2008 in an amendment to the Management Plan. These goals were developed with coordination from Regional Board staff after evaluation of the effectiveness of the Coalition's Management Plan strategy.

Performance goals, measures, outputs, and completion dates for third priority site subwatersheds were approved by the Regional Board on November 17, 2010. For the third set of high priority sites (2011–2013), 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. Completion dates are February (Performance Measure 3.1 – record implemented management practices in an Access database) or April 2013 (Performance Measure 3.1 – summary of management practices implemented as a result of individual contacts; Performance Measure 4.1) as expensive structural management practices may take some time to implement.

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 in progress.

Performance goals, measures, outputs, and completion dates for fifth priority site subwatersheds were approved by the Regional Board on November 1, 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 are in progress.

Additionally, the ESJWQC established monitoring and management activities for Total Maximum Daily Load (TMDL) constituents as required in the Regional Board's Basin Plan for the Sacramento and San Joaquin River basins.

The San Joaquin River chlorpyrifos and diazinon TMDL was approved by the United States Environmental Protection Agency (US EPA) on December 20, 2006 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 Lower San Joaquin River*). As dictated by the Basin Plan Amendment, a surveillance and monitoring program was developed in 2010 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.

The ESJWQC and the Westside Coalition collaborated to develop a monitoring plan for assessing compliance of the Lower San Joaquin River concentration based loads at the six compliance points identified in the Basin Plan Amendment (Monitoring Objective 1). There were no detections of chlorpyrifos or diazinon at any of the San Joaquin River compliance points during the 2012 water year, and the Coalition therefore demonstrated compliance with load capacity. In addition, the ESJWQC did not detect chlorpyrifos or diazinon in any of the tributaries within the ESJWQC region during October 2011 through September 2012 and therefore demonstrated compliance with load allocations. A complete review of results from monitoring during the 2012 water year as well as an assessment of each Coalition's compliance with Monitoring Objectives 1- 7 will be reported in the San Joaquin River Chlorpyrifos and Diazinon TMDL 2013 Annual Monitoring Report (AMR, to be submitted May 1, 2013).

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). Coalition representatives and technical consultants (Michael L. Johnson, LLC (MLJ-LLC)) attend Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) meetings and participate in planning and reviewing studies relevant to the development of a Basin Plan amendment to implement new salt and boron objectives in the San Joaquin River upstream of Airport Way (Vernalis). In addition, the Coalition monitors for salt (SC and TDS), nitrates and boron in every zone 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 DO levels in the Stockton Deep Water Ship Channel (DWSC). The Coalition reviews DO monitoring results in the Stockton DWSC and its tributaries to assess compliance with the DO WQOs required in the TMDL. The measured DO

concentration was less than the Water Quality Objective (WQO) of 5.0 mg/L (requirements for January through August and December) during 21 days in June, 20 days in July and 27 days in August and less than the WQO of 6.0 mg/L (September through November) during 16 days in September and eight days in October of 2012. The Coalition reviewed tributary monitoring results from the sampling events immediately prior to the noncompliant DO measurements in the Stockton DWSC. There were nine exceedances of the WQTL for DO at four ESJWQC tributary sites, three in June and two each in the months of August, September and October. Given the high water temperatures in the tributaries at the time of sampling and the other various factors, such as changing flow rates and waterway hydrology, that could have affected DO levels in water en route to the Delta, it is unlikely that these nine exceedances of the WQTL for DO contributed to the noncompliant DO measurements 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.

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. Although 2012 was a unique monitoring year with reduced monitoring, results from MPM in January through March (before reduced monitoring) and results from Assessment Monitoring indicate fewer exceedances in high priority site subwatersheds where both general and focused outreach occurred, as well as in site subwatersheds where only general outreach occurred.
2. Agriculture may not be the only cause of water quality impairments due to elevated concentrations of copper in the Coalition region.
3. Growers in the ESJWQC region are taking advantage of available funding resources to implement management practices that improve water quality.
4. Growers across the ESJWQC 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.
5. The drop in exceedances in the Coalition region coincides with implementation of management practices encouraged by the Coalition.
6. The Coalition's focused management practice outreach and tracking strategy is effective at improving water quality. Monitoring results indicate two consecutive years of monitoring with no exceedances of the WQTLs 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. The Coalition was approved on May 30, 2012 to remove 33 specific site subwatershed/ constituent pairs from the active management plan and, based on 2012 monitoring results, petitioned on November 7, 2012 to remove an additional 14 specific site subwatershed/ constituent pairs from the active management.
7. During the 2012 water year, the ESJWQC was in compliance with load capacity and load allocation requirements of the chlorpyrifos and diazinon TMDL.

The Coalition includes brief descriptions of all site subwatersheds listed in the ESJWQC Management Plan as of April 1, 2013 at the end of this report. Further analysis of the first (2008-2010), second (2010-2012), third (2011-2013), fourth (2012-2014) and fifth (2013-2015) high priority site subwatersheds is included in Appendix I.

## INTRODUCTION

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The East San Joaquin Water Quality Coalition (ESJWQC or Coalition) is submitting a Management Plan Update Report (MPUR) on the status of water quality in the region and methods used to identify sources of agricultural discharges, track implemented management practices, and evaluate Performance Goals as outlined in the ESJWQC Management Plan. A Management Plan Update is submitted every April 1 to report on the previous year's activities and the status of management plan implementation schedules and timelines for reporting to the Regional Board. Yearly updates allow the Coalition to assess the need to conduct outreach to growers, evaluate information about pesticide use, and obtain water quality data collected from the previous year.

The Management Plan Update Report includes the following:

1. Status of constituents and subwatersheds requiring a management plan
2. Updates to the prioritization process of constituents (if applicable)
3. Status of priority subwatershed Performance Goals
4. Compliance with Total Maximum Daily Load (TMDL) requirements
5. Summary of newly implemented management practices
6. Evaluation of management practice effectiveness

The Coalition compiled a detailed analysis of high priority subwatersheds (2008–2010, 2010–2012, 2011–2013, 2012–2014 and 2013–2015) including monitoring and exceedance histories, source analyses, outreach and management practice tracking.

## OVERVIEW OF MONITORING AND RESULTS

This is the fifth annual update report to the Coalition’s Management Plan. In this report, monitoring data for the previous year are evaluated for exceedances and water quality improvements. This update includes an assessment of water quality based on 2012 monitoring results including new exceedances and new site/constituents requiring management plans.

During 2012, monitoring was conducted from January through March as outlined in the Coalition’s Monitoring and Reporting Program Plan (MRPP, pages 33-59) and Management Plan. On April 17, 2012 the Coalition was approved to temporarily suspend monitoring at Core and Management Plan Monitoring (MPM) sites with the exception of Bear Creek @ Kibby Rd. Management Plan Monitoring continued at Bear Creek @ Kibby Rd as part of a cost-share for a project funded by Proposition 84. In addition, the Coalition was approved to reduce the number of constituents monitored at Assessment Monitoring sites by eliminating analyses for Group A, paraquat, glyphosate, total Kjeldahl nitrogen, total phosphorus (as P), *E. coli* and all metals except copper and zinc for the remainder of 2012. Coalition monitoring occurred as scheduled from January through March. In April 2012 schedules were modified according to the plan specifying the reduced monitoring. In addition, MPM in 2012 was conducted at high priority locations for high priority constituents requiring a management plan from January through March. In some cases, these constituents were already being monitored under the MRPP monitoring schedule (Table 10, pages 51-52). The Coalition’s Annual Monitoring Report (AMR) submitted on March 1, 2013 lists the locations, dates and type of sampling that was conducted during 2012.

The ESJWQC scheduled 18 sites for monitoring from January through March in 2012 (Table 1). Of the 18, MPM took place at 14 sites between January and March 2012 as outlined in the ESJWQC MPUR. From January through March 2012, six of the 14 sites were monitored for MPM only, five were monitored for Core and MPM and three were monitored for Assessment Monitoring where management plan constituents were analyzed on a monthly basis (Table 1). Management Plan Monitoring ceased from April through December 2012 with the exception of Bear Creek @ Kibby Rd. Based on the prioritization of exceedances, MPM was conducted for copper, lead, chlorpyrifos, diazinon and diuron, water column toxicity (*Ceriodaphnia dubia*, *Pimephales promelas* and *Selenastrum capricornutum*) and sediment toxicity (*Hyalella azteca*).

**Table 1. ESJWQC January through March 2012 sample locations (by zone and site name).**

ZONE	SITE TYPE <sup>1</sup>	JANUARY-MARCH 2012 MONITORING	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Core	C, MPM	Dry Creek @ Wellsford Rd	535XDCAWR	37.66000	-120.87526
1	Assessment	A	Rodden Creek @ Rodden Rd	535XRCARD	37.79053	-120.80886
2	Assessment	MPM	Hilmar Drain @ Central Ave	535XHDACA	37.39058	-120.95820
2	Core	C, MPM	Prairie Flower Drain @ Crows Landing Rd	535XPFDCL	37.44187	-121.00331
2	Assessment	A	Levee Drain @ Carpenter Rd	535XLDACR	37.48062	-121.03106
3	Core	C, MPM	Highline Canal @ Hwy 99	535XHCHNN	37.41254	-120.75941
3	Assessment	A	Highline Canal @ Lombardy Rd	535XHCALR	37.45547	-120.72181
4	Assessment	MPM	Bear Creek @ Kibby Rd	535XBCAKR	37.31230	-120.41535

ZONE	SITE TYPE <sup>1</sup>	JANUARY-MARCH 2012 MONITORING	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
4	Assessment	MPM	Livingston Drain @ Robin Ave	535XLDARA	37.31693	-120.74229
4	Core	C	Merced River @ Santa Fe	535XMRSFD	37.42705	-120.67353
4	Assessment	A, MPM	McCoy Lateral @ Hwy 140	535XMLAHO	37.30968	-120.78771
5	Assessment	MPM	Deadman Creek @ Gurr Rd	535XDCAGR	37.19514	-120.56147
5	Assessment	A, MPM	Deadman Creek @ Hwy 59	535DMCAHF	37.19755	-120.48763
5	Core	C, MPM	Duck Slough @ Gurr Rd	535XDSAGR	37.21408	-120.56126
5	Assessment	MPM	Duck Slough @ Hwy 99	535XDSAHN	37.25031	-120.41043
6	Assessment	A, MPM	Berenda Slough along Ave 18 1/2	545XSAAE	37.01820	-120.32650
6	Core	C, MPM	Cottonwood Creek @ Rd 20	545XCCART	36.86860	-120.18180
6	Assessment	MPM	Dry Creek @ Rd 18	545XDCARE	36.98180	-120.22056

<sup>1</sup> Site types are either Assessment or Core based on the ESJWQC MRPP (page 33). Type of monitoring conducted at sample locations depends on the rotation schedule outlined in the ESJWQC MRPP (Table 10, pages 52-53), Core Monitoring locations rotate into Assessment Monitoring every third year.

C – Core Monitoring

A – Assessment Monitoring

MPM – Management Plan Monitoring

**Table 2. ESJWQC April through December 2012 (by zone and site name) sample locations.**

ZONE	SITE TYPE <sup>1</sup>	APRIL-DECEMBER 2012 MONITORING <sup>2</sup>	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Assessment	A	Rodden Creek @ Rodden Rd	535XRCARD	37.79053	-120.80886
2	Assessment	A	Levee Drain @ Carpenter Rd	535XLDACR	37.48062	-121.03106
3	Assessment	A	Highline Canal @ Lombardy Rd	535XHCALR	37.45547	-120.72181
4	Assessment	MPM	Bear Creek @ Kibby Rd	535XBCAKR	37.31230	-120.41535
4	Assessment	A, MPM	McCoy Lateral @ Hwy 140	535XMLAHO	37.30968	-120.78771
5	Assessment	A, MPM	Deadman Creek @ Hwy 59	535DMCAHF	37.19755	-120.48763
6	Assessment	A, MPM	Berenda Slough along Ave 18 1/2	545XSAAE	37.01820	-120.32650

A – Assessment Monitoring

MPM – Management Plan Monitoring

<sup>1</sup> Site types are either Assessment or Core based on the ESJWQC MRPP (page 33). The type of monitoring conducted at sample locations depends on the rotation schedule outlined in the ESJWQC MRPP (Table 10, pages 52-53) where Core Monitoring locations rotate into Assessment Monitoring locations every third year.

<sup>2</sup> Core Monitoring and MPM (with the exception of Bear Creek @ Kibby Rd and Assessment sites) were suspended April through December 2012 (approved April 17, 2012).

Water quality results from MPM are used to evaluate the effectiveness of Coalition outreach in priority subwatersheds and the effectiveness of management practices implemented by growers within those subwatersheds. Table 3 lists all MPM sites and monitoring results from 2012. Of the MPM that took place in 2012, exceedances of the WQTL for copper occurred in five of 31 samples collected or 16% of the samples (Table 3). There were no other exceedances of management plan constituent WQTLs monitored during 2012 MPM. There were exceedances of other WQTLs for other constituents during Core and Assessment Monitoring.

Each high priority subwatershed is discussed in more detail including water quality exceedances, sourcing of exceedances, outreach, and evaluation of management practice effectiveness in the high priority site subwatershed summaries (Appendix I).

**Table 3. 2012 MPM results including a 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. Grey shaded cells indicate that no MPM was conducted on that date for that constituent.

Site Name	Sample Date	Copper	Lead	Chlorpyrifos	Diazinon	Diuron	C. dubia	P. promelas	S. capricornutum	H. azteca
Bear Creek @ Kibby Rd	1/10/2012	X								
Berenda Slough along Ave 18 1/2†	1/10/2012	X								
Cottonwood Creek @ Rd 20	1/10/2012	X*		X*		X*				
Deadman Creek @ Gurr Rd	1/10/2012	X						X		
Deadman Creek @ Hwy 59†	1/10/2012								X	
Dry Creek @ Rd 18	1/10/2012	X				X			X	
Duck Slough @ Gurr Rd	1/10/2012	X*								
Highline Canal @ Hwy 99	1/10/2012	4.5 (2.65)		X		X				
Livingston Drain @ Robin Ave	1/10/2012	X	X	X						
Prairie Flower Drain @ Crows Landing Rd	1/10/2012								X	
Bear Creek @ Kibby Rd	2/7/2012	X								
Berenda Slough along Ave 18 1/2†	2/7/2012	X*								
Cottonwood Creek @ Rd 20	2/7/2012	X*		X*	X*	X*				
Deadman Creek @ Gurr Rd	2/7/2012	X					X	X	X	
Dry Creek @ Rd 18	2/7/2012	X		X	X	X			X	
Dry Creek @ Wellsford Rd	2/7/2012	X				X			X	
Duck Slough @ Gurr Rd	2/7/2012	X					X			
Duck Slough @ Hwy 99	2/7/2012	X								
Highline Canal @ Hwy 99	2/7/2012	3.8 (2.07)	X	X		X			X	
Hilmar Drain @ Central Ave	2/7/2012	X								
Livingston Drain @ Robin Ave	2/7/2012	12 (2.46)	X						X	
Prairie Flower Drain @ Crows Landing Rd	2/7/2012								X	
Deadman Creek @ Gurr Rd	3/6/2012			X			X	X		
Dry Creek @ Rd 18	3/6/2012									X
Dry Creek @ Wellsford Rd	3/6/2012								X	X
Duck Slough @ Gurr Rd	3/6/2012						X			
Highline Canal @ Hwy 99	3/6/2012						X		X	X
Hilmar Drain @ Central Ave	3/6/2012									X
Prairie Flower Drain @ Crows Landing Rd	3/6/2012						X			X
Berenda Slough along Ave 18 ½†	4/12/2012	X*		X*						
Deadman Creek @ Hwy 59†	4/12/2012			X					X	
Bear Creek @ Kibby Rd	5/9/2012			X			X			
Berenda Slough along Ave 18 ½†	5/9/2012	X*							X*	
Berenda Slough along Ave 18 ½†	6/12/2012	5.70 (3.02)								
Bear Creek @ Kibby Rd	7/10/2012			X			X			
Berenda Slough along Ave 18 ½†	7/10/2012	4.8 (3.02)		X					X	
Bear Creek @ Kibby Rd	8/14/2012	X								
Berenda Slough along Ave 18 ½†	8/14/2012	X								
Deadman Creek @ Hwy 59†	8/14/2012			X*						
Berenda Slough along Ave 18 ½†	9/11/2012	X*		X						
Deadman Creek @ Hwy 59†	9/11/2012			X						
McCoy Lateral @ Hwy 140†	9/11/2012	X								
Berenda Slough along Ave 18 ½†	10/9/2012	X*								
McCoy Lateral @ Hwy 140†	10/9/2012	X*								

Site Name	Sample Date	Copper	Lead	Chlorpyrifos	Diazinon	Diuron	<i>C. dubia</i>	<i>P. promelas</i>	<i>S. capricornutum</i>	<i>H. azteca</i>
Berenda Slough along Ave 18 ½†	11/13/2012	X*								
Berenda Slough along Ave 18 ½†	12/11/2012	X*								
<b>Total MPM Exceedances</b>		5	0	0	0	0	0	0	0	0
<b>Total MPM Samples Collected</b>		31	3	15	2	7	8	3	14	5
<b>% Exceedances</b>		16%	0%	0%	0%	0%	0%	0%	0%	0%

Grey cells- No MPM conducted for that site and constituent

MPM- Management Plan Monitoring

‘†’ indicates that site is in Assessment Monitoring and MPM constituents will be analyzed during months of previous exceedances (even though MPM was suspended).

‘X’- Sample was taken for MPM for toxicity, but there was no toxicity or, the sample was taken for Management Plan Monitoring for exceedance, but there was no exceedance.

‘X\*’-Indicates site was ‘Dry’ during sampling event

## 2004 - 2012 EXCEEDANCES

One objective of the ESJWQC Management Plan is to maintain yearly updates of exceedances based on the most recent WQTLs. Table 4 provides a tally of exceedances of WQTLs for sites monitored from 2004 through 2012.

Sites not included in this tally, as described in the ESJWQC Management Plan submitted on September 30, 2008 are August Drain, Jones Drain and Lone Willow Slough. Sough Slough @ Quinley Rd was removed from Table 4 and from the ESJWQC MRPP (approved June 3, 2010). In addition, exceedances that occurred at Lateral 3 along East Taylor Rd site in 2011 and 2012 are not included in Tables 4 or 5. Lateral 3 along East Taylor Rd was removed from the Coalition’s MRPP (approved on February 7, 2012) and all 2011 monitoring results from the site are in Appendix X of the 2012 AMR (submitted on March 1, 2012). Upstream MPM sites monitored in 2008 where exceedances occurred are not included in Table 4. These sites and associated exceedances were included in the MPUR submitted on April 1, 2009 and are referenced in the site subwatershed section (Appendix I).

Table 5 includes a tally of exceedances that occurred since the last update (April 1, 2012) and includes monitoring results from 2012. In both Tables 4 and 5, cells with blue highlights indicate constituents that are currently under the ESJWQC Management Plan. In Table 5, green highlights indicate sites/constituents that have been added to the ESJWQC Management Plan due to exceedances in 2012.

**Table 4. ESJWQC exceedance tally based on results through December 2012.**

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). Constituents under a management plan are highlighted. The tally only includes field duplicate exceedances if the environmental sample did not also have an exceedance.

SITE NAME	F			I				B	M										P										T											
	OXYGEN, DISSOLVED	PH	SPECIFIC CONDUCTIVITY	DISSOLVED SOLIDS	AMMONIA	NITRATE AS N	NITRITE AS N	NITRATE + NITRITE AS N	E. COLI	ARSENIC	COPPER DISSOLVED†	COPPER TOTAL†	LEAD	MOLYBDENUM	ZINC	ALDICARB	CARBARYL	CARBOFURAN	CHLORPYRIFOS	CYANAZINE	DDD (P,P')	DDE (P,P')	DDT (P,P')	DIAZINON	DIELDRIN	DIMETHOATE	DIURON	HCH, DELTA	MALATHION	METHIDATHION	METHOXYCHLOR	METHYL PARATHION	THIOBENCARB	SIMAZINE	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA		
Ash Slough @ Ave 21	1							3		2	5	2						4																				1		
Bear Creek @ Kibby Rd	2	5						7	1		4							2				1														3		2	2	
Berenda Slough along Ave 18 ½	11	1						7			13							4								1										1		3		
Black Rascal Creek @ Yosemite Rd	17	2						11			1	2						4																		5		1	1	
Cottonwood Creek @ Rd 20	19	1						19		9	12	3						3	1				1			2								1		1	2	1		
Deadman Creek @ Gurr Rd	27	3	6	6	5			41	11		4							4				1		1		1		1						4	7	3				
Deadman Creek @ Hwy 59	20	6						18	6									6		1		1				1									1			3	1	
Dry Creek @ Rd 18	3	5						4		7	21	5		1				3					2			2										1		4	2	
Dry Creek @ Wellsford Rd	37	7	1	1				40			3	1						8							2										2		5	3		
Duck Slough @ Gurr Rd	4	7	2	1				1	23		1	8	4				1	1																2	3	1	2	7		
Duck Slough @ Hwy 59	3		1																																					
Duck Slough @ Hwy 99	2	3						12			11	11						4																		1		3	2*	
Hatch Drain @ Tuolumne Rd	23		22	12	1	13	1	12	12													1		1														10	6	
Highline Canal @ Hwy 99	1	16	1	2	2			11		2	7	7						5				1			2											4		4	6	
Highline Canal @ Lombardy Rd	1	8	1		1			6		4	5	8		1				6							1		1		1					1	6	2*	6	7		
Hilmar Drain @ Central Ave	6	3	39	26	2	12		20			2							1		1	1				3											1		6	4	
Howard Lateral @ Hwy 140	1	6	1	1				1	3		4							1																					1	
Lateral 2 ½ near Keyes Rd		5			1			1	2									3										1										1	1	
Levee Drain @ Carpenter Rd	5		11	12	2			11	3																														1	
Livingston Drain @ Robin Ave	1	11				1		2		3	9	2						4																					4	
McCoy Lateral @ Hwy 140		4						1		5																														
Merced River @ Santa Fe	4	1						4			1	2						3				1						1								5		1		
Miles Creek @ Reilly Rd	10							7			7	5			1			4																		3		3	3	
Mootz Drain @ Langworth Rd	10	1			1 <sup>2</sup>			9										2							1 <sup>2</sup>														1	
Mootz Drain downstream of Langworth Pond	9				1 <sup>2</sup>			10										2						1 <sup>2</sup>																
Mustang Creek @ East Ave	12		9	6	1			2	10		4							2			3														2	2*		1	1	
Prairie Flower Drain @ Crows Landing Rd	18	6	87	70	12	18	1	40	53	1			5			1		4				1		3				1							3	3 <sup>1</sup>	12	6		
Rodden Creek @ Rodden Rd	1							6														1					1													
Silva Drain @ Meadow Dr	17	1				3		13			3	1						6																		3	1		4	
Westport Drain @ Vivian Rd	7		19	13		13		7										2																					4	1
<b>GRAND TOTAL</b>	<b>272</b>	<b>102</b>	<b>200</b>	<b>150</b>	<b>32</b>	<b>57</b>	<b>2</b>	<b>56</b>	<b>364</b>	<b>31</b>	<b>54</b>	<b>103</b>	<b>53</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>17</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>47</b>	<b>15</b>	<b>83</b>	<b>59</b>		

\*Not prioritized for MPM; both toxic samples were from the same sampling event (sample and resample to test for persistence).

<sup>1</sup>Two of the toxic samples were from the same sampling event (sample and resample to test for persistence).

<sup>2</sup>Exceedances from the Mootz Drain @ Langworth Rd site count toward the management plan for Mootz Drain Downstream of Langworth Pond (site location was moved in December 2010, as approved on November 18, 2009).

† Exceedances of the copper WQTL determined by either total or dissolved copper are evaluated under the same copper management plan.

**Table 5. ESJWQC exceedance tally based on 2012 sampling events.**

All sites are listed that have had at least one exceedance in 2012. 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 2012 exceedances; blue highlights refer to sites/constituents already in a management plan. The tally only includes field duplicate exceedances if the environmental sample did not also have an exceedance.

ZONES	SITE NAME	F			I			B	M	T		
		OXYGEN, DISSOLVED	pH	SPECIFIC CONDUCTIVITY	DISSOLVED SOLIDS	AMMONIA	NITRATE + NITRITE AS N	E. COLI	ARSENIC	COPPER DISSOLVED†	S. CAPRICORNUTUM	H. AZTECA
4	Bear Creek @ Kibby Rd		2									
6	Berenda Slough along Ave 18 ½	1	1						2			
5	Deadman Creek @ Gurr Rd		2									
5	Deadman Creek @ Hwy 59	3	2				1	1				
6	Dry Creek @ Rd 18		1									
1	Dry Creek @ Wellsford Rd	1	1									
5	Duck Slough @ Gurr Rd		1				1					
3	Highline Canal @ Hwy 99		1						2			
3	Highline Canal @ Lombardy Rd		3						2	1		
2	Hilmar Drain @ Central Ave			2								
2	Levee Drain @ Carpenter Rd	5		11	12	2	11	3				1
4	Livingston Drain @ Robin Ave								1			
4	McCoy Lateral @ Hwy 140		2				1		2			
2	Prairie Flower Drain @ Crows Landing Rd			3	3	1	3	2				
1	Rodden Creek @ Rodden Rd	1					2					
<b>GRAND TOTAL</b>		<b>11</b>	<b>16</b>	<b>16</b>	<b>15</b>	<b>3</b>	<b>14</b>	<b>10</b>	<b>1</b>	<b>9</b>	<b>1</b>	<b>1</b>

† Exceedances of the copper WQTL determined by either total or dissolved copper are evaluated under the same copper management plan.

## 2012 NEW SITE/CONSTITUENTS REQUIRING MANAGEMENT PLANS

New sites that require a focused management plan approach are added to the priority list (Table 6). Source identification, outreach, and evaluation of management practices will be addressed at all new site subwatersheds that have been added to the focused management plan list during their years of high priority status as specified in Table 6.

As a result of 2012 monitoring, several new site/constituent specific management plans are required (see green highlights in Table 5). Below is a list of constituents with 2012 exceedances that triggered a new site/constituent specific management plan:

- pH
  - Deadman Creek @ Gurr Rd
- DO, SC, TDS, Ammonia, Nitrate and *E. coli*
  - Levee Drain @ Carpenter Rd

## MANAGEMENT PLAN PROCESS

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The ESJWQC Management Plan process was first outlined in the ESJWQC Management Plan submitted on September 30, 2008 and updated in the 2010 MPUR. Updates were made to reflect the monitoring strategy outlined in the ESJWQC MRPP (page 33) of rotating Core and Assessment Monitoring locations. Except for Assessment Monitoring locations initially sampled in October 2008, all other subwatersheds under the ESJWQC Management Plan followed the process outlined in the original Management Plan flow charts. The process required additional monitoring in 2007 and upstream monitoring in 2008 during the irrigation season for high priority constituents during months of past exceedances. In 2009, the Coalition was able to utilize source information gained from MPM during its outreach efforts, especially within high priority site subwatersheds. Due to the extensive amount of monitoring conducted within the Coalition region, the Coalition is focusing its efforts on documenting changes in management practices and performing outreach at both an individual and group level.

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## MANAGEMENT PLAN MONITORING STRATEGY

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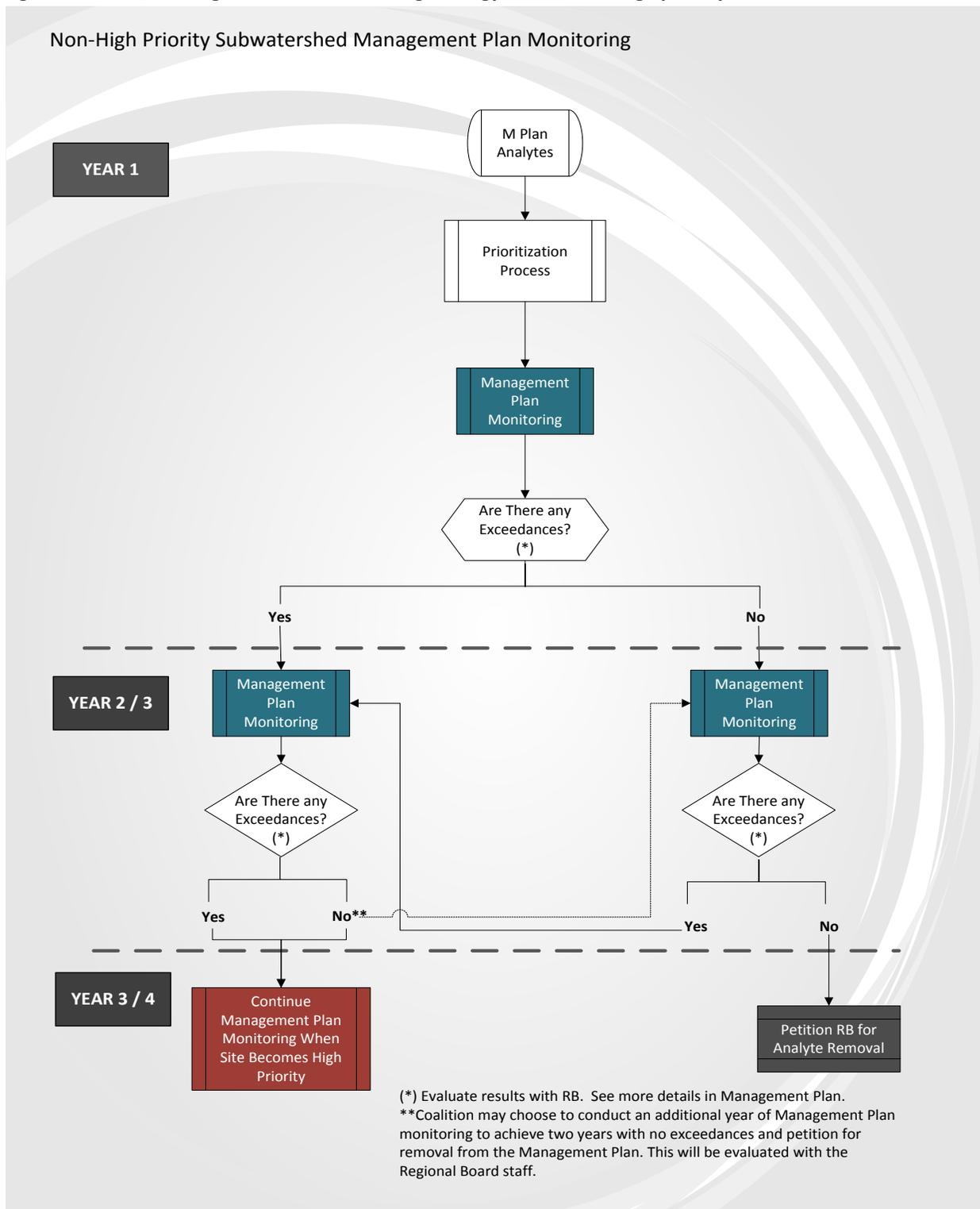
The Coalition's MPM strategy is divided into two subcategories: additional monitoring for low priority sites and MPM for high priority sites. Once a site requires a management plan, the site becomes a low priority site. Sites are rotated from low priority to high priority based on a schedule approved by the Regional Board (Table 6).

The flow chart in Figure 1 depicts the monitoring strategy for low priority site subwatersheds. Assessment Monitoring occurs at some sampling locations that were not sampled under the previous MRPP. If a management plan is required for a new Assessment Monitoring location (no previous monitoring), the Coalition will continue monitoring at this location to obtain two years of monitoring data for high priority constituents during months of past exceedances. Obtaining two years of data may occur during Assessment Monitoring at the site or may require the Coalition to schedule an additional year of monitoring. Appendix I (Low Priority Subwatersheds section) contains details on low priority sites scheduled for additional monitoring in 2012. Data gained through additional monitoring can be used to assess the sources of exceedances (both temporally and geographically with Pesticide Use Report data) between years. Additionally, general outreach and education occurs to all Coalition members, not just members within high priority subwatersheds. The Coalition anticipates growers will take steps to prevent the offsite movement of agricultural constituents, including implement additional management practices, regardless of the priority level of their subwatershed. Therefore, it is possible monitoring results will indicate an improvement in water quality due to increased management practices without additional focused outreach.

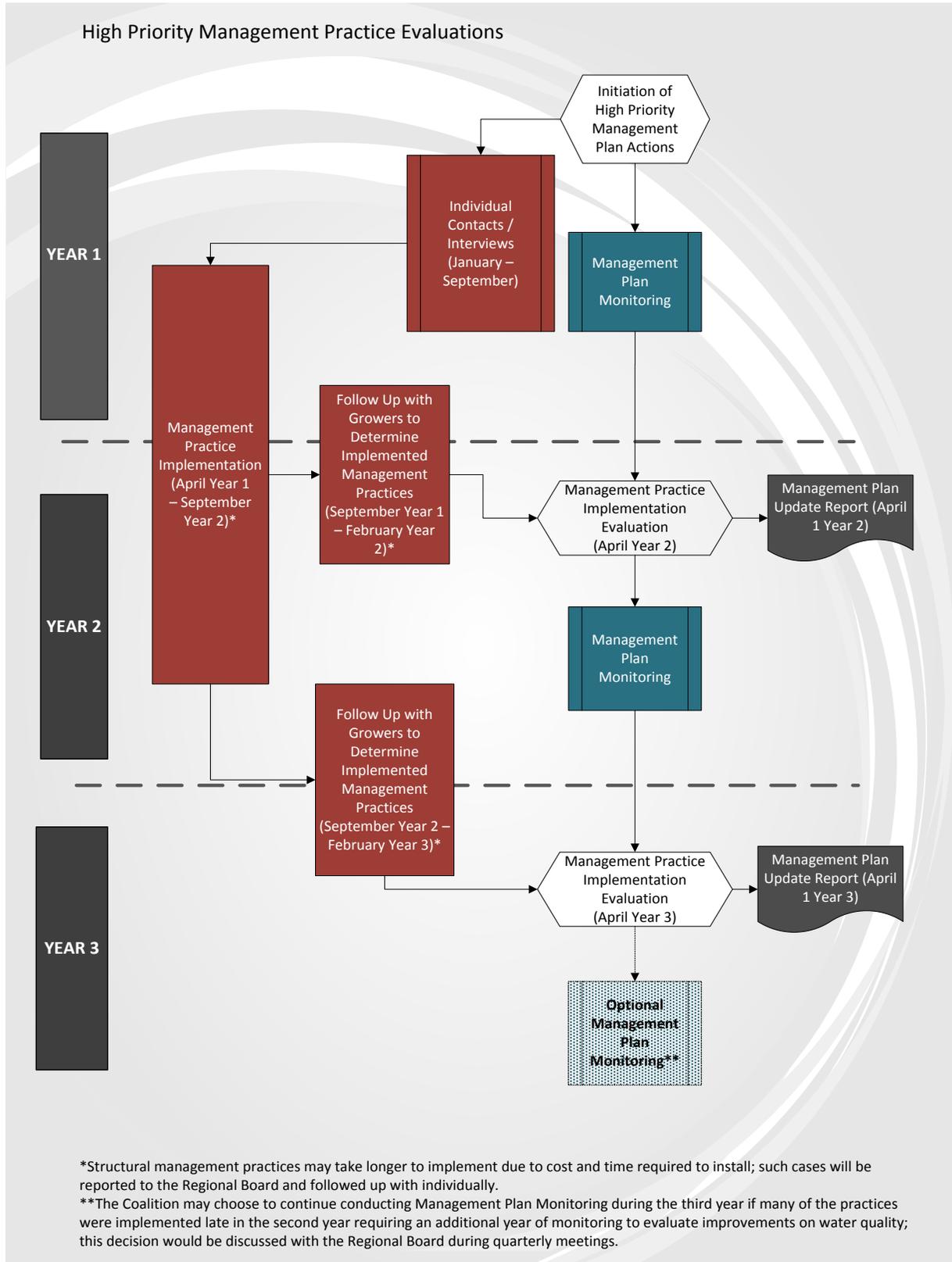
Once a subwatershed rotates into high priority status, the Coalition initiates MPM according to the strategy outlined in Figure 2 (Year 1 refers to the first year that the subwatershed is a high priority site). The purpose of MPM is to obtain data to evaluate improvements in water quality and/or the

effectiveness of newly implemented management practices. Management Plan Monitoring is scheduled for Year 1 and Year 2; MPM may continue beyond two years if the Coalition determines more data are necessary. If there are two years of no exceedances of WQTLs of high priority constituents (either in Year 1 and Year 2 or Year 2 and Year 3), the Regional Board is petitioned for removal of the site/constituent from an active management plan. Starting in 2013, the Coalition must perform three or more years of monitoring of a management plan constituent with no exceedances of the WQTL to petition for removal of the constituent from the site's management plan.

**Figure 1. ESJWQC Management Plan Monitoring strategy for new non-high priority subwatersheds.**



**Figure 2. ESJWQC High Priority Subwatershed Management Plan Monitoring and management practice evaluation strategy.**



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## MANAGEMENT PRACTICE TRACKING STRATEGY

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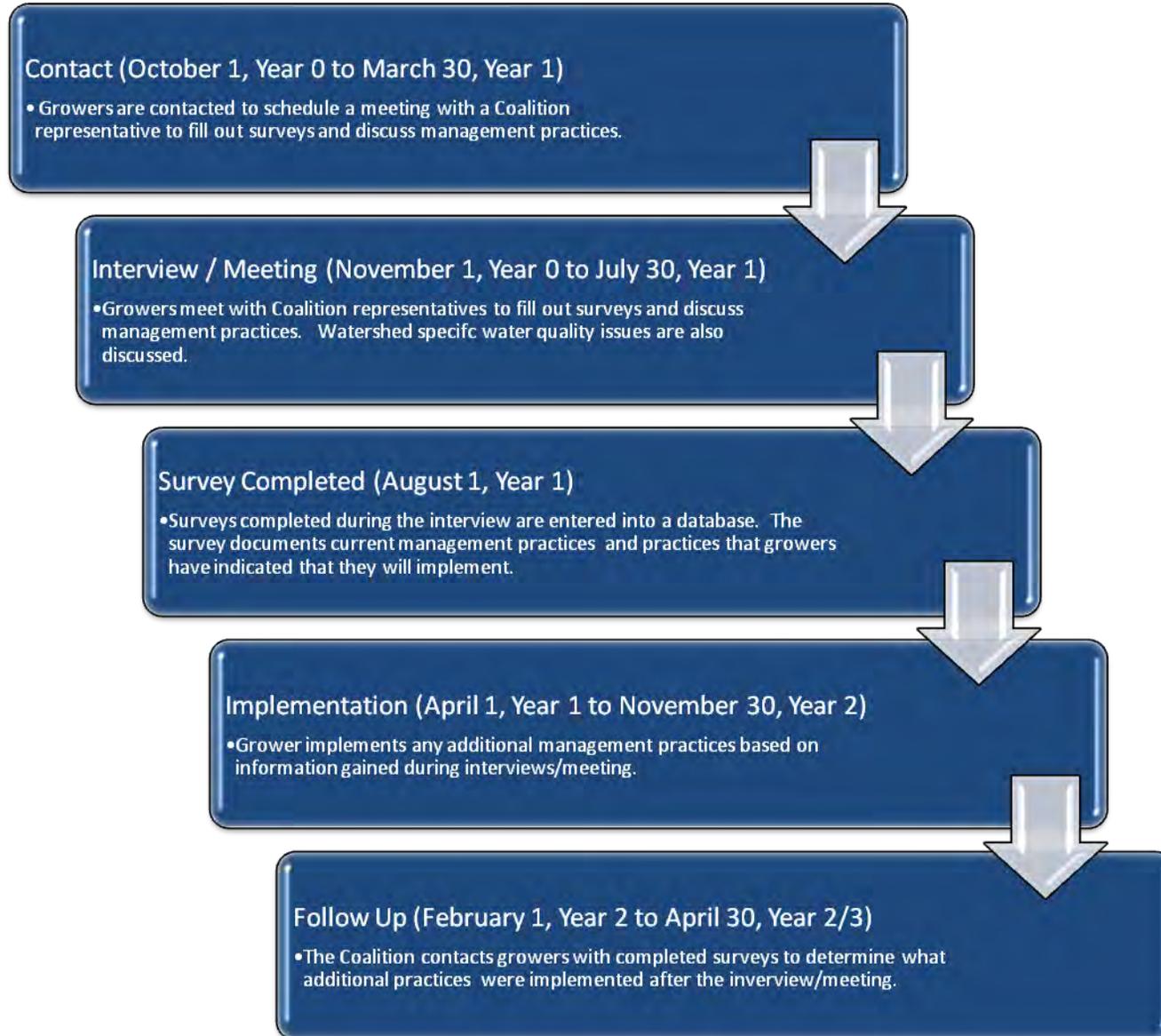
The schedule outlined in Figure 3 lists a timeline of actions in Years 1, 2 and 3 of the flow chart outlined in Figure 2. When a site becomes a high priority site subwatershed, the Coalition contacts individuals within the subwatershed who have the potential for direct drainage and who applied constituents of concern. Growers are contacted between October 1 and March 30 of Year 1 to schedule meetings and which occur between November 1 and July 30. Individual meetings inform growers of current water quality concerns and management practices that can be implemented to reduce impairments of water quality due to agricultural inputs.

During the interviews, growers are asked about their current farming operations and surveys are completed that document the grower's current management practices and record recommended management practices. It is anticipated that all surveys will be completed and entered into a database by August 1 of Year 1. Implementation of management practices is anticipated to occur between April of Year 1 and November of Year 2. It is difficult to predict when implementation will occur because some practices such as structural management practices may take multiple years to fund and construct.

