



san joaquin county & DELTA WATER QUALITY COALITION

August 1, 2016

Pamela Creedon
Chris Jimmerson
Irrigated Lands Regulatory Program
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

Re: Submittal of Monitoring Plan Update for Waste Discharge Requirements General Order R5-2014-0029-R1 for Growers in the San Joaquin River County and Delta Area Watershed.

Dear Ms. Creedon,

The San Joaquin County and Delta Water Quality Coalition (SJCDWQC) is submitting the Monitoring Plan Update (MPU) as outlined in Attachment B of the Waste Discharge Requirements General Order R5-2014-0029-R1. Appendix I is included and contains the protocol for low flow, no flow, and dry site sample collection. An excel file (Attachment A: monitoring schedule workbook) containing the 2017 WY Monitoring Schedule is also included.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines for knowing violations.

Submitted respectfully,

SJCDWQC Technical Program Manager
Michael L. Johnson, LLC

Enclosure:
SJCDWQC Monitoring Plan Update
Appendix I: Sample Collection Protocol
Attachment A: Monitoring Schedule Workbook

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Monitoring Plan Update

2017 Water Year



san joaquin county & DELTA
WATER QUALITY COALITION

**Irrigated Lands Regulatory Program
Central Valley Regional Water Quality Control Board**

Submitted August 1, 2016

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LIST OF ACRONYMS AND TERMS

C	Core site
cfs	cubic feet per second
CSM	Core site monitoring
DO	Dissolved Oxygen
DPR	Department of Pesticide Regulation
MPM	Management Plan Monitoring
MPU	Monitoring Plan Update
MRP	Monitoring and Reporting Program
MRPP	Monitoring and Reporting Program Plan
Order	Waste Discharge Requirements General Order R5-2012-0016 Growers within San Joaquin County and Delta Watershed
pH	Power of Hydrogen
PUR	Pesticide Use Reporting
Regional Board	Central Valley Regional Water Quality Control Board
R	Represented site
RSM	Represented site monitoring
SC	Specific Conductivity
SJCDWQC	San Joaquin County Delta Water Quality Coalition
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TOC	Total Organic Carbon
TSS	Total Suspended Solids
TMDL	Total Maximum Daily Load
WQTL	Water Quality Trigger Limit
WY	Water Year

SURFACE WATER MONITORING OVERVIEW

This Monitoring Plan Update (MPU) report provides the monitoring schedule and justification for monitoring during the 2017 Water Year (WY). The Coalition evaluated monitoring results through June 2016 to determine the 2017 WY monitoring schedule. The Annual Report will include an addendum to the 2017 MPU that addresses the monitoring results from July through September from the 2016 WY. The San Joaquin County and Delta Water Quality Coalition (SJCDWQC or the Coalition) will execute the monitoring program, as specified in the Revised Waste Discharge Requirements General Order for Growers (No. R5-2014-0029-R1), within the San Joaquin County and Delta Area that are Members of a Third-Party Group (Order or WDR).

NORMAL MONITORING

The Coalition conducts Normal Monitoring (NM), which includes monitoring at Core and Represented sites, to characterize discharge from irrigated agriculture. As described in the Monitoring and Reporting Program (MRP), Attachment B to the Order, the Coalition conducts monitoring at Core sites once a month based on a WY and includes an assessment of field parameters, nutrients, pathogens, pesticides, metals, and toxicity to water column and sediment species. Attachment A is an Excel workbook submitted with the MPU that includes the monitoring parameters and sites scheduled for the 2017 WY, including the MPM schedule. Table 1 and Table 2 indicate the constituents and monitoring frequency for each Core and Represented site in the Coalition boundary.

The Coalition also attempts to sample two storm events per year. A storm monitoring event is defined as monitoring within three days of a rainfall event that exceeds 0.5 inches within 24 hours.

The Coalition is required to sample every site scheduled for monitoring during the 2017 WY; however, certain field conditions can prevent samples from being collected. If a site has no water present during the scheduled sampling event, the Coalition identifies the site as 'dry' and no samples are collected. If a site does not have enough water present for sample collection, the Coalition identifies the site as 'too shallow' or 'non-contiguous' (puddle-like conditions; waterbody not connected upstream or downstream) and no samples are collected. Appendix I includes a detailed flowchart, photos, and descriptions for determining when samples cannot be collected from a monitoring site. All 'Dry', 'Too Shallow', and 'Non-contiguous' events are counted as sampled events and reported as 'no exceedances of the WQTLs'.

Table 2. SJCDWQC 2017 WY monitoring counts for carbamates, herbicides, group A, toxicity, and sediment parameters.

Core site information is in bold. Monthly monitoring at Core sites includes MPM.

ZONE	SITE NAME	MONITORING TYPE	CARBAMATES									HERBICIDES						WATER COLUMN TOXICITY			PHYSICAL PARAMETER		SED TOX. H. AZTECA		
			ALDICARB	CARBARYL	CARBOFURAN	DIURON	LINURON	METHIOCARB	METHOMYL	OXAMYL	ATRAZINE	CYANAZINE	GLYPHOSATE	PARAQUAT	SIMAZINE	TRIFLURALIN	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	GRAIN SIZE	TOC				
1	Bear Creek @ North Alpine Rd	C	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	2	2	12	2	2	2
	Jahant Slough @ Cherokee Ln	R																7							
	Mokelumne River @ Bruella Rd	M																6							
	Mosher Creek @ North Alpine Rd	R																8							
2	French Camp Slough @ Airport Way	C	12	12	12	12	12	12	12	12	12	12	2	2	12	12	12	12	12	2	2	12	2	2	2
		M				2																			
	Duck Creek @ Hwy 4	M														3				2	2			2	2
	Lone Tree Creek @ Jack Tone Rd	M															2								
	Mormon Slough @ Jack Tone Rd	R																		2	2			2	2
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	M				5														2	2			2	2	
3	Drain @ Woodbridge Rd	C	12	12	12	12	12	12	12	12	12	12	2	2	12	12	12	12	12	2	2	12	2	2	2
	Empire Tract @ 8 Mile Rd	R														1									
	Rindge Tract Drain	R														3		6							
	Staten Island @ Staten Island Rd	R														3		5							
	Terminus Tract @ Hwy 12	M				3												5		2	2			2	2
4	Bacon Island Pump @ Old River	C	12	12	12	12	12	12	12	12	12	12	2	2	12	12	12	12	12	2	2	12	2	2	2
	Roberts Island @ Whiskey Slough Pump	M														2		6							
5	Walthall Slough @ Woodward Ave	C	12	12	12	12	12	12	12	12	12	12	2	2	12	12	12	12	12	2	2	12	2	2	2
		M																4							
6	Sand Creek @ Hwy 4 Bypass	M																					2	2	2
7	Union Island Drain @ Bonetti	C	12	12	12	12	12	12	12	12	12	12	2	2	12	12	12	12	12	2	2	12	2	2	2
		M															3	10		2	2		2	2	2
	Upper Robert Island Drain	R																		2	2		2	2	2

C – Core Site Monitoring.
R – Represented Site Monitoring.
M – Management Plan Monitoring.

SPECIAL PROJECT MONITORING

Special Project Monitoring includes Management Plan Monitoring (MPM) and monitoring to ensure compliance with Total Maximum Daily Load (TMDL) requirements. The Coalition conducts MPM based on the strategy described in the 2015 Revised Surface Water Quality Management Plan (SQMP; approved November 24, 2015). Monitoring for the TMDL constituents, chlorpyrifos and diazinon, will occur at four compliance locations within the Coalition region (Light House Restaurant @ West Brannon Island Rd, Old River @ the West End of Clifton Court Rd, San Joaquin River @ West Neugebauer Rd, and Walthall Slough @ Woodward Ave). These constituents are monitored once during the storm season (January through March) and monthly during the irrigation season (May through August).

Management Plan Monitoring

The Coalition conducts MPM as part of the management plan strategy to identify contaminant sources and evaluate effectiveness of outreach and newly implemented management practices. The Coalition will continue conducting MPM based on the monitoring strategy proposed in the 2015 SQMP.

The flowchart in Figure 1 is used to determine which sites require focused outreach and MPM, based on the compliance schedule described in the Order (Section XII, page 37). The flowchart is used to evaluate management plans that will reach the 10 year compliance deadline in the next three years and new management plans, or reinstated management plans, which have occurred due to exceedances in the previous water year. Table 3 includes the scenarios based on evaluation of the strategy described in the flowchart and the monitoring decision. For any exceedances of WQTLs for pesticides, the Coalition will begin sourcing, outreach, and monitoring within three years from the initiation of a management plan.

Table 4 lists each site in a management plan for constituents with known agricultural sources, each constituent's compliance schedule, and the decision to conduct MPM based on the flowchart results. There are, however, some special scenarios where the Coalition evaluated and made a decision based on data collected to characterize the site (such as arsenic at Terminous Tract Drain @ Hwy 12).

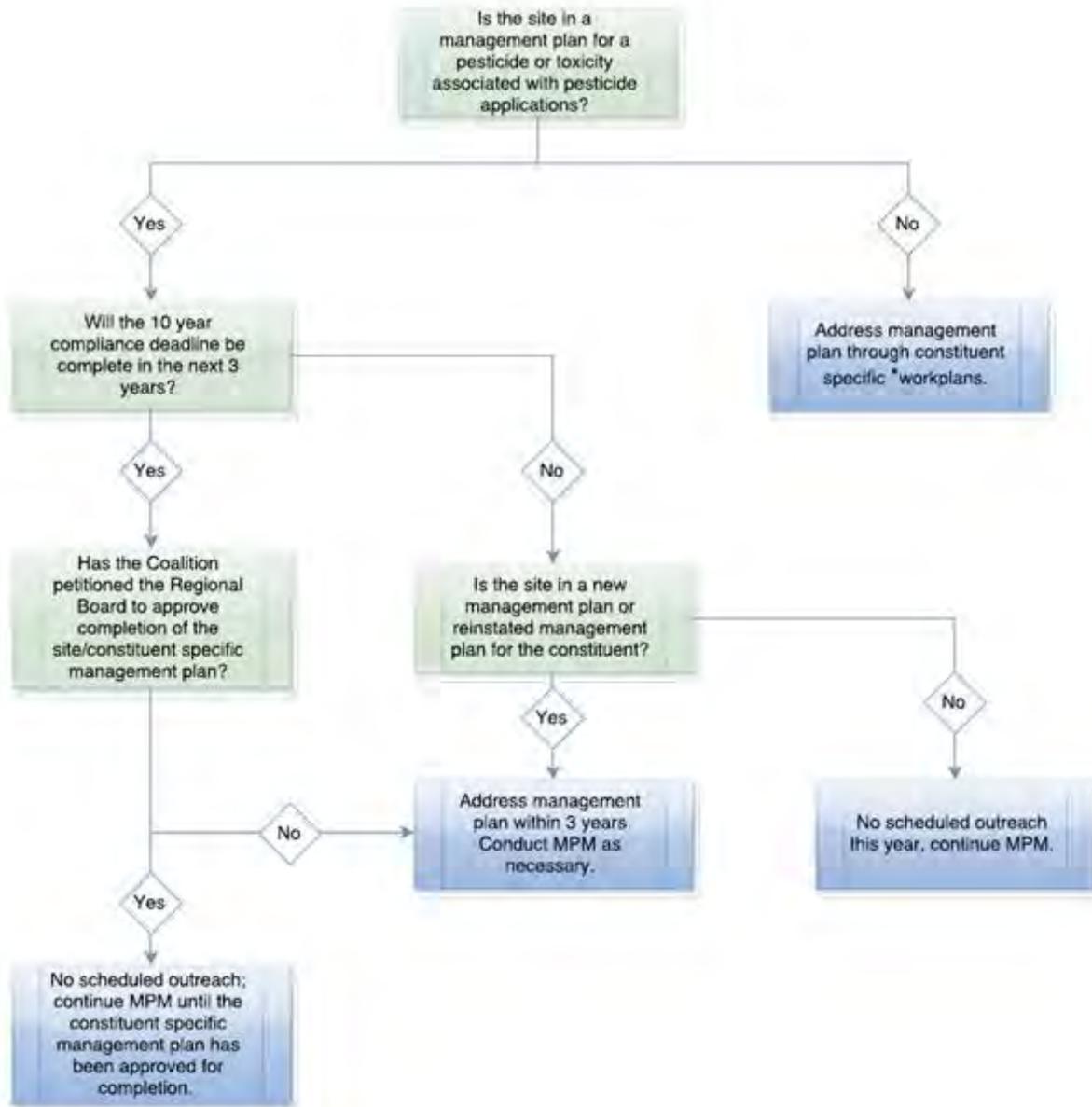
Constituents not applied by agriculture, including ammonia, *E. coli*, field parameters, legacy pesticides (lead, DDE), naturally occurring metals (arsenic), and nitrates are not easily sourced and there are potentially multiple contributors to the levels detected in the waterbodies. The Coalition submitted preliminary analyses for all constituents that are not applied by agriculture during the 2016 WY according to the schedule outlined in the 2015 SQMP. The Coalition provided evidence that suggests detections of these constituents in waterbodies could be the result of natural occurrence, applied by other land uses in the Coalition region, and/or an artifact of pesticide applications that have since been discontinued. The impact of these sources on water quality impairments is unknown and there is not enough evidence to suggest management practices alone will improve water quality. These constituents will not be monitored as part of MPM or evaluated in the 'Monitoring at Represented sites' section of this report. However, the Coalition will measure field parameters (DO, SC, and pH) during all scheduled monitoring events. Table 5 lists the management plans for constituents not applied by agriculture and when the preliminary analyses were submitted during the 2016 WY.

The Coalition will conduct MPM at Core sites according to the frequency outlined in Attachment B, section III.A.1 of the Order; monitoring shall occur on a monthly basis for all management plan constituents at the Core sites. The frequency for MPM at Represented sites is based on Pesticide Use Report (PUR) data, which provide the quantity of applications of the constituent of concern, and past exceedances. The Coalition used the following process to determine the frequency of MPM at Represented sites:

- Identify months of past exceedances for applied pesticides, metals, and toxicity.
- Identify months of peak use and seasonal trends using PUR data and compare to water quality data.

Each site subwatershed section below includes 1) a discussion of management plan constituents (applied pesticides, metals, and toxicity) and 2) an evaluation of monitoring frequency (based on past exceedances and PUR evaluations).

Figure 1. 2017 WY management plan monitoring decision tree.



*Work plan timelines are proposed in the SQMP (approved November 24, 2015).

Table 3. Evaluation and monitoring decision based on the strategy outlined in flowchart.

EVALUATION	MONITORING DECISION
10 year deadline is not within the next three years and the management plan was initiated prior to the 2016 WY.	Continue MPM.
10 year deadline is not within the next three years and a management plan for applied pesticides or toxicity was reinstated in the 2016 WY.	Resume MPM.
Constituent was petitioned for management plan completion.	Continue MPM until approved for completion.
10 year deadline is not within the next three years for newly initiated management plans.	MPM will coincide with outreach.
10 year deadline is within the next three years for an applied pesticide or toxicity.	Additional focused outreach within next three years and continue MPM.

Table 4. SJCDWQC results of management plan strategy flowchart analysis for the 2017 WY.

The MPM schedule is included in the Excel workbook. Red text indicates the constituent was reinstated in the site's management plan.

SITE	CONSTITUENT	10 YR COMPLIANCE DEADLINE	2017 FOCUSED OUTREACH	2017 MPM
Duck Creek @ Hwy 4	Chlorpyrifos	2017	X	X
	<i>C. dubia</i>	2019	X	X
	<i>H. azteca</i>	2023	X	X
East Orwood Tract Drain	<i>S. capricornutum</i>	2026		
Empire Tract @ 8 Mile Rd	<i>S. capricornutum</i>	2027		
French Camp Slough @ Airport Way	Chlorpyrifos	2016		X
	Diuron	2026		X
Lone Tree Creek @ Jack Tone Rd	Chlorpyrifos	2016		X
	<i>P. promelas</i>	2019		X
Mokelumne River @ Bruella Rd	<i>S. capricornutum</i>	2026		X
Mormon Slough @ Jack Tone Rd	Chlorpyrifos	2017	X	X
	<i>C. dubia</i>	2019		X
Roberts Island @ Whiskey Slough Pump	<i>S. capricornutum</i>	2019		X
	<i>H. azteca</i>	2017		X
Sand Creek @ Hwy 4 Bypass	<i>S. capricornutum</i>	2026		
South McDonald Island Pump	Chlorpyrifos	2019		X
	Diuron	2026		X
	<i>S. capricornutum</i>	2027		X
	<i>H. azteca</i>	2024		X
Union Island Drain @ Bonetti Rd	Chlorpyrifos	2026	X	X
	<i>C. dubia</i>	2016	X	X
	<i>S. capricornutum</i>	2018	X	X
	<i>H. azteca</i>	2016	X	X
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Chlorpyrifos	2017		X
	Diuron	2018		X
	<i>H. azteca</i>	2019		X
Upper Roberts Island Drain	<i>C. dubia</i>	2026		
	<i>S. capricornutum</i>	2027		
Walthall Slough @ Woodward Ave	<i>S. capricornutum</i>	2027		X

Table 5. Management plan constituents requiring a source study or work plan.

Constituent	Preliminary Analysis Submittal Date	Bacon Island Pump @ Old River	Bear Creek @ North Alpine Rd	Coyote Creek Tributary @ Jack Tone Rd	Duck Creek @ Hwy 4	Drain @ Woodbridge Rd	East Orwood Tract Drain	Empire Tract @ 8 Mile Rd	French Camp Slough @ Airport Way	Jahant Slough @ Cherokee Ln	Kellogg Creek along Hoffman Ln	Littlejohns Creek @ Jack Tone Rd	Lone Tree Creek @ Jack Tone Rd	Mokelumne River @ Bruella Rd	Mormon Slough @ Jack Tone Rd	Mosher Creek @ North Alpine Rd	Pixley Slough @ Furry Rd	Roberts Island @ Whiskey Slough Pump	Rindge Tract Drain	Sand Creek @ Hwy 4 Bypass	South McDonald Island Pump	Staten Island Drain @ Staten Island Rd	Terminus Tract Drain @ Hwy 12	Union Island Drain @ Bonetti Rd	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Upper Roberts Island Drain	Walthall Slough @ Woodward Ave	
DO	2/22/2016	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH	2/22/2016	X		X							X	X	X	X	X			X										
SC ¹	NA	X			X	X	X	X			X							X	X	X	X	X	X			X	X	
Ammonia	4/22/2016											X																
Nitrate	4/22/2016																					X						X
<i>E. coli</i> ²	NA	X	X		X	X		X	X		X	X	X	X				X		X			X	X	X	X	X	
Arsenic	3/23/2016	X				X		X															X	X				
Lead	5/20/2016																								X			
DDE	5/20/2016										X							X		X				X				
DDT	5/20/2016										X									X								

NA-Not Applicable; a preliminary analysis was not submitted in the 2016 WY.

¹SC is being addressed by CV-SALTS which is a collaborative effort to develop and implement a salinity and nitrate management program and Basin Plan Amendment.

²The Coalition currently relies on existing agricultural practices to manage *E. coli* pollution pending further discussion and/or direction with the Regional Board regarding a region-wide management program. No work plan/study on the source of *E. coli* is currently being developed for the site.

Total Maximum Daily Load Monitoring

The SJCDWQC will monitor parameters that are part of an adopted TMDL with a source of agriculture in accordance with adopted Basin Plan provisions, or as directed by the Executive Officer. On March 15, 2013, the Coalition received approval to monitor four Delta monitoring locations (Old River at the West End of Clifton Court Rd, San Joaquin River @ West Neugerbauer Rd, Light House Restaurant @ West Brannon Island Rd, and Walthall Slough @ Woodward Ave) during one storm event and from May through August annually to assess compliance with loading capacity (Table 6). To assess compliance with load allocation, the Coalition monitors tributary sites for chlorpyrifos and diazinon as part of the Coalition monitoring strategy outlined in each year's MPU report. Sites monitored for load allocation include named Delta waterways and tributaries that drain to named Delta waterways from both inside and outside the legal Delta boundary. The new TMDL compliance monitoring strategy focuses on periods of peak pesticide use. To assess compliance with the DO WQOs required in the TMDL Basin Plan objectives, the Coalition reviews monitoring data from the California Data Exchange Center (CDEC) Rough and Ready Island station to evaluate DO concentrations in the Stockton DWSC and assesses DO concentrations from its tributary monitoring locations. The 2018 Annual Report will include the status and analysis of the TMDL monitoring for the 2017 WY.

Table 6. SJCDWQC Delta chlorpyrifos and diazinon TMDL compliance locations and monitoring frequency.

LOCATION NAME	REPRESENTED WATERBODY AREAS	MONITORING FREQUENCY
Walthall Slough @ Woodward Ave	San Joaquin River (Stanislaus River to Delta Boundary)	1 storm event; monthly from May through August
San Joaquin River @ West Neugerbauer Rd	Delta Waterways (Stockton Ship Channel)	1 storm event; monthly from May through August
Old River @ the West End of Clifton Court Rd	Delta Waterways (export area, southern and western portions)	1 storm event; monthly from May through August
Light House Restaurant @ West Brannon Island Rd	Delta Waterways (central and eastern portions), Mosher Slough (downstream of I-5) and Five Mile Slough (Alexandria Place to Fourteen Mile Slough)	1 storm event; monthly from May through August

MONITORING AT A CORE SITE

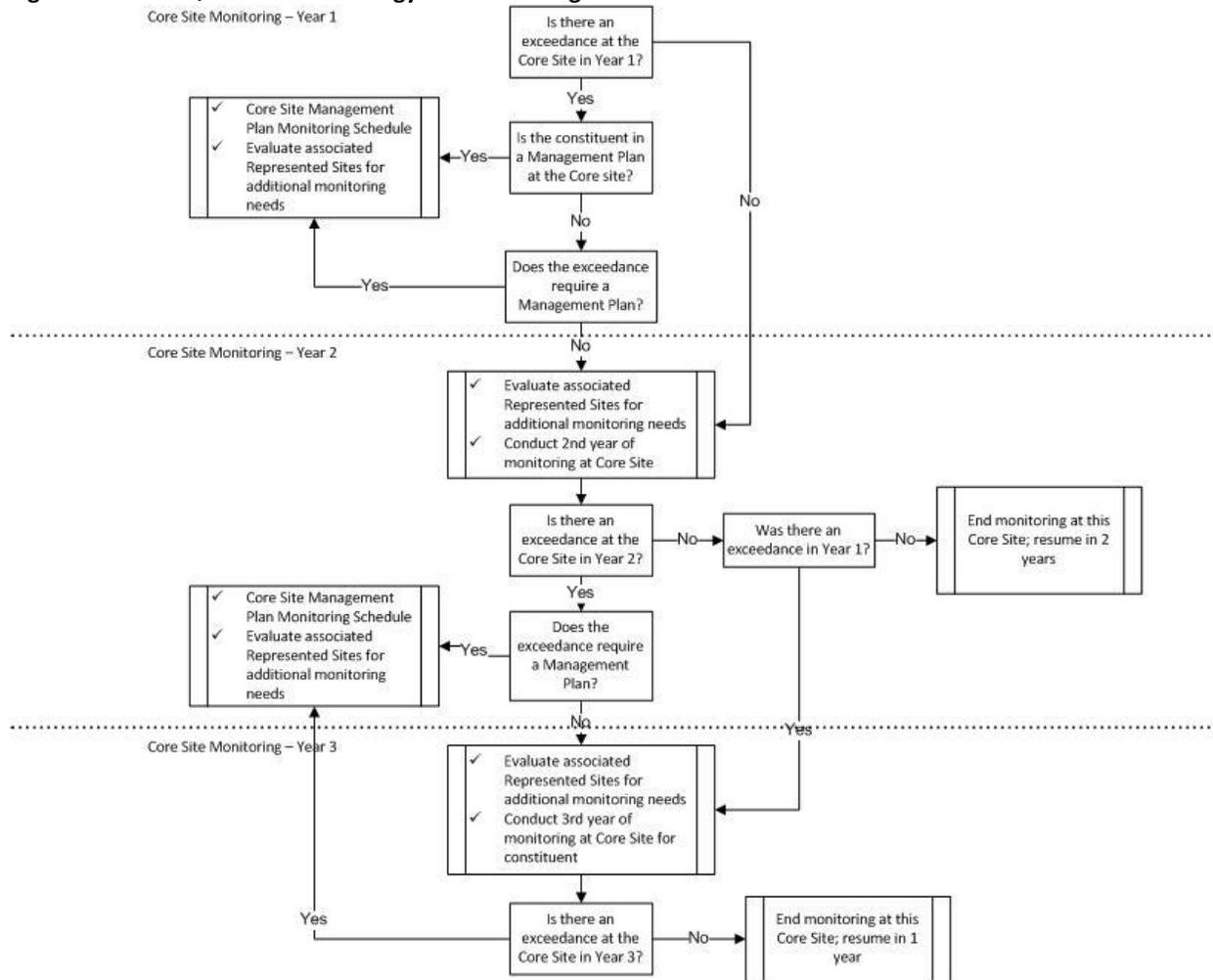
Table 7 includes a list of Core sites scheduled for monitoring in the 2017 WY. The Coalition will monitor the Core site in each zone for a minimum of two consecutive years before rotating to the second Core site in the zone. The Coalition will rotate to new Core sites for the 2017 WY (submitted June 21, 2016, approved July 11, 2016). French Camp Slough @ Airport Way, Union Island Drain @ Bonetti Rd, and Walthall Slough @ Woodward Ave will remain as the Core sites within Zone 2, 7, and 5; respectively. French Camp Slough @ Airport Way has been determined to be the only suitable Core site in Zone 2. Union Island Drain @ Bonetti Rd will remain as the Core site in Zone 7 because monitoring was initiated in 2015 and additional data is needed to fully characterize water quality in this site subwatershed. Walthall Slough @ Woodward Ave will remain the Core site in Zone 5 as it is the only monitoring location in the zone and is both the Core and Represented site for the zone. Bacon Island Pump @ Old River, the new rotating Core site for Zone 4, will also represent water quality in Zone 6. The Coalition will include members of Zone 6 in its evaluation for focused outreach for Bacon Island Pump @ Old River. The flowchart in Figure 2 describes the Core site monitoring strategy.

Table 7. SJCDWQC Core sites by zone.

ZONE	SITE TYPE	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Core	Bear Creek @ North Alpine Rd	531BCANAR	38.07386	-121.21215
2	Core	French Camp Slough @ Airport Way	531SJC504	37.88172	-121.24933
3	Core	Drain @ Woodbridge Rd	544DAWRXX	38.15256	-121.50095
4 and 6	Core	Bacon Island Pump @ Old River	544BIPAOR	37.97916	-121.57023
5	Core	Walthall Slough @ Woodward Ave	544WSAWAV	37.77046	-121.29227
7	Core	Union Island Drain @ Bonetti Rd	544UIDABR	37.87170	-121.52551

There is no Core site in Zone 6; Bacon Island Pump @ Old River will represent water quality in the zone.

Figure 2. SJCDWQC flowchart strategy for monitoring at a Core site.



The Coalition will monitor physical parameters, nutrients, bacteria, metals, pesticides, and water column and sediment toxicity at each Core site as listed in Table 2, Attachment B of the Order (Page 9). The Coalition will monitor for the parameters listed in Table 8 during the 2017 WY at Core sites listed in Table 7. The analysis for each Core site in each zone below includes rationale for metals monitoring only because all other constituents are collected monthly as outlined in the WDR.

If the concentration of a constituent (applied pesticide or applied metal) exceeds the WQTL or a toxicity occurs at a Core site, monitoring for that constituent will occur for an additional third consecutive year (Attachment B of the Order, page 3).

Table 8. SJCDWQC parameters to be monitored at the Core sites for the 2017 WY.

PARAMETER GROUP	MEASURED PARAMETER	MONITORING FREQUENCY
Water Column Sampling		
Photo	Photo documentation	Monthly
Physical Parameters	Estimated flow (cfs, field measure)	Monthly
	pH (field measure)	Monthly
	Electrical Conductivity (at 25°C, field measure)	Monthly

PARAMETER GROUP		MEASURED PARAMETER	MONITORING FREQUENCY
		Dissolved Oxygen (DO, field measure)	Monthly
		Temperature (field measure)	Monthly
		Turbidity	Monthly
		Total Suspended Solids (TSS)	Monthly
		Hardness (as CaCO ₃)	Two storms and two irrigations
		Total Organic Carbon (TOC)	Monthly
Bacteria		<i>E. coli</i>	Monthly
Water Column Toxicity Test		Algae - <i>Selenastrum capricornutum</i>	Monthly
		Water Flea - <i>Ceriodaphnia dubia</i>	Monthly
		Fathead Minnow - <i>Pimephales promelas</i>	Monthly
		Toxicity Identification Evaluation (TIE) ¹	As needed based on section III.C.4 of Attachment B
Pesticides	Carbamates	Aldicarb	Monthly
		Carbaryl	Monthly
		Carbofuran	Monthly
		Methiocarb	Monthly
		Methomyl	Monthly
		Oxamyl	Monthly
	Organophosphates	Azinphos-methyl	Monthly
		Chlorpyrifos	Monthly
		Diazinon	Monthly
		Dichlorvos	Monthly
		Dimethoate	Monthly
		Demeton-s	Monthly
		Disulfoton (Disyton)	Monthly
		Malathion	Monthly
		Methamidophos	Monthly
		Methidathion	Monthly
	Herbicides	Parathion-methyl	Monthly
		Phorate	Monthly
		Phosmet	Monthly
		Atrazine	Monthly
		Cyanazine	Monthly
Diuron		Monthly	
Glyphosate		One storm and one irrigation ²	
Linuron	Monthly		
Paraquat	One storm and one irrigation ²		
Simazine	Monthly		
Trifluralin	Monthly		
Metals		Arsenic (total)	See Core Site Metals section below
		Boron (total)	See Core Site Metals section below
		Cadmium (dissolved)	See Core Site Metals section below
		Copper (dissolved)	See Core Site Metals section below
		Lead (dissolved)	See Core Site Metals section below
		Molybdenum (total)	See Core Site Metals section below
		Nickel (dissolved)	See Core Site Metals section below
		Selenium (total)	See Core Site Metals section below
		Zinc (dissolved)	See Core Site Metals section below
Nutrients		Nitrate plus Nitrite as Nitrogen	Monthly
		Total Ammonia	Monthly
		Unionized Ammonia (calculated value)	Monthly

PARAMETER GROUP	MEASURED PARAMETER	MONITORING FREQUENCY
	Soluble Orthophosphate	Monthly
Sediment Sampling		
Toxicity	<i>Hyalella azteca</i>	March, September
Pesticides and Sediment Pesticides	Bifenthrin	As Needed ³
	Cyfluthrin	As Needed ³
	Cypermethrin	As Needed ³
	Deltamethrin	As Needed ³
	Esfenvalerate/Fenvalerate	As Needed ³
	Lambda-Cyhalothrin	As Needed ³
	Permethrin	As Needed ³
	Fenpropathrin	As Needed ³
	Chlorpyrifos	As Needed ³
	Piperonyl butoxide (PBO)	As Needed ³
	Total Organic Carbon	March, September
Grain Size	March, September	

¹ Specific TIE manipulations utilized in each test will be reported.

