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April 1, 2010

Pamela Creedon
Dania Huggins
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
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Dear Ms. Creedon,

The East San Joaquin Water Quality Coalition (ESJWQC) is submitting the Management Plan Update Report which updates the ESJWQC Management Plan approved on November 25, 2008. The report includes information on activities conducted during 2009. The Management Plan update is being submitted to inform the Regional Board of progress made on the management of exceedances within the Coalition region. Included in the report is a status update of constituents and subwatersheds requiring a management plan, an evaluation of the current Management Plan strategy including any updates, a status update of high priority subwatershed performance goals, a summary of newly implemented management practices within 2008 – 2010 high priority site subwatersheds, an evaluation of management practice effectiveness and a status review of TMDL constituents and Basin Plan requirements.

Submitted respectfully,

Parry Klassen
Board Chairman
East San Joaquin Water Quality Coalition

Management Plan Update

East San Joaquin Water Quality Coalition

Submitted on April 1, 2010

Irrigated Lands Regulatory Program

Central Valley Regional Water Quality Control Board

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List of Acronyms

A	Assessment
AMR	Annual Monitoring Report
APN	Assessor Parcel Number
BMP	Best Management Practice
C	Core
CVRWQCB	Central Valley Regional Water Quality Control Board
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
ESJWQC	East San Joaquin Water Quality Coalition
HCH	Hexachlorocyclohexane
ILRP	Irrigated Land and Regulatory Program
MLJ-LLC	Michael L. Johnson, LLC
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
PCA	Pesticide Control Advisor
pH	Power of Hydrogen
PUR	Pesticide Use Report
QC	Quality Control
SC	Specific Conductance
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TRS	Township, Range, Section
WQO	Water Quality Objective
WQTL	Water Quality Trigger Limit

List of Units

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

EXECUTIVE SUMMARY

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, track implemented management practices, and progress toward meeting its performance goals as outlined in the ESJWQC Management Plan. A Management Plan Update Report 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 second yearly update to the Coalition's Management Plan.

During 2009, monitoring was conducted as outlined in the Coalition's MRPP. In addition, Management Plan Monitoring (MPM) continued during irrigation months (April through September). There were 20 sites monitored between October 2008 and December 2009; of the 20, 11 were monitored for management plan constituents either additionally or as part of assessment monitoring. Based on the prioritization of exceedances, MPM was conducted for *Ceriodaphnia dubia* and *Selenastrum capricornutum* toxicity, copper and chlorpyrifos.

As a result of 2009 monitoring, several new site/constituent specific Management Plans are required including:

- Dissolved Oxygen
    - Duck Slough @ Hwy 99
    - Mootz Drain @ Langworth Rd
- pH
    - Howard Lateral @ Hwy 140
- Specific Conductance (SC) / Total Dissolved Solids (TDS)
    - Dry Creek @ Wellsford Rd
    - Howard Lateral @ Hwy 140
- *E. coli*
    - Howard Lateral @ Hwy 140
    - Mootz Drain @ Langworth Rd
- Ammonia
    - Deadman (Dutchman) Creek @ Gurr Rd
- Nitrate
    - Mustang Creek @ East Ave
- Copper (dissolved and total)
    - Mustang Creek @ East Ave
- Chlorpyrifos
    - Lateral 2 ½ near Keyes Rd
- *C. dubia*
    - Deadman (Dutchman) Creek @ Gurr Rd

The Coalition updated its flow chart of actions based on the monitoring strategy described in the current MRPP which became effective in October 2008. The current monitoring strategy includes a combination of Core and Assessment Monitoring locations with a yearly rotation schedule. Based on this Core and Assessment monitoring strategy, the Management Plan flow charts had to be revised since not all sites were monitored for all constituents and many locations would not be monitored until they were rotated into the monitoring schedule.

Actions in the original flow chart are focused outreach, education and sourcing in Year 1 and Year 2. In the updated flow chart process, a non-high priority site will not have focused outreach, education and sourcing until it becomes high priority; general outreach and education will continue throughout the Coalition region. Therefore, after two years of MPM with continuous exceedances, the Coalition will cease MPM having obtained at least three years of monitoring data and wait till the site becomes high priority to initiate the high priority management plan strategy for monitoring management practice evaluation. Based on this strategy, the Coalition will monitor new management plan sites/constituents during months of past exceedances for at least two years after the initiation of the management plan. This may overlap with assessment monitoring already occurring at that location and therefore there would not be "additional" monitoring.

In the ESJWQC high priority subwatershed, MPM and management practice evaluation strategy, Year 1 refers to the first year that the subwatershed is a high priority site. If there are two years of no exceedances of high priority constituents (either in Year 1 and Year 2 or Year 2 and Year 3), that site/constituent will be removed from an active Management Plan. There will be monitoring for those constituents when the site is rotated into assessment monitoring. MPM may continue into Year 3 if the Coalition determines that an extra year of monitoring is necessary to evaluate improvements in water quality and the effectiveness of newly implemented management practices.

The Coalition prioritized constituents and site subwatersheds to allow for focused source identification, outreach and education. 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 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 help reduce the runoff of these constituents will also reduce the runoff of other pesticides, nutrients, salts and metals.

The Coalition submitted Performance Goals on November 24, 2008 in an amendment to the Management Plan. These goals were developed with coordination with Regional Board staff after evaluation of the effectiveness of the Coalition's Management Plan strategy.

The Performance Goals are built on the following actions essential to the Management Plan strategy:

1. Determine number/type of management practices currently in place, based on APN 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

For the current high priority sites, the Coalition has completed Performance Measure 1.1 (100% of identified growers contacted) and 1.2 (Contact owners/operators representing at least 1,000 acre of membership acreage in the site subwatershed) of Performance Goal 1 (Individually contact members on adjacent properties to waterways where discharges have been identified from February to August 2009). The acreage in the Prairie Flower Drain watershed is less than the 1,000 acres identified in the Performance Measure because there are very few Coalition members and the majority of the watershed belongs to the Dairy Program. Performance Measure 2.1 (Obtain current management practice information from 100% of targeted growers), Performance Measure 2.2 (Document current management practices of the targeted growers) and Performance Measure 2.3 (Document management practices targeted grower was encouraged to implement) of Performance Goal 2 (Establish current management practices) are complete for all three high priority site subwatersheds. Performance Measure 3.1 (By February 2011, document additional management practices implemented by identified growers) of Performance Goal 3 (Encourage growers to implement additional management practices) is incomplete but is not required to be completed until February 2011. Performance Measure 4.1 (Assess water quality results from Coalition monitoring locations within the priority site subwatersheds) of Performance Goal 4 (Evaluate effectiveness of new practices) is complete to April 1, 2010 and includes a summary for 2009, and Performance Goal 5 (Consult with CVRWQCB at least once during 2008/09) is complete.

The Coalition will submit a full evaluation of current and implemented management practices in the April 2011 Management Plan Update Report for the first high priority subwatersheds. A preliminary analysis of implemented management practices was performed based on survey information obtained from individual contacts and preliminary follow up contacts for the first high priority subwatersheds Dry Creek @ Wellsford Rd, Duck Slough @ Hwy 99 and Prairie Flower Drain @ Crows Landing Rd.

Management practice surveys were divided into checklist subjects including Irrigation Water Management, Storm Drainage, Erosion and Sediment Management, Pest Management and Dormant Spray Management. Responses varied across the three watersheds but a common response was that no dormant sprays were used by respondents in any of the three subwatersheds.

Other compliance issues involve TMDL constituents. The ESJWQC established monitoring and management activities for TMDL constituents as required in the Regional Board's Basin Plan for the Sacramento and San Joaquin River basins.

Chlorpyrifos and Diazinon

The Coalition's Management Plan includes source identification and a means to identify management practices that will need to be implemented in specific areas to achieve expected reductions in chlorpyrifos and diazinon discharges. Improved management practices, including pesticide application practices to address drift, alternative irrigation practices to reduce runoff, and drainage management practices to decrease or reduce the volume of runoff of contaminants have been implemented to meet water quality objectives and load allocations set forth in the Basin Plan. Meetings have been held quarterly with the Regional Water Board to evaluate progress in meeting these reductions, and revisions to the Management Plan will be made if sufficient progress is not being achieved.

Presently, the Coalition broadly monitors chlorpyrifos and diazinon monthly, every year, according to the ESJWQC's Monitoring and Reporting Program (MRP) Plan Core and Assessment strategy (MRP Plan, Tables 8 and 9, Pages 52 - 53) at all Coalition established zones. The monitoring locations in each zone are representative of discharges to the San Joaquin River and Delta. The Coalition attempts to monitor at least two storm events during winter months. Representative monitoring provides information on the wide range of discharges and hydrologic conditions likely to occur in the Delta.

Salt and Boron

The Coalition: (1) participates in ongoing Regional Water Board programs for the management of salt and boron, and (2) implements actions required by the Regional Water Board. Coalition representatives attend CV-SALTS meetings and participate in planning and reviewing studies relevant to the development of a Basin Plan amendment for salt and boron.

Dissolved Oxygen

The Coalition is addressing DO exceedances through the Management Prioritization process and is participating in the DO TMDL Technical Working Group meetings. In general, the Coalition will work to comply with the DO Basin Plan load allocations for oxygen demanding substances by December 2011.

INTRODUCTION

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, 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 update management plan implementation schedules and timelines for reporting to the Central Valley Regional Water Quality Control Board (CVRWQCB or 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 for both irrigation and dormant seasons.

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 TMDL requirements
5. Summary of newly implemented management practices
6. Evaluation of management practice effectiveness

The Coalition has done a detailed analysis of high priority subwatersheds (2008 – 2010 and 2010 – 2012) including monitoring and exceedance histories, sourcing, outreach and management practice tracking that is supplemental to this report and is attached in Appendix I.

OVERVIEW OF MONITORING

Table 1. October 2008- December 2009 Core (C), Assessment (A) and Management Plan (MPM) Monitoring sites.

Zone	Type	Site Name	Station Code	Latitude	Longitude
1	C*	Dry Creek @ Wellsford Rd	535XDCAWR	37.6602	-120.8743
1	A	Mootz Drain @ Langworth Rd†	535XMDALR	37.70582	-120.89303
1	A	Mootz Drain downstream of Langworth Pond†	535XMDDLP	37.70551	-120.89438
2	C*	Prairie Flower Drain @ Crows Landing	535XPFDCL	37.4422	-121.0024
2	A	Lateral 2 1/2 near Keyes Rd	535LTHNKR	37.54780	-121.09274
3	C*	Highline Canal @ Hwy 99	535XHCHNN	37.41530	-120.75570
3	A	Mustang Creek @ East Ave	535XMCAEA	37.49180	-120.68390
4	C*	Merced River @ Santa Fe Rd	535XMRSFD	37.4271	-120.6721
4	A	Howard Lateral @ Hwy 140	535XHLAHO	37.30790	-120.78200
5	C	Duck Slough @ Gurr Rd	535XDSAGR	37.2142	-120.5596
5	A	Deadman Creek @ Gurr Rd	535XDCAGR	37.19360	-120.56120
6	C	Cottonwood Creek @ Rd 20	545XCCART	36.8686	-120.1818
6	A	Ash Slough @ Ave 21	545XASAAT	37.05450	-120.41580
1	MPM	Dry Creek @ Waterford Rd	535XDCWF	37.65876	-120.77887
1	MPM*	Dry Creek @ Wellsford Rd	535XDCAWR	37.6602	-120.8743
2	MPM	Hilmar Drain @ Central Ave	535XHDACA	37.39060	-120.95820
2	MPM*	Prairie Flower Drain @ Crows Landing	535XPFDCL	37.4422	-121.0024
3	MPM	Dry Creek @ Oakdale Rd	535DCAORD	37.46047	-120.61530
3	MPM*	Highline Canal @ Hwy 99	535XHCHNN	37.41530	-120.75570
3	MPM	Highline Canal @ Lombardy Ave	535XHCALR	37.45560	-120.72070
4	MPM*	Merced River @ Santa Fe Rd	535XMRSFD	37.4271	-120.6721
5	MPM	Deadman Creek @ Hwy 59	535DMCAHF	37.19810	-120.48690
5	MPM	Duck Slough @ Hwy 99	535XDSAHN	37.25010	-120.41000
5	MPM	Miles Creek @ Reilly Rd	535XMCARR	37.25820	-120.47550

C – Core Monitoring site
A – Assessment Monitoring site
MPM – Management Plan Monitoring site
*Core site also sampled as MPM.
†Mootz Drain @ Langworth was approved to be moved downstream to Mootz Drain downstream of Langworth Pond on November 30, 2009. Sampling in the new location began December 8, 2009.

2009 Management Plan Monitoring

This is the second yearly update to the Coalition's Management Plan. In this report, previous year's monitoring data are reviewed and assessed for water quality improvements and exceedances. This update includes an assessment of water quality based on 2009 monitoring results including new exceedances and new site/constituents requiring management plans.

During 2009, monitoring was conducted as outlined in the Coalition's MRPP. In addition, Management Plan sampling continued during irrigation months (April through September). Management Plan Monitoring (MPM) in 2009 involved monitoring for constituents that had exhibited more than one exceedance of the associated water quality trigger limit (WQTL). In

some cases, these constituents were already being monitored for under the MRPP monitoring schedule. The Coalition's Annual Monitoring Report (AMR) submitted on March 1, 2010 lists the locations, dates and type of sampling that was conducted during the irrigation season including Management Plan Monitoring (MPM), Normal monitoring (NM) and sediment toxicity. There were 20 sites monitored between October 2008 and December 2009; of the 20, 11 were monitored for management plan constituents either additionally or as part of Assessment Monitoring (Table 1). Based on the prioritization of exceedances, MPM was conducted for *Ceriodaphnia dubia* and *Selenastrum capricornutum* toxicity, copper and chlorpyrifos (Table 2). Results from MPM can be found in Table 3.

Table 2. 2009 Management Plan Monitoring schedule.

Site Name	Year	Month	*C. dubia*	*S. capricornutum*	Copper	Chlorpyrifos
Deadman Creek @ Hwy 59	2009	April		X		
Duck Slough @ Hwy 99	2009	April		X		
Highline Canal @ Hwy 99	2009	April		X		
Hilmar Drain @ Central Ave	2009	April		X		
Miles Creek @ Reilly Rd	2009	April		X		
Prairie Flower Drain @ Crows Landing Rd	2009	April		X		
Duck Slough @ Hwy 99	2009	May				X
Highline Canal @ Hwy 99	2009	May		X		
Highline Canal @ Lombardy Rd	2009	May		X		
Prairie Flower Drain @ Crows Landing Rd	2009	May		X		
Duck Slough @ Hwy 99	2009	June			X	
Dry Creek @ Waterford Rd	2009	July				X
Dry Creek @ Wellsford Rd	2009	July				X
Duck Slough @ Hwy 99	2009	July			X	X
Highline Canal @ Hwy 99	2009	July				X
Highline Canal @ Lombardy Rd	2009	July	X			X
Miles Creek @ Reilly Rd	2009	July			X	X
Deadman Creek @ Hwy 59	2009	August				X
Dry Creek @ Waterford Rd	2009	August				X
Dry Creek @ Wellsford Rd	2009	August				X
Duck Slough @ Hwy 99	2009	August			X	
Highline Canal @ Lombardy Rd	2009	August	X		X	X
Miles Creek @ Reilly Rd	2009	August			X	X
Prairie Flower Drain @ Crows Landing Rd	2009	August				X
Deadman Creek @ Hwy 59	2009	September				X
Duck Slough @ Hwy 99	2009	September			X	X
Hilmar Drain @ Central Ave	2009	September		X		
Miles Creek @ Reilly Rd	2009	September				X
Dry Creek @ Oakdale Rd (upstream of Merced River)	2009	November				X
Merced River @ Santa Fe Dr	2009	November				X
Dry Creek @ Oakdale Rd (upstream of Merced River)	2009	December				X
Merced River @ Santa Fe Dr	2009	December				X

Table 3. 2009 Management Plan Monitoring results.

Sample Site	Sample Date	*C. dubia* (% survival compared to the control)	*S. capricornutum* (% growth compared to the control)	Copper (µg/L)	Chlorpyrifos (µg/L)
Deadman Creek @ Hwy 59	4/21/2009		No toxicity		
Duck Slough @ Hwy 99	4/21/2009		No toxicity		
Highline Canal @ Hwy 99	4/21/2009		No toxicity		
Hilmar Drain @ Central Ave	4/21/2009		No toxicity		
Miles Creek @ Reilly Rd	4/21/2009		No toxicity		
Prairie Flower Drain @ Crows Landing Rd	4/21/2009		No toxicity		
Duck Slough @ Hwy 99	5/19/2009				No exceedance
Highline Canal @ Hwy 99	5/19/2009		No toxicity		
Highline Canal @ Lombardy Rd	5/19/2009		No toxicity		
Prairie Flower Drain @ Crows Landing Rd	5/19/2009		30%		
Duck Slough @ Hwy 99	6/16/2009			No exceedance	
Dry Creek @ Waterford Rd	7/21/2009				No exceedance
Dry Creek @ Wellsford Rd	7/21/2009				No exceedance
Duck Slough @ Hwy 99	7/21/2009			No exceedance	No exceedance
Highline Canal @ Hwy 99	7/21/2009				0.093
Highline Canal @ Lombardy Rd	7/21/2009	No toxicity			No exceedance
Miles Creek @ Reilly Rd	7/21/2009			No exceedance	0.028
Deadman Creek @ Hwy 59	8/18/2009				No exceedance
Dry Creek @ Waterford Rd	8/18/2009				No exceedance
Dry Creek @ Wellsford Rd	8/18/2009				0.027
Duck Slough @ Hwy 99	8/18/2009			No exceedance	
Highline Canal @ Lombardy Rd	8/18/2009	No toxicity		No exceedance	No exceedance
Miles Creek @ Reilly Rd	8/18/2009			No exceedance	No exceedance
Prairie Flower Drain @ Crows Landing Rd	8/18/2009				No exceedance
Deadman Creek @ Hwy 59	9/22/2009				No exceedance
Duck Slough @ Hwy 99	9/22/2009			No exceedance	No exceedance
Hilmar Drain @ Central Ave	9/22/2009		No toxicity		
Miles Creek @ Reilly Rd	9/22/2009				No exceedance
Dry Creek @ Oakdale Ave	11/17/2009				No exceedance
Merced River @ Santa Fe Dr	11/17/2009				No exceedance
Dry Creek @ Oakdale Ave	12/15/2009				No exceedance
Merced River @ Santa Fe Dr	12/15/2009				No exceedance

2004 - 2009 Exceedances

An important aspect of the ESJWQC Management Plan is to maintain yearly updates of exceedances based on the most recent water quality trigger limits (WQTLs). Table 4 provides a tally of exceedances for sites monitored from 2004 through 2009. Sites not included in this tally, as described in the ESJWQC Management Plan submitted on September 30, 2008 include August Drain, Jones Drain and Lone Willow Slough.

Sites monitored as upstream MPM sites in 2008 that experienced exceedances are not included in Table 4 or 5. These sites and associated exceedances were included in the Management Plan Update Report submitted on April 1, 2009 and are referenced in the site subwatershed section of this Management Plan.

Table 5 includes a tally of exceedances experienced since the last update (April 1, 2009) and includes monitoring results from 2009. South Slough @ Quinley Rd is included in this tally; however the Coalition is in discussion with the Regional Board to remove this site from its Monitoring and Reporting Program Plan (MRPP) due to recent information regarding the source and drainage of this water body. In both Tables 4 and 5, cells with blue highlights indicate exceedances that are currently under the ESJWQC Management Plan. In Table 5, green highlights indicate sites/constituents that are included in the ESJWQC Management Plan due to exceedances experienced in 2009.

Table 4. ESJWQC exceedance tally based on results through December 2009.

Sites are listed alphabetically by station name and constituents are listed alphabetically within each of the following groups: field parameters, inorganics, bacteria, metals, pesticides and toxicity. Constituents under a management plan are highlighted.

Station Name	Oxygen, Dissolved, mg/L	pH, none	Specific Conductivity, µS/cm	Total Dissolved Solids, mg/L	Ammonia, mg/L	Nitrate as N, mg/L	Nitrite as N, mg/L	Nitrate + Nitrite as N, mg/L	*E. coli*, MPN/100 mL	Arsenic, µg/L	Copper Dissolved, µg/L	Copper Total, µg/L	Lead, µg/L	Zinc, µg/L	Aldicarb, µg/L	Carbofuran	Chlorpyrifos, µg/L	Cyanazine, µg/L	DDD (p,p'), µg/L	DDE (p,p'), µg/L	DDT (p,p'), µg/L	Diazinon, µg/L	Dieldrin, µg/L	Dimethoate, µg/L	Diuron, µg/L	HCH, µg/L	Malathion, µg/L	Methidathion	Methoxychlor, µg/L	Methyl parathion, µg/L	Thiobencarb, µg/L	Simazine, µg/L	*C. dubia*, Survival (%)	*P. promelas*, Survival (%)	*S. capricornutum*, Total Cell	*H. azteca*, Survival (%)
Ash Slough @ Ave 21	1								3		1	5	2				4																		1	
Bear Creek @ Kibby Rd	2	3							7	1		4					2				1												3		2*	2*
Berenda Slough along Ave 18 1/2	8								2								3								1								1		3	
Black Rascal Creek @ Yosemite Rd	17	2							11			1	2				4																5		1	1
Cottonwood Creek @ Rd 20	14	1							14			12	3				2	1				1			2							1		1	2*	1
Deadman (Dutchman) Creek @ Gurr Rd	20	1	4	4	3				30	10		4					1				1		1				1						2	5	3	
Deadman Creek @ Hwy 59	17								12	5							4		1		1				1							1			3	1
Dry Creek @ Rd 18	3	2							4			21	5	1			3					2			2								1		4	2
Dry Creek @ Wellsford Rd	25	4	1						29			3	1				7								2						1		2		5	2
Duck Slough @ Gurr Rd	3	4	2	1				1	19		1	8	4			1	1														2		3		2	5
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					1						10	6
Highline Canal @ Hwy 99	1	14	1	2	2				8			7	7				5								2								4		4	6
Highline Canal @ Lombardy Rd	1	4	1		1				4			5	8	1			5								1		1			1		1	6	2*	4	7
Hilmar Drain @ Central Ave	6	3	37	26	2	12			20			2					1		1	1					3								1		6	4
Howard Lateral @ Hwy 140	1	3	1	1				1	2		1																								1	
Lateral 2 ½ near Keyes Rd		4			1			1	2								1									1									1	1
Livingston Drain @ Robin Ave	1	11				1			2			9	2				4																		4	
Merced River @ Santa Fe	4	1							1			1	2				3									1							5		1	
Miles Creek @ Reilly Rd	10								7			7	5		1		4											1					3		3	3
Mootz Drain @ Langworth Rd	10	1			1				9								2								1										1	
Mootz Drain Downstream of Langworth Pond	1								1																											
Mustang Creek @ East Ave	10		7	4	1			2	7		3						2			3												2	2*		1	1
Prairie Flower Drain @ Crows Landing Rd	14	6	60	45	6	18	1	15	31	1							4							1			1						2	2*	8	6
Silva Drain @ Meadow Dr	17	1			3				13			3	1				6																3	1		4

Station Name	Oxygen, Dissolved, mg/L	pH, none	Specific Conductivity, µS/cm	Total Dissolved Solids, mg/L	Ammonia, mg/L	Nitrate as N, mg/L	Nitrite as N, mg/L	Nitrate + Nitrite as N, mg/L	*E. coli*, MPN/100 mL	Arsenic, µg/L	Copper Dissolved, µg/L	Copper Total, µg/L	Lead, µg/L	Zinc, µg/L	Aldicarb, µg/L	Carbofuran	Chlorpyrifos, µg/L	Cyanazine, µg/L	DDD (p,p'), µg/L	DDE (p,p'), µg/L	DDT (p,p'), µg/L	Diazinon, µg/L	Dieldrin, µg/L	Dimethoate, µg/L	Diuron, µg/L	HCH, µg/L	Malathion, µg/L	Methidathion	Methoxychlor, µg/L	Methyl parathion, µg/L	Thiobencarb, µg/L	Simazine, µg/L	*C. dubia*, Survival (%)	*P. promelas*, Survival (%)	*S. capricornutum*, Total Cell	*H. azteca*, Survival (%)
South Slough @ Quinley Rd	4	2							3			1	1				1						1													1	
Westport Drain @ Vivian Rd	7		19	13		13			7								2																			4	1
Grand Total	**222**	**70**	**155**	**108**	**21**	**57**	**2**	**20**	**272**	**38**	**6**	**104**	**54**	**2**	**1**	**1**	**75**	**1**	**2**	**4**	**5**	**3**	**2**	**2**	**15**	**2**	**3**	**1**	**1**	**1**	**3**	**5**	**44**	**11**	**78**	**55**

All data were evaluated including field QCs. If a field QC has an exceedance, and the associated environmental sample does NOT have an exceedance, that field QC exceedance is included in the tally.