The Coalition conducts follow up surveys with growers between February and April of Year 2. Follow up may extend to Year 3 depending on information obtained from the growers as to when they plan to implement practices. In some cases a third year may be necessary for funds to be available for structural improvements. Growers contacted in Year 1 are scheduled to attend a follow up meeting. At the meeting, interactive devices are used by attendees to answer survey questions included in a PowerPoint presentation given by Coalition representatives. Growers who did not attend the follow up meeting are contacted via phone calls/phone interviews in order to complete their follow up survey questions.

The follow up survey documents whether growers implemented new management practices in Year 1; if they did not implement new management practices the survey documents whether or not they plan to implement those practices in Year 2. If the grower indicates that they did not implement any practices nor do they intend to implement additional practices in the next year, the grower is asked why (i.e. they no longer farm that parcel, no available funds, etc.).

**Figure 3. Schedule for Coalition Management Plan strategy activities to document management practices for high priority subwatersheds.**



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## PRIORITIZATION OF CONSTITUENTS WITH EXCEEDANCES

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The ESJWQC developed a prioritization process (Figure 4) 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. pesticide applications) and for which management practices are available. Following the process outlined in the flow chart in Figure 4, a priority level is assigned to a management plan constituent for a specific site subwatershed. Priority levels of a constituent determine the level of effort used for sourcing, outreach and evaluation.

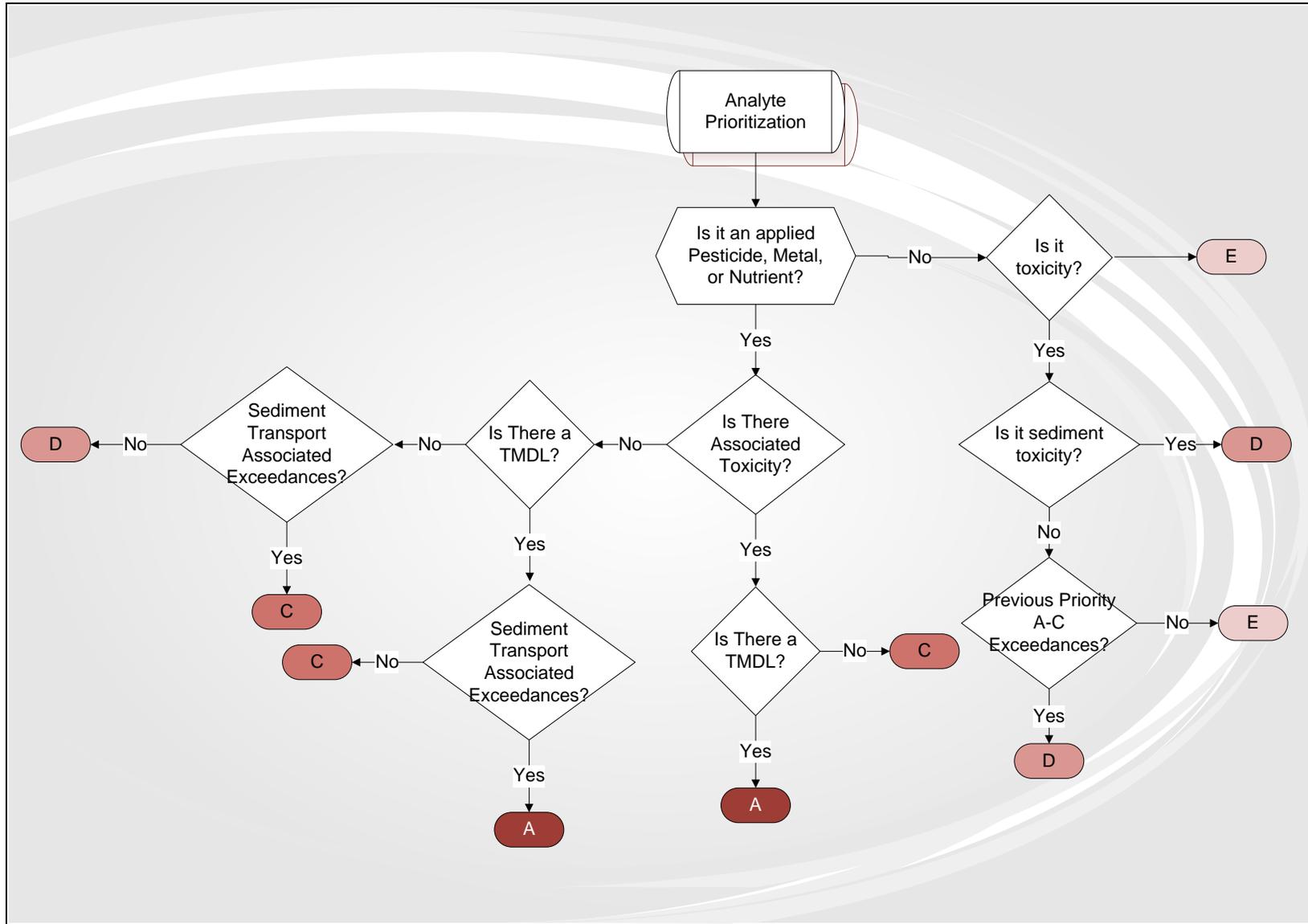
Source analysis is conducted by utilizing Pesticide Use Report (PUR) available from the offices of the County Agricultural Commissioners. These PUR data are considered preliminary and may contain some level of inaccuracy until they are finalized and made available through California Pesticide Information Portal (CalPIP). The most recently available CalPIP data for PURs are through December 2010. Preliminary PUR data associated with 2012 exceedances that were available for review included data from January through December for Madera, Merced and Stanislaus counties.

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 will not have MPM except for field parameters which are collected each time monitoring occurs.

The Coalition continues to provide information regarding management practices and exceedances of WQTLs to growers during annual meetings and site subwatershed meetings as needed. When a site subwatershed is rotated into high priority, the Coalition focuses its outreach on high priority constituents; however, individual contacts also include discussions of all exceedances that have occurred within that waterbody.

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

Figure 4. ESJWQC constituent prioritization process.



## MANAGEMENT PLAN DEVELOPMENT TIMELINES

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The Coalition developed a schedule (Table 6) establishing when sites become high priority and undergo a focused management plan approach. This schedule was submitted as an addendum to the ESJWQC Management Plan which was approved on November 25, 2008 (Table B). This schedule is evaluated and updated in each yearly MPUR for 1) any new sites requiring a management plan, and 2) changes to the years for focused outreach. Based on the Management Plan process, any new site that requires a management plan due to the previous year's exceedances is added to the bottom of the schedule. Changes such as time extensions, removal of sites and/or changing the year of prioritization must be approved by the Regional Board's Executive Officer.

Table 6 provides the updated schedule that includes approved changes to the prioritization scheme. Updates to the schedule (other than the addition of new sites requiring a management plan based on 2012 monitoring) from previous years included the omission of South Slough @ Quinley Rd and the exchange of priority years for Bear Creek @ Kibby Rd, Hilmar Drain @ Central Ave, Lateral 2 ½ near Keyes Rd and Ash Slough @ Ave 21. Specific details regarding changes made to the priority schedule following 2012 monitoring are provided below.

Rodden Creek @ Rodden Rd and Levee Drain @ Carpenter Rd were added to the focused management plan schedule and will rotate into high priority status in 2016 (Table 6). Rodden Creek @ Rodden Rd was monitored for the first time in 2011 as a rotating Assessment site. Exceedances of the WQTL for *E. coli* occurred at the site in 2011 and 2012 and the constituent was added to the site's management plan. Levee Drain @ Carpenter Rd was monitored for the first time in 2012 as a rotating Assessment site. Exceedances of the WQTLs for DO, SC, TDS, ammonia, nitrate and *E. coli* occurred and the constituents were added to the site's management plan. Levee Drain is scheduled from Assessment Monitoring in 2013 and all constituents will be monitored during that time. There are currently 28 site subwatersheds in the ESJWQC Management Plan scheduled for high priority status between 2008 and 2018 (Table 6).

**Table 6. Schedule for addressing each site subwatershed with a detailed, focused Management Plan approach (revised and approved May 17, 2011).**

<b>SITE SUBWATERSHED NAME</b>	<b>UPDATED YEAR FOR FOCUSED APPROACH</b>
Dry Creek @ Wellsford Rd	2008-2010
Duck Slough @ Hwy 99	2008-2010
Prairie Flower Drain @ Crows Landing Rd	2008-2010
Cottonwood Creek @ Rd 20	2010-2012
Duck Slough @ Gurr Rd	2010-2012
Highline Canal @ Hwy 99	2010-2012
Bear Creek @ Kibby Rd	2010-2012
Lateral 2 ½ near Keyes Rd	2011-2013
Berenda Slough along Ave 18 1/2	2011-2013
Dry Creek @ Rd 18	2011-2013
Livingston Drain @ Robin Ave	2011-2013
Hilmar Drain @ Central Ave	2012-2014
Black Rascal Creek @ Yosemite Rd	2012-2014
Deadman Creek @ Hwy 59	2012-2014
Deadman Creek (Dutchman) @ Gurr Rd	2012-2014
Hatch Drain @ Tuolumne Rd	2013-2015
Highline Canal @ Lombardy Rd	2013-2015
Merced River @ Santa Fe	2013-2015
Miles Creek @ Reilly Rd	2013-2015
Mustang Creek @ East Ave	2014-2016
Silva Drain @ Meadow Dr	2014-2016
Westport Drain @ Vivian Rd	2014-2016
Ash Slough @ Ave 21	2015-2017
Mootz Drain downstream of Langworth Pond <sup>1</sup>	2015-2017
Howard Lateral @ Hwy 140	2015-2017
Levee Drain @ Carpenter Rd	2016-2018
McCoy Lateral @ Hwy 140	2016-2018
Rodden Creek @ Rodden Rd	2016-2018
<b>RE-EVALUATE ALL SITE SUBWATERSHEDS AND REVISE SCHEDULE</b>	<b>ANNUALLY</b>

<sup>1</sup>Mootz Drain downstream of Langworth Pond was monitored for all constituents requiring a management plan detected at the upstream location, Mootz Drain @ Langworth Rd.

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## PRIORITY SITE MANAGEMENT

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### MANAGEMENT OBJECTIVES

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The Coalition prioritizes constituents and site subwatersheds to allow for source identification, focused outreach, and evaluation of management practices. In 2008, the Coalition prioritized subwatersheds based on the number, frequency and magnitude of chlorpyrifos and diazinon exceedances. Other factors considered include size of the subwatershed and known improvements in management practices in those areas.

The objective of the prioritization process is to identify watersheds where exceedances are common and where management practices can be implemented to decrease agricultural discharges that contribute to downstream impairments. Although the Coalition is focusing on chlorpyrifos and diazinon exceedances and associated applications, management practices implemented to reduce the runoff of these constituents will also reduce the runoff of other pesticides, nutrients, salts, and metals.

The Coalition will monitor for Priority A-D constituents when a site becomes a high priority subwatershed. The purpose of monitoring is to evaluate improvements in water quality and the effectiveness of management practices. In addition, if there is a new site subwatershed requiring a management plan, that site will be monitored for at least two years for Priority A-D constituents. A site subwatershed analysis is included in Appendix I for all high priority subwatersheds.

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### 2013 MANAGEMENT PLAN MONITORING (MPM) SCHEDULE

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In 2013, the ESJWQC will conduct MPM at the following high priority sites:

First Priority (2008 – 2010)

- Dry Creek @ Wellsford
- Duck Slough @ Hwy 99
- Prairie Flower Drain @ Crows Landing

Second Priority (2010 – 2012)

- Bear Creek @ Kibby Rd
- Cottonwood Creek @ Rd 20
- Duck Slough @ Gurr Rd
- Highline Canal @ Hwy 99

Third Priority (2011-2013)

- Berenda Slough along Ave 18 ½
- Dry Creek @ Rd 18
- Lateral 2 ½ near Keyes Rd
- Livingston Drain @ Robin Ave

Fourth Priority (2012-2014)

- Black Rascal Creek @ Yosemite Rd
- Deadman Creek @ Gurr Rd
- Deadman Creek @ Hwy 59
- Hilmar Drain @ Central Ave

Fifth Priority (2013-2015)

- Hatch Drain @ Tuolumne Rd
- Highline Canal @ Lombardy Rd
- Merced River @ Santa Fe
- Miles Creek @ Santa Fe

The first priority subwatersheds are scheduled for continued monitoring in the fifth year to assess water quality due to initial delays in management practice evaluation and/or implementation. After two consecutive years without exceedances the Coalition can petition to have the constituents removed from that sites active management plan (starting in 2013, the Coalition must perform three or more years of monitoring of a management plan constituent with no exceedances of the WQTL to petition for removal of the constituent from the site’s management plan). The Coalition was approved on May 30, 2012 to remove specific site/constituent pairs from active management plans and MPM. Based on 2012 monitoring, the Coalition submitted a second letter petitioning to remove specific site/constituent pairs from active management plan to the Regional Board on November 7, 2012; this letter is still pending approval (Table 33).

Table 7 includes all sites that are scheduled for MPM for priority constituents during months of past exceedances in 2013. Furthermore, Rodden Creek @ Rodden Rd and Levee Drain @ Carpenter Rd were added to the priority schedule and will rotate into high priority status in 2016 (Table 6). Rodden Creek @ Rodden Rd requires a management plan for *E. coli* which is not a high priority constituent. Levee Drain @ Carpenter Rd continues to be monitored as an Assessment Monitoring location.

**Table 7. 2013 Management Plan Monitoring schedule.**

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	LEAD	CHLORPYRIFOS	DIAZINON	DIETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Bear Creek @ Kibby Rd	2nd	January	X									
Berenda Slough along Ave 18 1/2	3rd	January	X									
Cottonwood Creek @ Rd 20	2nd	January	X	X	X							
Deadman Creek @ Gurr Rd	4th	January								X		
Deadman Creek @ Hwy 59	4th	January									X	
Dry Creek @ Rd 18	3rd	January	X				X				X	
Duck Slough @ Gurr Rd	2nd	January	X	X								
Hatch Drain @ Tuolumne Rd	5th	January									X	
Highline Canal @ Hwy 99	2nd	January	X									
Highline Canal @ Lombardy Rd	5th	January	X		X				X			
Livingston Drain @ Robin Ave	3rd	January	X	X	X							
McCoy Lateral @ Hwy 140	8th	January	X									
Merced River @ Santa Fe	5th	January			X				X			
Miles Creek @ Reilly Rd	5th	January	X	X					X			
Prairie Flower Drain @ Crows Landing Rd	1st	January									X	
Bear Creek @ Kibby Rd	2nd	February	X									
Berenda Slough along Ave 18 1/2	3rd	February	X									
Cottonwood Creek @ Rd 20	2nd	February	X	X	X							
Deadman Creek @ Gurr Rd	4th	February							X	X	X	
Dry Creek @ Rd 18	3rd	February	X		X	X		X			X	
Duck Slough @ Gurr Rd	2nd	February	X	X					X			
Hatch Drain @ Tuolumne Rd	5th	February									X	
Highline Canal @ Hwy 99	2nd	February	X	X							X	
Highline Canal @ Lombardy Rd	5th	February	X						X		X	
Hilmar Drain @ Central Ave	4th	February	X									

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	LEAD	CHLORPYRIFOS	DIAZINON	DIEMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Livingston Drain @ Robin Ave	3rd	February	X	X							X	
Miles Creek @ Reilly Rd	5th	February	X	X								
Prairie Flower Drain @ Crows Landing Rd	1st	February									X	
Deadman Creek @ Gurr Rd	4th	March			X				X	X		
Dry Creek @ Rd 18	3rd	March										X
Dry Creek @ Wellsford Rd	1st	March										X
Duck Slough @ Gurr Rd	2nd	March							X			
Hatch Drain @ Tuolumne Rd	5th	March										X
Highline Canal @ Hwy 99	2nd	March							X		X	X
Highline Canal @ Lombardy Rd	5th	March	X		X				X		X	X
Hilmar Drain @ Central Ave	4th	March										X
Merced River @ Santa Fe	5th	March							X			
Prairie Flower Drain @ Crows Landing Rd	1st	March							X			X
Berenda Slough along Ave 18 1/2	3rd	April	X		X							
Deadman Creek @ Hwy 59	4th	April			X						X	
Black Rascal Creek @ Yosemite Rd	4th	April		X								
Cottonwood Creek @ Rd 20	2nd	April	X									
Miles Creek @ Reilly Rd	5th	April									X	
Deadman Creek @ Gurr Rd	4th	April			X							
Dry Creek @ Rd 18	3rd	April	X		X							
Duck Slough @ Gurr Rd	2nd	April	X	X								
Hatch Drain @ Tuolumne Rd	5th	April									X	
Highline Canal @ Hwy 99	2nd	April	X	X							X	
Highline Canal @ Lombardy Rd	5th	April									X	
Hilmar Drain @ Central Ave	4th	April						X			X	
Howard Lateral @ Hwy 140	7th	April	X									
Lateral 2 1/2 near Keyes Rd	3rd	April			X							
Livingston Drain @ Robin Ave	3rd	April									X	
Prairie Flower Drain @ Crows Landing Rd	1st	April								X	X	
Berenda Slough along Ave 18 1/2	3rd	May	X								X	
Black Rascal Creek @ Yosemite Rd	4th	May			X				X			
Cottonwood Creek @ Rd 20	2nd	May	X									
Deadman Creek @ Gurr Rd	4th	May								X		
Dry Creek @ Rd 18	3rd	May	X	X							X	
Duck Slough @ Gurr Rd	2nd	May	X	X								
Hatch Drain @ Tuolumne Rd	5th	May									X	
Highline Canal @ Hwy 99	2nd	May		X					X		X	
Highline Canal @ Lombardy Rd	5th	May	X								X	
Livingston Drain @ Robin Ave	3rd	May	X								X	
Miles Creek @ Reilly Rd	5th	May	X									
Prairie Flower Drain @ Crows Landing Rd	1st	May									X	
Berenda Slough along Ave 18 1/2	3rd	June	X									
Cottonwood Creek @ Rd 20	2nd	June	X	X								
Deadman Creek @ Gurr Rd	4th	June								X		
Dry Creek @ Rd 18	3rd	June	X	X								
Duck Slough @ Gurr Rd	2nd	June	X	X								
Highline Canal @ Hwy 99	2nd	June	X	X								
Highline Canal @ Lombardy Rd	5th	June							X			
Hilmar Drain @ Central Ave	4th	June						X				

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	LEAD	CHLORPYRIFOS	DIAZINON	DIEMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Howard Lateral @ Hwy 140	7th	June			X							
Livingston Drain @ Robin Ave	3rd	June	X		X							
Miles Creek @ Reilly Rd	5th	June	X	X							X	
McCoy Lateral @ Hwy 140	8th	June	X									
Berenda Slough along Ave 18 1/2	3rd	July	X		X						X	
Black Rascal Creek @ Yosemite Rd	4th	July			X				X			
Cottonwood Creek @ Rd 20	2nd	July	X									
Deadman Creek @ Gurr Rd	4th	July									X	
Dry Creek @ Rd 18	3rd	July	X		X							
Dry Creek @ Wellsford Rd	1st	July			X							
Duck Slough @ Gurr Rd	2nd	July	X	X								
Hatch Drain @ Tuolumne Rd	5th	July									X	
Highline Canal @ Hwy 99	2nd	July	X	X								
Highline Canal @ Lombardy Rd	5th	July			X							
Hilmar Drain @ Central Ave	4th	July	X								X	
Howard Lateral @ Hwy 140	7th	July	X									
Lateral 2 1/2 near Keyes Rd	3rd	July			X							
Livingston Drain @ Robin Ave	3rd	July	X		X							
Merced River @ Santa Fe	5th	July			X				X			
Miles Creek @ Reilly Rd	5th	July	X	X	X							
Prairie Flower Drain @ Crows Landing Rd	1st	July					X			X		
Bear Creek @ Kibby Rd	2nd	August	X									
Berenda Slough along Ave 18 1/2	3rd	August	X									
Deadman Creek @ Hwy 59	4th	August			X							
Black Rascal Creek @ Yosemite Rd	3rd	August			X				X			
Cottonwood Creek @ Rd 20	2nd	August	X									
Deadman Creek @ Gurr Rd	4th	August			X							
Duck Slough @ Gurr Rd	2nd	August	X	X								
Dry Creek @ Rd 18	3rd	August	X	X								
Dry Creek @ Wellsford Rd	1st	August			X							
Hatch Drain @ Tuolumne Rd	5th	August									X	
Highline Canal @ Hwy 99	2nd	August	X	X								
Highline Canal @ Lombardy Rd	5th	August	X		X						X	
Livingston Drain @ Robin Ave	3rd	August			X							
Merced River @ Santa Fe	5th	August							X			
Miles Creek @ Reilly Rd	5th	August	X	X	X							
Prairie Flower Drain @ Crows Landing Rd	1st	August					X		X			
Berenda Slough along Ave 18 1/2	3rd	September	X		X							
Deadman Creek @ Hwy 59	4th	September			X							
McCoy Lateral @ Hwy 140	8th	September	X									
Black Rascal Creek @ Yosemite Rd	3rd	September		X	X							
Cottonwood Creek @ Rd 20	2nd	September	X									
Deadman Creek @ Gurr Rd	4th	September			X							
Dry Creek @ Rd 18	3rd	September	X	X								X
Dry Creek @ Wellsford Rd	1st	September			X							X
Duck Slough @ Gurr Rd	2nd	September	X	X								X
Hatch Drain @ Tuolumne Rd	5th	September										X
Highline Canal @ Hwy 99	2nd	September							X			X
Highline Canal @ Lombardy Rd	5th	September							X		X	X

SITE NAME	HIGH PRIORITY SUBWATERSHED	MONTH	COPPER	LEAD	CHLORPYRIFOS	DIAZINON	DIEMETHOATE	DIURON	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	H. AZTECA
Hilmar Drain @ Central Ave	4th	September									X	X
Livingston Drain @ Robin Ave	3rd	September	X									
Miles Creek @ Reilly Rd	5th	September			X				X			X
Prairie Flower Drain @ Crows Landing Rd	1st	September					X		X			X
McCoy Lateral @ Hwy 140	8th	October	X									
Berenda Slough along Ave 18 1/2	3rd	October	X									
Cottonwood Creek @ Rd 20	2nd	October	X									
Howard Lateral @ Hwy 140	7th	October	X									
Prairie Flower Drain @ Crows Landing Rd	1st	October									X	
Berenda Slough along Ave 18 1/2	3rd	November	X									
Deadman Creek @ Gurr Rd	4th	November							X	X		
Merced River @ Santa Fe	5th	November			X							
Berenda Slough along Ave 18 1/2	3rd	December	X									
Deadman Creek @ Gurr Rd	4th	December								X		
Prairie Flower Drain @ Crows Landing Rd	1st	December									X	

## PERFORMANCE GOALS AND SCHEDULES

The Coalition Strategic Plan is outlined in the original Management Plan (approved on November 25, 2008) in Table 18, pages 77-79 and is designed to meet the following management goal:

“To continue to monitor and analyze the water and sediment quality of ESJWQC 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 five sets of high priority site subwatersheds: first priority (2008-2010), second priority (2010- 2012), third priority (2011-2013), fourth priority (2012-2014) and fifth priority (2013-2015). Performance Goals are submitted for approval each time a new set of 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 Assessor Parcel Number (APN) associated with baseline survey responses
2. Grower Group Contacts / Individual Contacts to recommend additional practices
3. Implementation of new management practices by growers
4. Determine 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 ESJWQC Management Plan on June 16, 2009 (first priority), June 8, 2010 (second priority), November 17, 2010 (third priority), November 14, 2011 (fourth priority) and November 1, 2012

(fifth priority). The following sections describe Coalition actions to meet the approved Performance Goals and the status of each of the Performance Goals along with associated measures/outputs.

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### First Priority Subwatersheds (2008 – 2010)

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The amended Performance Goals for the first priority subwatersheds are presented in Table 8 (details and amendments are discussed in detail in the request for an extension of the schedule submitted on June 5, 2009 and approved on June 8, 2010). The updated management practices survey, outreach, implementation and evaluation tracking schedule is included in Table 9. The first priority subwatersheds Performance Goals 1-5 are complete; each goal was discussed in detail in the MPUR 2012 (approved June 25, 2012). A site subwatershed analysis has been included in Appendix I for all high and low priority subwatersheds.

The Coalition continues to discuss Management Plan activities with the Regional Board during meetings; quarterly meetings held in 2012 are listed in Table 14. Management Plan Monitoring in the first priority subwatersheds is scheduled to occur during months of previous exceedances in 2013.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.) in the first, second, third, fourth and fifth priority subwatersheds are listed in Table 16.

**Table 8. High Priority Performance Goals status for 2008-2010 high priority subwatersheds (Dry Creek @ Wellsford, Duck Slough @ Hwy 99 and Prairie Flower Drain @ Crows Landing Rd), updated on June 5, 2009 and approved on June 16, 2009.**

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013 <sup>1</sup>		
			DRY CREEK @ WELLSFORD	DUCK SLOUGH @ HWY 99	PRAIRIE FLOWER DRAIN @ CROWS LANDING RD
<b>Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified from February to August 2009.</b>					
Performance Measure 1.1. – 100% of targeted growers contacted.	Report ratio of individual contacts made versus total growers identified with discharges.	Parry Klassen	<b>25 of 25</b> (100%)	<b>24 of 24</b> (100%)	<b>11 of 11</b> (100%)
Performance Measure 1.2 – Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed.	Report ratio of acreage represented by individual contacts versus total subwatershed acreage <sup>2</sup> .	MLJ-LLC	<b>6,392 of 23,331<sup>3</sup></b> (27%)	<b>4,016 of 10,695<sup>3</sup></b> (38%)	<b>865 of 3,611<sup>3</sup></b> (24%)
<b>Performance Goal 2: Establish current practices by August 15, 2009, on adjacent properties to waterways or where discharges are identified.</b>					
Performance Measure 2.1 – Obtain current management practice information from 100% of targeted growers.	Completed individual contact checklists recorded in an Access database.	Parry Klassen	<b>25 of 25</b> (100%)	<b>24 of 24</b> (100%)	<b>11 of 11</b> (100%)
Performance Measure 2.2 – Document current management practices of the targeted growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record of management practices used that may reduce agricultural impact on water quality.	MLJ-LLC	<b>25 of 25</b> (100%)	<b>24 of 24</b> (100%)	<b>11 of 11</b> (100%)
Performance Measure 2.3 – Document management practices targeted grower was encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update (April 2010).	MLJ-LLC	<b>Complete</b>	<b>Complete</b>	<b>Complete</b>
<b>Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.</b>					
Performance Measure 3.1 – By February 2011, document additional management practices implemented by targeted growers.	Summary of management practices implemented as a result of individual contacts.	Parry Klassen/MLJ-LLC	<b>Complete</b>	<b>Complete</b>	<b>Complete</b>
<b>Performance Goal 4: Evaluate effectiveness of the new management practices implemented during 2009 and 2010.</b>					
Performance Measure 4.1 – Assess water quality results from Coalition monitoring locations within the priority site subwatersheds.	Summary of 2009 and 2010 water quality data from site subwatershed (April 2010 and 2011).	MLJ-LLC	<b>Complete</b> April 1, 2012 <sup>4</sup>	<b>Complete</b> April 1, 2012 <sup>4</sup>	<b>Complete</b> April 1, 2012 <sup>4</sup>
<b>Performance Goal 5: Consult with CVRWQCB at least once during 2008/2009 to discuss Management Plan activities and consider if changes need to be made in Management Plan strategy for high priority waterbodies.</b>					

<sup>1</sup>County overall direct drainage acreage has been updated; acreages has been updated to be more accurate by updating GIS parcel layers (actual parcels did not change).

<sup>2</sup>Performance Goal states that ‘total subwatershed acreage’ was reported; however, the Coalition reported overall irrigated acres for the first priority subwatersheds.

<sup>3</sup>Overall irrigated direct drainage acreage for first priority subwatersheds comes from 2008/2009 parcel data layers.

<sup>4</sup>The Coalition will continue MPM at Dry Creek @ Wellsford Rd (chlorpyrifos and *H. azteca* toxicity) and Prairie Flower Drain @ Crows Landing Rd (dimethoate and toxicity to *C. dubia*, *P. promelas*, *S. capricornutum* and *H. azteca*) during 2013.

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## Second Priority Subwatersheds (2010 – 2012)

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Performance Goals, measures, outputs and completion dates for second priority subwatersheds are included in Table 9 and were approved by the Regional Board on June 8, 2010. The second priority subwatersheds Performance Goals 1-5 are complete; each goal was discussed in detail in the MPUR 2012 (approved June 25, 2012). A site subwatershed analysis has been included in Appendix I for all high and low priority subwatersheds.

The Coalition continues to discuss Management Plan activities with the Regional Board during meetings; quarterly meetings held in 2012 are listed in Table 13. Management Plan Monitoring in the second priority subwatersheds is scheduled to occur during months of previous exceedances in 2013.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third and fourth priority subwatersheds are listed in Table 15.

**Table 9. High Priority Performance Goals status for 2010 - 2012 high priority subwatersheds (Cottonwood Creek @ Rd 20, Highline Canal @ Hwy 99, Duck Slough @ Gurr Rd and Bear Creek @ Kibby Rd), approved on June 8, 2010.**

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013 <sup>1</sup>			
			COTTONWOOD CREEK @ Rd 20	HIGHLINE CANAL @ HWY 99	DUCK SLOUGH @ GURR RD	BEAR CREEK @ KIBBY RD
<b>Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.</b>						
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.	Parry Klassen	25 of 25 (100%)	10 of 10 (100%)	6 of 6 (100%)	14 of 14 (100%)
Performance Measure 1.2 – Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed (if subwatershed is greater than 800 acres).	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	5,768 of 12,940 <sup>2</sup> (45%)	368 of 1,106 <sup>2</sup> (33%)	2,656 of 5,761 <sup>2</sup> (46%)	1,292 of 4,179 <sup>2</sup> (31%)
<b>Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.</b>						
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 in an Access database current management practices used that may reduce agricultural impact on water quality.	Parry Klassen	25 of 25 (100%)	10 of 10 (100%)	6 of 6 (100%)	14 of 14 (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	Complete
<b>Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.</b>						
Performance Measure 3.1* –Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices in an Access database.	Parry Klassen, MLJ-LLC	Complete	Complete	Complete	Complete
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC				
<b>Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.</b>						
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, 2012	Complete April 1, 2012	Complete April 1, 2012	Complete April 1, 2012
<b>Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in Management Plan strategy for High Priority waterbodies.</b>						

<sup>1</sup>County overall direct drainage acreage has been updated; acreages has been updated to be more accurate by updating GIS parcel layers (actual parcels did not change).

<sup>2</sup> Overall irrigated direct drainage acreage for second priority subwatersheds comes from 2009/2011 parcel data layers.

\*Contacts with growers to determine implemented practices will occur between February 1 and April 30; all information obtained by February 28th will be entered into an Access database and included in the following April 1 Management Plan Update Report; any additional information will be reported on during the quarterly meetings.

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### Third Priority Subwatersheds (2011 – 2013)

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The third high priority subwatersheds include Berenda Slough along Ave 18 ½ , Dry Creek @ Rd 18, Livingston Drain @ Robin Ave and Lateral 2 ½ near Keyes Rd. Performance Goals for the third priority subwatersheds are similar to those formulated for the second priority subwatershed Performance Goals and were approved on November 17, 2010 (Table 10).

#### **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 growers in the third priority subwatersheds by March 30, 2011 as scheduled (Table 10). The Coalition initiated contacts with the third priority subwatershed targeted members with conference calls to discuss member responsibilities, management plan strategies, and initiate scheduling of visits with growers (Table 15). Following these conference calls, the Coalition sent mailings to targeted growers in the Berenda Slough along Ave 18 ½ , Dry Creek @ Rd 18, Livingston Drain @ Robin Ave and Lateral 2 ½ near Keyes Rd subwatersheds (Table 15). The mailings informed growers about the Coalition’s Management Plan strategy, member responsibilities, and encouraged growers to schedule individual interviews.

A total of 72 growers were contacted representing 10,974 acres or 44% of the acreage with the potential for direct drainage in the third priority subwatersheds (Table 10). Of the four subwatersheds, Dry Creek @ Rd 18 had the highest percentage of acreage with direct drainage represented by contacted growers (53%), followed by Lateral 2 ½ near Keyes Rd (47%), Berenda Slough along Ave 18 ½ (38%) and Livingston Drain @ Robin Ave (23%, Table 10).

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

The Coalition met and documented current management practices for 100% of targeted growers within all four subwatersheds (Table 10). As detailed in the Management Practices section of this report, surveys document management practices including irrigation management, storm water runoff, erosion and sediment management, pest management, and dormant sprays (when applicable). One hundred percent of the management practices documented on the surveys were recorded in an Access database (Table 10).

A summary of currently implemented and recommended management practices is included in the Third 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 conducts follow up contacts with growers who received recommendations for additional management practices between February 1 and April 30<sup>th</sup> to record newly implemented practices (Table 10).

One hundred percent of the management practices recommended to growers to implement in 2011 and 2012 were recorded in an Access database (Table 10). A summary of recommended management practices is included in the Third 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 MPM in the third high priority subwatersheds during 2012. The Evaluation of Management Plan Effectiveness section of this report discusses the water quality results from 2012 monitoring in the third priority subwatersheds during Year 2. The Coalition will also conduct MPM in the third priority subwatersheds in 2013 to assess changes in water quality.

**Performance Goal 5: Consult with the 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.**

The Coalition met with the Regional Board staff quarterly to discuss Coalition activities (Table 13). Quarterly meeting dates from 2011 were reported in the 2012 MPUR (Table 14, page 40). The Coalition continues to discuss Management Plan activities with the Regional Board staff during meetings.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth and fifth priority subwatersheds are listed in Table 15.

**Table 10. High Priority Performance Goals status for 2011 - 2013 high priority subwatersheds (Berenda Slough along Ave 18 ½, Dry Creek @ Rd 18, Lateral 2 ½ near Keyes Rd, Livingston Drain @ Robin Ave), approved on November 17, 2010.**

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013 <sup>1</sup>			
			BERENDA SLOUGH ALONG AVE 18 ½	DRY CREEK @ RD 18	LATERAL 2 ½ NEAR KEYES RD	LIVINGSTON DRAIN @ ROBIN AVE
<b>Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.</b>						
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.	Parry Klassen	19 of 19 (100%)	17 of 17 (100%)	25 of 25 (100%)	11 of 11 (100%)
Performance Measure 1.2 – Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed (if subwatershed is greater than 800 acres).	Report ratio of acreage represented by individual contacts versus subwatershed acreage determined to have direct drainage.	MLJ-LLC	4,103 of 10,742 (38%)	4,710 of 8,914 (53%)	1,826 of 3,905 (47%)	335 of 1,430 (23%)
<b>Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.</b>						
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 in an Access database current management practices used that may reduce agricultural impact on water quality.	Parry Klassen	19 of 19 (100%)	17 of 17 (100%)	25 of 25 (100%)	11 of 11 (100%)
Performance Measure 2.2 – Document management practices that the identified grower were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	Complete	Complete	Complete	Complete
<b>Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.</b>						
Performance Measure 3.1*—Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices in an Access database.	Parry Klassen/MLJ-LLC	Complete	Complete	Complete	Complete
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	Complete	Complete	Complete	Complete
<b>Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.</b>						
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, 2013	Complete April 1, 2013	Complete April 1, 2013	Complete April 1, 2013
<b>Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in Management Plan strategy for High Priority waterbodies.</b>						

<sup>1</sup>Overall irrigated direct drainage acreage for third priority subwatersheds comes from 2006-2011 parcel data layers.

\*Contacts with growers to determine implemented practices will occur between February 1 and April 30; all information obtained by February 28<sup>th</sup> will be entered into an Access database and included in the following April 1 Management Plan Update Report; any additional information will be reported on during the quarterly meetings.

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## Fourth Priority Subwatersheds (2012 – 2014)

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The fourth high priority subwatersheds include Black Rascal Creek @ Yosemite Rd, Deadman Creek @ Gurr Rd, Deadman Creek @ Hwy 59 and Hilmar Drain @ Central Ave. Performance Goals for the fourth priority subwatersheds are similar to those formulated for the second priority subwatershed Performance Goals and were approved on November 14, 2011 (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 growers in the fourth priority subwatershed (Table 11). As outlined in the Fourth Priority Subwatersheds Summary of Management Practices section of this report, the contact letters informed growers of member responsibilities, management plan strategies and initiated the scheduling of individual meetings. Growers were encouraged to initiate the scheduling of individual contact meetings with the Coalition.

A total of 14 growers were contacted representing 4410 acres or 27% of the acreage with the potential for direct drainage in the fourth priority subwatersheds (Table 11). Of the four subwatersheds, Hilmar Drain @ Central Ave had the highest percentage of acreage with direct drainage represented by contacted growers (39%), followed by Deadman Creek @ Hwy 59 (30%), Black Rascal Creek @ Yosemite Rd (18%) and Deadman Creek @ Gurr Rd (9%).

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

The Coalition met and documented current management practices for 100% of growers within the fourth priority subwatersheds (Table 11). One hundred percent of the management practices documented on the surveys filled out by growers during meetings were recorded in an Access database.

A summary of currently implemented and recommended management practices 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.**

After the Coalition meets with targeted growers individually and discusses local water quality concerns, sufficient time is allowed for growers to implement new management practices before follow up. The Coalition is in the process of following up with growers in the fourth priority subwatersheds. Follow ups occur between February 1 and April 30, 2013 to document newly implemented management practices. If the Coalition is aware of structural management practices that will take longer than two years to implement, this information will be included in the annual updates and may result in an extension to the final evaluation of management practice effectiveness.

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

The Coalition is conducting MPM in the fourth high priority sites during 2012 through 2014 to assess changes in water quality. It is anticipated that water quality will improve as new management practices are implemented.

**Performance Goal 5: Consult with the 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.**

The Coalition met with the Regional Board staff quarterly to discuss Coalition activities (Table 13). The Coalition continues to discuss Management Plan activities with the Regional Board staff during meetings.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth and fifth priority subwatersheds are listed in Table 15.

**Table 11. High Priority Performance Goals status for 2012 - 2014 high priority subwatersheds (Black Rascal Creek @ Yosemite Rd, Deadman Creek @ Gurr Rd, Deadman Creek @ Hwy 59 and Hilmar Drain @ Central Ave), approved on November 14, 2011.**

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013 <sup>1</sup>			
			BLACK RASCAL CREEK @ YOSEMITE RD	DEADMAN CREEK @ GURR RD	DEADMAN CREEK @ HWY 59	HILMAR DRAIN @ CENTRAL AVE
<b>Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.</b>						
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.	Parry Klassen	<b>1 of 1</b> (100%) March 30, 2012	<b>2 of 2</b> (100%) March 30, 2012	<b>8 of 8</b> (100%) March 30, 2012	<b>3 of 3</b> (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	<b>301 of 1,639</b> (18%)	<b>240 of 2,582</b> (9%)	<b>3,414 of 11,223<sup>2</sup></b> (30%)	<b>455 of 1,160</b> (39%)
<b>Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.</b>						
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 in an Access database current management practices used that may reduce agricultural impact on water quality.	Parry Klassen	<b>1 of 1</b> (100%)	<b>2 of 2</b> (100%)	<b>8 of 8</b> (100%)	<b>3 of 3</b> (100%)
Performance Measure 2.2 – Document management practices that the identified grower were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	<b>Complete</b>	<b>Complete</b>	<b>Complete</b>	<b>Complete</b>
<b>Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.</b>						
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices in an Access database.	Parry Klassen/ MLJ-LLC	<b>In Progress:</b> Feb. 28, 2013*	<b>In Progress:</b> Feb. 28, 2013*	<b>In Progress:</b> Feb. 28, 2013*	<b>In Progress:</b> Feb. 28, 2013*
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	<b>In Progress:</b> April 1, 2013/2014	<b>In Progress:</b> April 1, 2013/2014	<b>In Progress:</b> April 1, 2013/2014	<b>In Progress:</b> April 1, 2013/2014
<b>Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.</b>						
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	<b>In Progress:</b> April 1, 2013/2014	<b>In Progress:</b> April 1, 2013/2014	<b>In Progress:</b> April 1, 2013/2014	<b>In Progress:</b> April 1, 2013/2014
<b>Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in Management Plan strategy for High Priority waterbodies.</b>						

<sup>1</sup>Overall irrigated direct drainage acreage for fourth priority subwatersheds comes from 2011 parcel data layers.

<sup>2</sup>Overall irrigated direct drainage acreage for Deadman Creek @ Hwy 59 represents the Merced County portion of the subwatershed only.

\*Contacts with growers to determine implemented practices will occur between February 1 and April 30; all information obtained by February 28<sup>th</sup> will be entered into an Access database and included in the following April 1 Management Plan Update Report; any additional information will be reported on during the quarterly meetings.

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## Fifth Priority Subwatersheds (2013 – 2015)

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The fifth priority subwatersheds include Hatch Drain @ Tuolumne Rd, Highline Canal @ Lombardy Rd, Merced River @ Santa Fe and Miles Creek @ Reilly Rd. Performance Goals for the fifth priority subwatersheds are similar to those formulated for the second priority subwatershed Performance Goals and were approved on November 1, 2012 (Table 12).