² Glyphosate and Paraquat shall be monitored twice a year during high TSS events: one storm and one irrigation.

³ Pesticide analyses shall be performed on sediment samples measuring significant toxicity and < 80% organism survival compared to the control.

DELTA RMP REDUCED MONITORING

The goal of the Delta Regional Monitoring Program (RMP) is to develop comprehensive and coordinated monitoring efforts between the many entities that currently conduct monitoring in the Delta, including the SJCDWQC. Based on the success of similar programs, it is anticipated that this effort will lead to opportunities to fill data gaps related to contaminants, water quality impairments, aquatic health, and also reduce redundant monitoring efforts and cost.

Through evaluation of past monitoring plans, the Coalition was able to identify monitoring reductions that would enable the Coalition to both comply with the Order and offer support to the RMP. Table 9 outlines the Coalition's plan for reduced monitoring during the 2017 WY at Core site.

Table 9. Planned reduced monitoring due to participation in the Delta RMP schedule for the 2017 WY Core sites.

SITE	MONTH
Bear Creek @ North Alpine Rd	November
	April
French Camp Slough @ Airport Way	November
	December
Drain @ Woodbridge Rd	November
Bacon Island Pump @ Old River	October
	November
Walthall Slough @ Woodward Ave	October
	November

CORE SITE PESTICIDES

The 2017 WY is the first year of monitoring at the newly rotated Core sites. Section III.C.3 of the Order specifies that pesticides intended for monitoring are identified as part of a process that includes input from qualified scientists and coordination with the Department of Pesticide Regulation (DPR). The Central Valley Regional Water Quality Control Board organized a Pesticide Evaluation Advisory Workgroup, which recommended some elements of the monitoring process.

As of July 2016, a process for identifying the pesticides to monitor has been drafted but not yet approved. Therefore, the Coalition will monitor monthly at each Core site for actively registered pesticide listed in Table 8. The Coalition will continue monitoring for glyphosate and paraquat dichloride twice a year: once during a storm event and once during an irrigation event with high flows.

CORE SITE METALS

Table 2 of Attachment B of the Order identifies metals that are required for consideration in the monitoring program. Past monitoring data and pesticide use data were evaluated to determine if monitoring for all metals in Table 2 of the WDR was required, and if so, the specific metals, timing, and frequency of monitoring.

To evaluate the need to monitor metals, the Coalition follows the steps in the flowchart below in Figure 3. The first step in the flowchart evaluates whether the metal is a constituent responsible for a 303d listing of the Core site waterbody in the zone. If the metal is the cause of a 303d listing and there is an approved TMDL, then the Coalition will monitor based on the schedule outlined in the TMDL or determined by the Regional Board. There is a TMDL in place for selenium discharges on the west side of the San Joaquin River basin and a TMDL for boron for the San Joaquin River segment between the Merced and Tuolumne Rivers. Both of these TMDLs are upstream and outside of Coalition boundaries. There is currently no required TMDL monitoring in the SJCDWQC for either selenium or boron. The Coalition is involved in the implementation of the methyl mercury TMDL process and will not monitor for methyl mercury until the TMDL is fully implemented.

If there is no EPA approved TMDL for the 303d listed metal, the Coalition reviews past monitoring data and determines if sufficient data exist to propose delisting of the waterbody. If there are not sufficient data, the Coalition will develop monitoring options as determined by the process outlined in Figure 3 for discussion with the Regional Board. With the exception of Bear Creek @ North Alpine Rd, none of the Core site waterbodies are listed for metals on the 2010 California 303d List of Water Quality Limited Segments; Bear Creek @ North Alpine Rd is listed for copper.

If a metal is not 303(d) listed at the Core site waterbody, the Coalition reviews past monitoring results to determine if the site was adequately characterized. These evaluations lead to one of the following decisions:

- Follow the monitoring program as described in the SJCDWQC Management Plan (characterization adequate, two or more exceedances in a three year period).
- Develop a monitoring schedule based on past results and application data (characterization not adequate).

- No monitoring is necessary (characterization adequate, no exceedances).

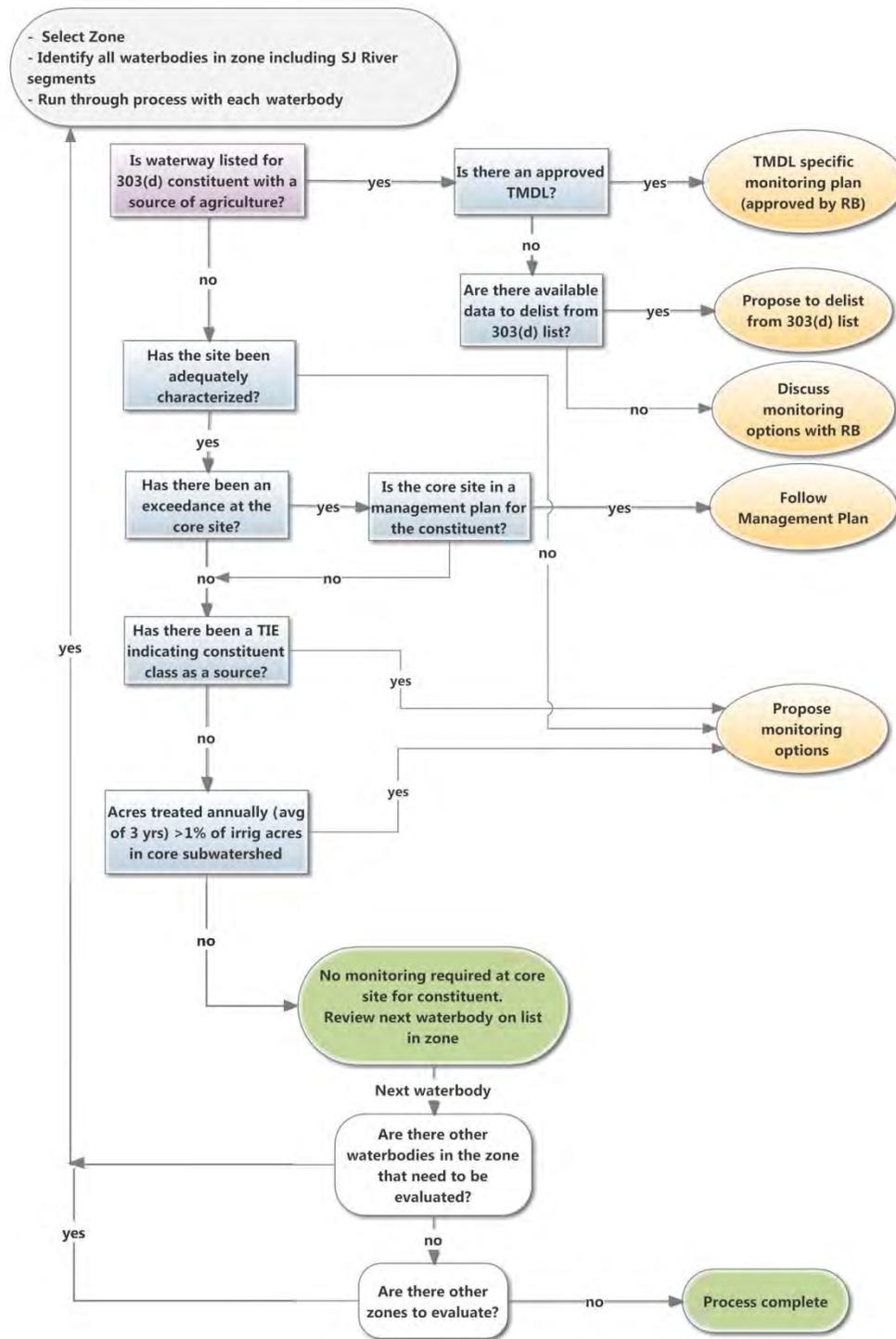
One of the questions in the flowchart is whether characterization of the concentration of the metal at the site is adequate. Adequacy is determined by having three years of monitoring of the constituent. For dissolved metals, not all sites have three years of monitoring, but there are multiple years of monitoring for the total fraction of metals at all sites.

The relationship between total and dissolved fraction concentrations has consequences for the determination of adequate characterization. The goal of adequate characterization is to establish that the concentration of the metal does not exceed the hardness based WQTL at any time and does not impair beneficial uses. The Coalition can use the combined history of monitoring for the total fraction and the dissolved fraction to demonstrate adequate characterization provided there are no exceedances of the hardness based WQTL for either the total or dissolved fraction of any metal.

If the decision tree in Figure 3 indicates that a particular metal should be monitored, the Coalition will monitor only the total fraction for arsenic, boron, molybdenum, and selenium; and only the dissolved fraction for cadmium, copper, lead, nickel, and zinc.

As required by the Order, the Coalition considered geologic conditions as part of the evaluation for metals applied to lands for irrigated agricultural purposes. Metals used by agriculture tend to bind to the sediment and become settled or concentrated in the bed of the waterbodies. These compounds can result in water contamination when the sediments become mobilized in the water column. The Coalition has developed a monitoring schedule of metals that includes monitoring during irrigation and storm events with high total suspended solids (high TSS) in order to capture sediment-bound metals.

Figure 3. SJCDWQC flowchart for the Core site metals monitoring strategy.



Bear Creek @ North Alpine Rd

Bear Creek @ North Alpine Rd is the Core site in Zone 1. The decisions for monitoring for metals at Bear Creek @ North Alpine Rd during the 2017 WY are outlined in Table 10. The monitoring plan is based on results from 2008 through June 2016. Metals monitoring results are listed in Table 11.

Bear Creek (San Joaquin and Calaveras Counties; partly in Delta Waterways, eastern portion) is currently listed as an impaired waterbody on California's 303(d) List of Impaired Waterbodies for copper (last updated in 2012).

Table 10. Results of the flowchart analysis for Bear Creek @ North Alpine Rd outlined in Figure 3.

"X" indicates a specific monitoring decision per each constituent.

FLOWCHART QUESTION	As	B	Cd	Cu	Pb	Mo	Ni	Se	Zn
1. Is site on 303d list for constituent?	No	No	No	Yes	No	No	No	No	No
2. Has the site been adequately characterized?	Yes								
3. Has there been an exceedance?	No								
4. Is waterbody in a management plan for constituent?	No								
5. Has there been a TIE indicating the constituent class as causal agent?	No								
6. Acres treated > 1%?	No	No	No	Yes	No	No	No	No	Yes
Monitoring Decision									
1. TMDL-specific monitoring									
2. Propose to delist from 303(d) list									
3. Monitoring according to management plan									
4. Propose monitoring plan in MPU analysis below				X					X
5. No monitoring during the 2017 WY	X	X	X		X	X	X	X	

Monitoring Decision #4- Monitoring plan

Dissolved Copper and Dissolved Zinc

Bear Creek @ North Alpine Rd was monitored for all metals in 2008, 2009, and 2011 and no exceedances occurred. The site subwatershed is considered fully characterized (Table 11). The Coalition will monitor for dissolved copper and dissolved zinc at the Bear Creek @ North Alpine Rd site subwatershed during four high TSS events (two storm and two irrigation) since both metals are applied to more than 1% of the total irrigated acreage.

Monitoring Decision #5 - No monitoring

Total Arsenic, Total Boron, Dissolved Cadmium, Dissolved Lead, Total Molybdenum, Dissolved Nickel, and Total Selenium

The Coalition did not monitor for these constituents at Bear Creek @ North Alpine Rd during the 2016 WY. Monitoring results from 2008, 2009, and 2011 indicate no exceedances for these constituents. The Figure 3 flowchart indicates no monitoring (Monitoring Decision #5 of Table 10) at Bear Creek @ North Alpine Rd is required for arsenic, boron, cadmium, lead, molybdenum, nickel, and selenium.

Table 11. Bear Creek @ North Alpine Rd site subwatershed dissolved and total metals monitoring results (2008-June 2016).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. Any exceedance of a WQTL is highlighted in blue.

SITE NAME	YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
Bear Creek @ North Alpine Rd	2008	Oct	10/14/2008	1.9	27	<0.011	<0.011	0.1	0.3	<0.071	<0.071	0.41	1.5	1.6	0.076	<0.8	<0.8	<2
Bear Creek @ North Alpine Rd	2008	Nov	11/4/2008	1.4	24	<0.011	<0.011	0.3	0.6	<0.071	0.12	0.28	1.2	1.2	<0.06	0.9	2	<2
Bear Creek @ North Alpine Rd	2008	Dec	12/9/2008	1.2	17	<0.011	<0.011	0.4	0.9	<0.071	0.18	0.3	1.2	1.5	<0.06	<0.8	2	120
Bear Creek @ North Alpine Rd	2009	Jan	1/13/2009	0.80	22	<0.011	<0.011	0.7	1.2	<0.071	0.22	0.31	1.1	1.3	<0.06	<0.8	2	5
Bear Creek @ North Alpine Rd	2009	Feb	2/10/2009	1.1	38	<0.011	<0.011	2.3	3.7	<0.071	0.52	0.61	2.3	3.1	0.09	<0.8	3.4	6
Bear Creek @ North Alpine Rd	2009	Mar	3/10/2009	1.8	28	<0.011	<0.011	3.3	4	0.19	0.5	0.67	2.4	2.6	0.12	2.2	3.2	<2
Bear Creek @ North Alpine Rd	2011	Jan	1/11/2011	1.3	27	<0.011	<0.011	2.9	3.9	0.11	0.39	0.48	1.9	3.2	0.1	1.7	4.1	3
Bear Creek @ North Alpine Rd	2011	Feb	2/8/2011	1.3	33	<0.011	0.012	2.5	3.2	0.09	0.31	0.55	1.6	1.9	0.1	<0.8	1.3	10
Bear Creek @ North Alpine Rd	2011	Mar	3/8/2011	1.4	30	<0.011	0.011	2.5	3	0.15	0.45	0.41	1.8	1.8	0.08	1.3	3	6
Bear Creek @ North Alpine Rd	2011	Apr	4/12/2011	1.9	40	<0.04	<0.04	2.4	3.1	0.16	0.42	0.52	1.7	1.9	0.09	<0.7	1.2	6
Bear Creek @ North Alpine Rd	2011	May	5/24/2011	1.5	28	<0.04	<0.04	1.3	2.5	0.11	0.57	0.45	1.4	2.3	0.08	0.9	2.6	3
Bear Creek @ North Alpine Rd	2011	Jun	6/28/2011	0.87	17	<0.04	<0.04	1	1.6	0.04	0.18	0.48	1.1	1.4	0.13	<0.7	<0.7	<2
Bear Creek @ North Alpine Rd	2011	Jul	7/26/2011	1.2	19	<0.04	<0.04	1.2	2.2	0.08	0.41	0.45	1.3	1.9	0.12	<0.7	1.8	20
Bear Creek @ North Alpine Rd	2011	Aug	8/23/2011	0.79	15	<0.04	<0.04	1.2	2.9	0.06	0.71	0.42	1	2.8	0.11	<0.7	3.9	31

SITE NAME	YEAR	MONTH	DATE	AS,	B,	CD,	CD,	CU,	CU,	PB,	PB,	MO,	NI,	NI,	SE,	ZN,	ZN,	TSS,	
Bear Creek @ North Alpine Rd	2011	Sept	9/20/2011	0.86	16	<0.04	<0.04	1.4	3.5	0.06	0.9	0.32	1.1	2.9	0.08	<0.7	4.9	48	
Bear Creek @ North Alpine Rd	2011	Oct	10/6/2011	0.63	15	<0.04	<0.04	1.2	2.1	0.07	0.29	0.32	1	1.4	0.09	<0.7	1.8	10	
Bear Creek @ North Alpine Rd	2011	Nov	11/15/2011	2.5	8.7	<0.04	0.08	0.93	22	0.13	8.3	0.12	0.94	18	0.16	<0.7	43	662	
Bear Creek @ North Alpine Rd	2011	Dec	12/13/2011	1.1	28	<0.04	<0.04	2.4	3.2	0.08	0.23	1	2.6	3.2	0.1	<0.7	1.2	8	
Sample Count Summary																			
Samples collected in 2008				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Samples collected in 2009				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Samples collected in 2010				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2011				12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Samples collected in 2012				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2013				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2014				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2015				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2016				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exceedance Summary																			
Total Collected				18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Total Exceedances				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA

NA- Not applicable.

French Camp Slough @ Airport Way

French Camp Slough @ Airport Way is the Core site in Zone 2. The decisions for monitoring for metals at French Camp Slough @ Airport Way during the 2017 WY are outlined in Table 12. The monitoring plan is based on results from 2006 through June 2016. Metals monitoring results are listed in Table 13.

French Camp Slough (confluence of Littlejohns and Lone Tree Creeks to San Joaquin River, San Joaquin County; partly in Delta Waterways, eastern portion) is not listed on the 303(d) list for any metals.

Table 12. Results of the flowchart analysis for French Camp Slough @ Airport Way outlined in Figure 3.

“X” indicates a specific monitoring decision per each constituent.

FLOWCHART QUESTION	As	B	Cd	Cu	Pb	Mo	Ni	Se	Zn
1. Is site on 303d list for constituent?	No								
2. Has the site been adequately characterized?	Yes								
3. Has there been an exceedance?	No	No	No	Yes	Yes	No	No	No	No
4. Is waterbody in a management plan for constituent?	No								
5. Has there been a TIE indicating the constituent class as causal agent?	No								
6. Acres treated > 1%?	No	No	No	Yes	No	No	No	No	No
Monitoring Decision									
1. TMDL-specific monitoring									
2. Propose to delist from 303(d) list									
3. Monitoring according to management plan									
4. Propose monitoring plan in MPU				X					
5. No monitoring during the 2017 WY	X	X	X		X	X	X	X	X

Monitoring Decision #4- Propose monitoring plan

Dissolved Copper

During the 2016 WY, the Coalition monitored for copper during one storm event (January 2016); there was a detection during this event, but the WQTL was not exceeded. An additional storm event was scheduled (November 2015); however, due to the Coalition’s participation in the Delta RMP, monitoring at this site was reduced during the month of November 2015 (approved September 15, 2015). The 2016 WY scheduled monitoring for copper during two irrigation events (July and August 2016) had not yet occurred during preparation of this report. Since copper is applied greater than 1% of the total irrigated acreage within this site subwatershed, the Coalition will continue monitoring for dissolved copper at French Camp Slough@ Airport Way during four high TSS events (two storm and two irrigation).

Monitoring Decision #5 - No monitoring

Total Arsenic, Total Boron, Dissolved Cadmium, Dissolved Lead, Total Molybdenum, Dissolved Nickel, Total Selenium, and Dissolved Zinc

The Coalition did not monitor for these constituents at French Camp Slough @ Airport Way during the 2016 WY. Past monitoring for these constituents at the site resulted in no exceedances of the WQTLs (Table 13). The Figure 3 flowchart indicates no monitoring (Monitoring Decision #5 of Table 10) is required at the site for arsenic, boron, cadmium, lead, molybdenum, nickel, and selenium.

Table 13. French Camp Slough @ Airport Way site subwatershed dissolved and total metals monitoring results (2006 – June 2016).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. Any exceedance of a WQTL is highlighted in blue.

YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
2014	Dec	12/4/2014	NA	NA	NA	NA	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	97
2015	Feb	2/9/2015	NA	NA	NA	NA	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	20
2015	Jul	7/21/2015	NA	NA	NA	NA	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	29
2015	Aug	8/18/2015	NA	NA	NA	NA	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	36
2015	Nov	11/10/2015	NA	NA	NA	NA	RMP*	NA	NA	NA	NA	NA	NA	NA	NA	NA	*
2016	Jan	1/06/2016	NA	NA	NA	NA	4.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	8
2016	Jul ¹	NA	NA	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
2016	Aug ¹	NA	NA	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
Sample Count Summary																	
Samples collected in 2006			5	5	0	5	0	5	0	5	0	0	5	5	0	5	0
Samples collected in 2007			8	8	0	8	0	11	0	8	0	0	8	4	0	8	0
Samples collected in 2008			7	7	0	7	0	7	0	7	0	0	7	7	0	7	0
Samples collected in 2009			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2010			0	0	0	0	4	4	0	0	0	0	0	0	0	0	0
Samples collected in 2011			12	12	12	12	12	12	12	12	12	12	12	12	12	12	4
Samples collected in 2012			0	0	0	0	5	5	2	2	0	0	0	0	0	0	12
Samples collected in 2013			0	0	0	0	1	1	0	0	0	0	0	0	0	0	4
Samples collected in 2014			9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Samples collected in 2015			0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
Samples collected in 2016 ¹			0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Exceedance Summary																	
Total Collected			41	41	21	41	36	54	23	43	21	21	41	37	21	41	34
Total Exceedances			0	0	0	0	0	12	0	2	0	0	0	0	0	0	NA
% Exceedances			0%	0%	0%	0%	0%	22%	0%	5%	0%	0%	0%	0%	0%	0%	NA

¹ At the time of this report, scheduled sampling had not yet occurred in July and August 2016. Results from those months will be included in addendum.

RMP – Site was approved for reduced monitoring due to the Coalition’s participation in the Delta RMP (approval letter 09/16/2015).

NA- Not applicable.

Drain @ Woodbridge Rd

Drain @ Woodbridge Rd is the Core site in Zone 3. The decisions for monitoring for metals at Drain @ Woodbridge Rd during the 2017 WY are outlined in Table 14. The monitoring plan is based on results from 2008 through June 2016. Metals monitoring results are listed in Table 15.

Drain @ Woodbridge Rd is not listed as an impaired waterbody on California’s 303(d) List of Impaired Waterbodies (last updated in 2010).

Table 14. Results of the flowchart analysis for Drain @ Woodbridge Rd outlined in Figure 3.

“X” indicates a specific monitoring decision per each constituent.

FLOWCHART QUESTION	As	B	Cd	Cu	Pb	Mo	Ni	Se	Zn
1. Is site on 303d list for constituent?	No								
2. Has the site been adequately characterized?	Yes								
3. Has there been an exceedance?	Yes	No							
4. Is waterbody in a management plan for constituent?	Yes	No							
5. Has there been a TIE indicating the constituent class as causal agent?	No								
6. Acres treated > 1%?	No	No	No	Yes	No	No	No	No	No
Monitoring decision									
1. TMDL-specific monitoring									
2. Propose to delist from 303(d) list									
3. Monitoring according to management plan									
4. Propose monitoring plan in MPU	X			X					
5. No monitoring during the 2017 WY		X	X		X	X	X	X	X

Monitoring Decision #4- Propose monitoring plan

Total Arsenic and Dissolved Copper

Drain @ Woodbridge Rd was monitored for all metals in 2008, 2009, and 2010 and is considered fully characterized (Table 15). Since monitoring began in this site subwatershed, there have been a total of 14 exceedances of the WQTL for arsenic and therefore the site was placed in a management plan in 2008 (Table 15); however, the Coalition will not conduct MPM for arsenic. The Coalition will conduct additional characterization monitoring for arsenic for one year, during four high TSS events (two storm and two irrigation).

Since copper is applied to greater than 1% of the total irrigated acreage in the site subwatershed, the Coalition will monitor for dissolved copper during four high TSS events (two storm and two irrigation).

Monitoring Decision #5 - No monitoring

Total Boron, Dissolved Cadmium, Dissolved Lead, Total Molybdenum, Dissolved Nickel, Total Selenium, and Dissolved Zinc

The Coalition did not monitor for the constituents at Drain @ Woodbridge Rd during the 2016 WY. Past monitoring for these constituents at the site resulted in no exceedances of the WQTLs (Table 15). The Figure 3 flowchart indicates no monitoring (Monitoring Decision #5 of Table 14) is required at the site for boron, cadmium, lead, molybdenum, nickel, selenium, and zinc.

Table 15. Drain @ Woodbridge Rd site subwatershed dissolved and total metals monitoring results (2008-June 2016).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. Any exceedance of a WQTL is highlighted in blue.

SITE NAME	YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
Drain @ Woodbridge Rd	2008	Oct	10/14/2008	12	100	<0.011	<0.011	0.1	1	<0.071	0.31	2.8	0.8	1.6	0.067	<0.8	2	50
Drain @ Woodbridge Rd	2008	Nov	11/4/2008	13	100	<0.011	<0.011	0.8	1.9	<0.071	0.26	2.2	1.5	1.9	0.096	4	7	19
Drain @ Woodbridge Rd	2009	Jan	1/13/2009	12	130	0.011	0.04	0.9	2.6	<0.071	0.79	4.1	1.9	3.5	0.12	1	4	28
Drain @ Woodbridge Rd	2009	Feb	2/10/2009	14	130	<0.011	0.03	0.46	1.6	<0.071	0.42	4.5	2.1	2.9	0.09	<0.8	2.6	12
Drain @ Woodbridge Rd	2009	Mar	3/10/2009	15	120	<0.011	0.02	0.44	1.5	<0.071	0.43	4.1	1.6	2.4	0.08	<0.8	2.9	37
Drain @ Woodbridge Rd	2010	Jan	1/13/2010	10	100	<0.011	0.03	0.92	2.8	<0.071	0.96	4.1	2.2	3.9	0.12	1.1	2.9	33
Drain @ Woodbridge Rd	2010	Feb	2/9/2010	14	87	<0.011	0.03	0.83	3.6	<0.071	1.1	3.7	2.1	4.4	0.14	2	8	218
Drain @ Woodbridge Rd	2010	Mar	3/16/2010	13	130	<0.011	0.02	0.56	1.2	<0.071	0.39	3.3	1.2	2.1	0.06	2.2	2	21
Drain @ Woodbridge Rd	2010	Apr	4/13/2010	14	110	<0.011	0.013	0.42	0.95	<0.071	0.21	3.8	1.1	1.5	0.08	<0.8	1.6	23
Drain @ Woodbridge Rd	2010	May	5/11/2010	18	103	0.11	0.15	1.2	1.1	<0.071	0.25	3.9	1.2	1.7	0.08	10	12	22
Drain @ Woodbridge Rd	2010	Jun	6/8/2010	13	142	<0.011	<0.011	0.56	1.1	<0.071	0.18	3.9	1.1	1.4	0.06	<0.8	0.9	7
Drain @ Woodbridge Rd	2010	Jul	7/13/2010	11	79	<0.011	0.013	0.25	1.5	<0.071	0.41	2.5	0.88	2	0.09	1.8	2.5	14
Drain @ Woodbridge Rd	2010	Aug	8/10/2010	8.7	82	<0.011	<0.011	0.61	1.8	<0.071	0.28	1.9	0.96	1.3	0.07	<0.8	1.5	12
Drain @ Woodbridge Rd	2010	Sep	9/7/2010	14	107	<0.011	<0.011	1.1	1.3	<0.071	0.30	3.3	1.1	1.6	0.09	1.5	2.4	12
Drain @ Woodbridge Rd	2010	Oct	10/12/2010	17	87	<0.011	<0.011	0.36	0.79	<0.071	0.27	2.2	1.0	1.6	0.06	1.6	2.5	46
Drain @ Woodbridge Rd	2010	Nov	11/09/2010	8.8	81	<0.011	<0.011	0.34	1.2	<0.071	0.17	2.3	0.85	1.2	0.31	<0.8	1.5	10
Drain @ Woodbridge Rd	2010	Dec	12/7/2010	14	106	<0.011	0.02	0.43	1.5	<0.071	0.42	3.4	1.1	2	0.08	<0.8	2.7	17
Sample Count Summary																		
Samples collected in 2008				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Samples collected in 2009				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Samples collected in 2010				12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Samples collected in 2011				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2012				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2013				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2014				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2015				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2016				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exceedance Summary																		
Total Collected				17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Total Exceedances				14	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances				82.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA

NA- Not applicable.

Bacon Island Pump @ Old River

Bacon Island Pump @ Old River is the Core site in Zone 4. The decisions for monitoring for metals at Bacon Island Pump @ Old River during the 2017 WY are outlined in Table 16. The monitoring plan is based on results from 2014 through June 2016. Metals monitoring results are listed in Table 17.

Bacon Island Pump @ Old River is not listed as an impaired waterbody according to California’s 303(d) List of Impaired Waterbodies.

Table 16. Results of the flowchart analysis for Bacon Island Pump @ Old River outlined in Figure 3.

“X” indicates a specific monitoring decision per each constituent.