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

Table 5. ESJWQC exceedance tally based on 2009 sampling events.

All sites are listed that have had at least one exceedance. Sites are listed alphabetically by station name and constituents are listed alphabetically within each of the following groups: field parameters, inorganics, bacteria, metals, pesticides and toxicity. Green highlighted cells refer to sites/constituents that require a management plan due to 2009 exceedances; blue highlights refer to sites/constituents already in management plans.

Station Name	Oxygen, Dissolved, mg/L	pH, none	Specific Conductivity, µS/cm	Total Dissolved Solids, mg/L	Ammonia, mg/L	Nitrate + Nitrite as N, mg/L	E. coli, MPN/100 mL	Arsenic, µg/L	Copper Dissolved, µg/L	Chlorpyrifos, µg/L	DDE (p,p'), µg/L	Diuron, µg/L	*C. dubia*, Survival (%)	*P. promelas*, Survival (%)	*S. capricornutum*, Total Cell Count	*H. azteca*, Survival (%)
Ash Slough @ Ave 21	1								1							
Cottonwood Creek @ Rd 20	1						2									
Deadman (Dutchman) Creek @ Gurr Rd	6		3	3	3		9	3					2	3	1	
Dry Creek @ Wellsford Rd	6		1				8			1						
Duck Slough @ Gurr Rd		2	1			1	3		1							
Duck Slough @ Hwy 99	1															
Highline Canal @ Hwy 99		5					1			1						
Hilmar Drain @ Central Ave			2													
Howard Lateral @ Hwy 140	1	3	1	1		1	2		1						1	
Lateral 2 ½ near Keyes Rd		2				1				1					1	1
Merced River @ Santa Fe	2															
Miles Creek @ Reilly Rd	4									1						
Mootz Drain @ Langworth Rd	9				1		8			1		1			1	
Mootz Drain Downstream of Langworth Pond	1						1									
Mustang Creek @ East Ave	2		5	3	1	2	1		3		1					
Prairie Flower Drain @ Crows Landing Rd	1	1	12	12	4	12	6								1	

All data were evaluated including field QCs. If a field QC has an exceedance, and the associated environmental sample does NOT have an exceedance, that field QC exceedance is included in the tally

2009 New Site/Constituents Requiring Management Plans

As a result of 2009 monitoring, several new site/constituent specific Management Plans are required (see green highlights in Table 5). Below is a list of constituents with 2009 exceedances that have triggered a new site/constituent specific management plan:

- Dissolved Oxygen
  - Duck Slough @ Hwy 99
  - Mootz Drain @ Langworth Rd
- pH
  - Howard Lateral @ Hwy 140
- Specific Conductance (SC) / Total Dissolved Solids (TDS)
  - Dry Creek @ Wellsford Rd
  - Howard Lateral @ Hwy 140
- *E. coli*
  - Howard Lateral @ Hwy 140
  - Mootz Drain @ Langworth Rd
- Ammonia
  - Deadman (Dutchman) Creek @ Gurr Rd
- Nitrate
  - Mustang Creek @ East Ave
- Copper (dissolved and total)
  - Mustang Creek @ East Ave
- Chlorpyrifos
  - Lateral 2 ½ near Keyes Rd
- *C. dubia*
  - Deadman (Dutchman) Creek @ Gurr Rd

MANAGEMENT PLAN PROCESS

The ESJWQC Management Plan process was first outlined in the ESJWQC Management Plan submitted on September 30, 2008. This process was an outline of specific actions that would be taken by the Coalition based on prioritized exceedances. Actions were placed into a framework of years and tiers and the process was diagramed in a flow chart. The Coalition has updated its flow chart of actions based on the monitoring strategy described in the current MRPP which became effective in October 2008. The current monitoring strategy includes a combination of Core and Assessment Monitoring locations with a yearly rotation schedule. Based on this Core and Assessment monitoring strategy, the Management Plan flow charts had to be revised since not all sites were monitored for all constituents and many locations would not be monitored until they were rotated into the monitoring schedule (see the ESJWQC MRPP for details on the monitoring schedule). Flow chart revisions were discussed with Regional Board staff during a pre-quarterly meeting held on October 7, 2009.

Except for new assessment monitoring locations initiated in October 2008, all other subwatersheds under the ESJWQC Management Plan followed the original Management Plan flow charts requiring 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 has focused its efforts on documenting changes in management practices and performing outreach at both an individual and grower group level.

Management Plan Monitoring Strategy

The Coalition developed an updated flow chart for its Management Plan Monitoring (MPM) strategy for non-high priority subwatersheds (Figure 1) and high priority subwatersheds (Figure 2).

Figure 1 (non-high priority strategy) is very similar to the flow chart that was submitted in the ESJWQC Management Plan. In the original flow chart, after two years of continuous exceedances the Coalition would enter its third year of MPM and consult with the Regional Board regarding the lack of water quality improvements. Actions in the original flow chart are focused outreach, education and sourcing in Year 1 and Year 2. In the updated flow chart (Figure 1), a non-high priority site will not have focused outreach, education and sourcing until it becomes high priority. Therefore, after two years of MPM with continuous exceedances, the Coalition will cease MPM having obtained at least three years of monitoring data and wait till the site becomes high priority to initiate the high priority management plan strategy for monitoring management practice evaluation (Figure 2).

Based on this strategy, the Coalition will monitor new management plan sites/constituents during months of past exceedances for at least two years after the initiation of the

management plan. This may overlap with assessment monitoring already occurring at that location and therefore there would not be "additional" monitoring. For example, if new site X has an exceedance for chlorpyrifos during its first year of assessment monitoring, the site will continue to be monitored the following year for chlorpyrifos per the normal monitoring schedule. This will count as year 1 of MPM (Figure 1). If an exceedance occurs in year 1 of MPM, site X will be monitored for chlorpyrifos the following year even though it will no longer be monitored as an assessment monitoring location (assessment sites rotate every two years). The Coalition selected this strategy for new management plan sites/constituents since outreach and education will continue with all members within the Coalition, not just with those in high priority subwatersheds. It is hoped that growers will take the initiative and implement additional management practices within their watersheds before the subwatershed becomes a high priority site. Therefore, it is possible that Coalition monitoring results will indicate an improvement in water quality which would eliminate the need for extremely costly future individual contacts/interviews. The other benefit of this strategy is that the additional monitoring will help in the assessment of the sources of exceedances (both temporally and geographically) between years.

In the ESJWQC high priority subwatershed, MPM and management practice evaluation strategy (Figure 2), Year 1 refers to the first year that the subwatershed is a high priority site. If there are two years of no exceedances of high priority constituents (either in Year 1 and Year 2 or Year 2 and Year 3), that site/constituent will be removed from an active Management Plan. There will be monitoring for those constituents when the site is rotated into assessment monitoring. MPM may continue into Year 3 if the Coalition determines that an extra year of monitoring is necessary to evaluate improvements in water quality and the effectiveness of newly implemented management practices.

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

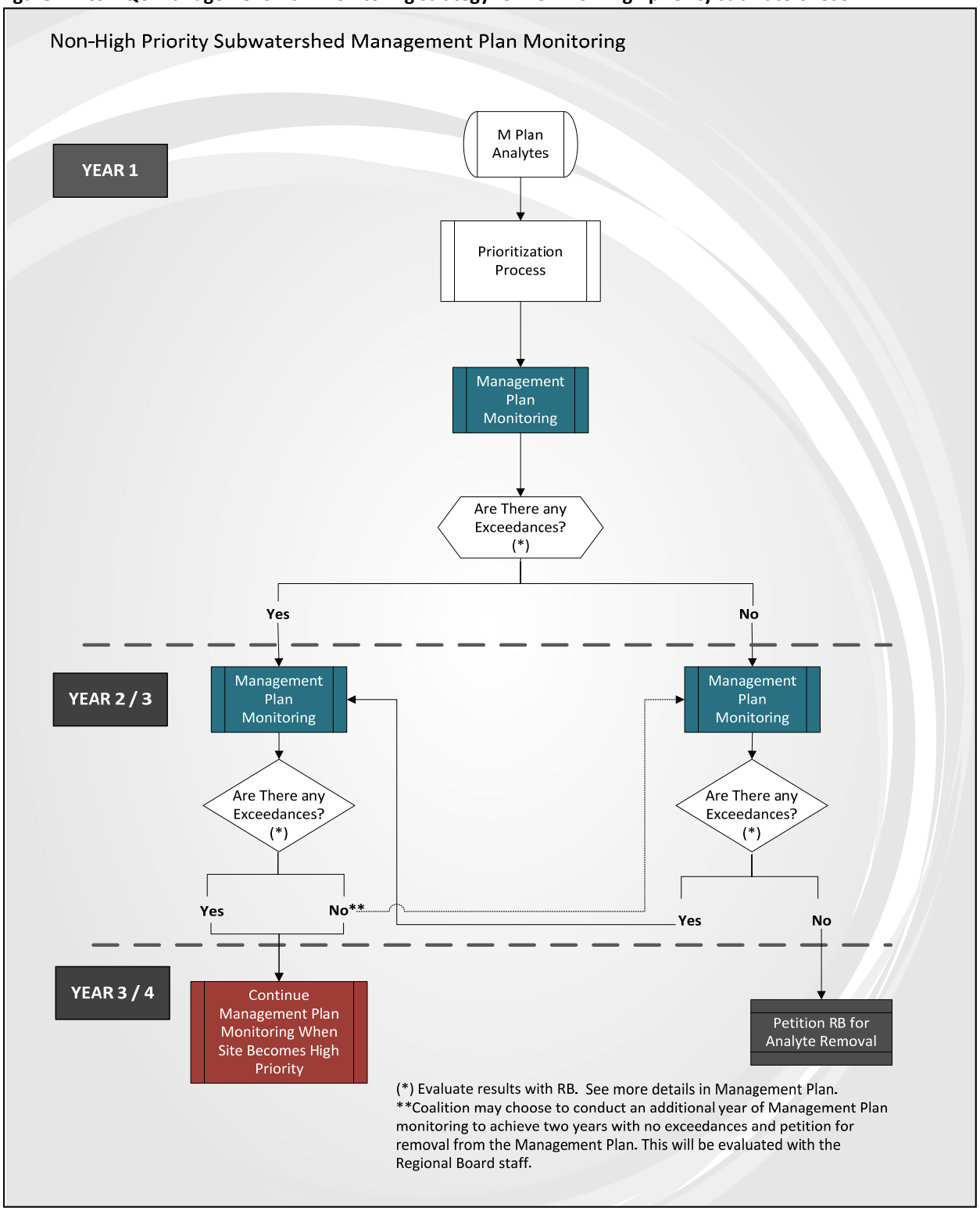
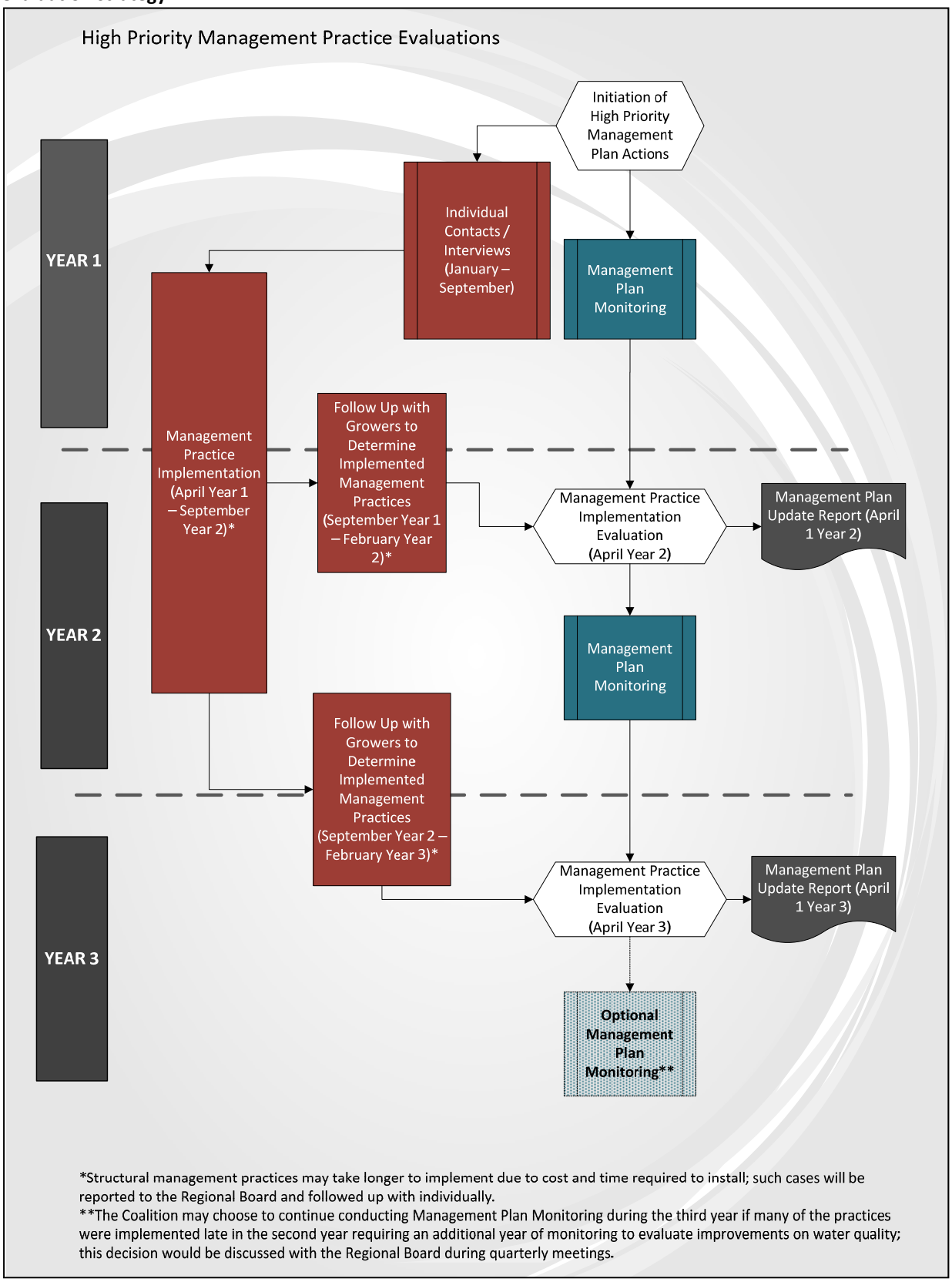


Figure 2. ESJWQC high priority subwatershed Management Plan Monitoring and management practice evaluation strategy.



Management Practice Tracking Strategy

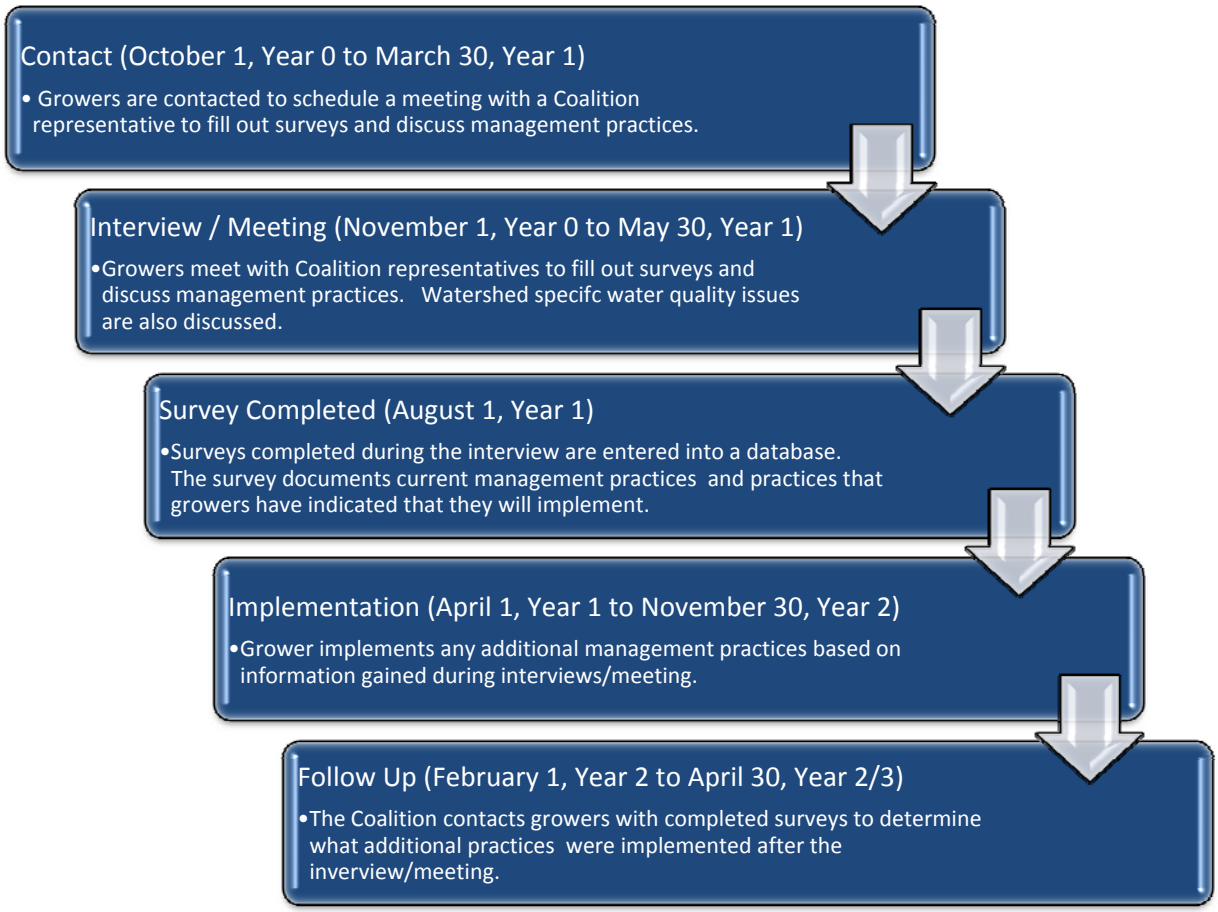
The schedule diagramed in Figure 3 lists a general timeline based on Year 1, 2 and 3 of the flow chart in Figure 2. When a site becomes a high priority site subwatershed, the Coalition makes contacts to individuals within the subwatershed who have the potential for direct drainage and have applied constituents of concern. Contacts occur between October 1 and March 30 of the first year in order to set up meetings and conduct individual contacts/interviews between November 1 and May 30. Individual contacts are used to inform growers of current water quality issues and potential 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 which document the grower's current management practices and any recommended management practices. It is anticipated that all surveys will be completed and entered into a database by August 1 of the first year. Implementation 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 implement.

The Coalition conducts follow up surveys with growers between February of Year 2 and April of Year 2. Follow up may be extended to Year 3 depending on information obtained from the growers on when they plan to implement practices; in some cases a third year may be necessary for funds to be available for structural improvements. Growers with surveys from Year 1 are contacted to attend a follow up meeting. At the meeting, hand held interactive devices are checked out to attendees that are then used to answer survey questions included in a power point presentation given by Coalition representatives. For growers that do not attend the meeting, the Coalition follows up with phone calls and completion of follow up survey questions during phone interviews.

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 they decided not to implement those practices (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.



PRIORITIZATION OF EXCEEDANCES

The ESJWQC developed a prioritization process which allows the Coalition to focus on constituents of the greatest concern. These constituents are included in the Management Plan process outlined below in Figure 4. 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 use reports) and for which management practices are available. Following the flow chart in Figure 4, a priority level is assigned to a Management Plan constituent for a specific site subwatershed. Priority levels will determine the level of activity for sourcing, outreach and evaluation. The ESWJQC Management Plan includes a detailed description of the prioritization process including tiers and actions.

The flow chart included in the Management Plan included a tiered system with specific actions depending on the priority level of the exceedance and the tier in which it is located. The actions included additional and upstream monitoring. Due to changes in the MPM strategies for non-high

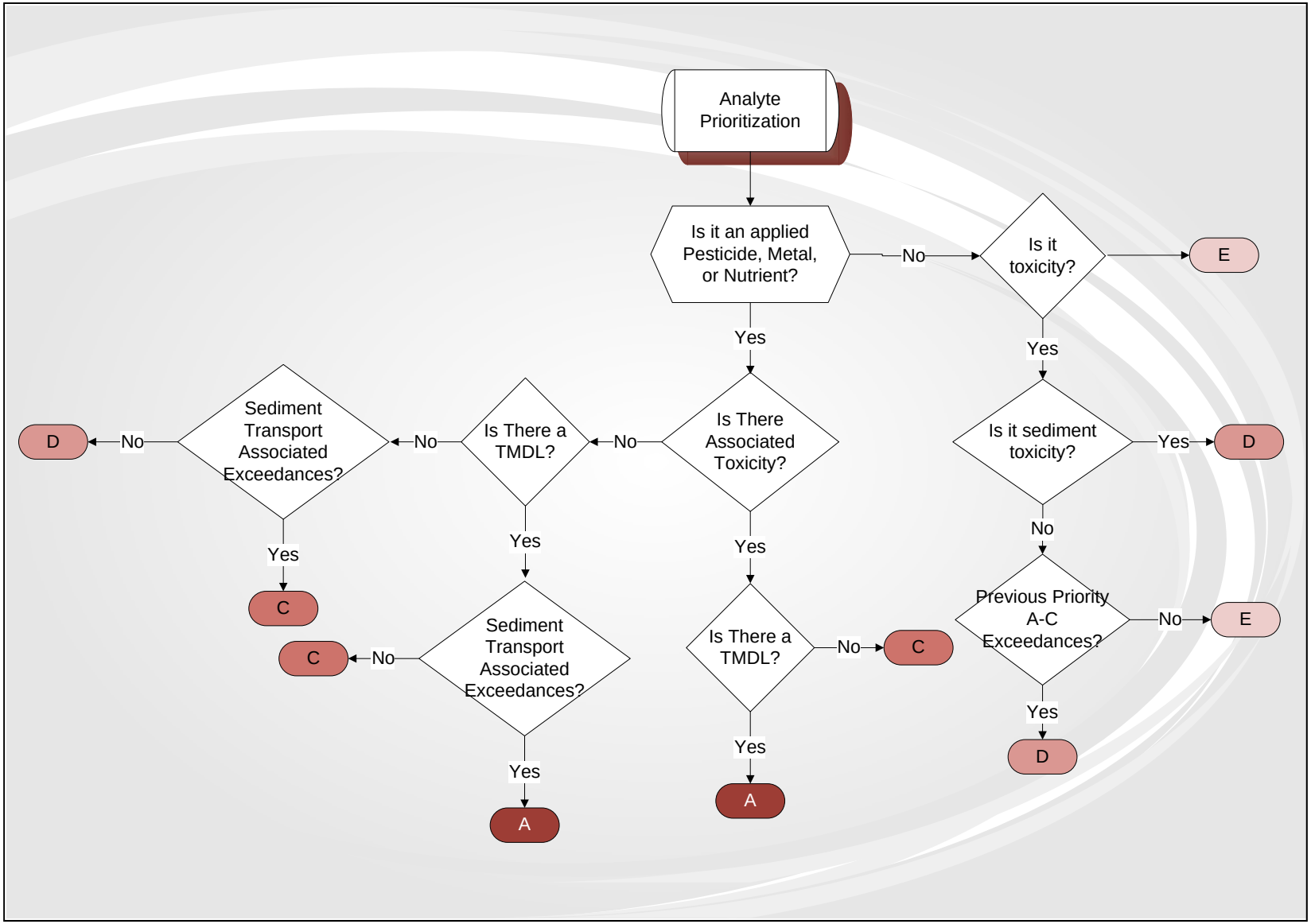
priority and priority subwatersheds, the actions associated with tiers have been omitted from this flow chart. The MPM and management practice evaluation strategies are documented in Figures 1-3 above.

Sourcing will still be conducted by utilizing pesticide use reports (PUR) and any associated MPM data (may include upstream and/or increased frequency monitoring from previous years). Monitoring will be 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.

Outreach occurs for all constituents however growers using constituents of high priority (i.e. TMDL pesticides such as chlorpyrifos) are targeted for individual contacts. The Coalition will continue to conduct annual meetings and site subwatershed meetings as needed.

The Coalition evaluates management practice information obtained from individual survey contacts including follow up surveys which 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 non member actions, there may continue to be downstream water quality impairments. Therefore evaluations of management practices not only assess water quality but also overall changes in practices at a subwatershed level.

Figure 4. ESJWQC prioritization process.



MANAGEMENT PLAN DEVELOPMENT TIMELINES

The Coalition submitted on June 5, 2009 a request to extend completion of actions in its prioritization schedule (originally submitted on November 24, 2008) by a year. A request was sent to the Executive Office on October 23, 2009 to replace Hilmar Drain @ Central Ave with Bear Creek @ Kibby Rd as a high priority site subwatershed in 2010 – 2012. In exchange, Hilmar Drain would become high priority in 2012 – 2014. The schedule is re-evaluated yearly and updated with new monitoring locations and updates in prioritization based on various factors including updated monitoring results and available resources.