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

On November 2, 2012, targeted growers in Hatch Drain @ Tuolumne Rd (one grower), Highline Canal @ Lombardy Rd (three growers), Merced River @ Santa Fe (13 growers) and Miles Creek @ Reilly Rd (14 growers) were mailed initial contact letters (Table 15). As outlined in the Fifth Priority Subwatersheds Summary of Management Practices section of this report, the contact letters informed growers of member responsibilities, management plan strategies, and initiated the scheduling of individual meetings. All initial contacts were complete before March 30, 2013 (Table 12).

### **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 meeting with fifth priority growers to complete surveys that record their implemented and recommended management practices (Table 12). To address the water quality impairments in the fifth priority subwatersheds, the Coalition is concerned with management practices that apply to irrigation water management, storm water runoff, erosion and sediment management, pest management, and dormant sprays (when applicable). Upon completion, all surveys will be entered into an Access database. Currently, information about management practices has been entered into the database for three growers from the fifth priority subwatersheds.

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

After the Coalition meets individually with targeted growers and discusses local water quality concerns, sufficient time is allowed for growers to implement new management practices before follow up. The Coalition will follow up with growers in the fifth priority subwatersheds between February 1 and April 30, 2014 to document newly implemented management practices and will report its findings in future MPURs submitted annually on April 1 (Table 12). If the Coalition is aware of structural management practices that will take longer than two years to implement, this information will be included in the annual updates and may result in an extension to the final evaluation of management practice effectiveness.

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

The Coalition is conducting MPM in the fifth high priority sites from 2013 through 2015 to assess changes in water quality. It is anticipated that water quality will improve as new management practices are implemented.

**Performance Goal 5: Consult with the 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.**

Quarterly meetings with the Regional Board staff to discuss Coalition activities have been scheduled for 2013 (Table 14). The Coalition has already met with Regional Board staff on March 12, 2013 for its first quarterly meeting.

All Coalition activities related to outreach (including mailings, grower meetings, individual meetings, etc.), in the first, second, third, fourth and fifth priority subwatersheds are listed in Table 15.

**Table 12. High Priority Performance Goals status for 2013 - 2015 high priority site subwatersheds (Hatch Drain @ Tuolumne Rd, Highline Canal @ Lombardy Rd, Merced River @ Santa Fe and Miles Creek @ Reilly Rd) approved on November 1, 2012.**

PERFORMANCE GOAL/PERFORMANCE MEASURE	OUTPUTS	WHO	STATUS AS OF APRIL 1, 2013 <sup>1</sup>			
			HATCH DRAIN @ TUOLUMNE RD	HIGHLINE CANAL @ LOMBARDY RD	MERCED RIVER @ SANTA FE	MILES CREEK @ REILLY RD
<b>Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.</b>						
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.	Parry Klassen	<b>1 of 1</b> (100%) March 30, 2013	<b>22 of 22</b> (100%) March 30, 2013	<b>13 of 13</b> (100%) March 30, 2013	<b>14 of 14</b> (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	<b>36 of 275</b> (13%) Quarterly	<b>4348 of 9228</b> (9%) Quarterly	<b>4197 of 12,172</b> (34%) Quarterly	<b>2191 of 8603</b> (25%) Quarterly
<b>Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.</b>						
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 in an Access database current management practices used that may reduce agricultural impact on water quality.	Parry Klassen	<b>In Progress:</b> July 30, 2013	<b>In Progress:</b> July 30, 2013	<b>In Progress:</b> July 30, 2013	<b>In Progress:</b> July 30, 2013
Performance Measure 2.2 – Document management practices that the identified grower were encouraged to implement.	Summary of management practice evaluations on a site subwatershed level in the Management Plan update.	MLJ-LLC	<b>In Progress:</b> August 30, 2013	<b>In Progress:</b> August 30, 2013	<b>In Progress:</b> August 30, 2013	<b>In Progress:</b> August 30, 2013
<b>Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.</b>						
Performance Measure 3.1 – Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices from returned surveys in an Access database.	Parry Klassen/ MLJ-LLC	<b>In Progress:</b> Feb. 28, 2014*	<b>In Progress:</b> Feb. 28, 2014*	<b>In Progress:</b> Feb. 28, 2014*	<b>In Progress:</b> Feb. 28, 2014*
	Summary of management practices implemented as a result of individual contacts.	MLJ-LLC	<b>In Progress:</b> April 1, 2014/2015	<b>In Progress:</b> April 1, 2014/2015	<b>In Progress:</b> April 1, 2014/2015	<b>In Progress:</b> April 1, 2014/2015
<b>Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.</b>						
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	<b>In Progress:</b> April 1, 2014/2015	<b>In Progress:</b> April 1, 2014/2015	<b>In Progress:</b> April 1, 2014/2015	<b>In Progress:</b> April 1, 2014/2015
<b>Performance Goal 5: Consult with CVRWQCB at least once to discuss Management Plan activities and consider if changes need to be made in Management Plan strategy for High Priority waterbodies.</b>						

<sup>1</sup>Overall irrigated direct drainage acreage for fifth priority subwatersheds comes from 2010/2011 parcel data layers.

\*Contacts with growers to determine implemented practices will occur between February 1 and April 30; all information obtained by February 28<sup>th</sup> will be entered into an Access database and included in the following April 1 Management Plan Update Report; any additional information will be reported on during the quarterly meetings.

**Table 13. 2012 Regional Board Quarterly Meeting dates.**

<b>QUARTERLY MEETINGS</b>	<b>MEETING DATE</b>
First Quarter Meeting	March 1, 2012
Second Quarter Meeting	June 5, 2012
Third Quarter Meeting	September 5, 2012
Fourth Quarterly Meeting	January 8, 2013

**Table 14. 2013 Regional Board Quarterly Meeting dates (subject to change).**

<b>QUARTERLY MEETINGS</b>	<b>MEETING DATE</b>
First Quarter Meeting	March 12, 2013
Second Quarter Meeting	June 11, 2012
Third Quarter Meeting	TBD
Fourth Quarterly Meeting	TBD

TBD-To be determined

**Table 15. Coalition outreach in high priority subwatersheds.**

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

AREA	DATE	CATEGORY	DETAILS	WHO
Dry Creek @ Wellsford (1st P)	January - August 2009	Management Practice Tracking, BMP Outreach and Education	Individual contact with targeted growers in Dry Creek subwatershed (current management practice evaluation).	Parry Klassen, Wayne Zipser
Duck Slough @ Hwy 99 (1st P)	May - August 2009	Management Practice Tracking, BMP Outreach and Education	Individual contact with targeted growers in Duck Slough (above Hwy 99) subwatershed (current management practice evaluation).	Parry Klassen, Wayne Zipser
Prairie Flower Drain (1st P)	June - September 2009	Management Practice Tracking, BMP Outreach and Education	Individual contact with targeted growers in Prairie Flower Drain subwatershed (current management practice evaluation).	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain (1st P)	4-Jun-09	Management Practice Tracking, Grower Notification	Mailing to 25 members in high priority site subwatersheds to notify members that individual meetings are required for 100% of growers near or adjacent to the waterways and members are responsible for scheduling individual contact meetings via provided contact information in mailing. Additionally, an email containing the same information was sent to 13 high priority members on June 1, 2009.	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain (1st P)	23-Jun-09	Management Practice Tracking, Grower Notification	Follow-up mailing to June 4 mailing regarding scheduling individual meetings; sent to all growers who had not yet scheduled an individual meeting urging members to do so and providing in a supplementary Regional Board letter an explanation of the consequences for members and the Coalition if the meetings are not conducted.	Parry Klassen, Wayne Zipser
Stanislaus and Merced Counties	30-Jul-09	Management Practice Tracking, Collaborations and Special Studies	USDA announced Jul. 30, 2009 an award of \$2 million annually over 5 years (\$10 million total) funded by the Agricultural Water Enhancement Program (AWEP) created in the 2008 Farm Bill. The money will aid in installation of Management Practices and be directed to farms and dairies with operations bordering waterways within subwatersheds covered by Management Plans in the two county regions.	Parry Klassen/CURES; ESJQWC; Westside San Joaquin River Watershed Coalition; NRCS; West and East Stanislaus Resource Conservation District
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain (1st P)	6-Aug-09	Management Practice Tracking, Grower Notification	Mailing to 226 members in high priority subwatersheds announcing that the USDA recently approved \$2 million annually in grants over the next 5 years for projects intended to improve water quality of waterways in Stanislaus and Merced counties; includes details of eligibility, requirements, and application process.	Parry Klassen
Cottonwood Creek (2nd P)	14-Oct-09	Management Practice Tracking, Grower Notification	Letter mailed to all members with parcels adjacent to Cottonwood Creek announcing two conference call meetings (Oct. 21st @ 11AM and Oct. 22nd @ 4PM) to inform growers about requirements for and initiate the scheduling of individual contact meetings.	Parry Klassen, Wayne Zipser
Cottonwood Creek (2nd P)	21 and 22-Oct-09	Management Practice Tracking, BMP Outreach and Education	Conference call meeting to inform growers about the Cottonwood Creek Management Plan, specifically member participation requirements and to initiate the scheduling of individual contact meetings. A total of four members were represented.	Parry Klassen
Cottonwood Creek, Highline Canal @ Hwy 99 (2nd P)	10-Nov-09	Management Practice Tracking, Grower Notification	Mailing to all targeted Cottonwood Creek members who did not participate in the conference call and to all targeted Highline Canal @ Hwy 99 members to inform growers of the need to schedule individual meetings.	Parry Klassen, Wayne Zipser
Duck Slough @ Hwy 99 (1st P)	9-Feb-10	Management Practice Tracking, Grower Notification	Duck Slough Follow-Up to 2009 Individual Contacts Meeting Announcement Mailing: sent to all members who participated in an individual meeting during 2009.	Parry Klassen

AREA	DATE	CATEGORY	DETAILS	WHO
Dry Creek @ Wellsford (1st P)	15-Feb-10	Management Practice Tracking, Grower Notification	Dry Creek Follow-Up to 2009 Individual Contacts Meeting Announcement Mailing: sent to all members who participated in an individual meeting during 2009.	Parry Klassen
Prairie Flower Drain (1st P)	17-Feb-10	Management Practice Tracking, Grower Notification	Prairie Flower Drain Follow-Up to 2009 Individual Contacts Meeting Announcement Mailing: sent to all members who participated in an individual meeting during 2009.	Parry Klassen
Duck Slough @ Hwy 99 (1st P)	19-Feb-10	Management Practice Tracking, BMP Outreach and Education	Duck Slough Follow-Up to 2009 Individual Contacts Grower Meeting: 11 members in attendance. By using the Turning Interactive Survey Devices, assessed implementation of management practices since individual contact meetings in 2009.	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford (1st P)	26-Feb-10	Management Practice Tracking, BMP Outreach and Education	Dry Creek Follow-Up to 2009 Individual Contacts Grower Meeting: 13 members in attendance. By using the Turning Interactive Survey Devices, assessed implementation of management practices since individual contact meetings in 2009.	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain (1st P)	1-Mar through 4-Aug-10	Management Practice Tracking, BMP Outreach and Education	Phone call to assess management practice implementation of all targeted members with recommended practices for 2009 that did not attend their respective subwatershed follow-up meeting (8 members total).	Parry Klassen
Prairie Flower Drain (1st P)	19-Mar-10	Management Practice Tracking, BMP Outreach and Education	Prairie Flower Drain Follow-Up to 2009 Individual Contacts Grower Meeting: 3 members in attendance. By using the Turning Interactive Survey Devices, assessed implementation of management practices since individual contact meetings in 2009.	Parry Klassen, Wayne Zipser
Bear Creek @ Kibby, Duck Slough @ Gurr (2nd P)	28-Apr-10	Management Practice Tracking, Grower Notification	Individual Contacts Meeting Announcement Mailing: 13 growers in Bear Creek @ Kibby subwatershed and 6 growers in Duck Slough @ Gurr subwatershed. Letter mailed to notify growers of the management plan high priority tracking process and that they need to schedule an individual meeting with Parry Klassen or Wayne Zipser.	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain (1st P)	24-Aug-10	Management Practice Tracking, Grower Notification	Results from Individual Contact Meeting Confirmation Mailing: sent to all members whom participated in individual contacts. The mailing summarized management practice implementations and recommendations recorded during each grower's Individual Contact Meeting. Growers reviewed their responses for accuracy and made corrections if necessary.	Parry Klassen
Lateral 2 1/2 @ Keyes Rd, Livingston Drain @ Robin Ave, Bear Creek @ Kibby, Dry Creek @ Wellsford Rd (1st, 2nd, and 3rd P)	8-Nov-10	Management Practice Tracking, Grower Notification	Individual Contacts Meeting Announcement Mailing: 27 growers in Lateral 2 1/2 @ Keyes Rd subwatershed (1st portion), 11 growers in Livingston Drain @ Robin Ave subwatershed, 3 growers in Bear Creek @ Kibby subwatershed (additional members), and 2 growers in Dry Creek @ Wellsford subwatershed (additional members). Letter mailed to notify growers of the management plan high priority tracking process and that they need to schedule an individual meeting with Parry Klassen or Wayne Zipser.	Parry Klassen, Wayne Zipser
Dry Creek @ Rd 18 (3rd P)	22-Nov-10	Management Practice Tracking, Grower Notification	Individual Contacts Meeting Announcement Mailing: 18 growers in Dry Creek @ Road 18 subwatershed. Letter mailed to notify growers of the management plan high priority tracking process and that they need to schedule an individual meeting with Parry Klassen or Wayne Zipser.	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford and Duck Slough @ Hwy 99 (1st P)	5-Jan through 28-Feb-11	Management Practice Tracking, BMP Outreach and Education	Phone call to assess management practice implementation of all targeted members with recommended practices for 2010 (8 members total).	Wayne Zipser

AREA	DATE	CATEGORY	DETAILS	WHO
Highline Canal @ Hwy 99 (2nd P)	1-Feb-11	Management Practice Tracking, Grower Notification	Highline Canal @ Hwy 99 Follow-Up to Individual Contacts (Initial) Meeting Announcement Mailing: sent to 9 members who participated in an individual meeting during 2009 and 2010. Meeting rescheduled to better accommodate growers' schedules.	Parry Klassen, Wayne Zipser
Cottonwood Creek (2nd P)	15-Feb-11	Management Practice Tracking, Grower Notification	Cottonwood Creek Follow-Up to Individual Contacts (Initial) Meeting Announcement Mailing: sent to 24 members who participated in an individual meeting during 2009 and 2010. Meeting rescheduled to better accommodate growers' schedules.	Parry Klassen, Wayne Zipser
Bear Creek and Duck Slough @ Gurr (2nd P)	16-Feb-11	Management Practice Tracking, Grower Notification	Bear Creek and Duck Slough @ Gurr Follow-Up to Individual Contacts (Initial) Meeting Announcement Mailing: sent to 14 and 6 members, respectively, who participated in an individual meeting during 2009 and 2010. Meeting rescheduled to better accommodate growers' schedules.	Parry Klassen, Wayne Zipser
Berenda Slough (3rd P)	9-Mar-11	Management Practice Tracking, Grower Notification	Berenda Slough Individual Contacts Meeting Announcement Mailing: sent to 22 targeted growers. Alerted targeted members of the Management Plan high priority tracking process and the need to schedule an individual meeting with Parry Klassen or Wayne Zipser.	Parry Klassen, Wayne Zipser
Cottonwood Creek (2nd P)	14-Apr-11	Management Practice Tracking, Grower Notification	Rescheduled Cottonwood Creek Follow-Up to Individual Contacts Meeting Announcement Mailing: sent to all members who participated in an individual meeting during 2009 and 2010.	Parry Klassen, Wayne Zipser
Bear Creek, Duck Slough @ Gurr, Highline Canal @ Hwy 99 (2nd P)	14-Apr-11	Management Practice Tracking, Grower Notification	Rescheduled Bear Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 Follow-Up to Individual Contacts Meeting Announcement Mailing: sent to all members who participated in an individual meeting during 2009 and 2010.	Parry Klassen, Wayne Zipser
Cottonwood Creek (2nd P)	26-Apr-11	Management Practice Tracking, BMP Outreach and Education	Rescheduled Cottonwood Creek Follow Up to Individual Contacts Grower Meeting: 14 growers were represented in attendance. By using the Turning Interactive Survey Devices, assessed implementation of management practices since individual contact meetings in 2009 and 2010.	Parry Klassen, Wayne Zipser
Bear Creek, Duck Slough @ Gurr, Highline Canal @ Hwy 99 (2nd P)	28-Apr-11	Management Practice Tracking, BMP Outreach and Education	Rescheduled Bear Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 Follow Up to Individual Contacts Grower Meeting: 3, 4, and 3 growers from each subwatershed were represented in attendance, respectively. By using the Turning Interactive Survey Devices, assessed implementation of management practices since individual contact meetings in 2009 and 2010.	Parry Klassen, Wayne Zipser
Bear Creek, Cottonwood Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 (2nd P)	11-May-11	Management Practice Tracking, BMP Outreach and Education	Bear Creek, Cottonwood Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 Follow Up to Individual Contacts Email: 7, 3, 1, and 4 growers from each subwatershed, respectively, completed the Online Follow Up Survey Form assessing implementation of new management practices.	Parry Klassen, Wayne Zipser
Bear Creek, Cottonwood Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 (2nd P)	20-May-11	Management Practice Tracking, BMP Outreach and Education	Bear Creek, Cottonwood Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 Follow Up to Individual Contacts Mailing: 4, 5, 1, and 1 growers from each subwatershed, respectively, completed and returned the Follow Up Survey assessing implementation of new management practices.	Parry Klassen, Wayne Zipser
Bear Creek, Cottonwood Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 (2nd P)	1-Jun-11	Management Practice Tracking, Grower Notification	Bear Creek, Cottonwood Creek, Duck Slough @ Gurr, and Highline Canal @ Hwy 99 Follow Up to Individual Contacts - Final Attempt to Contact Mailing: sent to 9, 7, 2, and 4 members, respectively. Letter reminded members of their responsibility to provide the Coalition with requested management practice information and indicated if a response was not received by July 31, 2011, the member would be dropped from the Coalition.	Parry Klassen, Wayne Zipser

AREA	DATE	CATEGORY	DETAILS	WHO
Livingston Drain @ Robin Ave (3rd P)	7-Nov-11	Management Practice Tracking, Grower Notification	Livingston Drain @ Robin Ave Initial Contact Grower Survey - Final Attempt to Contact Mailing: sent to 7 growers. Letter reminded members of their responsibility to provide the Coalition with requested management practice information and indicated if a response was not received by Nov. 30, 2011, the member would be dropped from the Coalition.	Parry Klassen, Wayne Zipser
Berenda Slough, Dry Creek @ Rd 18, Lateral 2 1/2, and Livingston Drain (3rd P)	15-Nov-11	Management Practice Tracking, Grower Notification	3rd Priority Results from Individual Contact Meeting Confirmation Mailing: sent to all members whom participated in individual contacts. The mailing summarized management practice implementations and recommendations recorded during each grower's Individual Contact Meeting. Growers reviewed their responses for accuracy and made corrections if necessary.	Parry Klassen, Wayne Zipser
Black Rascal Creek, Deadman Creek @ Gurr, Deadman Creek @ Hwy 59, and Hilmar Drain (4th P)	24-Jan-12	Management Practice Tracking, Grower Notification	Individual Contacts Meeting Announcement Mailing: sent to the 14 targeted growers in Black Rascal Creek (1), Deadman Creek @ Gurr (2), Deadman Creek @ Hwy 59 (8), and Hilmar Drain (3). Alerted targeted members of the Management Plan high priority tracking process and the need to schedule an individual meeting with Parry Klassen or Wayne Zipser.	Parry Klassen, Wayne Zipser
Dry Creek @ Rd 18, Lateral 2 1/2, and Livingston Drain (3rd P)	24-Jan-12	Management Practice Tracking, Grower Notification	Follow Up Contact Mailing: sent to 4 growers with recommended practices in third priority subwatersheds who completed initial contact by July 31, 2011.	Parry Klassen, Wayne Zipser
Lateral 2 1/2 and Livingston Drain (3rd P)	12-Feb-12	Management Practice Tracking, Grower Notification	Results from Individual Contact Meeting Confirmation Mailing: sent to the 3 targeted growers in Lateral 2 1/2 (1) and Livingston Drain (2). The mailing summarized management practice implementations and recommendations recorded during each grower's Individual Contact Meeting. Growers reviewed their responses for accuracy and made corrections if necessary.	Parry Klassen, Wayne Zipser
Dry Creek @ Rd 18, Lateral 2 1/2, and Livingston Drain (3rd P)	21-Feb-12	Management Practice Tracking, Grower Notification	Reminder Follow Up Contact Mailing: sent to 3 growers who did not respond to the original mailing on 24-Jan-12.	Parry Klassen, Wayne Zipser
Berenda Slough, Dry Creek @ Rd 18, and Livingston Drain (3rd P)	16-Apr-12	Management Practice Tracking, Grower Notification	Follow Up Contact Mailing: sent to 7 growers with recommended practices in third priority subwatersheds who completed initial contact after July 31, 2011.	Parry Klassen, Wayne Zipser
Berenda Slough, Dry Creek @ Rd 18, and Livingston Drain (3rd P)	4-Jun-12	Management Practice Tracking, Grower Notification	Reminder Follow Up Contact Mailing: sent to 4 growers who had yet to respond to initial Follow Up Contact Mailings (sent 24-Jan-12 and 16-Apr-12).	Parry Klassen, Wayne Zipser
Dry Creek @ Rd 18 (3rd P)	14-Sep-12	Management Practice Tracking, Grower Notification	Final Reminder Follow Up Contact Mailing: sent to 1 grower who had yet to respond to initial Follow Up Contact Mailings (sent 24-Jan-12 and 16-Apr-12).	Parry Klassen, Wayne Zipser
Dry Creek @ Rd 18 (3rd P)	11-Oct-12	Management Practice Tracking, Grower Notification	Violation of Membership Agreement Mailing: sent to 1 grower who had yet to respond to initial Follow Up Contact Mailings (sent 24-Jan-12 and 16-Apr-12). The letter informed the grower they would be in violation of their membership agreement if a response was not received by 26-Oct-12. Mailing included a letter from the Regional Board detailing Coalition member responsibilities.	Parry Klassen, Wayne Zipser

AREA	DATE	CATEGORY	DETAILS	WHO
Deadman Creek @ Hwy 59 and Hilmar Drain (4th P)	15-Oct-12	Management Practice Tracking, Grower Notification	Violation of Membership Agreement Mailing: sent to 2 growers (1 in either subwatershed) who had yet to respond to the initial Individual Contacts Meeting Announcement Mailing (sent 24-Jan-12). The letter informed the grower they would be in violation of their membership agreement if the meeting was not scheduled to occur before 19-Oct-12. Mailing included a letter from the Regional Board detailing Coalition member responsibilities.	Parry Klassen, Wayne Zipser
Black Rascal Creek, Deadman Creek @ Gurr, Deadman Creek @ Hwy 59, and Hilmar Drain (4th P)	23-Oct-12	Management Practice Tracking, Grower Notification	4th Priority Results from Individual Contact Meeting Confirmation Mailing: sent to the 14 targeted growers in Black Rascal Creek (1), Deadman Creek @ Gurr (2), Deadman Creek @ Hwy 59 (8), and Hilmar Drain (3). Summarized the data collected during initial, individual contact meetings and requested the grower review for accuracy. Reminded targeted growers of next steps in Management Plan high priority tracking process.	Parry Klassen, Wayne Zipser
Hatch Drain, Highline Canal @ Lombardy, Merced River, and Miles Creek (5th P)	2-Nov-12	Management Practice Tracking, Grower Notification	Individual Contacts Meeting Announcement Mailing: sent to the 50 targeted growers in Hatch Drain (1), Highline Canal @ Lombardy (22), Merced River (13), and Miles Creek (14). Alerted targeted members of the Management Plan high priority tracking process and the need to schedule an individual meeting with Parry Klassen or Wayne Zipser.	Parry Klassen, Wayne Zipser
Black Rascal Creek, Deadman Creek @ Gurr, Deadman Creek @ Hwy 59, and Hilmar Drain (4th P)	13-Dec-12	Management Practice Tracking, Grower Notification	Follow Up Contact Mailing: sent to 14 growers.	Parry Klassen, Wayne Zipser

P – Priority

## MANAGEMENT PRACTICES

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The Coalition obtains information about management practices used by growers by conducting focused outreach in high priority site subwatersheds. The purpose of focused outreach is to review local water quality concerns, document practices implemented prior to focused outreach (current practices), recommend additional practices if applicable (recommended practices), and document practices implemented following focused outreach (newly implemented practices). The Coalition identified eight general classifications of management practices that would be effective at reducing the impacts of agricultural discharges on water quality including:

1. Reduction in application rates,
2. Spray drift management,
3. Change to low risk products,
4. Polyacrylamide (PAM),
5. Drip or microspray irrigation,
6. Recirculation/tailwater return system,
7. Retention pond/holding basin, and
8. Grass waterways or grass filter strips.

Non-structural practices (practices 1-4 above) can be implemented sooner than structural practices (practices 5-8) as structural practices may require that the grower secure additional resources for implementation. The Coalition makes efforts to inform growers of resources available for management practice implementation (discussed in past AMRs in the Actions Taken to Address Exceedances sections and summarized briefly in the Evaluation of Management Practice Effectiveness). In addition, the Coalition was mindful of the implementation timeline as it planned its strategy and schedule to contact growers.

The Coalition completed focused outreach in the first and second priority subwatersheds. First priority subwatersheds (2008 – 2010) are Dry Creek @ Wellsford Rd, Duck Slough @ Hwy 99, and Prairie Flower Drain @ Crows Landing Rd. Second priority subwatersheds (2010 – 2012) are Bear Creek @ Kibby Rd, Cottonwood Creek @ Hwy 20, Duck Slough @ Gurr Rd, and Highline Canal @ Hwy 99. Current and recommended management practices for Dry Creek @ Wellsford Rd and Duck Slough @ Hwy 99 were reported in the 2011 MPUR (pages 50-54, 57-65), and newly implemented practices were reported in the 2012 MPUR (pages 55-66). The Coalition reported current, recommended and newly implemented management practices in the Prairie Flower Drain @ Crows Landing Rd site subwatershed in the 2011 MPUR (pages 55-56, 66-70, and 78-80). Final results of current, recommended and newly implemented management practices for the second set of high priority site subwatersheds were reported in the 2012 MPUR Management Practices section (pages 68-100).

The Coalition continued with its management plan tracking process in the third priority subwatersheds (2011-2013): Berenda Slough along Ave 18 ½, Dry Creek @ Rd 18, Lateral 2 ½ near Keyes Rd and Livingston Drain @ Robin Ave. During the fall of 2010 and 2011, the Coalition met with 100% of targeted growers and documented current management practices for 2010 and 2011; these data are reported in the 2012 MPUR (pages 100-124). During these meetings, the Coalition discussed water quality concerns with targeted growers and, when applicable, recommended additional management practices designed to address water quality exceedances. Follow up contacts were conducted in 2012 and the winter of 2013 to document any additional practices implemented in 2011 and/or 2012. The Coalition followed up with growers to whom the Coalition specifically recommended additional management practices, and 100% of follow up contacts are complete. The following sections provide a final summary of recommended and newly implemented practices for all third priority site subwatersheds. Management Plan Monitoring will continue in 2013 to collect data to evaluate the effectiveness of newly implemented practices.

The management plan tracking process continued in fourth priority subwatersheds (2012-2014): Black Rascal Creek @ Yosemite Rd, Deadman Creek @ Gurr Rd, Deadman Creek @ Hwy 59 and Hilmar Drain @ Central Ave. The Coalition completed 100% of individual contacts with targeted growers in the fourth priority site subwatersheds during 2012, and the following sections report on the currently implemented and recommended practices recorded during these contacts. The Coalition began following up with targeted growers during the fall of 2012, and completed nine follow up contacts by February 28, 2013. The results of the nine follow up contacts are reported in the following sections as a preliminary analysis of newly implemented practices in the fourth set of high priority subwatersheds, except for Black Rascal Creek @ Yosemite Rd. Follow up contacts are complete for the single targeted grower in the Black Rascal Creek @ Yosemite Rd site subwatershed; therefore, the summary of newly implemented practices is final.

The Coalition initiated focused outreach in the fifth priority subwatersheds (2013-2015): Hatch Drain @ Tuolumne Rd, Highline Canal @ Lombardy Rd, Merced River @ Santa Fe and Miles Creek @ Reilly Rd. The Coalition compiled a targeted grower list of members who farm property with the potential to drain to the waterway and who apply or have applied constituents of concern. In the fall of 2012, letters outlining the management plan process and responsibilities of Coalition members were mailed to growers in the Hatch Drain @ Tuolumne Rd (1), Highline Canal @ Lombardy Rd (22), Merced River @ Santa Fe (13) and Miles Creek @ Reilly Rd (14) site subwatersheds. The Coalition is scheduling meetings with targeted growers to assess their operations and discuss water quality concerns. Current and recommended management practices will be reported in the 2014 MPUR.

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## SUMMARY OF FOCUSED OUTREACH IN PRIORITY SUBWATERSHEDS

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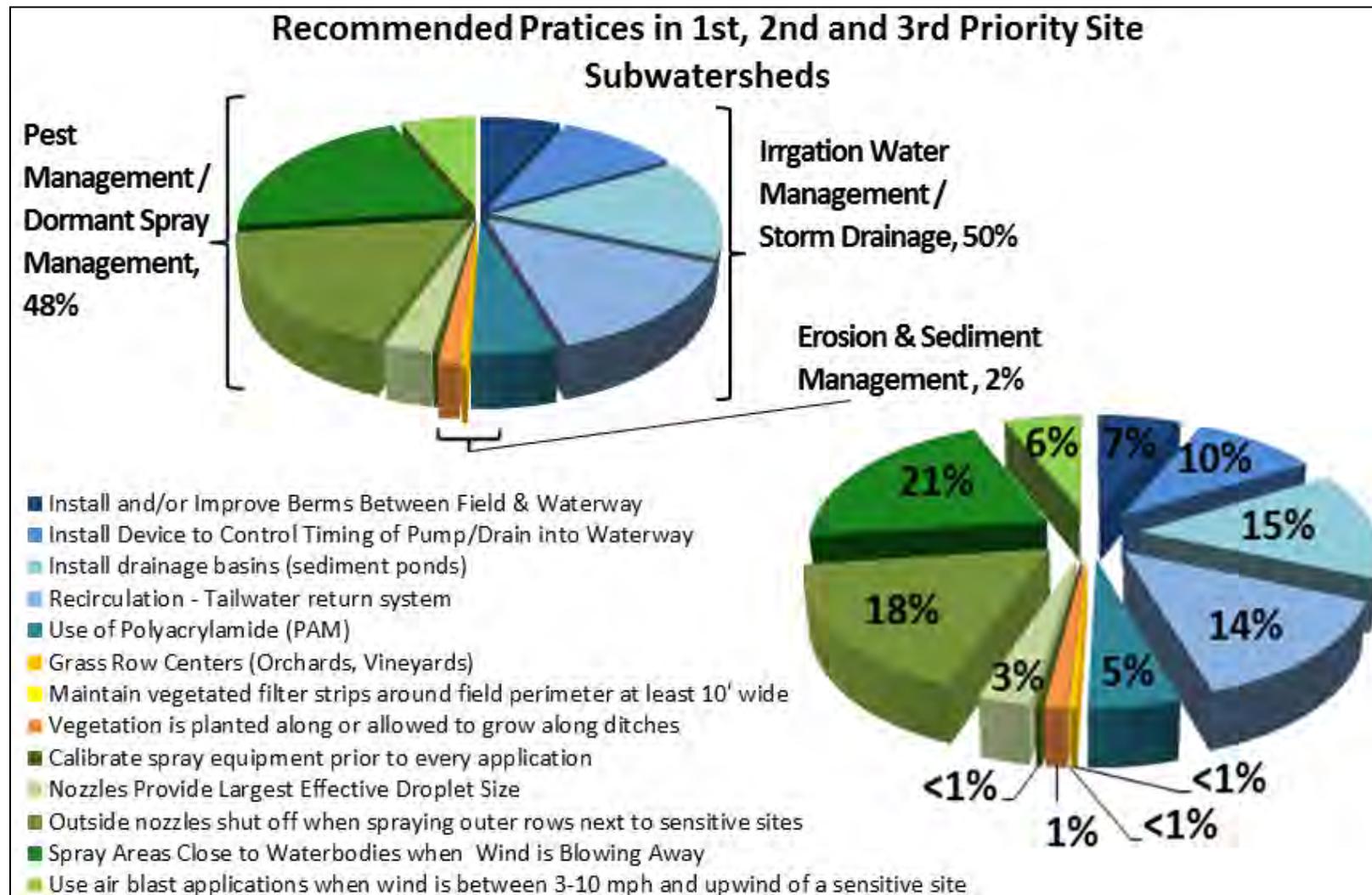
The Coalition completed its focused outreach strategy in the first, second and third priority site subwatersheds, which included recommending management practices to improve water quality and documenting newly implemented practices.

Figure 5 illustrates the management practices recommended by Coalition representatives to growers within first, second and third priority site subwatersheds. These practices are color coded in the figure by management practice category: Irrigation Water Management/Storm Drainage (blue shades), Erosion and Sediment Management (yellow/orange shades) and Pest Management/Dormant Spray Management (green shades). Of the acres with recommended practices, Irrigation Water Management / Storm Drainage practices accounted for 50% of the acres, Erosion & Sediment Management practices accounted for 2% of the acres, and Pest Management / Dormant Spray Management practices accounted for 48% of the acres (Figure 5). Several practices are designed to address multiple aspects of agricultural operations (i.e. filter strips aid in irrigation tailwater management and reducing erosion).

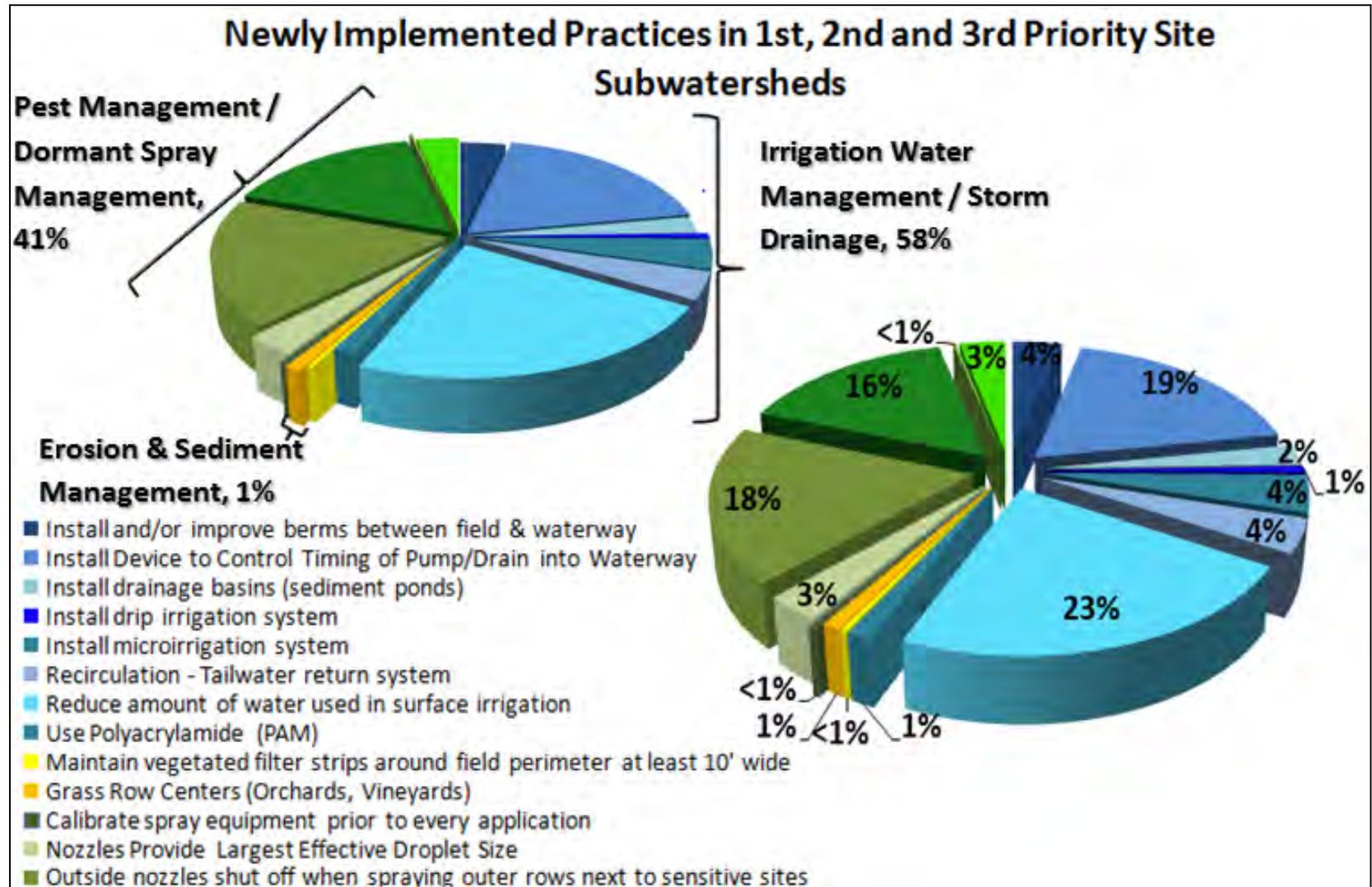
Of the acres with newly implemented practices, growers implemented Irrigation Water Management / Storm Drainage Management practices the most frequently (58% of acres, Figure 6; blue shades). These practices also indirectly affect Erosion and Sediment Management. For example, the use of microirrigation systems improves management of irrigation runoff and also reduces or eliminates sediment erosion caused by the offsite movement of irrigation tailwater. Practices more specifically designed to address Erosion and Sediment Management, such as grass row centers or vegetation filter strips, account for 1% of the acres with newly implemented management practices (Figure 6; yellow/orange shades). Pest Management /Dormant Spray Management practices accounted for 41% of the acres with newly implemented practices (Figure 6; green shades).

During follow up contacts, particularly in the second priority subwatersheds, Coalition representatives noted the most common reason growers were unable to implement recirculation/tailwater return systems and drainage basins/sediment ponds (two of the more expensive recommended management practices) was due to lack of resources. In an effort to assist growers in securing financial resources, the Coalition will continue to provide members with additional information regarding funding opportunities for management practice implementation including the following programs: Agricultural Water Enhancement Program (AWEP) and Environmental Quality Incentives Program (EQIP). In addition, growers that indicated on their follow up surveys that they were interested in additional information about funding will be contacted directly by a Coalition representative to assist with their individual operation's needs. More information regarding financial resources for management practice implementation is contained in the Coalition Wide Evaluation section.

**Figure 5. Percentage of acreage associated with each recommended management practice in the first, second and third priority site subwatersheds.** Irrigation Water Management / Storm Drainage practices (blue shades), Erosion & Sediment Management practices (yellow/orange shades), and Pest Management / Dormant Spray Management practices (green shades) are included.



**Figure 6. Percentage of acreage associated with each implemented management practice in the first, second and third priority site subwatersheds.** Irrigation Water Management / Storm Drainage practices (blue shades), Erosion & Sediment Management practices (yellow/orange shades), and Pest Management / Dormant Spray Management practices (green shades) are included. Figure does not include the acreages associated with “Other” which reflect a management practices not listed in the follow up survey; refer to each site subwatershed analysis of implemented practices in the sections below.



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## THIRD PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES (2011-2013)

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Focused outreach began in the fall of 2010 and continued through 2013 in third priority site subwatersheds. The Coalition completed individual meetings and documented current management practices in 2010 and 2011 for 72 targeted growers (Table 16). Follow up contacts were conducted in 2012 and early 2013 to document any additional practices implemented in 2011 and/or 2012. Growers completed follow up surveys identical to the surveys used to record newly implemented management practices in second priority subwatersheds (amendment to the 2011 MPUR, page 2 and Table 1). The Coalition recommended practices to growers in the Berenda Slough along Ave 18 ½ (3), Dry Creek @ Rd 18 (3), Lateral 2 ½ near Keyes Rd (4) and Livingston Drain @ Robin Ave (3) site subwatersheds (Table 16). One grower from the Lateral 2 ½ near Keyes Rd site subwatershed dropped his Coalition membership prior to follow up contact; therefore, only three growers in the site subwatershed participated in follow up contacts. The Coalition completed follow up contacts with 100% of growers with recommended practices.