FLOWCHART QUESTION	As	B	Cd	Cu	Pb	Mo	Ni	Se	Zn
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	No	No	No	No	No	No	No
3. Has there been an exceedance?	Yes	No	No	No	No	Yes	No	No	No
4. Is waterbody in a management plan for constituent?	Yes	No	No	No	No	No	No	No	No
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	No	No	No	No	No
Monitoring decision									
1. TMDL-specific monitoring									
2. Propose to delist from 303(d) list									
3. Monitoring according to management plan									
4. Propose monitoring plan in MPU	X	X	X	X	X	X	X	X	X
5. No monitoring during the 2017 WY									

Monitoring Decision #4 – Propose monitoring plan

Total Arsenic, Total Boron, Dissolved Cadmium, Dissolved Copper, Dissolved Lead, Total Molybdenum, Dissolved Nickel, Total Selenium, and Dissolved Zinc

Bacon Island Pump @ Old River was monitored for all of the above metals from January through September 2014 (Table 17). Since metals have only been monitored during nine sampling events at Bacon Island Pump @ Old River (from January through September 2014), the site subwatershed has not been adequately characterized. The Figure 3 flowchart indicates monitoring should be proposed (Monitoring Decision #4 of Table 16). During the 2017 WY, the Coalition will monitor for total arsenic, total boron, dissolved cadmium, dissolved copper, dissolved lead, total molybdenum, dissolved nickel, total selenium, and dissolved zinc to better characterize this site subwatershed during four high TSS events (two storm and two irrigation).

Table 17. Bacon Island Pump @ Old River site subwatershed dissolved and total metals monitoring results (2014-June 2016).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. Any exceedance of a WQTL is highlighted in blue.

SITE NAME	YEAR	MONTH	DATE	As, TOTAL (µG/L)	B, TOTAL (µG/L)	Cd, DISSOLVED (µG/L)	Cd, TOTAL (µG/L)	Cu, DISSOLVED (µG/L)	Cu, TOTAL (µG/L)	Pb, DISSOLVED (µG/L)	Pb, TOTAL (µG/L)	Mo, TOTAL (µG/L)	Ni, DISSOLVED (µG/L)	Ni, TOTAL (µG/L)	Se, TOTAL (µG/L)	Zn, DISSOLVED (µG/L)	Zn, TOTAL (µG/L)	TSS, TOTAL (MG/L)	
Bacon Island Pump @ Old River	2014	Jan	1/28/2014	7	120	<0.05	<0.05	0.91	3.3	0.12	0.66	5.8	4.2	6.5	0.13	1.3	4.7	33	
Bacon Island Pump @ Old River	2014	Feb	2/11/2014	6.4	130	<0.05	<0.05	1.7	2.7	0.31	0.59	6.9	5.9	6.8	0.16	2.6	4.4	23	
Bacon Island Pump @ Old River	2014	Mar	3/03/2014	8.4	140	<0.05	<0.05	1.1	2.6	0.15	0.61	9.8	5.8	7.6	0.22	1.5	3.6	27	
Bacon Island Pump @ Old River	2014	Apr	4/15/2014	9.5	130	<0.05	<0.05	2.1	3.2	0.23	0.72	11	6.1	7.8	0.25	1.7	4.4	22	
Bacon Island Pump @ Old River	2014	May	5/20/2014	5.4	180	<0.05	<0.05	3.2	4.5	0.04	0.29	4.7	7.1	8.9	0.13	5.1	7.7	13	
Bacon Island Pump @ Old River	2014	Jun	6/17/2014	6.9	150	<0.05	<0.05	1.5	3.9	0.05	0.67	7.7	4.6	7	0.19	0.97	5.5	73	
Bacon Island Pump @ Old River	2014	Jul	7/15/2014	27	120	<0.05	<0.05	0.2	1.8	<0.03	0.21	4.3	3.7	4.4	0.2	1.9	4.1	56	
Bacon Island Pump @ Old River	2014	Aug	8/19/2014	15	150	<0.05	<0.05	<0.15	3.6	0.05	0.97	5.1	3.9	7.9	0.22	<0.7	7.2	57	
Bacon Island Pump @ Old River	2014	Sep	9/16/2014	5.2	110	<0.05	<0.05	0.69	2	0.12	0.5	4.2	2.7	3.9	0.15	0.9	3.2	124	
Sample Count Summary																			
Samples collected in 2014				9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
Samples collected in 2015				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Samples collected in 2016				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exceedance Summary																			
Total Collected				9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
Total Exceedances				2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	NA
% Exceedances				22.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%	0.0%	NA

NA- Not applicable.

Walthall Slough @ Woodward Ave

Walthall Slough @ Woodward Ave is the Core site in Zone 5. The decision for monitoring for metals at Walthall Slough @ Woodward Ave during the 2017 WY is outlined in Table 18. The monitoring plan is based on results from 2009 through June 2016. Metals monitoring results are listed in Table 19.

Walthall Slough @ Woodward Ave is not listed as an impaired waterbody on California’s 303(d) List of Impaired Waterbodies.

Table 18. Results of the flowchart analysis for Walthall Slough @ Woodward Ave outlined in Figure 3.

“X” indicates a specific monitoring decision per each constituent.

FLOWCHART QUESTION	AS	B	CD	CU	PB	MO	NI	SE	ZN
1. Is site on 303d list for constituent?	No								
2. Has the site been adequately characterized?	Yes								
3. Has there been an exceedance?	No								
4. Is waterbody in a management plan for constituent?	No								
5. Has there been a TIE indicating the constituent class as causal agent?	No								
6. Acres treated > 1%?	No	No	No	Yes	No	No	No	No	No
Monitoring decision									
1. TMDL-specific monitoring									
2. Propose to delist from 303(d) list									
3. Monitoring according to management plan									
4. Propose monitoring plan in MPU				X					
5. No monitoring during the 2017 WY	X	X	X		X	X	X	X	X

Monitoring Decision #4 – Propose monitoring plan

Dissolved Copper

Walthall Slough @ Woodward Ave was monitored for all metals in 2009, 2010, and 2013 and is considered fully characterized Table 19. The Coalition will monitor for dissolved copper at the Walthall Slough @ Woodward Ave site subwatershed during four high TSS events (two storm and two irrigation) since copper is applied to more than 1% of the total irrigated acreage.

Monitoring Decision #5 - No monitoring

Total Arsenic, Total Boron, Total Cadmium, Total Copper, Total Lead, Total Nickel, Total Selenium, and Total Zinc

Past monitoring history showed no exceedances of any of the listed constituents (Table 19). The Figure 3 flowchart indicates no monitoring (Monitoring Decision #5 of Table 18) is required for these constituents at Walthall Slough @ Woodward Ave.

Table 19. Walthall Slough @ Woodward Ave site subwatershed dissolved and total metals monitoring results (2009- June 2016).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. Any exceedance of a WQTL is highlighted in blue.

SITE NAME	YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)
Walthall Slough @ Woodward Ave	2013	Jan	1/15/2013	4.2	270	<0.05	<0.05	1.4	1.7	<0.03	0.09	2.6	1.4	1.8	0.45	0.6	0.7	<2
Walthall Slough @ Woodward Ave	2013	Feb	2/21/2013	8.8	150	<0.05	<0.05	1.6	2.1	<0.03	<0.03	2.7	1.7	1.5	0.18	0.8	1.7	<2
Walthall Slough @ Woodward Ave	2013	Mar	3/19/2013	3.3	120	<0.05	<0.05	1.2	2	<0.03	0.19	1.6	1.3	1.5	0.19	0.6	1.9	2
Walthall Slough @ Woodward Ave	2013	Apr	4/02/2013	4.2	72	<0.05	<0.05	1.5	2.7	0.03	0.38	1.4	1.3	2	0.18	1.6	3.7	15
Walthall Slough @ Woodward Ave	2013	May	5/21/2013	4.3	120	<0.05	<0.05	0.71	2.2	<0.03	0.4	1.8	1.2	2.3	0.21	<0.5	3.2	28
Walthall Slough @ Woodward Ave	2013	June	6/18/2013	3.5	110	<0.05	<0.05	0.79	2.2	<0.03	0.37	1.6	0.82	2	0.22	<0.5	3	24
Walthall Slough @ Woodward Ave	2013	Jul	7/16/2013	3.1	180	<0.05	<0.05	0.75	1.5	<0.03	0.16	2.3	1.2	1.4	0.27	<0.5	1.1	15
Walthall Slough @ Woodward Ave	2013	Aug	8/20/2013	4	180	<0.05	<0.05	1.2	1.7	<0.03	0.13	1.9	1.4	1.5	0.31	<0.5	1.1	<2
Walthall Slough @ Woodward Ave	2013	Sep	9/17/2013	2.7	110	<0.05	<0.05	0.7	1.3	<0.03	0.16	1.5	0.81	1.3	0.23	0.7	1.9	11
Walthall Slough @ Woodward Ave	2013	Oct	10/08/2013	2.4	81	<0.05	<0.05	1.1	1.4	<0.03	0.1	0.98	0.45	0.89	0.12	0.7	1.2	<2
Walthall Slough @ Woodward Ave	2013	Nov	11/19/2013	8.4	180	<0.05	<0.05	1.4	1.6	<0.03	0.1	2.8	1.3	1.7	0.25	<0.7	1.3	6
Walthall Slough @ Woodward Ave	2013	Dec	12/17/2013	9.2	180	<0.05	<0.05	1.6	1.7	<0.03	<0.03	2.7	1.6	1.5	0.28	<0.7	1.6	<2

Sample Counts Summary

SITE NAME	YEAR	MONTH	DATE	AS, TOTAL (µG/L)	B, TOTAL (µG/L)	CD, DISSOLVED (µG/L)	CD, TOTAL (µG/L)	CU, DISSOLVED (µG/L)	CU, TOTAL (µG/L)	PB, DISSOLVED (µG/L)	PB, TOTAL (µG/L)	MO, TOTAL (µG/L)	NI, DISSOLVED (µG/L)	NI, TOTAL (µG/L)	SE, TOTAL (µG/L)	ZN, DISSOLVED (µG/L)	ZN, TOTAL (µG/L)	TSS, TOTAL (MG/L)	
Samples collected in 2009				12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Samples collected in 2010				12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Samples collected in 2011				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Samples collected in 2012				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Samples collected in 2013				12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Samples collected in 2014				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2015				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2016				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exceedance Summary																			
Total Samples Collected				36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Total Exceedances				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA

NA- Not applicable.

Union Island Drain @ Bonetti Rd

Union Island Drain @ Bonetti Rd is the Core site in Zone 7. The decisions for monitoring for metals at Union Island Drain @ Bonetti Rd during the 2017 WY are outlined in Table 20; the monitoring plan is based on results from October 2014 through June 2016. Metals monitoring results are listed in Table 21.

Union Island Drain is not listed as an impaired waterbody on California’s 303(d) List of Impaired Waterbodies (last updated in 2012).

Table 20. Results of the flowchart analysis for Union Island Drain @ Bonetti Rd outlined in Figure 2.

“X” indicates a specific monitoring decision per each constituent.

FLOWCHART QUESTION	AS	B	CD	CU	PB	MO	NI	SE	ZN
1. Is site on 303d list for constituent?	No	No	No	No	No	No	No	No	No
2. Has the site been adequately characterized?	No	No	No	No	No	No	No	No	No
3. Has there been an exceedance?	Yes	No							
4. Is waterbody in a management plan for constituent?	Yes	No							
5. Has there been a TIE indicating the constituent class as causal agent?	No	No	No	No	No	No	No	No	No
6. Acres treated > 1%?	No	No	No	No	No	No	No	No	Yes
Monitoring schedule									
1. TMDL-specific monitoring									
2. Propose to delist from 303(d) list									
3. Monitoring according to management plan									
4. Propose monitoring plan in MPU	X	X	X	X	X	X	X	X	X
5. No monitoring during the 2017 WY									

Monitoring Decision #4 – Propose monitoring plan

Total Arsenic, Total Boron, Dissolved Cadmium, Dissolved Copper, Dissolved Lead, Total Molybdenum, Dissolved Nickel, Total Selenium, and Dissolved Zinc

Since metals analyses have only been conducted six times (July and August 2016 sampling had not been conducted at the time of this report) at Union Island Drain @ Bonetti Rd, the Coalition cannot conclude that this site subwatershed has been adequately characterized (Table 21). The Figure 3 flowchart indicates monitoring should be proposed (Monitoring Decision #4 of Table 20). During the 2017 WY, the Coalition will monitor for total arsenic, total boron, dissolved cadmium, dissolved copper, dissolved lead, total molybdenum, dissolved nickel, total selenium, and dissolved zinc to better characterize this site subwatershed during four high TSS events (two storm and two irrigation) in the 2017 WY.

Table 21. Union Island Drain @ Bonetti Rd site subwatershed dissolved and total metals monitoring results (October 2014 through June 2016).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. Any exceedance of a WQTL is highlighted in blue.

SITE NAME	YEAR	MONTH	DATE	As, TOTAL (µG/L)	B, TOTAL (µG/L)	Cd, DISSOLVED (µG/L)	Cd, TOTAL (µG/L)	Cu, DISSOLVED (µG/L)	Cu, TOTAL (µG/L)	Pb, DISSOLVED (µG/L)	Pb, TOTAL (µG/L)	Mo, TOTAL (µG/L)	Ni, DISSOLVED (µG/L)	Ni, TOTAL (µG/L)	Se, TOTAL (µG/L)	Zn, DISSOLVED (µG/L)	Zn, TOTAL (µG/L)	TSS, TOTAL (MG/L)	
Union Island Drain @ Bonetti Rd	2014	Dec	12/4/2014	7.7	NA	NA	NA	0.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	392	
Union Island Drain @ Bonetti Rd	2015	Feb	2/9/2015	24	NA	NA	NA	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	122	
Union Island Drain @ Bonetti Rd	2015	Jul	7/21/2015	74	NA	NA	NA	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	588	
Union Island Drain @ Bonetti Rd	2015	Aug	8/18/2015	22	NA	NA	NA	0.81	NA	NA	NA	NA	NA	NA	NA	NA	NA	228	
Union Island Drain @ Bonetti Rd	2015	Nov	11/10/2015	35	NA	NA	NA	0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	1320	
Union Island Drain @ Bonetti Rd	2016	Jan	1/06/2016	12	NA	NA	NA	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	198	
Union Island Drain @ Bonetti Rd	2016	Jul ¹	7/19/2016	NA	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	
Union Island Drain @ Bonetti Rd	2016	Aug ¹	8/16/2016	NA	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	
Sample Counts Summary																			
Samples collected in 2014				1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Samples collected in 2015				4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
Samples collected in 2016 ¹				1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Exceedance Summary																			
Total Samples Collected				6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	6
Total Exceedances				5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances				83.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	NA

¹At the time of this report, scheduled sampling had not yet occurred in July and August 2016. Results from July and August 2016 monitoring will be analyzed and included in an addendum to the MPU which will be submitted on May 1, 2017 with the SJCDWQC 2017 Annual Report.

NA- Not applicable.

MONITORING AT A REPRESENTED SITE

During the 2017 WY, the Coalition will monitor at 19 of 20 Represented sites; Mokelumne River Drain @ North Lower Sacramento Rd is the only site that is not scheduled for monitoring. Sites that are marked as “to be determined” (TBD) for Delta Zones 3, 4, and 7 in Table 1 of Attachment B of the Order have been identified in this Monitoring Plan Update (Table 22). The Coalition evaluated potential monitoring locations that would represent the hydrological units (HUC 12) within each of these zones and monitoring locations in the Delta were selected based on the following criteria:

- The drain has a pump that removes water from the island.
- The monitoring location is accessible year-around (e.g. the road accessing the site is traversable during storm events).

Some sites represent more than one HUC 12 because of these criteria. As described later in this section, Union Island Drain @ Bonetti Rd will represent the Town of French Camp – San Joaquin River HUC 12 in the 2017 WY. Table 22 lists all of the Core and Represented sites that the Coalition will monitor in the 2017 WY including the HUC 12 represented by the site, the site name, station code, and monitoring site coordinates.

Table 22. SJCDWQC Hydrological Unit Code-12 (HUC-12) and Represented sites.

Core site information is bolded.

ZONE	SITE TYPE	SITE NAME	HUC	STATION CODE	LATITUDE	LONGITUDE
1	Core	Bear Creek @ North Alpine Rd	Lower Bear Creek	531BCANAR	38.07386	-121.21215
1	Represented	Coyote Creek Tributary @ Jack Tone Rd	Coyote Creek	531CCTALR	38.24082	-121.15200
1	Represented	Jahant Slough @ Cherokee Ln	Jahant Slough	531XJSACL	38.21035	-121.26200
1	Represented	Mokelumne River @ Bruella Rd		531XMRABR	38.16022	-121.20643
1	Represented	Mokelumne River Drain @ North Lower Sacramento Rd ¹	Murphy Creek-Mokelumne River	531MRDNL	38.19557	-121.29400
1	Represented	Mosher Creek @ North Alpine Rd	Mosher Creek	531MCANAR	38.06088	-121.20900
1	Represented	Pixley Slough @ Furry Rd	Pixley Slough	531XPSAFR	38.08256	-121.24100
2	Core	French Camp Slough @ Airport Way		531SJC504	37.88172	-121.24933
2	Represented	Duck Creek @ Hwy 4	Lower Duck Creek	531XDCAHF	37.94949	-121.18208
2	Represented	Littlejohns Creek @ Jack Tone Rd	Simmons Creek-Littlejohns Creek	531XLCAJR	37.88958	-121.14727
2	Represented	Lone Tree Creek @ Jack Tone Rd	Middle Lone Tree Creek	531XLTCJR	37.83754	-121.14460
2	Represented	Mormon Slough @ Jack Tone Rd	McLeod Lake-Mormon Slough	544MSAJTR	37.96470	-121.14880
2	Represented	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Lower Lone Tree Creek	531UDLTAJ	37.85360	-121.14570
3	Core	Drain @ Woodbridge Rd	Hog Slough	544DAWRXX	38.15256	-121.50095
3	Represented	Empire Tract @ 8 Mile Rd	Venice Island-Little Connection Slough	544ETAEMR	38.06012	-121.49912
3	Represented	Rindge Tract Drain	Fivemile Creek-San Joaquin River	544RDGTRD	38.04553	-121.46933
3	Represented	Staten Island Drain @ Staten Island Rd	South Mokelumne River-Mokelumne River	544SIDSIR	38.13297	-121.52225
3	Represented	Terminus Tract Drain @ Hwy 12		544XTTHWT	38.11558	-121.49380
4	Core	Bacon Island Pump @ Old River	Mandeville Island-	544BIPAOR	37.97916	-121.57023

ZONE	SITE TYPE	SITE NAME	HUC	STATION CODE	LATITUDE	LONGITUDE
			Connection Slough			
4	Represented	East Orwood Tract Drain	Jersey Island-Taylor Slough	544EOWDTD	37.92857	-121.56067
4	Represented	Kellogg Creek along Hoffman Ln	Lower Kellogg Creek	544XKCAHL	37.88188	-121.65221
4	Represented	Roberts Island @ Whiskey Slough Pump		544RIAWSP	37.96737	-121.46434
4	Represented	South McDonald Island Pump	Fivemile Creek-San Joaquin River	544SMCDIP	37.98928	-121.46285
5	Core	Walthall Slough @ Woodward Ave²	Walthall Slough-San Joaquin River	544WSAWAV	37.77046	-121.29227
6	NA	Sand Creek @ Hwy 4 Bypass ³		544SCAHFB	37.94750	-121.74300
7	Core	Union Island Drain @ Bonetti Rd⁴	Union Island/Town of French Camp-San Joaquin River	544UIDABR	37.87170	-121.52551
7	Represented	Upper Roberts Island Drain	Roberts Island-Trapper Slough	544UPRRID	37.81893	-121.35830

¹ No monitoring will occur at Mokelumne River Drain @ North Lower Sacramento Rd. Bear Creek @ North Alpine Rd is a Core site that will represent water quality in the Murphy Creek – Mokelumne River HUC.

² Walthall Slough @ Woodward Ave is a Core site that will represent water quality in the Walthall Slough-San Joaquin River HUC.

³ The Coalition only monitors in Zone 6 for MPM at Sand Creek @ Hwy 4 Bypass. Bacon Island Pump @ Old River will represent water quality in Zone 6.

⁴ Union Island Drain @ Bonetti Rd is a Core site that will represent water quality in the Union Island and Town of French Camp-San Joaquin River HUCs.

Represented sites were identified for monitoring during the 2017 WY based on the following criteria:

- Represented site is in a management plan for an applied pesticide, metal, or toxicity.
- Exceedance of an applied pesticide, metal, or toxicity occurred at the Core site.
- Core site is in a management plan for an applied pesticide, metal, or toxicity and monitoring is necessary at the Represented site to characterize potential discharge.

The Coalition conducts two types of monitoring at Represented sites: monitoring based on management plans and monitoring based on exceedances at the respective Core site. The Coalition conducts MPM as part of its management plan strategy to identify contaminant sources and evaluate the efficacy of outreach and newly implemented management practices. The Coalition also evaluates the potential risk, by analyzing pesticide use, for water quality impairments at Represented sites when an exceedance of a WQTL occurs at an associated Core site and then monitors the Represented site accordingly (Attachment B of the Order, pages 3-4).

The Coalition reviewed past exceedances and PUR data for the Core sites in each zone and followed the strategy outlined in the Figure 4 flowchart to determine which constituents to monitor at the Represented sites in each zone. The 2017 WY is the first year of monitoring at the Represented sites based on monitoring results analyzed for the new Core sites. Therefore, monitoring will include:

- 1) Constituents that were monitored at the old Core site during the 2015 and 2016 WYs and resulted in exceedances of WQTLs,
- 2) Constituents in management plans at the new Core sites, and
- 3) A third year of Represented site monitoring if an exceedance occurred at the Represented site during the 2015 and/or 2016 WYs.

The Coalition will monitor at the Represented site during the period when there is the greatest potential to detect the constituent in the waterbody. Monitoring at Represented sites will occur for a minimum of two years.

When water column toxicity occurred at the Core site, the Coalition used TIEs, if possible, to identify the pesticides potentially associated with toxicity. The Coalition conducts TIEs when toxicity to *C. dubia* and *P. promelas* result in 50% or less survival compared to the control and when toxicity to *S. capricornutum* results 50% or less growth compared to the control. Table 23 includes a list of active ingredients, arranged by chemical group (herbicides, insecticides, metals, pyrethroids), that are associated with toxicity to *C. dubia*, *P. promelas*, and *S. capricornutum*. If the Coalition could not associate applications of pesticides directly to toxicity, then the Coalition used PUR data from 2013 through 2015 to identify application periods for the groups of chemicals generally associated with the specific toxicity.

If sediment toxicity to *H. azteca* occurred at a Core site, the Coalition will monitor for sediment toxicity once during the storm season (March 1st through April 30th) and once during the irrigation season (August 15th through October 15th) at each Represented site in the Core site zone.

Until the Coalition receives feedback from the Regional Board for the submitted preliminary analyses (Table 5), the constituents (ammonia, *E. coli*, field parameters, lead, DDE, arsenic, molybdenum, and nitrate) will not be evaluated for Represented site monitoring. There is an exception with arsenic at Terminous Tract Drain @ Hwy 12; an explanation can be found in the section below.

Each site subwatershed section below includes 1) analysis and discussion of MPM for applied pesticides, metals, or toxicity, and 2) analysis and discussion of Represented site monitoring constituents based on past Core site exceedances and/or toxicity. Each of the two sections includes justification for the monitoring frequency.

Figure 4. SJCDWQC flowchart strategy for monitoring at a Represented site.



Table 23. Chemical names of pesticides applied within the SJCDWQC region. Chemicals are associated with a group and toxicity species.

CHEMICAL GROUP	CHEMICAL NAME	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM
HERBICIDE	2,4-D, DIMETHYLAMINE SALT			X
HERBICIDE	4-(2,4-DB), DIMETHYLAMINE SALT			X
HERBICIDE	BENSULIDE			X
HERBICIDE	BROMACIL			X
HERBICIDE	BROMOXYNIL OCTANOATE			X
HERBICIDE	CHLORTHAL-DIMETHYL			X
HERBICIDE	CLETHODIM			X
HERBICIDE	CYCLOATE			X
HERBICIDE	CYHALOFOP BUTYL			X
HERBICIDE	DIGLYCOLAMINE SALT OF 3,6-DICHLORO-O-ANISIC ACID			X
HERBICIDE	DIURON			X
HERBICIDE	EPTC			X
HERBICIDE	FLUMIOXAZIN			X
HERBICIDE	GLUFOSINATE-AMMONIUM			X
HERBICIDE	GLYPHOSATE			X
HERBICIDE	GLYPHOSATE, DIAMMONIUM SALT			X
HERBICIDE	GLYPHOSATE, ISOPROPYLAMINE SALT			X
HERBICIDE	GLYPHOSATE, MONOAMMONIUM SALT			X
HERBICIDE	GLYPHOSATE, POTASSIUM SALT			X
HERBICIDE	HEXAZINONE			X
HERBICIDE	LINURON			X
HERBICIDE	MCPA, DIMETHYLAMINE SALT			X
HERBICIDE	METAM-SODIUM	X	X	X
HERBICIDE	METRIBUZIN			X
HERBICIDE	MSMA			X
HERBICIDE	NAPROPAMIDE			X
HERBICIDE	NORFLURAZON			X
HERBICIDE	ORYZALIN			X
HERBICIDE	OXYFLUORFEN			X
HERBICIDE	PARAQUAT DICHLORIDE	X	X	X
HERBICIDE	PENDIMETHALIN			X
HERBICIDE	PROMETRYN			X
HERBICIDE	PROPANIL			X
HERBICIDE	SETHOXYDIM			X
HERBICIDE	SIMAZINE			X
HERBICIDE	S-METOLACHLOR			X
HERBICIDE	SODIUM CHLORATE			X
HERBICIDE	THIOBENCARB			X
HERBICIDE	TRIFLURALIN			X
INSECTICIDE	ABAMECTIN		X	
INSECTICIDE	ACEPHATE	X	X	
INSECTICIDE	ALDICARB	X	X	
INSECTICIDE	AZINPHOS-METHYL	X	X	
INSECTICIDE	BIFENAZATE	X	X	

CHEMICAL GROUP	CHEMICAL NAME	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM
INSECTICIDE	CARBARYL	X	X	
INSECTICIDE	CARBOFURAN	X	X	
INSECTICIDE	CHLOROPICRIN	X	X	X
INSECTICIDE	CHLORPYRIFOS	X	X	
INSECTICIDE	CYPERMETHRIN	X	X	
INSECTICIDE	DELTAMETHRIN	X	X	
INSECTICIDE	DIAZINON	X	X	
INSECTICIDE	DICAMBA, DIMETHYLAMINE SALT			X
INSECTICIDE	DICOFOL	X	X	
INSECTICIDE	DIFLUBENZURON	X	X	X
INSECTICIDE	DIMETHOATE	X	X	
INSECTICIDE	DISULFOTON	X	X	
INSECTICIDE	ETHOPROP	X	X	
INSECTICIDE	FENAMIPHOS	X	X	
INSECTICIDE	IMIDACLOPRID	X	X	
INSECTICIDE	INDOXACARB		X	
INSECTICIDE	KAOLIN	X	X	
INSECTICIDE	MALATHION	X	X	
INSECTICIDE	METHIDATHION	X	X	
INSECTICIDE	METHOMYL	X	X	
INSECTICIDE	METHOXYFENOZIDE	X	X	
INSECTICIDE	METHYL BROMIDE	X	X	X
INSECTICIDE	OXAMYL	X	X	
INSECTICIDE	PHOSMET	X	X	
INSECTICIDE	POTASSIUM N-METHYLDITHIOCARBAMATE	X	X	
INSECTICIDE	PROPARGITE	X	X	
INSECTICIDE	PYRIDABEN	X	X	
INSECTICIDE	SODIUM TETRATHIOCARBONATE	X	X	
INSECTICIDE	SPINOSAD	X	X	
INSECTICIDE	SPIROMESIFEN	X	X	X
INSECTICIDE	THIOPHANATE-METHYL	X	X	
INSECTICIDE	TRALOMETRIN	X	X	
INSECTICIDE	(S)-CYPERMETHRIN	X	X	
INSECTICIDE	BIFENTHRIN	X	X	
INSECTICIDE	CYFLUTHRIN	X	X	
INSECTICIDE	ESFENVALERATE	X	X	
INSECTICIDE	FENPROPATHRIN	X	X	
INSECTICIDE	LAMBDA-CYHALOTHRIN	X	X	
INSECTICIDE	PERMETHRIN	X	X	
INSECTICIDE	(S)-CYPERMETHRIN	X		
INSECTICIDE	BIFENTHRIN	X		
INSECTICIDE	CYFLUTHRIN	X		
INSECTICIDE	ESFENVALERATE	X		
INSECTICIDE	FENPROPATHRIN	X		
INSECTICIDE	LAMBDA-CYHALOTHRIN	X		
INSECTICIDE	PERMETHRIN	X		
METALS	COPPER			X

CHEMICAL GROUP	CHEMICAL NAME	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM
METALS	COPPER HYDROXIDE			X
METALS	COPPER OXIDE (OUS)			X
METALS	COPPER OXYCHLORIDE			X
METALS	COPPER OXYCHLORIDE SULFATE			X
METALS	COPPER SULFATE (BASIC)			X
METALS	COPPER SULFATE (PENTAHYDRATE)			X

ZONE 1 – BEAR CREEK @ NORTH ALPINE RD

Bear Creek @ North Alpine Rd is the new rotating Core site in Zone 1. Monitoring was initiated at Bear Creek @ North Alpine Rd in 2008. During the 2016 WY, Bear Creek @ North Alpine Rd was a Represented site and monitoring occurred for water column toxicity to *S. capricornutum*; there were no toxic samples. In the 2017 WY, the Coalition will monitor monthly for Core site constituents at Bear Creek @ North Alpine Rd.