There have been new sites added to the Coalition's Management Plan and they have been prioritized for 2015 -2017:

- Lateral 2 ½ near Keyes Rd
- Mootz Drain @ Langworth Rd / Mootz Drain Downstream of Langworth Pond

Howard Lateral @ Hwy 140 was not given a high priority because there have been no exceedances of Priority A-D constituents.

Table 6 provides an updated schedule that includes the approved changes to prioritization years, exchange of Bear Creek and Hilmar Drain and the three new management plan site subwatersheds.

Although South Slough @ Quinley Rd is listed as a high priority subwatershed in 2014 – 2016 the Coalition has submitted documentation to the Regional Board requesting that South Slough be removed from the ESJWQC MRPP. It is anticipated that next year the schedule will be updated with the removal of South Slough from this list.

Mootz Drain @ Langworth Rd was replaced by Mootz Drain Downstream of Langworth Pond which is downstream of Langworth Rd. The original sampling location at Langworth Rd often acted as a sediment or retention pond with little to no flow leaving the pond during summer months. The Coalition began sampling downstream of the pond in December 2009; however, until the downstream location is monitored long enough to determine water quality impairments, all upstream exceedances will be monitored as part of the Mootz Drain Downstream of Langworth Pond site subwatershed MPM.

There are currently 25 site subwatersheds included in the ESJWQC Management Plan that will become high priority sites between 2008 and 2017 (including South Slough @ Quinley Rd) (Table 6).

Table 6. Proposed schedule for addressing each site subwatershed with a detailed, focused management plan approach.

Site Subwatershed Name	Updated year for focused approach
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
Ash Slough @ Ave 21	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 Creak @ 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
South Slough @ Quinley Rd	2014-2016
Westport Drain @ Vivian Rd	2014-2016
Lateral 2 ½ near Keyes Rd	2015-2017
Mootz Drain Downstream of Langworth Pond*	2015-2017
Re-evaluate All Site Subwatersheds and Revise Schedule	**Annually**

*Mootz Drain Downstream of Langworth Pond will be monitored for all management plan constituents detected at the upstream location, Mootz Drain @ Langworth Rd.

PRIORITY SITE MANAGEMENT

Management Objectives

The Coalition prioritized constituents and site subwatersheds to allow for focused source identification, outreach and education. 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 that have already occurred in those areas.

The objective of the prioritization process is to decrease the amount of agricultural inputs that may contribute to downstream impairments. Although the Coalition is focusing on chlorpyrifos and diazinon exceedances and associated applications, management practices implemented to help 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 is a high priority subwatershed to evaluate improvements in water quality and the effectiveness of management practices (Figure 2). 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 (Figure 1).

2010 Management Plan Monitoring (MPM) Schedule

The ESJWQC will conduct MPM at the following sites; Years 1 and 2 refer to the year that the site has been a high priority site (Figure 2):

Year 2: First Priority (2008 – 2010)

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

Year 1: Second Priority (2010 – 2012)

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

The above sites will be monitored for priority constituents during months in which exceedances have occurred (Table 7).

Starting in September 2010, sediment toxicity will be added to the MPM schedule for high priority subwatersheds to coincide with the post irrigation sediment sampling period for normal monitoring. Sediment toxicity was omitted from previous monitoring schedules when the Coalition was monitoring at the same locations from year to year. Due to the new MRPP monitoring design, the Coalition has added in MPM for sediment to assess if there has been improvement in sediment quality due to implemented management practices.

Table 7. 2010-2011 Management Plan sampling schedule.

Site Name	Year	Month	*H. azteca*	*C. dubia*	*S. capricornutum*	Copper	Chlorpyrifos	Diazinon	Diuron	Simazine
Cottonwood Creek @ Rd 20	2010	February				X	X	X	X	
Deadman Creek @ Gurr Rd	2010	February			X	X				
Dry Creek @ Wellsford Rd	2010	February			X	X			X	
Duck Slough @ Gurr Rd	2010	February				X				
Highline Canal @ Hwy 99	2010	February			X	X	X		X	
Miles Creek @ East Ave	2010	February					X			X
Mustang Creek @ East Ave	2010	February			X					
Prairie Flower Drain @ Crows Landing Rd	2010	February			X					
Highline Canal @ Hwy 99	2010	March	X							
Cottonwood Creek @ Rd 20	2010	April				X				
Dry Creek @ Wellsford Rd	2010	April				X				
Duck Slough @ Gurr Rd	2010	April					X			
Duck Slough @ Hwy 99	2010	April			X	X				
Highline Canal @ Hwy 99	2010	April			X	X				
Prairie Flower Drain @ Crows Landing Rd	2010	April			X					
Bear Creek @ Kibby Rd	2010	May		X			X			
Cottonwood Creek @ Rd 20	2010	May				X				
Dry Creek @ Wellsford Rd	2010	May								
Duck Slough @ Hwy 99	2010	May					X			
Highline Canal @ Hwy 99	2010	May			X					
Prairie Flower Drain @ Crows Landing Rd	2010	May			X					
Cottonwood Creek @ Rd 20	2010	June				X				
Duck Slough @ Gurr Rd	2010	June				X				
Duck Slough @ Hwy 99	2010	June				X				
Highline Canal @ Hwy 99	2010	June				X				
Bear Creek @ Kibby Rd	2010	July		X			X			
Cottonwood Creek @ Rd 20	2010	July				X				
Dry Creek @ Wellsford Rd	2010	July					X			
Duck Slough @ Gurr Rd	2010	July			X	X	X			
Duck Slough @ Hwy 99	2010	July			X	X	X			
Highline Canal @ Hwy 99	2010	July				X	X			
Bear Creek @ Kibby Rd	2010	August				X				
Cottonwood Creek @ Rd 20	2010	August				X				
Dry Creek @ Wellsford Rd	2010	August					X			
Duck Slough @ Gurr Rd	2010	August								

Site Name	Year	Month	*H. azteca*	*C. dubia*	*S. capricornutum*	Copper	Chlorpyrifos	Diazinon	Diuron	Simazine
Duck Slough @ Hwy 99	2010	August				X				
Highline Canal @ Hwy 99	2010	August				X				
Prairie Flower Drain @ Crows Landing Rd	2010	August					X			
Cottonwood Creek @ Rd 20	2010	September				X				
Dry Creek @ Wellsford Rd	2010	September	X				X			
Duck Slough @ Gurr Rd	2010	September	X		X					
Duck Slough @ Hwy 99	2010	September				X	X			
Highline Canal @ Hwy 99	2010	September	X							
Prairie Flower Drain @ Crows Landing Rd	2010	September	X	X			X			
Bear Creek @ Kibby Rd	2011	January				X				
Cottonwood Creek @ Rd 20	2011	January				X	X		X	
Duck Slough @ Gurr Rd	2011	January				X				
Highline Canal @ Hwy 99	2011	January				X	X		X	
Prairie Flower Drain @ Crows Landing Rd	2011	January			X					
Bear Creek @ Kibby Rd	2011	February				X				
Cottonwood Creek @ Rd 20	2011	February				X	X	X	X	
Dry Creek @ Wellsford Rd	2011	February			X	X			X	
Duck Slough @ Gurr Rd	2011	February		X		X				
Duck Slough @ Hwy 99	2011	February				X				
Highline Canal @ Hwy 99	2011	February				X	X		X	
Prairie Flower Drain @ Crows Landing Rd	2011	February			X					
Dry Creek @ Wellsford Rd	2011	March	X							
Duck Slough @ Gurr Rd	2011	March		X						
Highline Canal @ Hwy 99	2011	March	X							
Prairie Flower Drain @ Crows Landing Rd	2011	March		X						

Performance Goals and Schedules

The Coalition Strategic Plan is outlined in the original Management Plan (submitted on September 30, 2008) Table 18 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 submitted High Priority Site Subwatershed Performance Goals (hereafter referred to as Performance Goals) on November 24, 2008 in an amendment to the Management Plan. These goals were developed with coordination with Regional Board staff after evaluation of the effectiveness of the Coalition's Management Plan strategy.

The Performance Goals are built on the following actions essential to the Management Plan strategy:

1. Determine number/type of management practices currently in place, based on APN 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 completed action one listed above and submitted a General Survey Summary Report to the Regional Board on January 30, 2009. The Coalition uses this information when comparing the baseline management practices to current management practice information obtained during grower group / individual contacts.

First Priority Subwatersheds (2008 – 2010)

The amended Performance Goals for the first priority subwatersheds (details and amendments are discussed in detail in the schedule extension request submitted on June 5, 2009 and approved on June 15, 2009) are presented in Table 8. Below each performance goal is an update on the status of the associated measures and outputs.

Table 8. High Priority Performance Goals status for 2008-2010 high priority sites (updated on June 5, 2009 and approved on June 16, 2009). Performance Goals without "Update" are the original performance goals submitted on November 24, 2008 for Dry Creek.

Performance Goal/Performance Measure	Outputs	Status as of April 1, 2010		
		Dry Creek @ Wellsford	Duck Slough @ Hwy 99	Prairie Flower Drain @ Crows Landing Rd
Performance Goal 1 Update: Individually contact members on adjacent properties to waterways where discharges have been identified from February to August 2009.				
Performance Measure 1.1. – 100% of targeted growers contacted.	Report ratio of individual contacts made versus total growers identified with discharges.	22 of 22 (100%)	24 of 24 (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.	Report ratio of acreage represented by individual contacts versus total subwatershed acreage.	6,116 of 68,620 (9%)	4,016 of 17,559 (23%)	865 of 3,106 (28%)
Performance Goal 2 Update: Establish current practices by August 15, 2009, on adjacent properties to waterways or where discharges are identified.				
Performance Measure 2.1 – Obtain current management practice information from 100% of targeted growers.	Completed individual contact checklists recorded in an Access database.	22 of 22 (100%)	24 of 24 (100%)	11 of 11 (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.	22 of 22 (100%)	24 of 24 (100%)	11 of 11 (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).	Complete (April 1, 2010)	Complete (April 1, 2010)	Complete (April 1, 2010)
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.				
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.	12 of 22 (55%)	12 of 24 (50%)	6 of 11 (55%)
Performance Goal 4 Update: Evaluate effectiveness of the new management practices implemented during 2009 and 2010.				

Performance Goal/Performance Measure	Outputs	Status as of April 1, 2010		
		Dry Creek @ Wellsford	Duck Slough @ Hwy 99	Prairie Flower Drain @ Crows Landing Rd
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).	2009 Summary Complete (April 1, 2010)	2009 Summary Complete (April 1, 2010)	2009 Summary Complete (April 1, 2010)
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.				

Table 9. Updated Management Practices survey, outreach, implementation and evaluation tracking schedule based on the table submitted with the ESJWQC schedule extension request on June 5, 2009.

Priority Subwatershed Evaluation of Management Practices	Dry Creek @ Wellsford Rd		Duck Slough @ Hwy 99		Prairie Flower Drain @ Crows Landing Rd	
	2009 Schedule	Status as of April 1, 2010	2009 Schedule	Status as of April 1, 2010	2009 Schedule	Status as of April 1, 2010
1a) Associate baseline survey responses with member APNs.	Completed	Completed	Completed	Completed	Completed	Completed
1b) Determine number/type of management practices currently in place.	Completed	Completed	Completed	Completed	Completed	Completed
2a) Group Grower Contacts	Completed	Completed	Completed	Completed	No grower group contact scheduled	No grower group contact scheduled
2b) Individual Contacts	February – August 15, 2009	Completed	February – September 30, 2009	Completed	February – September 30, 2009	Completed
3) Implementation of new management practices.	October 2009 – April 2010	October 2009 – April 2010	October 2009 – April 2011	October 2009 – April 2011	October 2009 – April 2011	October 2009 – April 2011
4) Assess number/type of new management practices implemented.	October 2009 - February 2010	Complete for 2009	October 2009 - February 2010	Complete for 2009	October 2009 -February 2010	Complete for 2009
5) Evaluate effectiveness of new management practices.	April 2009 - February 2011	Complete for 2009	April 2009 - February 2011	Complete for 2009	April 2009 - February 2011	Complete for 2009

Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified from February to August 2009.

The Coalition identified targeted growers within the high priority subwatersheds by selecting a subset of parcels within the subwatershed that had:

- high potential of drainage directly into the creek
- potential for spray drift to reach the waterway
- grew a crop labeled for chlorpyrifos
- insecticide was applied in the last four years (based on PURs).

Targeted member parcels are selected based on possible direct drainage to the water body (using GIS), crop type and past pesticide use using PUR data. The Coalition may omit members and their associated parcels from the target list if it is determined that the parcel does not drain into the water body, the grower is not currently farming the parcel(s), there is no reported pesticide use, and/or the land is pasture only with no pesticide use.

In Dry Creek @ Wellsford, Duck Slough @ Hwy 99 and Prairie Flower Drain @ Crows Landing Rd there were 22, 24 and 11 targeted members, respectively; all members were contacted between January and August 2009 (Table 8, Table 11 in next section).

Performance Goal 2: Establish current practices August 15, 2009 on adjacent properties to waterways or where discharges are identified.

The Coalition created Individual Contact Packets containing member information (including parcel APN, TRS and crop type), subwatershed water quality trigger exceedances, pesticide applications based on TRS for which the grower may have been responsible and were associated with a water quality trigger limit exceedance, in addition to any known management practice information based on the general survey (an example of a packet was included in the Management Plan Update Report submitted on April 1, 2009). Next, the Coalition contacted the targeted growers to set up individual meetings. Coalition representatives (Parry Klassen and Wayne Zipser) met with the grower, land owner and on occasion the Pest Control Advisor (PCA) on the grower's farm to assess the following: possible drainage from the field to the creek, review farm operating procedures and current management practices. Additional discussions on water quality trigger limit exceedances (mostly focused on chlorpyrifos) and recommendations of additional management practices also took place. These visits typically took around two to three hours per farm. All information was recorded within the Individual Contact Packet which was then entered into an Access database.

In the Management Plan Update Report submitted on April 1, 2009 the Coalition proposed an amended Management Practice tracking schedule (Table 12) which updated the time frames for individual contacts for Dry Creek @ Wellsford (February – April 2009), Duck Slough @ Hwy 99 (April 2009 – April 2010), and Prairie Flower Drain @ Crows Landing Rd (April 2009 – April

2010) (Table 9). The Coalition anticipated that all contacts would be completed within the Dry Creek subwatershed by April 2010; nevertheless, due to difficulties with schedules and the beginning of the farming season, the visits were delayed. This was discussed at the ESJWQC quarterly meeting with Regional Board staff.

The Coalition submitted a schedule extension request letter to the Regional Board Executive Officer on June 5, 2009 which was approved on June 15, 2009 that extended the completion of Performance Goal 2 to August 15, 2009 (originally listed as April 2009).

The Coalition has contacted 100% of the targeted growers and has recorded 100% of management practice information in a Microsoft Access database. A summary of management practice evaluations is included in the section "Summary of Implemented Management Practices" and in the High Priority Subwatershed Analysis Appendix (Appendix I).

The Coalition originally considered hiring a consultant to help in conducting the individual contacts with growers but has concluded that it will be difficult to find a person knowledgeable of the Coalition and water quality issues, with the expertise in management practices, understanding of current farming conditions and who has the time to commit to performing the visits in a timely basis. All of these components have been necessary for gaining the trust of the growers allowing the Coalition representatives to evaluate the property with an eye to potential discharges, openly discuss water quality issues and confer management practices. Both Parry Klassen (Executive Director of the Coalition for Urban/Rural Environmental Stewardship and Chairman of the ESJWQC) and Wayne Zipser (Executive Manager of the Stanislaus County Farm Bureau and Co-Chairman of the ESJWQC) have extensive knowledge of the farming practices within the ESJWQC region and have a history with growers which allows them to communicate effectively with targeted growers. In addition, both Parry and Wayne have been involved with the Coalition since its inception and therefore have a working knowledge of the ILRP requirements, Regional Board enforcement strategies and the history of the Coalition's monitoring strategy.

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

The primary objective of the individual contacts is to encourage adoption of practices that will result in a reduction of chlorpyrifos exceedances. Conversely, many of the management practices that will reduce runoff of chlorpyrifos will also result in the reduction of runoff of other constituents (e.g. converting to drip irrigation, spray nozzle calibrations, increased buffer zones). Therefore, during the individual contact interviews all water quality issues are addressed. Each individual contact packet includes a table of downstream water quality exceedances, relevant pesticide use information (not just for chlorpyrifos), and a checklist specific to overall pest management, irrigation water management, dormant spray management and erosion/sediment management. Even though growers are targeted based on

chlorpyrifos use, all subwatershed water quality issues are discussed (see Appendix I of the April 2009 Management Plan update for an example of an individual contact packet).

All recommended practices were recorded in addition to current management practice information and has been summarized in the section "Summary of Implemented Management Practices".

The Coalition originally anticipated implementation of new management practices between April 2009 and February 2010 based on the completion of individual and grower group contacts by April 2009. Due to a delay in contacts, the expected time frame of management practice implementation was extended to October 2009 through April 2011 (see the ESJWQC schedule extension letter submitted on June 5, 2009 for details, Table 9).

Performance Goal 4: Evaluate effectiveness of the new management practices implemented during 2009 and 2010.

The Coalition updated its schedule for management practice implementation for all three subwatersheds to extend to April 2011 (approved June 15, 2009). The evaluation of the efficiency of new management practices will be assessed using water quality monitoring results from 2009 and 2010 (Table 9). This will allow the Coalition to have two years of water quality monitoring results (in addition to additional monitoring conducted in 2007 and 2008 in Management Plan subwatersheds) to assess the success of new practices. This will also allow time for the Coalition to determine which practices were implemented (additional contacts with targeted growers) during 2009 and 2010 that may reduce the amount of agricultural runoff. The Coalition will include this evaluation in the Management Plan update due on April 1, 2011. In the interim, an evaluation of the water quality data collected to date in relation to management practice information is included in the section "Evaluation of Management Practice Effectiveness".

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 for High Priority waterbodies.

The Coalition met with Regional Board staff to discuss the Management Plan activities for high priority waterbodies including status of individual contacts, survey completion and extension to time lines for completing Performance Goals (Table 10).

Table 10. 2009 Regional Board Quarterly Meeting dates.

Quarterly Meetings	Meeting Date
First Quarter Meeting	February 10, 2009
Second Quarter Meeting	May 5, 2009
Third Quarter Meeting	August 4, 2009
Fourth Pre-Quarterly Meeting	October 7, 2009
Fourth Quarterly Meeting	November 3, 2009

Second Priority Subwatersheds (2010 – 2012)

In the pre-quarterly meeting with Regional Board staff on October 7, 2009 the Coalition proposed new Performance Goals for the next high priority site subwatersheds (Cottonwood Creek @ Rd 20, Duck Slough @ Gurr Rd, Highline Canal @ Hwy 99 and Bear Creek @ Kibby Rd). The second priority subwatershed performance goals include the following changes from the first priority subwatershed performance goals:

1. Updated Performance Measure 1.2 Output to be specific to the subwatershed acreage with direct drainage.
2. Combined Performance Measure 2.1 and 2.2.
3. Updated Performance Goal 4 – refers to years that the subwatershed is high priority versus specific years.
4. Updated Performance Measure 4.1 outputs to not be year specific.

Performance goals, measures, outputs and completion dates are included in Table 11. The Coalition anticipates using the following performance goals for future priority subwatersheds as they rotate into priority status.

Table 11. Subwatershed specific performance goals for 2010 - 2012 high priority subwatersheds (Cottonwood Creek @ Rd 20, Highline Canal @ Hwy 99, Duck Slough @ Gurr Rd and Bear Creek @ Kibby Rd). Completion deadlines are in bold; if applicable, status updates are in bold; if applicable, status updates are included below completion deadlines.

Performance Goal/Performance Measure	Outputs	Completion Deadline / Status as of April 1, 2010			
		Cottonwood Creek @ Rd 20	Highline Canal @ Hwy 99	Duck Slough @ Gurr Rd	Bear Creek @ Kibby Rd
Performance Goal 1: Individually contact members on adjacent properties to waterways where discharges have been identified to fill out surveys.					
Performance Measure 1.1 – 100% of identified growers contacted to fill out surveys.	Report ratio of individual initial contacts made versus total growers identified to contact.	**May 30, 2010** 25 of 25	**May 30, 2010** 10 of 10	**May 30, 2010** 0 of 6	**May 30, 2010** 0 of 13
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.	**Quarterly** 5500 of 9731	**Quarterly** 368 of 1116	**Quarterly** 0 of 5562	**Quarterly** 0 of 2668
Performance Goal 2: Establish current practices (beyond established baseline practices) on adjacent properties to waterways or where discharges are identified.					
Performance Measure 2.1 – Document current management practices of 100% of identified growers during individual contacts and encourage the adoption of new practices not currently implemented.	Record in an Access database current management practices used that may reduce agricultural impact on water quality.	**July 30, 2010** 9 of 25	**July 30, 2010** 3 of 10	**July 30, 2010** 0 of 6	**July 30, 2010** 0 of 13
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.	**Aug.30, 2010**	**Aug. 30, 2010**	**Aug. 30, 2010**	**Aug. 30, 2010**
Performance Goal 3: Encourage growers to implement additional management practices based on water quality results.					
Performance Measure 3.1 –Document (e.g. assess number/type) new management practices implemented by identified growers.	Record implemented management practices in an Access database.	**Feb. 28, 2011***	**Feb. 28, 2011***	**Feb. 28, 2011***	**Feb. 28, 2011***
	Summary of management practices implemented as a result of individual contacts.	**April 1, 2011** **April 1, 2012**	**April 1, 2011** **April 1, 2012**	**April 1, 2011** **April 1, 2012**	**April 1, 2011** **April 1, 2012**

Performance Goal/Performance Measure	Outputs	Completion Deadline / Status as of April 1, 2010			
		Cottonwood Creek @ Rd 20	**Highline Canal @ Hwy 99**	**Duck Slough @ Gurr Rd**	**Bear Creek @ Kibby Rd**
Performance Goal 4: Evaluate effectiveness of the new management practices implemented during years that site is high priority.					
Performance Measure 4.1 Update – Assess water quality results from Coalition monitoring location within the priority site subwatershed.	Summary of water quality data from management plan monitoring.	**April 1, 2011** **April 1, 2012**	**April 1, 2011** **April 1, 2012**	**April 1, 2011** **April 1, 2012**	**April 1, 2011** **April 1, 2012**
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.					

*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.

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

Targeted growers in Cottonwood Creek (25 total) were mailed meeting announcements for two conference call meetings (October 21 and October 22, 2009) focused on informing growers of member responsibilities, management plan strategies and to initiate the scheduling of individual contact meetings (Table 13). Following these conference calls, the Coalition sent a mailing to targeted growers in Cottonwood Creek who did not participate in the October conference calls as well as to targeted growers in Highline Canal @ Hwy 99 subwatershed (10 growers) (Table 11 and Table 13). The mailing also informed growers about the Coalition's Management Plan strategy, member responsibilities and requested that growers call the Coalition to schedule meetings for individual interviews. The Coalition has not yet contacted growers in the Duck Slough @ Gurr Rd or Bear Creek subwatersheds in 2010. All initial contacts will be completed by May 30, 2010 (Table 11).

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

The Coalition has met with and filled out surveys with nine growers (36% of targeted growers) within the Cottonwood Creek @ Rd 20 subwatershed and three growers (30% of targeted growers) within the Highline Canal @ Hwy 99 subwatershed (Table 11). Surveys document current management practices regarding irrigation practices, storm runoff, pest management and dormant sprays (when applicable). All surveys received to date have been entered an Access database.

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

The management practices recommended to growers during the individual interviews have been recorded in the management practice tracking database (36% of Cottonwood Creek targeted growers and 30% of Highline Canal targeted growers) (Table 11).

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 second high priority sites during 2010 and 2011 to assess water quality improvements. The Coalition will submit an interim evaluation of management practice effectiveness in the 2011 Management Plan Update Report and a final evaluation in the 2012 Management Plan Update Report (Table 11).

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 will meet with the Regional Board quarterly to discuss Coalition activities in relation to the first high priority subwatersheds and the second high priority subwatersheds. The Coalition has already met with Regional Board staff on February 10, 2010 for its first quarterly meeting.

Table 12. 2010 Regional Board Quarterly Meeting dates (subject to change).

Quarterly Meetings	Meeting Date
First Quarter Meeting	February 10, 2010
Second Quarter Meeting	May 4, 2010
Third Quarter Meeting	August 3, 2010
Fourth Quarterly Meeting	November 2, 2010

Table 13. Priority subwatershed contacts including grower notifications and outreach/education meetings to track management practices.