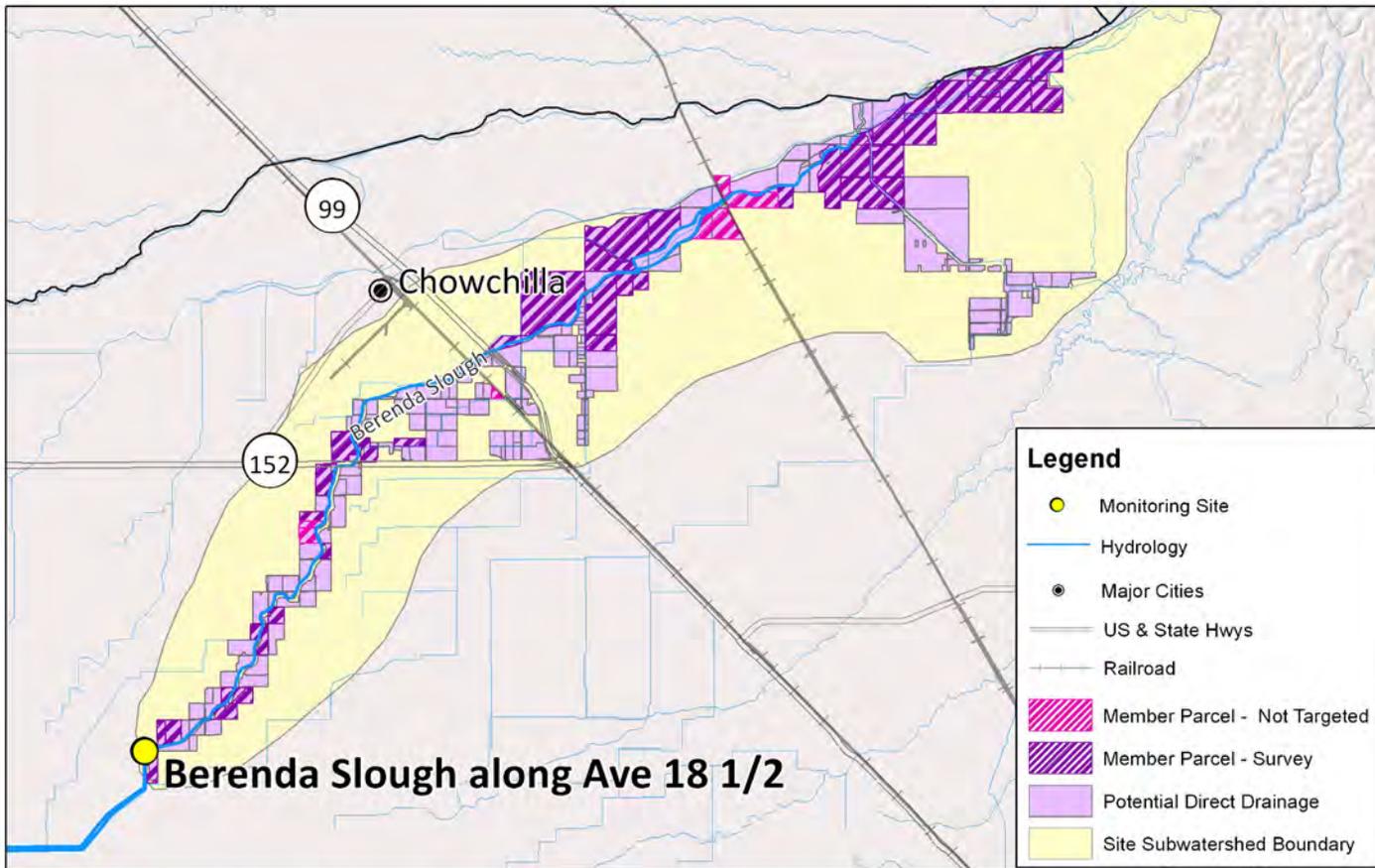
**Table 16. Tally of growers who participated in focused outreach in the third set of high priority site subwatersheds (2011-2013).**

	BERENDA SLOUGH ALONG AVE 18 ½	DRY CREEK @ RD 18	LATERAL 2 ½ NEAR KEYES RD	LIVINGSTON DRAIN @ ROBIN AVE
Targeted Growers	19	17	25	11
Completed Individual Meeting	19	17	25	11
Growers with Recommended Practices	3	3	4	3
Dropped Coalition Membership	0	0	1	0
Completed Follow Up Contact	3	3	3	3
<b>PERCENT COMPLETE (INITIAL CONTACT)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>PERCENT COMPLETE (FOLLOW UP CONTACT)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

### Berenda Slough along Ave 18 ½

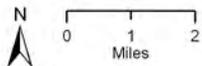
The Coalition contacted 19 targeted growers representing 4,103 acres within the Berenda Slough along Ave 18 ½ site subwatershed (Table 10). Management practices were documented for 38% of the acreage identified as direct drainage (Figure 7). The Coalition met individually with growers to discuss water quality concerns, document current management practices and recommend additional practices. The Coalition reported current management practices for the site subwatershed in the 2012 MPUR (pages 101-106). Targeted growers currently implement several irrigation, erosion and sediment, storm drainage, and pest management practices; one or more management practices are currently implemented on all 4,103 acres. Most targeted growers in the site subwatershed reported no irrigation drainage from their properties (17 of 19 growers representing 72% of acreage). The two growers with irrigation drainage implement several irrigation management practices. The Coalition recommended practices to growers without irrigation drainage that focused on managing storm water, sediment erosion, and spray drift (Figure 8). In 2012, the Coalition contacted the three growers with recommended practices to document newly implemented management practices.

**Figure 7. Berenda Slough @ along Ave 18 ½ 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 - Stanislaus 2010, Merced 2011, Madera 2011  
 Basemap: Shaded Relief - ESRI  
 GSC North America 1983

Date Prepared: 02/23/12  
 ESJWQC

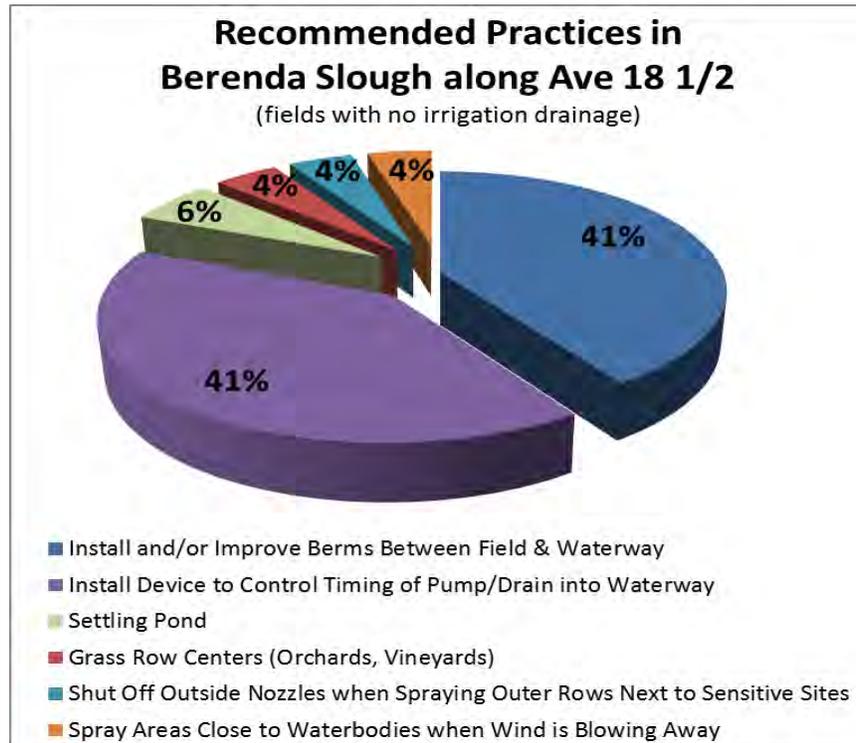


**Berenda Slough along Ave 18 1/2  
 3rd Priority Subwatershed Parcels**

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**Figure 8. Percentage of acreage represented by recommended management practices in the Berenda Slough along Ave 18 ½ site subwatershed (2012).**

Parcels with no irrigation drainage.



*Summary of Implemented Management Practices (2011/2012)*

Table 17 presents a comparison of recommended management practices and newly implemented management practices for the Berenda Slough along Ave 18 ½ site subwatershed. During initial contact meetings, Coalition representatives recommended six practices to three growers; three of the six practices were implemented (Table 17, Figure 9). A grower farming 36 acres was recommended to implement practices designed to reduce spray drift and improve management of storm drainage and erosion. The grower implemented both spray drift practices, but did not implement grass row centers as the practice was no longer applicable. The grower removed his orchard and planted a winter feed crop in its place; a winter feed crop can reduce storm water runoff and erosion. Another grower operates 336 acres and was recommended to install berms and a device to control the timing of discharge to the waterway. The grower reported during the follow up contact that storm drainage from the particular field no longer enters the waterway; therefore, both practices are no longer applicable. The third grower, who farms 48 acres, could not afford to install the recommended settling pond during 2012. The grower requested additional information regarding funding opportunities. The same grower was able to reduce the amount of water used during surface irrigation in 2012; this management practice was not specifically recommended by Coalition representatives (Table 17).

Newly implemented practices include shutting off outside nozzles when spraying outer rows next to sensitive sites (36 acres), spraying areas close to waterbodies when the wind is blowing away from them (36 acres), and reducing the amount of water used in surface irrigation (48 acres, Table 17).

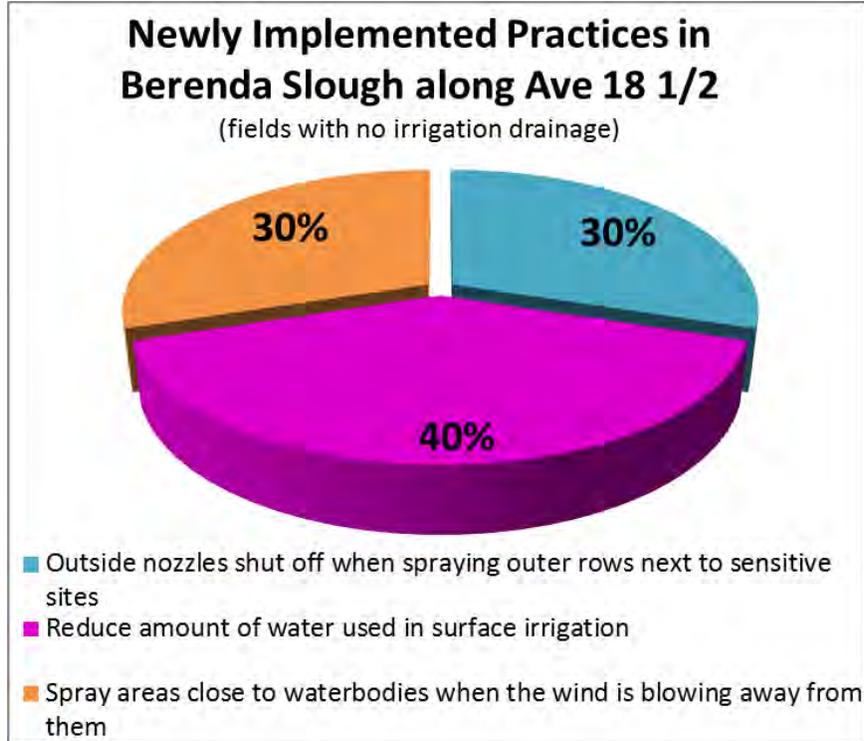
**Table 17. Comparison of recommended and implemented management practices in the Berenda Slough along Ave 18 ½ site subwatershed.**

MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
<b>No irrigation drainage from property</b>					
Install Device to Control Timing of Pump/Drain into Waterway	1	336	0	0	0%
Grass row centers (orchards, vineyards)	1	36	0	0	0%
Install and/or improve berms between field & waterway	1	336	0	0	0%
Install settling pond	1	48	0	0	0%
Outside nozzles shut off when spraying outer rows next to sensitive sites	1	36	1	36	100%
Reduce amount of water used in surface irrigation <sup>1</sup>	0	0	1	48	NA
Spray areas close to waterbodies when the wind is blowing away from them	1	36	1	36	100%

<sup>1</sup>Management practice not specifically recommended by Coalition representative for grower's operation.  
 NA – Not applicable; no recommendations for the management practice in the site subwatershed.

**Figure 9. Percentage of acreage represented by newly implemented management practices in the Berenda Slough along Ave 18 ½ site subwatershed.**

Parcels with no irrigation drainage.



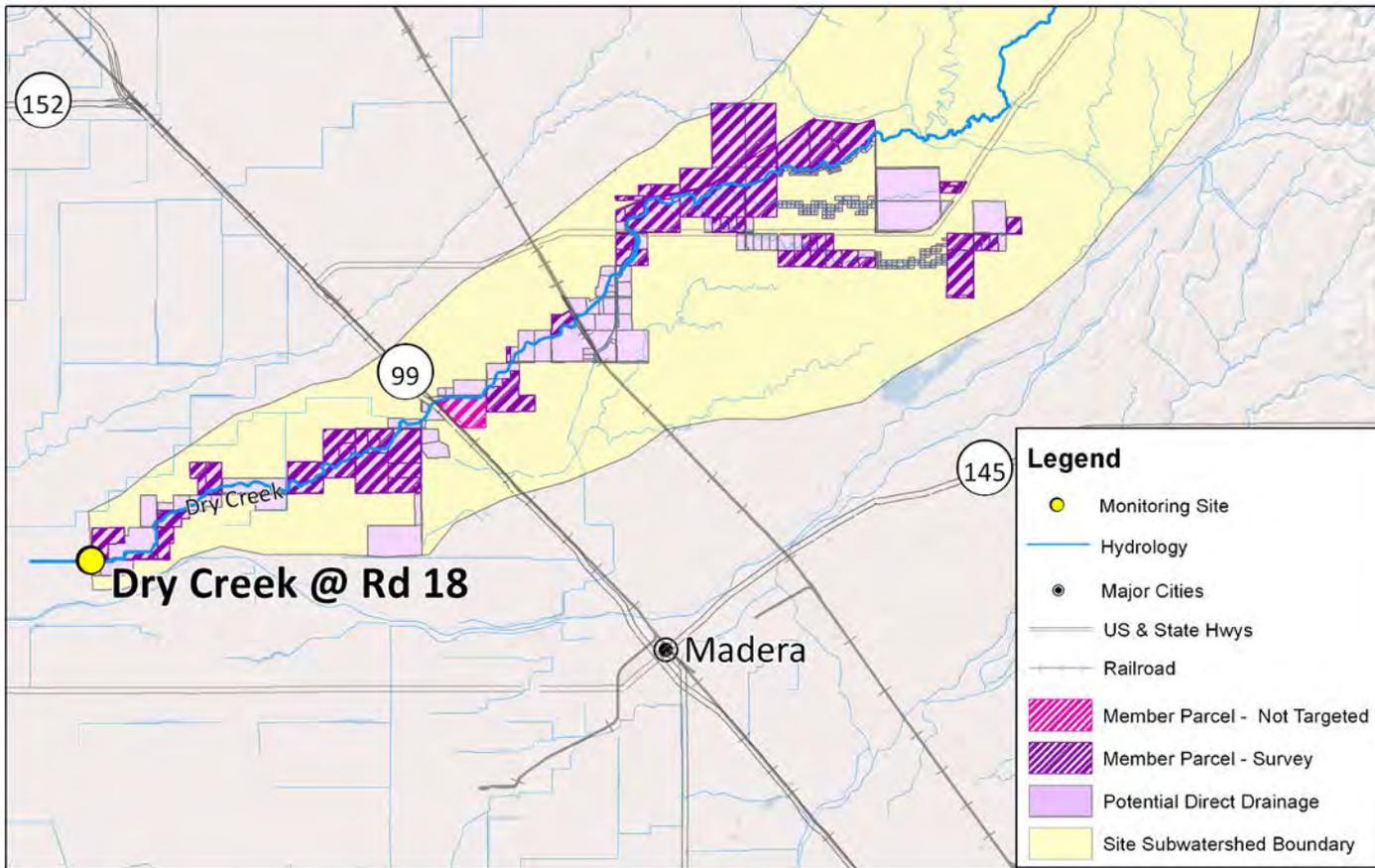
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## Dry Creek @ Rd 18

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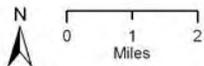
The Coalition contacted 17 targeted growers representing 4,710 acres within the Dry Creek @ Rd 18 site subwatershed (Table 10). Management practices were documented for 53% of the acreage identified as direct drainage (Figure 10). The Coalition met individually with growers to discuss water quality concerns, document current management practices and recommend additional practices. The majority of targeted growers implement several irrigation, erosion and sediment, and pest management practices; one or more management practices are currently implemented on all 4,710 acres. The Coalition reported current management practices for the site subwatershed in the 2012 MPUR (pages 107-112). The Coalition recommended additional practices designed to manage spray drift and potential storm water runoff to 524 acres (Figure 11). In 2012, the Coalition contacted the three growers with recommended practices to document newly implemented management practices.

Figure 10. Dry Creek @ Rd 18 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 - Stanislaus 2010, Merced 2011, Madera 2011  
 Basemap, Shaded Relief - ESRI  
 GSC North America 1983

Date Prepared: 02/23/12  
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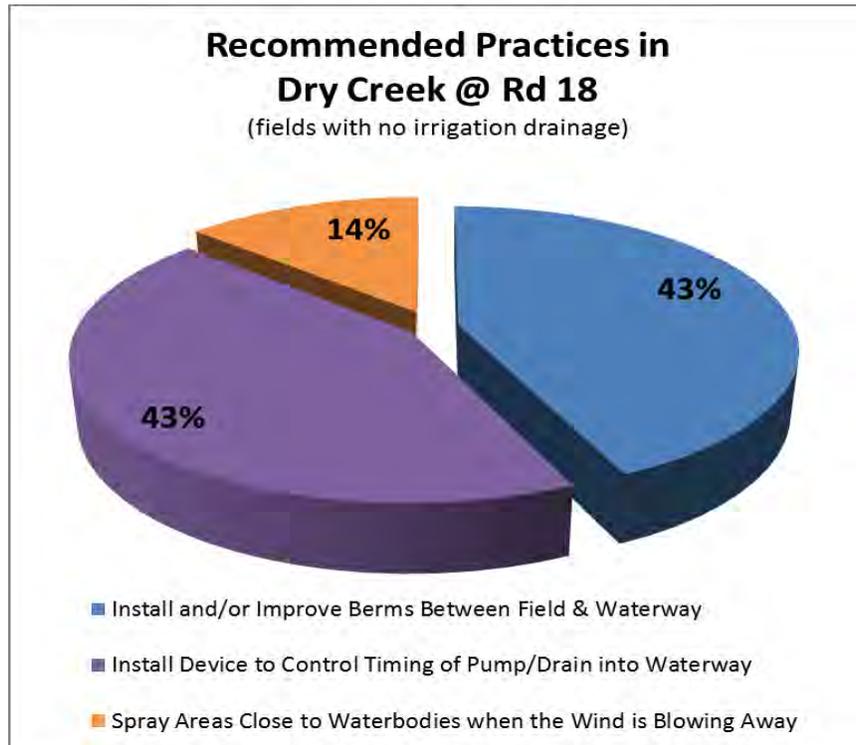


**Dry Creek @ Rd 18**  
**3rd Priority Subwatershed Parcels**

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**Figure 11. Percentage of acreage represented by recommended management practices in the Dry Creek @ Rd 18 site subwatershed (2012).**

Parcels with no irrigation drainage.



### *Summary of Implemented Management Practices (2011/2012)*

Table 18 presents a comparison of recommended management practices and newly implemented management practices for the Dry Creek @ Rd 18 site subwatershed. Growers implemented all practices recommended by Coalition representatives as well as additional practices not specifically recommended (Table 18, Figure 12). The implemented management practices address spray drift, irrigation water management, and storm water runoff.

The Coalition contacted three growers for follow up, and two of the three indicated no irrigation drainage leaves their fields. The two growers with no irrigation drainage installed practices designed to prevent spray drift and improve management of possible storm water runoff. The practices include installing a device that controls the timing of discharge, installing and/or improving berms between fields and waterways, and spraying areas close to waterbodies when the wind is blowing away from them (Figure 12).

The third grower contacted for follow up indicated irrigation drainage occurred from their property in 2012, but reported no irrigation drainage from their fields during initial contact in 2011. The grower implemented practices to improve the management of irrigation water and possible storm water runoff across 189 acres. The grower installed a device that controls the timing of discharge, installed and/or

improved berms between fields and waterways, and reduced the amount of water used during surface irrigation (Figure 13).

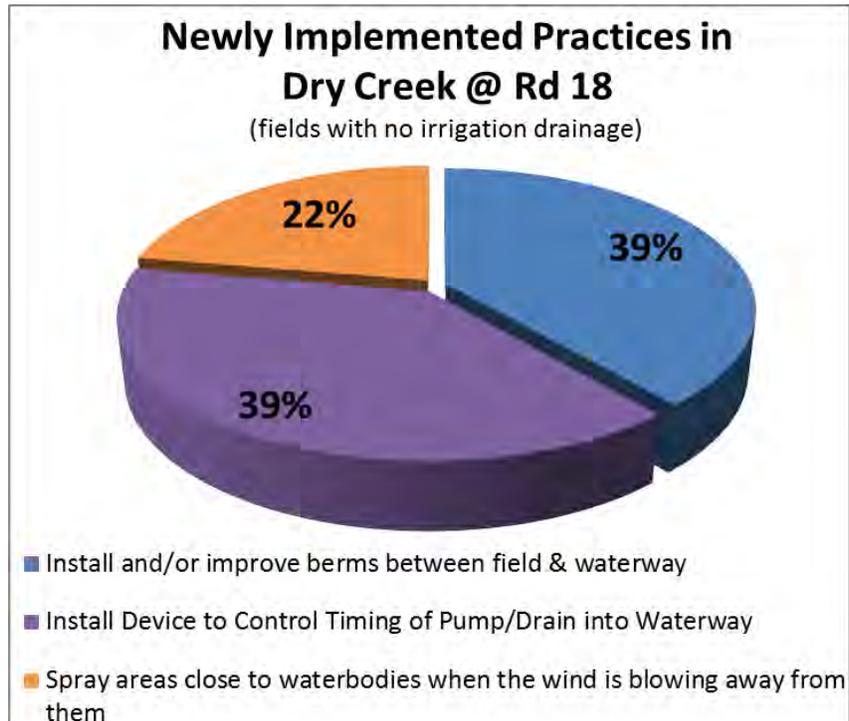
**Table 18. Comparison of recommended and implemented management practices in the Dry Creek @ Rd 18 site subwatershed.**

MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
<b>No irrigation drainage from property</b>					
Install and/or improve berms between field & waterway	1	213	1	213	100%
Install Device to Control Timing of Pump/Drain into Waterway	1	213	1	213	100%
Spray areas close to waterbodies when the wind is blowing away from them	1	122	1	122	100%
<b>Yes, irrigation drainage from property</b>					
Install and/or improve berms between field & waterway	1	189	1	189	100%
Install Device to Control Timing of Pump/Drain into Waterway	1	189	1	189	100%
Reduce amount of water used in surface irrigation <sup>1</sup>	0	0	1	189	NA

<sup>1</sup>Management practice not specifically recommended by Coalition representative for grower's operation.

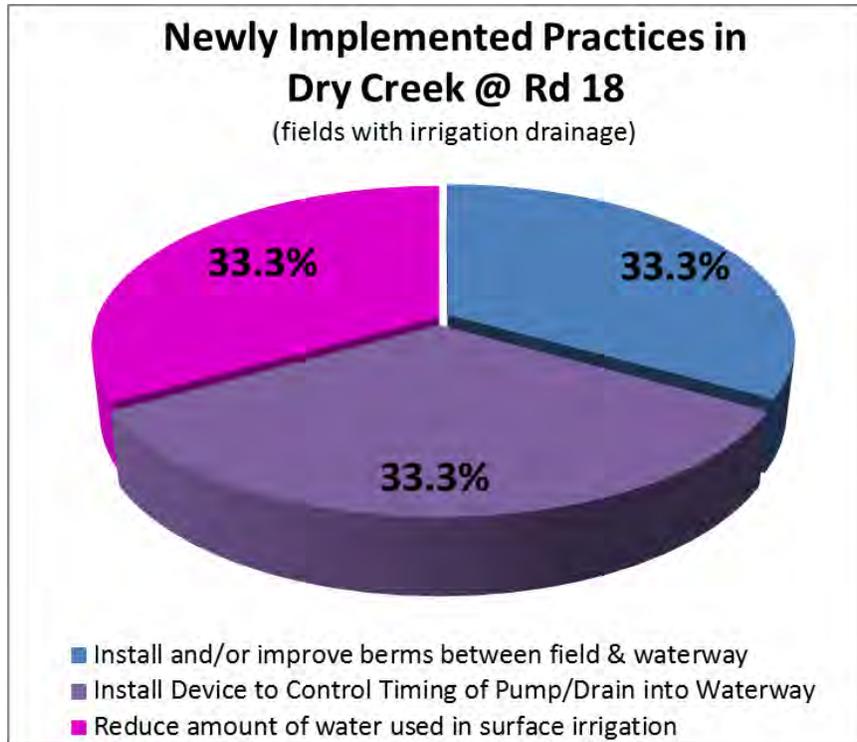
**Figure 12. Percentage of acreage represented by newly implemented management practices in the Dry Creek @ Rd 18 site subwatershed.**

Parcels with no irrigation drainage.



**Figure 13. Percentage of acreage represented by newly implemented management practices in the Dry Creek @ Rd 18 site subwatershed.**

Parcels with irrigation drainage.



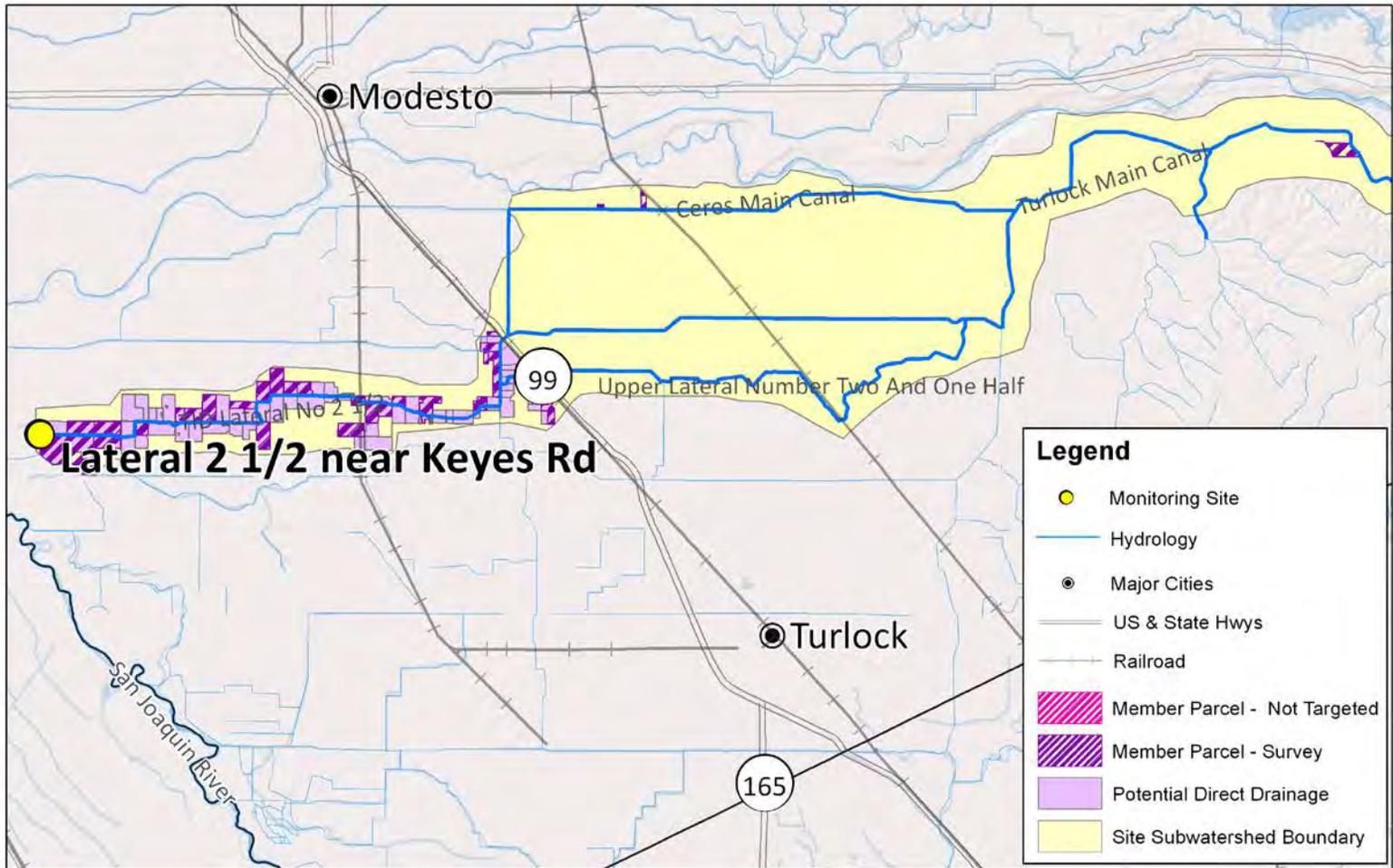
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### Lateral 2 ½ near Keyes Rd

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The Coalition contacted 25 targeted growers representing 1,826 acres within the Lateral 2 ½ near Keyes Rd site subwatershed (Table 10). Management practices were documented for 47% of the acreage identified as direct drainage (Figure 14). The Coalition met individually with growers to discuss water quality concerns, document current management practices and recommend additional practices. The Coalition reported current management practices for the site subwatershed in the 2012 MPUR (pages 113-118). All targeted growers reported no irrigation drainage and no storm runoff from their operations and indicated management practices were implemented to prevent the transport of pesticides to waterways if drainage were to occur (e.g. recirculation/tailwater return systems, filter strips, etc.). One or more management practices are currently implemented on all 1,826 acres. Coalition representatives therefore recommended practices designed to minimize spray drift to 304 acres (Figure 15). In 2012 and 2013, the Coalition contacted the three growers with recommended practices to document newly implemented management practices.

Figure 14. Lateral 2 ½ near Keyes Rd member parcels with direct drainage potential.

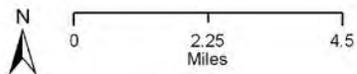


Source of Layers:  
 Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>  
 Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library  
 TRS - Teale Public Land Survey System, Pub. date, 20090101, California Spatial Information Library  
 Parcel Layer - Stanislaus 2010, Merced 2011, Madera 2011  
 Basemap, Shaded Relief - ESR  
 GSC North America 1983

Date Prepared: 03/02/12

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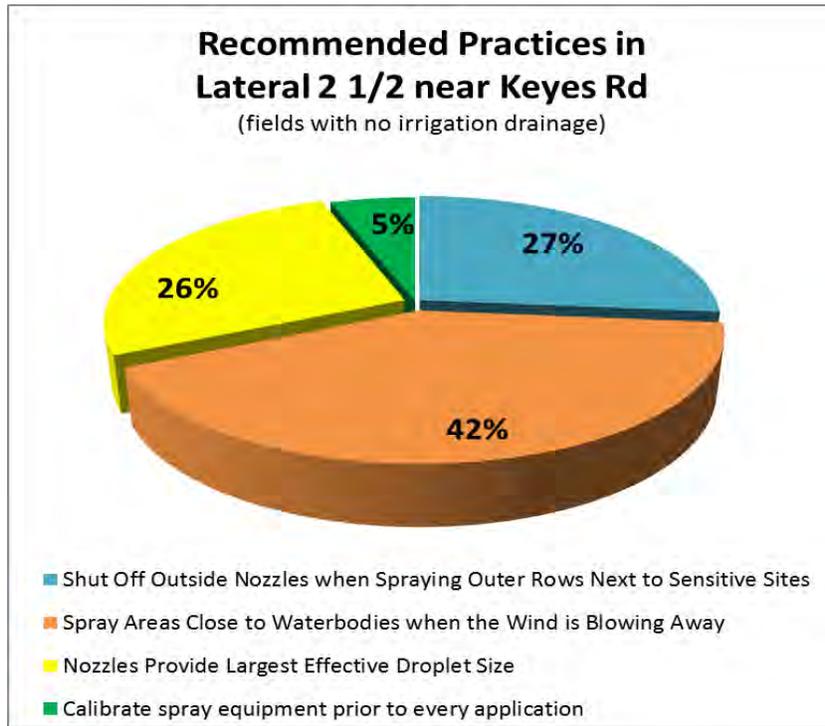
### Lateral 2 1/2 near Keyes Rd 3rd Priority Subwatershed Parcels



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**Figure 15. Percentage of acreage represented by recommended management practices in the Lateral 2 ½ near Keyes Rd (2012).**

Parcels with no irrigation drainage.



*Summary of Implemented Management Practices (2011/2012)*

Table 19 presents a comparison of recommended management practices and newly implemented practices for the Lateral 2 ½ near Keyes Rd site subwatershed. Growers implemented all recommended practices. Growers calibrate equipment prior to every application, shut off outside nozzles when spraying outer rows to sensitive sites, spray areas close to waterbodies when the wind is blowing away from them, and use nozzles that provide largest effective droplet size to minimize drift (Figure 16).

During initial contact meetings, Coalition representatives recommended three growers spray areas close to waterbodies when the wind is blowing away from them. Two of the growers implemented the practice (Table 19); the third grower dropped his Coalition membership prior to follow up contact.

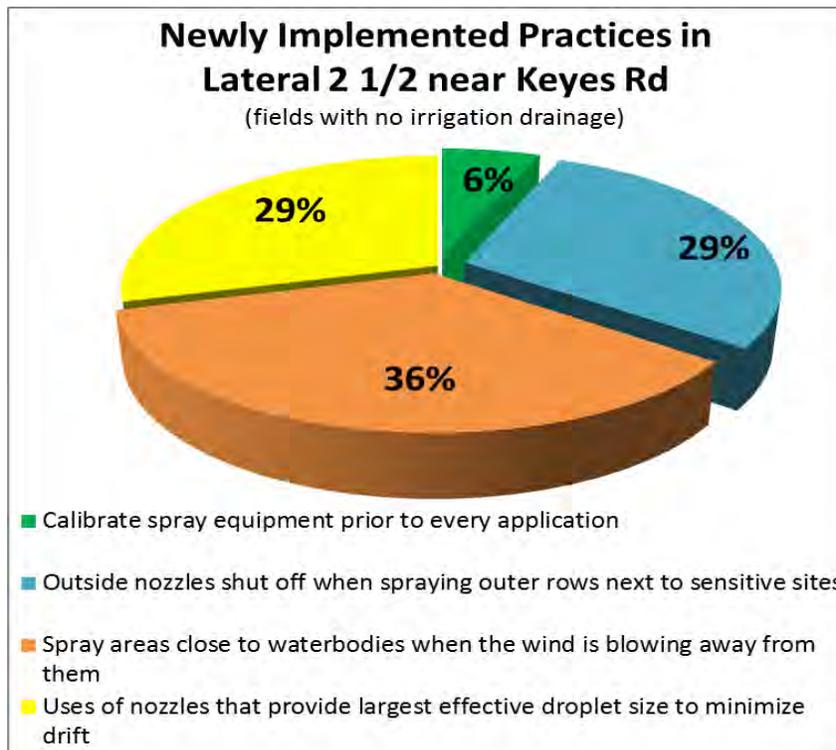
**Table 19. Comparison of recommended and implemented management practices in the Lateral 2 ½ near Keyes Rd site subwatershed.**

MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
<b>No irrigation drainage from property</b>					
Calibrate spray equipment prior to every application	1	44	1	44	100%
Outside nozzles shut off when spraying outer rows next to sensitive sites	1	215	1	215	100%

MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
Spray areas close to waterbodies when the wind is blowing away from them	2	260	2	260	100%
Use nozzles that provide largest effective droplet size to minimize drift	1	215	1	215	100%

**Figure 16. Percentage of acreage represented by newly implemented management practices in the Lateral 2 ½ near Keyes Rd site subwatershed.**

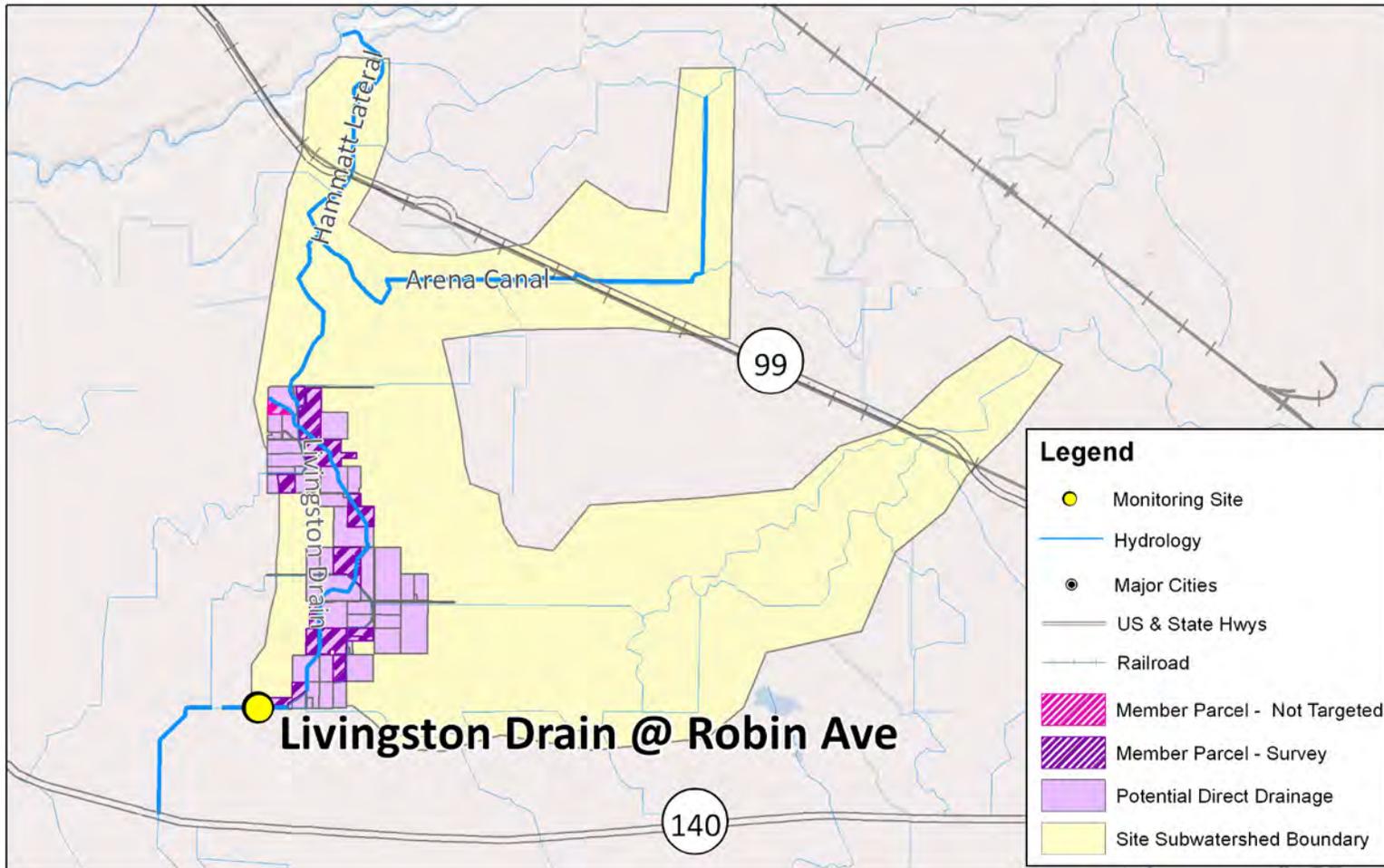
Parcels with no irrigation drainage.



### Livingston Drain @ Robin Ave

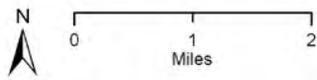
The Coalition contacted 11 targeted growers representing 335 acres within the Livingston Drain @ Robin Ave site subwatershed (Table 10). Management practices were documented for 23% of the acreage identified as direct drainage (Figure 17). The Coalition met individually with growers to discuss water quality concerns, document current management practices and recommend additional practices. The Coalition reported current management practices for the site subwatershed in the 2012 MPUR (pages 119-124). The majority of targeted growers implement several erosion and sediment, pest management, and dormant spray management practices; one or more management practices are currently implemented on all 335 acres. Targeted growers irrigate using sprinkler, microspray and/or drip irrigation techniques and report no irrigation drainage. The Coalition recommended management practices designed to address storm water retention and reduce spray drift to 151 acres (Figure 18). In 2012, the Coalition contacted the three growers with recommended practices to document newly implemented management practices.

Figure 17. Livingston Drain @ Robin 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 - Stanislaus 2010, Merced 2011, Madera 2011  
 Basemap, Shaded Relief - ESR!  
 GSC North America 1983

Date Prepared: 03/05/12  
 ESJWQC

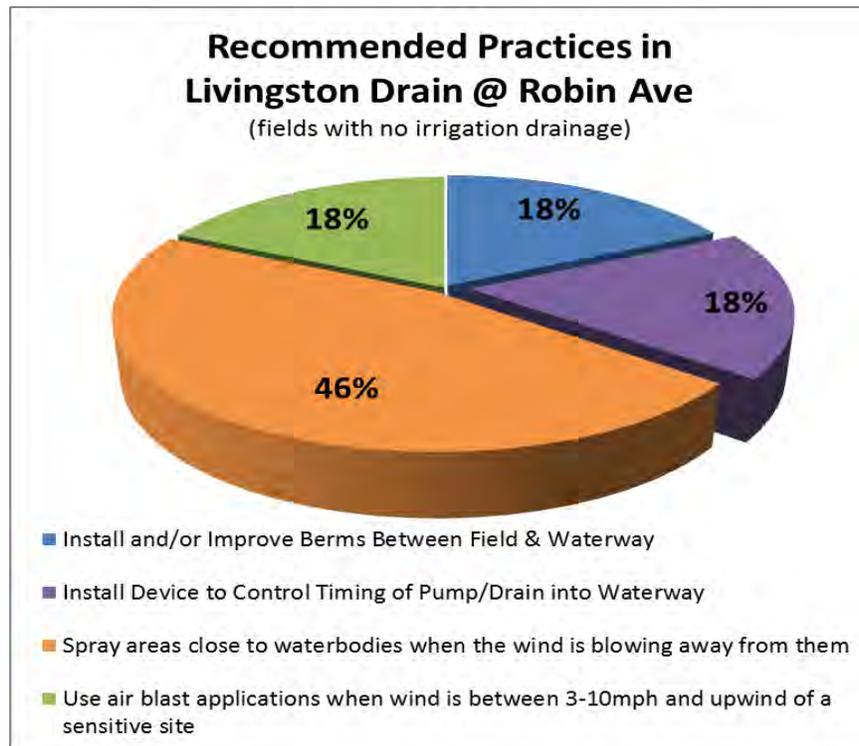


### Livingston Drain @ Robin Ave 3rd Priority Subwatershed Parcels

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**Figure 18. Percentage of acreage represented by recommended management practices in the Livingston Drain @ Robin Ave (2012).**

Parcels with no irrigation drainage.