Bear Creek @ North Alpine Rd is in a management plans for DO and *E. coli*; no MPM is scheduled. Monitoring for DO and *E. coli* will occur monthly in the 2017 WY in accordance with the Core site monitoring strategy. Table 24 includes the status of active management plans and 2016 WY exceedances for all sites within Zone 2.

Table 24. Zone 1 Management Plan Constituents and 2016 WY Exceedances.

Core site information is bolded.

SITE NAME	DO	PH	SC	E. COLI	S. CAPRICORNUTUM
Bear Creek @ North Alpine Rd	M			M	
Coyote Creek Tributary @ Jack Tone Rd	M	M			
Jahant Slough @ Cherokee Ln	M		X		X
Mokelumne River @ Bruella Rd		M		M	M
Mosher Creek @ North Alpine Rd	M				X
Pixley Slough @ Furry Rd	M				

M – Indicates constituent is in a management plan at the site.

M – Indicates exceedance in the 2016 WY triggered a management plan.

X – Indicates exceedance of WQTL in 2016 WY but management plan was not required.

Coyote Creek Tributary @ Jack Tone Rd

Coyote Creek Tributary @ Jack Tone Rd is a Represented site in Zone 1. Monitoring was initiated at this site in the 2015 WY. During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Coyote Creek Tributary @ Jack Tone Rd based on toxicities at the previous Core site (Mokelumne River @ Bruella Rd), and associated pesticide/metal applications. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core Site Management Plans and Exceedances

The Zone 1 Core site in the 2017 WY, Bear Creek @ North Alpine Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on

management plans and exceedances at Bear Creek @ North Alpine Rd is not scheduled for Coyote Creek Tributary @ Jack Tone Rd.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Coyote Creek Tributary @ Jack Tone Rd due to past toxicities at the previous Core site in Zone 1 (Mokelumne River @ Bruella Rd). Monitoring occurred from November 2015 through April 2016, and in June 2016; no toxicity occurred. As outlined in the Coalition's strategy for monitoring at a Represented sites in the Figure 4 flowchart, the Coalition has completed two years of Represented site monitoring with no toxicity; no additional toxicity monitoring is required at this time.

2017 WY Monitoring Based on Management Plan

The Coyote Creek Tributary @ Jack Tone Rd site subwatershed is currently in a management plan for DO and pH. The Coalition will not conduct MPM in this site subwatershed in the 2017 WY.

Jahant Slough @ Cherokee Ln

Jahant Slough @ Cherokee Ln is a Represented site in Zone 1. Monitoring was initiated at this site in the 2015 WY. During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Jahant Slough @ Cherokee Ln based on toxicities at the previous Core site (Mokelumne River @ Bruella Rd), and associated pesticide/metal applications. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

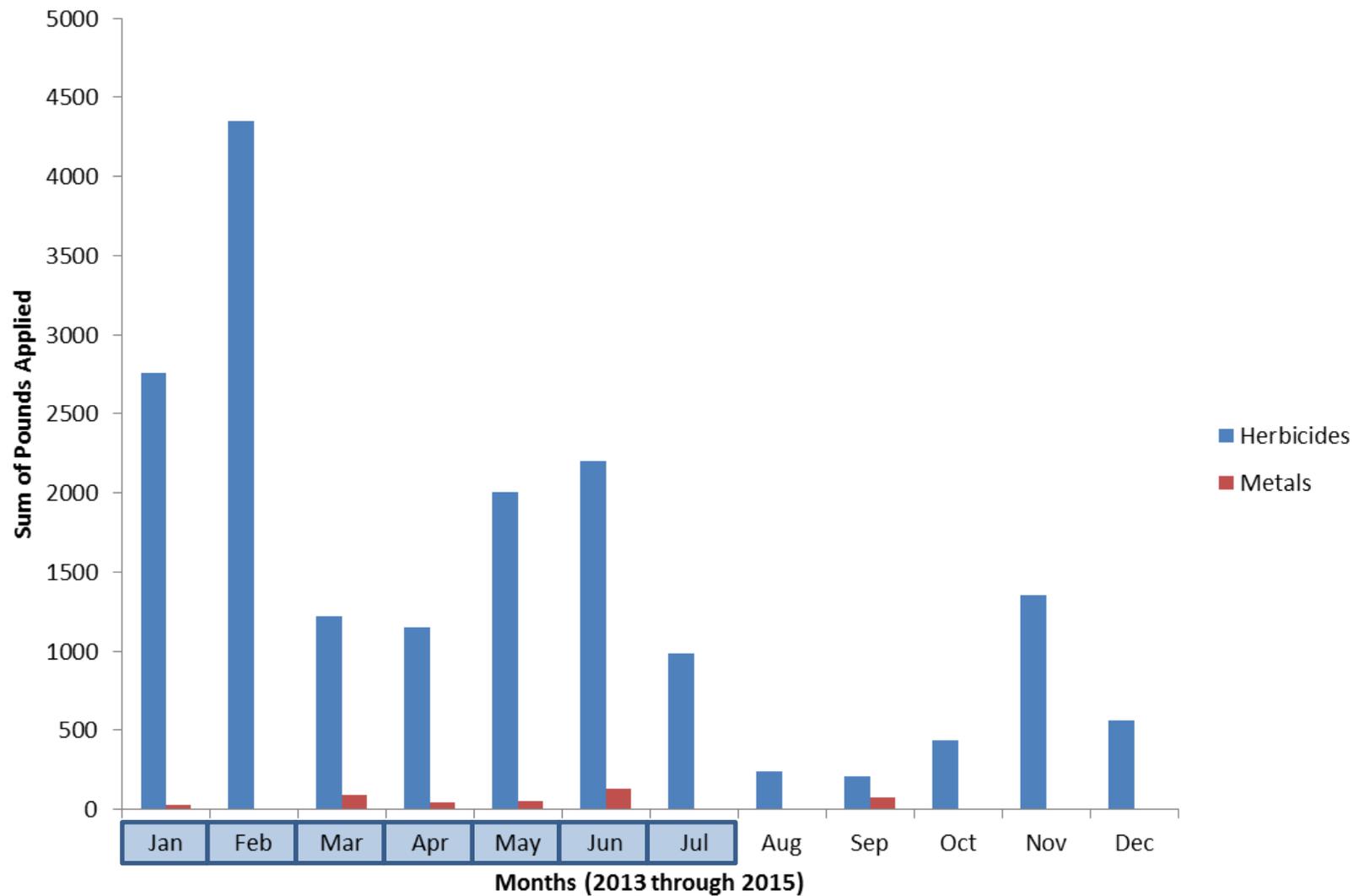
2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 1 Core site in the 2017 WY, Bear Creek @ North Alpine Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bear Creek @ North Alpine Rd is not scheduled for Jahant Slough @ Cherokee Ln.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Jahant Slough @ Cherokee Ln due to past toxicities at the previous Core site in Zone 1 (Mokelumne River @ Bruella Rd). Monitoring occurred from January through June 2016; samples collected on May 17, 2016 were toxic (87% growth compared to the control). At the time of this report, scheduled monitoring in July 2016 had not yet occurred. The PUR data from 2013 through 2015 indicate applications of pesticides associated with toxicity to algae occurred year around with peaks from January through June. Applications of metals occurred in January, March through June, and September, with 442 lbs of Al applied in the past three years (Figure 5). According to the strategy outlined in the Figure 4 flowchart for monitoring at Represented sites, the Coalition will conduct a third year of Represented site monitoring for toxicity to *S. capricornutum* at Jahant Slough @ Cherokee Ln due to the May 2016 toxicity. In the 2017 WY, the Coalition will continue to monitor for toxicity to *S. capricornutum* during the months of highest applications of pesticides: January through July.

Figure 5. Jahant Slough @ Cherokee Ln applications of herbicides and metals associated with *S. capricornutum* toxicity (2013-2015).
 Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2017 WY.



2017 WY Monitoring Based on Management Plan

The Jahant Slough @ Cherokee Ln site subwatershed is currently in a management plan for DO and SC. The Coalition will not conduct MPM in this site subwatershed in the 2017 WY.

Mokelumne River @ Bruella Rd

The Mokelumne River @ Bruella Rd site subwatershed is one of the two rotating Core sites in Zone 1. Monitoring was initiated at this site in 2004. During the 2016 WY, was the Coalition monitored monthly for Core site constituents at Mokelumne River @ Bruella Rd. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 1 Core site in the 2017 WY, Bear Creek @ North Alpine Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bear Creek @ North Alpine Rd is not scheduled for Mokelumne River @ Bruella Rd.

During the 2016 WY, the Mokelumne River @ Bruella Rd was the Core site within Zone 1. There were no exceedances of any applied pesticides, applied metals, or toxicity through June 2016. As outlined in the Coalition's strategy for monitoring at a Core site in the Figure 2 flowchart, the Coalition completed two years of Core site monitoring and a third year of Core site monitoring is not required at Mokelumne River @ Bruella Rd.

2017 WY Monitoring Based on Management Plan

The Mokelumne River @ Bruella Rd site subwatershed is currently in a management plan for pH, *E. coli*, and *S. capricornutum* water column toxicity. The Coalition will conduct MPM in the 2017 WY for water column toxicity to *S. capricornutum* (Table 24).

Water column toxicity to *S. capricornutum*

During the 2016 WY, the Coalition conducted MPM, as part of Core site monitoring, for water column toxicity to *S. capricornutum* from March through June 2016; no toxicity occurred. At the time of this report, scheduled monitoring in August 2016 had not yet occurred. During the 2017 WY, the Coalition will continue MPM for water column toxicity to *S. capricornutum* during the months of past exceedances: March through August.

Mokelumne River Drain @ North Lower Sacramento Rd

The Coalition will not monitor at Mokelumne River Drain @ North Lower Sacramento Rd during the 2017 WY. The Coalition provided the rationale for not monitoring at this location in past MPUs.

Mosher Creek @ North Alpine Rd

Mosher Creek @ North Alpine Rd is a Represented site Zone 1. Monitoring was initiated at this site in the 2015 WY. During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* based on toxicities at the previous Core site (Mokelumne River @ Bruella Rd), and associated pesticide/metal applications. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

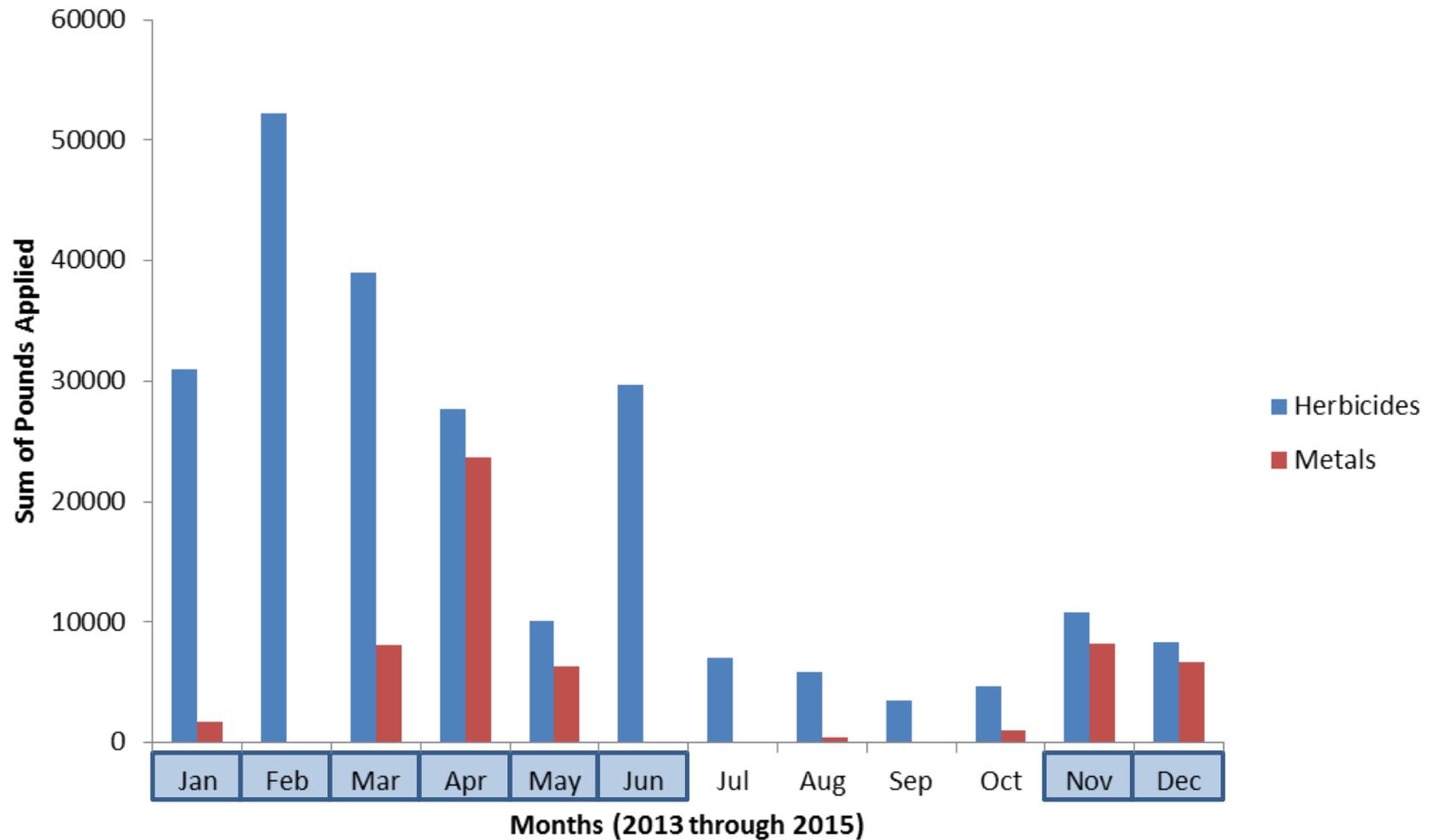
2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 1 Core site in the 2017 WY, Bear Creek @ North Alpine Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bear Creek @ North Alpine Rd is not scheduled for Mosher Creek @ North Alpine Rd.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Mosher Creek @ North Alpine Rd from November 2015 through June 2016; a single toxicity occurred on March 7, 2016 (49% growth compared to the control). A TIE was not initiated due to an error in the original calculation for percent control. As outlined in the Coalition's strategy for monitoring at a Represented site in the Figure 4 flowchart above, the Coalition will monitor for water column toxicity to *S. capricornutum* for a third year Mosher Creek @ North Alpine Rd due to the March 2016 toxicity. The PUR data from 2013 through 2015 indicate pesticide applications associated with toxicity to algae occurred throughout the year; applications of metals associated with the toxicity occurred during every month except February, June, July, and September (Figure 6). The peak applications of pesticides and metals occurred from November through June. Therefore, in the 2017 WY, the Coalition will continue to monitor for toxicity to *S. capricornutum* for a third year during months of peak applications of pesticides and metals: November through June.

Figure 6. Mosher Creek @ North Alpine Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2013-2015).
 Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2017 WY.



2017 WY Monitoring Based on Management Plan

The Mosher Creek @ North Alpine Rd site subwatershed is currently in a management plan for DO. The Coalition will not conduct MPM in this site subwatershed in the 2017 WY.

Pixley Slough @ Furry Rd

Pixley Slough @ Furry Rd is a Represented site in Zone 1. Monitoring was initiated at this site in the 2015 WY. During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Pixley Slough @ Furry Rd based on toxicities at the previous Core site (Mokelumne River @ Bruella Rd), and associated pesticide/metal applications. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 1 Core site in the 2017 WY, Bear Creek @ North Alpine Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bear Creek @ North Alpine Rd is not scheduled Pixley Slough @ Furry Rd.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Pixley Slough @ Furry Rd due to past toxicities at the previous Core site in Zone 1 (Mokelumne River @ Bruella Rd). Monitoring occurred from October 2015 through March 2016; no toxicity occurred. As outlined in the Coalition's strategy for monitoring at a Represented site in the Figure 4 flowchart above, the Coalition has completed two years of Represented site monitoring with no toxicity; no additional monitoring is required at this time.

Monitoring Based on Management Plan

The Pixley Slough @ Furry Rd site subwatershed is currently in a management plan for DO. The Coalition will not conduct MPM in this site subwatershed in the 2017 WY.

ZONE 2 – FRENCH CAMP SLOUGH @ AIRPORT WAY

French Camp Slough @ Airport Way remains the Core site in Zone 2 in the 2017 WY. Monitoring was initiated at French Camp Slough @ Airport Way in 2005. Monitoring during the 2016 WY resulted in exceedances of the WQTLs for DO, *E. coli*, and chlorpyrifos.

French Camp Slough is in a management plan for DO, *E. coli*, chlorpyrifos, and diuron. In the 2017 WY, in addition to monitoring monthly for Core site constituents, the Coalition will conduct MPM for the following constituents at French Camp Slough @ Airport Way:

- chlorpyrifos (October, January through May, and July through September).
- diuron (January and February).

Table 25 includes the status of active management plans and 2016 WY exceedances for all sites within Zone 2.

Table 25. Zone 2 Management Plan Constituents and 2016 WY Exceedances.

Core site information is bolded.

SITE NAME	DO	PH	SC	E. COLI	AMMONIA AS N	LEAD	CHLORPYRIFOS	DIURON	C. DUBIA	P. PROMELAS	H. AZTECA
French Camp Slough @ Airport Way	M			M			M	M			
Duck Creek @ Hwy 4	M		M	M			M		M		M
Littlejohns Creek @ Jack Tone Rd	M	M		M							
Lone Tree Creek @ Jack Tone Rd	M	M		M	M		M			M	
Mormon Slough @ Jack Tone Rd	M	M					M				
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	M			M		M	M	M			M

M – Indicates constituent is in a management plan at the site.

Duck Creek @ Hwy 4

Duck Creek @ Hwy 4 is a Represented site in Zone 2. Monitoring was initiated at this site in 2004. During the 2016 WY, the Coalition conducted MPM for chlorpyrifos, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca* during months of past exceedances and high pesticide use. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 2 Core site, French Camp @ Airport Way, is in a management plan for chlorpyrifos and diuron. There were no other exceedances of any applied pesticide, applied metal, and toxicity.

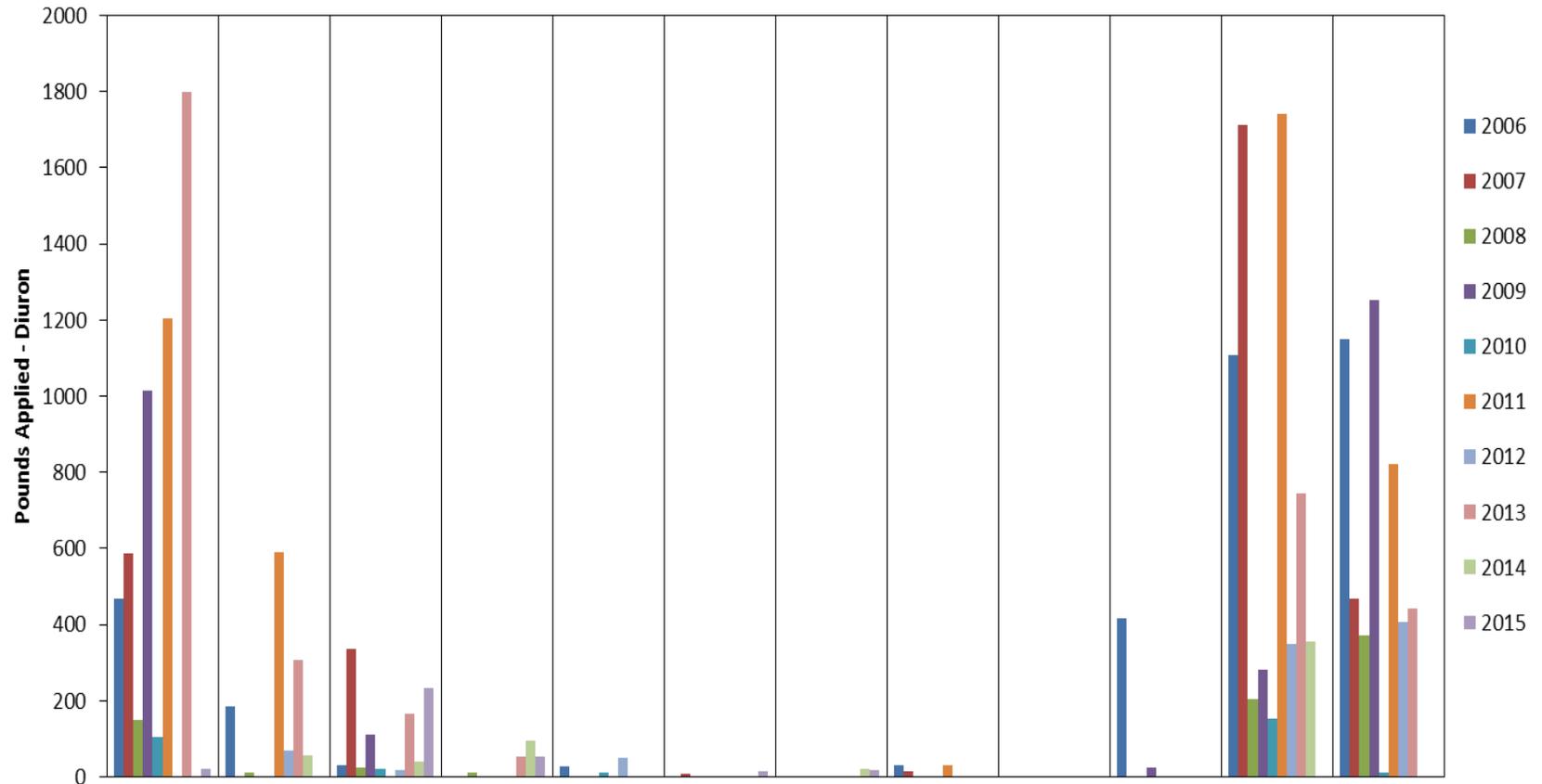
Chlorpyrifos

Duck Creek @ Hwy 4 is in a management plan for chlorpyrifos. Monitoring in the 2017 WY for chlorpyrifos is addressed in the section below and will occur according to the Coalition’s management plan strategy.

Diuron

In the 2014 MPU, the Coalition was approved to not monitor for diuron in this site subwatershed; Duck Creek @ Hwy 4 was monitored for diuron during 38 events from May 2006 through December 2012 and there were no detections above the WQTL in any of the samples. The PUR data for diuron from 2006 through 2015 indicated that use has steadily declined in this site subwatershed; particularly from 3,512 in 2013, to 568 in 2014, to 341 total pounds applied in 2015 (Figure 7). The Coalition will not monitor for diuron at Duck Creek @ Hwy 4 in the 2017 WY.

Figure 7. Diuron use in the Duck Creek @ Hwy 4 site subwatershed from 2006 through 2015.



2017 WY Monitoring Based on Management Plan

The Duck Creek @ Hwy 4 site subwatershed is currently in a management plan for DO, SC, *E. coli*, chlorpyrifos, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca* (Table 25). The Coalition will conduct MPM during the 2017 WY for chlorpyrifos, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca*.

Chlorpyrifos

During the 2016 WY, the Coalition monitored for chlorpyrifos in this site subwatershed from April through June 2016; no exceedance of the WQTL for chlorpyrifos occurred. At the time of this report, scheduled monitoring for chlorpyrifos from July through September 2016 had not yet occurred. The PUR data from 2013 through 2015 indicate the highest use of chlorpyrifos occurred during the summer months, with the peak in July accounting for 47% (Figure 8). In the 2017 WY, the Coalition will continue to conduct MPM for chlorpyrifos in October, and from April through September.

Water Column Toxicity to *C. dubia*

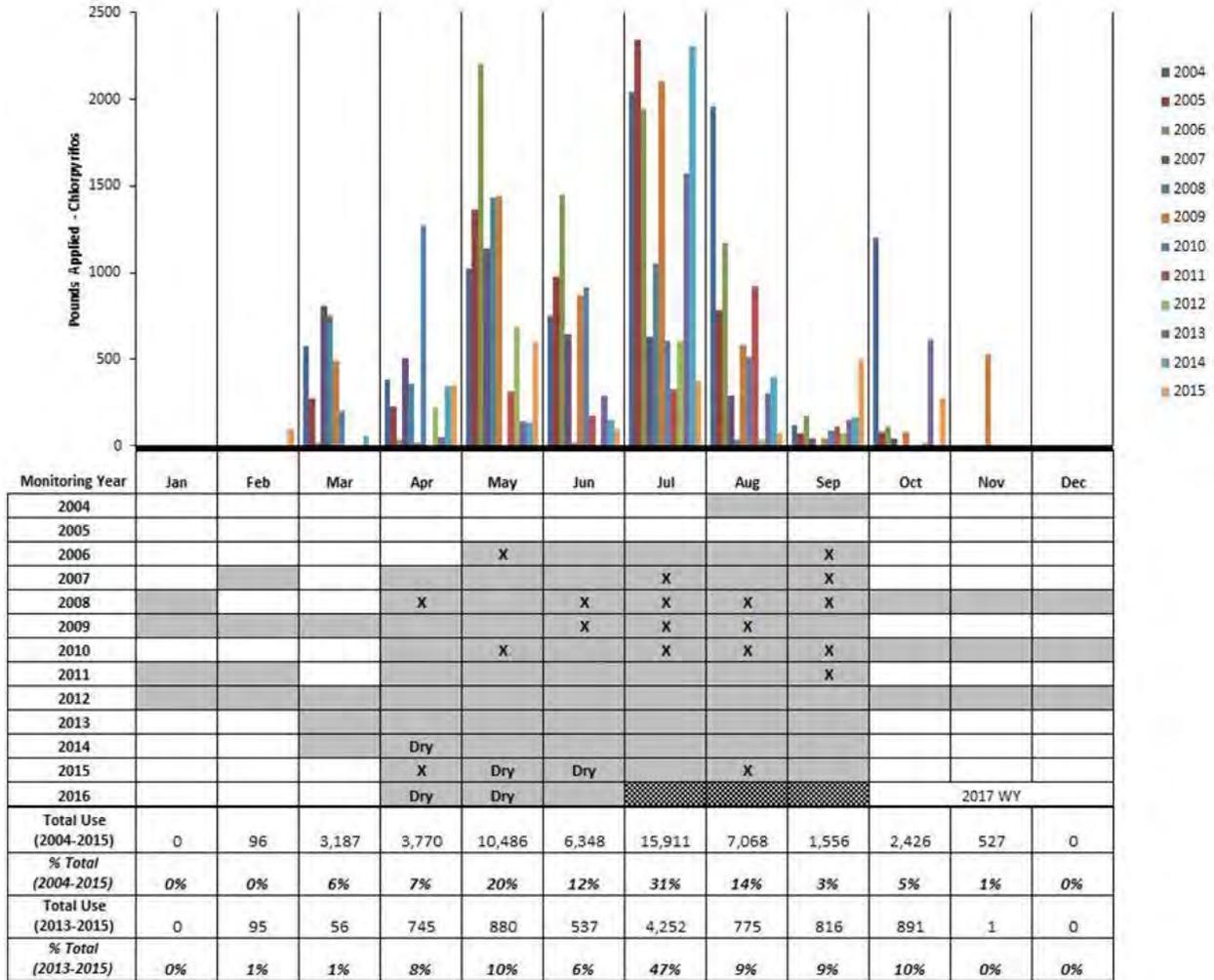
Monitoring for water column toxicity to *C. dubia* occurred in April during the 2016 WY; the sample was not toxic. At the time of this report, scheduled monitoring for toxicity to *C. dubia* had not yet occurred in July and September 2016. During the 2017 WY, the Coalition will continue MPM for toxicity to *C. dubia* in April, July, and September.

Sediment Toxicity to *H. azteca*

Monitoring for sediment toxicity was scheduled in both March and September at the site during the 2016 WY; there was no toxicity in the March 2016 sample. At the time of this report, September 2016 sediment sampling had not yet occurred. The Coalition will conduct MPM for sediment toxicity to *H. azteca* in March and September in the 2017 WY.

Figure 8. Duck Creek @ Hwy 4 2004-2016 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.



Littlejohns Creek @ Jack Tone Rd

Littlejohns Creek @ Jack Tone Rd is a Represented site in Zone 2. Monitoring was initiated at this site in 2004. During the 2016 WY, the Coalition conducted Represented site monitoring for diuron. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 2 Core site, French Camp @ Airport Way, is in a management plan for chlorpyrifos and diuron. There were no other exceedances of any applied pesticide, applied metal, or toxicity during the 2016 WY.

Chlorpyrifos

On December 18, 2015, the Coalition received approval to complete the management plan for chlorpyrifos in the Littlejohns Creek @ Jack Tone Rd site subwatershed. No additional monitoring is required.

Diuron

In the 2016 WY, the Coalition conducted Represented site monitoring for diuron from November 2015 through February 2016; there were no detections of diuron in any of the samples. In addition to the Represented site monitoring, Littlejohns Creek @ Jack Tone Rd was monitored for diuron during 20 events from May 2006 through September 2008 and there were no detections of diuron above the WQTL in any of the samples. As outlined in the Coalition's strategy for monitoring at a Represented site in the Figure 4 flowchart, the Coalition completed two years of Represented site monitoring for diuron with no exceedances; no additional monitoring is required.

2017 WY Monitoring Based on Management Plan

The Littlejohns Creek @ Jack Tone Rd site subwatershed is currently in a management plan for DO, pH, and *E. coli* (Table 25). The Coalition will not conduct MPM in this site subwatershed in the 2017 WY.