Priority Site Subwatershed	Date	Category	Details	Who
Dry Creek @ Wellsford	January - August 2009	BMP Outreach and Education / Management Practice Tracking	Individual contact with targeted growers in Dry Creek subwatershed (current management practice evaluation).	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain	4-Jun-09	Grower Notification / Management Practice Tracking	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	23-Jun-09	Grower Notification / Management Practice Tracking	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
Prairie Flower Drain	June - September 2009	BMP Outreach and Education / Management Practice Tracking	Individual contact with targeted growers in Prairie Flower Drain subwatershed (current management practice evaluation).	Parry Klassen, Wayne Zipser
Duck Slough @ Hwy 99	May - August 2009	BMP Outreach and Education / Management Practice Tracking	Individual contact with targeted growers in Duck Slough (above Hwy 99) subwatershed (current management practice evaluation).	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain	10-Sep-09	Grower Notification / Management Practice Tracking	Mailing to all members who have not responded to Coalition attempts to contact and schedule an individual meeting. Letter informed those members they have been dropped from the ESJWQC Coalition as of August 31, 2009 and must now seek alternative methods of complying with the ILRP.	Parry Klassen, Wayne Zipser
Dry Creek @ Wellsford, Duck Slough @ Hwy 99, Prairie Flower Drain	30-Sep-09	Grower Notification / Management Practice Tracking	Individual survey recap and letter mailed to participants in most recent round of individual contact meetings to provide members with a copy for their records and remind them they will be contacted in spring 2010 to regarding the implementation status of recommended management practices.	Parry Klassen, Wayne Zipser

Priority Site Subwatershed	Date	Category	Details	Who
Cottonwood Creek	14-Oct-09	Grower Notification / Management Practice Tracking	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	21-Oct-09	BMP Outreach and Education / Management Practice Tracking	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	22-Oct-09	BMP Outreach and Education / Management Practice Tracking		Parry Klassen
Cottonwood Creek, Highline Canal @ Hwy 99	10-Nov-09	Grower Notification / Management Practice Tracking	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	9-Feb-10	Grower Notification / Management Practice Tracking	Duck Slough Follow-Up to 2009 Individual Contacts Meeting Announcement: sent to all members who participated in an individual meeting during 2009.	Parry Klassen
Dry Creek @ Wellsford	15-Feb-10	Grower Notification / Management Practice Tracking	Dry Creek Follow-Up to 2009 Individual Contacts Meeting Announcement: sent to all members who participated in an individual meeting during 2009.	Parry Klassen
Duck Slough @ Hwy 99	19-Feb-10	BMP Outreach and Education / Management Practice Tracking	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	26-Feb-10	BMP Outreach and Education / Management Practice Tracking	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

Priority Site Subwatershed	Date	Category	Details	Who
Prairie Flower Drain	4-Mar-10	Grower Notification / Management Practice Tracking	Prairie Flower Drain Follow-Up to 2009 Individual Contacts Meeting Announcement: sent to all members who participated in an individual meeting during 2009.	Parry Klassen
Prairie Flower Drain	19-Mar-10	BMP Outreach and Education / Management Practice Tracking	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

SUMMARY OF IMPLEMENTED MANAGEMENT PRACTICES

The Coalition identified eight general classifications of management practices that would be effective at reducing negative 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/tail water return system,
7. Retention pond/holding basin, and
8. Grass waterways or grass filter strips.

The Coalition's Management Plan submitted on September 30, 2008 anticipated that due to Coalition outreach the first four practices would be implemented when necessary, from April to September in 2009 and the second four (structural improvements) the following year by December 2010. Due to delays in contacts and outreach, the Coalition moved the anticipated implementation dates to 2010 (Table 14), originally submitted in the Management Plan Update Report on April 1, 2009).

Table 14. Management Plan implementation schedule for high priority subwatersheds (2008-2010).

Management Practice	Anticipated Implementation Date	Anticipated Evaluation Date
Reduction in application rates	April - September 2010	April 2011
Spray drift management	April - September 2010	April 2011
Switch to low risk products	April - September 2010	April 2011
Polyacrylamide (PAM)	April - September 2010	April 2011
Sprinkler or microspray irrigation	December 2009 - 2010	April 2011
Recirculation/tail water return system	December 2009 - 2010	April 2011
Retention pond/holding basin	December 2009 - 2010	April 2011
Grass waterways or grass filter strips	December 2009 - 2010	April 2011

The Coalition will submit a full evaluation of current and implemented management practices in the April 2011 Management Plan Update Report for the first high priority subwatersheds. The following evaluation is an preliminary analysis based on survey information obtained from individual contacts and preliminary follow up contacts for the first high priority subwatersheds Dry Creek @ Wellsford Rd, Duck Slough @ Hwy 99 and Prairie Flower Drain @ Crows Landing Rd.

Current Management Practices – 2008

Dry Creek @ Wellsford Rd

The Coalition contacted 22 targeted growers within the Dry Creek @ Wellsford Rd subwatershed that were determined to have the potential to drain directly to Dry Creek (including spray drift potential), were currently farming and had reported pesticide use of high priority constituents. The 22 members have farm approximately 6, 116 acres within the Dry Creek subwatershed which includes 68,620 acres.

Dry Creek has little irrigation drainage from parcels directly next to the creek. Of those surveyed, 86% of the acreage had no irrigation runoff. A majority of the acreage farmed by targeted growers was orchards and vineyards with a smaller amount of parcels with a combination of field/row crops and orchards and some pasture (Figure 5). The only irrigation runoff was associated with orchards (Figure 6).

Management practice surveys were divided into checklist subjects including Irrigation Water Management, Storm Drainage, Erosion and Sediment Management, Pest Management and Dormant Spray Management (Table 15). Table 15 lists the management practice survey question, associated answers, number of surveys with a specific answer, the percentage of respondents with a specific answer and the sum of acreage associated with a specific answer.

Most growers in Dry Creek utilize microirrigation and/or sprinklers to irrigate their parcels. Only 1% of the acres for which responses are available are irrigated by surface (flood) techniques. Most growers (86%) irrigate based on actual moisture levels and crop needs rather than on a set schedule.

There is a mixture of growers that have storm drainage when the soil is saturated in late winter (27%) and/or in 100 year storms (36%). Four growers utilize tail water return systems and/or settling ponds to manage storm runoff and over a third of the acreage has no storm drainage. All respondents indicated that they controlled erosion and sediment delivery by some means. Herbicides were applied by most growers with only 14% indicating no applications. However, almost two-thirds of the respondents did not specify the herbicide that they used.

Sixteen respondents indicated they had considered alternatives to using diazinon or chlorpyrifos during the growing season and 22 of 22 respondents indicated that they did not use dormant sprays. Over 98% of the acreage was sprayed with equipment that was calibrated prior to each application and the majority took numerous steps to manage their spray drift including adjusting spray nozzles to match the canopy profile (95%), shutting outside nozzles when spraying outer two rows (73%), spraying areas close to waterbodies when the wind is blowing away from them (86%), using air blast applications when wind is between 3-10 mph (73%), and using nozzles that provide the largest effective droplet size to minimize drift (86%).

Table 15. Current management practices utilized by targeted growers within Dry Creek @ Wellsford subwatershed (2009).

Checklist	Question	Answer	Count of Answers	Pct of Respondents	Sum of Associated Acreage
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	16	73%	5191.3
		Recirculation – Tail water return system	3	14%	3050.3
		Use drainage basins (sediment ponds) to capture and retain runoff	3	14%	3046.5
		Use of Polyacrylamide (PAM) to increase water infiltration and reduce furrow erosion	1	5%	2450
	Irrigation System	Microirrigation	13	59%	5445.52
		Not Recorded	1	5%	76
		Sprinkler	8	36%	808.4
		Surface	2	9%	62.5
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	19	86%	5643.12
		Irrigation District Deliveries	1	5%	26.3
		Not Recorded	3	14%	678
Section 2: Storm Drainage	How are you able to manage storm drainage?	No Storm Drainage	8	36%	1272.4
		Pump/Drain into waterway & able to control timing	2	9%	3147.2
		Pump/Drain into waterway & unable to control timing	8	36%	1191.8
		Recirculation – Tail water return system	1	5%	26.3
		Settling Pond	3	14%	2498.8
	When do you have storm water draining from your field?	After soil is saturated-late winter	6	27%	2076.5
		No Storm Drainage	4	18%	714.3
		Not Recorded	5	23%	2727.02
		Only in heavy (100 year) storms	8	36%	829.6
Section 3: Erosion & Sediment Management	Sediment management practices:	Constructed wetlands	1	5%	2450
		Grass Row Centers (Orchards, Vineyards)	19	86%	5574.1
		Maintain vegetated filter strips around field perimeter at least 10' wide	16	73%	5558.32
		Vegetation is planted along or allowed to grow along ditches	16	73%	5904.42
	Do you apply herbicides during winter months?	Do not apply	3	14%	160.12
		Glyphosate (Round-Up)	6	27%	3721.2

Checklist	Question	Answer	Count of Answers	Pct of Respondents	Sum of Associated Acreage
		Goal	1	5%	697.2
		Not Recorded	14	64%	2466.1
		Paraquat (Gramaxone)	5	23%	3685
	If waterway crosses or borders pasture, how is livestock managed?	N/A	22	100%	6321.12
		Not Recorded	1	5%	26.3
		Riparian vegetation prevents livestock access to water	1	5%	26.3
		Water not present when livestock is in pasture	1	5%	26.3
		Waterway is fenced	1	5%	26.3
Section 4: Pest Management	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	N/A	7	32%	938.72
		Yes	16	73%	5408.7
	How often is spray equipment calibrated?	Never	1	5%	26.3
		Once per year	1	5%	40
		Prior to each application	21	95%	6281.12
	Spray management practices:	Adjust spray nozzles to match crop canopy profile	21	95%	6245.12
		Outside nozzles shut off when spraying outer rows next to sensitive sites	16	73%	5590.42
		Spray areas close to waterbodies when the wind is blowing away from them	19	86%	5978.12
		Use air blast applications when wind is between 3-10 mph and upwind of a sensitive site	16	73%	4953.4
		Use electronic controlled sprayer nozzles	1	5%	2450
		Uses of nozzles that provide largest effective droplet size to minimize drift	19	86%	6048.12
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	22	100%	6321.12

Figure 5. Direct drainage parcels in Dry Creek @ Wellsford subwatershed.

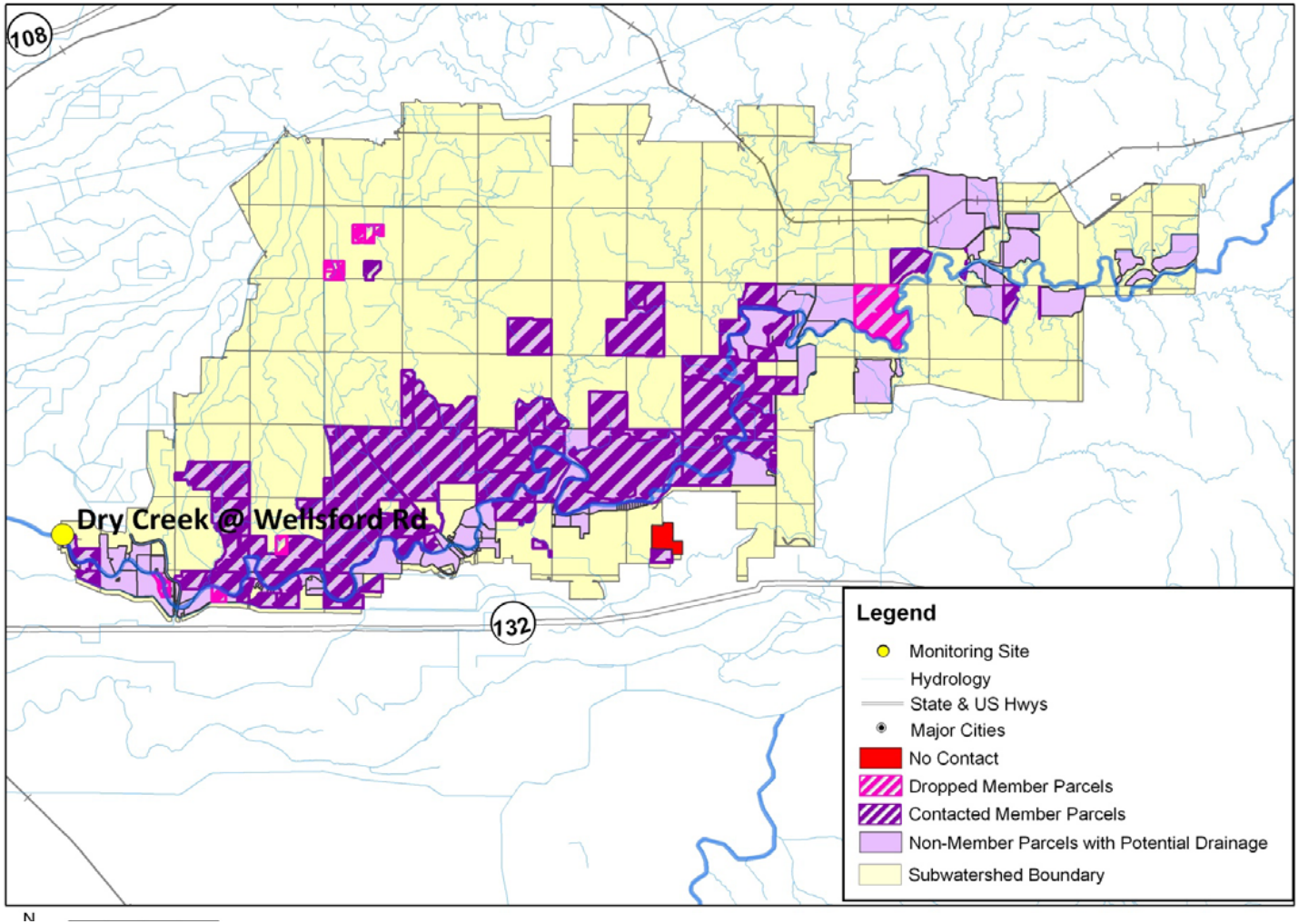
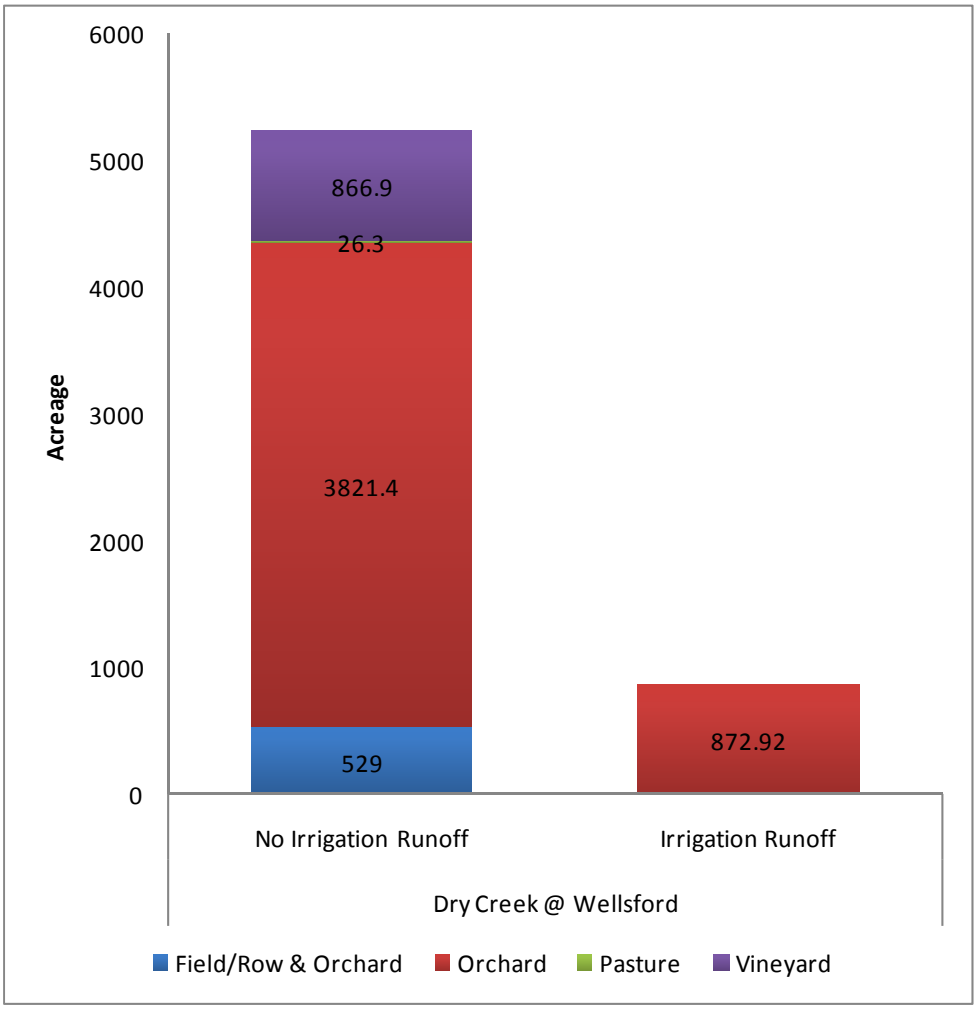


Figure 6. Dry Creek @ Wellsford crop acreage information from member surveys based on crop type and irrigation runoff.



Duck Slough @ Hwy 99

The Coalition contacted 23 targeted growers within the Duck Slough @ Hwy 99 subwatershed that were determined to have the potential to drain directly to Duck Slough (including spray drift potential), were currently farming and had reported pesticide use of high priority constituents. The 23 members have farm approximately 4,017 acres within the Duck Slough subwatershed which includes 17,559 acres (Table 16).

Of those surveyed, 52% of the acreage had irrigation runoff. A majority of the acreage farmed by targeted growers was orchards and field/row crops and some pasture (Figure 7). The only acreage that did not have irrigation runoff was orchard parcels (Figure 8).

In Duck Slough (above Hwy 99) the most common management practices currently utilized by targeted growers are:

- Irrigation Water Management
- Storm Drainage
- Erosion and Sediment Management
- Pest Management
- Dormant Spray Management

Duck Slough has more irrigation and storm water drainage from parcels directly next to the creek than Dry Creek. Of those surveyed in the Duck Slough watershed, 50% of the respondents with slightly over 50% of the acreage used flood irrigation and only 42% used drip or microspray systems. However, 88% used laser leveled fields, 63% used recirculation systems, and 38% used sediment retention ponds to prevent discharges to surface waters.

There is a mixture of growers that have storm drainage when the soil is saturated in late winter (58%) and/or in 100 year storms (29%). Only one respondent indicated that there was no storm water drainage from the property, and 50% of the respondents indicated they pumped storm water to surface waters and could not control the timing. All respondents indicated that they controlled erosion and sediment delivery by some means. Herbicides were applied by most growers with only 4% indicating no applications. However, 88% of the respondents did not specify the herbicide that they used.

Fourteen respondents indicated they had considered alternatives to using diazinon or chlorpyrifos during the growing season but 10 respondents indicated that the question was not applicable to their operation. All respondents indicated that they did not use dormant sprays. Only 4% of the acreage was sprayed with equipment that was not calibrated in some way; 75% of the respondents calibrated prior to each application, 13% calibrated once per month, and 13% calibrated once per year. The majority took numerous steps to manage their spray drift including adjusting spray nozzles to match the canopy profile (96%), shutting outside nozzles when spraying outer two rows (75%), spraying areas close to waterbodies when the wind is blowing away from them (88%), using air blast applications when wind is between 3-10 mph (71%), and using nozzles that provide the largest effective droplet size to minimize drift (96%).

Table 16. Current management practices utilized by targeted growers within Duck Slough @ Hwy 99 subwatershed (2008).

Checklist	Question	Answer	Count of Answers	Pct of Respondents	Sum of Associated Acreage
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	21	88%	3438.2
		Recirculation - Tail water return system	15	63%	2181.9
		Use drainage basins (sediment ponds) to capture and retain runoff	9	38%	2072.7
	Irrigation System	Microirrigation	10	42%	2410.3
		Not Recorded	2	8%	62
		Other _____	2	8%	508
		Surface	12	50%	1264.9
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	23	96%	3878.3
		Not Recorded	2	8%	137.9
Section 2: Storm Drainage	How are you able to manage storm drainage?	No Storm Drainage	1	4%	195
		Pump/Drain into waterway & able to control timing	2	8%	249
		Pump/Drain into waterway & unable to control timing	12	50%	1789.3
		Recirculation - Tailwater return system	4	17%	479.9
		Settling Pond	8	33%	1848.8
	When do you have storm water draining from your field?	After soil is saturated-late winter	14	58%	1582
		No Storm Drainage	1	4%	195
		Not Recorded	3	13%	416.9
		Only in heavy (100 year) storms	7	29%	1822.3
Section 3: Erosion & Sediment Management	Sediment management practices:	Grass Row Centers (Orchards,Vineyards)	18	75%	3251.3
		Maintain vegetated filter strips around field perimeter at least 10' wide	11	46%	1398.5
		Vegetation is planted along or allowed to grow along ditches	21	88%	3617.2
	Do you apply herbicides during winter months?	Do not apply	1	4%	55.9
		Glyphosate (Round-Up)	3	13%	384
		Not Recorded	21	88%	3576.3
	If waterway crosses or borders pasture, how is livestock managed?	N/A	24	100%	3821.2
		Not Recorded	1	4%	195
		Riparian vegetation prevents livestock access to water	1	4%	195
		Water not present when livestock is in pasture	1	4%	195

Checklist	Question	Answer	Count of Answers	Pct of Respondents	Sum of Associated Acreage
		Waterway is fenced	1	4%	195
Section 4: Pest Management	Spray management practices:	Adjust spray nozzles to match crop canopy profile	23	96%	3789.2
		Outside nozzles shut off when spraying outer rows next to sensitive sites	18	75%	2371.9
		Spray areas close to waterbodies when the wind is blowing away from them	21	88%	3204.7
		Use air blast applications when wind is between 3-10 mph and upwind of a sensitive site	17	71%	2639.5
		Use electronic controlled sprayer nozzles	1	4%	82
		Uses of nozzles that provide largest effective droplet size to minimize drift	23	96%	3800.2
	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	N/A	10	42%	1443.3
		No	1	4%	210
		Yes	14	58%	2362.9
	How often is spray equipment calibrated?	N/A	1	4%	195
		Once per month	3	13%	264
		Once per year	3	13%	159
		Prior to each application	18	75%	3398.2
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	25	104%	4016.2

Figure 7. Direct drainage parcels in Duck Slough @ Hwy 99 subwatershed.