*Summary of Implemented Management Practices (2011/2012)*

Table 20 presents a comparison of recommended management practices and newly implemented management practices for the Livingston Drain @ Robin Ave site subwatershed. Growers implemented some of the spray drift management practices recommended by Coalition representatives and also some practices not specifically recommended. Per the Coalition’s recommendation, growers now spray areas close to waterbodies when the wind is blowing away from them. Additionally, a grower farming 71 acres converted his property from orchards to sweet potato row crops and installed a more efficient irrigation system. The row crops are watered using drip irrigation systems, reducing the amount of water used previously during surface irrigation. Overall, newly implemented practices include spraying areas close to waterbodies when the wind is blowing away from them, reducing the amount of water used during surface irrigation, and installing a drip irrigation system (Figure 19).

One grower was recommended to install berms between his 41-acre property and the waterway, to install a device to control the timing of discharge to the waterway, and to use air blast applications when the wind is between 3-10 mph and upwind of sensitive sites. The grower indicated during follow up contacts these practices were not implemented but did not provide any additional explanation.

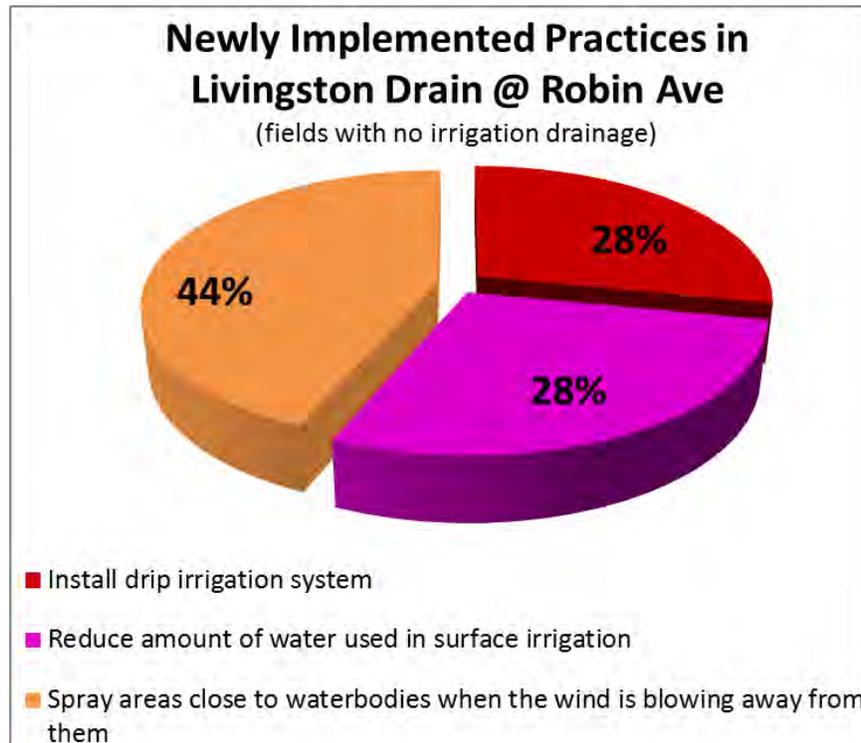
**Table 20. Comparison of recommended and implemented management practices in the Livingston Drain @ Robin Ave site subwatershed.**

MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
<b>No irrigation drainage from property</b>					
Install Device to Control Timing of Pump/Drain into Waterway	1	41	0	0	0%
Install and/or improve berms between field & waterway	1	41	0	0	0%
Install drip irrigation system <sup>1</sup>	0	0	1	71	NA
Reduce amount of water used in surface irrigation <sup>1</sup>	0	0	1	71	NA
Spray areas close to waterbodies when the wind is blowing away from them	2	110	2	110	100%
Use air blast applications when wind is between 3-10mph and upwind of a sensitive site	1	41	0	0	0%

<sup>1</sup>Management practice not specifically recommended by Coalition representative for grower's operation.  
 NA – Not applicable; no recommendations for the management practice in the site subwatershed.

**Figure 19. Percentage of acreage represented by newly implemented management practices in the Livingston Drain @ Robin Ave site subwatershed.**

Parcels with no irrigation drainage.



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**FOURTH PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES  
(2012-2014)**

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The Coalition began focused outreach in fourth priority site subwatersheds in January 2012. The Coalition mailed initial contact letters on January 24, 2012 informing growers of the high priority site subwatershed Management Plan process, including growers’ responsibilities, and requesting that members contact the Coalition to schedule an individual grower meeting (Table 15). The Coalition completed individual meetings with the 14 targeted growers in 2012 (Table 21), during which Coalition representatives discussed water quality concerns, documented currently implemented management practices and recommended additional management practices designed to address the water quality concerns. The Coalition sent follow up mailings to all targeted growers on December 13, 2012 (Table 15). The mailing included a survey with instructions for growers to indicate any newly implemented management practices; surveys were identical to those used for follow up in the second priority subwatersheds, which are recorded in the amendment to the 2011 MPUR, page 2 and Table 1. All follow up contacts will be complete by April 30, 2013.

Prior to February 28, 2013, the Coalition received follow up surveys from targeted growers in the Black Rascal Creek @ Yosemite Rd (1), Deadman Creek @ Gurr Rd (1), Deadman Creek @ Hwy 59 (6) and Hilmar Drain @ Central Ave (1) site subwatersheds (Table 21). Outreach is complete with the single targeted grower in the Black Rascal Creek @ Yosemite Rd site subwatershed. A final analysis of newly implemented management practices in the Black Rascal Creek @ Yosemite Rd site subwatershed is included in the following sections. A preliminary analysis is included for Deadman Creek @ Gurr Rd, Deadman Creek @ Hwy 59 and Hilmar Drain @ Central Ave site subwatersheds as follow up contacts are still in process. The results from outstanding follow up contacts will be reported during the quarterly meetings, and a final analysis of newly implemented management practices will be presented in the 2014 MPUR.

**Table 21. Tally of growers who participated in focused outreach in the fourth set of high priority site subwatersheds (2012-2014).**

	<b>BLACK RASCAL CREEK @ YOSEMITE RD</b>	<b>DEADMAN CREEK @ GURR RD</b>	<b>DEADMAN CREEK @ HWY 59</b>	<b>HILMAR DRAIN @ CENTRAL AVE</b>
Targeted Growers	1	2	8	3
Completed Individual Meeting	1	2	8	3
Completed Follow Up Contact by 28-Feb-2013	1	1	6	1
<b>PERCENT COMPLETE (INITIAL CONTACT)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>PERCENT COMPLETE (FOLLOW UP CONTACT)</b>	<b>100%</b>	<b>50%</b>	<b>75%</b>	<b>33%</b>

**Black Rascal Creek @ Yosemite Rd**

The Black Rascal Creek @ Yosemite Rd site subwatershed is a smaller site subwatershed and contains relatively few irrigated acres with direct drainage. Only one Coalition member operates land adjacent to the waterway and applied chlorpyrifos in the past. The Coalition completed the initial contact with the single targeted grower farming 301 acres within the site subwatershed (Table 11). Management

practices were documented for 16% of the acreage identified as direct drainage (Figure 20). The grower completed the follow up survey, and it was received by the Coalition prior to February 28, 2013.

### *Summary of Current Management Practices (2012)*

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The grower reported irrigation runoff from his 301 acre orchard. The Coalition representative discussed with the grower local water quality concerns and the importance of preventing the offsite movement of all agricultural constituents but did not recommend any specific, additional management practices be implemented as the grower currently implements several practices. The grower indicated on the follow up survey he did not implement any new management practices. Table 22, therefore, lists all the management practices recorded as implemented in the Black Rascal Creek @ Yosemite Rd site subwatershed.

#### **Irrigation Water Management**

The grower flood irrigates the orchard, but has laser leveled the property and installed a drainage basin (sediment pond) to capture and retain runoff. The grower irrigates based on the actual moisture levels in the soil and crop needs (Table 22).

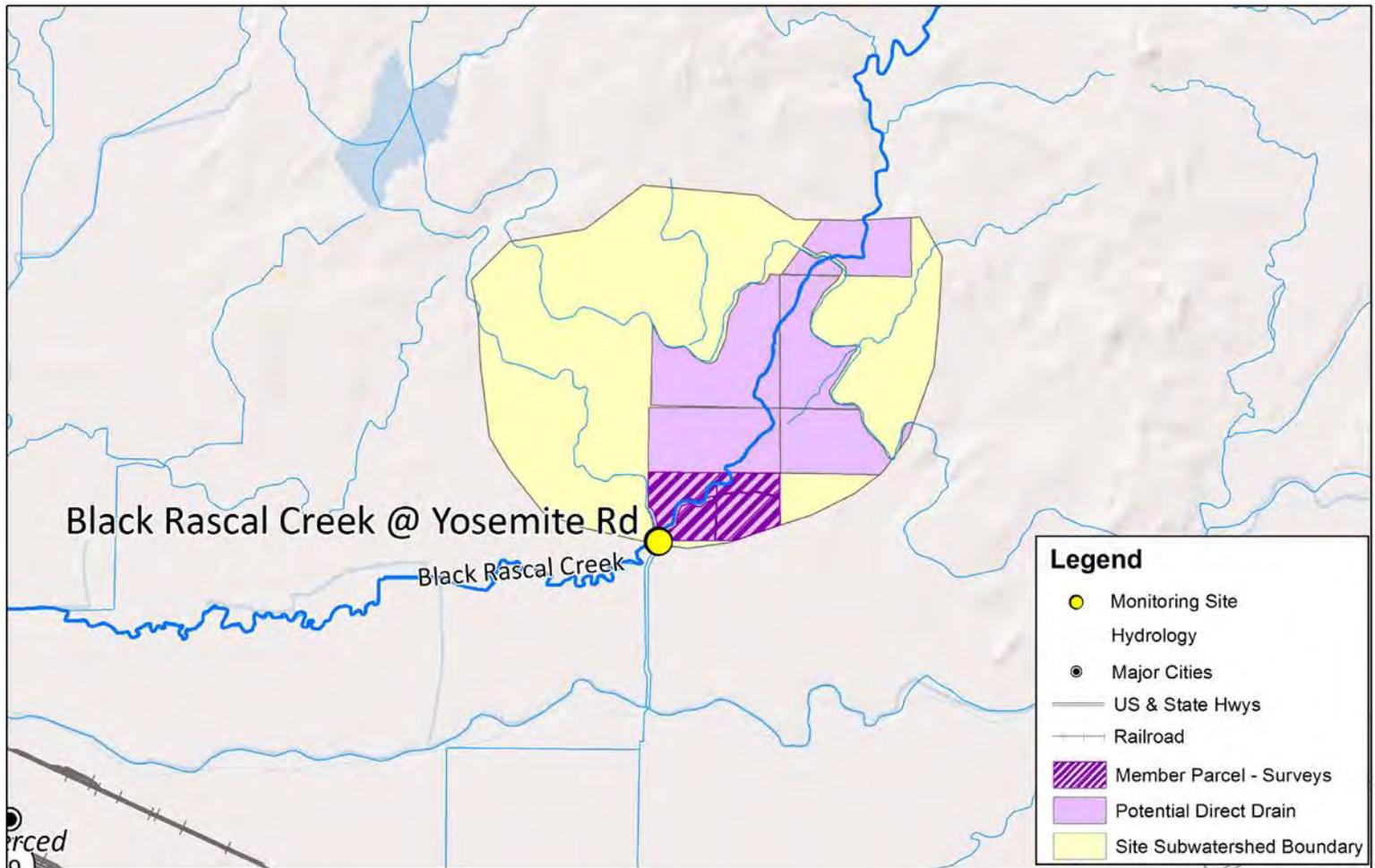
#### **Storm Drainage / Erosion & Sediment Management / Dormant Spray Management**

The grower does have some storm runoff in heavy (100 year) storms, but is able to control the timing of runoff. The grower does not apply pesticides during the dormant season, but does apply glyphosate and Goal (oxyflurofen) during the winter to control weeds. The grower implements several erosion and sediment management practices including grass row centers, filter strips around the field perimeter at least 10 feet wide, and vegetation along ditches (Table 22).

#### **Pest Management**

The grower implements several spray management practices, such as calibrating equipment prior to every application, adjusting spray nozzles to match crop canopy profile, and shutting off outside nozzles when spraying outer rows next to sensitive sites (Table 22).

Figure 20. Black Rascal Creek @ Yosemite 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  
 Basemap, Shaded Relief - ESRI  
 Datum - NAD1983

Date Prepared: 02/11/13  
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### Black Rascal Creek @ Yosemite Rd 4th Priority Subwatershed Parcels

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**Table 22. Black Rascal Creek @ Yosemite Rd site subwatershed current management practices (2012).**

CHECKLIST	QUESTION	ANSWER	COUNT OF ANSWERS	% RESPONDENTS	SUM OF ASSOCIATED ACREAGE
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	1	100%	301
		Use drainage basins (sediment ponds) to capture and retain runoff	1	100%	301
	Irrigation System	Surface	1	100%	301
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	1	100%	301
Section 2: Storm Drainage	How are you able to manage storm drainage?	Pump/Drain into waterway & able to control timing	1	100%	301
	When do you have storm water draining from your field?	Only in heavy (100 year) storms	1	100%	301
Section 3: Erosion & Sediment Management	Do you apply herbicides during winter months?	Glyphosate (Round-Up)	1	100%	301
		Goal	1	100%	301
	If waterway crosses or borders pasture, how is livestock managed?	N/A - Not Pasture	1	100%	301
	Sediment management practices:	Grass Row Centers (Orchards, Vineyards)	1	100%	301
		Maintain vegetated filter strips around field perimeter at least 10' wide	1	100%	301
	Vegetation is planted along or allowed to grow along ditches	1	100%	301	
Section 4: Pest Management	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	N/A	1	100%	301
	How often is spray equipment calibrated?	Prior to each application	1	100%	301
	Spray management practices:	Adjust spray nozzles to match crop canopy profile	1	100%	301
		Outside nozzles shut off when spraying outer rows next to sensitive sites	1	100%	301
		Spray areas close to waterbodies when the wind is blowing away from them	1	100%	301
		Use air blast applications when wind is between 3-10 mph and upwind of a sensitive site	1	100%	301
		Use electronic controlled sprayer nozzles	1	100%	301
Uses of nozzles that provide largest effective droplet size to minimize drift	1	100%	301		
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	1	100%	301

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## Deadman Creek @ Gurr Rd

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The Coalition completed initial contacts with the two targeted growers farming 240 acres within the Deadman Creek @ Gurr Rd site subwatershed (Table 11). Management practices were documented for 8% of the acreage identified as direct drainage (Figure 21). As of February 28, 2013, the Coalition received a follow up survey from one of the two growers; the results of the follow up survey are reported below.

### *Summary of Current Management Practices (2012)*

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The two targeted growers both farm field/row crops and report no irrigation drainage. Coalition representatives discussed local water quality concerns and the importance of preventing the offsite movement of all agricultural constituents but did not recommend any specific, additional management practices be implemented as the grower currently implements several practices.

The single grower who returned his follow up survey by February 28, 2013 indicated he did not implement any new management practices. Table 23, therefore, lists all the management practices recorded as implemented in the Deadman Creek @ Gurr Rd site subwatershed at this time. The Coalition will provide an analysis of all follow up survey results in the 2014 MPUR.

#### **Irrigation Water Management**

Both growers use surface irrigation techniques, and both growers laser leveled their fields. One of the growers, whose property accounts for 40% of the acreage of the growers contacted, installed a drainage basin (sediment ponds) to capture and retain runoff. The growers both irrigate based on the actual moisture levels in the soil and crop needs (Table 23).

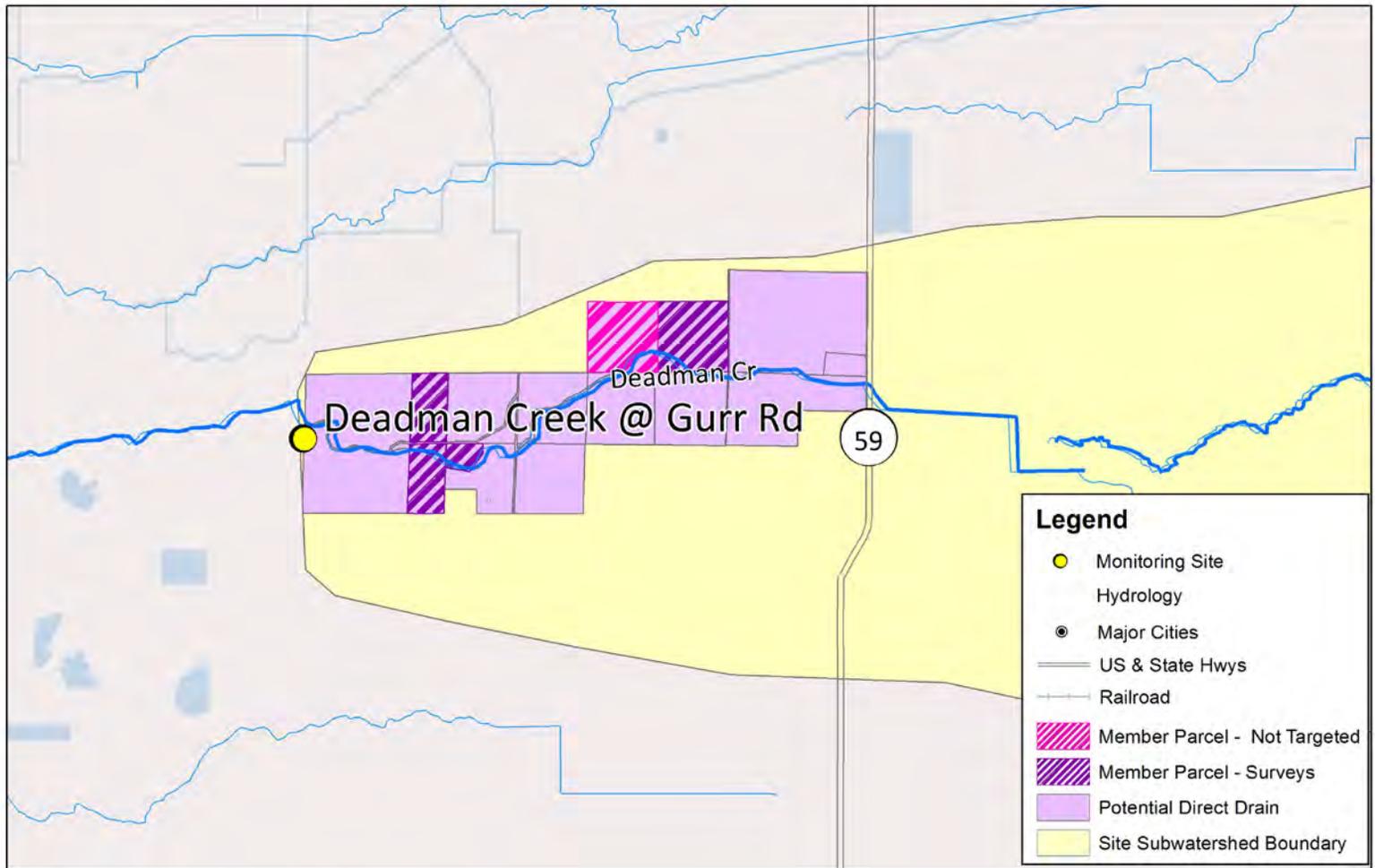
#### **Storm Drainage / Erosion & Sediment Management / Dormant Spray Management**

One grower indicated he has no storm water runoff. The other grower, representing 60% of the acreage of the two contacted growers, reports that storm water runoff from fields can occur after the soil is saturated in late winter. Both growers implement erosion and sediment management practices, including maintaining vegetation along ditches and filter strips around field perimeters at least 10 feet wide. Neither grower sprays pesticides during the dormant season; one grower specified herbicides are not applied during the winter months (Table 23).

#### **Pest Management**

One of the two growers reported that he implements several pest management practices including calibrating equipment prior to every application, adjusting spray nozzles to match crop canopy profile, and shutting off outside nozzles when spraying outer rows next to sensitive sites. This grower has also considered alternative strategies to using diazinon or chlorpyrifos. The other grower did not respond to the pest management section of the survey (Table 23).

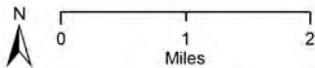
Figure 21. Deadman Creek @ Gurr Rd member parcels with direct drainage potential.



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  
 Basemap, Shaded Relief - ESR  
 Datum - NAD1983

Date Prepared: 02/11/13

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## Deadman Creek @ Gurr Rd 4th Priority Subwatershed Parcels

ESJWQC\_2012

**Table 23. Deadman Creek @ Gurr Rd site subwatershed current management practices (2012).**

CHECKLIST	QUESTION	ANSWER	COUNT OF ANSWERS	% RESPONDENTS	SUM OF ASSOCIATED ACREAGE
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	2	100%	240
		Use drainage basins (sediment ponds) to capture and retain runoff	1	50%	95
	Irrigation System	Surface	2	100%	240
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	2	100%	240
Section 2: Storm Drainage	How are you able to manage storm drainage?	No Storm Drainage	1	50%	95
		Settling Pond	1	50%	95
	When do you have storm water draining from your field?	After soil is saturated-late winter	1	50%	145
		No Storm Drainage	1	50%	95
Section 3: Erosion & Sediment Management	Do you apply herbicides during winter months?	Do not apply	1	50%	95
		Did not Respond	1	50%	145
	If waterway crosses or borders pasture, how is livestock managed?	N/A - Not Pasture	2	100%	240
	Sediment management practices:	Maintain vegetated filter strips around field perimeter at least 10' wide	2	100%	240
		Vegetation is planted along or allowed to grow along ditches	2	100%	240
	Section 4: Pest Management	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	Yes	1	50%
Did not Respond			1	50%	95
How often is spray equipment calibrated?		Prior to each application	1	50%	145
		Did not Respond	1	50%	95
Spray management practices:		Adjust spray nozzles to match crop canopy profile	1	50%	145
		Outside nozzles shut off when spraying outer rows next to sensitive sites	1	50%	145
		Spray areas close to waterbodies when the wind is blowing away from them	1	50%	145
		Uses of nozzles that provide largest effective droplet size to minimize drift	1	50%	145
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	2	100%	240

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## Deadman Creek @ Hwy 59

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The Coalition completed initial contacts with the eight targeted growers farming 3,414 acres within the Deadman Creek @ Hwy 59 site subwatershed (Table 11). Management practices were documented for 30% of the acreage identified as direct drainage (Figure 22). As of February 28, 2013, the Coalition received follow up surveys from six growers.

### *Summary of Current Management Practices (2012)*

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The majority of the targeted acreage in the site subwatershed contains orchards (79%, Figure 23). Nineteen percent of the acreage is field/row crops (667 of 3,414 acres, Figure 23). The remaining 2% of the targeted acreage is a mixture of orchard and field/row crops (Figure 23). Irrigation runoff occurs from more than eighty percent of the orchards (2,233 of 2,685 acres); all operators of field/row crops reported no irrigation drainage (Figure 23). Coalition representatives discussed local water quality concerns and the importance of preventing the offsite movement of all agricultural constituents with growers. Representatives also reviewed currently implemented management practices.

#### **Irrigation Water Management**

Growers in the site subwatershed employ a mixture of irrigation systems on their parcels. The majority of growers use surface irrigation techniques, but two growers also use either sprinklers or microirrigation. One grower, accounting for 11% (383 of 3,414 acres), uses only sprinklers and microirrigation. All growers have laser leveled fields and irrigate according to actual moisture levels in the soil and crop needs. Sixty-three percent of the growers, accounting for 82% of the acreage, utilize recirculation/ tailwater return systems to manage irrigation runoff. Two growers, representing 65% of the acreage, installed drainage basins (sediment ponds) to capture and retain runoff (Table 24).

#### **Storm Drainage**

Half the targeted growers, whose properties account for 28% of the acreage, report some storm drainage either in late winter when the soil is saturated or only during heavy (100 year) storms. All parcels with storm drainage have at least one management practice installed to manage storm water runoff, either berms between the field and waterway, recirculation/ tailwater return systems, and/or settling ponds (Table 24). Of the four growers with storm drainage, one grower farming 2,146 acres reported drainage only occurs from a portion of his property and does not reach the creek.

#### **Erosion & Sediment Management**

The majority of acres in the site subwatershed have at least one of the following sediment and erosion practices installed: grass row centers (80% of acreage), vegetated filter strips at least 10 feet wide around field perimeter (89% of acreage), and vegetation maintained along ditches (100% of acreage, Table 24). Five growers apply herbicides during the winter; all five growers implement at least two sediment and erosion management practices (Table 24).

### **Pest Management**

Targeted growers implement several spray management practices including calibrating prior to each spray application (all growers), adjusting spray nozzles to match the canopy profile (five growers), shutting off outside nozzles when spraying outer rows next to sensitive sites (all growers), spraying areas close to waterbodies when the wind is blowing away from them (all growers), and using nozzles that provide the largest effective droplet size to minimize drift (all growers). All but one grower has considered alternative strategies to applying chlorpyrifos and diazinon (Table 24).

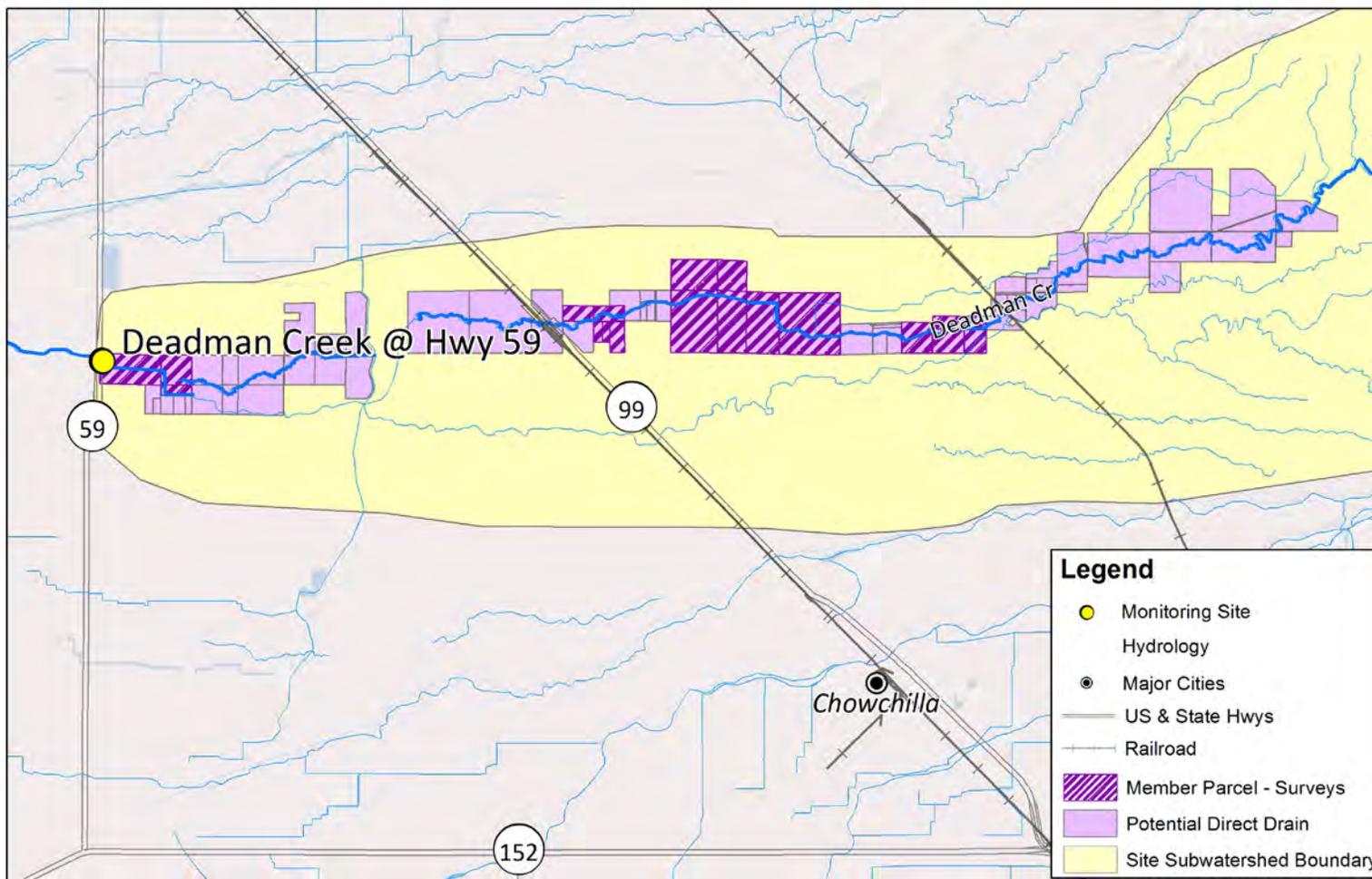
### **Dormant Spray Management**

A single member applies dormant pesticides to 270 of their 2,146 acres. The grower implements several management practices during dormant sprays, including checking weather condition, maintaining setback zones and ensuring soil moisture is not at field capacity. Additionally, fields have vegetative cover prior to applications (Table 24).

### **Recommended Practices**

Coalition representatives found that some members in the Deadman Creek @ Hwy 59 site subwatershed could improve management of irrigation and storm water runoff from their parcels. The Coalition recommended for growers to install and/or improve berms between fields and waterways, install a device to control timing of pump/drain into waterway, install recirculation/tailwater return systems, and/or install and maintain vegetated filter strips at least 10 feet wide around the perimeter of fields (Figure 24).

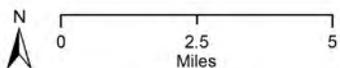
Figure 22. Deadman Creek @ Hwy 59 member parcels with direct drainage potential.



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  
 Basemap, Shaded Relief - ESR  
 Datum - NAD1983

Date Prepared: 02/11/13

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## Deadman Creek @ Hwy 59 4th Priority Subwatershed Parcels

ESJWQC\_2012

**Table 24. Deadman Creek @ Hwy 59 site subwatershed current management practices (2012).**

CHECKLIST	QUESTION	ANSWER	COUNT OF ANSWERS	% RESPONDENTS	SUM OF ASSOCIATED ACREAGE
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	8	100%	3,414
		Recirculation - Tailwater return system	5	63%	2,787
		Use drainage basins (sediment ponds) to capture and retain runoff	2	25%	2,215
	Irrigation System	Microirrigation	2	25%	2,529
		Sprinkler	2	25%	445
		Surface	7	88%	3,031
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	8	100%	3,414
Section 2: Storm Drainage	How are you able to manage storm drainage?	Berms Between Field & Waterway (Install and/or Improve)	4	50%	519
		No Storm Drainage	5	63%	1,119
		Recirculation - Tailwater return system	5	63%	2,787
		Settling Pond	2	25%	2,215
	When do you have storm water draining from your field?	After soil is saturated-late winter	3	38%	2,390
		No Storm Drainage	4	50%	962
Section 3: Erosion & Sediment Management	Do you apply herbicides during winter months?	Do not apply	3	38%	572
		Glyphosate (Round-Up)	4	50%	2,685
		Goal	4	50%	2,685
		Paraquat (Gramaxone)	1	13%	157
	If waterway crosses or borders pasture, how is livestock managed?	N/A - Not Pasture	8	100%	3,414
	Sediment management practices:	Grass Row Centers (Orchards, Vineyards)	5	63%	2,747
		Maintain vegetated filter strips around field perimeter at least 10' wide	7	88%	3,031
		Vegetation is planted along or allowed to grow along ditches	8	100%	3,414
Section 4: Pest Management	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	N/A	1	13%	2,146
		No	1	13%	62
		Yes	6	75%	1,206
	How often is spray equipment calibrated?	Prior to each application	8	100%	3,414

CHECKLIST	QUESTION	ANSWER	COUNT OF ANSWERS	% RESPONDENTS	SUM OF ASSOCIATED ACREAGE
Section 4: Pest Management	Spray management practices:	Adjust spray nozzles to match crop canopy profile	5	63%	2,747
		Outside nozzles shut off when spraying outer rows next to sensitive sites	8	100%	3,414
		Spray areas close to waterbodies when the wind is blowing away from them	8	100%	3,414
		Use air blast applications when wind is between 3-10 mph and upwind of a sensitive site	3	38%	532
		Use electronic controlled sprayer nozzles	1	13%	304
		Uses of nozzles that provide largest effective droplet size to minimize drift	8	100%	3,414
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	7	88%	1,268
		270 Acres	1	13%	2,146
	Prior to applying winter dormant sprays, what is the condition of your orchard floor?	Vegetative cover	1	13%	2,146
	Do you apply when soil moisture is at field capacity?	No	1	13%	2,146
	Dormant spray management practices:	Check weather conditions prior to spraying (i.e. storm status)	1	13%	2,146
		Maintain setback zones	1	13%	2,146
	Have you been informed of DPR's Dormant Spray Regulations?	Yes	1	13%	2,146

Figure 23. Deadman Creek @ Hwy 59 crop acreage information from member surveys (2012).

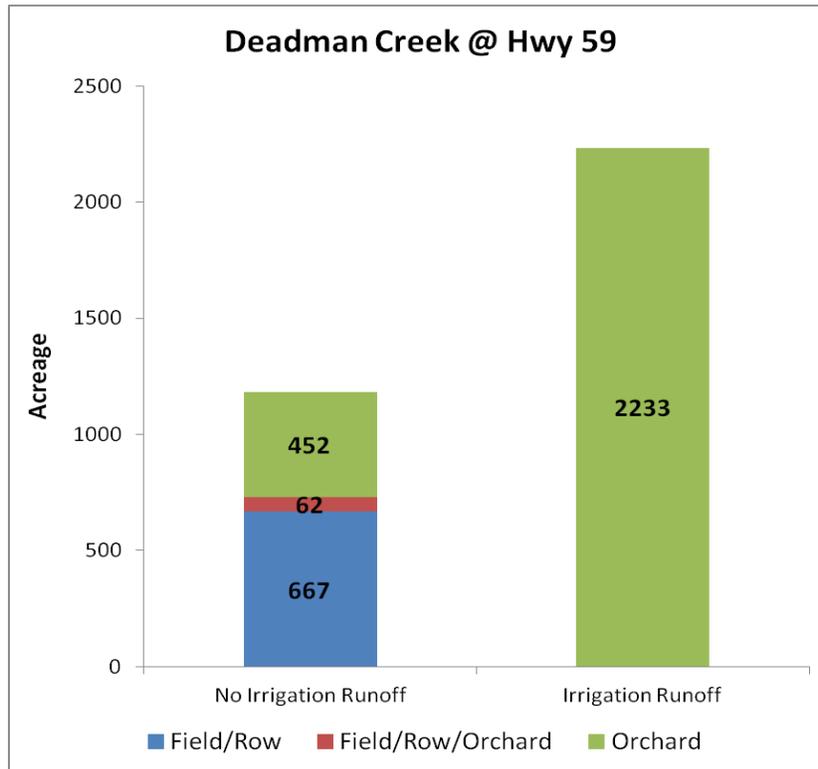
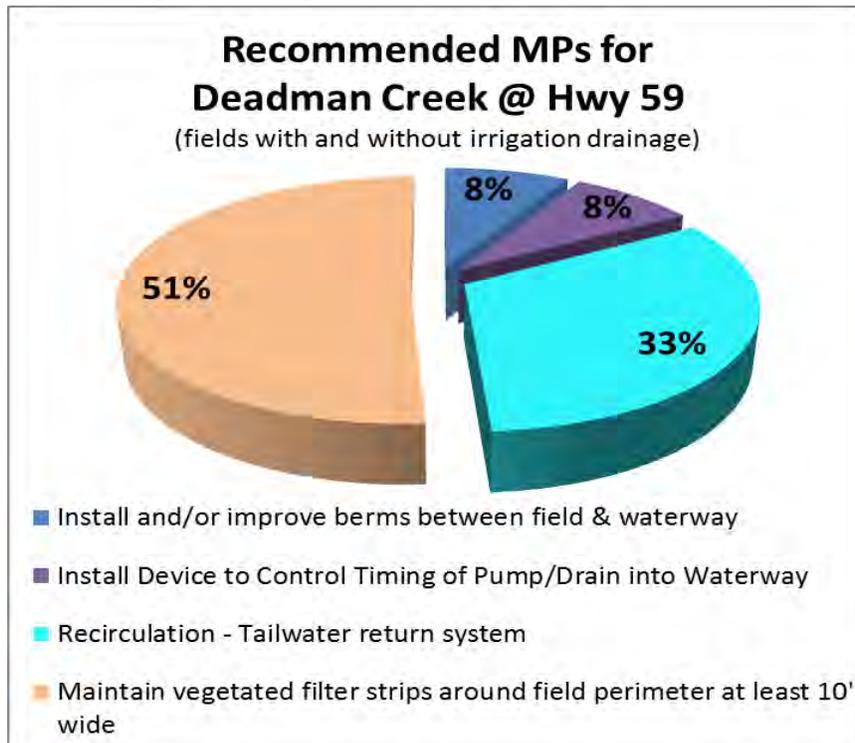


Figure 24. Deadman Creek @ Hwy 59 recommended management practice (2012) acreage percentage for members with and without irrigation drainage.



*Summary of Newly Implemented Practices (2012/2013)*

Table 25 presents a comparison of recommended management practices and newly implemented management practices for the Deadman Creek @ Hwy 59 site subwatershed as of February 28, 2013. To date, six of the eight targeted growers returned their follow up surveys. Growers indicated they implemented all recommended practices, which include installing a device to control the timing of drainage into the waterway, improving berms between fields and the waterway, and maintain vegetated filter strips at least 10 feet wide around the perimeter of fields (Figure 25).

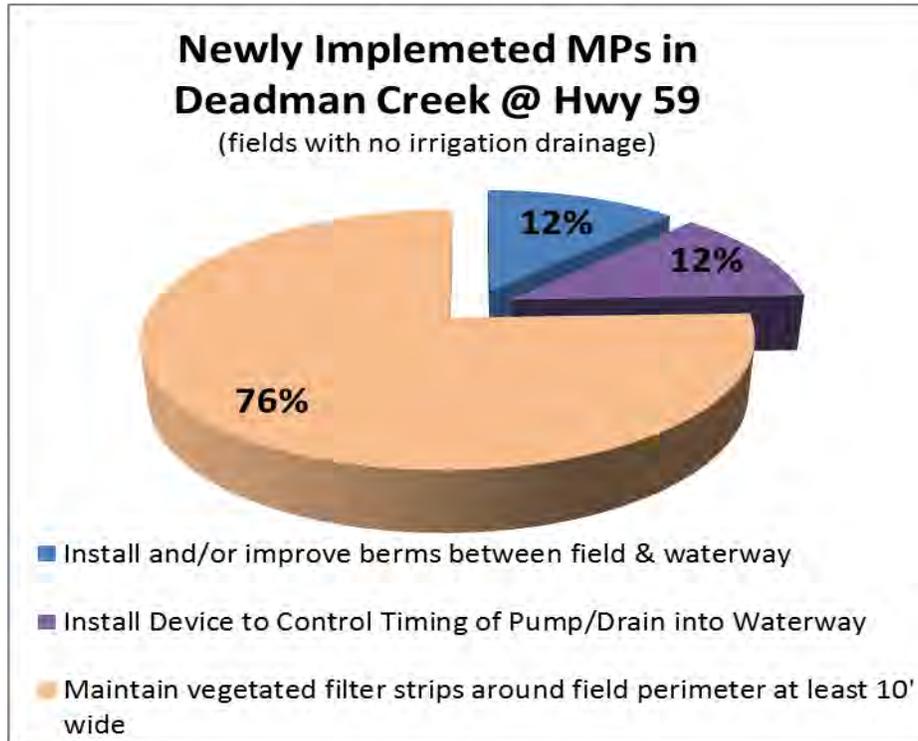
Both growers who have yet to return their surveys were recommended to implement recirculation/tailwater return systems. The Coalition will provide an analysis of all follow up survey results in the 2014 MPUR.

**Table 25. Comparison of recommended and implemented management practices in the Deadman Creek @ Hwy 59 site subwatershed (preliminary analysis).**

MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
<b>No irrigation drainage from property</b>					
Install and/or improve berms between field & waterway	1	62	1	62	100%
Install Device to Control Timing of Pump/Drain into Waterway	1	62	1	62	100%
Maintain vegetated filter strips around field perimeter at least 10' wide	1	383	1	383	100%
Recirculation - Tailwater return system	1	157	NR	NR	NR
<b>Yes, irrigation drainage from property</b>					
Recirculation - Tailwater return system	1	87	NR	NR	NR

NR – Not recorded. The Coalition has yet to receive follow up results from growers concerning these practices.