Lone Tree Creek @ Jack Tone Rd

Lone Tree Creek @ Jack Tone Rd is a Represented site in Zone 2. Monitoring was initiated at this site in 2004. In the 2016 WY, the Coalition conducted MPM for chlorpyrifos and water column toxicity to *P. promelas*. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 2 Core site, French Camp @ Airport Way, is in a management plan for chlorpyrifos and diuron. There were no other exceedances of any applied pesticide, applied metal, or toxicity during the 2016 WY.

Chlorpyrifos

Lone Tree Creek @ Jack Tone Rd is in a management plan for chlorpyrifos. Monitoring in the 2017 WY for chlorpyrifos is addressed in the section below and will occur according to the Coalition's management plan strategy.

Diuron

On May 21, 2012, the Coalition received approval to complete the management plan for diuron in the Lone Tree Creek @ Jack Tone Rd site subwatershed. No additional monitoring is required.

2017 WY Monitoring Based on Management Plan

The Lone Tree Creek @ Jack Tone Rd site subwatershed is currently in a management plan for DO, pH, *E. coli*, ammonia, chlorpyrifos, and water column toxicity to *P. promelas* (Table 25). During the 2017 WY the Coalition will conduct MPM for chlorpyrifos and toxicity to *P. promelas*.

Chlorpyrifos

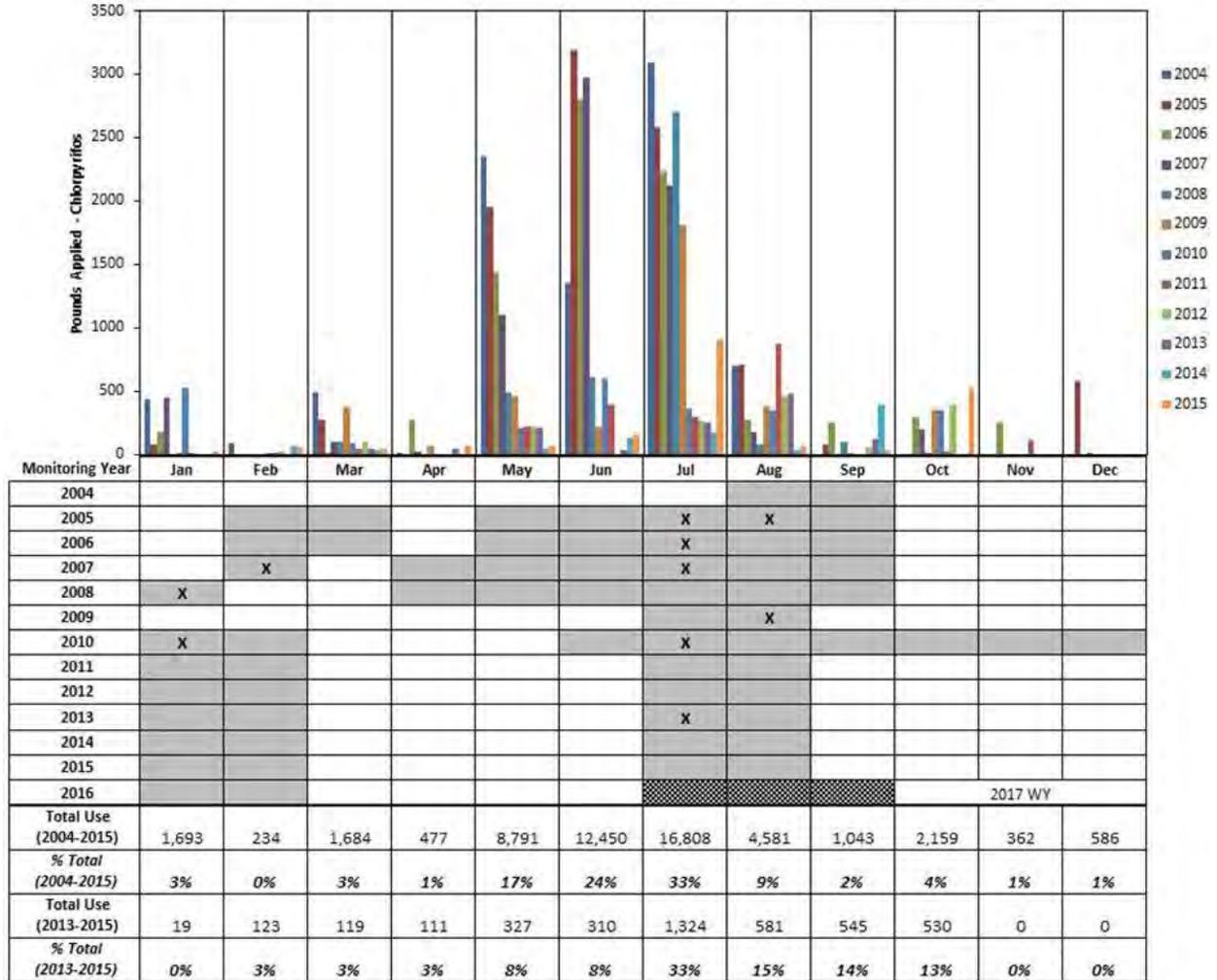
During the 2016 WY, the Coalition conducted MPM for chlorpyrifos in January and February 2016; there were no detections. At the time of this report, scheduled monitoring in July and August 2016 had not yet occurred. The PUR data from 2013 through 2015 indicate highest applications of chlorpyrifos from May through October; the peak applications occurred in July which accounted for 33% of all applications in the past three years (Figure 9). According to the PUR data, applications of chlorpyrifos during January and February accounted for 3% or below of all applications in the site subwatershed in the past three years (Figure 9). The Coalition monitored during these months for five years or more without an exceedance; therefore, the Coalition will discontinue MPM for chlorpyrifos in January and February. In the 2017 WY, the Coalition will continue MPM for chlorpyrifos during months when applications of the pesticide peak, October (added due to 13% of all applications in the past three years of chlorpyrifos occurring in October), July, August, and September.

Water column toxicity to *P. promelas*

The Coalition conducted MPM for toxicity to *P. promelas* in January and February of the 2016 WY; toxicity did not occur. In the 2017 WY, the Coalition will continue to conduct MPM for toxicity to *P. promelas* in the Lone Tree Creek @ Jack Tone Rd site subwatershed during the months of January and February.

Figure 9. Lone Tree Creek @ Jack Tone Rd 2004-2016 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.



Mormon Slough @ Jack Tone Rd

Mormon Slough @ Jack Tone Rd is a Represented site in Zone 2. The Coalition initiated monitoring at this site in 2006. In the 2016 WY, the Coalition conducted MPM for chlorpyrifos and Represented site monitoring for diuron and toxicity to *H. azteca*. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 2 Core site, French Camp @ Airport Way, is in a management plan for chlorpyrifos and diuron. There were no other exceedances of any applied pesticide, applied metal, or toxicity during the 2016 WY.

Chlorpyrifos

Mormon Slough @ Jack Tone Rd is in a management plan for chlorpyrifos. Monitoring in the 2017 WY for chlorpyrifos is addressed in the section below and will occur according to the Coalition's management plan strategy.

Diuron

In the 2016 WY, the Coalition conducted the second year of Represented site monitoring for diuron from November 2015 through February 2016; there were no exceedances. In addition, Mormon Slough @ Jack Tone Rd was monitored for diuron during 20 sampling events from May 2006 through September 2008. There were no detections of diuron above the WQTL in any of the samples. As outlined in the Coalition's strategy for monitoring at a Represented site in the Figure 4 flowchart, the Coalition has completed two years of Represented site monitoring for diuron; no additional monitoring is required during the 2017 WY.

Sediment Toxicity to *H. azteca*

In the 2016 WY, the Coalition planned to conduct the second year of Represented site monitoring for sediment toxicity to *H. azteca* during the months of March and September 2016. However, due to conditions at Mormon Slough @ Jack Tone Rd, as described in Appendix I, the Coalition was unable to collect sediment samples in March 2016; at the time this report was written, scheduled monitoring in September 2016 had not yet occurred. The Coalition will monitor for toxicity to *H. azteca* for a third year in the 2017 WY during the months of March and September.

Monitoring Based on Management Plan

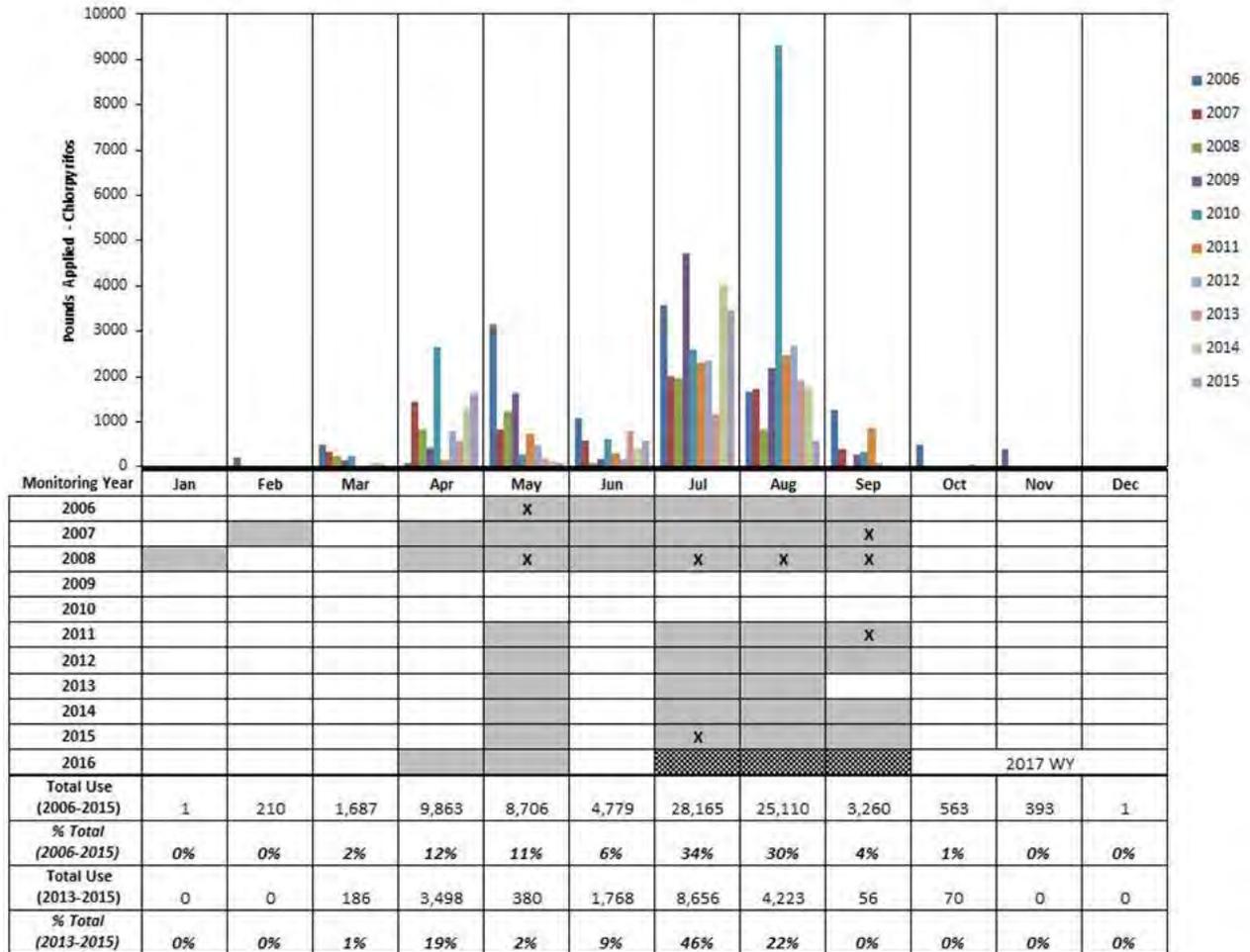
The Mormon Slough @ Jack Tone Rd site subwatershed is currently in a management plan for DO, pH, and chlorpyrifos (Table 25). The Coalition will conduct MPM during the 2017 WY for chlorpyrifos.

Chlorpyrifos

During the 2016 WY, the Coalition monitored for chlorpyrifos in April and May 2016; there were no detections of chlorpyrifos. At the time of this report, scheduled monitoring had not yet occurred from July through September 2016. The PUR data from 2013 through 2015 indicate the highest use of chlorpyrifos was during the summer months with peaks in July and August totaling 46% and 22%; respectively (Figure 10). The Coalition will discontinue MPM in May due to decline in use and monitoring with no exceedance for the past six years. The Coalition will also add June to MPM due to increased use the last three years. During the 2017 WY, the Coalition will continue MPM for chlorpyrifos at Mormon Slough @ Jack Tone Rd in April, and June through September.

Figure 10. Mormon Slough @ Jack Tone Rd 2006-2016 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.



Unnamed Drain to Lone Tree Creek @ Jack Tone Rd

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is a Represented site in Zone 2. The Coalition initiated monitoring at this site in 2006. During the 2016 WY, the Coalition conducted MPM for chlorpyrifos, diuron, lead, and toxicity to *H. azteca*. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 2 Core site, French Camp @ Airport Way, is in a management plan for chlorpyrifos and diuron. There were no other exceedances of any applied pesticide, applied metal, or toxicity during the 2016 WY.

Chlorpyrifos

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is in a management plan for chlorpyrifos. Monitoring in the 2017 WY for chlorpyrifos is addressed in the section below and will occur according to the Coalition's management plan strategy.

Diuron

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is in a management plan for diuron. Monitoring in the 2017 WY for diuron is addressed in the section below and will occur according to the Coalition's management plan strategy.

Monitoring Based on Management Plan

The Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed is in a management plan for DO, *E. coli*, lead, chlorpyrifos, diuron, and sediment toxicity to *H. azteca* (Table 25). The Coalition will conduct MPM during the 2017 WY for chlorpyrifos, diuron, lead, and sediment toxicity to *H. azteca*.

Chlorpyrifos

During the 2016 WY, the Coalition conducted MPM for chlorpyrifos from November 2015 through January 2016, May, and June 2016; no exceedances of the WQTL for chlorpyrifos occurred. At the time of this report, scheduled monitoring had not yet occurred from July through September 2016. The PUR data from 2013 through 2015 indicate the highest use of chlorpyrifos occurred during the summer months with peaks in May and July, each accounting for 27% of total use (Figure 11). Due to an increase in recent use in February and March, the Coalition added March to the MPM schedule; the Coalition is waiting for additional PUR data before adding February. During the 2017 WY, the Coalition will continue MPM in November through January, March, and May through September.

Diuron

During the 2016 WY, the Coalition conducted MPM for diuron from November 2015 through February 2016; no exceedances of the WQTL for diuron occurred. The PUR data from 2013 through 2015 indicate the highest use of diuron occurred during the winter months, peaking in February with 39% of total

applications of diuron (Figure 12). In the 2017 WY, the Coalition will continue MPM in November through March.

Lead

During the 2016 WY, the Coalition has scheduled MPM for lead during the month of September. During the 2017 WY, the Coalition will conduct MPM for lead during April and September.

Sediment toxicity to *H. azteca*

Monitoring for sediment toxicity was scheduled in both March and September at the site during the 2016 WY. At the time of this report September sediment monitoring had not yet occurred. The Coalition will conduct MPM for *H. azteca* sediment toxicity in March and September during the 2017 WY.

Figure 11. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2006-2016 chlorpyrifos use and monitoring. Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.

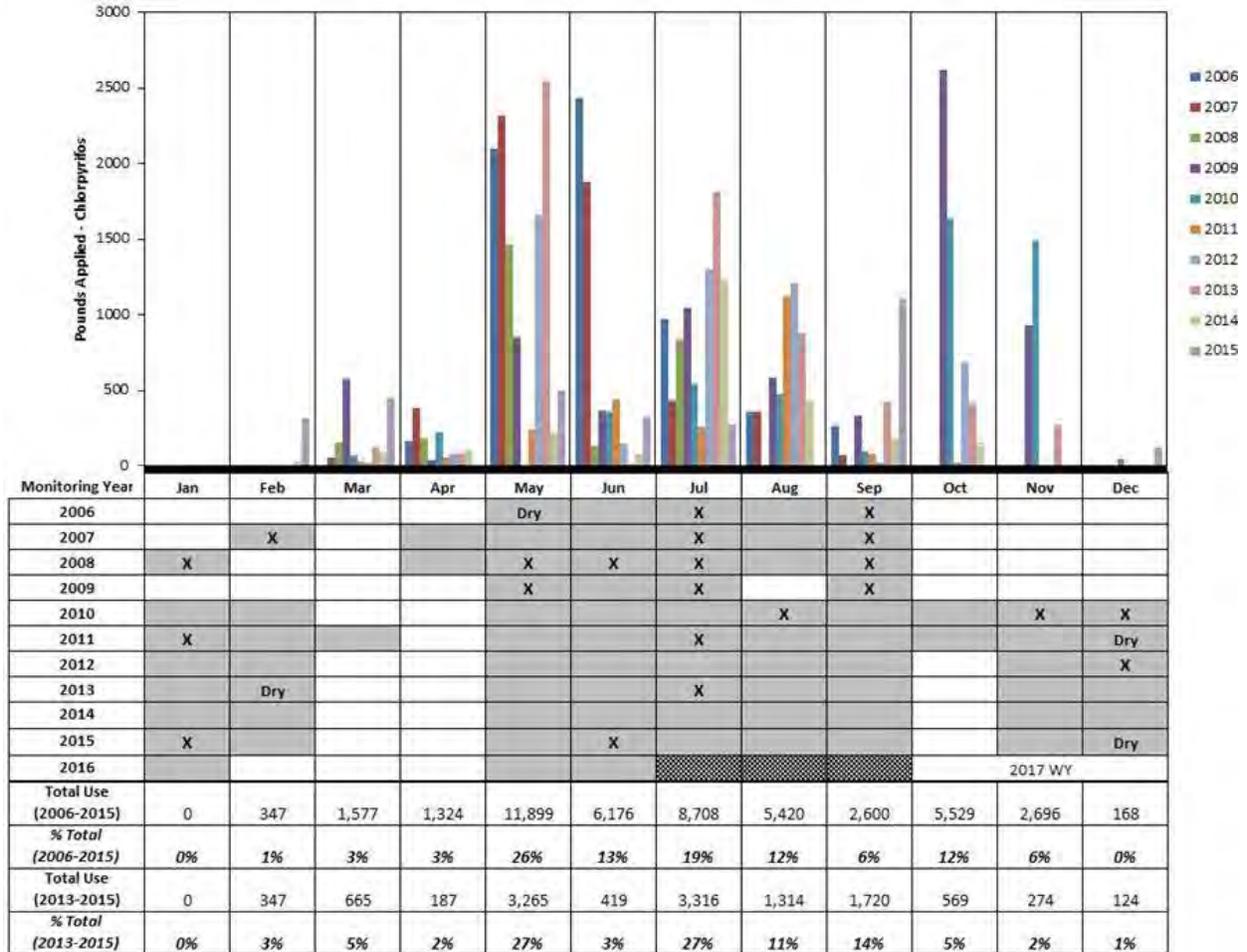
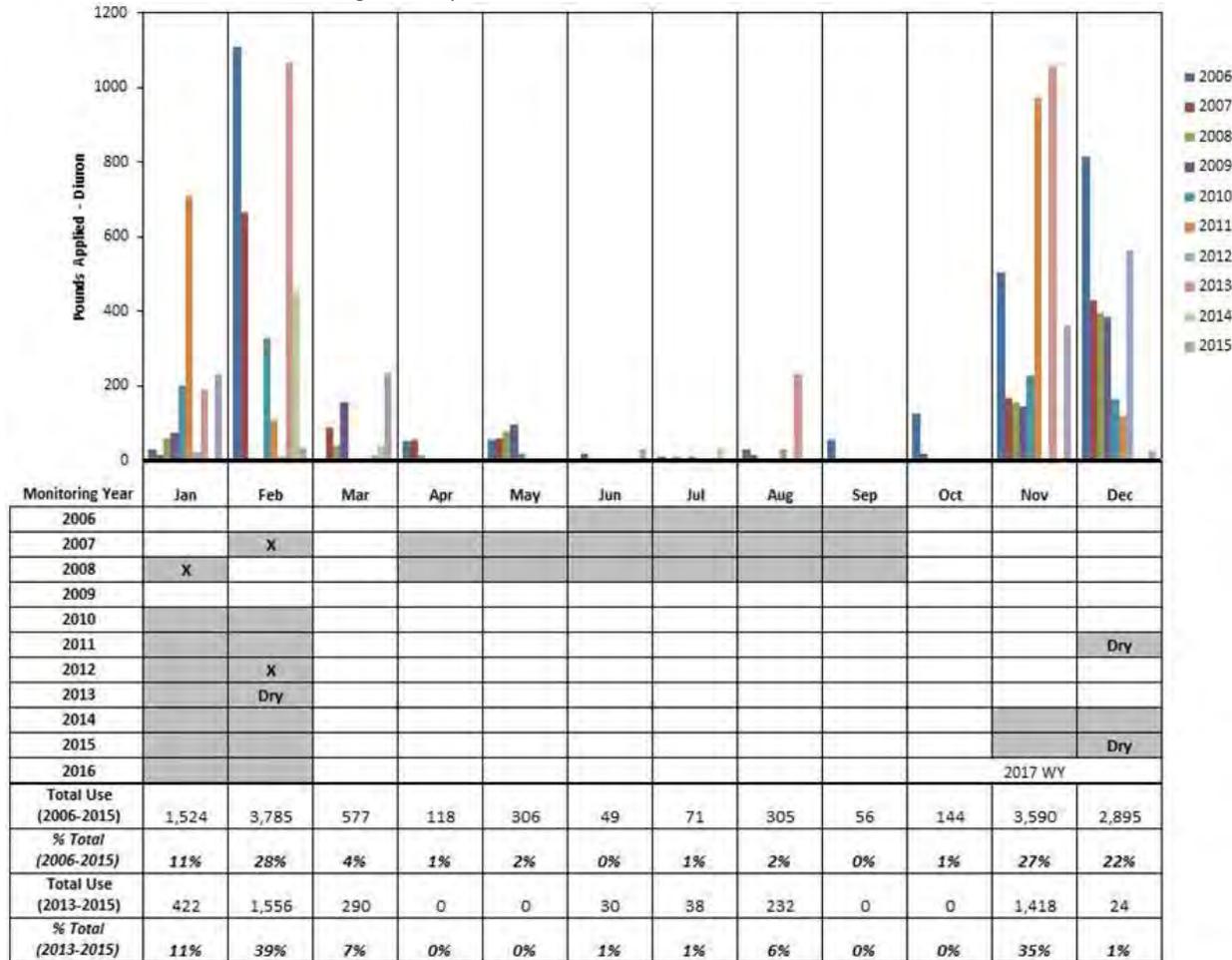


Figure 12. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2006-2016 diuron use and monitoring.

Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.



ZONE 3 – DRAIN @ WOODBRIDGE RD

Drain @ Woodbridge Rd is the new rotating Core site in Zone 3. Monitoring was initiated at this site subwatershed in 2008.

Drain @ Woodbridge Rd is in a management plan for DO, SC, *E. coli*, and arsenic. Monitoring will occur monthly for DO, SC, and *E. coli* in accordance with the Core site monitoring strategy. As determined in the Core Site Metals section of this report, the Coalition will not conduct MPM for arsenic (Page 22).

Table 26 includes the status of active management plans and 2016 WY exceedances for all sites within Zone 3.

Table 26. Zone 3 Management Plan Constituents and 2016 WY Exceedances.

Core site information is bolded.

SITE NAME	DO	PH	SC	<i>E. COLI</i>	NITRATE + NITRITE	ARSENIC	CHLORPYRIFOS	DIURON	<i>C. DUBIA</i>	<i>S. CAPRICORNUTUM</i>	<i>H. AZTECA</i>
Drain @ Woodbridge	M		M	M		M					
Empire Tract @ 8 Mile Rd	M		M	M		M				M	
Rindge Tract Drain	M		M							X	
Staten Island Drain @ Staten Island Rd	M	X	M							X	
Terminus Tract Drain @ Hwy 12	M		M	M	M	M	M	M		M	M

M – Indicates constituent is in a management plan at the site.

M – Indicates exceedance in the 2016 WY triggered a management plan.

X – Indicates exceedance of WQTL in 2016 WY but management plan was not required.

In the 2016 WY, Drain @ Woodbridge Rd was a Represented site. The Coalition conducted Year 1 of Represented site monitoring for diuron and water column toxicity to both *C. dubia* and *S. capricornutum*; there were no detections or toxicities. As outlined in the Coalition’s strategy for monitoring at a Represented site (Figure 4), the Coalition is required to continue monitoring for the aforementioned constituents for at least one more year. However, Drain @ Woodridge is now the Core site in Zone 3 and monitoring for these constituents will occur in accordance to the Core site monitoring strategy on a monthly basis. The Coalition will reevaluate the statuses of these constituents when the site rotates back to a Represented site in two years.

Empire Tract @ 8 Mile Rd

Empire Tract @ 8 Mile Rd is a Represented site in Zone 3. Monitoring was initiated at this site in 2013. During the 2016 WY, the Coalition conducted Represented site monitoring for chlorpyrifos, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca* due to exceedances at the past Core site (Terminus Tract Drain @ Hwy 12). Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 3 Core site in the 2017 WY, Drain @ Woodbridge Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Drain @ Woodbridge Rd is not scheduled for Empire Tract @ 8 Mile Rd.

Chlorpyrifos

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for chlorpyrifos in November 2015 due to exceedances at the previous Core site (Terminus Tract Drain @ Hwy 12); there were no detections of chlorpyrifos. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred from July through September of the 2016 WY. In addition to the 2016 WY representative site monitoring, monitoring for chlorpyrifos occurred during 14 sampling events from July 2013 through September 2015; no detections of chlorpyrifos occurred. As outlined in the Coalition's strategy for monitoring at a Represented site in the Figure 4 flowchart, the Coalition has completed two years of monitoring with no exceedances; pending July through September 2016 monitoring results, no additional monitoring is required at the site for chlorpyrifos during the 2017 WY.

Water Column Toxicity to *S. capricornutum*

Empire Tract @ 8 Mile Rd is in a management plan for water column toxicity to *S. capricornutum*. Monitoring in the 2017 WY for toxicity to *S. capricornutum* is addressed in the section below and will occur according to the Coalition's management plan strategy.

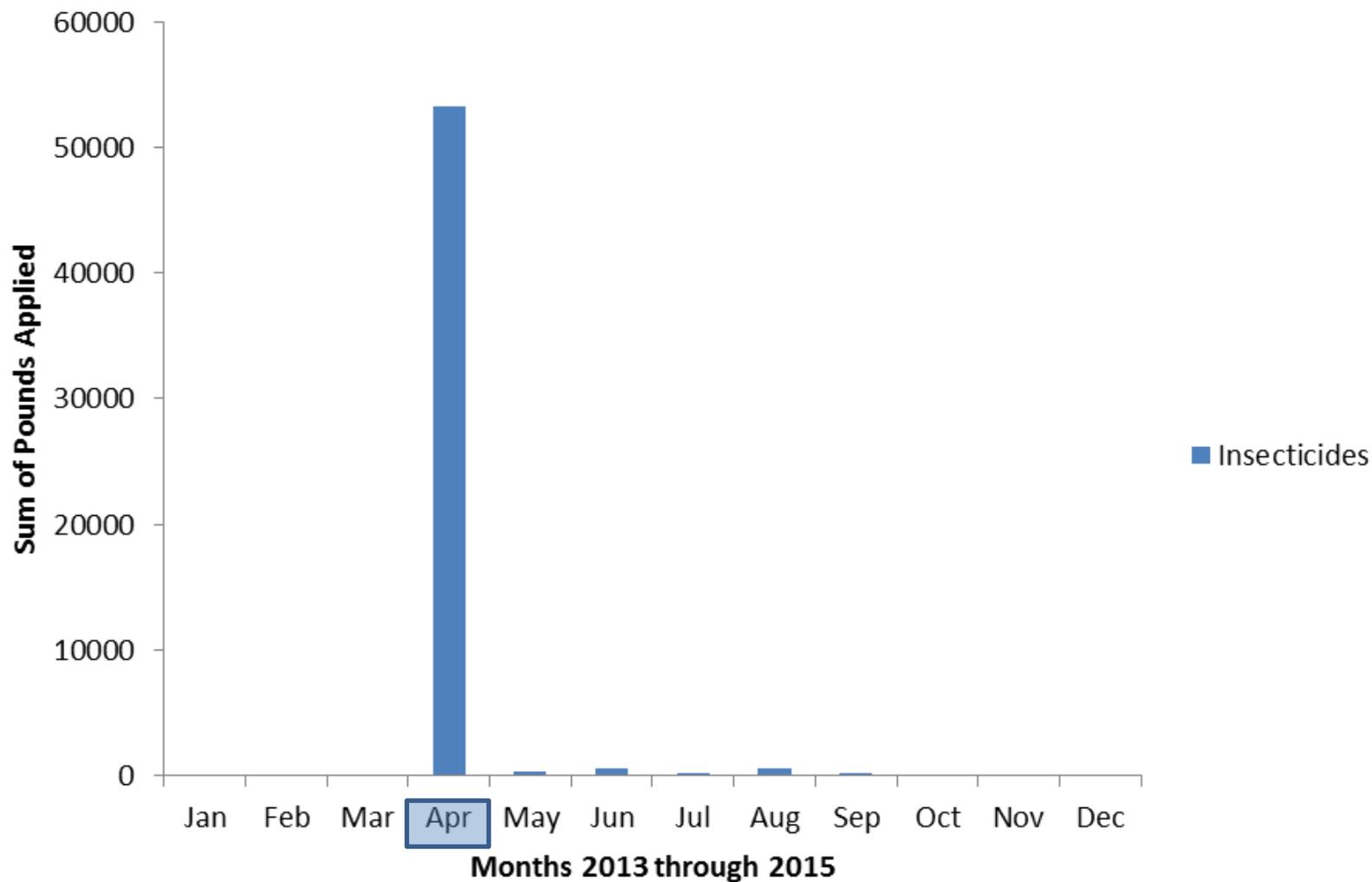
Water Column Toxicity to *C. dubia*

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring for water column toxicity to *C. dubia* in December 2015 and April 2016 due to toxicities that occurred at the previous Core site (Terminus Tract Drain @ Hwy 12); no toxicity occurred. At the time of this report, scheduled monitoring during the month of July had not yet occurred. The PUR data from 2013 through 2015 indicate applications of insecticides associated with toxicity to *C. dubia* occurred from March through November; with peak applications occurring during the month of April (53,277 lbs AI; Figure 13). In the 2017 WY, the Coalition will monitor for toxicity to *C. dubia* during the months of highest applications of pesticides: April. The Figure 4 flowchart for monitoring at Represented sites indicates the 2017 WY will count as the second year of monitoring for toxicity to *C. dubia* at Empire Tract @ 8 Mile Rd.