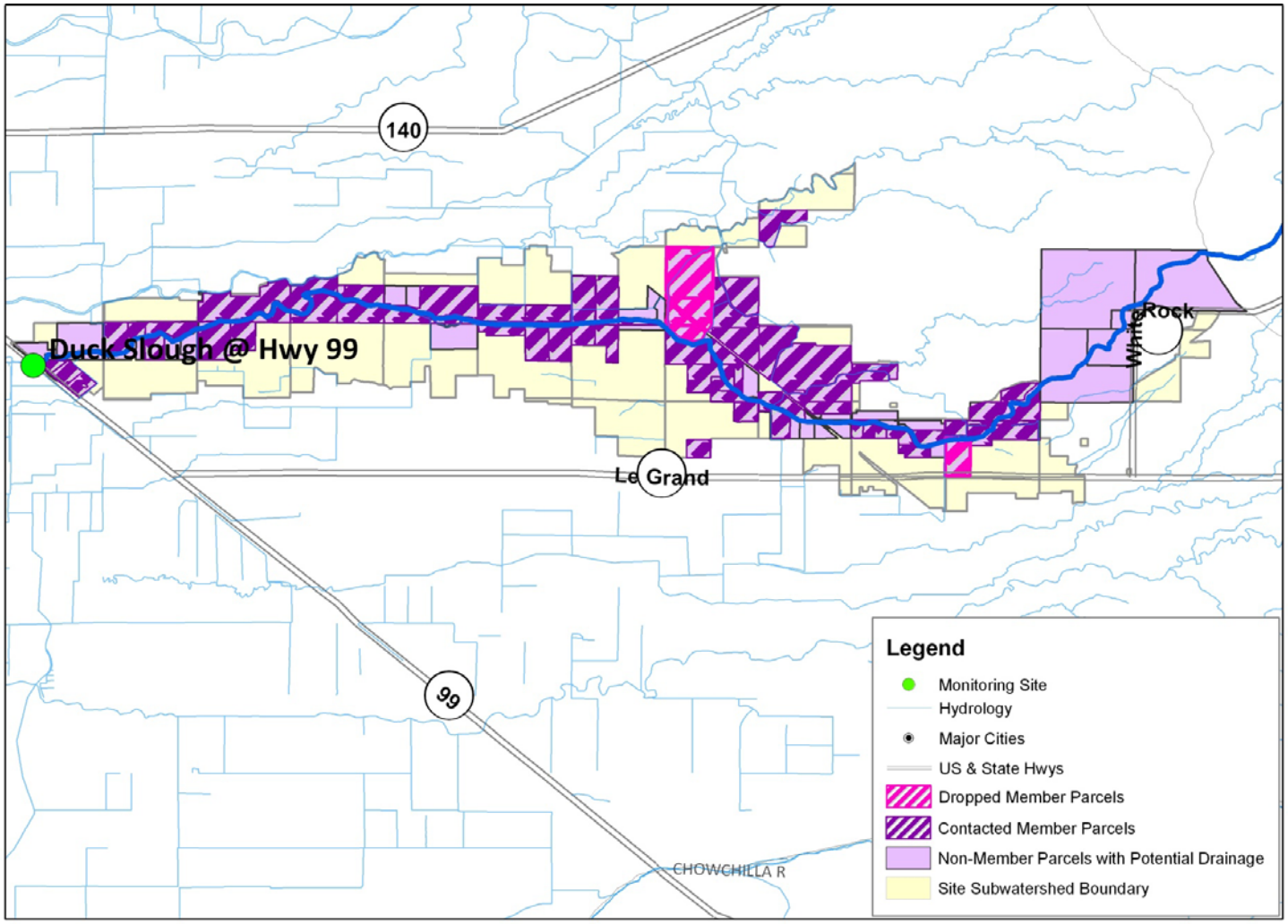
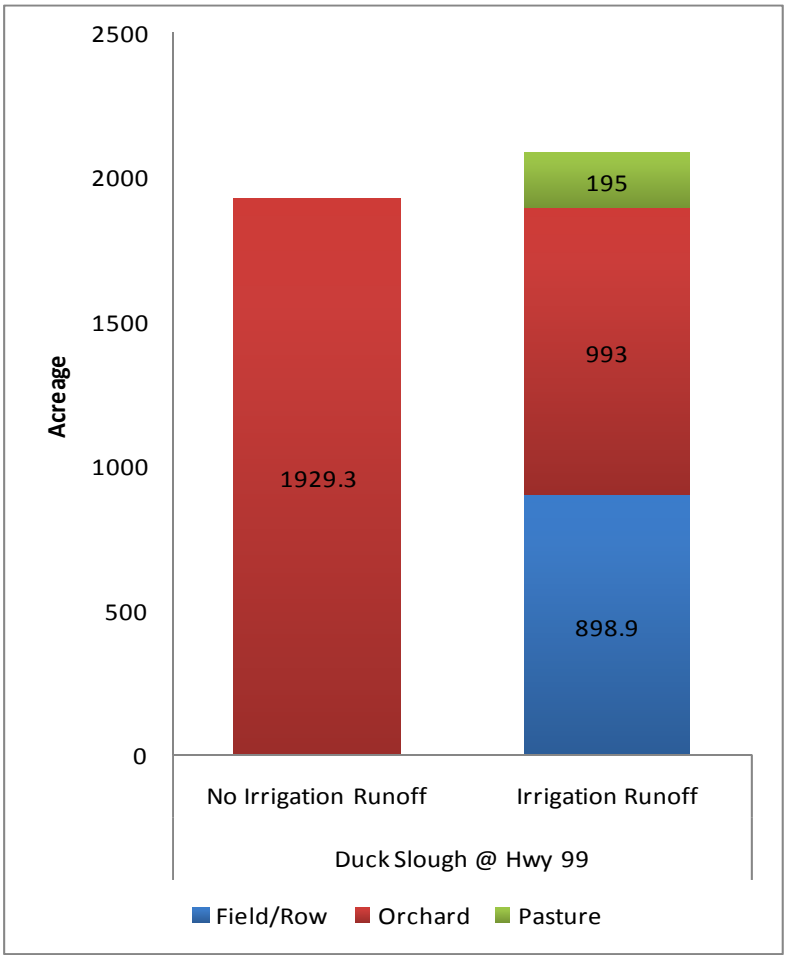


Figure 8. Duck Slough @ Hwy 99 crop acreage information from member surveys based on crop type and irrigation runoff.



Prairie Flower Drain @ Crows Landing Rd

The Coalition contacted 11 targeted growers within the Prairie Flower Drain @ Crows Landing Rd subwatershed that were determined to have the potential to drain directly to the drain, were currently farming and had reported pesticide use of high priority constituents. The 11 members farm approximately 865 acres within the Prairie Flower Drain subwatershed which includes 3,106 acres (Table 17).

Prairie Flower Drain is dominated by field/row crops and dairy acreage. A majority of the parcels farmed by targeted growers were determined to have irrigation drainage (95%, Figure 9 and 10).

Of those surveyed in the Prairie Flower Drain watershed, 82% of the respondents with slightly over 95% of the acreage used flood irrigation and there was no reported use of drip or microspray systems. However, 64% used laser leveled fields, 45% used recirculation systems, 18% used sediment retention ponds and 18% used PAM to reduce furrow erosion and prevent discharges to surface waters. Only 55% of the respondents irrigated based on soil moisture levels and 27% did not respond.

There is a mixture of respondents that have storm drainage when the soil is saturated in late winter (27%) and/or in 100 year storms (9%). Only two respondents (18%) indicated that there was no storm water drainage from the property, and 36% did not respond. 27% of the respondents indicated they pumped storm water to surface waters and could not control the timing and an additional 27% used a settling pond to hold storm water. All respondents indicated that they controlled erosion and sediment delivery by some means. Herbicides use is difficult to determine as 45% indicated no applications and 55% did not respond.

Two respondents indicated they had considered alternatives to using diazinon or chlorpyrifos during the growing season and 8 respondents indicated that the question was not applicable to their operation. All respondents indicated that they did not use dormant sprays. All respondents indicated that they calibrated their nozzles prior to each application. The majority took numerous steps to manage their spray drift including adjusting spray nozzles to match the canopy profile (82%), shutting outside nozzles when spraying outer two rows (55%), spraying areas close to waterbodies when the wind is blowing away from them (91%), using air blast applications when wind is between 3-10 mph (36%), and using nozzles that provide the largest effective droplet size to minimize drift (91%).

Table 17. Current management practices utilized by targeted growers within Prairie Flower Drain subwatershed (2008).

Checklist	Question	Answer	Count of Answers	Pct of Respondents	Sum of Associated Acreage
Section 1: Irrigation Water Management	Irrigation management practices:	Laser leveled fields	7	64%	553.3
		Recirculation – Tail water return system	5	45%	331.9
		Use drainage basins (sediment ponds) to capture and retain runoff	2	18%	76.9
		Use of Polyacrylamide (PAM) to increase water infiltration and reduce furrow erosion	2	18%	76.9
	Irrigation System	Not Recorded	1	9%	39
		Surface	9	82%	780
	Which do you base your irrigation schedule on:	Actual Moisture Levels in soil/crop needs	6	55%	286.6
		Irrigation District Deliveries	1	9%	150
		Not Recorded	3	27%	382.4
Section 2: Storm Drainage	How are you able to manage storm drainage?	No Storm Drainage	1	9%	45
		Pump/Drain into waterway & unable to control timing	3	27%	347.8
		Settling Pond	3	27%	347.8
	When do you have storm water draining from your field?	After soil is saturated-late winter	3	27%	347.8
		No Storm Drainage	2	18%	195
		Not Recorded	4	36%	236.5
		Only in heavy (100 year) storms	1	9%	39.7
Section 3: Erosion & Sediment Management	Sediment management practices:	Maintain vegetated filter strips around field perimeter at least 10' wide	6	55%	426.2
		Vegetation is planted along or allowed to grow along ditches	8	73%	742.1
	Do you apply herbicides during winter months?	Do not apply	5	45%	355.5
		Not Recorded	6	55%	508.5
	If waterway crosses or borders pasture, how is livestock managed?	N/A	10	91%	819
Section 4: Pest Management	Spray management practices:	Adjust spray nozzles to match crop canopy profile	9	82%	743
		Outside nozzles shut off when spraying outer rows next to sensitive sites	6	55%	411.2
		Spray areas close to waterbodies when the wind is blowing away from them	10	91%	819

Checklist	Question	Answer	Count of Answers	Pct of Respondents	Sum of Associated Acreage
		Use air blast applications when wind is between 3-10 mph and upwind of a sensitive site	4	36%	295.5
		Use electronic controlled sprayer nozzles	4	36%	295.5
		Uses of nozzles that provide largest effective droplet size to minimize drift	10	91%	819
	Have you considered alternative strategies to using diazinon or chlorpyrifos either during the dormant or growing season?	N/A	8	73%	593
		Yes	2	18%	226
	How often is spray equipment calibrated?	Prior to each application	10	91%	819
Section 5: Dormant Spray Management	How many acres are sprayed with dormant pesticides?	No Dormant Sprays	10	91%	819

Figure 9. Direct drainage parcels in Prairie Flower Drain @ Crows Landing Rd.

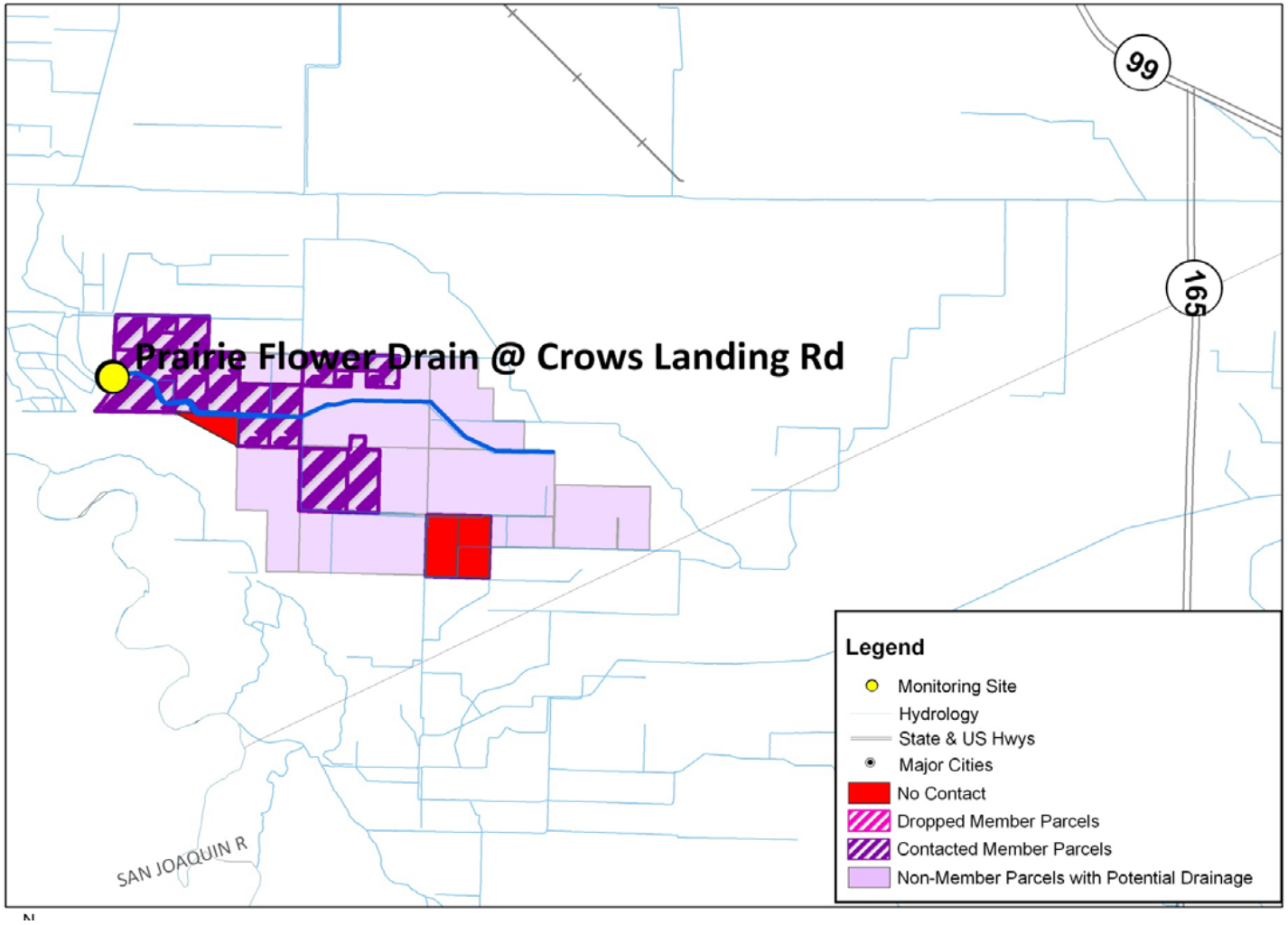
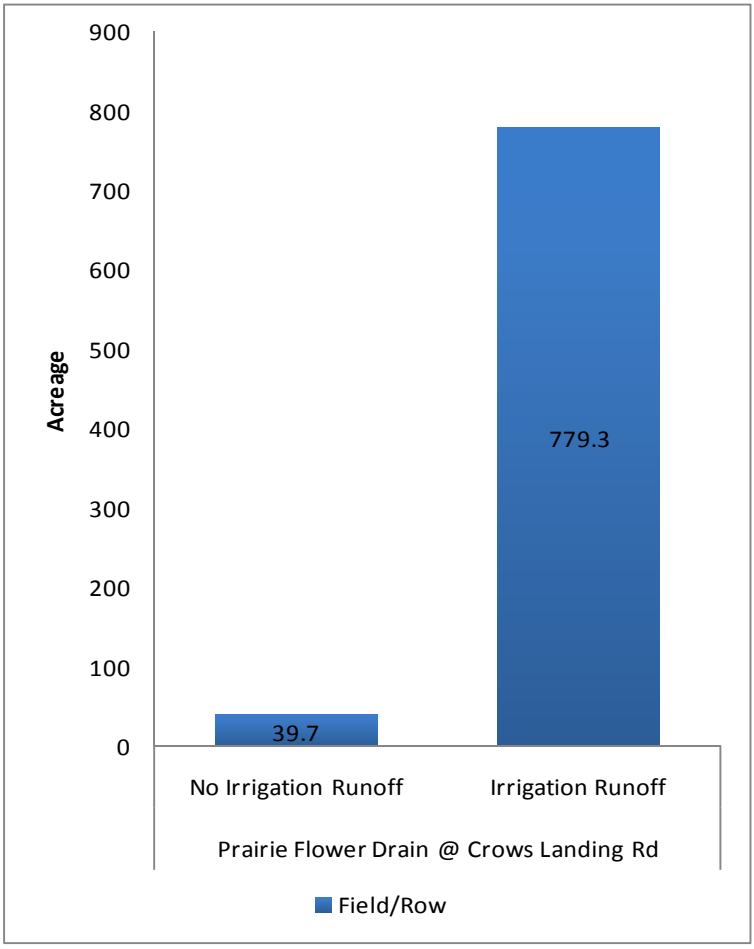


Figure 10. Prairie Flower Drain @ Crows Landing Rd crop acreage information from member surveys based on crop type and irrigation runoff.

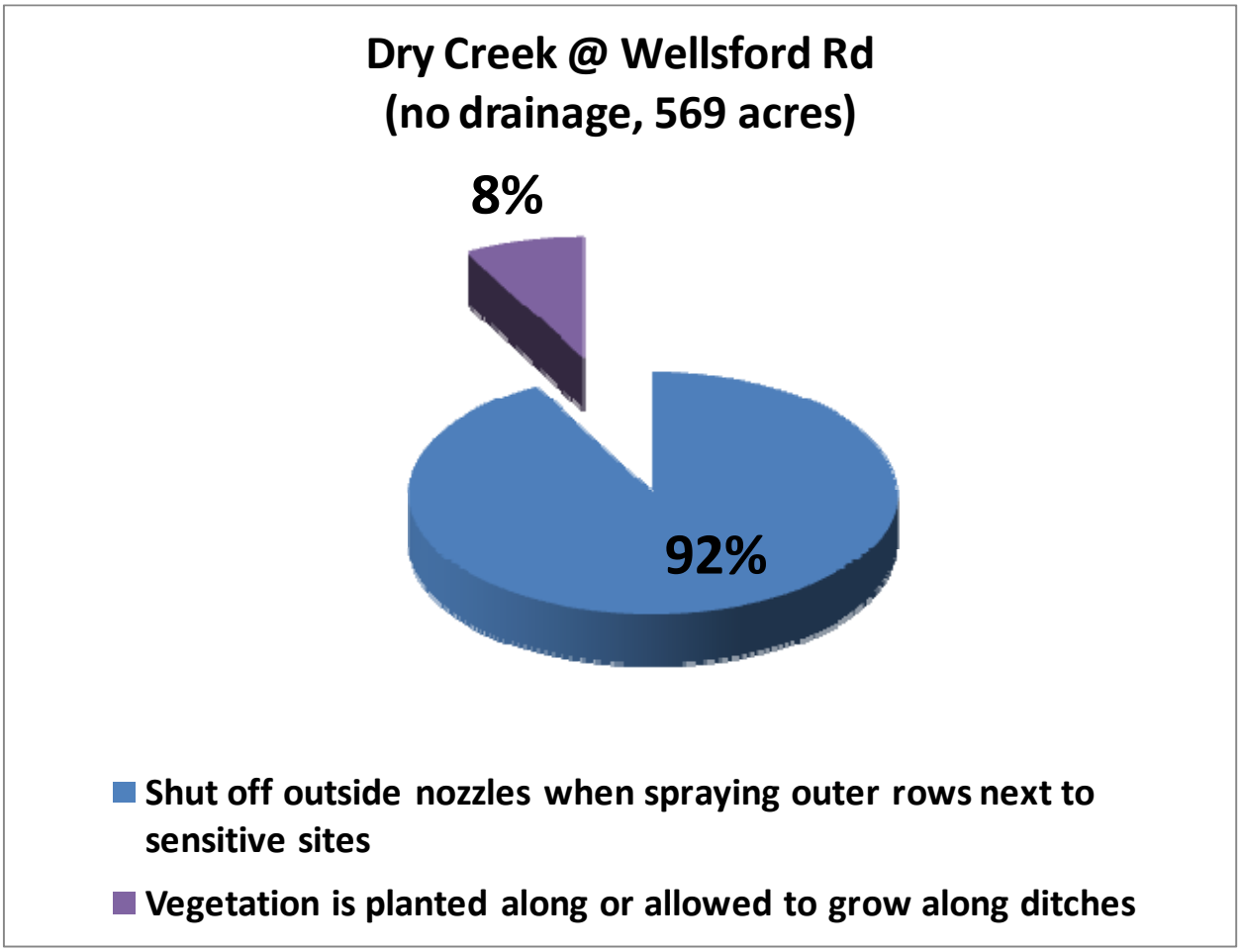


Recommended Management Practices – 2009/2010

Dry Creek @ Wellsford Rd

In Dry Creek, the lack of irrigation drainage suggests that preventing spray drift can eliminate water quality problems. This was also the conclusion of an analysis of chlorpyrifos concentrations and pesticide use which indicated that chlorpyrifos in the water was unlikely to be the result of irrigation runoff. Drift management is especially important in this subwatershed and a majority of the growers were recommended to implement additional spray drift practices such as shutting off outside nozzles when spraying outer rows next to creeks (Figure 11).

Figure 11. Percentage of acreage represented by recommended management practices for Dry Creek @ Wellsford. All members that were recommended to implement additional practices did not have irrigation drainage.



Duck Slough @ Hwy 99

For acreages with irrigation drainage in the Duck Slough (above Highway 99) watershed, a combination of spray drift, pump/drain control of storm drainage, planting of vegetation in ditches and addition of drainage basins/sediment ponds was recommended for growers (Figures 12 and 13). For growers with and without irrigation drainage, a majority of growers were recommended to implement additional spray drift practices such as shutting off outside nozzles when spraying outer rows (Figure 12 and 13). One grower representing 31% of the acreage with recommended practices was encouraged to utilize a drainage basin/sediment pond to reduce irrigation runoff (Figure 12).

Figure 12. Percentage of acreage represented by recommended management practices for Duck Slough @ Hwy 99 for members with irrigation drainage.

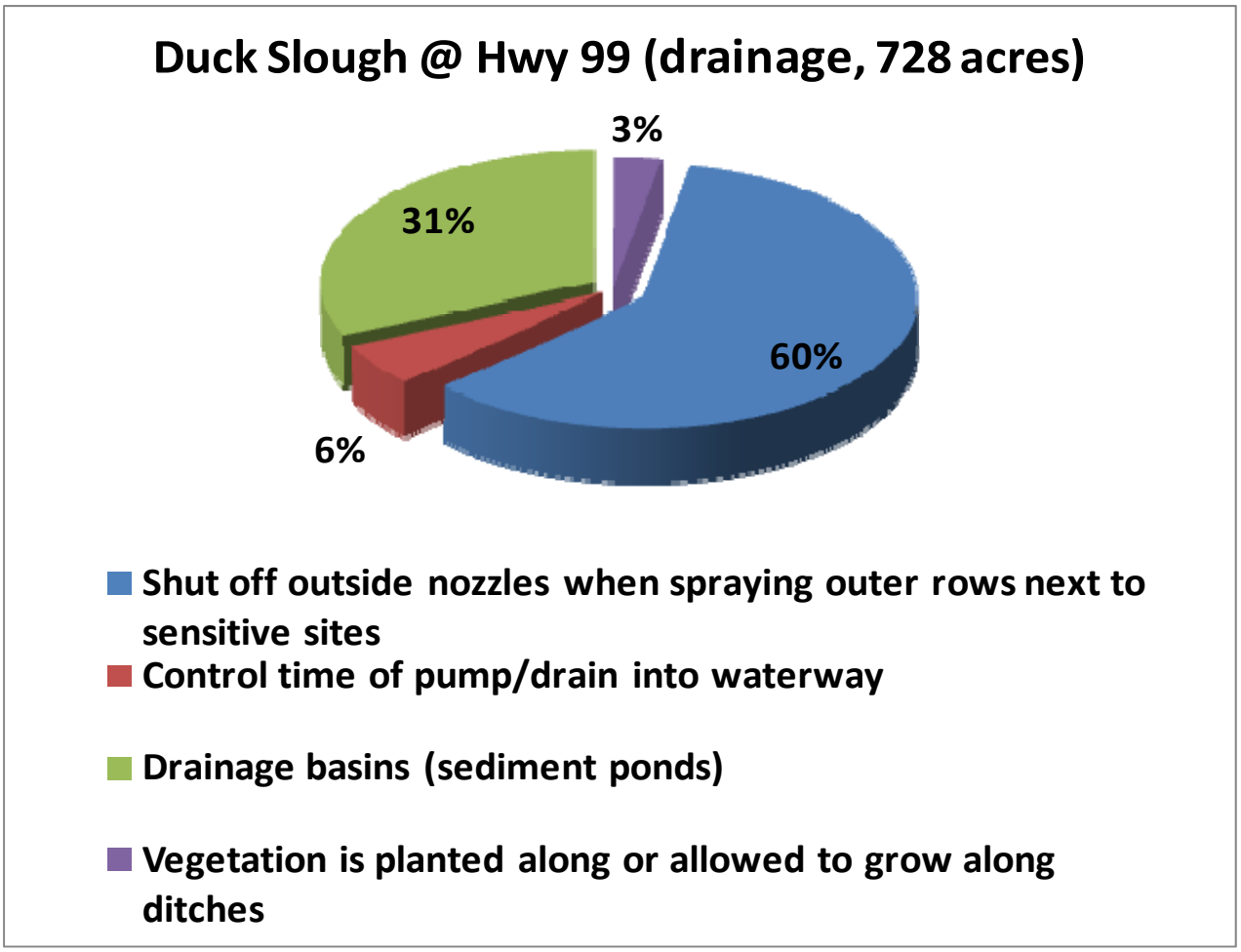
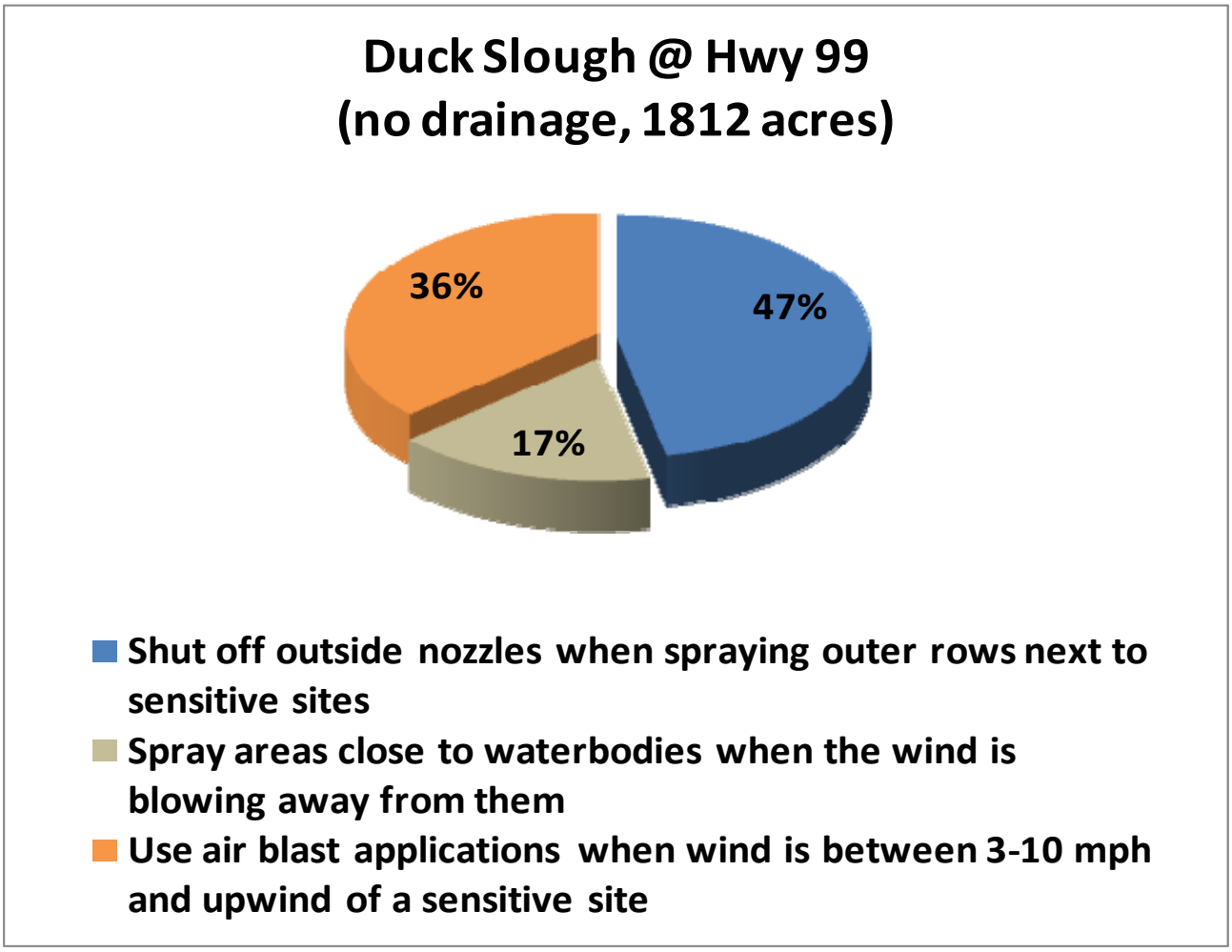