Figure 25. Deadman Creek @ Hwy 59 newly implemented management practice (2013) acreage percentage for members without irrigation drainage (preliminary analysis).




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### Hilmar Drain @ Central Ave

The Coalition completed initial contacts with the three targeted growers farming 455 acres within the Hilmar Drain @ Central Ave site subwatershed (Table 11). Management practices were documented for 37% of the acreage identified as direct drainage (Figure 26). As of February 28, 2013, the Coalition received a follow up survey from one grower.

#### *Summary of Current Management Practices (2012)*

All parcels surveyed in the site subwatershed contain field/row crops; 31% of the parcels have irrigation runoff (Figure 27). Coalition representatives discussed local water quality concerns and the importance of preventing the offsite movement of all agricultural constituents with growers. Representatives also reviewed currently implemented management practices.

#### **Irrigation Water Management**

All targeted growers utilize surface irrigation and have laser leveled their fields. One grower scheduled irrigation solely based on actual moisture levels in the soil and crop needs; the other two growers based their irrigation schedules on irrigation district deliveries (Table 26).

### **Storm Drainage Management**

Two growers, representing 316 acres, indicated storm drainage occurs after soil is saturated in the late winter. One of the two growers, accounting for 298 acres, installed a drain system on the parcel that can be opened to drain flooded fields. The grower rarely opens this drain and can control the timing of discharge to surface waterways. The grower has also installed berms between his fields and the waterway to further aid in managing runoff (Table 26). Of the two with storm drainage, one grower farms 18 acres and implements minimal storm drainage management practices. The Coalition recommended to the grower to install berms between fields and waterways and install a device to control the timing of discharge (Figure 28).

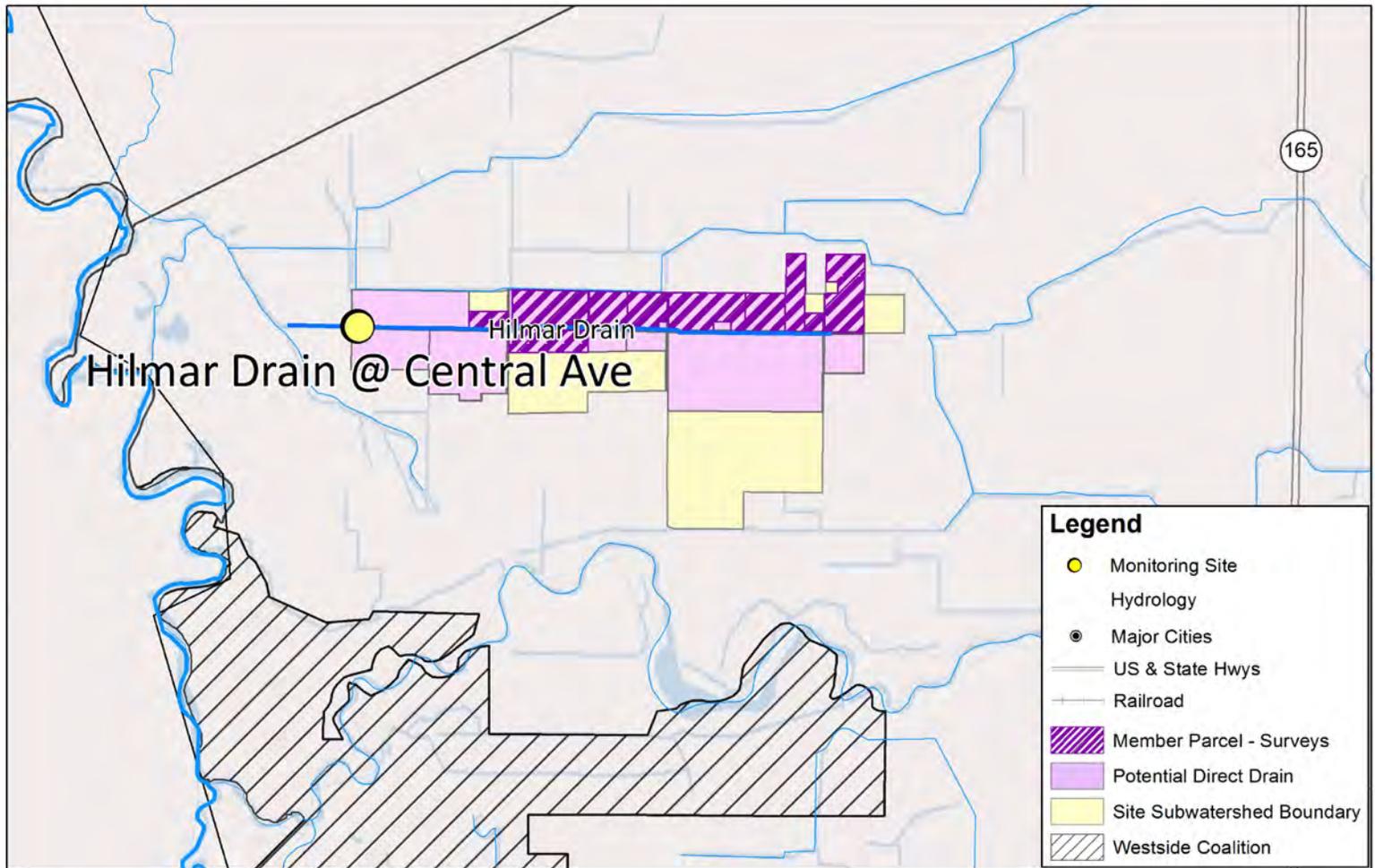
### **Erosion & Sediment Management / Pest Management / Dormant Spray Management**

All three growers maintain vegetated filter strips at least 10 feet wide around field perimeters and maintain vegetation in ditches. Growers also implement several pest management practices, including calibrating prior to each spray application (all acres), shutting off outside nozzles when spraying outer rows next to sensitive sites (96% of acreage), spraying areas close to waterbodies when the wind is blowing away from them (all acres), and using nozzles that provide the largest effective droplet size to minimize drift (all acres). None of the growers apply herbicides or pesticides during the winter months (Table 26).

### **Recommended Practices**

Coalition representatives found that some members in the Hilmar Drain @ Central Ave site subwatershed could improve management of irrigation and storm water runoff from their parcels. In addition to recommending that one grower install berms between fields and waterways and a device to control the timing of discharge (discussed above), the Coalition also recommended to the other grower that he install a recirculation/tailwater return system (Figure 28).

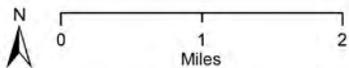
Figure 26. Hilmar Drain @ Central Ave member parcels with direct drainage potential.



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  
 Basemap, Shaded Relief - ESRI  
 Datum - NAD1983

Date Prepared: 02/11/13

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## Hilmar Drain @ Central Ave 4th Priority Subwatershed Parcels

ESJWQC\_2012

**Table 26. Hilmar Drain @ Central Ave site subwatershed current management practices (2012).**

CHECKLIST	QUESTION	ANSWER	COUNT OF ANSWERS	% RESPONDENTS	SUM OF ASSOCIATED ACREAGE
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	3	100%	455
	Irrigation System	Surface	3	100%	455
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	2	67%	157
		Irrigation District Deliveries	2	67%	316
Section 2: Storm Drainage	How are you able to manage storm drainage?	Berms Between Field & Waterway (Install and/or Improve)	1	33%	298
		Pump/Drain into waterway & able to control timing	1	33%	298
		No Storm Drainage	1	33%	139
	When do you have storm water draining from your field?	After soil is saturated-late winter	2	67%	316
No Storm Drainage		1	33%	437	
Section 3: Erosion & Sediment Management	Do you apply herbicides during winter months?	Do not apply	3	100%	139
	If waterway crosses or borders pasture, how is livestock managed?	N/A - Not Pasture	3	100%	455
	Sediment management practices:	Maintain vegetated filter strips around field perimeter at least 10' wide	3	100%	455
		Vegetation is planted along or allowed to grow along ditches	3	100%	455
Section 4: Pest Management	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	Yes	3	100%	455
	How often is spray equipment calibrated?	Prior to each application	3	100%	455
	Spray management practices:	Outside nozzles shut off when spraying outer rows next to sensitive sites	2	67%	437
		Spray areas close to waterbodies when the wind is blowing away from them	3	100%	455
		Uses of nozzles that provide largest effective droplet size to minimize drift	3	100%	455
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	3	100%	455

Figure 27. Hilmar Drain @ Central Ave crop acreage information from member surveys (2012).

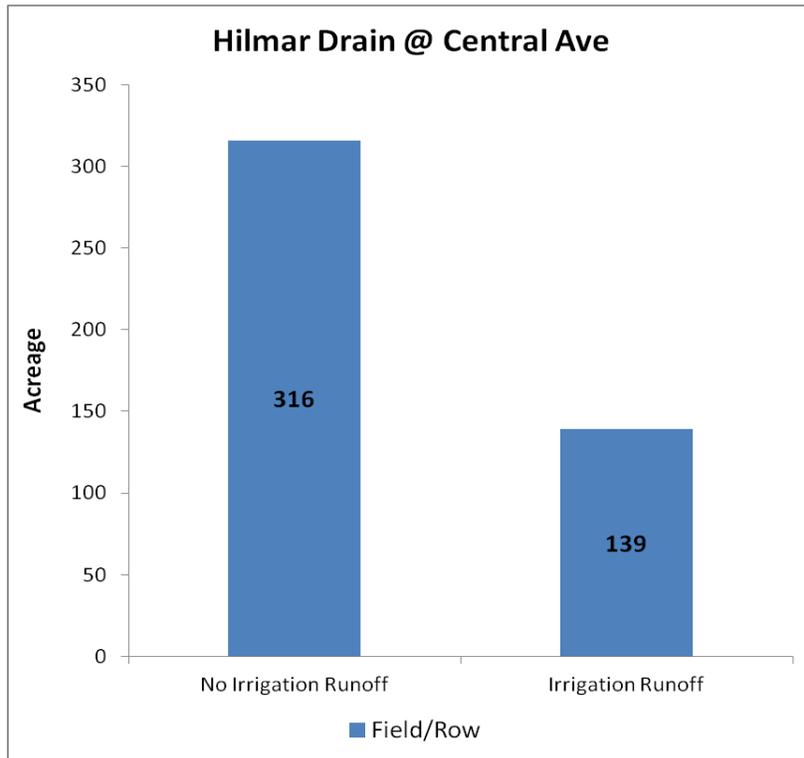
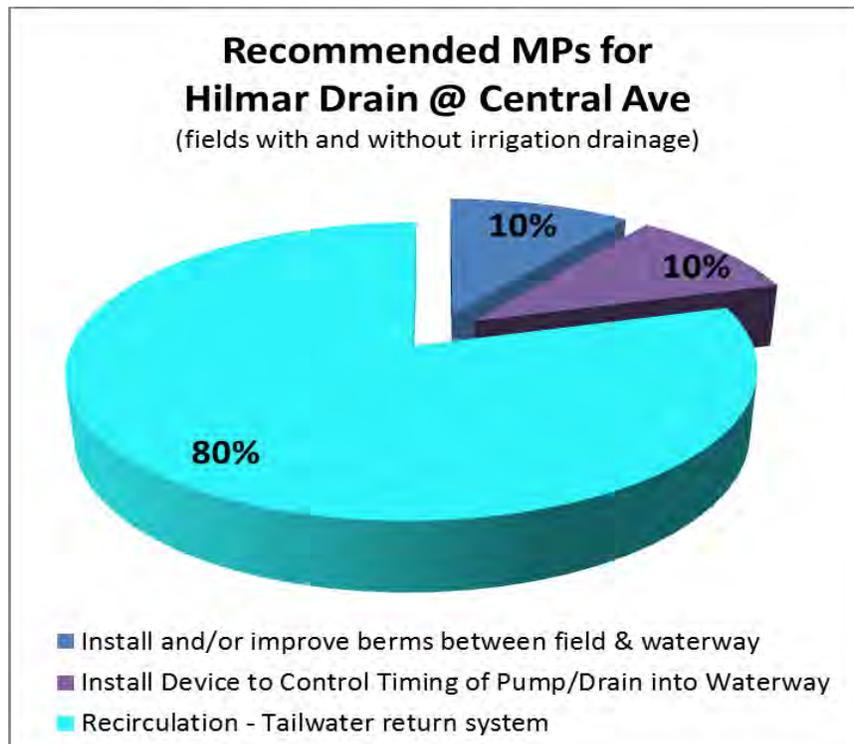


Figure 28. Hilmar Drain @ Central Ave recommended management practice (2012) acreage percentage for members with and without irrigation drainage.



*Summary of Newly Implemented Practices (2012/2013)*

Table 27 presents a comparison of recommended management practices and newly implemented management practices for the Hilmar Drain @ Central Ave site subwatershed as of February 28, 2013. To date, one of the three targeted growers returned their follow up survey. The grower indicated he implemented the practice recommended; the grower installed a tailwater/return system on his 139 acre property to aid in management of irrigation and storm water runoff. In addition, the grower began adjusting spray nozzles to match crop canopy profile to manage spray drift (Figure 29).

The grower who received a recommendation to install berms between fields and waterways and install a device to control the timing of discharge has yet to return their follow up survey. The Coalition will provide an analysis of all follow up survey results in the 2014 MPUR.

**Table 27. Comparison of recommended and implemented management practices in the Hilmar Drain @ Central Ave site subwatershed (preliminary analysis).**

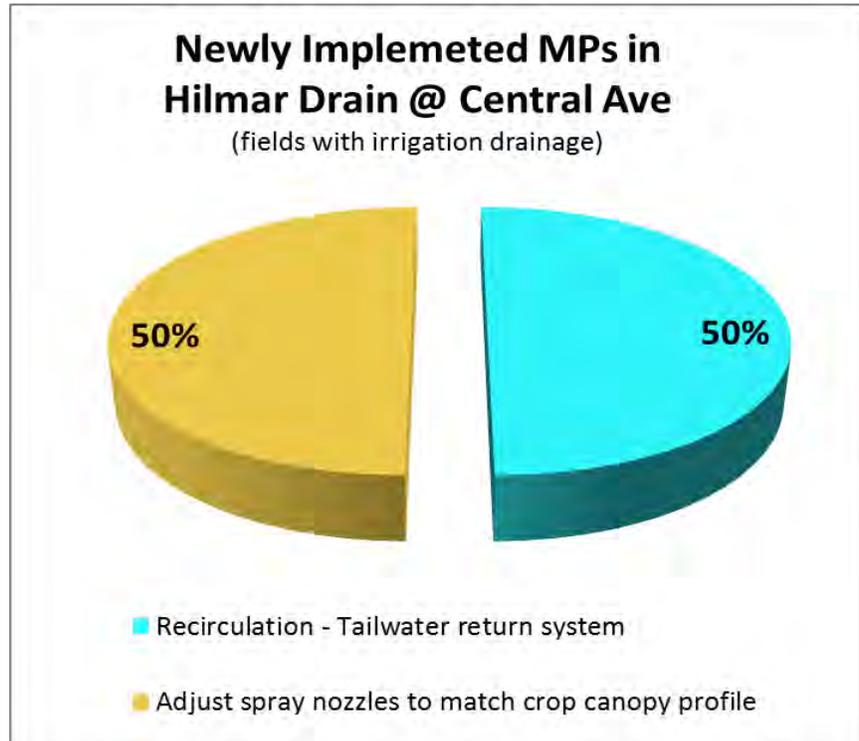
MANAGEMENT PRACTICE	RECOMMENDED PRACTICES		IMPLEMENTED PRACTICES		% RECOMMENDED ACREAGE WITH IMPLEMENTED PRACTICES
	# GROWERS	ACRES	# GROWERS	ACRES	
<b>No irrigation drainage from property</b>					
Recirculation - Tailwater return system	1	139	1	139	100%
Adjust spray nozzles to match crop canopy profile <sup>1</sup>	0	0	1	139	NA
<b>Yes, irrigation drainage from property</b>					
Device controls timing of pump/drain into waterway	1	18	NR	NR	NR
Install and/or improve berms between field & waterway	1	18	NR	NR	NR

<sup>1</sup>Management practice not specifically recommended by Coalition representative for grower's operation.

NA – Not applicable; no recommendations for the management practice in the site subwatershed.

NR – Not recorded. The Coalition has yet to receive follow up results from growers concerning these practices.

Figure 29. Hilmar Drain @ Central Ave newly implemented management practice (2013) acreage percentage for members with irrigation drainage (preliminary analysis).



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## FIFTH PRIORITY SUBWATERSHEDS SUMMARY OF MANAGEMENT PRACTICES (2013-2015)

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The Coalition began focused outreach in fifth priority site subwatersheds in November and December of 2012. The Coalition compiled a list of targeted growers in the Hatch Drain @ Tuolumne Rd (1), Highline Canal @ Lombardy Rd (22), Merced River @ Santa Fe (13) and Miles Creek @ Reilly Rd (14) site subwatersheds. On November 2, 2012, the Coalition mailed targeted growers a letter requesting growers to contact the Coalition to schedule a required meeting with a representative (Table 16). The Coalition began conducting individual grower meetings in late 2012 and will complete individual grower meetings by July 30, 2013. The Coalition will report the results of individual grower meetings and currently implemented management practices in the 2014 MPUR. Follow up contacts will occur during the fall of 2013 and winter of 2014.

## EVALUATION OF MANAGEMENT PRACTICE EFFECTIVENESS

The Coalition implemented its management plan process for four years in the first priority site subwatersheds, for three years in the second priority site subwatersheds and for two years in the third priority site subwatersheds (Table 28). The Coalition completed focused outreach in all first, second and third priority site subwatersheds, which includes documenting management practices and conducting MPM. The Coalition uses the results of all monitoring (MPM, Core and Assessment) to evaluate the effectiveness of current and newly implemented management practices. Management Plan Monitoring was temporarily suspended in 2012 and only occurred from January through March with the exception of Bear Creek @ Kibby Rd. Sites scheduled for Assessment Monitoring were still monitored for all constituents including MPM constituents. Berenda Slough along Ave 18 ½ (third priority) was the only site within the first, second or third priority subwatersheds scheduled for Assessment Monitoring (Table 28). The results from the 2012 monitoring year do not include complete sets of data for interpreting trends in water quality improvements; an evaluation of management practice effectiveness cannot be conducted to the same degree as it has been in previous MPURs. The following evaluation includes a complete summary of current and newly implemented management practices but is based on the limited monitoring results from 2012. Management Plan Monitoring resumed as scheduled in 2013, and the Coalition will provide a complete evaluation of management practice effectiveness in the first, second, third and fourth priority site subwatersheds in the 2014 MPUR. A complete evaluation of management practices effectiveness in the first and second priority site subwatersheds is provided in the 2012 MPUR (pages 126-133).

**Table 28. Years of MPM and current and newly implemented management practices in high priority site subwatersheds with two or more years of focused outreach.**

PRIORITY GROUP	SITE NAME	YEAR(S) OF CURRENT MPs	YEAR(S) OF NEWLY IMPLEMENTED MPs	YEAR(S) OF WQ ASSESSMENT FOR EVALUATION <sup>1</sup>
First (2008-2010)	Dry Creek @ Wellsford	2008-2009	2009-2011	2009-2012
	Duck Slough @ Hwy 99	2008	2009-2010	2009-2012 <sup>2</sup>
	Prairie Flower Drain @ Crows Landing Rd	2008	2009-2010	2009-2012
Second (2010-2012)	Bear Creek @ Kibby Rd	2009	2010-2011	2009-2012
	Cottonwood Creek @ Rd 20	2009	2010-2011	2010-2012
	Duck Slough @ Gurr Rd	2009	2010-2011	2010-2012
	Highline Canal @ Hwy 99	2009	2010-2011	2010-2012
Third (2011-2013)	Berenda Slough along Ave 18 ½	2010-2011	2011-2012	2011-2012
	Dry Creek @ Rd 18	2010-2011	2011-2012	2012
	Lateral 2 ½ near Keyes Rd	2010-2011	2011-2012	2012
	Livingston Drain @ Robin Ave	2010-2011	2011-2012	2012

<sup>1</sup> Management Plan Monitoring was suspended from April through December in 2012 at all site subwatersheds except at Bear Creek @ Kibby Rd. Assessment Monitoring occurred during all months in 2012 as scheduled at Berenda Slough along Ave 18 ½.

<sup>2</sup> The Regional Board approved the site to be removed from the site from the Coalition's monitoring program on April 26, 2012. Monitoring ceased in at the site after March 2012, and the Coalition will address the remaining active management plan constituents at the Duck Slough @ Gurr Rd site.

MP – Management Practice

WQ – Water Quality

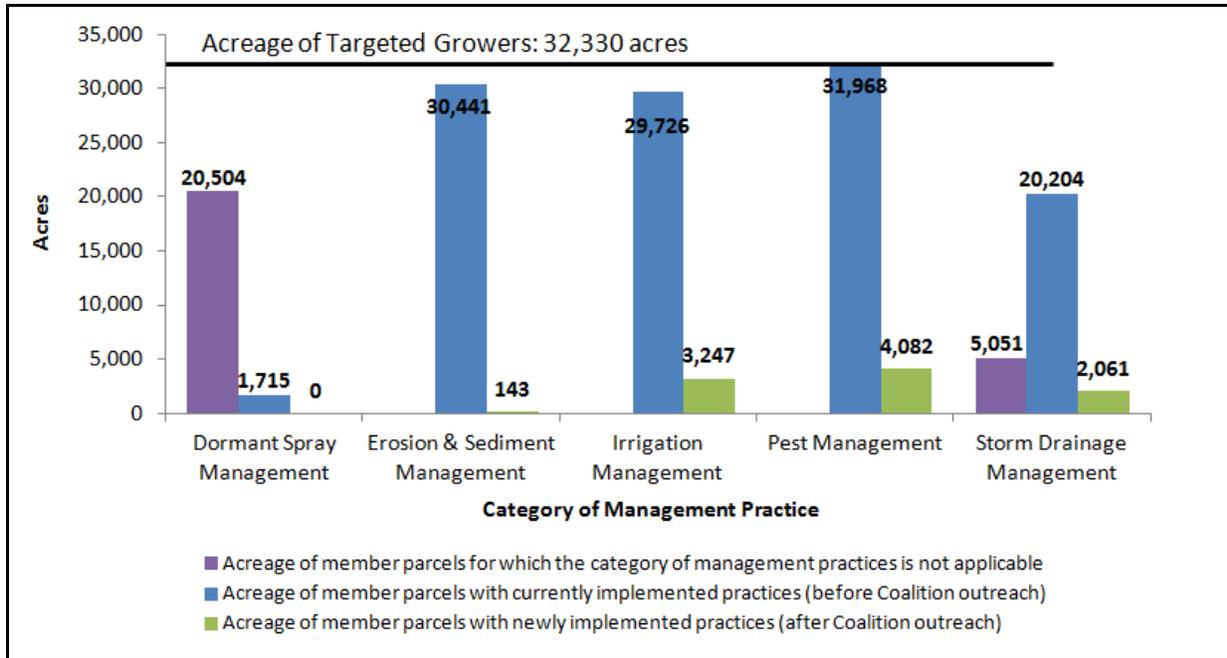
During initial meetings, the Coalition documented numerous management practices currently implemented by members. The initial contact surveys are organized into Checklist Sections which categorize management practices into five categories: Irrigation Water Management, Storm Drainage, Erosion and Sediment Management, Pest Management and Dormant Spray Management. The Coalition reports each currently implemented management practice per each site subwatershed in the Management Practice sections of MPURs (first priority in the 2011 MPUR, pages 50-80; second and third priority in 2012 MPUR, pages 67-124; fourth priority in this report). The Coalition then summarizes currently implemented practices by category. Figure 30 includes the acreage associated with a member if the member currently implements one or more management practice(s) per category (blue bars). Prior to focused outreach, growers employed practices to improve management of dormant spray applications, erosion and sediment, irrigation tailwater, pesticide applications and storm drainage. In some cases, Coalition representatives recommended for growers to implement additional management practices in one or more category.

As a result of focused outreach, growers in the first, second and third priority site subwatersheds implemented new management practices designed to address agricultural induced water quality impairments. Figure 30 includes the acreage associated with a member if the member implements one or more new management practice(s) per category (green bars). Across the 11 first, second and third high priority site subwatersheds, 45 members implemented 64 new management practices from 2009 through 2012 (Table 29). The number and type of practices implemented by members varies among site subwatersheds because each location is unique in both water quality impairments and causes of the impairments.

Table 30 lists the number of acres associated with each newly implemented management practice in the first, second and third priority site subwatersheds. Growers implemented several new practices in the Pest Management and Dormant Spray Management categories to manage spray drift. Growers take additional steps to better manage irrigation tailwater and storm drainage; the most common practices include reducing the volume of water used for irrigation and installing a device to control the timing of discharge (tailwater and/or storm water runoff).

**Figure 30. Targeted acreage of categories of current and newly implemented management practices in the first, second and third priority site subwatersheds.**

Targeted acreage associated with a grower is displayed if one or more practice(s) are implemented per category. Several practices serve multiple purposes and fall into more than one category, but practices are counted only once with their primary category.



**Table 29. Count of targeted growers implementing new management practices in first, second and third priority site subwatersheds.**

PRIORITY GROUP	SITE NAME	NUMBER OF GROWERS IMPLEMENTING:			COUNT OF NEW MPs IMPLEMENTED	NUMBER OF GROWERS:		% TARGETED GROWERS IMPLEMENTING NEW MPs
		1 NEW MP	2 NEW MPs	3 NEW MPs		IMPLEMENTING NEW MPs	TARGETED (FOLLOW UP)	
First (2008-2010)	Dry Creek @ Wellsford Rd	7	1	0	9	8	22	36%
	Duck Slough @ Hwy 99	3	3	1	12	7	20	35%
	Prairie Flower Drain @ Crows Landing	2	1	1	7	5	10	50%
	<b>1<sup>ST</sup> PRIORITY TOTAL</b>	<b>12</b>	<b>5</b>	<b>2</b>	<b>28</b>	<b>20</b>	<b>52</b>	<b>38%</b>
Second (2010-2012)	Bear Creek @ Kibby Rd	2	1	0	4	3	14	21%
	Cottonwood Creek @ Rd 20	5	1	0	7	6	24	25%
	Duck Slough @ Gurr Rd	2	0	0	2	2	6	33%
	Highline Canal @ Hwy 99	2	2	0	6	4	8	50%
<b>2<sup>ND</sup> PRIORITY TOTAL</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>19</b>	<b>15</b>	<b>52</b>	<b>29%</b>	
Third (2011-2013)	Berenda Slough along Ave 18 ½	1	1	0	3	2	3	67%
	Dry Creek @ Rd 18	1	2	0	5	3	3	100%
	Lateral 2 ½ near Keyes Rd	2	0	1	5	3	3	100%
	Livingston Drain @ Robin Ave	1	0	1	4	2	3	67%
<b>3<sup>RD</sup> PRIORITY TOTAL</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>17</b>	<b>10</b>	<b>12</b>	<b>83%</b>	
<b>1<sup>ST</sup>, 2<sup>ND</sup> AND 3<sup>RD</sup> PRIORITY TOTAL</b>		<b>28</b>	<b>12</b>	<b>4</b>	<b>64</b>	<b>45</b>	<b>116</b>	<b>39%</b>

MP – Management Practice

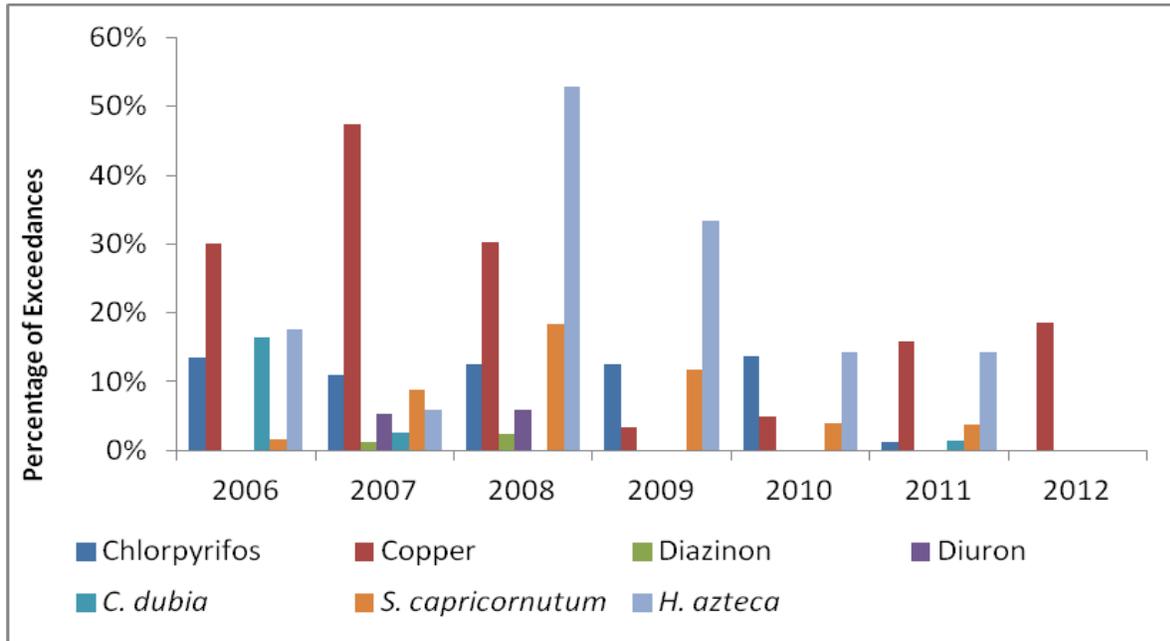
**Table 30. Targeted acreage of newly implemented management practices in the first, second and third priority site subwatersheds.**

PRACTICE CATEGORY	TARGETED ACREAGE:	1ST PRIORITY (2008-2010)	2ND PRIORITY (2010-2012)	3RD PRIORITY (2011-2013)				SUM OF ACREAGE	PCT OF TARGETED ACRES
				BERENDA SLOUGH ALONG AVE 18 ½	DRY CREEK @ RD 18	LATERAL 2 ½ NEAR KEYES RD	LIVINGSTON DRAIN @ ROBIN AVE		
		11,273	10,084	4,103	4,710	1,826	335	32,331	NA
<b>MANAGEMENT PRACTICES</b>									
Irrigation, Storm Runoff	Berms between field & waterway				402			402	
	Drainage Basins (Sediment Ponds)	271						271	1%
	Install device to control amount/timing of discharge to waterway	1,660			402			2,062	6%
	Microirrigation system	279	207				71	557	2%
	Recirculation - Tailwater return system	443						443	1%
	Reduce amount of water used in surface irrigation	1,197	1,028	48	189		71	2,533	8%
	Use Polyacrylamide (PAM)	150						150	<1%
Sediment and Erosion	Filter strips at least 10' wide around field perimeter	28	8					36	<1%
	Grass row centers	107						107	<1%
Pest, Dormant Spray	Calibrate spray equipment prior to every application					44		44	<1%
	Shut off outside nozzles when spraying outer rows next to sensitive sites	1,170	622	36		215		2,043	6%
	Spray areas close to waterbodies when the wind is blowing away from them		1,223	36	122	260	110	1,751	5%
	Use air blast applications when wind is 3-10 mph and upwind of sensitive sites		25					25	<1%
	Use electronic controlled sprayer nozzles		375					375	1%
	Use nozzles that provide largest effective droplet size to minimize drift		121			215		336	1%
NA	Other (Not specified) <sup>1</sup>	4,102						4,102	13%

<sup>1</sup>If growers implemented management practices other than those asked about during Coalition follow-up, they were instructed to indicate so and provide a summary/explanation.

Starting in 2009, the Coalition began evaluating the effectiveness of newly implemented management practices (Table 28). High priority management plan constituents monitored for management practice effectiveness include chlorpyrifos, copper, diazinon, diuron, *C. dubia* water column toxicity, *S. capricornutum* water column toxicity, and *H. azteca* sediment toxicity. Overall, the percentage of exceedances of WQTLs for these constituents decreased since focused outreach after 2008 (Figure 31, Tables 31 and 32). The number of samples collected for these constituents across the first, second and third high priority site subwatersheds varied from year to year due to changes in MPM schedules and the rotating Assessment Monitoring schedule. Tables 31 and 32 include the number of exceedances per year from 2006 through 2012, and the ratio of the number of exceedances relative to the number of samples collected (as a percentage) for the first, second and third high priority site subwatersheds; the percentage is graphed in Figure 31.

**Figure 31. Percentage of exceedances of WQTLs for high priority constituents in first, second and third priority site subwatersheds.**



**Table 31. Count of exceedances and samples collected for high priority pesticides in first, second and third priority subwatersheds.**

YEAR	CHLORPYRIFOS				COPPER <sup>1</sup>				DIAZINON				DIURON			
	COUNT OF EXCEEDANCES	COUNT OF SAMPLES <sup>2</sup>	% EXCEEDANCE	LBS APPLIED <sup>3</sup>	COUNT OF EXCEEDANCES	COUNT OF SAMPLES <sup>2</sup>	% EXCEEDANCE	LBS APPLIED <sup>3</sup>	COUNT OF EXCEEDANCES	COUNT OF SAMPLES <sup>2</sup>	% EXCEEDANCE	LBS APPLIED <sup>3</sup>	COUNT OF EXCEEDANCES	COUNT OF SAMPLES <sup>2</sup>	% EXCEEDANCE	LBS APPLIED <sup>3</sup>
2006	8	59	14%	77,245	12	40	30%	292,019	0	59	0%	3,816	0	45	0%	9,400
2007	9	82	11%	59,912	37	78	47%	207,708	1	78	1%	4,089	4	74	5%	9,734
2008	11	88	13%	36,567	26	86	30%	159,762	2	85	2%	2,355	5	84	6%	8,636
2009	3	24	13%	40,435	1	30	3%	155,328	0	17	0%	1,855	0	12	0%	8,261
2010	4	29	14%	39,178	3	60	5%	206,135	0	14	0%	1,148	0	17	0%	8,597
2011	1	86	1%	35,505	25	158	16%	245,591	0	73	0%	1,131	0	74	0%	13,189
2012	0	20	0%	37,199	5	27	19%	190,464	0	14	0%	410	0	19	0%	9,966

<sup>1</sup>Since 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 a site is scheduled for copper total and copper dissolved analysis, only one sample is counted for copper). Concentrations from a single sample collected from one site during one event have never exceeded both the total and dissolved copper WQTLs.

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

<sup>3</sup>All PUR data are considered preliminary until received from California Pesticide Information Portal (CalPIP); CalPIP data are available through December 2010.

NA – Not applicable, no samples were collected for the constituent during the year.

**Table 32. Count of toxicities and samples collected for high priority toxic analysis in first, second and third priority subwatersheds.**

YEAR	<i>C. DUBIA</i> TOXICITY			<i>S. CAPRICORNUTUM</i> TOXICITY			<i>H. AZTECA</i> TOXICITY		
	COUNT OF TOXICITIES	COUNT OF SAMPLES <sup>1</sup>	% TOXIC	COUNT OF TOXICITIES	COUNT OF SAMPLES <sup>1</sup>	% TOXIC	COUNT OF TOXICITIES	COUNT OF SAMPLES <sup>1</sup>	% TOXIC
2006	10	61	16%	1	59	2%	3	17	18%
2007	2	78	3%	7	79	9%	1	17	6%
2008	0	88	0%	16	87	18%	9	17	53%
2009	0	12	0%	2	17	12%	1	3	33%
2010	0	15	0%	1	25	4%	1	7	14%
2011	1	74	1%	3	80	4%	2	14	14%
2012	0	18	0%	0	21	0%	0	6	0%

<sup>1</sup>Samples refers to all samples scheduled for constituent analysis (dry sites are included). Resampling events are not scheduled monitoring events and are not included.

NA – Not applicable, no samples were collected for the constituent during the year.

## Chlorpyrifos

Chlorpyrifos is a high priority constituent for all first, second and third priority site subwatersheds. As stated in previous sections, the Coalition discussed with growers the importance of irrigation and storm water management as well as encouraged the adoption of management practices to reduce spray drift. Prior to 2009, the number of exceedances of the WQTL for chlorpyrifos in the first, second and third priority site subwatersheds ranged from eight to 11 samples representing 11 – 14% of the samples analyzed (Table 31). In 2009 and 2010, the number of exceedances was reduced to less than five per year. In 2011, there was only a single exceedance of the WQTL for chlorpyrifos and no exceedances in 2012 (Table 31). Pesticide Use Report data indicate less chlorpyrifos was applied to the first, second and third priority site subwatersheds in 2012 compared to 2009 and 2010; however, more chlorpyrifos was applied in 2012 compared to 2011 (Table 31). The most notable decrease in chlorpyrifos use occurred from 2006 to 2008 with a decrease from 77,245 pounds in 2007 to 36,567 pounds in 2008 (Table 31). The Coalition received approval on May 30, 2012 to remove chlorpyrifos from the active management plans for Duck Slough @ Hwy 99, Prairie Flower Drain @ Crows Landing Rd, Bear Creek @ Kibby Rd, Duck Slough @ Gurr Rd and Highline Canal @ Hwy 99 as a result of improved water quality. The Coalition petitioned to remove chlorpyrifos from the Cottonwood Creek @ Rd 20 active management plan on November 7, 2012.

## Copper

Copper is included in management plans for all the first, second and third priority site subwatersheds except Prairie Flower Drain @ Crows Landing Rd and Lateral 2 ½ near Keyes Rd. The amount of copper applied in 2012 compared to 2011 was less but use remains high (Table 30). The percentage of exceedances of copper was less in 2011 (16%) and 2012 (19%) compared to the percentage of exceedances before focused outreach began in 2009 (Table 31). The Coalition began to monitor for both the total and dissolved fractions of copper in October 2008 to better characterize copper contamination. The bioavailable fraction of the metal in the water column is more accurately estimated in samples collected after October 1, 2008 and may be a contributing factor to the lower number of exceedances. The majority of exceedances of the hardness based WQTL for copper from 2010 through 2012 occurred in samples collected from site subwatersheds in Zone 6 (28 of 33 exceedances).

Growers within all site subwatersheds implemented additional management practices designed to prevent the offsite movement of copper including management of spray drift and irrigation/storm runoff (Table 30). Sources of copper in waterways within the ESJWQC region include naturally elevated concentrations of copper in the soils or source waters and anthropogenic sources including applications by growers and applications by water districts. Only one source of copper is under the control of Coalition members: discharges from irrigated agriculture. Management practices implemented by growers can be effective and still not eliminate exceedances of the hardness based WQTL for copper. The Coalition received approval on May 30, 2012 to remove copper from the Dry Creek @ Wellsford Rd site subwatershed active management plan and petitioned on November 7, 2012 to remove copper from the Bear Creek @ Kibby Rd active management plan. The Coalition will continue to monitor for copper in the other first, second and third priority site subwatersheds to assess water quality improvements.

## Diazinon

Cottonwood Creek @ Rd 20 and Dry Creek @ Rd 18 are the only site subwatersheds with diazinon in their management plans. A single exceedance of the WQTL for diazinon occurred in 2008 in Cottonwood Creek @ Rd 20. Two exceedances of the WQTL for diazinon occurred in Dry Creek @ Rd 18, once in 2007 and once in 2008. All samples with exceedances of the WQTL for diazinon were collected during storm events. During individual contacts, the Coalition encouraged orchard operators to implement management practices during the dormant spray/storm season. These practices, along with declining diazinon applications, have been effective in reducing the number of exceedances. No exceedances of the WQTL for diazinon have occurred since 2008 (Table 31), and diazinon has not been detected since a storm sampling event in February 2009. The Coalition received approval on May 30, 2012 to remove diazinon from the Cottonwood Creek @ Rd 20 site subwatershed active management plan and petitioned on November 7, 2012 to remove diazinon from the Dry Creek @ Rd 18 active management plan.

## Diuron

Diuron is listed in the management plans for Dry Creek @ Wellsford Rd, Cottonwood Creek @ Rd 20 Highline Canal @ Hwy 99 and Dry Creek @ Rd 18 site subwatersheds. Between 2007 and 2008, there were nine exceedances of the WQTL for diuron; the majority of exceedances occurred in samples collected during storm events in either January or February (Table 31). The Coalition discussed the importance of preventing offsite movement of dormant spray pesticides and herbicides such as diuron during individual grower meetings. Growers in the three site subwatersheds implemented several management practices designed to address storm water runoff and dormant spray applications (e.g. maintaining filter strips at least 10 feet wide, spray areas close to waterbodies when the wind is blowing away from them; Table 30). These management practices are effective in reducing the offsite movement of diuron; no exceedances of the WQTL for diuron have occurred since 2008 while the pounds of diuron applied remains at or slightly above the amount applied in 2007 and 2008 (Table 31). The Coalition received approval on May 30, 2012 to remove diuron from the Dry Creek @ Wellsford Rd, Cottonwood Creek @ Rd 20 and Highline Canal @ Hwy 99 site subwatershed active management plans and petitioned on November 7, 2012 to remove diuron from the Dry Creek @ Rd 18 active management plan.