Sediment Toxicity to *H. azteca*

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2016 and plans to monitor again in September 2016; samples collected in March 2016 were not toxic to *H. azteca*. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition has completed two years of monitoring with no toxicities; pending September 2016 monitoring results, no additional monitoring is required during the 2017 WY.

Figure 13. Empire Tract @ 8 Mile Rd applications of insecticides associated with *C. dubia* toxicity (2013 through 2015).
Highlighted months indicate when Represented site monitoring will occur for *C. dubia* in the 2017 WY.



2017 WY Monitoring Based on Management Plan

The Empire Tract Drain @ 8 Mile Rd site subwatershed is currently in a management plan for DO, SC, *E. coli*, arsenic, and water column toxicity to *S. capricornutum* (Table 26).

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring for water column toxicity to *S. capricornutum* from December 2015 through June 2016 due to toxicities that occurred at the previous Core site (Terminus Tract Drain @ Hwy 12); samples collected in April 2016 were toxic to *S. capricornutum*.

Due to the April 2014 and 2016 toxicities (57% growth and 51% growth compared to the control; respectively) at Empire Tract @ 8 Mile Rd, a new management plan for water column toxicity to *S. capricornutum* is now required. The 2017 management plan strategy in the Figure 1 flowchart indicates the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, MPM will not occur at Empire Tract @ 8 Mile Rd during the 2017 WY.

Rindge Tract Drain

Rindge Tract Drain is a Represented site in Zone 3. The Coalition began monitoring at this site subwatershed during the 2015 WY. During the 2016 WY, the Coalition monitored for chlorpyrifos, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca* due to past exceedances at the previous Core site (Terminus Tract Drain @ Hwy 12). Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 3 Core site in the 2017 WY, Drain @ Woodbridge Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Drain @ Woodbridge Rd is not scheduled for Rindge Tract Drain.

Chlorpyrifos

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for chlorpyrifos during the months of October, February, March due to exceedances at the previous Core site (Terminus Tract Drain @ Hwy 12); no detections of chlorpyrifos occurred. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred during the months of August and September 2016. The Represented site Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no exceedances; pending August and September 2016 monitoring results, no additional monitoring is required during the 2017 WY.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring during January through June for water column toxicity to *S. capricornutum* due to toxicities at the previous

Core site (Terminus Tract Drain @ Hwy 12); the sample collected in April 2016 was toxic (75% growth compared to the control). The PUR data from 2013 through 2015 indicate applications of herbicides associated with toxicity to algae occurred year around with peaks from January through June; applications of metals only occurred in April with 490 lbs of AI applied in the past three years (Figure 14). In the 2017 WY, the Coalition will monitor for toxicity to *S. capricornutum* during the months of highest applications of herbicides: January through June. The Figure 4 flowchart for monitoring at Represented sites indicates monitoring in the 2017 WY will count as the second year of monitoring for toxicity to *S. capricornutum* at Rindge Tract Drain.

Water Column Toxicity to *C. dubia*

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring for water column toxicity to *C. dubia* in February through April due to toxicities at the previous Core site (Terminus Tract Drain @ Hwy 12); toxicity did not occur. The PUR data from 2013 through 2015 indicate applications of insecticides associated with toxicity to *C. dubia* occurred from February through October; with peak applications occurring February through April. In the 2017 WY, the Coalition will monitor for toxicity to *C. dubia* during the months of highest applications of insecticides: February through April. The Figure 4 flowchart for monitoring at Represented sites indicates the 2017 WY monitoring will count as the second year of monitoring for toxicity to *C. dubia* at Rindge Tract Drain.

Sediment Toxicity to *H. azteca*

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2016 and September 2016; toxicity to *H. azteca* did not occur. The Figure 4 flowchart indicates the Coalition has completed two years of Represented site monitoring with no toxicities; pending September 2016 monitoring results, no additional monitoring is required during the 2017 WY.

Figure 14. Rindge Tract Drain applications of herbicides and metals associated with *S. capricornutum* toxicity (2013 through 2015).
 Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2017 WY.

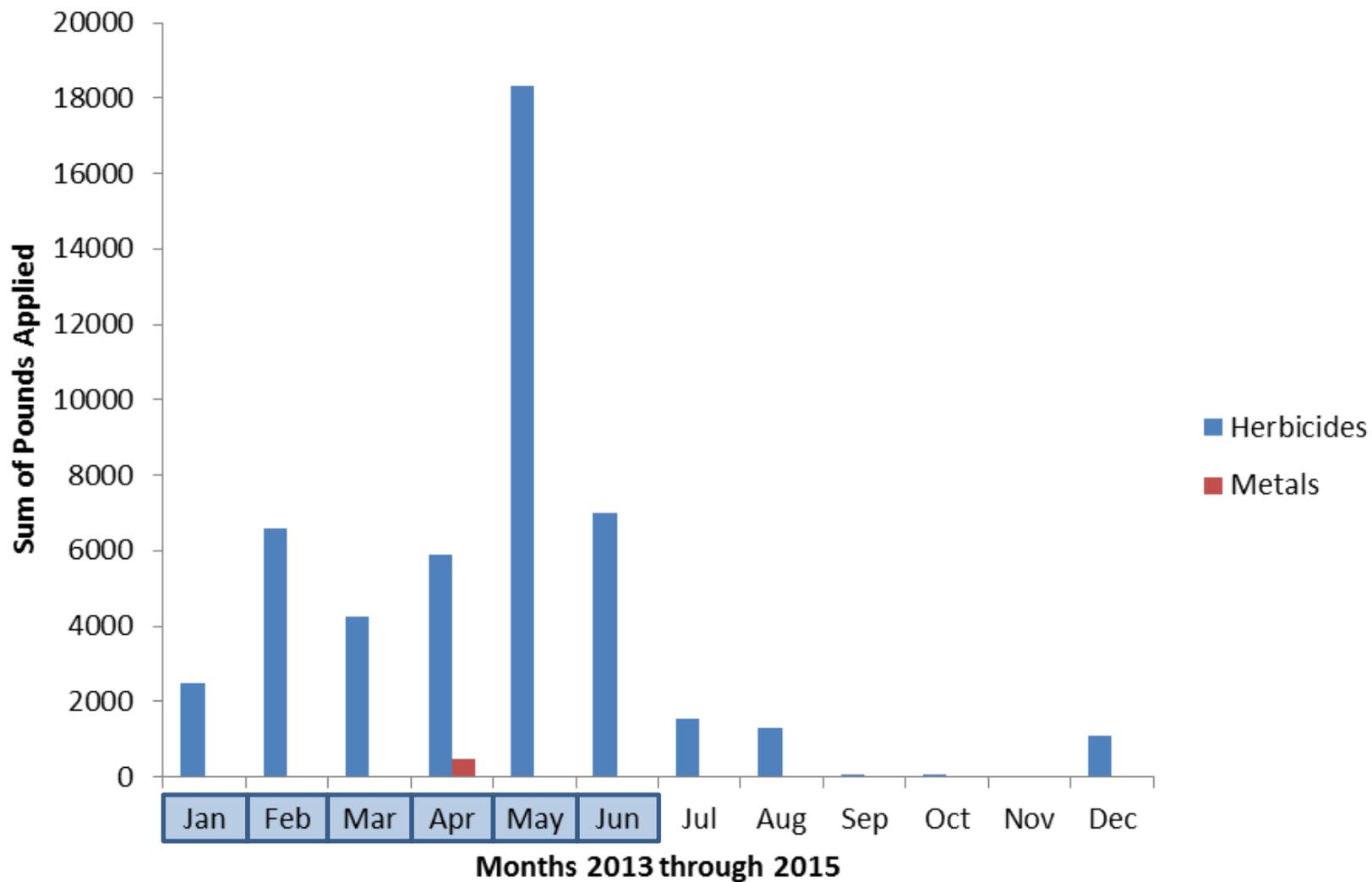
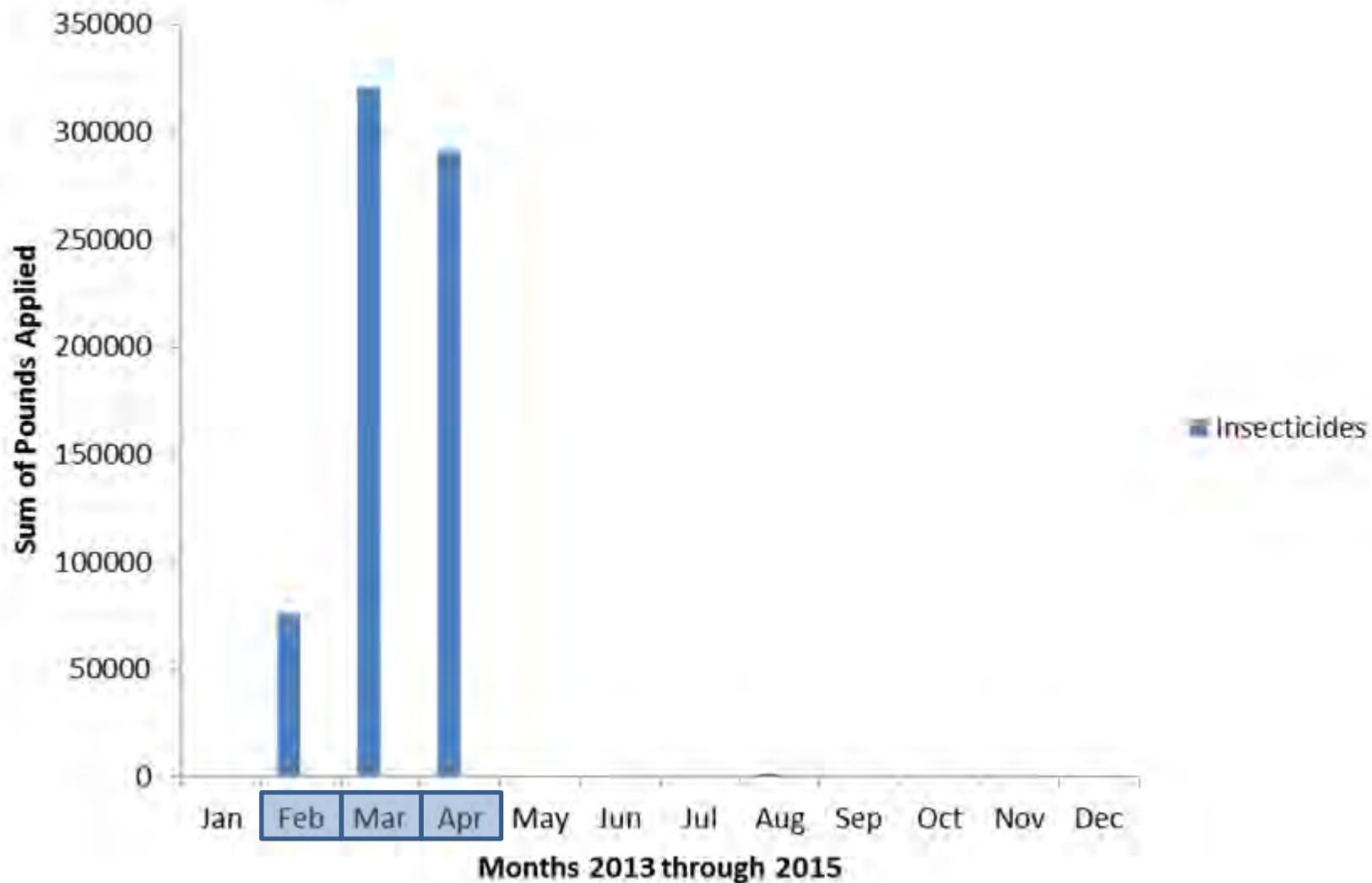


Figure 15. Rindge Tract Drain applications of insecticides associated with *C. dubia* toxicity (2013 through 2015).
 Highlighted months indicate when Represented site monitoring will occur for *C. dubia* in the 2017 WY.



Monitoring Based on Management Plan

The Rindge Tract Drain site subwatershed is currently in a management plan for DO and SC (Table 26). The Coalition will not conduct MPM in this site subwatershed during the 2017 WY.

Staten Island Drain @ Staten Island Rd

Staten Island Drain @ Staten Island Rd is a Represented site in Zone 2. Monitoring was initiated at this site in the 2015 WY. In the 2016 WY, the Coalition monitored for water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca* due to past exceedances at the previous Core site (Terminus Tract Drain @ Hwy 12). Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 3 Core site in the 2017 WY, Drain @ Woodbridge Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Drain @ Woodbridge Rd is not scheduled for Staten Island Drain @ Staten Island Rd.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring for water column toxicity to *S. capricornutum* from April through June due to exceedances at the previous Core site (Terminus Tract Drain @ Hwy 12); the sample collected in April 2016 was toxic (63% growth compared to the control). The PUR data from 2013 through 2015 indicate applications of herbicides associated with toxicity to algae occurred January through June, and November (Figure 16). Applications of metals only occurred in April with 45 lbs of AI applied in the past three years. In the 2017 WY, the Coalition will monitor for toxicity to *S. capricornutum* during the months of highest applications of herbicides: February through June. The Figure 4 flowchart indicates the 2017 WY monitoring will count as the second year of monitoring for toxicity to *S. capricornutum* at Staten Island Drain @ Staten Island Rd.

Water Column Toxicity to *C. dubia*

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring for water column toxicity to *C. dubia* from April through August due to exceedances at the previous Core site (Terminus Tract Drain @ Hwy 12); none of the samples were toxic. The PUR data from 2013 through 2015 indicate applications of insecticides associated with toxicity to *C. dubia* occurred from June through August; with peak applications occurring in August (Figure 17). In the 2017 WY, the Coalition will monitor for toxicity to *C. dubia* in the months of highest applications of insecticides: June through August. The Figure 4 flowchart indicates the 2017 WY monitoring will count as the second year of monitoring for toxicity to *C. dubia* at Staten Island Drain @ Staten Island Rd.

Sediment Toxicity to *H. azteca*

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2016 and September 2016; toxicity to *H. azteca* did not occur. The Figure 4 flowchart indicates the 2017 WY monitoring indicates the Coalition has conducted two years of Represented site monitoring for toxicity to *H. azteca* with no toxicities; pending September 2016 monitoring results, no additional monitoring is required for sediment toxicity during the 2017 WY.

Figure 16. Staten Island Drain @ Staten Island Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2013 through 2015).
 Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2017 WY.

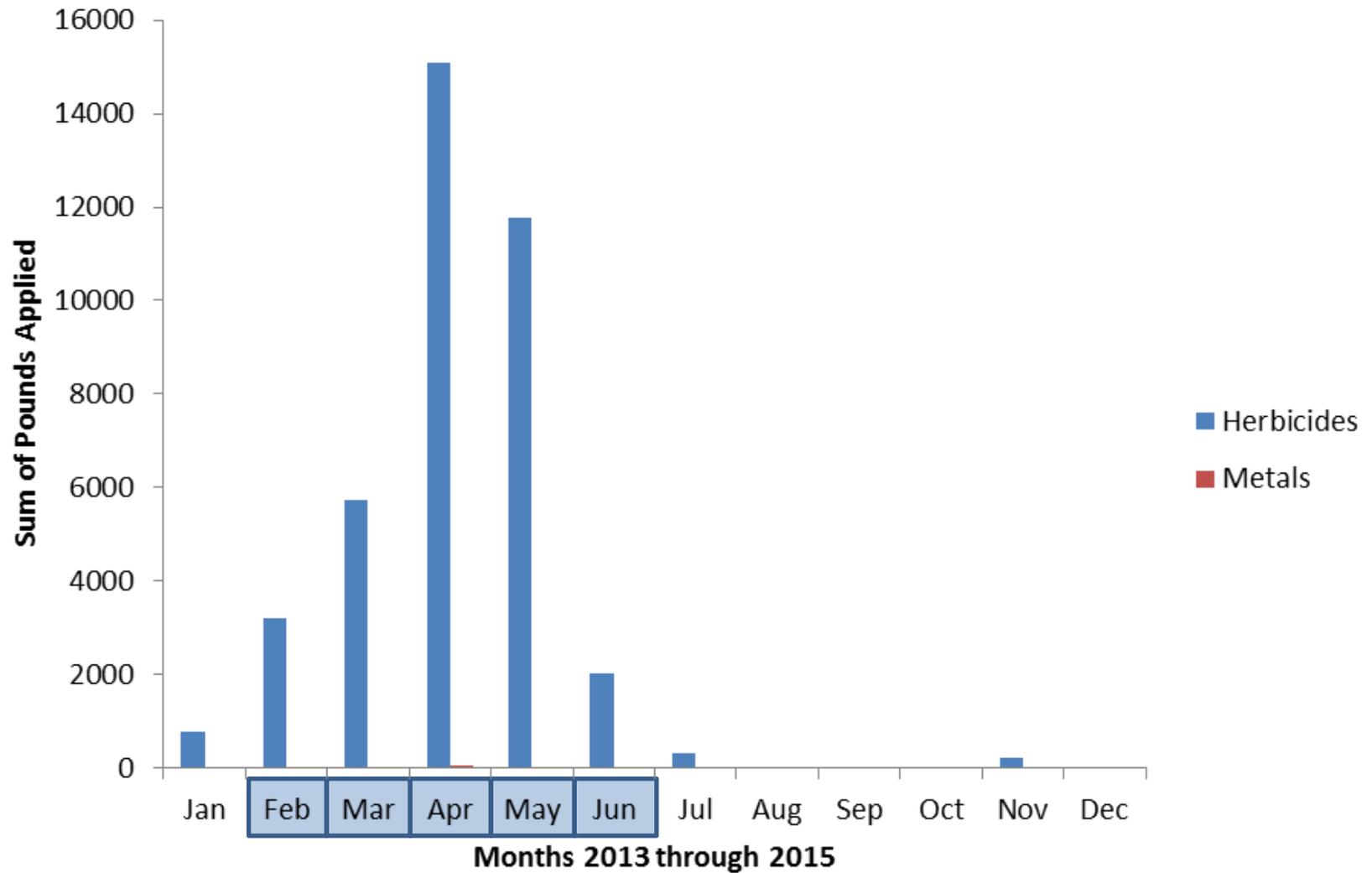
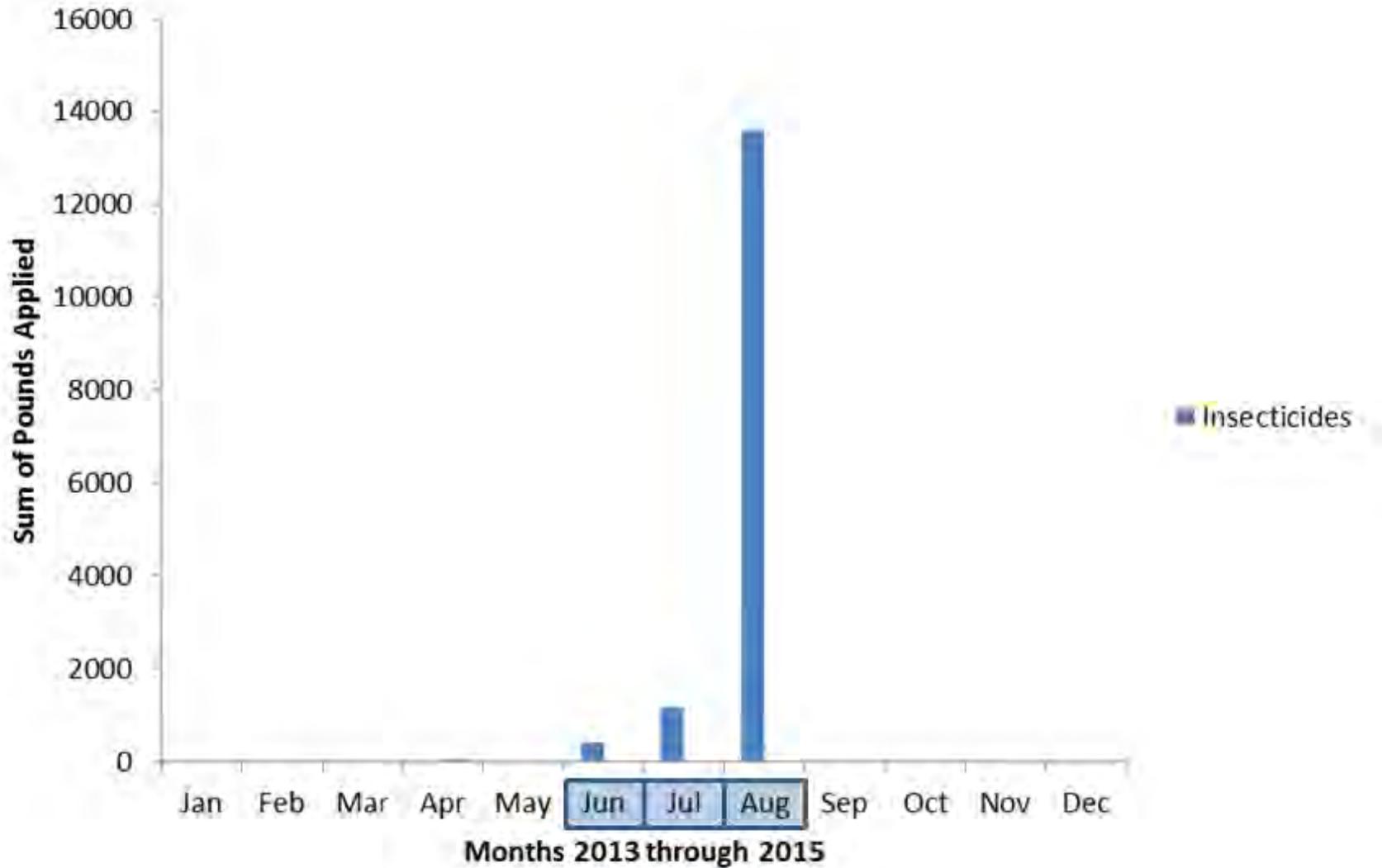


Figure 17. Staten Island Drain @ Staten Island Rd applications of insecticides associated with *C. dubia* toxicity (2013 through 2015).
Highlighted months indicate when Represented site monitoring will occur for *C. dubia* in the 2017 WY.



Monitoring Based on Management Plan

The Staten Island Drain @ Staten Island Rd is currently in a management plan for DO and SC (Table 26). The Coalition will not conduct MPM in this site subwatershed in the 2017 WY.

Terminus Tract Drain @ Hwy 12

Terminus Tract Drain @ Hwy 12 is one of two of the rotating Core sites in Zone 3. Monitoring was initiated at this site in 2005. During the 2016 WY, the Coalition monitored monthly for Core site constituents at Terminus Tract Drain @ Hwy 12. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 3 Core site in the 2017 WY, Drain @ Woodbridge Rd, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Drain @ Woodbridge Rd is not scheduled for Terminus Tract Drain @ Hwy 12.

In October 2014, when Terminus Tract Drain @ Hwy 12 was a Core site, there was a sample that was toxic to *C. dubia* (15% survival compared to the control). A TIE was conducted and concluded that cationic metals and organophosphate insecticides were the cause of the toxicity. The Figure 2 flowchart indicates monitoring for water column toxicity to *C. dubia* is required for an additional year. During the 2017 WY, the Coalition will conduct Represented site monitoring for water column toxicity to *C. dubia* during the month of past toxicity: October.

2017 WY Monitoring Based on Management Plan

The Terminus Tract Drain @ Hwy 12 site subwatershed is currently in a management plan for DO, SC, *E. coli*, nitrate, arsenic, chlorpyrifos, diuron, water column toxicity to *S. capricornutum*, and sediment toxicity to *H. azteca* (Table 26). The Coalition will conduct MPM in the 2017 WY for chlorpyrifos, diuron, water column toxicity to *S. capricornutum*, and sediment toxicity to *H. azteca*.

Arsenic

During the 2016 WY, the Coalition conducted MPM for arsenic in October 2015 and from January through June 2016; no exceedances of the WQTL for arsenic occurred. At the time of this report, scheduled monitoring from July through September 2016 had not yet occurred. As previously mentioned in the Management Plan Monitoring section of this report on Page 4, the Coalition has submitted a work plan regarding this constituent and has determined that it is naturally occurring within the Coalition boundary; therefore, no MPM is scheduled for this constituent during months of past exceedances in the 2017 WY. However, the Coalition will monitor for arsenic during four high TSS events (two storm and two irrigation events) in order to better characterize this constituent in this site subwatershed.

Chlorpyrifos

During the 2016 WY, MPM for chlorpyrifos was conducted in January 2016; no exceedance of the WQTL for chlorpyrifos occurred. At the time of this report, MPM during the months of August and September had not yet occurred. The PUR data from 2013 through 2015 indicate applications of chlorpyrifos have historically been applied from February through November; with peak applications occurring in the month of February which accounted for 23% of all applications within the past three years (Figure 18). In the 2017 WY, the Coalition will continue MPM for chlorpyrifos during the months of January, February, August, and September; March has been added to the 2017 WY MPM schedule due to the March 2016 exceedance.

Diuron

During the 2016 WY, MPM for diuron was conducted in February and March 2016. The PUR data from 2013 through 2015 indicate applications of diuron have historically been applied from December through May; with peak applications occurring in the month of January which accounted for 46% of all applications within the past three years (Figure 19). During the 2017 WY, the Coalition will continue MPM for diuron during the months of past exceedances (February and March) and include the month of January due to increased use.

Water column toxicity to *S. capricornutum*

In 2012, the toxicity to *S. capricornutum* management plan was approved for completion due to improving water quality. Toxicity occurred again in February 2015 (21% growth compared to the control; the TIE indicated diuron as the cause of the toxicity) and in March 2016 (55% growth compared to the control; arsenic, chlorpyrifos, diuron, and simazine were detected in the sample). Due to the 2015 and 2016 toxicities, the water column toxicity to *S. capricornutum* management plan will be reinstated. During the 2017 WY, the Coalition will conduct MPM for water column toxicity to *S. capricornutum* from January through May.

Sediment toxicity to *H. azteca*

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2016 and monitoring is also scheduled for September. At the time of this report, September 2016 sediment sampling had not yet occurred. The Coalition will conduct MPM for sediment toxicity to *H. azteca* in March and September in the 2017 WY.

Figure 18. Terminous Tract Drain @ Hwy 12 2005-2016 chlorpyrifos use and monitoring.

Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.