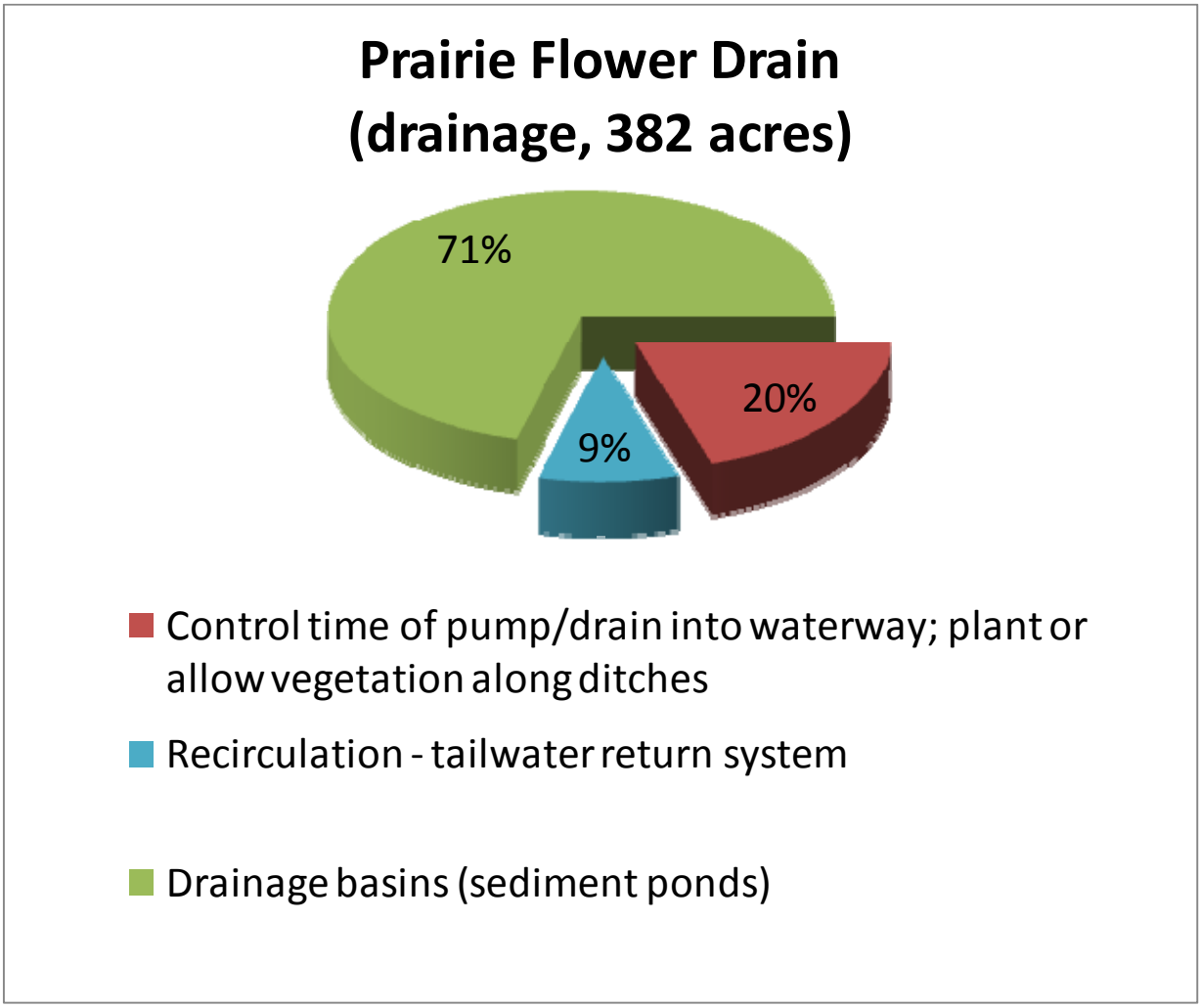
Figure 13. Percentage of acreage represented by recommended management practices for Duck Slough @ Hwy 99 for members without irrigation drainage.



Prairie Flower Drain @ Crows Landing Rd

The management practices recommended to these farmers included controlling the timing of pumping/draining into the waterway, planting vegetation in the ditches and constructing drainage basins/sediment ponds (Figure 14). One grower representing 71% of the acreages with recommended practices was encouraged to utilize a drainage basin (Figure 14).

Figure 14. Percentage of acreage represented by recommended management practices for Prairie Flower Drain. All members that were recommended to implement additional practices have irrigation drainage.



Implemented Management Practices – 2009/2010

Follow up meetings were conducted in 2010 on February 19, February 26 and March 19 for Duck Slough @ Hwy 99, Dry Creek @ Wellsford, and Prairie Flower Drain @ Crows Landing, respectively. The follow up meetings utilized interactive hand held devices to document grower responses based on questions posed in a Power Point presentation. This allowed for anonymous, instantaneous responses at an individual grower level to be conducted in a grower group setting.

There were 21 follow-up questions asked of growers who had filled out surveys in 2009 (Table 18).

Table 18. Targeted grower follow up questions for high priority subwatersheds (2008 -2010).

Targeted Grower Follow Up Questions
01) Did you have irrigation drainage in 2009?
02) Any changes in crop type? (switched from row crops to orchards)?
In 2009, did you implement the following management practices:
03) Laser Leveled Fields
04) Recirculation/ Tail water Return System
05) Drainage Basins/Sediment Ponds To Capture & Retain Runoff
06) Use Polyacrylamide (PAM) to Increase Water Infiltration & Reduce Furrow Erosion
07) Microirrigation
08) Sprinkler
09) Reduce Amount of Water Used in Surface Irrigation
10) Add Constructed Wetlands
11) Grass Row Centers
12) Add Filter Strips Around Field Perimeter At Least 10' Wide
13) Vegetation Allowed to Grow in Drain Ditches
14) Outside Nozzles Are Shut Off When Spraying Outer Rows Next To Sensitive Areas
15) Added control device to discharge (storm drainage)
16) Did you implement new practices based on information from contact with Coalition representatives?
17) Did you implement additional practices not listed on previous slides?
18) Did you wish to receive quarterly water quality information from the Coalition?
19) Would you like to receive additional information regarding NRCS funding for management practice implementation?
20) Is this type of meeting a good way to provide information?
21) Is this approach to solving water quality problems viable in your opinion?

Preliminary responses were positive with 100% of growers responding that yes, this approach to solving water quality problems is viable and that this type of meeting was a good way to provide information (Question 21 and 20, Table 18). Fifty-three percent of growers would like

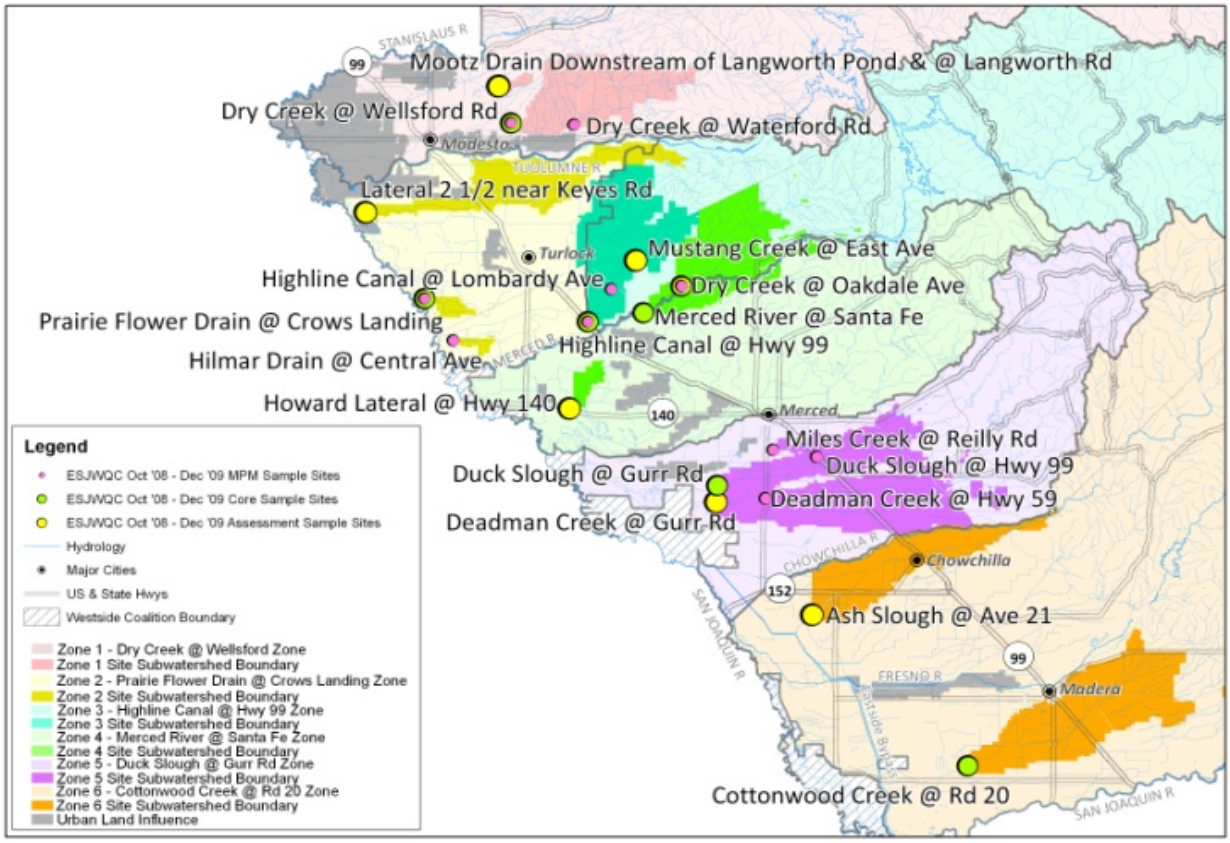
to receive additional information regarding NRCS funding for management practice implementation and overall, 50% of the growers implemented new practices based on information from contacts with Coalition representatives (Question 19 and 16, Table 18). Approximately half of the targeted growers from each subwatershed attended the meetings and participated in answering follow up questions.

The Coalition will conduct additional follow up activities by conducting phone interviews, in person contact and or another luncheon meeting with interactive slides with growers who did not attend the follow up meetings and asking similar questions on the phone. The Coalition anticipates completing follow-up surveys with growers in all three first high priority subwatersheds by June 30, 2010.

EVALUATION OF MANAGEMENT PRACTICE EFFECTIVENESS

The Coalition is still obtaining management practice implementation information from growers within the first three high priority subwatersheds which are located in Coalition Zones 1, 2 and 5 (see the Coalition's MRPP for Zone descriptions). Management Plan Monitoring was conducted in 2007, 2008 and 2009 to identify sources and evaluate changes in water quality. Despite annual Coalition meetings and management practice mailings, the Coalition continued to have exceedances of high priority constituents such as chlorpyrifos. In 2009, the Coalition initiated individual contacts as part of its Management Plan strategy and conducted farm visits to determine what additional management practices could be implemented within the first three high priority subwatersheds (2008 – 2010).

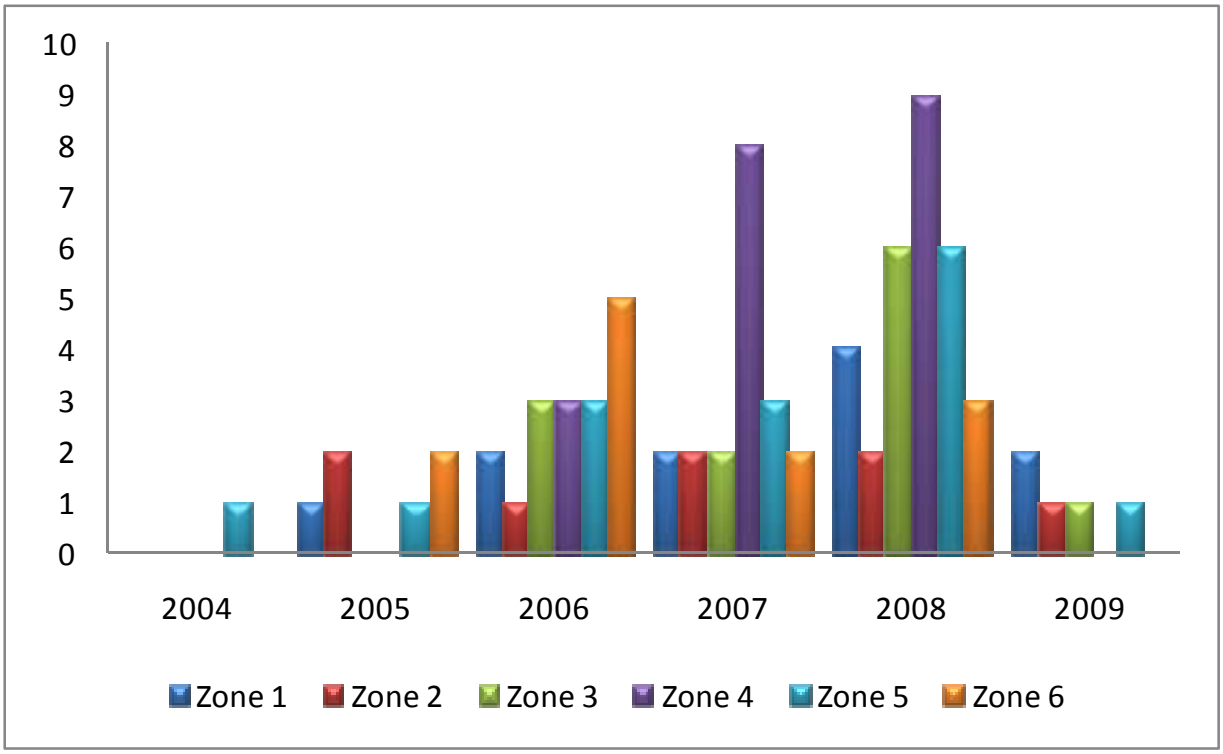
Figure 15. Monitoring locations sampled during 2009 for core, assessment and Management Plan Monitoring including site subwatershed designation and zone.



The number of chlorpyrifos exceedances within the six Coalition Zones decreased from 2008 to 2009 (Figure 16). The number of exceedances that occurred in 2009 compared to those that occurred in 2008 were reduced from four exceedances to two in Zone 1 (Dry Creek @ Wellsford Zone) and from six exceedances to one in both Zones 2 (Prairie Flower Drain @ Crows Landing Rd Zone) and 5 (Duck Slough @ Gurr Rd Zone)(Figure 16). In addition, one of the exceedances that occurred in 2009 in Zone 1 was in a non contiguous water body that was sampled per ILRP

guidelines. It appears that the Management Plan strategy of conducting individual contacts and discussing management practices and water quality issues on grower's farms has had an impact on not only the number of management practices implemented within the priority subwatersheds but also the overall zone water quality in regards to chlorpyrifos exceedances.

Figure 16. Exceedance counts of the chlorpyrifos water quality trigger limit from 2004 - 2009 within the ESJWQC Zones.



The Coalition conducted MPM within 11 site subwatersheds during 2009 plus one upstream location within the same site subwatershed (Dry Creek @ Waterford) (Table1). Of the 20 MPM samples collected for chlorpyrifos analysis, three samples had detections above 0.015 µg/L (15% of the samples collected specifically for MPM) (Table 3). One of the chlorpyrifos exceedances occurred in Dry Creek @ Wellsford but was most likely due to a dairy that had sprayed 120 acres of corn within the time period and also had a discharge of lagoon water resulting in the death of 40-50 oak trees as a result of high ammonia in the water. The other two exceedances occurred in July at Highline Canal @ Hwy 99 (Zone 3) which and Miles Creek @ Reilly Rd (Zone 5). The Coalition will continue to monitor at Dry Creek @ Wellsford and Highline Canal @ Hwy 99 in 2010 during months of past exceedances. MPM will be conducted at Miles Creek when it becomes a high priority subwatershed in 2013.

All copper concentrations from samples collected during 2009 were below exceedance levels (both normal monitoring and MPM). The Coalition will continue to monitor for copper in 2010

during months of past exceedances however it anticipates similar results indicating improved copper management practices.

There was no toxicity to Ceriodaphnia in MPM samples collected in 2009 and one algae toxicity in May (10% of samples collected specifically for MPM, Table 3). The algae toxicity occurred at Prairie Flower Drain @ Crows Landing Rd and will be monitored for again in 2010.

The Coalition will conduct MPM within the first three high priority subwatersheds (2008 – 2010) to obtain water quality results during Year 2 of the Management Plan Monitoring flow chart (Figure 2). In addition, the Coalition will conduct MPM in four second high priority subwatershed (2010 – 2012) which will begin their Year 1 of focused outreach. These sites include Bear Creek @ Kibby Rd, Cottonwood Creek @ Rd 20, Duck Slough @ Gurr Rd and Highline Canal @ Hwy 99. MPM conducted in 2010 will include samples collected for copper, chlorpyrifos, diazinon, diuron and simazine analysis as well as toxicity to *C. dubia, S. capricornutum* and *H. azteca*. The Coalition has already begun individual contacts within Cottonwood Creek and Highline Canal @ Hwy 99 and has surveys for 26% of the targeted growers in Cottonwood Creek and 30% of the targeted growers within Cottonwood Creek. Individual contacts resulting in filled out surveys will be completed by May 30, 2010 allowing for management practice implementation during the summer of 2010.

STATUS OF TMDL CONSTITUENTS

The ESJWQC has established monitoring and management activities as required in the Regional Board's Basin Plan for the Sacramento and San Joaquin River basins. The Basin Plan sets forth Total Maximum Daily Load (or TMDL) requirements for dischargers and requires that dischargers comply with the monitoring and management criteria defined in the Basin Plan. A narrative concerning each special monitoring constituent has been documented below as an effort by the Coalition to describe how it is meeting the TMDL requirements for Coalition members.

If an exceedance occurs for a TMDL constituent (i.e. chlorpyrifos, diazinon, salt and boron) a management plan is required for that constituent in that site subwatershed regardless of whether there was a second exceedance.

A management plan for a TMDL constituent results in additional focused efforts within subwatersheds. Coalition efforts in all zones include but are not limited to: (1) continued monitoring at periods when peak pesticide use occurs, (2) analysis of Pesticide Use Report (PUR) data, (3) Management Plan Monitoring, (4) holding site subwatershed grower meetings, (5) encouraging and evaluating implementation of management practices, and (6) addressing the seven compliance components described in the Basin Plan in conjunction with dairy operators with irrigated lands and other entities identified as potential sources of discharges. The Coalition addresses toxicity, pesticides, and sediment bound analytes with specific management practices whether or not there is a TMDL.

Intensive outreach and documentation of implemented management practices occur throughout the Coalition, but greater efforts to acquire this information are made at the site subwatersheds that the Coalition has designated as high priority subwatersheds (see Table 6). The Coalition informs growers with irrigated land about water quality and the status of evolving water quality objectives. The Coalition also obtains information on management practices from the growers. Furthermore, the Coalition conducts annual meetings to provide growers with information on management practices that can improve water quality. The Coalition evaluates various management practices and determines their suitability for irrigated land within the Coalition region.

Chlorpyrifos and Diazinon TMDL

The Basin Plan requires that dischargers either individually or as a coalition describe the actions that the discharger will take to reduce chlorpyrifos and diazinon discharges or also meet the applicable allocations by the required compliance date. The Coalition's Management Plan includes source identification and a means to identify management practices that will need to be implemented in specific areas to achieve expected reductions in chlorpyrifos and diazinon discharges. Improved management practices, including pesticide application practices to address drift, alternative irrigation practices to reduce runoff, and drainage management

practices to decrease or reduce the volume of runoff of contaminants have been implemented to meet water quality objectives and load allocations set forth in the Basin Plan. Meetings have been held quarterly with the Regional Water Board (Table 10) in order to evaluate progress in meeting these reductions, and revisions to the Management Plan will be made if sufficient progress is not being achieved.

The Coalition is following the development and continued assessment of chlorpyrifos and diazinon TMDLs in the San Joaquin River. The final San Joaquin River Diazinon and Chlorpyrifos Basin Plan Amendment Staff Report was completed in October 2005. Since then, the Regional Water Quality Control Board has been working to develop new amendments to the Basin Plan for the control of discharges of pesticides into selected surface waters in the Sacramento and San Joaquin Valleys, including the Delta. On July 23, 2009, a meeting was held to discuss and update the public on the status of creating a new method to evaluate setting criteria for organophosphate pesticides. The Central Valley Pesticide BPA and TMDL Stakeholder Meeting was held on November 16, 2009 to provide participants with an opportunity to discuss the overall status and schedule of the project, the waterbodies for potential inclusion in the geographic scope of the project, and potential provisions of the Basin Plan Amendment. A similar meeting was held on January 7, 2010, the Central Valley Pesticide TMDL and Basin Plan Amendment Meeting. The Coalition will continue to pay close attention to State and regional action to ensure incorporation of new policies and mandates to meet water quality objectives.

The ESJWQC participated in a TMDL meeting with representatives from the Westside Water Quality Coalition, the San Joaquin County and Delta Water Quality Coalition, and Regional Board Irrigated Lands Regulatory Program staff and TMDL unit staff. It was decided that the Westside Water Quality Coalition and the ESJWQC would split the six San Joaquin River compliance monitoring points such that ESJWQC would sample San Joaquin River @ Vernalis (Airport Way), San Joaquin River @ Maze Rd and San Joaquin River @ Hills Ferry. The Westside Water Quality Coalition will monitor San Joaquin River @ Las Palmas Ave (Patterson), San Joaquin River @ Hwy 65 (Lander Ave) and San Joaquin River @ Sack Dam. Monitoring will occur quarterly and monitoring results will be included in an annual report to include an assessment of results from both Coalitions. The two Coalitions are putting together a memo to submit to the Regional Board by April 15, 2010 the joint strategy for coordinating sampling events and the reporting process including when annual report will be submitted and what monitoring will be addressed.

Presently, the Coalition broadly monitors chlorpyrifos and diazinon monthly, every year, according to the ESJWQC's Monitoring and Reporting Program MRPP Core and Assessment strategy. The monitoring locations in each zone are representative of discharges to the San Joaquin River. The Coalition attempts to monitor at least one storm event during winter months. San Joaquin River TMDL monitoring will occur within the same week as Core and Assessment Monitoring within the six Coalition zones.

Below are the seven Basin Plan monitoring requirements to indicate compliance with the chlorpyrifos and diazinon TMDL.

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

To demonstrate compliance with the Basin Plan water quality objectives and the loading capacity, several agriculturally-influenced tributaries to the San Joaquin River are routinely monitored, as described in the ESJWQC MRPP.