## C. dubia toxicity

Management plans were implemented for *C. dubia* toxicity in the Dry Creek @ Wellsford Rd, Prairie Flower Drain @ Crows Landing Rd, Bear Creek @ Kibby Rd, Duck Slough @ Gurr Rd and Highline Canal @ Hwy 99 site subwatersheds. Across the ESJWQC region, water toxicity to *C. dubia* is often caused, either partially or entirely, by organophosphates in surface waterways. The Coalition's strategy for *C. dubia* toxicity is to focus on chlorpyrifos and diazinon water quality impairments to address the toxicity. Since focused outreach began in 2009, there has been only one *C. dubia* toxicity in the first, second and third priority site subwatersheds (Table 32). The single *C. dubia* toxicity occurred in 2011 in samples collected from Prairie Flower Drain @ Crows Landing Rd and coincided with exceedances of carbaryl (five times the WQTL) and dimethoate (10 times the WQTL). The Toxicity Identification Evaluation (TIE) indicated pyrethroids were the cause of toxicity. The Coalition identified the Pesticide Control Adviser (PCA) who

advised the grower who applied the carbaryl that resulted in the exceedance and discussed water quality concerns and applicable management practices. The Coalition emphasizes during general and focused outreach that all pesticides carry risks for water quality and preventing the offsite movement of all pesticides via storm water, irrigation tailwater, and/or sediment, is the most effective method to eliminate water quality impairments. The Coalition recognizes it will need to continue to inform growers of the risks of switching to alternative pesticides and plans to continue to do so during both general and focused outreach efforts. Due to the improvement in water quality with respect to *C. dubia* toxicity, the Coalition received approval on May 30, 2012 to remove *C. dubia* toxicity from the Bear Creek @ Kibby Rd site subwatershed active management plan and petitioned on November 7, 2012 to remove *C. dubia* toxicity from the Duck Slough @ Gurr Rd active management plan.

### ***S. capricornutum* toxicity**

Management plans were implemented for *S. capricornutum* toxicity in all first, second and third priority site subwatersheds except Bear Creek @ Kibby Rd, Cottonwood Creek @ Rd 20 and Lateral 2 ½ near Keyes Rd. Since focused outreach began in 2009, *S. capricornutum* toxicity occurred in samples collected from the Prairie Flower Drain @ Crows Landing Rd site subwatershed once in 2009, once in 2010 and three times in 2011 (Table 32). Since 2009, samples collected from the other high priority site subwatersheds were not toxic to *S. capricornutum* (Table 32).

Potential sources of past toxicity include metals, ammonia and herbicides. Prairie Flower Drain contains both irrigated agricultural and dairy parcels that discharge to the drain. Management practices implemented by members within the Prairie Flower site subwatershed may be effective and still not eliminate all exceedances. The Coalition will continue to monitor for *S. capricornutum* toxicity at Prairie Flower Drain during months of past exceedances and when the site rotates into Assessment Monitoring. The Coalition received approval on May 30, 2012 to remove *S. capricornutum* toxicity from the Dry Creek @ Wellsford Rd, Duck Slough @ Hwy 99 and Duck Slough @ Gurr Rd site subwatershed active management plans and petitioned on November 7, 2012 to remove *S. capricornutum* toxicity from the Berenda Slough along Ave 18 ½ and Highline Canal @ Hwy 99 active management plans.

### ***H. azteca* toxicity**

Management plans were implemented for *H. azteca* toxicity (sediment) in the Dry Creek @ Wellsford Rd, Prairie Flower Drain @ Crows Landing Rd, Duck Slough @ Gurr Rd, Highline Canal @ Hwy 99 and Dry Creek @ Rd 18 site subwatersheds. The Coalition discussed management practices to address sediment toxicity during its focused outreach to growers in the first, second and third priority site subwatersheds. Since focused outreach began in 2009, *H. azteca* toxicity has not occurred in the Prairie Flower Drain @ Crows Landing Rd, Highline Canal @ Hwy 99 and Dry Creek @ Rd 18 site subwatersheds. However, *H. azteca* toxicity occurred once in the Dry Creek @ Wellsford Rd (September 2011) and twice in the Duck Slough @ Gurr Rd site subwatershed (September 2010 and September 2011; Table 32). Pesticide Use Reports indicate both chlorpyrifos and various pyrethroids were applied prior to all three exceedances. The management practices recommended by the Coalition to reduce the offsite movement of storm water, irrigation tailwater, and/or sediment are effective in that, overall, there was a reduction in the percentage of *H. azteca* toxicities in 2011 and 2012 compared to the percentage of toxicities in 2008

(first, second and third priority site subwatersheds 0 – 14% compared to 53%, Table 32). The Coalition petitioned on November 7, 2012 to remove *H. azteca* toxicity from the Prairie Flower Drain @ Crows Landing Rd and Highline Canal @ Hwy 99 active management plans.

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## COALITION WIDE EVALUATION

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Monitoring results from across the Coalition region indicate water quality has improved in several ESJWQC high priority management plan site subwatersheds in recent years. Under the 2008 MRPP, the Coalition can petition to remove a constituent from an active site subwatershed management plan if monitoring results indicate no exceedances of the WQTL for a particular constituent during two or more consecutive years of monitoring at the site during months of past exceedances. The Coalition received approval on May 30, 2012 to remove several constituents from the active management plans of 14 site subwatersheds (Table 33). Additionally, the Coalition submitted a second letter to the Regional Board on November 7, 2012 petitioning to remove constituents from the active management plan of 10 site subwatersheds (Table 33). Overall, the Coalition has received approval or approval is pending to remove 44 specific site subwatershed/constituent pairs from active management plan (Table 33).

The Coalition focused on water quality impairments due to chlorpyrifos during general outreach and focused outreach in high priority site subwatersheds (focused outreach began in 2009). Since the implementation of the Coalition's Management Plan in 2008, there has been an overall decrease in the number and percentage of chlorpyrifos exceedances across the entire ESJWQC region (Table 34 and Figure 32). Growers are applying less chlorpyrifos across the Coalition region (Table 34).

During 2012, the Coalition conducted MPM at 14 sites from January through March (Table 1 and Figure 33). Management Plan Monitoring was temporarily suspended beginning in April of 2012, and MPM during April through December of 2012 occurred only at Bear Creek @ Kibby Rd and at sites scheduled for Assessment Monitoring (Table 2 and Figure 34). Of the 34 MPM samples scheduled to be collected and analyzed for chlorpyrifos in 2012, the Coalition collected and analyzed 15. The 15 samples were collected from site subwatersheds where focused outreach is complete and where outreach is in progress. In addition to MPM, the Coalition conducted Assessment Monitoring on a monthly basis at six sites during 2012. The Coalition conducted focused outreach in two of the six site subwatersheds for which Assessment Monitoring occurred in 2012 whereas only general outreach occurred in the other four. There were no exceedances of the WQTL for chlorpyrifos and no detections of chlorpyrifos in samples collected during 2012 in the ESJWQC region (Figure 32). Therefore, both general and focused outreach have resulted in fewer detections of chlorpyrifos.

**Table 33. Status of management plan constituents at ESJWQC site subwatersheds.**

Active - X, removed – grey cell, or pending approval to remove - P.

SITE SUBWATERSHED	MOST RECENT ASSESSMENT MONITORING	FUTURE ASSESSMENT MONITORING	DO*	pH*	SC*	ARSENIC	COPPER (TOTAL & DISSOLVED)	LEAD (TOTAL & DISSOLVED)	MOLYBDENUM	AMMONIA	E. COLI	NITRATE/NITRITE	TDS	CHLORPYRIFOS	DDE	DIAZINON	DIMETHOATE	DIURON	SIMAZINE	C. DUBIA TOXICITY	H. AZTECA TOXICITY	P. PROMELAS TOXICITY	S. CAPRICORNUTUM TOXICITY
Ash Slough @ Ave 21	2010	2015					X																
Bear Creek @ Kibby Rd	2008†	2023		X			P				X												
Berenda Slough along Ave 18 1/2	2012	2017	X				X				X			X									P
Black Rascal Creek @ Yosemite Rd	2008†	2025	X	X				X			X			X							X		
Cottonwood Creek @ Rd 20	2011	2014	X				X	X			X			P									
Deadman Creek @ Gurr Rd	2010	2015	X	X	X	X				X	X		X	X							X		X
Deadman Creek @ Hwy 59	2012	2017	X			X					X			X									P
Dry Creek @ Rd 18	2008†	2014	X	X			X	X			X			X		P		P			X		X
Dry Creek @ Wellsford Rd	2011	2014	X	X							X		X	X							X	X	
Duck Slough @ Gurr Rd**	2011	2014	X	X			X	X			X										P	X	
Hatch Drain @ Tuolumne Rd	2008†	2024	X		X	X					X	X	X								X		X
Highline Canal @ Hwy 99	2011	2014		X			X	X			X										X	P	P
Highline Canal @ Lombardy Rd	2011	2015		X			X	X			X			P							P	P	X
Hilmar Drain @ Central Ave	2008†	2020	X	X	X		X			X	X	X	X					X			X		X
Howard Lateral @ Hwy 140	2010	2029		X	X		X				X		X	X									
Lateral 2 ½ near Keyes Rd	2010	2028		X										X									
Levee Drain @ Carpenter Rd	2012	2013			X						X	X	X										
Livingston Drain @ Robin Ave	2008†	2021		X			X	P			X			X									X
McCoy Lateral @ Hwy 140	2012	after 2029		X			X																
Merced River @ Santa Fe	2011	2014						X			X			X							X		
Miles Creek @ Reilly Rd	2008†	2013	X				X	X			X			X							X	X	X
Mootz Drain downstream of Langworth Pond	2010	2015	X							X	X			X				X					
Mustang Creek @ East Ave	2010	2013	X		X		X				X	X	X		X								
Prairie Flower Drain @ Crows Landing Rd	2011	2014	X		X				X	X	X	X	X				X				X	P	X
Rodden Creek @ Rodden Rd	2012	2017									X												
Silvia Drain @ Meadow Rd	2008†	2027	X				X			X	X			X							X	X	
Westport Drain @ Vivian Rd	2008†	2026	X		X						X	X	X	X									X
<b>Total Approved to be removed 2012 (Grey Cells)</b>			<b>2</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>Total Pending 2013 (P)</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>3</b>
<b>Total Management Plan Constituents Remaining Active (X)</b>			<b>16</b>	<b>13</b>	<b>8</b>	<b>3</b>	<b>15</b>	<b>9</b>	<b>1</b>	<b>5</b>	<b>24</b>	<b>6</b>	<b>9</b>	<b>16</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>10</b>	<b>10</b>	<b>2</b>	<b>12</b>

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

\*\*Duck Slough @ Hwy 99 site subwatershed was removed from the Coalitions monitoring schedule; all remaining management plan constituents are monitored at the Duck Slough @ Gurr Rd location. Three constituents were approved for removal from Duck Slough @ Hwy 99 before the site was removed from the monitoring plan (DO, chlorpyrifos and *S. capricornutum* toxicity).

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

**Table 34. Count of exceedances of the WQTL and samples collected for chlorpyrifos across the ESJWQC region.**  
 Management Plan Monitoring at upstream sites are not included.

YEAR	EXCEEDANCE COUNT	SAMPLES <sup>1</sup>	% EXCEEDANCE	LBS APPLIED <sup>2</sup>
2006	17	115	15%	199,664
2007	19	180	11%	157,374
2008	27	218	12%	117,874
2009	5	97	5%	145,748
2010	9	93	10%	116,018
2011	3	147	2%	102,479
2012	0	82	0%	85,066

<sup>1</sup> Samples refers to all samples collected for constituent analysis (MPM at upstream sites not included).

<sup>2</sup> All PUR data are considered preliminary until received from CalPIP; CalPIP data are available through December 2010.

**Figure 32. Percentage of exceedances of the WQTL for chlorpyrifos from 2006 through 2012 in the ESJWQC region.**

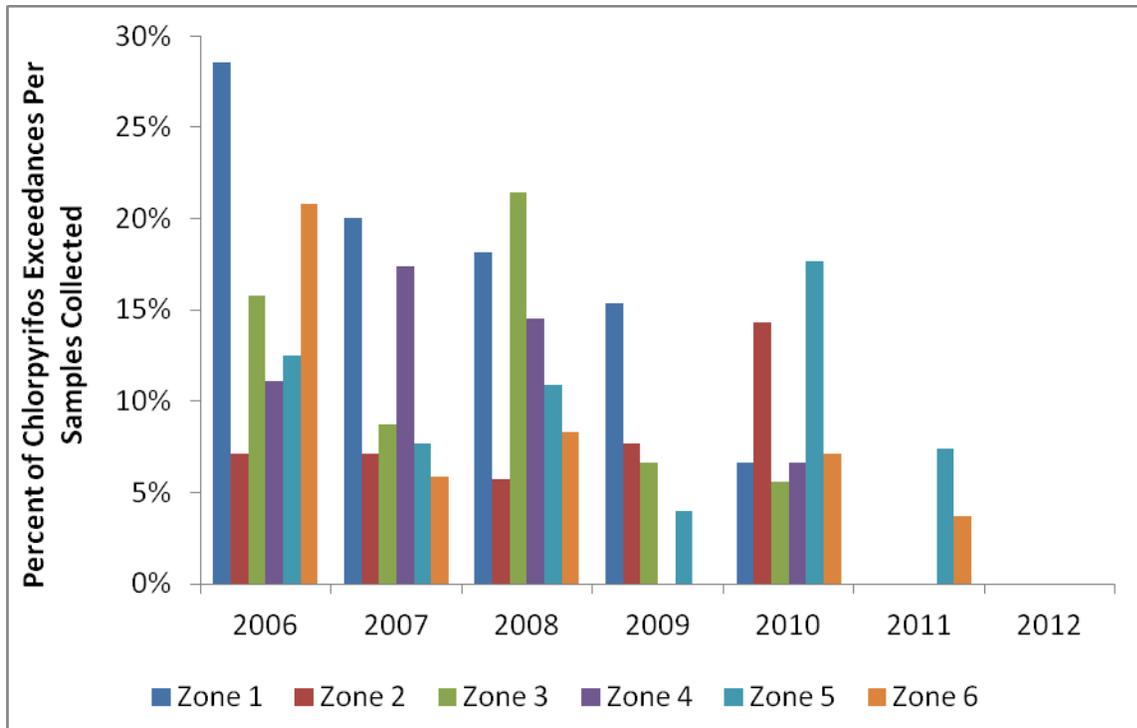
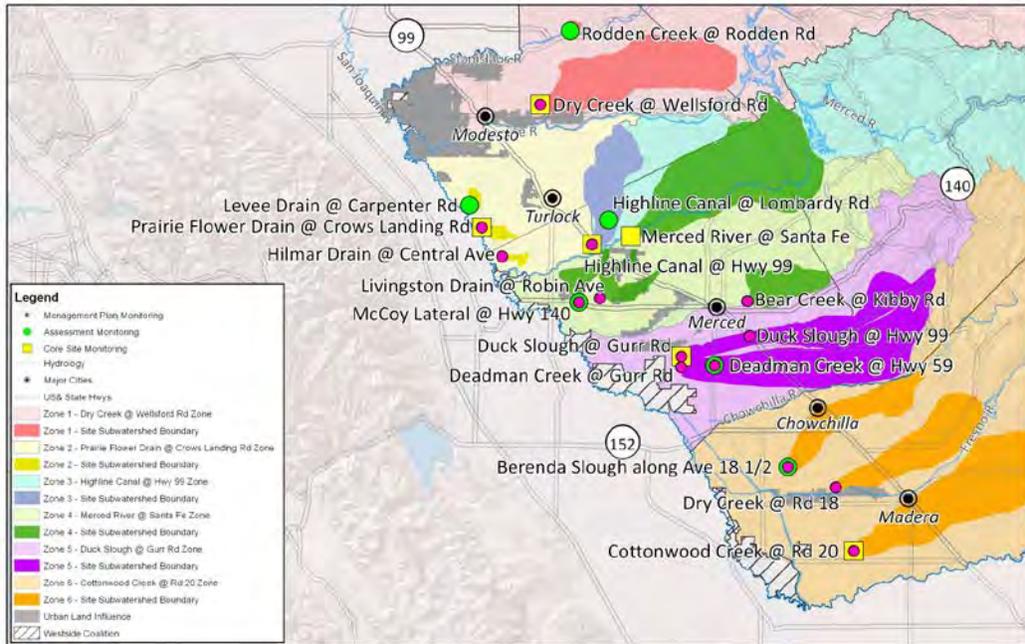
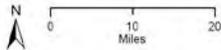


Figure 33. ESJWQC January through March 2012 monitoring sites relative to zone boundaries.

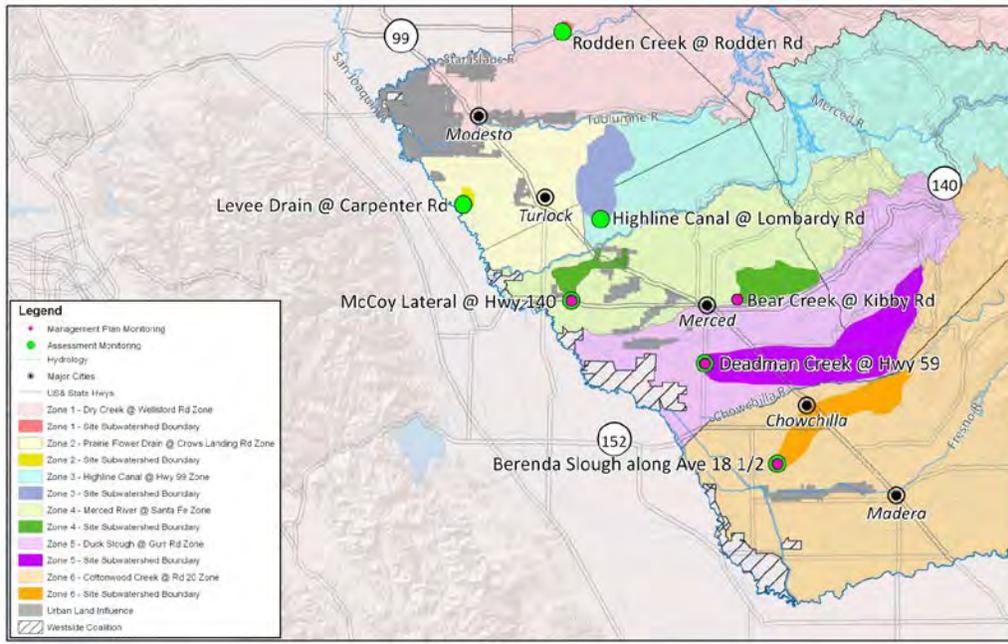


ESJWQC January - March 2012 Monitoring Sites  
 Zone Boundaries & Urban Land Influence

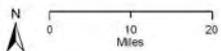


ESJWQC\_2012\_ammr

Figure 34. ESJWQC April through December 2012 monitoring sites relative to zone boundaries.



ESJWQC April - December 2012 Monitoring Sites  
 Zone Boundaries & Urban Land Influence



ESJWQC\_2012\_ammr

## Funding Resources

In 2012, growers across the Coalition region utilized external funding resources to aid in the implementation of management practices designed to address water quality impairments caused by agriculture. The Coalition reviewed funding data provided by organizations managing the distribution of financial support to growers for the implementation of management practices. The two main organizations are the Coalition for Urban/Rural Environmental Stewardship (CURES) and the Natural Resource Conservation Service (NRCS). The CURES office manages the distribution of Proposition 84 funds and the associated cost share program. The county NRCS offices manage the distribution of Agricultural Water Enhancement Program (AWEP) and Environmental Quality Incentives Program (EQIP) funding cost share programs. The data provided below are from Madera, Merced and Stanislaus County offices.

The AWEP funds are specific to agriculture and a group 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. The AWEP funds are distributed through the county NRCS offices. Funds were made available to support management practice implementation on farms and dairies with operations bordering waterways within site subwatersheds covered by management plans in Stanislaus and Merced Counties. Alternatively, 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.

Data obtained from CURES regarding Proposition 84 funding indicate there were five contracts awarded in 2012 worth \$603,689 to growers within the ESJWQC (Table 35). Proposition 84 funding is a 50% cost share program; therefore, the total cost of the management practices is twice the amount listed. Growers utilized Proposition 84 funds to install microirrigation systems. Proposition 84 funds awarded in 2012 are associated with 737 acres in Merced County within the ESJWQC region (Table 35).

**Table 35. Proposition 84 funding contracts awarded, contract dollars and contract acres Merced County.**

Data provided to the Coalition are considered preliminary.

COUNTY	FUNDING YEAR	PROGRAM	PRACTICE NAME	TOTAL NUMBER OF CONTRACTS AWARDED	TOTAL CONTRACT DOLLARS <sup>1</sup>	TOTAL CONTRACT ACREAGE
Merced	2011-2012	Proposition 84	Microirrigation	2	\$167,765	156
	2012-2013			3	\$435,924	581
<b>TOTAL</b>				<b>5</b>	<b>\$603,689</b>	<b>737</b>

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

The NRCS offices for the three counties in the ESJWQC region award 100% of their appropriated AWEP and EQIP funds and always have more applications than available funds to be awarded. Table 36 summarizes total contract acreage associated with EQIP and AWEP funded management practices awarded in 2012. Growers from 16 site subwatersheds, which are either already high priority site

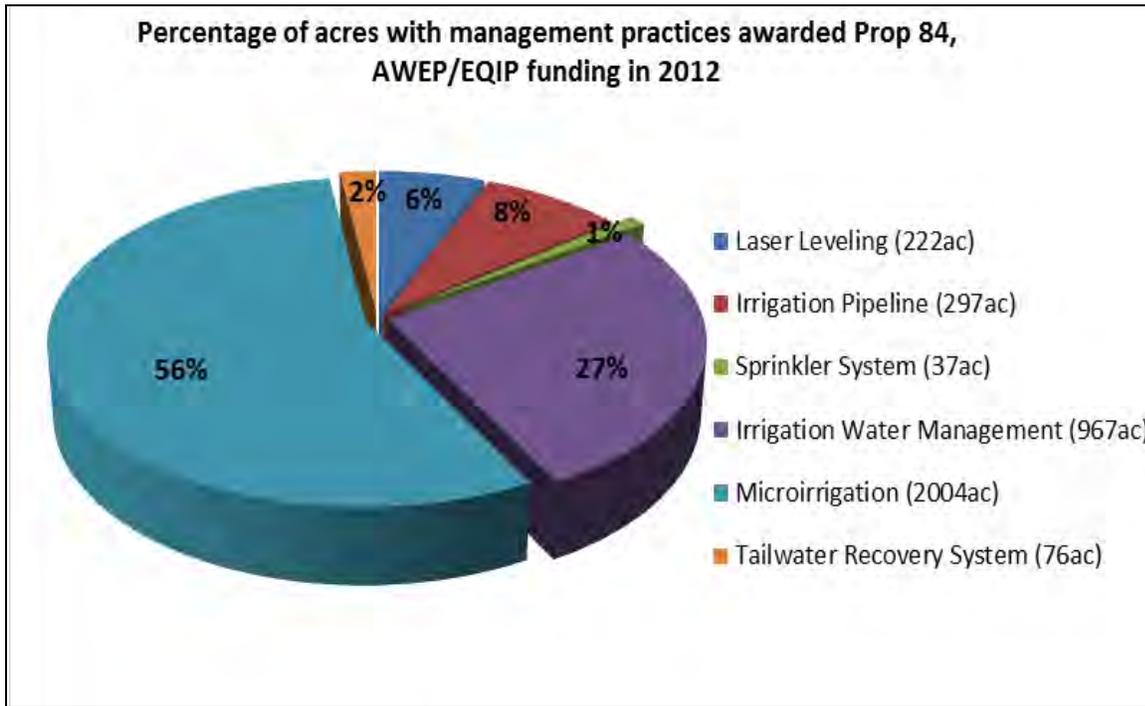
subwatersheds or are scheduled to rotate into high priority status, received funding to implement management practices. Of the management practices funded by AWEP and EQIP in the site subwatersheds monitored by the Coalition in 2012, microirrigation/drip irrigation systems were associated with the most acreage (1,267 acres), followed by irrigation water management (967 acres) and irrigation pipelines (297 acres, Table 36). When all funding awarded to the Coalition in 2012 are combined, 56% of Proposition 84, AWEP and EQIP funding was awarded for the installation of microirrigation systems, 27% to irrigation water management, and less than 10% of the acreage awarded funding was for management practices such as irrigation pipeline (8%), laser leveling (6%), tailwater recovery systems (2%) and sprinkler systems (1%, Figure 35).

**Table 36. Acres associated with management practices awarded AWEP and EQIP funding in site subwatersheds sampled in ESJWQC during 2012.**

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

COUNTY	PROGRAM AND FUNDING YEAR	SUBWATERSHED	HIGH PRIORITY YEARS	LASER LEVELING	IRRIGATION PIPELINE	SPRINKLER SYSTEM	IRRIGATION WATER MANAGEMENT	MICROIRRIGATION	TAILWATER RECOVERY SYSTEM
Madera	EQIP 2012	Cottonwood Creek @ Rd 20	2010-2012				37.4	37.4	
		Dry Creek @ Rd 18	2011-2013				0.6	0.6	
Merced	AWEP 2012	Bear Creek @ Kibby Rd	2010-2012					617	
		Deadman Creek @ Hwy 59	2012-2014		59.3				
		Duck Slough @ Hwy 99	2008-2010		43.7				
	EQIP 2012	Deadman Creek @ Hwy 59	2012-2014		147.3		324.8		
		Duck Slough @ Gurr Rd	2010-2012	103.2					
		Duck Slough @ Hwy 99	2008-2010	74.3			114.8	117	
		Highline Canal @ Hwy 99	2010-2012			18.1	104.6		
		Howard Lateral @ Hwy 140	2015-2017					37	
		Livingston Drain @ Robin Ave	2011-2013			17.8		17.6	
		McCoy Lateral @ Hwy 140	2016-2018					30	75.8
Merced River @ Santa Fe	2013-2015			1		1			
Stanislaus	AWEP 2012	Dry Creek @ Wellsford Rd	2008-2010					155.7	
		Dry Creek @ Wellsford Rd	2008-2010					42.8	
	EQIP 2012	Highline Canal @ Hwy 99	2010-2012				243.8		
		Lateral 2 1/2 near Keyes Rd	2011-2013				140.7	192.4	
		Prairie Flower Drain @ Crow Landing Rd	2008-2010	44.8	46.5				
		Rodden Creek @ Rodden Rd	2016-2018					18.9	
<b>TOTAL</b>				<b>222</b>	<b>297</b>	<b>37</b>	<b>967</b>	<b>1,267</b>	<b>76</b>

Figure 35. Proposition 84, AWEP and EQIP management practice acreages awarded funding in Madera, Merced and Stanislaus Counties in 2012.



The management practices funded by Proposition 84, AWEP, and EQIP programs to date include several of the management practices recommended by the Coalition during focused outreach. Proposition 84, AWEP, and EQIP funding information indicate growers are utilizing financial resources to implement management practices. These management practices are preventing the offsite movement of agricultural constituents to adjacent waterways in both high priority site subwatersheds and site subwatersheds that have not yet rotated into high priority status (e.g. Howard lateral @ Hwy 140, McCoy Lateral @ Hwy 140 and Rodden Creek @ Rodden Rd, Table 36). The data demonstrate that growers beyond those farming in the high priority site subwatersheds are taking actions to address agriculturally induced water quality impairments in the ESJWQC region.

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## STATUS OF TMDL CONSTITUENTS

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The Basin Plan includes Total Maximum Daily Load (TMDL) monitoring and reporting requirements, and dischargers must comply with the monitoring and management criteria specified per each TMDL. A narrative concerning each United States Environmental Protection Agency (US EPA) approved TMDL constituent is provided below to document the Coalition's strategy and actions to meet the TMDL requirements for Coalition members during 2012.

If an exceedance of the WQTL occurs for a TMDL constituent, a management plan is required for that constituent in that site subwatershed. A management plan for a TMDL constituent results in additional focused monitoring, source identification, and outreach within site subwatersheds. Coalition efforts include but are not limited to: 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, where applicable. Intensive outreach and documentation of implemented management practices occur throughout the Coalition; however, greater efforts to acquire this information are made in locations the Coalition has designated as high priority site subwatersheds (Table 6). Furthermore, the Coalition conducts annual meetings to provide growers with information on management practices designed to improve water quality. These actions, in addition to the actions described below, enable growers within the Coalition region to address the agricultural sources of TMDL constituents.

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### CHLORPYRIFOS AND DIAZINON TMDL

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The San Joaquin River chlorpyrifos and diazinon TMDL was adopted by the Regional Board in October 21, 2005 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 Lower San Joaquin River*). The TMDL was approved by the US EPA on December 20, 2006. Dischargers had until December 31, 2010 to be in compliance with the water quality objectives (WQOs) and loading capacity in the San Joaquin River and load allocations to the river for diazinon and chlorpyrifos.

The Lower San Joaquin River is divided into seven subareas, which include agricultural drainages monitored by the ESJWQC and the Westside San Joaquin River Watershed Coalition (Westside Coalition) under the Irrigated Lands Regulatory Program (ILRP). In order to be compliant with the Basin Plan Amendment, a surveillance and monitoring program was developed in 2010 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. The ESJWQC and the

Westside Coalition collaborated to develop a monitoring plan for assessing compliance of the Lower San Joaquin River concentration based loads at the six compliance points identified in the Basin Plan Amendment (Monitoring Objective 1). Sampling occurs on a monthly basis at three of the six compliance points (at Sack Dam, at Highway 165 near Stevinson, and at Las Palmas Avenue near Patterson). In the 2012 water year (October 2011 through September 2012), sampling occurred at the other three compliance points (at Hills Ferry Rd, at the Maze Boulevard (Highway 132) Bridge, and at the Airport Way Bridge near Vernalis) during October, March and May through August (Table 37). Both Coalitions independently assess compliance with Monitoring Objectives 2 -7 by reviewing the results of the San Joaquin River monitoring relative to the monitoring conducted in the upstream tributaries within each of the Coalition regions.

**Table 37. Monitoring frequency of San Joaquin River compliance points for the chlorpyrifos and diazinon TMDL.**

RESPONSIBLE COALITION	STATION NAME	MONITORING FREQUENCY IN 2012WY
Westside	San Joaquin River at Sack Dam	Monthly
Westside	San Joaquin River at Highway 165 near Stevinson <sup>1</sup>	Monthly
Westside	San Joaquin River at Fremont Ford <sup>1</sup>	Monthly
ESJWQC	San Joaquin River at Hills Ferry Road	Oct, Mar, and May through Aug
Westside	San Joaquin River at Las Palmas Avenue near Patterson	Monthly
ESJWQC	San Joaquin River at the Maze Boulevard (Highway 132) Bridge	Oct, Mar, and May through Aug
ESJWQC	San Joaquin River at the Airport Way Bridge near Vernalis	Oct, Mar, and May through Aug

<sup>1</sup> The San Joaquin River at Highway 165 near Stevinson site was sampled March through September 2012. Road construction beginning in October 2011 prevented access to the site, and a sample was unable to be collected during October 2011. Monitoring to assess TMDL compliance occurred at the San Joaquin River at Fremont Ford site from November 2011 through February 2012 in place of the San Joaquin River at Highway 165 near Stevinson site.

WY – Water year

There were no detections of chlorpyrifos or diazinon at any of the San Joaquin River compliance points (including San Joaquin River @ Fremont Ford) during the 2012 water year, and the Coalition therefore demonstrated compliance with load capacity. In addition, the ESJWQC did not detect chlorpyrifos or diazinon in any of the tributaries within the ESJWQC region during October 2011 through September 2012 and therefore demonstrated compliance with load allocations. A complete review of results from monitoring during the 2012 water year as well as an assessment of each Coalition’s compliance with Monitoring Objectives 1- 7 will be reported in the San Joaquin River Chlorpyrifos and Diazinon TMDL 2013 AMR (to be submitted May 1, 2013).

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## SALT AND BORON TMDL

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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), which is 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 needed to fulfill the goals of CV-SALTS, including coordinating meetings of the CV-SALTS committees. The Lower San Joaquin River Committee of CV-SALTS is tasked with reviewing relevant studies and developing the science and policy needed to justify a Basin Plan amendment for salt and boron in the San Joaquin River upstream of Vernalis.

Coalition representatives and technical consultants (Michael L. Johnson, LLC (MLJ-LLC)) attend CV-SALTS meetings and participate in planning and reviewing studies relevant to the development of a Basin Plan amendment (Table 38). In addition, the Coalition monitors for salt (SC and TDS), nitrates and boron in every zone and includes these constituents in conversations with growers about water quality impairments and applicable management practices (Table 39).

**Table 38. Coalition representatives and MLJ-LLC attendance to CV-SALTS meetings during 2012.**

ORGANIZATION	MEETING DATE	MEETING TITLE	COALITION REPRESENTATIVE IN ATTENDANCE
CV-SALTS	17-Jan-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	10-Feb-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	9-Mar-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	6-Apr-12	Executive Committee Meeting-Administrative	
CV-SALTS	11-May-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	8-Jun-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	16-Jul-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	10-Aug-12	Executive Committee Meeting-Administrative	
CV-SALTS	8-Oct-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	2-Nov-12	Executive Committee Meeting-Administrative	PK
CV-SALTS	19-Jan-12	Executive Committee Meeting-Policy	PK
CV-SALTS	16-Feb-12	Executive Committee Meeting-Policy	PK
CV-SALTS	5-Apr-12	Executive Committee Meeting-Policy	
CV-SALTS	19-Apr-12	Executive Committee Meeting-Policy	PK
CV-SALTS	24-May-12	Executive Committee Meeting-Policy	PK
CV-SALTS	19-Jul-12	Executive Committee Meeting-Policy	PK
CV-SALTS	23-Aug-12	Executive Committee Meeting-Policy	PK
CV-SALTS	10-Sep-12	Executive and Technical Advisory Committee Meeting-Policy	PK
CV-SALTS	20-Sep-12	Executive Committee Meeting-Policy	PK
CV-SALTS	18-Oct-12	Executive Committee Meeting-Policy	PK
CV-SALTS	8-Nov-12	Executive Committee Meeting-Policy	PK
CV-SALTS	24-Jan-12	BMP Subcommittee Meeting	PK
CV-SALTS	22-Feb-12	BMP Subcommittee Meeting	PK
CV-SALTS	1-May-12	BMP Subcommittee Meeting	PK
CV-SALTS	9-Feb-12	Lower San Joaquin River Committee Meeting	
CV-SALTS	22-Mar-12	Lower San Joaquin River Committee Meeting	
CV-SALTS	12-Apr-12	Lower San Joaquin River Committee Meeting	
CV-SALTS	31-May-12	Lower San Joaquin River Committee Meeting	
CV-SALTS	28-Jun-12	Lower San Joaquin River Committee Meeting	PK
CV-SALTS	30-Aug-12	Lower San Joaquin River Committee Meeting	

ORGANIZATION	MEETING DATE	MEETING TITLE	COALITION REPRESENTATIVE IN ATTENDANCE
CV-SALTS	1-Nov-12	Lower San Joaquin River Committee Meeting	PK
CV-SALTS	25-Jan-12	Technical Advisory Committee Meeting	
CV-SALTS	8-Mar-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	24-Apr-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	17-May-12	Technical Advisory Committee Meeting	MJ,PK
CV-SALTS	30-May-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	26-Jun-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	31-Jul-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	21-Aug-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	21-Sep-12	Technical Advisory Committee Meeting	
CV-SALTS	19-Oct-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	9-Nov-12	Technical Advisory Committee Meeting	MJ
CV-SALTS	12-Jun-12	Region Wide Salt and Nitrate Management Planning (CV-SALTS Initiative) Workshop	PK
CV-SALTS	26-Nov-12	Initial Concept Model and GIS Technical Services Project Workshop	

MJ – Michael Johnson, MLJ-LLC

PK – Parry Klassen, ESJWQC

**Table 39. ESJWQC sites monitored for salt (SC and TDS), nitrate, and boron during 2012.**

ZONE	SITE NAME	SC	TDS	NITRATE + NITRITE (AS N)	BORON (TOTAL)
Zone 1	Dry Creek @ Wellsford Rd	C	C	C	
	Rodden Creek @ Rodden Rd	A	A	A	A <sup>1</sup>
Zone 2	Hilmar Drain @ Central Ave	F			
	Levee Drain @ Carpenter Rd	A	A	A	A <sup>1</sup>
	Prairie Flower Drain @ Crows Landing Rd	C	C	C	
Zone 3	Highline Canal @ Hwy 99	C	C	C	
	Highline Canal @ Lombardy Rd	A	A	A	A <sup>1</sup>
Zone 4	Bear Creek @ Kibby Rd	F			
	Livingston Drain @ Robin Ave	F			
	McCoy Lateral @ Hwy 140	A	A	A	A <sup>1</sup>
	Merced River @ Santa Fe	C	C	C	
Zone 5	Deadman Creek @ Gurr Rd	F			
	Deadman Creek @ Hwy 59	A	A	A	A <sup>1</sup>
	Duck Slough @ Gurr Rd	C	C	C	
	Duck Slough @ Hwy 99	F			
Zone 6	Berenda Slough along Ave 18 1/2	A	A	A	A <sup>1</sup>
	Cottonwood Creek @ Rd 20	C	C	C	
	Dry Creek @ Rd 18	F			

C – Constituent monitored as part of Core Monitoring. Core Monitoring occurred from January through March 2012 as it was suspended for all sites on April 17, 2012.

A - Constituent monitored as part of Assessment Monitoring. Assessment Monitoring occurred monthly.

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

<sup>1</sup> The constituent was suspended from Assessment Monitoring for all sites on April 17, 2012; the constituent was sampled during a storm event on April 12, 2012.

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## DISSOLVED OXYGEN

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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.

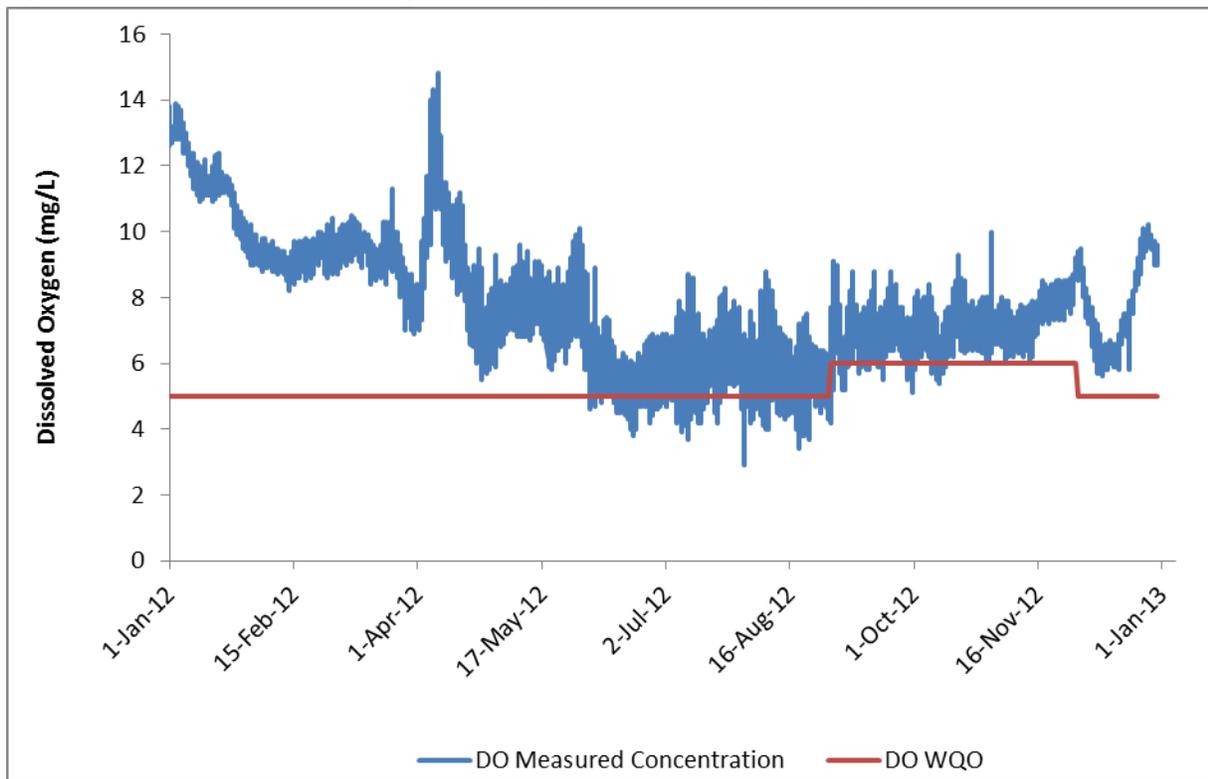
The Coalition reviews DO monitoring results in the Stockton DWSC and from within its tributaries to assess compliance with the DO WQOs required in the TMDL. The DO Basin Plan Amendment specifies that DO concentrations shall not be reduced below 5.0 mg/L from December 1 through August 31 and below 6.0 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 2012 (Figure 36). The Coalition selected this monitoring station because of its location within the Stockton DWSC and to be consistent with the Stockton DWSC Demonstration DO Aeration Facility reports (last report produced in June 2011). Dissolved oxygen is measured at the site on 15-minute intervals by an auto sampler.

During the months of January through August and December, the measured DO concentration was less than the WQO of 5.0 mg/L during 21 days in June, 20 days in July and 27 days in August (Figure 36). During September through November 2012, the measured DO concentration was less than the WQO of 6.0 mg/L during 16 days in September and eight days in October (the last day of 2012 with a noncompliant DO measurement was October 13, 2012; Figure 36). The Coalition defines a day as noncompliant with the WQO for DO if the measured DO concentration from one or more 15-minute interval is less than the WQO. Several of the noncompliant DO measurements occurred in sequences lasting over an hour. In general, the low DO levels occurred in the afternoon and early evening hours when air temperatures and, consequently, water temperature, peak for the day.