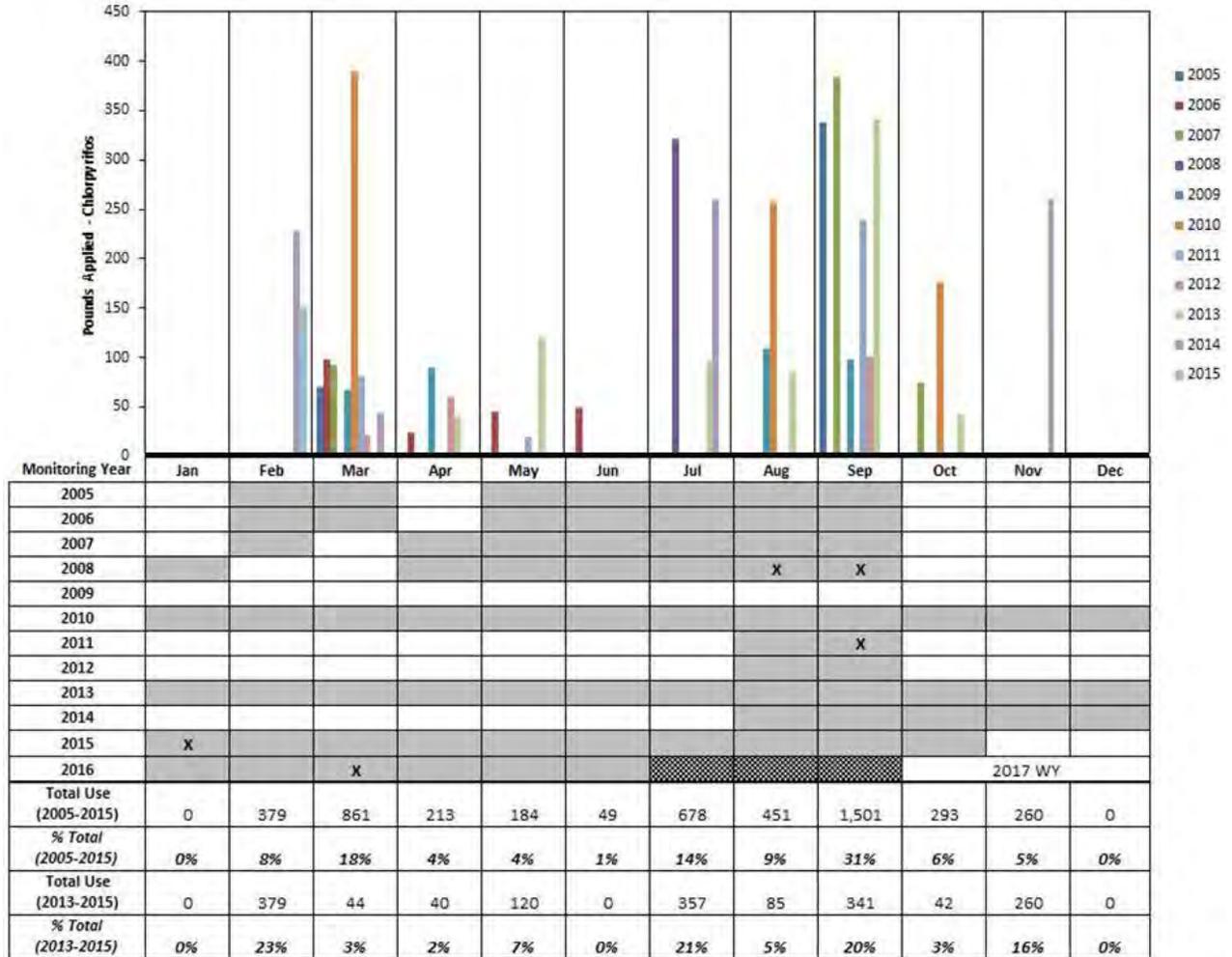
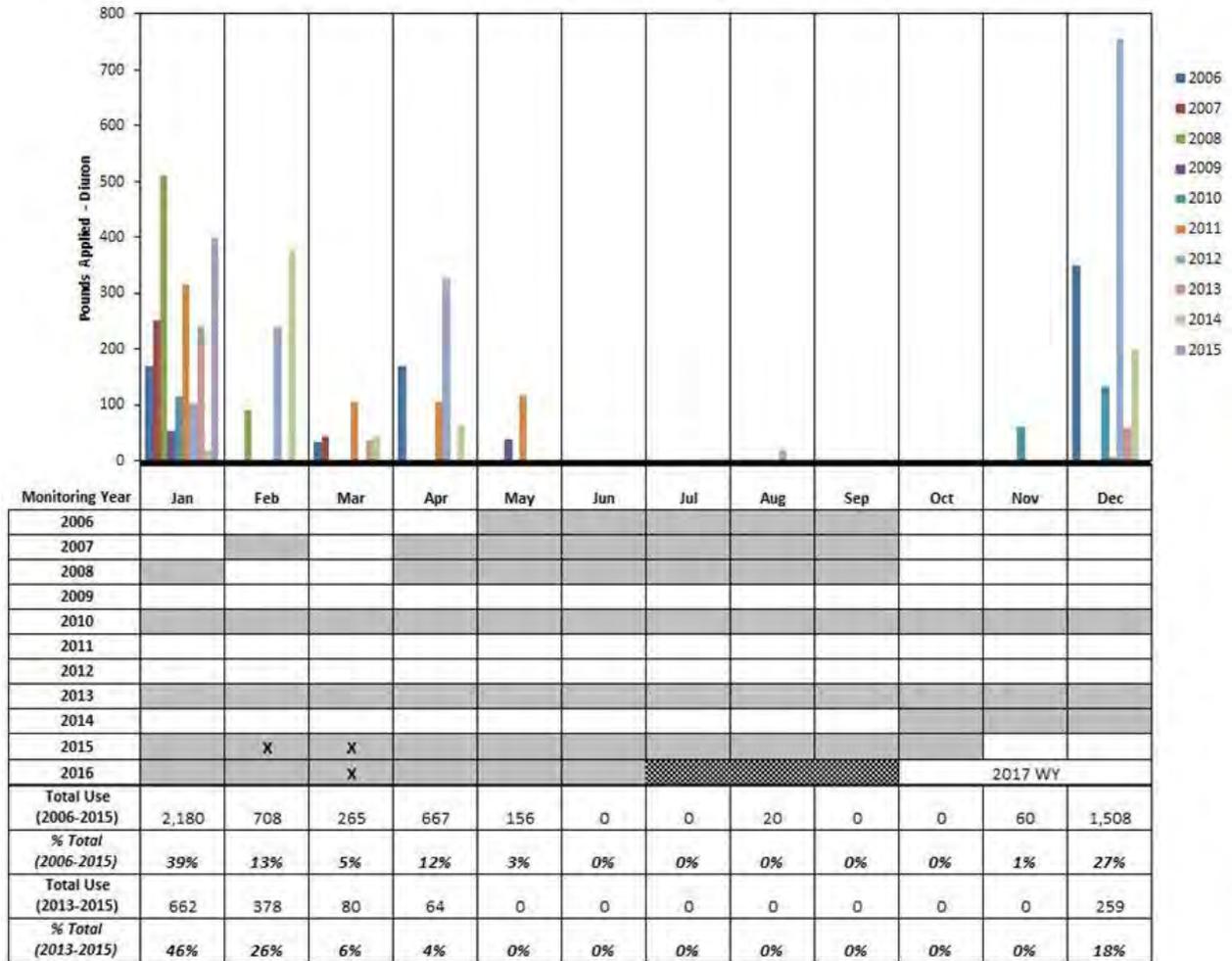


Figure 19. Terminous Tract Drain @ Hwy 12 2006-2016 diuron use and monitoring.

Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.



ZONE 4 – BACON ISLAND PUMP @ OLD RIVER

Bacon Island Pump @ Old River is the new rotating Core site in Zone 4. Bacon Island Pump @ Old River will also represent water quality in Zone 6. Monitoring was initiated at the site in 2014.

Bacon Island Pump @ Old River is in a management plan for DO, pH, SC, *E. coli*, and arsenic. Monitoring for DO, SC, pH, and *E. coli* will occur monthly in accordance with the Core site monitoring strategy. As previously determined in the Core Site Metals section of this report on Page 24, metals analyses will be conducted during four high TSS events (two storm and two irrigation events); however, the Coalition will not monitor for arsenic in the 2017 WY.

Table 27 includes the status of active management plans and 2016 WY exceedances for all sites within Zone 3.

Table 27. Zone 4 Management Plan Constituents and 2016 WY Exceedances.

Core site information is bolded.

SITE NAME	DO	pH	SC	E. COLI	ARSENIC	DDE	DDT	C. DUBIA	S. CAPRICORNUTUM
Bacon Island Pump @ Old River	M	M	M	M	M				
East Orwood Tract Drain	M		M						M
Kellogg Creek along Hoffman Ln		M	M	M		M	M		
Roberts Island @ Whiskey Slough Pump	M	M	M	M		M		M	M
South McDonald Island Pump	M		M						M

M – Indicates constituent is in a management plan at the site.

In the 2016 WY, Bacon Island Pump @ Old River was a Represented site. The Coalition conducted Year 2 of Represented site monitoring for chlorpyrifos, diuron, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*; of all samples collected, only the February 2015 samples were toxic to *S. capricornutum* (9% growth compared to the control). The Figure 4 flowchart indicates the Coalition has completed Represented site monitoring for chlorpyrifos, diuron, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca*; however, due to the February 2015 *S. capricornutum* toxicity, the Coalition is required to monitor for toxicity to *S. capricornutum* for at least one more year. Since Bacon Island Pump @ Old River is the new rotating Core site in Zone 4 and Zone 6, monitoring will occur in accordance to the Core site monitoring strategy and therefore monitoring for water column toxicity to *S. capricornutum* will occur monthly. The Coalition will reevaluate the status of this constituent when the site rotates back to a Represented site in two years.

East Orwood Tract Drain

East Orwood Tract Drain is a Represented site in Zone 4. Monitoring was initiated at this site in the 2015 WY. In the 2016 WY, the Coalition monitored for chlorpyrifos, diuron, water column toxicity to *C. dubia*

and *S. capricornutum*, and sediment toxicity to *H. azteca* due to past exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump). Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 4 Core site in the 2017 WY, Bacon Island Pump @ Old River, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bacon Island Pump @ Old River is not scheduled for East Orwood Tract Drain.

Chlorpyrifos

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for chlorpyrifos during the months of October 2015, February, and March 2016 due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump); there were no detections of chlorpyrifos. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred during the months of July through September 2016. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no exceedances; pending July through September 2016 monitoring results, no additional monitoring is required for chlorpyrifos during the 2017 WY.

Diuron

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for diuron during the months of December 2015 through May 2016 due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump); there were no detections of diuron. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no exceedances; no additional monitoring is required for diuron during the 2017 WY.

Water Column Toxicity to *S. capricornutum*

East Orwood Tract Drain is in a management plan for toxicity to *S. capricornutum*. Monitoring in the 2017 WY for toxicity to *S. capricornutum* is addressed in the section below and will occur according to the Coalition's management plan strategy.

Water Column Toxicity to *C. dubia*

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for water column toxicity to *C. dubia* in March 2016 due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump); the sample was not toxic. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no exceedances; no additional monitoring for toxicity to *C. dubia* is required during the 2017 WY.

Sediment Toxicity to *H. azteca*

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2016 and is scheduled to monitor again in September 2016; samples collected in March 2016 were not toxic to *H. azteca*. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no

exceedances; pending September 2016 monitoring results, no additional monitoring is required during the 2017 WY.

2017 WY Monitoring Based on Management Plan

The East Orwood Tract Drain site subwatershed is currently in a management plan for DO, SC, and water column toxicity to *S. capricornutum* (Table 27).

Water Column Toxicity to *S. capricornutum*

The East Orwood Tract Drain site subwatershed is in a management plan for toxicity to *S. capricornutum*. The Figure 1 flowchart indicates the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, no MPM will occur for toxicity to *S. capricornutum* during the 2017 WY.

Kellogg Creek along Hoffman Ln

Kellogg Creek along Hoffman Ln is a Represented site in Zone 4. Monitoring was initiated at this site in 2005. The Coalition did not monitor at this site in the 2016 WY. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 Monitoring Based on Core site Management Plans and Exceedances

The Coalition received approvals to complete the Kellogg Creek along Hoffman Ln management plans for chlorpyrifos and water column toxicity to *C. dubia* on February 27, 2013 and water column toxicity to *S. capricornutum* on August 22, 2014. In addition, the Coalition received approval to complete the management plan for water column toxicity to *P. promelas* and sediment toxicity to *H. azteca* on December 18, 2015. It was determined that no monitoring was required during the 2015 and 2016 WYs based on exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump).

The Zone 4 Core site in the 2017 WY, Bacon Island Pump @ Old River, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bacon Island Pump @ Old River is not scheduled for Kellogg Creek along Hoffman Ln.

2017 WY Monitoring Based on Management Plan

Kellogg Creek along Hoffman Ln is in a management plan for pH, SC, *E. coli*, DDE, and DDT (Table 27). The Coalition will not conduct MPM in this site subwatershed during the 2017 WY.

Roberts Island @ Whiskey Slough Pump

Roberts Island @ Whiskey Slough Pump is one of the rotating Core sites in Zone 4. Monitoring was initiated at this site in 2012. During the 2016 WY, the Roberts Island @ Whiskey Slough Pump site subwatershed was a Core site, and was monitored monthly for Core site constituents. Below is an

analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 4 Core site in the 2017 WY, Bacon Island Pump @ Old River, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bacon Island Pump @ Old River is not scheduled for Roberts Island @ Whiskey Slough Pump.

During the 2015 and 2016 WYs, Roberts Island @ Whiskey Slough Pump was the Core site in Zone 4. During this timeframe there were no exceedances of the WQTLs for any applied pesticides or metals. However, water column toxicity to *S. capricornutum* occurred four times. The Figure 2 flowchart indicates water column toxicity to *S. capricornutum* will be addressed through the management plan strategy. A third year of Core site monitoring is not required at this site.

2017 WY Monitoring Based on Management Plan

The Roberts Island @ Whiskey Slough Pump site subwatershed is in a management plan for DO, pH, SC, *E. coli*, DDE, and water column toxicity to *C. dubia* and *S. capricornutum* (Table 27). The Coalition will conduct MPM during the 2017 WY for water column toxicity to *C. dubia* and *S. capricornutum*.

Water column toxicity to *C. dubia*

During the 2016 WY, monitoring for water column toxicity to *C. dubia* occurred in March 2016; toxicity did not occur. At the time of this report, scheduled monitoring for toxicity to *C. dubia* had not yet occurred in July 2016. During the 2017 WY, the Coalition will continue to monitor for toxicity to *C. dubia* during months of past toxicities: March and July.

Water column toxicity to *S. capricornutum*

During the 2016 WY, monitoring for water column toxicity to *S. capricornutum* resulted in toxic samples in December 2015, and January and April 2016 (83%, 84%, and 52% growth compared to the control; respectively). At the time of this report, scheduled monitoring for toxicity to *S. capricornutum* had not yet occurred in July 2016. During the 2017 WY, the Coalition will monitor for toxicity to *S. capricornutum* during months of past toxicities: December through February, April, May, and July.

South McDonald Island Pump

South McDonald Island Pump is a Represented site in Zone 4. Monitoring was initiated at this site subwatershed in the 2015 WY. In the 2016 WY, the Coalition monitored for chlorpyrifos, diuron, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca* due to past exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump). Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

2017 WY Monitoring Based on Core site Management Plans and Exceedances

The Zone 4 Core site in the 2017 WY, Bacon Island Pump @ Old River, is not in a management plan for any applied pesticides, applied metals, or toxicity. Therefore, Represented site monitoring based on management plans and exceedances at Bacon Island Pump @ Old River is not scheduled for South McDonald Island Pump.

Chlorpyrifos

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring at South McDonald Island Pump for chlorpyrifos in May 2016 due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump); no exceedance occurred. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred during September 2016. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no exceedances; pending monitoring results in September 2016, no additional monitoring is required during the 2017 WY.

Diuron

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for diuron in April 2016 due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump); there were no detections. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no exceedances; no additional monitoring is required during the 2017 WY.

Water Column Toxicity to *S. capricornutum*

South McDonald Island Pump is in a management plan for toxicity to *S. capricornutum*. Monitoring in the 2017 WY for toxicity *S. capricornutum* is addressed in the section below and will occur according to the Coalition's management plan strategy.

Water Column Toxicity to *C. dubia*

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for water column toxicity to *C. dubia* due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump). Monitoring occurred during the months of March through June 2016; toxicity did not occur. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred from July through September 2016. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no toxicities; pending July through September 2016 monitoring results, no additional monitoring is required during the 2017 WY.

Sediment Toxicity to *H. azteca*

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for sediment toxicity to *H. azteca* due to exceedances at the previous Core site (Roberts Island @ Whiskey Slough Pump). Monitoring occurred April 2016; toxicity did not occur. At the time this report was written, scheduled monitoring had not yet occurred during September 2016. The Figure 4 flowchart indicates the Coalition has completed two years of monitoring with no toxicities; pending September 2016 monitoring results, no additional monitoring is required during the 2017 WY.

Monitoring Based on Management Plan

The South McDonald Island Pump site subwatershed is in a management plan for DO, SC, and water column toxicity to *S. capricornutum* (Table 27).

Water Column Toxicity to *S. capricornutum*

The South McDonald Island Pump site subwatershed is in a management plan for water column toxicity to *S. capricornutum*. The Figure 1 flowchart indicates the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, no MPM will occur for toxicity to *S. capricornutum* during the 2017 WY.

ZONE 5 – WALTHALL SLOUGH @ WOODWARD AVE ZONE

The Coalition will monitor the following management plan constituent at Walthall Slough @ Woodward Ave in the 2017 WY:

- *S. capricornutum* toxicity (December, January, March, and May).

In addition, Walthall Slough @ Woodward Ave is in a management plan for DO, SC, *E. coli*, and nitrate. Monitoring for DO, SC, *E. coli*, and nitrate will occur monthly in accordance with the Core site monitoring strategy.

There are no represented sites in Zone 5; the Walthall Slough @ Woodward Ave site subwatershed will represent water quality for the entire zone.

ZONE 6 – BACON ISLAND PUMP @ OLD RIVER

As discussed above monitoring results from samples collected at the Zone 4 Core site, Bacon Island Pump @ Old River, will represent irrigated agricultural discharges in Zone 6.

Sand Creek @ Hwy 4 Bypass

Sand Creek @ Hwy 4 Bypass is the only site scheduled to be monitored in Zone 6; it is neither a Core site nor a Represented site. Monitoring in this site subwatershed was initiated in 2006. During the 2016 WY, the Coalition conducted MPM for sediment toxicity to *H. azteca*. There is very little irrigated agriculture (402 irrigated acres) in the subwatershed which receives drainage from recent urban developments, industrial sites, a golf course, field crops, grains, and pastureland.

Monitoring Based on Management Plan

Sand Creek @ Hwy 4 Bypass is in a management plan for DO, SC, *E. coli*, DDE, DDT, and sediment toxicity to *H. azteca*. The Coalition will conduct MPM to monitor *H. azteca* sediment toxicity in March and September during the 2017 WY.

ZONE 7 - UNION ISLAND DRAIN @ BONETTI RD ZONE

Union Island Drain @ Bonetti Rd is the Core site in Zone 2. Monitoring was initiated at Union Island Drain @ Bonetti Rd in the 2015 WY. Monitoring results from the Core site during the 2016 WY resulted in exceedances of the WQTLs for DO, SC, *E. coli*, ammonia, arsenic, malathion, and toxicity to *S. capricornutum*. As previously determined in the Core Site Metals section of this report on Page 24, metals analyses will be conducted during four high TSS events (two storm and two irrigation events); however no MPM is scheduled for arsenic in the 2017 WY. The Coalition will conduct MPM for the following constituents at Union Island Drain @ Bonetti Rd in the 2017 WY:

- chlorpyrifos (January).
- *C. dubia* toxicity (March, May, and August).
- *S. capricornutum* toxicity (October, December, January through July, and September).
- *H. azteca* sediment toxicity (March and September).

Union Island Drain @ Bonetti Rd will also represent water quality in the Town of French Camp – San Joaquin River HUC 12 due to few members and significant urban contributions in the area.

Table 28. Zone 7 Management Plan Constituents and 2016 WY Exceedances.

Core site information is bolded.

SITE NAME	DO	PH	SC	E. COLI	AMMONIA	ARSENIC	CHLORPYRIFOS	DDE	MALATHION	C. DUBIA	S. CAPRICORNUTUM	H. AZTECA
Union Island Drain @ Bonetti Rd	M		M	M	X	M	M	M	X	M	M	M
Upper Roberts Island Drain	M		M							M	M	

M – Indicates constituent is in a management plan at the site.

M – Indicates exceedance in the 2016 WY triggered a management plan.

X – Indicates exceedance of WQTL or toxicity in 2016WY, but management plan was not initiated.

Upper Roberts Island Drain

Upper Roberts Island Drain is a Represented site in Zone 7. Monitoring was initiated at this site in the 2015 WY. During the 2016 WY, the Coalition monitored for chlorpyrifos, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2016 WY as well as the rationale for the proposed monitoring in the 2017 WY.

Monitoring Based on Core site Exceedances

The Zone 7 Core site, Union Island Drain @ Bonetti Rd, is in a management plan for chlorpyrifos, water column toxicity to *C. dubia* and *S. capricornutum*, and sediment toxicity to *H. azteca*. There was also an exceedance of the WQTL for malathion at the Core site. There were no other exceedances of any applied pesticide, applied metal, and toxicity.

Chlorpyrifos

During the 2016 WY, the Coalition conducted the first year of Represented site monitoring for chlorpyrifos due to exceedances at the Core site. Monitoring occurred February through April 2016; exceedances of the WQTL for chlorpyrifos did not occur. At the time of this report, scheduled monitoring during the month of August 2016 had not yet occurred. The Coalition reviewed PUR data from 2013 through 2015 and determined there were applications of chlorpyrifos during the months of February through May, and July through September (Figure 20). The Coalition will continue to monitor for chlorpyrifos during the months of peak applications: February through April, and August. The Figure 4 flowchart indicates the 2017 WY monitoring will count as Year 2 of monitoring for chlorpyrifos at Upper Roberts Island Drain.

Malathion

Due to the exceedance at the Core site during the 2016 WY, the Coalition evaluated Upper Roberts Island Drain for applications of malathion. Monitoring for malathion has not occurred in this site subwatershed. The Coalition reviewed PUR data from 2013 through 2015 and determined there were applications of malathion during the months of March and April (388 gallons and 620 gallons, respectively; Figure 21). The Coalition will monitor for malathion during the months of peak applications: March and April. The Figure 4 flowchart indicates the 2017 WY monitoring will count as Year 1 of monitoring for malathion at Upper Roberts Island Drain.

Water Column Toxicity to *S. capricornutum*

Upper Roberts Island Drain is in a management plan for toxicity to *S. capricornutum*. Monitoring in the 2017 WY for toxicity to *S. capricornutum* is addressed in the section below and will occur according to the Coalition's management plan strategy.

Water Column Toxicity to *C. dubia*

Upper Roberts Island Drain is in a management plan for toxicity to *C. dubia*. Monitoring in the 2017 WY for toxicity to *C. dubia* is addressed in the section below and will occur according to the Coalition's management plan strategy.

Sediment Toxicity to *H. azteca*

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for sediment toxicity to *H. azteca* due to exceedances at the Core site. Monitoring occurred in March 2016; toxicity did not occur. At the time of this report, scheduled monitoring had not yet occurred during September 2016. During the 2015 WY, the sediment sample collected in March 2015 was toxic (34% survival compared to the control). The Figure 4 flowchart indicates that, due to the toxic sample in March 2015, the Coalition will monitor for sediment toxicity to *H. azteca* in March and September for a third year in the 2017 WY.

Figure 20. Upper Roberts Island Drain applications of chlorpyrifos from 2013 through 2015.

Boxed months indicate when monitoring will occur in the 2017 WY.

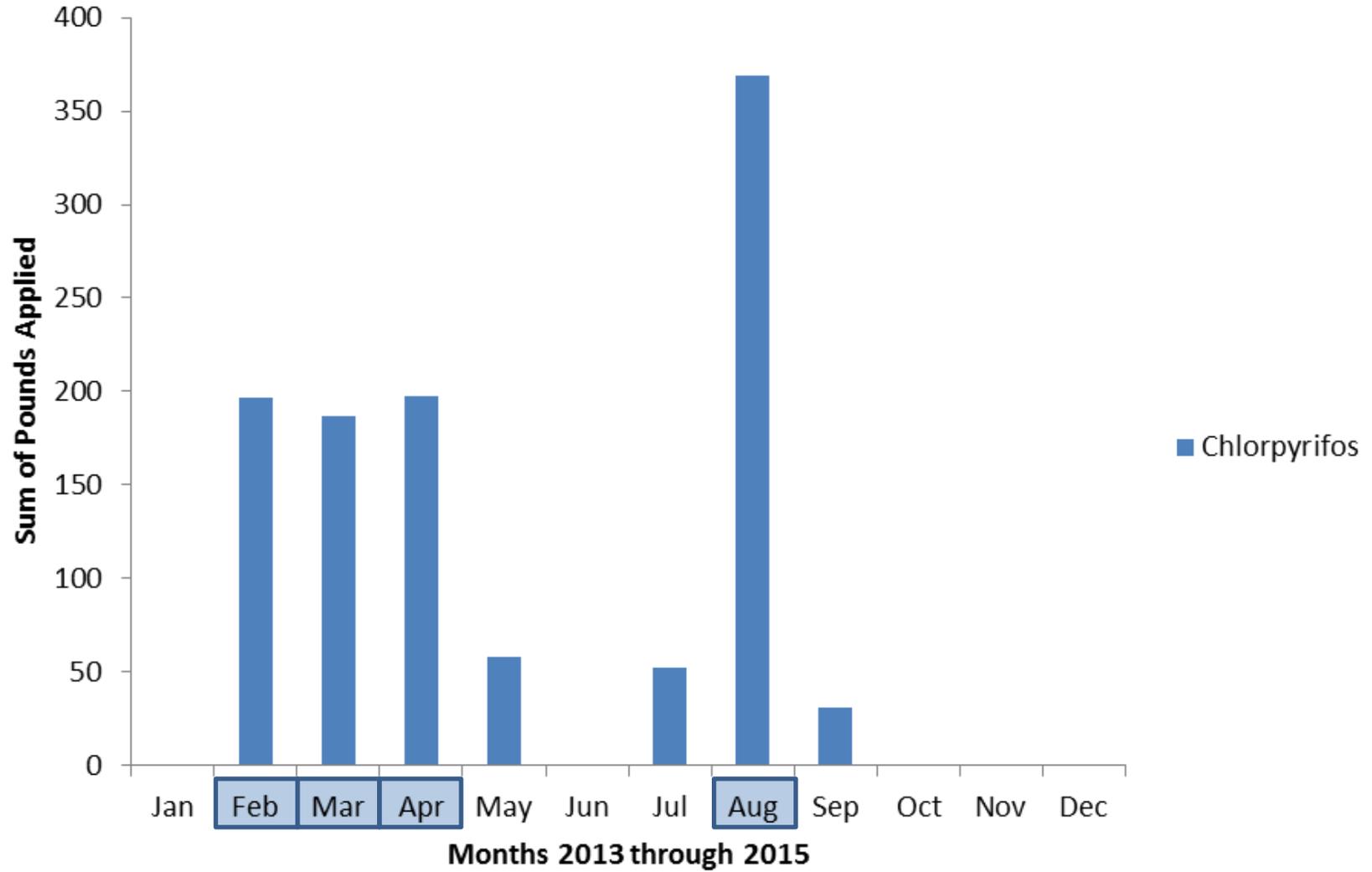
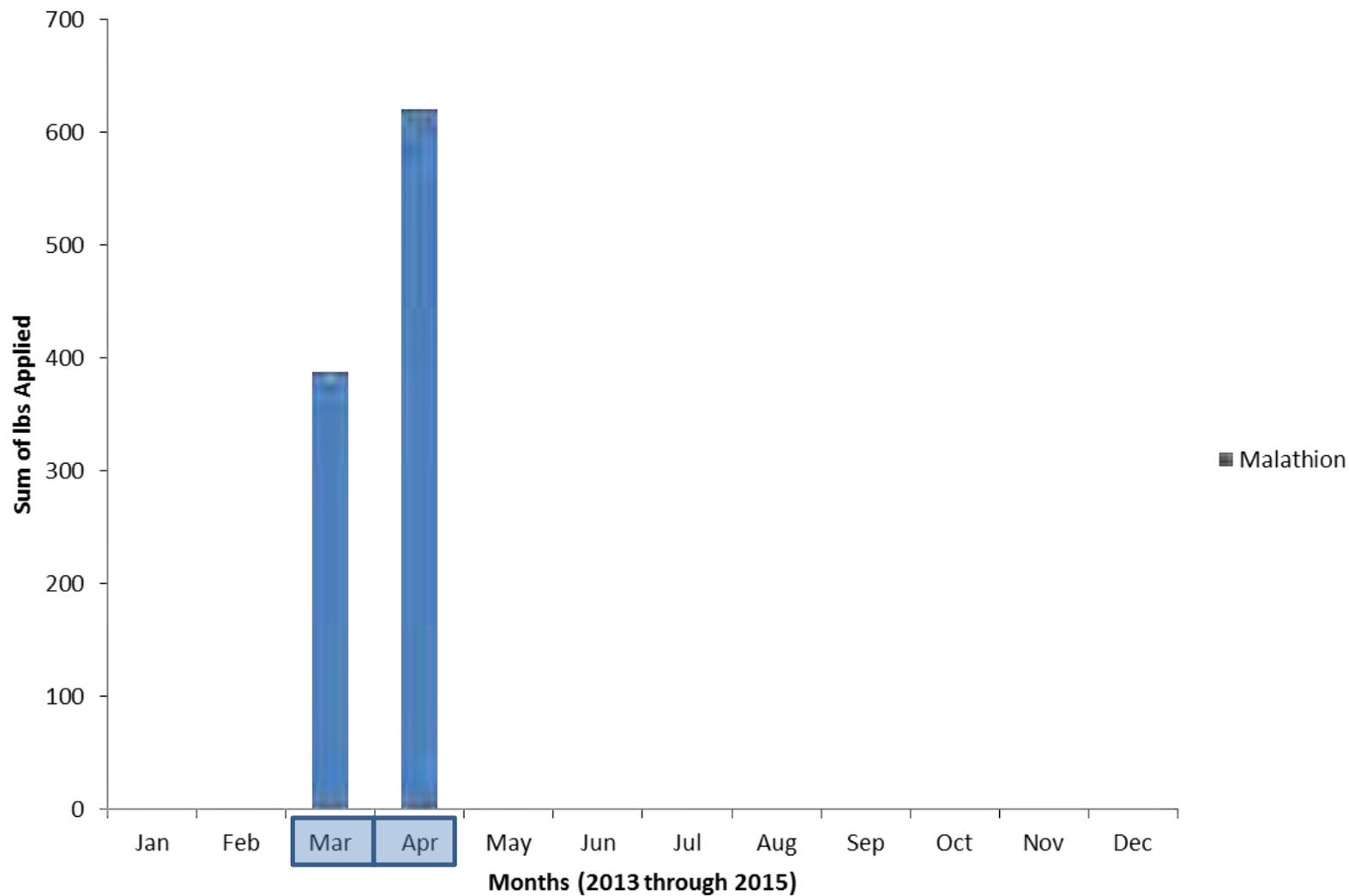


Figure 21. Upper Roberts Island Drain applications of malathion from 2013 through 2015.

Boxed months indicate when monitoring will occur in the 2017 WY.



Monitoring Based on Management Plan

Upper Roberts Island Drain is in a management plan for DO and SC. (Table 28). This site subwatershed is also in a management plan for water column toxicity to *C. dubia*, and a new management plan for water column toxicity to *S. capricornutum*.