Compliance with chlorpyrifos and diazinon WQO

Table 4 earlier in this document lists all site subwatersheds within the Coalition region that have experienced an exceedance of the chlorpyrifos water quality objective (WQO) of 0.015 µg/L and of the diazinon water quality objective of 0.1 µg/L. From 2004 through 2009, there have been 75 exceedances of the chlorpyrifos WQO across 24 site subwatersheds and three exceedances of the diazinon WQO across two subwatersheds (Table 4). In 2009, there were a total of five exceedances of the chlorpyrifos WQO and no exceedances of the diazinon WQO (Table 5). Chlorpyrifos exceedances occurred in Zone 1 at Dry Creek @ Wellsford Rd and Mootz Drain @ Langworth Rd, in Zone 2 at Lateral 2 ½ near Keyes Rd, in Zone 3 at Highline Canal @ Hwy 99 and in Zone 5 at Miles Creek @ Reilly Rd (Table 19). Three of the five samples were collected as part of the ESJWQC Management Plan monitoring schedule.

Table 19. 2009 chlorpyrifos WQTL exceedances within ESJWQC.

Zone	Station Name	Season	Sample Date	Chlorpyrifos, µg/L
Zone 1	Dry Creek @ Wellsford Rd	Irrigation4, MPM	8/18/2009	0.027
Zone 1	Mootz Drain @ Langworth Rd	Irrigation3	6/16/2009	0.033
Zone 2	Lateral 2 1/2 near Keyes Rd	Irrigation4	7/21/2009	0.049
Zone 3	Highline Canal @ Hwy 99	Irrigation4, MPM	7/21/2009	0.093
Zone 5	Miles Creek @ Reilly Rd	Irrigation4, MPM	7/21/2009	0.028
			Environmental Exceedances	**2**
			Non Contiguous Water Body Exceedances	**0**
			Management Plan Monitoring Exceedances[1]	**3**
			TOTAL Exceedances	**5**

[1] Refers to Management Plan Monitoring for specific constituents at Assessment, Core, and/or MPM locations.

Compliance with established load allocations for chlorpyrifos and diazinon

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

$$S = \frac{C_D}{WQO_D} + \frac{C_c}{WQO_c} \leq 1.0$$

Where

C_D = diazinon concentration in µg/L
C_C = chlorpyrifos concentration in µg/L
WQO_D = diazinon water quality objective; 0.1 µg/L
WQO_C = chlorpyrifos water quality objective; 0.015 µg/L

The Coalition reviewed all data collected from 2004 through 2009 to determine load allocation compliance based on the above formula (Table 20), Table 21 indicates compliance based on 2004-2009 and 2009 only.

Table 20. TMDL load calculations for diazinon and chlorpyrifos runoff in the San Joaquin River for nonpoint source discharges.

Zone	Station Name	Sample Date	Grouping	Chlorpyrifos	Diazinon	Load	Load Compliance
1	Dry Creek @ Wellsford Rd	15/Feb/2005	Storm1		0.011	0.11	Compliant
1	Dry Creek @ Wellsford Rd	17/Aug/2005	Irrigation4	0.024		1.60	Out of compliance
1	Dry Creek @ Wellsford Rd	13/Jul/2006	Irrigation3	0.026		1.73	Out of compliance
1	Dry Creek @ Wellsford Rd	10/Aug/2006	Irrigation4	0.024		1.60	Out of compliance
1	Dry Creek @ Wellsford Rd	11/Feb/2007	Storm1		0.034	0.34	Compliant
1	Dry Creek @ Wellsford Rd	15/May/2007	Irrigation2	0.011		0.73	Compliant
1	Dry Creek @ Wellsford Rd	17/Jul/2007	Irrigation4	0.021		1.40	Out of compliance
1	Dry Creek @ Wellsford Rd	11/Sep/2007	Irrigation6	0.043		2.87	Out of compliance
1	Dry Creek @ Wellsford Rd	22/Jul/2008	Irrigation4	0.03		2.00	Out of compliance
1	Dry Creek @ Wellsford Rd	21/Jul/2009	Irrigation4, MPM	0.013		0.87	Compliant
1	Dry Creek @ Wellsford Rd	18/Aug/2009	Irrigation5, MPM	0.027		1.80	Out of compliance
1	Dry Creek at Waterford	22/Jul/2008	Irrigation4, MPM	0.02		1.33	Out of compliance
1	Dry Creek at Waterford	19/Aug/2008	Irrigation5, MPM	0.023		1.53	Out of compliance
1	Mootz Drain @ Langworth Rd	16/Jun/2009	Irrigation3	0.033		2.20	Out of compliance
1	Mootz Drain @ Langworth Rd	16/Dec/2008	Non Contiguous, Storm3	0.017	0.013	1.26	Out of compliance
2	Hatch Drain @ Tuolumne Rd	24/Jan/2008	Storm1		0.037	0.37	Compliant
2	Lateral 2 1/2 near Keys Rd	21/Jul/2009	Irrigation4	0.049		3.27	Out of compliance
2	Hilmar Drain @ Central Ave	13/Jul/2006	Irrigation3	0.016		1.07	Out of compliance
2	Hilmar Drain @ Central Ave	17/Jul/2007	Irrigation4	0.015		1.00	Compliant
2	Prairie Flower Drain @ Crows Landing Rd	13/Jul/2005	Irrigation3		0.013	0.13	Compliant
2	Prairie Flower Drain @ Crows Landing Rd	17/Aug/2005	Irrigation4	0.029		1.93	Out of compliance
2	Prairie Flower Drain @ Crows Landing Rd	21/Sep/2005	Irrigation5	0.018		1.20	Out of compliance
2	Prairie Flower Drain @ Crows Landing Rd	13/Jul/2006	Irrigation3	0.014		0.93	Compliant
2	Prairie Flower Drain @ Crows Landing Rd	17/Jul/2007	Irrigation4	0.009		0.60	Compliant
2	Prairie Flower Drain @ Crows Landing Rd	28/Aug/2007	Irrigation5, MPM	0.094		6.27	Out of compliance
2	Prairie Flower Drain @ Crows Landing Rd	24/Jan/2008	Storm1		0.026	0.26	Compliant
2	Prairie Flower Drain @ Crows Landing Rd	19/Aug/2008	Irrigation5	0.024		1.60	Out of compliance
2	Westport Drain @ Vivian Rd	17/Jul/2007	Irrigation4	0.018		1.20	Out of compliance
2	Westport Drain @ Vivian Rd	24/Jan/2008	Storm1		0.031	0.31	Compliant
2	Westport Drain @ Vivian Rd	22/Jul/2008	Irrigation4	0.016		1.07	Out of compliance
3	Highline Canal @ Hwy 99	01/Mar/2006	Storm1	0.021	0.048	1.88	Out of compliance

Zone	Station Name	Sample Date	Grouping	Chlorpyrifos	Diazinon	Load	Load Compliance
3	Highline Canal @ Hwy 99	12/Jul/2006	Irrigation3	0.012		0.80	Compliant
3	Highline Canal @ Hwy 99	17/Jul/2007	Irrigation4	0.017		1.13	Out of compliance
3	Highline Canal @ Hwy 99	24/Jan/2008	Storm1	0.019	0.04	1.67	Out of compliance
3	Highline Canal @ Hwy 99	26/Feb/2008	Storm2	0.0076		0.51	Compliant
3	Highline Canal @ Hwy 99	22/Jul/2008	Irrigation4	0.021		1.40	Out of compliance
3	Highline Canal @ Lombardy Rd	15/Feb/2005	Storm1	0.01	0.098	1.65	Out of compliance
3	Highline Canal @ Lombardy Rd	13/Jul/2005	Irrigation3	0.011		0.73	Compliant
3	Highline Canal @ Lombardy Rd	01/Mar/2006	Storm1	0.027	0.03	2.10	Out of compliance
3	Highline Canal @ Lombardy Rd	16/Mar/2006	Storm2	0.018		1.20	Out of compliance
3	Highline Canal @ Lombardy Rd	17/Jul/2007	Irrigation4	0.017		1.13	Out of compliance
3	Highline Canal @ Lombardy Rd	24/Jan/2008	Storm1	0.028	0.043	2.30	Out of compliance
3	Highline Canal @ Lombardy Rd	26/Feb/2008	Storm2	0.015		1.00	Compliant
3	Highline Canal @ Lombardy Rd	22/Jul/2008	Irrigation4	0.013		0.87	Compliant
3	Highline Canal @ Lombardy Rd	23/Sep/2008	Irrigation6	0.015		1.00	Compliant
3	Highline Canal @ Hwy 99	21/Jul/2009	Irrigation4, MPM	0.093		6.20	Out of compliance
3	Mustang Creek @ East Ave	18/May/2006	Irrigation1	0.012		0.80	Compliant
3	Mustang Creek @ East Ave	10/Aug/2006	Irrigation4	0.015		1.00	Compliant
3	Mustang Creek @ East Ave	24/Jan/2008	Storm1	0.067	0.065	5.12	Out of compliance
3	Mustang Creek @ East Ave	26/Feb/2008	Storm2	0.028		1.87	Out of compliance
4	Bear Creek @ Kibby Rd	17/May/2006	Irrigation1	0.52		34.67	Out of compliance
4	Bear Creek @ Kibby Rd	24/Jul/2007	Irrigation4	0.049		3.27	Out of compliance
4	Bear Creek @ Kibby Rd	25/Feb/2008	Storm2	0.008		0.53	Compliant
4	Black Rascal Creek @ Yosemite Rd	18/May/2006	Irrigation1	0.033		2.20	Out of compliance
4	Black Rascal Creek @ Yosemite Rd	12/Feb/2007	Storm1		0.028	0.28	Compliant
4	Black Rascal Creek @ Yosemite Rd	24/Jul/2007	Irrigation4	3.7		246.67	Out of compliance
4	Black Rascal Creek @ Yosemite Rd	21/Aug/2007	Irrigation5	0.12		8.00	Out of compliance
4	Black Rascal Creek @ Yosemite Rd	18/Sep/2007	Irrigation6	0.031		2.07	Out of compliance
4	Black Rascal Creek @ Yosemite Rd	25/Feb/2008	Storm2	0.0057		0.38	Compliant
4	Black Rascal Creek @ Yosemite Rd	29/Apr/2008	Irrigation1	0.0078		0.52	Compliant
4	Livingston Drain @ Robin Ave	17/Jul/2007	Irrigation4	0.011		0.73	Compliant
4	Livingston Drain @ Robin Ave	14/Aug/2007	Irrigation5	0.016		1.07	Out of compliance
4	Livingston Drain @ Robin Ave	24/Jan/2008	Storm1	0.02	0.078	2.11	Out of compliance

Zone	Station Name	Sample Date	Grouping	Chlorpyrifos	Diazinon	Load	Load Compliance
4	Livingston Drain @ Robin Ave	26/Feb/2008	Storm2		0.068	0.68	Compliant
4	Livingston Drain @ Robin Ave	17/Jun/2008	Irrigation3	0.015		1.00	Compliant
4	Livingston Drain @ Robin Ave	22/Jul/2008	Irrigation4	0.025		1.67	Out of compliance
4	Livingston Drain @ Robin Ave	23/Sep/2008	Irrigation6	0.0051		0.34	Compliant
4	Merced River @ Santa Fe	12/Jul/2006	Irrigation3	0.011		0.73	Compliant
4	Merced River @ Santa Fe	17/Jul/2007	Irrigation4	0.018		1.20	Out of compliance
4	Merced River @ Santa Fe	24/Jan/2008	Storm1	0.59	0.01	39.43	Out of compliance
4	Merced River @ Santa Fe	26/Feb/2008	Storm2	0.011		0.73	Compliant
4	Merced River @ Santa Fe	11/Nov/2008	Fall2	0.1		6.67	Out of compliance
4	Merced River @ Santa Fe	20/Jan/2009	Winter1		0.018	0.18	Compliant
4	Merced River @ Santa Fe	07/Feb/2009	Storm1		0.0086	0.09	Compliant
4	Silva Drain @ Meadow Dr	13/Jul/2006	Irrigation3	0.015		1.00	Compliant
4	Silva Drain @ Meadow Dr	09/Aug/2006	Irrigation4	0.14		9.33	Out of compliance
4	Silva Drain @ Meadow Dr	13/Sep/2006	Irrigation5	0.013		0.87	Compliant
4	Silva Drain @ Meadow Dr	17/Jul/2007	Irrigation4	0.031		2.07	Out of compliance
4	Silva Drain @ Meadow Dr	31/Jul/2007	Irrigation4, MPM	0.006		0.40	Compliant
4	Silva Drain @ Meadow Dr	28/Aug/2007	Irrigation5, MPM	0.055		3.67	Out of compliance
4	Silva Drain @ Meadow Dr	22/Apr/2008	Irrigation1		0.0086	0.09	Compliant
4	Silva Drain @ Meadow Dr	22/Jul/2008	Irrigation4	0.43		28.67	Out of compliance
4	Silva Drain @ Meadow Dr	05/Aug/2008	Irrigation5, MPM	0.021		1.40	Out of compliance
4	Silva Drain @ Meadow Dr	19/Aug/2008	Irrigation5	0.023		1.53	Out of compliance
4	Silva Drain @ Meadow Dr	23/Sep/2008	Irrigation6	0.0051		0.34	Compliant
4	South Slough @ Quinley Rd	24/Jul/2007	Irrigation4	0.006		0.40	Compliant
4	South Slough @ Quinley Rd	29/Jul/2008	Irrigation4	0.029		1.93	Out of compliance
5	Deadman Creek (Dutchman) @ Gurr Rd	08/Aug/2006	Irrigation4	0.014		0.93	Compliant
5	Deadman Creek (Dutchman) @ Gurr Rd	12/Sep/2006	Irrigation5	0.027		1.80	Out of compliance
5	Deadman Creek (Dutchman) @ Gurr Rd	24/Jul/2007	Irrigation4	0.005		0.33	Compliant
5	Deadman Creek (Dutchman) @ Gurr Rd	25/Feb/2008	Storm2	0.0037		0.25	Compliant
5	Deadman Creek (Dutchman) @ Gurr Rd	29/Jul/2008	Irrigation4	0.0067		0.45	Compliant
5	Deadman Creek @ Hwy 59	12/Sep/2006	Irrigation5	0.059		3.93	Out of compliance
5	Deadman Creek @ Hwy 59	21/Aug/2007	Irrigation5	0.038		2.53	Out of compliance
5	Deadman Creek @ Hwy 59	25/Jan/2008	Storm1	0.012	0.021	1.01	Out of compliance

Zone	Station Name	Sample Date	Grouping	Chlorpyrifos	Diazinon	Load	Load Compliance
5	Deadman Creek @ Hwy 59	05/Aug/2008	Irrigation5, MPM	0.14		9.33	Out of compliance
5	Deadman Creek @ Hwy 59	26/Aug/2008	Irrigation5	0.015		1.00	Compliant
5	Deadman Creek @ Hwy 59	09/Sep/2008	Irrigation6, MPM	0.069		4.60	Out of compliance
5	Deadman Creek @ Hwy 59	30/Sep/2008	Irrigation6	0.015		1.00	Compliant
5	Duck Slough @ Gurr Rd	29/Sep/2004	Irrigation6		0.02	0.20	Compliant
5	Duck Slough @ Gurr Rd	08/Aug/2006	Irrigation4	0.014		0.93	Compliant
5	Duck Slough @ Gurr Rd	24/Jul/2007	Irrigation4	0.007		0.47	Compliant
5	Duck Slough @ Gurr Rd	31/Jul/2007	Irrigation4, MPM	0.007		0.47	Compliant
5	Duck Slough @ Gurr Rd	18/Sep/2007	Irrigation6	0.009		0.60	Compliant
5	Duck Slough @ Gurr Rd	25/Feb/2008	Storm2	0.0062		0.41	Compliant
5	Duck Slough @ Gurr Rd	29/Jul/2008	Irrigation4	0.011		0.73	Compliant
5	Duck Slough @ Hwy 99	12/Jul/2005	Irrigation3	0.026		1.73	Out of compliance
5	Duck Slough @ Hwy 99	17/May/2006	Irrigation1	0.27		18.00	Out of compliance
5	Duck Slough @ Hwy 99	24/Jul/2007	Irrigation4	0.011		0.73	Compliant
5	Duck Slough @ Hwy 99	31/Jul/2007	Irrigation4, MPM	0.042		2.80	Out of compliance
5	Duck Slough @ Hwy 99	25/Feb/2008	Storm2	0.0035		0.23	Compliant
5	Duck Slough @ Hwy 99	29/Jul/2008	Irrigation4	0.0067		0.45	Compliant
5	Duck Slough @ Hwy 99	30/Sep/2008	Irrigation6	0.034		2.27	Out of compliance
5	Duck Slough @ Whealan Rd	29/Jul/2008	Irrigation4, MPM	0.0081		0.54	Compliant
5	Miles Creek @ Reilly Rd	24/Jul/2007	Irrigation4	0.01		0.67	Compliant
5	Miles Creek @ Reilly Rd	18/Sep/2007	Irrigation6	0.03		2.00	Out of compliance
5	Miles Creek @ Reilly Rd	25/Jan/2008	Storm1		0.019	0.19	Compliant
5	Miles Creek @ Reilly Rd	25/Feb/2008	Storm2	0.0053		0.35	Compliant
5	Miles Creek @ Reilly Rd	29/Jul/2008	Irrigation4	0.021		1.40	Out of compliance
5	Miles Creek @ Reilly Rd	26/Aug/2008	Irrigation5	0.042		2.80	Out of compliance
5	Duck Slough @ Gurr Rd	20/Jan/2009	Winter1	0.012	0.033	1.13	Out of compliance
5	Miles Creek @ Reilly Rd	21/Jul/2009	Irrigation4, MPM	0.028		1.87	Out of compliance
6	Ash Slough @ Ave 21	12/Jul/2005	Irrigation3	0.018		1.20	Out of compliance
6	Ash Slough @ Ave 21	16/Aug/2005	Irrigation4	0.046		3.07	Out of compliance
6	Ash Slough @ Ave 21	28/Feb/2006	Storm1	0.016		1.07	Out of compliance
6	Ash Slough @ Ave 21	15/Mar/2006	Storm2	0.029		1.93	Out of compliance
6	Berenda Slough along Ave 18 1/2	11/Jul/2006	Irrigation3	0.043		2.87	Out of compliance

Zone	Station Name	Sample Date	Grouping	Chlorpyrifos	Diazinon	Load	Load Compliance
6	Berenda Slough along Ave 18 1/2	12/Sep/2006	Irrigation5	0.14		9.33	Out of compliance
6	Berenda Slough along Ave 18 1/2	24/Jul/2007	Irrigation4	0.028		1.87	Out of compliance
6	Cottonwood Creek @ Rd 20	12/Jul/2005	Irrigation3	0.012		0.80	Compliant
6	Cottonwood Creek @ Rd 20	28/Feb/2006	Storm1		0.02	0.20	Compliant
6	Cottonwood Creek @ Rd 20	15/Mar/2006	Storm2	0.011		0.73	Compliant
6	Cottonwood Creek @ Rd 20	11/Jul/2006	Irrigation3	0.014		0.93	Compliant
6	Cottonwood Creek @ Rd 20	24/Jul/2007	Irrigation4	0.007		0.47	Compliant
6	Cottonwood Creek @ Rd 20	21/Aug/2007	Irrigation5	0.011		0.73	Compliant
6	Cottonwood Creek @ Rd 20	25/Jan/2008	Storm1	0.019	0.06	1.87	Out of compliance
6	Cottonwood Creek @ Rd 20	25/Feb/2008	Storm2	0.036	0.24	4.80	Out of compliance
6	Dry Creek @ Rd 18	11/Jul/2006	Irrigation3	0.077		5.13	Out of compliance
6	Dry Creek @ Rd 18	11/Feb/2007	Storm1	0.014	0.13	2.23	Out of compliance
6	Dry Creek @ Rd 18	24/Apr/2007	Irrigation1	0.017		1.13	Out of compliance
6	Dry Creek @ Rd 18	24/Jul/2007	Irrigation4	0.008		0.53	Compliant
6	Dry Creek @ Rd 18	25/Jan/2008	Storm1	0.01	0.049	1.16	Out of compliance
6	Dry Creek @ Rd 18	25/Feb/2008	Storm2	0.034	0.24	4.67	Out of compliance

Table 21. ESJWQC zone load allocation compliance - tally of compliant load calculations for all data collected from 2004 - 2009 and 2009 only.

ESJWQC Zone	Sample Date Year(s)	Compliant	Out of Compliance
Zone 1	2004 -2009	4	11
Zone 2	2004 -2009	7	8
Zone 3	2004 -2009	8	12
Zone 4	2004 -2009	18	19
Zone 5	2004 -2009	20	15
Zone 6	2004 -2009	7	14
Zone 1	2009	1	2
Zone 2	2009	0	1
Zone 3	2009	0	1
Zone 4	2009	2	0
Zone 5	2009	0	2
Zone 6	2009	0	0

Implementation of management practices to reduce off-site movement of diazinon and chlorpyrifos

The report "General Survey Summary Report" submitted by the ESJWQC to the Regional Board on January 30, 2009 assessed management practices utilized by growers within the Coalition region. Based on 2008 membership information, current surveys represent 261,826 acres (3,328 parcels) within the Coalition area (47% of enrolled acreage).

Survey summaries were provided for the following subwatersheds:

1. Ash Slough @ Ave 21
2. Bear Creek @ Kibby Rd
3. Black Rascal Creek @ Yosemite Ave
4. Brenda Slough along Ave 18
5. Cottonwood Creek @ Rd 20
6. Deadman Creek @ Gurr Rd (includes Deadman Creek @ Hwy 59)
7. Deadman Creek @ Hwy 59
8. Dry Creek @ Rd 18
9. Dry Creek @ Wellsford Rd
10. Duck Slough @ Hwy 99
11. Duck Slough @ Gurr Rd (includes Duck Slough @ Hwy 99)
12. Hatch Drain @ Tuolumne Rd
13. Highline Canal @ Hwy 99 (includes Highline Canal @ Lombardy)
14. Highline Canal @ Lombardy

15. Hilmar Drain @ Central Ave
16. Jones Drain @ Oakdale Rd
17. Livingston Drain @ Robin Ave
18. Miles Creek @ Reilly Rd
19. Merced R @ Santa Fe Dr
20. Mustang Creek @ East Ave
21. Prairie Flower Drain @ Crows Landing Rd
22. Silva Drain @ Meadow Dr
23. South Slough @ Quinley Rd
24. Westport Drain @ Vivian Rd

Dry Creek @ Wellsford, Duck Slough @ Hwy 99 and Prairie Flower Drain @ Crows Landing are currently high priority subwatersheds. Members with the potential for direct drainage and past use of chlorpyrifos and/or diazinon were met with on their properties to review downstream water quality results and management practices that can be implemented to reduce agricultural drainage. Completed surveys document current management practices and any additional management practices that growers intend to implement. An assessment of current and newly implemented management practices is included in earlier sections of this report (Summary of Implemented Management Practices and Evaluation of Management Practice Effectiveness).

Current management practices, newly implemented practices and an evaluation of management practice effectiveness will be conducted within subwatersheds as they become high priority (see Table 6 in this report).

Alternatives to diazinon and chlorpyrifos surface water quality impacts

Alternatives to chlorpyrifos and diazinon depend on the commodity and the registration of alternative products. For many commodities, alternative products include pyrethroid pesticides. These are considered "safe" alternatives because of their low mammalian toxicity. However, recent research has demonstrated that they can be very toxic to aquatic organisms at extremely low concentrations. These products have very high K_{oc} values and tend to bind to sediment and can be moved to surface waters during irrigation or rainfall events. The high K_{oc} values make these products difficult to detect in water as they are seldom found in the dissolved phase. During the early years of the ILRP, the Coalition analyzed for pyrethroids with no detections. The Coalition does monitor for sediment toxicity and if there is a toxic sample that meets the threshold for additional analysis, the Coalition is required to analyze the sediment for pyrethroids and chlorpyrifos. To date, no toxic samples have met the threshold and no analyses have been performed. There may be additional products that qualify as organic (e.g. citrus oils) but the Coalition does not track or recommend their use because their efficacy relative to synthetic pesticides is low.

The Coalition collects information on pesticide use and provides this information to the Regional Board as part of the ESJWQC Annual Monitoring Report. In addition, the Coalition address toxicity, pesticides, and sediment bound analytes with specific management practices when conducting outreach and education whether or not there is a TMDL. Growers are made aware that switching pesticides may lead to other water quality concerns.

Toxicity impairment due to additive or synergistic effects of multiple pollutants

Loads were calculated to evaluate the additive effect of chlorpyrifos and diazinon concentrations from 2004 through 2009 (Table 20).

The ESJWQC MRPP discusses additivity and synergistic effects on page 82. Toxicity monitoring will also be conducted at Assessment sample locations which will assist in the evaluation of additive or synergistic effects of multiple pollutants.

Although there were multiple toxicities that occurred in 2009, none were sourced to organophosphates. Of the TIE's initiated, one concluded pyrethroids were the cause of *C. dubia* mortality, one concluded that cationic chemicals and ammonia were the cause of *S. capricornutum* lack of growth, and three concluded that ammonia was the cause of *P. promelas* mortality.

Demonstrate that management practices are achieving the lowest pesticide levels technically and economically achievable

An evaluation of management practices and their effectiveness will be performed on high priority subwatersheds per the ESJWQC Management Plan strategy outlined in Figures 1 and 2.