There were several more exceedances of the WQO for DO in the Stockton DWSC during 2012 compared to 2011. The only noncompliant DO concentrations were during September of 2011; the DO concentration was less than the WQO of 6.0 mg/L during at least one 15-minute interval event during five days in September 2011 (CA DWR, n.d.1). The reduced discharge during the months of June through October in 2012 compared to 2011 likely contributed to the more frequent low DO levels in 2012. The average measured flow at the Rough and Ready Island station from June through October of 2011 was 4,290 cfs whereas the average measured flow at the station during the same months of 2012 was 3,699 cfs (to account for tidal influence, the absolute values of flow measurements were used to calculate averages; CA DWR, n.d.2).

Figure 36. DO measurements at Rough and Ready Island from January 1 through December 31, 2012.



Source: CA DWR, n.d.1

The Coalition reviewed tributary monitoring results from the sampling events immediately prior to the noncompliant DO measurements in the Stockton DWSC: May 9, June 12, July 10, August 14, September 11 and October 9, 2012. The Coalition monitored for DO at seven site subwatersheds across the Coalition region (Table 40). There were nine exceedances of the WQTL for DO at four ESJWQC tributary sites, three in June and two each in the months of August, September and October (Table 41). The sample days in June, August and September followed several days of clear weather with ambient air temperatures reaching above 30°C. The low DO concentrations coincided with relatively high water temperatures, which were most likely a major causative factor. The ambient air temperatures in the days prior to sampling in October were not extreme (highs around 26°C), but discharge measured at the sites was less than 5 cfs (Table 41). In general, all sites had no or minimal flow at the time of sampling (Table 41). Given the high water temperatures in the tributaries and the other factors such as changing flow rates and waterway hydrology it is unlikely that these nine exceedances of the WQTL for DO contributed to the noncompliant DO measurements in the Stockton DWSC. The Coalition did not review DO results from tributary monitoring during other months because there were no DO impairments in the Stockton DWSC during other months. Even if low DO levels occurred in tributaries within the ESJWQC boundaries, the exceedances did not contribute to impairments in the DWSC.

**Table 40. Tributary sites monitored for DO during months associated with exceedances of the WQO for DO in the Stockton DWSC.**

ZONE	SITE NAME	9-MAY-12	12-JUN-12	10-JUL-12	14-AUG-12	11-SEP-12	9-OCT-12
1	Rodden Creek @ Rodden Rd	X	X	X	X	X	X
2	Levee Drain @ Carpenter Rd	X	X	X	X	X	X
3	Highline Canal @ Lombardy Rd	X	X	X	X	X	X
4	Bear Creek @ Kibby Rd	X		X	X		
4	McCoy Lateral @ Hwy 140	X	X	X	X	X	X <sup>1</sup>
5	Deadman Creek @ Hwy 59	X <sup>1</sup>	X	X	X <sup>1</sup>	X	X
6	Berenda Slough along Ave 18 1/2	X <sup>1</sup>	X	X	X	X <sup>1</sup>	X <sup>1</sup>

X – Monitored for DO

X<sup>1</sup> – Dry site

**Table 41. Exceedances of the WQTL for DO at tributary sites during months associated with exceedances of the WQO for DO in the Stockton DWSC.**

DWSC DO WQO <sup>1</sup> (MG/L)	ZONE	SITE NAME	SAMPLE DATE	DO (<7.0 MG/L)	WATER TEMPERATURE (°C)	DISCHARGE (CFS)
5.0	1	Rodden Creek @ Rodden Rd	12-Jun-12	6.97	17.1	3.46
	2	Levee Drain @ Carpenter Rd	12-Jun-12	5.65	29.7	2.76
	5	Deadman Creek @ Hwy 59	12-Jun-12	6.61	23.1	0
	2	Levee Drain @ Carpenter Rd	14-Aug-12	1.6	26.5	1.74
	6	Berenda Slough along Ave 18 1/2	14-Aug-12	3.72	22	0
6.0	2	Levee Drain @ Carpenter Rd	11-Sep-12	4.6	20.7	0.92
	5	Deadman Creek @ Hwy 59	11-Sep-12	4.92	20.8	4.19
	2	Levee Drain @ Carpenter Rd	9-Oct-12	3.93	18	1.33
	5	Deadman Creek @ Hwy 59	9-Oct-12	3.72	17.6	0

<sup>1</sup>The WQOs listed in the DO Basin Plan Amendment.

The Coalition is addressing exceedances of the WQTL for DO (<7 mg/L) 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 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. 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 Deep Water Ship Channel. The Coalition will continue to participate in meetings and review technical documents as they are made available.

## CONCLUSIONS

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Although monitoring during 2012 was reduced for some Assessment Monitoring constituents and temporarily suspended for MPM and Core Monitoring, results attained throughout 2012 indicate improved water quality throughout 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. Although 2012 was a unique monitoring year with reduced monitoring, results from MPM in January through March (before reduced monitoring) and results from Assessment Monitoring indicate fewer exceedances in high priority site subwatersheds where both general and focused outreach occurred, as well as in site subwatersheds where only general outreach occurred.
2. Agriculture may not be the only cause of water quality impairments due to elevated concentrations of copper in the Coalition region.
3. Growers in the ESJWQC region are taking advantage of available funding resources to implement management practices that improve water quality.
4. Growers across the ESJWQC 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.
5. The drop in exceedances in the Coalition region coincides with implementation of management practices encouraged by the Coalition.
6. The Coalition's focused management practice outreach and tracking strategy is effective at improving water quality. Monitoring results indicate two consecutive years of monitoring with no exceedances of the WQTLs 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. The Coalition was approved on May 30, 2012 to remove 33 specific site subwatershed/ constituent pairs from the active management plan and, based on 2012 monitoring results, petitioned on November 7, 2012 to remove an additional 14 specific site subwatershed/ constituent pairs from the active management.
7. During the 2012 water year, the ESJWQC was in compliance with load capacity and load allocation requirements of the chlorpyrifos and diazinon TMDL.

## SITE SUBWATERSHED MANAGEMENT PLAN UPDATE

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Listed below are brief descriptions of all site subwatersheds included in the ESJWQC Management Plan as of April 1, 2013. 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. Further analysis of the first (2008-2010), second (2010-2012), third (2011-2013), fourth (2012-2014) and fifth (2013-2015) high priority site subwatersheds is included in Appendix I.

### **Ash Slough @ Ave 21**

The Ash Slough @ Ave 21 site subwatershed is a rotating Assessment Monitoring location within the Cottonwood Creek @ Rd 20 Zone (Zone 6). Monitoring occurred at the site from the 2005 irrigation season through 2010 (Assessment Monitoring from fall of 2008 through 2010). However, following the 2006 irrigation season, Ash Slough @ Ave 21 was dry during all events in 2007 through 2010 except two (May 2009 and April 2010). Assessment Monitoring is scheduled to occur again in 2015 and 2016.

Focused outreach and MPM will begin in the Ash Slough @ Ave 21 site subwatershed in 2015, and copper is the only active management plan constituent. The Coalition received approval on May 30, 2012 to remove chlorpyrifos, *E. coli*, and lead from the active management plan. Additional MPM for chlorpyrifos and copper was scheduled in 2007 and 2008; however, the site was dry during all sampling events. During the only two Assessment Monitoring events for which water was present since 2006 (May 2009 and April 2010), exceedances of the hardness based dissolved copper WQTL during both events.

Initially, the Coalition scheduled Ash Slough @ Ave 21 to be a part of the third set of high priority management plan site subwatersheds (focused outreach 2011-2013). However, because Ash Slough @ Ave 21 was dry during the majority of Assessment Monitoring in 2008 through 2010, the Coalition received approval on November 17, 2010 to move the site to the seventh set of high priority site subwatersheds (focused outreach 2015-2017).

### **Bear Creek @ Kibby Rd**

The Bear Creek @ Kibby Rd site subwatershed is a rotating Assessment Monitoring location within the Merced River @ Santa Fe Zone (Zone 4). Sampling was initiated at Bear Creek @ Kibby Rd during the storm season of 2005 and continued through irrigation season of 2008. Assessment Monitoring is scheduled to occur in 2023 and 2024.

Bear Creek @ Kibby Rd is one of the Coalition's second priority site subwatersheds, and active management plan constituents include copper, *E. coli* and pH. The Coalition received approval on May 30, 2012 to remove chlorpyrifos, DO, and *C. dubia* toxicity and petitioned on November 7, 2012 to remove copper from the active management plan. Additional MPM at Bear Creek @ Kibby Rd occurred in 2008 (May and July) for chlorpyrifos and *C. dubia* toxicity. The Coalition resumed MPM in 2010 and

will continue through 2013 during months of past exceedances; there were two exceedances of the WQTL for pH during 2012 MPM in Bear Creek @ Kibby Rd.

A summary of current, recommended and newly implemented management practices in the Bear Creek @ Kibby Rd site subwatershed is included in 2012 MPUR (pages 68-77).

#### **Berenda Slough along Ave 18 ½**

Berenda Slough along Ave 18 ½ is an Assessment Monitoring location within the Cottonwood Creek @ Rd 20 Zone (Zone 6). Monitoring at Berenda Slough along Ave 18 ½ first began in May 2006 and continued through the irrigation season of 2008. Assessment Monitoring occurred in 2011 through 2012 and is scheduled to occur again in 2017 and 2018.

Berenda Slough along Ave 18 ½ is one of the Coalition's third priority site subwatersheds, and active management plan constituents include chlorpyrifos, copper, DO, *E. coli* and *S. capricornutum* toxicity. The Coalition petitioned on November 7, 2012 to remove *S. capricornutum* toxicity from the active management plan. Chlorpyrifos and *S. capricornutum* toxicity were sampled as a part of additional MPM in 2007 and upstream MPM in 2008. All constituents were monitored monthly during 2012 as a part of Assessment Monitoring, and there were two exceedances of the hardness based WQTL for copper in 2012. The most recent exceedance of the WQTL for chlorpyrifos occurred in April 2011. Management Plan Monitoring during months of past exceedances will occur in 2013.

A summary of current practices is included in the 2012 MPUR (pages 101-106). A summary of recommended and newly implemented practices is included in the Third Priority Subwatersheds Summary of Management Practices section of this report.

#### **Black Rascal Creek @ Yosemite Rd**

Black Rascal Creek @ Yosemite Rd is an Assessment Monitoring location within the Merced River @ Santa Fe Zone (Zone 4). Monitoring was initiated at the site beginning in the irrigation season of 2006 and continued through the irrigation season of 2008. Assessment Monitoring is scheduled to occur in 2025 and 2026.

Black Rascal Creek @ Yosemite Rd is one of the Coalition's fourth priority site subwatersheds, and active management plan constituents include chlorpyrifos, DO, *E. coli*, lead, pH and *C. dubia* toxicity. During the irrigation season of 2008, MPM for *C. dubia* toxicity (May, July and August) and chlorpyrifos (May, July, August and September) occurred, and there were no exceedances. The three exceedances of the WQTL for chlorpyrifos in 2007 (two of which were associated with *C. dubia* toxicity) were the result of a single application by one grower, and the Coalition since worked with that grower to reduce offsite movement of the pesticide. The Coalition initiated its management practice tracking and outreach strategy in 2012 and has completed initial and follow up contacts with the single, targeted grower (Fourth Priority Summary of Management Practices section of this report). Management Plan Monitoring was scheduled to resume in 2012 but did not occur due to the suspension of MPM in 2012. Management Plan Monitoring will resume in 2013 for *C. dubia* toxicity (May, July and August),

chlorpyrifos (May, July, August and September), and lead (April and September) and will continue through 2014.

### **Cottonwood Creek @ Rd 20**

Cottonwood Creek @ Rd 20 is the Core Monitoring location in Zone 6. Monitoring at Cottonwood Creek @ Rd 20 first began in the storm season of 2005 and continued through 2012. The site was monitored for Core constituents in the fall of 2008 through 2010 and in 2012 (January through March only due to the suspension of Core Monitoring in 2012); Core Monitoring will occur in 2013. Assessment Monitoring occurred at the site in 2011 and is scheduled to occur every third year.

The Cottonwood Creek @ Rd 20 site subwatershed is one of the Coalition's second priority site subwatersheds, and active management plan constituents include chlorpyrifos, copper, DO, *E. coli*, and lead. The Coalition received approval on May 30, 2012 to remove diazinon and diuron and petitioned on November 7, 2012 to remove chlorpyrifos from the active management plan. Copper was sampled during additional MPM in 2007 and during upstream MPM at Cottonwood Creek @ Hwy 145 in 2008. In 2010, MPM resumed (chlorpyrifos, copper, diazinon and diuron) during months of past exceedances. During 2011, the only high priority MPM constituent with exceedances was dissolved copper (April, May, July, September and October). The site was dry during the three MPM events sampled in 2012 (only January through March due to the suspension of MPM in 2012). Management Plan Monitoring will resume during months of past exceedances in 2013.

A summary of current, recommended and newly implemented management practices in the Cottonwood Creek @ Rd 20 site subwatershed is included in the 2012 MPUR (pages 77-85).

### **Deadman Creek @ Gurr Rd**

Deadman Creek @ Gurr Rd is a rotating Assessment Monitoring location in the Duck Slough @ Gurr Rd Zone (Zone 5). Monitoring at Deadman Creek @ Gurr Rd first began during the irrigation season of 2004. Monitoring was not conducted during 2005 or in the storm season of 2006. Monitoring resumed during the 2006 irrigation season and continued through fall 2010. Assessment Monitoring began in the fall of 2008 and continued through 2010 as scheduled under the current 2008 MRPP. Assessment Monitoring is scheduled to occur again in 2015 and 2016.

The Deadman Creek @ Gurr Rd site subwatershed is one of the Coalition's fourth priority site subwatersheds, and active management plan constituents include ammonia, arsenic, chlorpyrifos, DO, *E. coli*, pH, SC, TDS, *C. dubia* toxicity, *P. promelas* toxicity, and *S. capricornutum* toxicity. The Coalition received approval on May 30, 2012 to remove copper from the active management plan. During 2008 and 2010 through March 2012, MPM occurred for high priority constituents during months of past exceedances (MPM in only January through March of 2012 due to the suspension of MPM). There were no exceedances of WQTLs for high priority constituents in 2012. The Coalition also initiated its management practice tracking and outreach strategy in 2012 and documented all current and some newly implemented management practices in the site subwatershed (Fourth Priority Summary of Management Practices section of this report). The Coalition will complete follow up contacts in 2013,

and MPM will resume in 2013 for *C. dubia* toxicity (February, March and November), chlorpyrifos (March, April, August and September), *P. promelas* toxicity (January through March, May, June, November and December), and *S. capricornutum* toxicity (February and July).

### **Deadman Creek @ Hwy 59**

Deadman Creek @ Hwy 59 is an Assessment Monitoring location in the Duck Slough @ Gurr Rd Zone and is upstream of Deadman Creek @ Gurr Rd (Zone 5). Monitoring began at the site in the irrigation season of 2006 and continued through the irrigation season of 2008. Assessment Monitoring occurred in 2011 through 2012 and will occur again in 2017 and 2018.

Deadman Creek @ Hwy 59 is one of the Coalition's fourth priority site subwatersheds, and active management plan constituents include arsenic, chlorpyrifos, DO, *E. coli*, pH and *S. capricornutum* toxicity. The Coalition petitioned on November 7, 2012 to remove *S. capricornutum* toxicity from the active management plan. Additional MPM occurred for chlorpyrifos in 2008 (August and September). During 2009 MPM occurred for chlorpyrifos (August and September) and *S. capricornutum* toxicity (April) and in 2010, *S. capricornutum* toxicity (January) occurred. During Assessment Monitoring in 2011, there were two exceedances of the WQTL for chlorpyrifos (April and September), but there were no exceedances of the WQTLs for high priority constituents during Assessment Monitoring in 2012. The Coalition initiated its management practice tracking and outreach strategy in 2012 and documented all current and some newly implemented management practices in the site subwatershed (Fourth Priority Summary of Management Practices section of this report). The Coalition will complete follow up contacts in 2013, and MPM will occur for chlorpyrifos and *S. capricornutum* toxicity.

### **Dry Creek @ Road 18**

Dry Creek @ Rd 18 is an Assessment Monitoring location within the Cottonwood Creek @ Rd 20 Zone (Zone 6). Monitoring began at the site during the 2005 irrigation season and continued through the 2008 irrigation season. Assessment Monitoring is scheduled for 2013 and 2014.

Dry Creek @ Rd 18 is one of the Coalition's third priority site subwatersheds, and active management plan constituents include chlorpyrifos, copper, diazinon, diuron, DO, *E. coli*, lead, pH, *H. azteca* toxicity, and *S. capricornutum* toxicity. The Coalition petitioned on November 7, 2012 to remove diazinon and diuron from the active management plan. In 2007 and 2008, extensive MPM was conducted to address persistent exceedances of the hardness based WQTL for copper, including five additional samples in 2007 and eight upstream samples in 2008. Exceedances of the hardness based WQTL for copper occurred in samples collected from almost every event in 2007 and 2008. Upstream MPM was also conducted for chlorpyrifos during the irrigation season of 2008 and no exceedances of the WQYL for chlorpyrifos occurred. In 2011, Dry Creek @ Rd 18 became a high priority site subwatershed and MPM was scheduled for several constituents; exceedances of the hardness based WQTL for copper occurred in seven of the eight months scheduled for copper MPM. Management Plan Monitoring in 2012 only occurred from January through March due to the suspension of MPM, and there were no exceedances of the WQTLs for high priority constituents. The Coalition will resume MPM in 2013.

A summary of current practices is included in the 2012 MPUR (pages 107-112). The Third Priority Subwatersheds Summary of Management Practices section of this report includes a summary of recommended and newly implemented practices in the site subwatershed.

### **Dry Creek @ Wellsford Rd**

The Dry Creek @ Wellsford Rd site subwatershed is the Core Monitoring location in Zone 1. Monitoring at Dry Creek @ Wellsford Rd was initiated during the storm season of 2005 and has continued through 2012. As scheduled in the current 2008 MRPP, Core Monitoring occurred at the site in the fall of 2008 through 2010 and in 2012 (only January through March due to the suspension of Core Monitoring in 2012); Core Monitoring will occur in 2013. Assessment Monitoring at Dry Creek @ Wellsford Rd occurred in 2011 and is scheduled to reoccur every third year.

The Dry Creek @ Wellsford Rd site subwatershed is one of the Coalition's first priority site subwatersheds, and active management plan constituents include chlorpyrifos, DO, *E. coli*, pH, *C. dubia* toxicity and *H. azteca* toxicity. The Coalition received approval on May 30, 2012 to remove copper, diuron, and SC and *S. capricornutum* toxicity from the active management plan. Additional MPM occurred at the site in 2007, and upstream MPM occurred at Dry Creek @ Waterford Rd in 2008 and 2009. Management Plan Monitoring occurred in 2009 through March 2012 during months of past exceedances (only January through March in 2012 due to the suspension of MPM in 2012); MPM for chlorpyrifos, *C. dubia* toxicity and *H. azteca* toxicity will resume in 2013.

A summary of current and recommended practices is included in the 2011 MPUR (pages 51-52 and 57-60), and a summary of newly implemented practices is included in the 2012 MPUR (pages 55-59). During 2011, the only high priority exceedance to occur was sediment toxicity in September, and there were no exceedances of WQTL for high priority constituents in 2012. The Coalition's management plan tracking and outreach strategy has been effective in improving water quality in Dry Creek.

### **Duck Slough @ Gurr Rd**

Duck Slough @ Gurr Rd is the Core Monitoring location in Zone 5. Monitoring at Duck Slough @ Gurr Rd began during the irrigation season of 2004 and continued through 2012. Core Monitoring took place at Duck Slough @ Gurr Rd in the fall of 2008 through 2010 and in 2012 (only January through March in 2012 due to the suspension of Core Monitoring in 2012); Core Monitoring will occur in 2013. Assessment Monitoring occurred at Duck Slough @ Gurr Rd in 2011 and is scheduled to occur every third year thereafter.

Duck Slough @ Gurr is one of the Coalition's second priority site subwatersheds, and active management plan constituents include copper, DO, *E. coli*, lead, pH, *C. dubia* toxicity and *H. azteca* toxicity. The Coalition received approval on May 30, 2012 to remove chlorpyrifos, SC, TDS and *S. capricornutum* toxicity and petitioned on November 7, 2012 to remove *C. dubia* toxicity from the active management plan. Additional MPM occurred in 2007, and upstream MPM occurred at Duck Slough @ Hwy 59 and North Slough @ Hwy 59 in 2008. Management Plan Monitoring only occurred in January

through March of 2012 due to the suspension of MPM, and there were no exceedances of WQTLs for high priority constituents. The Coalition will resume MPM in 2013 during months of past exceedances.

A summary of current, recommended and newly implemented management practices in the Duck Slough @ Gurr Rd site subwatershed is included in the 2012 MPUR (pages 85-92). During 2011, toxicity to *H. azteca* in September was the only exceedances; there were no exceedances of WQTLs for high priority constituents in 2012.

The Coalition was approved on April 26, 2012 to remove the Duck Slough @ Hwy 99 site from its monitoring program, which was previously a separate Assessment Monitoring site draining the upper portion of the Duck Slough @ Gurr Rd site subwatershed. The remaining Duck Slough @ Hwy 99 active management plan constituents, copper, *E. coli*, lead, and pH, will be addressed as part of the Duck Slough @ Gurr Rd management plan.

### **Duck Slough @ Hwy 99**

The Duck Slough @ Hwy 99 site subwatershed was a rotating Assessment Monitoring location within the Duck Slough @ Gurr Rd Zone (Zone 5). Sampling was initiated at this location during the storm season of 2005 and continued through the end of the irrigation season of 2008. The Coalition received approval to remove the Duck Slough @ Hwy 99 site from the Coalition's monitoring program on April 26, 2012 because road construction expanding Highway 99 blocked all monitoring access beginning in May 2012. The Coalition will continue its management plan strategy for all remaining active management plan constituents from Duck Slough @ Hwy 99 at the downstream location, Duck Slough @ Gurr Rd.

The Duck Slough @ Hwy 99 site subwatershed is one of the Coalition's first priority site subwatersheds, and the remaining active management plan constituents include copper, *E. coli*, lead and pH. The Coalition received approval on May 30, 2012 to remove chlorpyrifos, DO and *S. capricornutum* toxicity from the active management plan. Management Plan Monitoring (chlorpyrifos, copper, lead, and *S. capricornutum* toxicity) occurred from 2007 through March 2012 during months of past exceedances.

A summary of current and recommended practices is included in the 2011 MPUR (pages 53-54 and 61-65), and a summary of newly implemented practices is included in the 2012 MPUR (pages 60-65). The Coalition's management plan tracking and outreach strategy has been effective in improving water quality in Duck Slough.

### **Hatch Drain @ Tuolumne Rd**

Hatch Drain @ Tuolumne Rd is an Assessment Monitoring location in the Prairie Flower Drain @ Crows Landing Rd Zone (Zone 2). Monitoring began at the site in 2007 and continued through the 2008 irrigation season. During the two years, there were three sediment samples toxic to *H. azteca*. Assessment Monitoring is scheduled to occur in 2024 and 2025.

Hatch Drain @ Tuolumne Rd is one of the Coalition's fifth priority site subwatersheds, and active management plan constituents include DO, SC, TDS, *E. coli*, arsenic, nitrate and *S. capricornutum* and *H.*

*azteca* toxicity. In 2013, the Coalition will initiate its focused management plan tracking and outreach strategy, which includes MPM and focused outreach, in the site subwatershed.

### **Highline Canal @ Hwy 99**

The Highline Canal @ Hwy 99 site subwatershed is the Core Monitoring location in Zone 3. Monitoring began during the irrigation season of 2005 and continued through 2012. Core Monitoring constituents were sampled at the site from October 2008 through 2010 and in 2012 (only January through March of 2012 due to the suspension of Core Monitoring); Core Monitoring will continue in 2013. Assessment Monitoring occurred at the site in 2011 and will occur again every third year.

Highline Canal @ Hwy 99 is one of the Coalition's second priority site subwatersheds, and active management plan constituents include copper, *E. coli*, lead, pH, *C. dubia* toxicity, *H. azteca* toxicity and *S. capricornutum* toxicity. The Coalition received approval on May 30, 2012 to remove chlorpyrifos, diuron, ammonia, SC and TDS and petitioned on November 7, 2012 to remove *H. azteca* toxicity and *S. capricornutum* toxicity from the active management plan. Additional MPM occurred at the site in 2007 and 2008, and MPM (copper, chlorpyrifos, diuron, *C. dubia* toxicity, *H. azteca* toxicity, and *S. capricornutum* toxicity) occurred during months of past exceedances in 2009 through March 2012 (only January through March of 2012 due to the suspension of MPM).

A summary of current, recommended and newly implemented management practices in the Highline Canal @ Hwy 99 site subwatershed is included in the 2012 MPUR (pages 92-99). There were no exceedances of high priority constituents during 2011 monitoring. However, concentrations of copper exceeded the hardness based WQTL during January and February 2012.

### **Highline Canal @ Lombardy Rd**

The Highline Canal @ Lombardy Rd site subwatershed is an Assessment Monitoring location in the Highline Canal @ Hwy 99 Zone (Zone 3) and is located upstream of the Highline Canal @ Hwy 99 site. Monitoring was initiated at this site during the 2005 storm season and continued through the 2008 irrigation season. Assessment Monitoring occurred at Highline Canal @ Lombardy Rd in 2011 through 2012 and is next scheduled for 2015 through 2016.

The Highline Canal @ Lombardy Rd site subwatershed is one of the Coalition's fifth priority site subwatersheds, and active management plan constituents include chlorpyrifos, copper, *E. coli*, lead, pH, *C. dubia* toxicity, *H. azteca* toxicity and *S. capricornutum* toxicity. The Coalition received approval on May 30, 2012 to remove SC and petitioned on November 7, 2012 to remove chlorpyrifos, *C. dubia* toxicity and *H. azteca* toxicity from the active management plan. The Coalition conducted four years of MPM (additional MPM in 2007 and 2008; MPM during months of past exceedances in 2009 and 2010). During Assessment Monitoring in 2012, exceedances occurred of the WQTLs for copper (hardness based, February and March), pH (February, August and November) and *S. capricornutum* toxicity (September). The Coalition will initiate its focused management plan tracking and outreach strategy, which includes MPM and focused outreach, in the site subwatershed in 2013.

### **Hilmar Drain @ Central Ave**

The Hilmar Drain @ Central Ave site subwatershed is within the Prairie Flower Drain @ Crows Landing Rd Zone (Zone 2). Normal Monitoring began at the site in 2005 and continued through 2008; the site is scheduled for Assessment Monitoring in 2020 and 2021.

The site subwatershed is one of the Coalition's fourth priority site subwatersheds, and active management plan constituents include ammonia, copper, diuron, DO, *E. coli*, nitrate, pH, SC, TDS, *H. azteca* toxicity and *S. capricornutum* toxicity. The Coalition received approval on May 30, 2012 to remove chlorpyrifos from the active management plan. Management Plan Monitoring occurred at the site in 2007 through 2009 and 2012 (only January through March of 2012 due to the suspension of MPM). The Coalition initiated its focused management plan tracking and outreach strategy in 2012 and documented all current and some newly implemented management practices (Fourth Priority Summary of Management Practices section of this report). The Coalition will complete follow up contacts in 2013, and MPM will occur for copper, diuron, *H. azteca* toxicity and *S. capricornutum* toxicity in 2013.

### **Howard Lateral @ Hwy 140**

Howard Lateral @ Hwy 140 is an Assessment Monitoring location in the Merced River @ Santa Fe Zone (Zone 4). Assessment Monitoring first occurred in the fall of 2008 continued through 2010. The site is scheduled for Assessment Monitoring again in 2029 and 2030.

The site is one of the Coalition's seventh priority site subwatersheds and requires a management plan for chlorpyrifos, copper, *E. coli*, pH, SC, and TDS. To collect two years of monitoring for management plan constituents before the site becomes a high priority, the Coalition conducted MPM in 2011 for chlorpyrifos (June) and copper (April, July and October); there was an exceedance of copper in October. Management Plan Monitoring will occur again in 2013 to satisfy the two year requirement (MPM did not occur in 2012 due to the suspension of MPM). Management Plan Monitoring is then scheduled to resume when the site becomes a high priority in 2015.

### **Lateral 2 1/2 near Keyes Rd**

Lateral 2 ½ near Keyes Rd is a rotating Assessment Monitoring location within the Prairie Flower Zone (Zone 2). Monitoring first began at the site in the fall of 2008 and continued through 2010 for Assessment Monitoring constituents. Assessment Monitoring is next scheduled for 2028 and 2029.

During the 2008 through 2010 monitoring, three exceedances of the WQTL for chlorpyrifos occurred (July 2009 and April and July 2010). Given the exceedances and because Lateral 2 ½ drains directly to the San Joaquin River, the Coalition was approved on November 17, 2010 to move Lateral 2 ½ near Keyes to the Coalition's third priority site subwatersheds (focused outreach 2011-2013). Aside from chlorpyrifos, the only other active management plan constituent is pH. The Coalition received approval on May 30, 2012 to remove *E. coli* from the active management plan. Management Plan Monitoring occurred in 2011 for chlorpyrifos (April and July) and there were no exceedances; MPM did not occur in 2012 due to the suspension of MPM.

A summary of current is included in the 2012 MPUR (pages 113-118), and a summary of recommended and newly implemented practices is included in the Third Priority Subwatersheds Summary of Management Practices section of this report. The Coalition will resume MPM in 2013 for chlorpyrifos.

#### **Levee Drain @ Carpenter Rd**

Levee Drain @ Carpenter Rd is an Assessment Monitoring location within the Prairie Flower Zone (Zone 2). The site was monitored for the first time during Assessment Monitoring in 2012. Assessment Monitoring is scheduled to continue in 2013.

The site subwatershed is scheduled to undergo the Coalition's focused management plan tracking and outreach strategy in 2016 through 2018 (eighth priority). Monitoring results indicate two or more exceedances of the WQTLs for ammonia, nitrate, *E. coli*, DO, SC and TDS, and the Coalition established a management plan for these constituents. The 2013 Assessment Monitoring results will allow the Coalition to evaluate water quality in the Levee Drain @ Carpenter Rd site subwatershed.

#### **Livingston Drain @ Robin Ave**

Livingston Drain @ Robin Ave is an Assessment Monitoring location in the Merced River @ Santa Fe Zone (Zone 4). Monitoring began at the site during the irrigation season of 2007 and continued through the irrigation season of 2008. Assessment Monitoring is next scheduled for 2021 and 2022.

Livingston Drain @ Robin Ave is one of the Coalition's third priority site subwatersheds, and active management plan constituents include chlorpyrifos, copper, *E. coli*, lead, pH and *S. capricornutum* toxicity. The Coalition petitioned on November 7, 2012 to remove lead from the active management plan. Additional MPM occurred in 2008 for copper; five copper (total) exceedances occurred in 2008 during Normal Monitoring and MPM. When the site became a high priority site subwatershed in 2011, MPM resumed, and there were two exceedances of the hardness based WQTL for copper in samples collected during July and September. Management Plan Monitoring occurred from January through March in 2012 (due to suspension of MPM), and there was an exceedance of the hardness based WQTL for copper in samples collected during February. The Coalition will resume MPM in 2013.

A summary of current practices is included in the 2012 MPUR (pages 119-124). The Third Priority Subwatersheds Summary of Management Practices section of this report includes a summary of recommended and newly implemented practices in the site subwatershed.

#### **McCoy Lateral @ Hwy 140**

McCoy Lateral @ Hwy 140 is an Assessment Monitoring location in the Merced River @ Santa Fe Zone (Zone 4). The site was monitored for the first time in 2011 when it rotated into Assessment Monitoring, and Assessment Monitoring continued through 2012. Assessment Monitoring is scheduled to occur after 2029 at the site subwatershed.

The site subwatershed is scheduled to undergo the Coalition's focused management plan tracking and outreach strategy in 2016 through 2018 (eighth priority). Monitoring results indicate two or more

exceedances of the WQTLs for copper (hardness based) and pH, and the Coalition established a management plan for these constituents. To collect two years of monitoring for management plan constituents before the site becomes a high priority, the Coalition will conduct MPM in 2013 for copper. Management Plan Monitoring is then scheduled to resume when the site becomes a high priority in 2016.

#### **Merced River @ Santa Fe Dr**

Merced River @ Santa Fe is the Core Monitoring location within Zone 4. Normal Monitoring was initiated during the irrigation season of 2004 and continued through the irrigation season of 2008. Core Monitoring began at the site in the fall of 2008 and occurred through 2010 and in 2012 (only January through March due to suspended monitoring); Core Monitoring will resume in 2013. Assessment Monitoring occurred at the site in 2011 and will occur again every third year.

The Merced River @ Santa Fe site subwatershed is one of the Coalition's fifth priority site subwatersheds, and active management plan constituents include chlorpyrifos, *E. coli*, lead and *C. dubia* toxicity. The Coalition received approval on May 30, 2012 to remove DO from the active management plan. The Coalition conducted three years of MPM (additional MPM in July and August 2008; upstream MPM in Dry Creek @ Oakdale Rd November 2009 through January 2010; and MPM in January 2010) and educated growers in the site subwatershed of water quality concerns due to chlorpyrifos in the river through educational mailings and news articles. The Coalition will initiate its focused management plan tracking and outreach strategy, which includes MPM and focused outreach, in the site subwatershed in 2013.

#### **Miles Creek @ Reilly Rd**

Miles Creek @ Reilly Rd is an Assessment Monitoring location in the Duck Slough @ Gurr Rd Zone (Zone 5). Monitoring began at the site in 2007 and continued through the irrigation season of 2008. Assessment Monitoring is scheduled for 2013 and 2014.

The Miles Creek @ Reilly Rd site subwatershed is one of the Coalition's fifth priority site subwatersheds, and active management plan constituents include chlorpyrifos, copper, DO, *E. coli*, lead, *C. dubia* toxicity, *H. azteca* toxicity, and *S. capricornutum* toxicity. Management Plan Monitoring occurred during 2009 and 2010 for chlorpyrifos (July, August and September 2009), copper (July and August 2009 and January and February 2010), *S. capricornutum* toxicity (April 2009), and *C. dubia* toxicity (January and February 2010); an exceedance of the WQTL for chlorpyrifos occurred in July 2009. The Coalition will initiate its focused management plan tracking and outreach strategy, which includes MPM and focused outreach, in the site subwatershed in 2013.

#### **Mootz Drain @ Langworth Rd / Mootz Drain downstream of Langworth Pond**

Mootz Drain downstream of Langworth Pond is an Assessment Monitoring location within the Dry Creek @ Wellsford Rd Zone (Zone 1). The downstream of Langworth Pond site replaced the Mootz Drain @ Langworth Rd Assessment Monitoring location starting in December 2009 to better characterize discharges from upstream agriculture since the pond can act as a sediment basin and retain both water

and sediment. Sampling began in Mootz Drain in October of 2008 and continued through 2010. On March 8, 2013 Burnett Lateral @ 28 Mile Rd was removed from Zone 1 in the Coalition's monitoring plan because the site is no longer located within the Coalition boundary adopted in the Waste Discharge Requirements General Order (R5-2012\_0116). Assessment Monitoring in Zone 1 rotated to Mootz Drain downstream of Langworth Pond beginning in April 2013. Mootz Drain downstream of Langworth Pond is scheduled for Assessment Monitoring in 2013 and 2014.

Mootz Drain downstream of Langworth Pond is one of the Coalition's seventh priority site subwatersheds, and active management plan constituents include ammonia, chlorpyrifos, diuron, DO, and *E. coli*. Exceedances of the chlorpyrifos WQTL first occurred in December 2008 and again in June 2009 (both exceedances occurred within the pond @ Langworth Rd). Exceedances of the diuron WQTL occurred in February 2009 (in the pond @ Langworth Rd) and again in December 2010 (downstream of Langworth Pond). Management Plan Monitoring will occur in 2015 for chlorpyrifos and diuron and will continue through 2017 along with focused outreach as part of the Coalition's focused management plan tracking and outreach strategy.

#### **Mustang Creek @ East Ave**

Mustang Creek @ East Ave is a rotating Assessment Monitoring location within the Highline Canal @ Hwy 99 Zone (Zone 3). Mustang Creek is an ephemeral waterbody and it is frequently dry; flow is found primarily during winter runoff events. Monitoring began at the site in 2006 and continued through 2010 (Assessment Monitoring fall of October 2008 through 2010). Mustang Creek is scheduled to rotate into an Assessment Monitoring location again in 2013 and 2014.

The Mustang Creek @ East Ave site subwatershed is one of the Coalition's sixth priority site subwatersheds, and active management plan constituents include copper, dichlorodiphenyldichloroethylene (DDE), DO, *E. coli*, nitrate, SC, and TDS. The Coalition received approval on May 30, 2012 to remove chlorpyrifos and simazine from the active management plan. The two exceedances of the WQTLs for chlorpyrifos and two exceedances of the WQTLs for simazine occurred during the same storm events (January and February 2008), but exceedances did not occur during the same months in 2009 and 2010. Concentrations in samples exceeded the hardness based WQTL for copper in 2009 (February, October, and December) and 2010 (February), and there were two exceedances of the WQTL for nitrate in 2009 (February and March). The Coalition plans to focus on the active high priority constituents, including copper and nitrate, when the site becomes a high priority in 2014.

#### **Prairie Flower Drain @ Crows Landing Rd**

The Prairie Flower Drain @ Crows Landing Rd site subwatershed is the Core Monitoring location in Zone 2, and sampling began in 2005 and has occurred continuously through March 2012 (only January through March of 2012 due to the suspension of Core Monitoring); Core Monitoring will resume in 2013. Assessment Monitoring at this site occurred in 2011 and is scheduled to recur every third year.

The Prairie Flower Drain @ Crows Landing Rd site subwatershed is one of the Coalition's first priority site subwatersheds, and active management plan constituents include ammonia, dimethoate, DO, *E. coli*,

molybdenum, nitrate, SC, TDS, *C. dubia* toxicity, *H. azteca* toxicity, *P. promelas* toxicity and *S. capricornutum* toxicity. The Coalition received approval on May 30, 2012 to remove chlorpyrifos and pH and petitioned on November 7, 2012 to remove *H. azteca* toxicity from the active management plan. Additional and upstream MPM occurred in 2007 and 2008 for chlorpyrifos, *C. dubia* toxicity, nitrate, and *P. promelas* toxicity. In 2009 through March 2012, MPM occurred during months of past exceedances (only January through March 2012 due to suspension of MPM). During 2011 and 2012, exceedances occurred of the WQTLs for dimethoate (August and September 2011), nitrate (most months sampled in 2011 and 2012), *C. dubia* toxicity (August 2011), *P. promelas* toxicity (April 2011), and *S. capricornutum* toxicity (February, October and December 2011).

The Coalition will resume MPM in 2013 during months of past exceedances and will work with the Regional Board and other entities to address continued water quality impairments in Prairie Flower Drain. A summary of current, recommended and newly implemented practices was included in the 2011 MPUR (66-68 and 78-80).

#### **Rodden Creek @ Rodden Rd**

Rodden Creek @ Rodden Rd is an Assessment Monitoring location in the Dry Creek @ Wellsford Rd Zone (Zone 1). The site was monitored for the first time in 2011 when it rotated into Assessment Monitoring, and Assessment Monitoring continued through 2012. Assessment Monitoring is scheduled for 2015 and 2016.

The site subwatershed is scheduled to undergo the Coalition's focused management plan tracking and outreach strategy in 2016 through 2018 (eighth priority). Monitoring results indicate two or more exceedances of the WQTLs for *E. coli*, and the Coalition established a management plan for the constituent.

#### **Silva Drain @ Meadow Dr**

Silva Drain @ Meadow Dr is an Assessment Monitoring location in the Merced River @ Santa Fe Zone (Zone 4). Monitoring began at the site in 2006 and continued through the 2008 irrigation season. Assessment Monitoring is next scheduled to occur in 2027 and 2028.

Silva Drain @ Meadow Dr is one of the Coalition's sixth priority site subwatersheds, and active management plan constituents include ammonia, chlorpyrifos, copper, DO, *E. coli*, *C. dubia* toxicity and *H. azteca* toxicity. Additional MPM was conducted for chlorpyrifos in 2007 and 2008 (July and August); since Silva Drain is a relatively small site subwatershed, upstream sampling was not conducted. There were six exceedances of the WQTL for chlorpyrifos, three exceedances of the hardness based WQTL for copper, and two toxicities each to *C. dubia* and *H. azteca*. Management Plan Monitoring will resume at in 2014 the site when it becomes a high priority.

### **Westport Drain @ Vivian Rd**

Westport Drain @ Vivian Rd is a rotating Assessment Monitoring location within the Prairie Flower Zone (Zone 2). Monitoring began at the site in 2007 and continued through the irrigation season of 2008. Assessment Monitoring is scheduled to occur in 2026 and 2027.

Westport Drain is one of the Coalition's sixth priority site subwatersheds, and active management plan constituents include chlorpyrifos, DO, *E. coli*, nitrate, SC, TDS and *S. capricornutum* toxicity. There were two exceedances of the WQTL for chlorpyrifos (July 2008 and 2009), three toxicities to *S. capricornutum* (May 2007, February and April 2008), and 13 exceedances of the WQTL for nitrate (storm and irrigation months). Management Plan Monitoring has not occurred at the site in the past and will begin in 2014 when the site becomes a high priority.

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