Water Column Toxicity to *S. capricornutum*

During the 2016 WY, the Coalition conducted the second year of Represented site monitoring for water column toxicity to *S. capricornutum* due to exceedances at the Core site. Monitoring occurred December 2015 through June 2016; toxicity occurred in January and April 2016 (35% and 72% growth compared to the control; respectively). At the time of this report, scheduled monitoring during the month of September 2016 had not occurred. A TIE was conducted on the January sample; however, the sample lost all toxicity and cause of the toxicity could not be determined. The Figure 1 flowchart indicates the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, no MPM will occur at Upper Roberts Island Drain in the 2017 WY.

Water Column Toxicity to *C. dubia*

Upper Roberts Island Drain is in a management plan for water column toxicity to *C. dubia*. The Figure 1 flowchart indicates the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, no MPM will occur at Upper Roberts Island Drain in the 2017 WY.

APPENDIX I

LOW FLOW, NO FLOW, AND DRY SITE SAMPLE COLLECTION PROTOCOL

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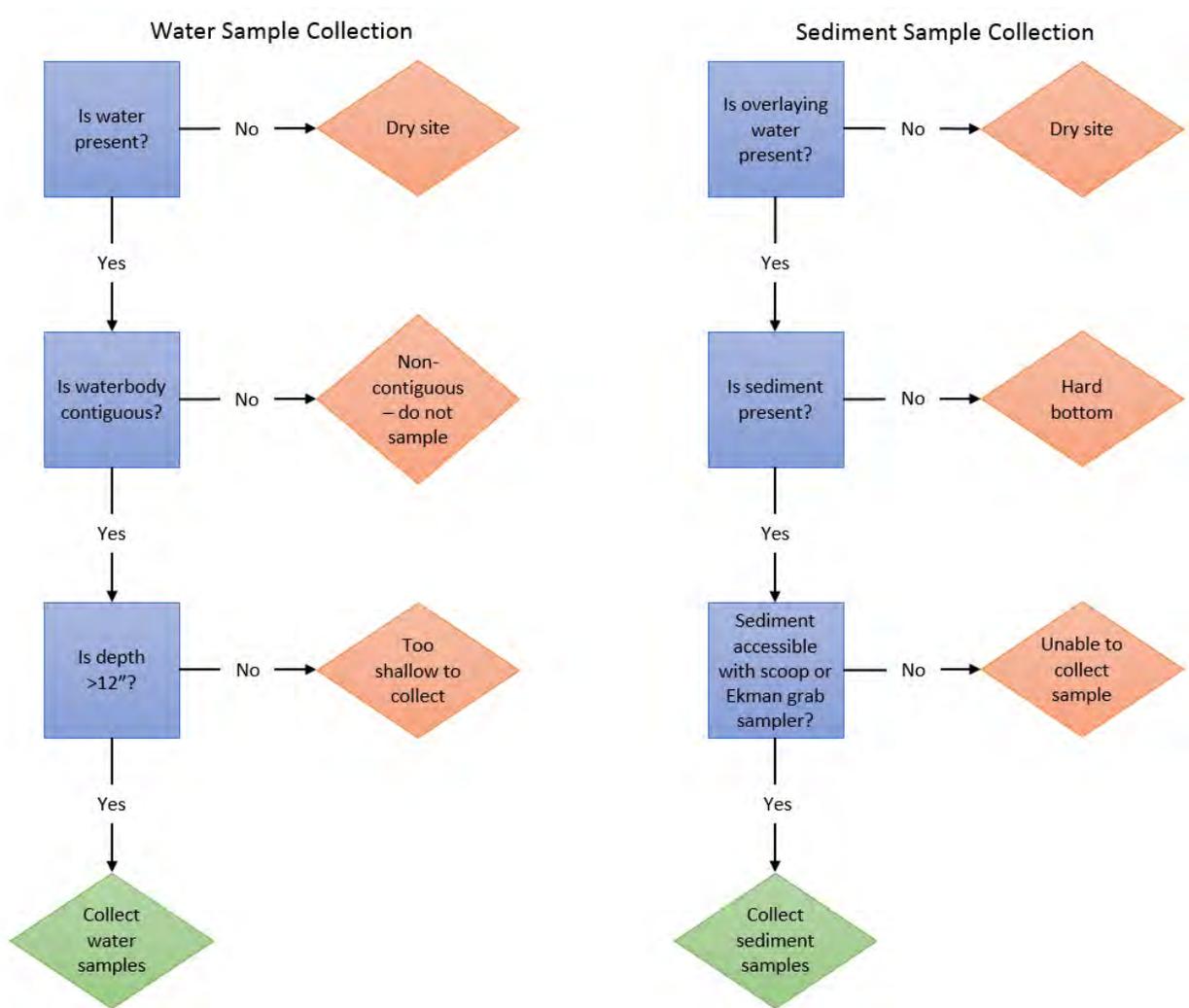
INTRODUCTION

Under typical monitoring conditions, all samples are collected according to the protocols and procedures outlined in the 2008 QAPP (amendment approved on September 4, 2015). However, due to the types of waterbodies monitored (rivers, creeks, sloughs, and Delta island drains), and variations in climatic patterns and agricultural irrigation patterns, conditions exist where the collection of a high quality, representative water or sediment samples cannot be collected due to low flow, no flow, and dry conditions.

The purpose of this appendix is to outline the decision making process for sampling actions as result of conditions where there is little to no flow or when there is no water (Figure 1). The flowchart in Figure 1 outlines the potential sample site flow conditions that occur at monitoring locations in the SJCDWQC region. Potential reasons for not collecting a sample include:

- waterbody is dry,
- waterbody is non-contiguous,
- not enough water depth to submerge the sample bottles to collect a sample,
- not enough sediment accumulation in the channel to collect a sample, or
- sample site not accessible for collection.

Figure 1. SJCDWQC flowchart strategy for sample collection.



SJCDWQC WATERBODY CHARACTERISTICS

Waterbodies in the SJCDWQC region consist of rivers, creeks, sloughs, and Delta Island drains. Zones 1, 2, 5, and 6 contain almost all of the creeks and sloughs in the entire Coalition; the exception is Kellogg Creek along Hoffman Lane (Zone 4). Zones 3, 4, and 7 contain all of the Delta Island drains (Table 1).

Table 1. SJCDWQC monitoring locations.

ZONE	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
Zone 1	Bear Creek @ North Alpine Rd	531BCANAR	38.07386	-121.21215
	Coyote Creek Tributary @ Jack Tone Rd	531CCTALR	38.24082	-121.15200
	Jahant Slough @ Cherokee Ln	531XJSACL	38.21035	-121.26200
	Mokelumne River @ Bruella Rd	531XMRABR	38.16022	-121.20643
	Mosher Creek @ North Alpine Rd	531MCANAR	38.06088	-121.20900
	Pixley Slough @ Furry Rd	531XPSAFR	38.08256	-121.24100
Zone 2	Duck Creek @ Highway 4	531XDCAHF	37.94949	-121.18208
	French Camp Slough @ Airport Way	531SJC504	37.88172	-121.24933
	Littlejohns Creek @ Jack Tone Rd	531XLCAJR	37.88958	-121.14727
	Lone Tree Creek @ Jack Tone Rd	531XLTCLR	37.83754	-121.14460
	Mormon Slough @ Jack Tone Road	544MSAJTR	37.96470	-121.14880
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	531UDLTAJ	37.85360	-121.14570
Zone 3	Drain @ Woodbridge Rd	544DAWRXX	38.15256	-121.50095
	Empire Tract @ 8 Mile Rd	544ETAEMR	38.06012	-121.49912
	Rindge Tract Drain	544RDGTRD	38.04553	-121.46933
	Staten Island Drain @ Staten Island Rd	544SIDSIR	38.13297	-121.52225
	Terminus Tract Drain @ Hwy 12	544XTTHWT	38.11558	-121.49380
Zone 4	Bacon Island Pump @ Old River	544BIPAOR	37.97916	-121.57023
	East Orwood Tract Drain	544EOWDTD	37.92857	-121.56067
	Kellogg Creek along Hoffman Lane	544XKCAHL	37.88188	-121.65221
	Roberts Island @ Whiskey Slough Pump	544RIAWSP	37.96737	-121.46434
	South McDonald Island Pump	544SMCDIP	37.98928	-121.46285
Zone 5	Walthall Slough @ Woodward Ave	544WSAWAV	37.77046	-121.29227
Zone 6	Sand Creek @ Hwy 4 Bypass	544SCAHFB	37.94750	-121.74300
Zone 7	Union Island Drain @ Bonetti Rd	544UIDABR	37.87170	-121.52551
	Upper Roberts Island Drain	544UPRRID	37.81893	-121.35830

Flows in rivers, creeks, and sloughs vary from perennial to intermittent and water is received from reservoirs upstream (managed by irrigation districts or other water/power entities), snow melt, and large storms depending on the time of year. During the summer months, flows in these waterbodies may originate from reservoirs upstream and irrigation return flows. During the winter and spring months, flows may come from storms and snow melt.

Water levels in the drains on the Delta islands are generally managed by Reclamation Districts. The Delta Islands and tracts receive all of their water from the Delta by pumping water onto the island and is stored in ditches for irrigation use. Delta Islands also have pumps that export the water back to the Delta as needed. There is usually one main drain bisecting the island with multiple inlets and pumps. The drains sampled by the Coalition only flow when water is being pumped out of the island; a majority of the time the drains are stagnant.

WATER SAMPLING

The protocol for collecting water samples is to collect an environmental sample from the waterbody by submerging sample bottles 0.1 m (approximate 4 inches) below the surface of the water, uncapping the bottle, filling the bottle and re-capping it under the water with no headspace (see Appendix II, SJCDWQC QAPP, Page 76). Sample bottles vary in size depending on the constituent that the sample will be tested for. However, the largest bottles are 8.5 inches (pesticide analysis) and 13.5 inches tall (toxicity analysis, Figure 2). Under certain conditions it is not possible to collect water samples according to approved protocols and criteria outlined in the QAPP due to situations that result in low volumes of water. These conditions and examples are outlined in the sections below.

Figure 2. Sample bottle sizes.



DRY SITE – SAMPLES CANNOT BE COLLECTED

A waterbody is considered dry when no water is present upstream or downstream from the sample location. An example of this type of site condition is Jahant Slough @ Cherokee Ln which was dry on January 6, 2016 and no water or sediment samples could be collected (Figure 3).

Figure 3. Dry site at Jahant Slough @ Cherokee Ln – January 6, 2016.

Photo on the left is facing upstream (east) and photo on the right is facing downstream (west)



NON-CONTIGUOUS – SAMPLE COLLECTION NOT REQUIRED

There are various occasions throughout the year where SJCDWQC waterbodies are non-contiguous. Sampling a non-contiguous waterbody is not representative of the water quality in a normal flowing waterbody and samples should not be collected for the following reasons:

- 1) Concentrations of pesticides and other analytes can become concentrated, and only represent the water quality of the isolated pool instead of the irrigation drainage of the site subwatershed;
- 2) Collecting samples from a shallow, isolated pool can introduce suspended sediments into the sample bottle and potentially dislodge sediment-bound pesticides or herbicides that were not previously present in the water column;
- 3) Section 4.3 of the Surface Water Sampling SOP advises samplers only to collect samples if water conditions are normal and not to collect samples in shallow, no flow, or isolated pool conditions (Appendix II, SJCDWQC QAPP, Page 75) to avoid bias and unrepresentative sampling; and
- 4) Non-contiguous waterbodies are not connected upstream or downstream and are unable to flow or discharge to downstream waterbodies which have designated beneficial uses.

Typically, waterbodies in SJCDWQC Zones 1 and 2 have a higher likelihood of being non-contiguous, as most of these waterbodies are perennial or intermittent. Results from samples collected at waterbodies under non-contiguous conditions are not indicative of the water quality of irrigation drainage. No samples will be collected if the waterbody is non-contiguous. An example of a non-contiguous site condition in the SJCDWQC region is depicted in Figures 4 and 5.

Figure 4. Non-contiguous waterbody at Littlejohns Creek @ Jack Tone Rd – December 8, 2015.

Photo on the left is facing upstream (east) and photo on the right is facing downstream (west)



Figure 5. Non-contiguous waterbody at Unnamed Drain to Lone Tree Creek @ Jack Tone Rd – March 17, 2015.

Photo on the left is facing upstream (east) and photo on the right is facing downstream (west)



TOO SHALLOW TO COLLECT- SAMPLES CANNOT BE COLLECTED

For waterbodies that measure less than 12 inches in depth, it is not possible to collect samples in accordance with sampling protocols. In the SJCDWQC region, situations where the water is too shallow to collect generally occurs in Zones 1 and 2 where the majority of the waterbodies consist of perennial and intermittent creeks and sloughs. Waterbodies can be too shallow to collect during the fall and winter months when there is not enough precipitation to keep flows steady/constant. During summer months when agricultural irrigation drainage is low, stream depth can also be too low to collect samples. Figure 6 and 7 depict examples of conditions where the water in the waterbody is too shallow to collect from the winter sampling event on February 9, 2015 at Pixley Slough @ Furry Rd and during the irrigation season sampling event on May 19, 2015 at Duck Creek @ Hwy 4. Figure 8 illustrates how it is impossible to collect samples with the sample bottles when the water levels are too low.

Figure 6. Too shallow to collect samples at Pixley Slough @ Furry Rd – February 9, 2015.

Photo on the left is facing upstream (east) and photo on the right is facing downstream (west)



Figure 7. Too shallow to collect samples at Duck Creek @ Hwy 4 – May 19, 2015.

Photo on the left is facing upstream (east) and photo on the right is facing downstream (west)



Figure 8. Too shallow waterbodies with sample bottle for scale.



SEDIMENT SAMPLING

The Order (Attachment B, Page 10) indicates sediment samples must be collected twice a year, once during the storm season between 1 March and 30 April and once during the irrigation season between 15 August and 15 October. Sediment sample collection consists of collecting an integrated sample from the top 2 cm of sediment along the bank or from the bottom of the channel, when overlying water is present. Sediment is either collected with a stainless steel scoop or with an Ekman grab sample collection device if sampling from a bridge.

Under certain conditions it is not possible to collect sediment samples according to approved protocols and criteria outlined in the QAPP. Examples of when a sediment sample may not be able to be collected during the planned event includes no sediment is present to collect, no overlying water is present or the sediment is dry, and the location where sediment is collected cannot be accessed due to high water levels and/or high flows.

If a sediment sample cannot be collected due to an issue accessing the location where sediment occurs in the waterbody, then an attempt will be made during the next sampling event to collect the sediment sample, as long as the event occurs within the timeframe prescribed in the Order.

When sites are dry or have no sediment accumulated, a sediment sample cannot be collected. In these situations it is not expected for the conditions to change before the end of the sediment sample collection period and therefore the site will be revisited during the next planned sediment sampling event. If the site continues to have no sediment, alternative sites will be evaluated to represent the waterbody. Communication will occur with Regional Board staff regarding sites that are not expected to have sediment in the future and options for alternative sampling locations.

DRY SITE – SAMPLES CANNOT BE COLLECTED

A waterbody is considered dry during sediment sampling when no overlying water is present over the sediment collection area. The Coalition will only collect sediment samples when water is present at the site. An example of a dry sediment sampling location where sediment was not collected is illustrated in Figure 9 where Sand Creek @ Hwy 4 Bypass was dry on September 15, 2015.

Figure 9. Dry site at Sand Creek @ Hwy 4 Bypass – September 15, 2015.

Photo on the left is facing upstream (west) and photo on the right is facing downstream (east)



HARD BOTTOM – NO SEDIMENT ACCUMULATED

If a monitoring location has water but does not have enough sediment to collect a sample, the reason for not collecting a sample is recorded as 'hard bottom'. This typically occurs in concrete lined channels where maintenance has recently occurred, although it is possible that these conditions could also occur in a waterbody with a hardpan substrate.

If sediment samples cannot be collected because sediment is not present, the site is evaluated to determine if the cause is temporary or permanent. If the cause is deemed temporary, and it is probable that sediment will re-accumulate over time, sediment collection is attempted during the subsequent scheduled sediment monitoring events (March and September). If it is determined that sediment accumulation is not likely to occur, then a surrogate location will be chosen for sediment collection. Sampling will occur either during the next month's monitoring event if it is within the sediment collection timeframe, or the next scheduled sediment monitoring event.

Currently, there are no sample sites in the SJCDWQC region where a sediment sample could not be collected due to this condition.

SEDIMENT SAMPLE LOCATION NOT ACCESSIBLE

Sediment samples may not be collected from a waterbody due to site conditions where samplers cannot physically or safely access the section of the waterbody where sediment samples need to be collected. This could occur as result of high channel walls/slope/gradient (channels with steep banks that are lined with rip rap), high irrigation delivery flows, or high flows due to a large storm event. When flows are up and the channel is at, or has exceeded bankfull stage, sediment cannot be accessed for collection with the stainless steel scoop. When this occurs, an attempt is made to collect sediment samples using an Ekman grab sampler from a bridge, if a bridge is present at the location. However, due to scour around

bridge pylons, many public works departments have modified channel hydraulics by adding rip rap around pylons and throughout the channel in the vicinity of the bridge and therefore an Ekman grab cannot successfully collect sediment samples under these conditions.

An example of a sediment sample not being accessible due to high irrigation delivery flows is depicted in Figure 10 for Mormon Slough @ Jack Tone Rd on April 19, 2016. Due to high water levels, the edge of the water had reached the rip rap and vegetation on the channel walls. Samplers were able to collect water samples from the bank, but it was not possible to reach any sediment with the stainless steel scoop. An Ekman grab sampler cannot be used from the bridge at this site because the entire channel around the bridge has been filled with rip rap to prevent scour (Figure 11). Samplers were able to collect sediment samples at this site during the previous sediment sampling event when the water level was lower (Figure 12).

Figure 10. Sediment sample not accessible at Mormon Slough @ Jack Tone Rd – April 19, 2016.

Upper left photo is facing upstream (east), upper right photo is facing downstream (west), lower left photo is facing north, lower right photo – high water level



Figure 11. Rip rap below bridge at Mormon Slough @ Jack Tone Rd – May 17, 2016.



Figure 12. Sediment sample accessible at Mormon Slough @ Jack Tone Rd – September 16, 2015.
Photo on the left is facing upstream (east) and photo on the right is facing downstream (west)



Zone or Delta TMDL Subarea	Site Type	October 2016- September 2017 Monitoring	Site Name	Station Code	Latitude	Longitude
Zone 1	Core	CSM	Bear Creek @ North Alpine Rd	531BCANAR	38.07386	-121.21215
Zone 1	Represented		Coyote Creek tributary @ Jack Tone Rd	531CCTALR	38.24082	-121.15200
Zone 1	Represented	RSM	Jahant Slough @ Cherokee Ln	531XJSACL	38.21035	-121.26200
Zone 1	Represented	MPM	Mokelumne River @ Bruella Rd	531XMRABR	38.16022	-121.20643
Zone 1	Represented		Mokelumne River Drain @ North Lower Sacramento Rd ¹	531MRDNLS	38.19557	-121.29400
Zone 1	Represented	RSM	Mosher Creek @ North Alpine Rd	531MCANAR	38.06088	-121.20900
Zone 1	Represented		Pixley Slough @ Furry Rd	531XPSAFR	38.08256	-121.24100
Zone 2	Core	CSM, MPM	French Camp Slough @ Airport Way	531SJC504	37.88172	-121.24933
Zone 2	Represented	MPM	Duck Creek @ Highway 4	531XDCAHF	37.94949	-121.18208
Zone 2	Represented		Littlejohns Creek @ Jack Tone Rd	531XLCAJR	37.88958	-121.14727
Zone 2	Represented	MPM	Lone Tree Creek @ Jack Tone Rd	531XLTCJR	37.83754	-121.14460
Zone 2	Represented	MPM	Mormon Slough @ Jack Tone Road	544MSAJTR	37.96470	-121.14880
Zone 2	Represented	MPM	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	531UDLTAJ	37.85360	-121.14570
Zone 3	Core	CSM	Drain @ Woodbridge Rd	544DAWRXX	38.15256	-121.50095
Zone 3	Represented	RSM	Empire Tract @ 8 Mile Rd	544ETAEMR	38.06012	-121.49912
Zone 3	Represented	RSM	Rindge Tract Drain	544RDGTRD	38.04553	-121.46933
Zone 3	Represented	RSM	Staten Island Drain @ Staten Island Rd	544SIDSIR	38.13297	-121.52225
Zone 3	Represented	MPM, RSM	Terminus Tract Drain @ Hwy 12	544XTTHWT	38.11558	-121.49380
Zone 4	Core	CSM	Bacon Island Pump @ Old River ²	544BIPAOR	37.97916	-121.57023
Zone 4	Represented		East Orwood Tract Drain	544EOWDTD	37.92857	-121.56067
Zone 4	Represented		Kellogg Creek along Hoffman Lane	544XKCAHL	37.88188	-121.65221
Zone 4	Represented	MPM	Roberts Island @ Whiskey Slough Pump	544RIAWSP	37.96737	-121.46434
Zone 4	Represented		South McDonald Island Pump	544SMCDIP	37.98928	-121.46285
Zone 5 and San Joaquin River (Stanislaus River to Delta Boundary)	Core	CSM, MPM, TMDL	Walthall Slough @ Woodward Ave	544WSAWAV	37.77046	-121.29227
Zone 6		MPM	Sand Creek @ Hwy 4 Bypass	544SCAHFB	37.94750	-121.74300
Zone 7	Core	CSM, MPM	Union Island Drain @ Bonetti Rd	544UIDABR	37.87170	-121.52551
Zone 7	Represented	RSM	Upper Roberts Island Drain	544UPPRID	37.81893	-121.35830
Delta Waterways (Stockton Ship Channel)	TMDL	TMDL	San Joaquin River @ West Neugerbauer Rd	544SJCAWN	37.99493	-121.44173
Delta Waterways (export area, southern and western portions)	TMDL	TMDL	Old River @ the West End of Clifton Court Rd	544ORAWCC	37.84195	-121.53721
Delta Waterways (central and eastern portions), Mosher Slough (downstream of I-5) and Five Mile Slough (Alexandria Place to Fourteen Mile Slough)	TMDL	TMDL	Light House Restaurant @ West Brannon Island Rd	510LHRWBI	38.10487	-121.59299

CSM - Core Site Monitoring
RSM - Represented Site Monitoring
MPM-Management Plan Monitoring

Zone	Site Name	Site Type	Year	Month	Lead, Dissolved	Chlorpyrifos	Malathion	Diuron	C. dubia	P. Promelas	S. capricornutum	H. azteca
Zone 2	French Camp Slough @ Airport Way	Core	2016	October		M						
Zone 2	French Camp Slough @ Airport Way	Core	2017	January		M		M				
Zone 2	French Camp Slough @ Airport Way	Core	2017	February		M		M				
Zone 2	French Camp Slough @ Airport Way	Core	2017	March		M						
Zone 2	French Camp Slough @ Airport Way	Core	2017	April		M						
Zone 2	French Camp Slough @ Airport Way	Core	2017	May		M						
Zone 2	French Camp Slough @ Airport Way	Core	2017	July		M						
Zone 2	French Camp Slough @ Airport Way	Core	2017	August		M						
Zone 2	French Camp Slough @ Airport Way	Core	2017	September		M						
Zone 2	Duck Creek @ Hwy 4	Represented	2016	October		M						
Zone 2	Duck Creek @ Hwy 4	Represented	2017	March								M
Zone 2	Duck Creek @ Hwy 4	Represented	2017	April		M			M			
Zone 2	Duck Creek @ Hwy 4	Represented	2017	May		M						
Zone 2	Duck Creek @ Hwy 4	Represented	2017	June		M						
Zone 2	Duck Creek @ Hwy 4	Represented	2017	July		M			M			
Zone 2	Duck Creek @ Hwy 4	Represented	2017	August		M						
Zone 2	Duck Creek @ Hwy 4	Represented	2017	September		M			M			M
Zone 2	Lone Tree Creek @ Jack Tone Rd	Represented	2016	October		M						
Zone 2	Lone Tree Creek @ Jack Tone Rd	Represented	2017	January						M		
Zone 2	Lone Tree Creek @ Jack Tone Rd	Represented	2017	February						M		
Zone 2	Lone Tree Creek @ Jack Tone Rd	Represented	2017	July		M						
Zone 2	Lone Tree Creek @ Jack Tone Rd	Represented	2017	August		M						
Zone 2	Lone Tree Creek @ Jack Tone Rd	Represented	2017	September		M						
Zone 2	Mormon Slough @ Jack Tone Rd	Represented	2017	March								R
Zone 2	Mormon Slough @ Jack Tone Rd	Represented	2017	April		M						
Zone 2	Mormon Slough @ Jack Tone Rd	Represented	2017	June		M						
Zone 2	Mormon Slough @ Jack Tone Rd	Represented	2017	July		M						
Zone 2	Mormon Slough @ Jack Tone Rd	Represented	2017	August		M						
Zone 2	Mormon Slough @ Jack Tone Rd	Represented	2017	September		M						R
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2016	November		M		M				
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2016	December		M		M				
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	January		M		M				
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	February				M				
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	March		M		M				M
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	April	M							
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	May		M						
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	June		M						
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	July		M						
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	August		M						
Zone 2	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Represented	2017	September	M	M						M
Zone 3	Empire Tract @ 8 Mile Rd	Represented	2017	April					R			
Zone 3	Rindge Tract Drain	Represented	2017	January							R	
Zone 3	Rindge Tract Drain	Represented	2017	February					R		R	
Zone 3	Rindge Tract Drain	Represented	2017	March					R		R	
Zone 3	Rindge Tract Drain	Represented	2017	April					R		R	
Zone 3	Rindge Tract Drain	Represented	2017	May							R	
Zone 3	Rindge Tract Drain	Represented	2017	June							R	
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	February							R	
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	March							R	
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	April							R	
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	May							R	
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	June					R		R	
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	July					R			

M^{PR} Petition to remove request sent end of May

M MPM for new sites with outreach, new months for sites with current Management Plans, new Management Plans, or reinstated Management Plans based on WY 2

Zone	Site Name	Site Type	Year	Month	Lead, Dissolved	Chlorpyrifos	Malathion	Diuron	C. dubia	P. Promelas	S. capricornutum	H. azteca
Zone 3	Staten Island Drain @ Staten Island Rd	Represented	2017	August					R			
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2016	October					R			
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	January		M		M			M	
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	February		M		M			M	
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	March		M		M			M	M
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	April							M	
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	May							M	
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	August		M						
Zone 3	Terminus Tract Drain @ Hwy 12	Represented	2017	September		M						M
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2016	December							M	
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2017	January							M	
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2017	February							M	
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2017	March					M			
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2017	April							M	
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2017	May							M	
Zone 4	Roberts Island @ Whiskey Slough Pump	Represented	2017	July					M		M	
Zone 5	Walthall Slough @ Woodward Ave	Core	2016	December							M	
Zone 5	Walthall Slough @ Woodward Ave	Core	2017	January							M	
Zone 5	Walthall Slough @ Woodward Ave	Core	2017	March							M	
Zone 5	Walthall Slough @ Woodward Ave	Core	2017	May							M	
Zone 6	Sand Creek @ Hwy 4 Bypass	Represented	2016	March								M
Zone 6	Sand Creek @ Hwy 4 Bypass	Represented	2017	September								M
Zone 7	Union Island Drain @ Bonetti Rd	Core	2016	October							M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2016	December							M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	January		M					M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	February							M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	March					M		M	M
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	April							M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	May					M		M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	June							M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	July							M	
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	August					M			
Zone 7	Union Island Drain @ Bonetti Rd	Core	2017	September							M	M
Zone 7	Upper Roberts Island Drain	Represented	2017	February		R						
Zone 7	Upper Roberts Island Drain	Represented	2017	March		R	R					R
Zone 7	Upper Roberts Island Drain	Represented	2017	April		R	R					
Zone 7	Upper Roberts Island Drain	Represented	2017	August		R						
Zone 7	Upper Roberts Island Drain	Represented	2017	September								R

M	Management Plan Monitoring
R	Represented site monitoring

M	Additional MPM based on evaluation
M ^{PR}	Petition to remove request sent end of May
M	MPM for new sites with outreach, new months for sites with current Management Plans, new Management Plans, or reinstated Management Plans based on WY 2

Zone	Core Sites	October	November	December	February	April
1	531BCANAR		X			X
2	531SJC504		X	X		
3	544DAWRXX		X			
4	544BIPAOR	X	X			
5	544WSAWAV	X	X			

Site	Monitoring	Constituent
Walthall Slough @ Woodward Ave	Storm (Jan-Mar) and May through August	chlorpyrifos and diazinon
San Joaquin River @ West Neugerbauer Rd	Storm (Jan-Mar) and May through August	chlorpyrifos and diazinon
Old River @ the West End of Clifton Court Rd	Storm (Jan-Mar) and May through August	chlorpyrifos and diazinon
Light House Restaurant @ West Brannon Island Rd	Storm (Jan-Mar) and May through August	chlorpyrifos and diazinon

Site	Monitoring	Constituent
All core sites	1 storm and 1 irrigation	Paraquat and glyphosate
531BCANAR	2 storm and 2 irrigation (July/August)	Dissolved Copper, Dissolved Zinc
531SJC504	2 storm and 2 irrigation (July/August)	Dissolved Copper
544DAWRXX	2 storm and 2 irrigation (July/August)	Total Arsenic, Dissolved Copper
544BIPAOR	2 storm and 2 irrigation (July/August)	Total: arsenic, boron, molybdenum, selenium; Dissolved: cadmium, copper, lead, nickel, zinc.
544WSAWAV	2 storm and 2 irrigation (July/August)	Dissolved Copper
544UIDABR	2 storm and 2 irrigation (July/August)	Total: arsenic, boron, molybdenum, selenium; Dissolved: cadmium, copper, lead, nickel, zinc.
544XTTHWT	2 storm and 2 irrigation (July/August)	Total Arsenic