Salt and Boron TMDL

The Regional Board has at least two programs currently operating to deal with this issue. One is the ongoing project of creating a San Joaquin River at Vernalis Salinity and Boron TMDL Basin Plan Amendment. The other is the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) which was established in July 2008 to facilitate and fund efforts needed for the efficient management of salinity in the Central Valley. The Regional Board and State Water Board have initiated this comprehensive effort to address salinity problems in California's Central Valley and adopt long-term solutions that will lead to improved water quality and economic sustainability.

The Coalition: (1) participates in ongoing Regional Water Board programs for the management of salt and boron, and (2) implements actions required by the Regional Water Board. Coalition representatives attend CV-SALTS meetings and participate in planning and reviewing studies relevant to the development of a Basin Plan amendment for salt and boron (Table 22).

An initial CEQA scoping workshop was held in May 2005 and the San Joaquin River at Vernalis Salinity and Boron Total Maximum Daily Loads (TMDL) Basin Plan Amendment was adopted with EPA approval in October 2006, but there have been new developments in the project since then including a revised geological scope, an increased cooperation between the State and the Regional Boards, and an effort to coordinate with CV-SALTS. On March 30, 2009, a CEQA Scoping Meeting for the Salt and Boron TMDL in the San Joaquin and Sacramento Rivers was held to discuss the Proposed Basin Plan Amendment to establish new salinity and boron water quality objectives in the Lower San Joaquin River upstream of Vernalis and a TMDL to implement the salinity and boron water quality objectives. Currently, the State and Central Valley Water Boards plan to coordinate with the CV-SALTS Technical Advisory Committee. CV-SALTS and the Central Valley Salinity Coalition continue to provide and educate the public through information and resources available on their website, www.cvsalinity.org, and by hosting meetings open to the public to move forward in the management of salt and boron. These meetings included the CV-SALTS Technical Advisory Committee's series of meetings to discuss the Reclamation Draft Compliance Monitoring and Evaluation Plan, the Basin Plan Training for nearly 70 CV-SALTS participants on September 3, 2009, and the Annual Salinity Leadership Group Meeting (formally the Salinity Policy Group) on September 24, 2009 (Table 22).

Table 22. CV-SALTS meetings from 2006 through December 2009. The Coalition began attending meetings in 2009.

Constituent / Organization	Meeting Date	Meeting Title
Boron & Salt / CV-SALTS	30-Nov-06	The Central Valley Salinity Policy Group Meeting
Boron & Salt / CV-SALTS	11-Mar-08	Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	30-Oct-08	The Central Valley Salinity Policy Group Meeting
Boron & Salt / CV-SALTS	13-Jan-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	13-Jan-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	2-Feb-09	Emergency Executive Committee Meeting
Boron & Salt / CV-SALTS	5-Feb-09	Salt Sources Work Plan Subcommittee
Boron & Salt / CV-SALTS	18-Feb-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	18-Feb-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	9-Mar-09	Economic and Technical Advisory Sub-Committee Meeting
Boron & Salt / CV-SALTS	18-Mar-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	18-Mar-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	14-Apr-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	17-Apr-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	4-May-09	Coordinating Committee Meeting
Boron & Salt / CV-SALTS	13-May-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	13-May-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	14-May-09	Technical Workshop - Policy Workshop Lessons from Santa Ana
Boron & Salt / CV-SALTS	28-May-09	Staff Workshop to Discuss Technical Reports
Boron & Salt / CV-SALTS	2-Jun-09	Technical Workshop - Salt Nitrate Pilot Study Selection
Boron & Salt / CV-SALTS	17-Jun-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	17-Jun-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	30-Jun-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	14-Jul-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	14-Jul-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	28-Jul-09	Technical Advisory Committee: Reclamation Draft Compliance Monitoring and Evaluation Plan (Meeting 1)
Boron & Salt / CV-SALTS	4-Aug-09	Technical Advisory Committee: Reclamation Draft Compliance Monitoring and Evaluation Plan (Meeting 2)
Boron & Salt / CV-SALTS	17-Aug-09	Technical Advisory Committee: Reclamation Draft Compliance Monitoring and Evaluation Plan (Meeting 3)
Boron & Salt / CV-SALTS	19-Aug-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	19-Aug-09	Executive Committee and Outreach/Education Committee Meeting
Boron & Salt / CV-SALTS	24-Aug-09	Technical Advisory Committee: Reclamation Draft Compliance Monitoring and Evaluation Plan (Meeting 4)
Boron & Salt / CV-SALTS	3-Sep-09	Special Basin Planning Training Meeting
Boron & Salt / CV-SALTS	16-Sep-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	16-Sep-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	24-Sep-09	Salinity Leadership Group Annual Meeting
Boron & Salt / CV-SALTS	28-Sep-09	Workshop - Multi-State Salinity Coalition
Boron & Salt / CV-SALTS	29-Oct-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	29-Oct-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	5-Nov-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	17-Nov-09	Beneficial Use and Objective Scope Meeting
Boron & Salt / CV-SALTS	19-Nov-09	Economic and Technical Advisory Committee Meeting

Constituent / Organization	Meeting Date	Meeting Title
Boron & Salt / CV-SALTS	19-Nov-09	Executive Committee Meeting
Boron & Salt / CV-SALTS	7-Dec-09	Draft Salt and Nitrate Source Pilot Report Presentation
Boron & Salt / CV-SALTS	16-Dec-09	Economic and Technical Advisory Committee Meeting
Boron & Salt / CV-SALTS	16-Dec-09	Executive Committee Meeting

Dissolved Oxygen

To demonstrate compliance with the Basin Plan and "The Control Program for Factors Contributing to the Dissolved Oxygen (DO) Impairment in the Stockton Deep Water Ship Channel", agriculturally-influenced tributaries to the San Joaquin River are routinely monitored, as described in the Coalition's MRPP and Management Plan. The Coalition is addressing DO exceedances through the Management Prioritization process (ESJWQC Management Plan submitted August 25, 2008). In addition, the Coalition is participating in the DO TMDL Technical Working Group meetings (http://www.sjrdotmdl.org/meetings.html) including two meetings that occurred in 2010. In general, the Coalition will work to comply with the DO Basin Plan load allocations for oxygen demanding substances by December 2011.

The Coalition conducted a special study to determine if Biological Oxygen Demand (BOD) was the cause of low DO in several water bodies. The results of this study were included in: (1) Appendix VIII of the December 30, 2007 Semi Annual Monitoring Report and (2) Site Subwatershed Management Plans (Management Plan submitted on August 25, 2008, Pages 147-342). Future studies will be conducted as required by the Regional Water Board.

SITE SUBWATERSHED MANAGEMENT PLAN UPDATE

Below are brief descriptions of all site subwatersheds (both high and low priority subwatersheds) within the ESJWQC Management Plan as of April 1, 2010. Further analysis of high priority site subwatersheds (2008 -2010 and 2010 – 2012) is included in Appendix I.

Ash Slough @ Ave 21

As an assessment site, Ash Slough @ Ave 21 is scheduled to be sampled once per month in 2010 for all constituents. In both 2007 and 2008, Ash Slough was scheduled for additional monitoring of chlorpyrifos (2 additional samples each year) and for copper (5 additional samples each year); however the site was dry at every visit after September 12, 2006 except for May 19, 2009. Chlorpyrifos and copper were analyzed as part of normal Assessment Monitoring in 2009 and will be analyzed for as part of normal Assessment Monitoring in 2010.

Bear Creek @ Kibby Rd

Bear Creek @ Kibby Rd is scheduled to be an assessment site in 2025 and 2026 and became a high priority site subwatershed in 2010. Water quality data from this location includes two exceedances of the chlorpyrifos WQTL (one in 2006 and one in 2007), four exceedances of the copper WQTL (one in 2007 and three in 2008), three samples toxic to *Ceriodaphnia dubia* (one in 2005, 2006, and 2007), toxicity to *Selenastrum capricornutum* and *Hyalella azteca* in 2008 (both toxicities were persistent a week later). Toxicity to *C. dubia* and chlorpyrifos WQTL will be monitored during May and July 2010, and only copper will be monitored in August 2010and January/February 2011.

Berenda Slough along Ave 18 ½

Berenda Slough along Ave 18 ½ will be an assessment site in 2011 and 2012. Water quality impairments include toxicity to *S. capricornutum* (a single event which was persistent a week later), three exceedances of the chlorpyrifos WQTL, and toxicity to *C. dubia*. In 2008, upstream MPM was conducted for *S. capricornutum* and chlorpyrifos resulting in no exceedances or toxicity. However, it should be noted that this location was dry for all events except for one. With no new exceedances recorded in 2008, no MPM was scheduled for 2009/2010. All constituents will be sampled at this location starting 2011.

Black Rascal Creek @ Yosemite Rd

Black Rascal Creek @ Yosemite Rd is scheduled to be an assessment site in 2027 and 2028. Water and sediment quality data include toxicity to *C. dubia* in 2007 including two months in which toxicity was persistent one week later, four exceedances of the chlorpyrifos WQTL (three in 2007 and one in 2006), single toxicities to *S. capricornutum* and *H. azteca* in 2008, one exceedance of the copper WQTL in 2008, and two exceedances of the lead WQTL in 2008. The chlorpyrifos exceedance (associated with *C. dubia* toxicity) in 2007 was believed to be an isolated incident and appears to have been resolved after contacting the grower and discussing management practices and downstream water quality issues. For 2008, in addition to normal monitoring, four samples were collected for chlorpyrifos analysis and three samples were

collected for analysis of toxicity to *C. dubia* during months of past exceedances however no additional exceedances/toxicity occurred. Black Rascal Creek will become a high priority site subwatershed in 2012; MPM monitoring will be conducted in 2012 and 2013.

Cottonwood Creek @ Rd 20

As a core site, Cottonwood Creek @ Rd 20 is monitored for a limited suite of constituents each month (see the ESJWQC MRPP for a list of core monitoring constituents). In addition to the core monitoring constituents; the Coalition monitors for *Pimephales promelas*, *S. capricornutum* and *H. azteca* toxicity due to a toxicity result from one of these species in the past. Exceedances of the copper WQTL (based on total copper) occurred in 12 samples since 2006 (four in 2008) and two exceedances of the chlorpyrifos WQTL occurred in 2008. Additional MPM was conducted three times in 2007 and in 2008 five copper samples were collected upstream at Hwy 145 in an attempt to further identify copper sources. One of upstream samples contained an exceedance level of copper, but no corresponding amount was detected at the downstream locations (Cottonwood Creek @ Rd 20). During 2008, the Rd 20 site recorded an additional exceedance of the copper WQTL that was not detected at the upstream site on Hwy 145. Based on the additional and upstream MPM it has been determined that copper is a problem throughout the entire Cottonwood Creek subwatershed and is not specific to a few months. Therefore, additional sampling was not necessary to further identify sources. Cottonwood Creek was monitored as a Core Monitoring location in 2009 and MPM will occur during 2010 and 2011. MPM for chlorpyrifos, copper, diuron and diazinon will occur in February 2010; copper will be monitored from April through September in 2010. Cottonwood Creek @ Rd 20 will be monitored monthly for all assessment constituents in 2011 and 2012 based on the MRPP rotation schedule.

Deadman Creek @ Gurr Rd

As an assessment site, Deadman Creek @ Gurr Rd was sampled once per month in 2009 and 2010 for all constituents. Deadman Creek @ Gurr Rd was monitored under the ESJWQC Management Plan in 2008 for copper (two additional samples) and *P. promelas* (two additional samples). The 2008 monitoring schedule was based on four exceedances of the copper WQTL between 2007 and 2008 and two samples testing toxic to *P. promelas*, one in 2006 and the second in 2007. In early 2008, a second sample was toxic to *S. capricornutum*, and in 2006 a single exceedance of the chlorpyrifos WQTL was recorded. Since all Management Plan constituents are monitored monthly at this site (see Table 13 in the MRPP) the Coalition did not conduct any additional MPM in 2009. This site will become a high priority subwatershed in 2012 and MPM will be conducted at that time.

Deadman Creek @ Hwy 59

Deadman Creek @ Hwy 59 will be an assessment site in 2011 and 2012. Toxicity to *S. capricornutum* occurred twice in 2008, as well as a resample indicating that the toxicity was persistent one week later. In 2008, additional MPM for chlorpyrifos occurred and both samples contained exceedance levels of chlorpyrifos. As a result of these past exceedances, during the irrigation season of 2009 samples were to be collected for *S. capricornutum* toxicity and

chlorpyrifos, however, the site was dry during all MPM sampling events. Deadman Creek @ Hwy 59 will become a high priority site subwatershed in 2012 and MPM will be conducted at that time.

Dry Creek @ Road 18

Dry Creek @ Rd 18 will be an assessment site in 2013 and 2014. In 2007 and 2008 extensive MPM was conducted to address persistent exceedances of the copper WQTL, including five additional samples in 2007 and eight upstream samples in 2008. In 2008, upstream MPM was also conducted for chlorpyrifos; no exceedances occurred during the irrigation season of 2008. Copper persists at a generally stable concentration in the water and exceedances of the WQTL (total copper) have been recorded at every visit where metals were analyzed, both at the Rd 18 site and at upstream sites (21 exceedances at Rd 18, six at Rd 22, and one at Rd 28 ½). Dry Creek @ Rd 18 becomes a high priority site subwatershed in 2011 and MPM will be conducted at that time.

Duck Slough @ Gurr Rd

Duck Slough @ Gurr Rd is a core site and therefore a limited suite of constituents are monitored for monthly. As per Table 13 in the MRPP several additional constituents are monitored including organophosphates and metals. Additional MPM conducted in 2007 for chlorpyrifos, thiobencarb, and copper; only copper was detected above the WQTL in 2007. In 2007 a second sample was toxic to *S. capricornutum* and therefore upstream MPM was conducted in 2008 for copper and *S. capricornutum* toxicity. There were no exceedances of the copper WQTL and samples collected for *S. capricornutum* were non toxic in 2008. Duck Slough was monitored for organophosphates (chlorpyrifos), carbamates and metals (total and dissolved) every month in 2009 due to past single exceedances as explained in the ESJWQC MRPP. Exceedances in 2009 consisted of: pH, SC, *E. coli*, nitrate + nitrite, and dissolved copper. Duck Slough is scheduled for MPM (second high priority site subwatershed 2010-2012) during 2010 for chlorpyrifos, copper, *S. capricornutum* toxicity, and *H. azteca* sediment toxicity.

Hatch Drain @ Tuolumne Rd

Hatch Drain @ Tuolumne Rd will be an assessment site in 2025 and 2026. It was a new site in 2007 and in 2008 six samples were toxic to *S. capricornutum*. In 2007 and 2008 three samples were toxic to *H. azteca*. The Coalition will monitor for toxicity to *S. capricornutum* in 2010 to determine if *S. capricornutum* toxicity continues to be a problem within this subwatershed. *H. azteca* toxicity is not a high priority constituent under the ESJWQC Management Plan. MPM will be conducted in 2013 and 2014 when this site become a high priority site subwatershed.

Highline Canal @ Hwy 99

Highline Canal @ Hwy 99 is a core site and therefore limited constituents are monitored until this site undergoes assessment monitoring. In 2007 additional MPM was conducted for toxicity to *C. dubia*; no toxicity to *C. dubia* occurred in 2007. In 2008, no upstream MPM was conducted since Highline Canal @ Lombardy Rd (upstream of Hwy 99) was also sampled during the same events. However, due to additional exceedances in 2007, additional MPM was conducted again

in 2008 for copper and chlorpyrifos and for toxicity to *C. dubia*; exceedances of WQTLs occurred in 2008 for chlorpyrifos and copper. In addition, three samples collected in 2008 caused toxicity to *S. capricornutum*. Therefore; monitoring at Highline Canal @ Hwy 99 in 2009 included *S. capricornutum* (April and May) and chlorpyrifos (July) during months of past exceedances. The MPM samples collected for chlorpyrifos in July 2009 resulted in an exceedance of the WQTL. Highline Canal @ Hwy 99 is a high priority site subwatershed starting 2010 and is scheduled for MPM in 2010 for copper, chlorpyrifos, diuron and toxicity to *S. capricornutum*. As with the Lombardy Rd site upstream of Hwy 99, water quality in the Highline Canal continues to be an issue since inputs to the canal are not well documented and may include groundwater seeping through the sandy bed of the canal.

Highline Canal @ Lombardy Rd

Highline Canal @ Lombardy Rd will be an assessment site in 2011 and 2012. This location is currently under a management plan for toxicity to *S. capricornutum* and *C. dubia* and exceedances of the chlorpyrifos and copper WQTLs. Additional MPM was conducted in 2007 for toxicity to *C. dubia* and *S. capricornutum*; no samples were toxic. As a result of additional exceedances, additional MPM was conducted for chlorpyrifos and copper in 2008 as well as *C. dubia* and *S. capricornutum*; exceedances of the WQTLs occurred in 2008 for chlorpyrifos and copper and there was toxicity to *C. dubia*. During the irrigation season of 2009 and the storm season of 2010, Highline Canal @ Lombardy Rd was monitored for toxicity to *S. capricornutum* and *C. dubia*, copper and chlorpyrifos. Due to a typo, the monitoring schedule included in the Management Plan update (April 1, 2009) did not include chlorpyrifos MPM in July and August; however both of these months included monitoring for chlorpyrifos. Samples collected from 2009 MPM events resulted in no exceedances. All constituents will be monitored for monthly in 2011 and 2012. This site will become high priority in 2013 and MPM will be scheduled for 2013 and 2014. As with the Hwy 99 site downstream of Lombardy Rd, water quality in the Highline Canal continues to be an issue since inputs to the canal are not well documented and may include groundwater seeping in through the sandy bed of the canal.

Hilmar Drain @ Central Ave

Hilmar Drain @ Central Ave is scheduled to become an assessment site in 2021 and 2022. Monitoring at this location resulted in five samples that were toxic to *S. capricornutum* (three in 2008) including several that were persistent, three exceedances of the diuron WQTL including one in 2008, two exceedances of the copper WQTL (one in 2007 and one in 2006) as well as a single exceedance of the chlorpyrifos WQTL and toxicity to *C. dubia* in 2006 and 2005, respectively. This site was not under a management plan until 2008. Additional MPM for diuron was conducted in 2008; there was a single exceedance of the diuron WQTL in 2008. Upstream MPM was conducted to further identify sources of nitrate, ammonia, copper and the cause(s) of toxicity to algae. This subwatershed has dairies upstream and the Coalition attempted to use water quality monitoring during July 2008 to assess whether dairies were an issue. Exceedances of the ammonia and copper WQTLs did not occur again in 2008 however exceedances of the nitrate WQTL occurred at the Hilmar Drain @ Central Ave site (three exceedances) and at the upstream Mitchell Ave site (one exceedance). The Coalition

determined that extra sampling conducted in 2008 aided in determining sources of water quality problems and will focus on outreach efforts to encourage growers to implement new management practices. To assess overall water quality, the Coalition monitored for toxicity to *S. capricornutum* during months of past exceedances in 2009. All samples collected were found to be non toxic. Hilmar Drain @ Central Ave has been re-prioritized and will become a high priority subwatershed in 2012; MPM monitoring will be conducted in 2012 and 2013.

Howard Lateral @ Hwy 140

This site was added to the Coalition's MRPP in October 2008 and was first monitored as an assessment site in 2009. As of April 1, 2010, Howard Lateral @ Hwy 140 requires a management plan for pH, SC, TDS and *E. coli.* Howard Lateral will continue to be monitored as an assessment site monthly in 2010 for all constituents.

Lateral 2 1/2 near Keyes Rd

This site was added to the Coalition's MRPP in October 2008 and was first monitored as an assessment site in 2009. As of April 1, 2010, Lateral 2 ½ near Keyes Rd requires a management plan for pH and chlorpyrifos. Lateral 2 ½ near Keyes Rd will continue to be monitored as an assessment site monthly in 2010 for all constituents.

Livingston Drain @ Robin Ave

Livingston Drain @ Robin Ave will be monitored as an assessment site in 2023 and 2024. Additional MPM occurred at Livingston Drain @ Robin Ave in 2008 during its first year under a management plan for copper; five exceedances of the copper WQTL occurred in 2008. In addition to copper; water samples collected from Livingston Drain in 2008 contained exceedance levels of chlorpyrifos, lead and three samples caused toxicity to *S. capricornutum*. Livingston Drain @ Robin Ave will become a high priority site subwatershed in 2011 and MPM will occur in 2011 and 2012.

Merced River @ Santa Fe Dr

Merced River @ Santa Fe Dr is a Core Monitoring location and will rotate into assessment monitoring in 2011. The high load associated with one of the three prior exceedances of the chlorpyrifos WQTL and the concomitant toxicity to *C. dubia* (the third since 2004) initiated an effort to source the chlorpyrifos including a review of pesticide use reports and meetings with growers in the subwatershed. Based on information gained from these efforts, the Coalition decided to collect upstream samples in 2009 during months of past chlorpyrifos exceedances in the Merced River; the Coalition also collected samples for chlorpyrifos at the downstream location during the same events. It is believed that chlorpyrifos is entering the Merced River via Dry Creek several miles upstream. Since toxicity to *C. dubia* was associated with chlorpyrifos in the water column, the Coalition is focusing its efforts in further identifying the sources of the chlorpyrifos which will aid in future outreach within this large subwatershed. In 2009, there were no exceedances of the chlorpyrifos WQTL in the Merced River during MPM in November and December. Dry Creek @ Oakdale was dry during both of those months. MPM was also conducted in January 2010 for both Merced River and Dry Creek @ Oakdale and there were no

detections of chlorpyrifos in samples from either subwatershed. Merced River becomes a high priority subwatershed in 2013; MPM will be conducted at that time.

Miles Creek @ Reilly Rd

Miles Creek @ Reilly Rd is scheduled to be an assessment site in 2015 and 2016. Miles Creek @ Reilly Rd was a new site in May 2007 and required a management plan as of 2009. In 2008, toxicity occurred for the second time to *S. capricornutum* and *C. dubia* and exceedances of WQTLs occurred twice for chlorpyrifos and four times for copper. During the irrigation season of 2009 and the storm season of 2010, Miles Creek was monitored for *S. capricornutum*, *C. dubia*, copper, and chlorpyrifos. July 2009 MPM for chlorpyrifos resulted in an exceedance of the WQTL. Miles Creek will become a high priority site subwatershed in 2013; MPM will be conducted in 2013 and 2014 followed by Assessment Monitoring in 2015 and 2016.

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

Mootz Drain @ Langworth Rd was first sampled in January 2009 as an Assessment Monitoring location. The Coalition received approval to move this location downstream of the pond where the original site was located. Starting in December 2009, Mootz Drain downstream of Langworth Pond replace Mootz Drain @ Langworth Rd and better characterizes discharges from upstream agriculture since the pond upstream can act as a sediment pond and retain both water and sediment when water flows are low or nonexistent. The Mootz Drain subwatershed requires a management plan for DO, *E. coli*, and chlorpyrifos. The Coalition will continue to monitor Mootz Drain downstream of Langworth Pond for all Assessment Monitoring constituents in 2010. This subwatershed will become a high priority subwatershed in 2015 and MPM will be conducted at that time.

Mustang Creek @ East Ave

Mustang Creek @ East Ave was monitored for all Assessment Monitoring constituents in 2009 and will be monitored for all constituents in 2010. Mustang Creek requires a management plan for DO, SC/TDS, nitrate, copper, chlorpyrifos, DDE, simazine and thiobencarb. Although there have been two samples toxic to *C. dubia,* a management plan is not required since the exceedance occurred as part of the same event (original sample and resample one week later to test for persistence). During 2009 monitoring, exceedances of DO, SC, TDS, nitrate + nitrite, ammonia, *E. coli*, copper and DDE were experienced. There were no toxic samples in 2009 and no exceedances of the chlorpyrifos or simazine WQTLs. Mustang Creek will become a high priority subwatershed in 2014 and MPM will be conducted at that time.

Silva Drain @ Meadow Dr

Silva Drain is an assessment site scheduled for monitoring in 2029. Silva Drain requires a management plan for *C. dubia,* copper, and chlorpyrifos. Additional MPM was conducted for chlorpyrifos in 2007 and 2008 during months of past exceedances; since Silva Drain is such a small subwatershed upstream sampling was not conducted. Silva Drain will become a high priority site subwatershed in 2014 and MPM will be conducted in 2014 and 2015.

Westport Drain @ Vivian Rd

Westport Drain @ Vivian Rd will be an assessment site in 2027 and 2028. It was a new site in 2007 and monitoring in 2007 and 2008 resulted in a single exceedance of the chlorpyrifos WQTL and a single *S. capricornutum* toxicity. In 2008 another exceedance of the chlorpyrifos WQTL occurred and two more samples were toxic to *S. capricornutum*. A single sediment sample was toxic to *H. azteca*. Westport Drain will become a high priority site subwatershed in 2014 and MPM will be conducted in 2014 and 2015.