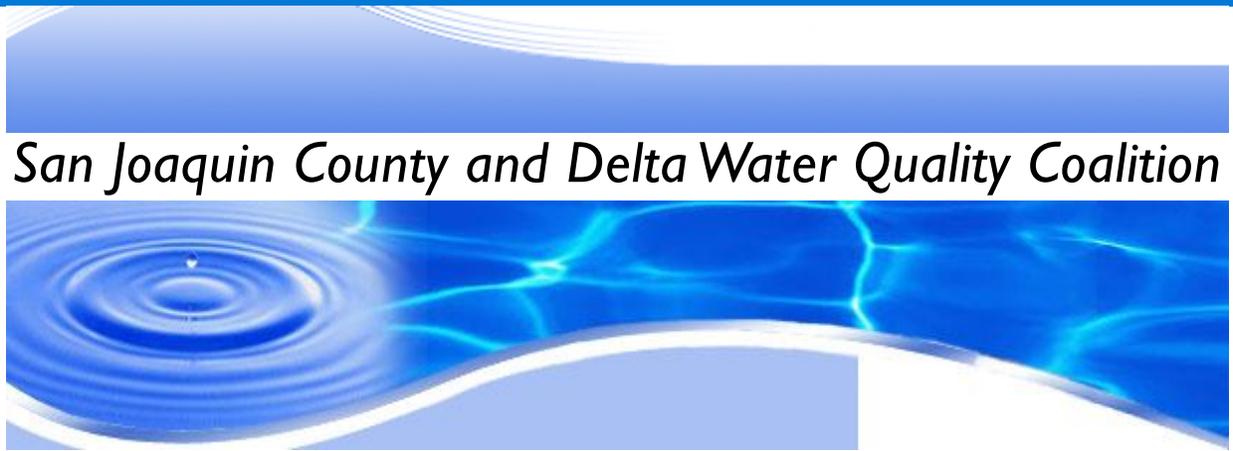


Monitoring Plan Update

2016 Water Year



San Joaquin County and Delta Water Quality Coalition

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

Submitted August 1, 2015

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LIST OF ACRONYMS AND TERMS

C	Core site
cfs	cubic feet per second
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 Report
Regional Board	Central Valley Regional Water Quality Control Board
R	Represented site
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 of monitoring for the 2016 Water Year (WY). The Coalition evaluated monitoring results through June 2015 to determine the 2016 WY monitoring schedule. The Annual Report will include an addendum to the 2016 MPU that addresses the monitoring results from July through September from the 2015 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 (hereafter “Order”).

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. Appendix I is an Excel workbook submitted with the MPU that includes the monitoring parameters and sites scheduled for the 2016 WY, including the MPM schedule. Table 1 and Table 2 indicate the constituents and frequency at which they will be monitored at each Core and Represented site within the Coalition boundary.

The Coalition 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 0.25 inches within 24 hours. Appendix I (located within the Excel workbook) lists which additional constituents are scheduled for monitoring during storm events.

Table 1. SJCDWQC 2015 WY monitoring counts for field and physical parameters, nutrients, metals, and organophosphate pesticides.

Core site information is bolded. Monthly monitoring at Core site includes MPM for Core sites. Complete schedule included in Appendix I.

ZONE	SJCDWQC 2015 WY MONITORING SCHEDULE	MONITORING TYPE	FIELD PARAMETERS				PHYSICAL PARAMETERS			NUTRIENTS			BACTERIA <i>E. COLI</i>	METALS		PESTICIDES																	
			DISSOLVED OXYGEN	PH	SPECIFIC CONDUCTANCE	TEMPERATURE	SUSPENDED SOLIDS	TOTAL ORGANIC CARBON	TURBIDITY	NITRATE + NITRITE (AS N)	SOLUBLE ORTHOPHOSPHATE	TOTAL AMMONIA (AS N)		ARSENIC (TOTAL)	COPPER (DISSOLVED)	ORGANOPHOSPHATES																	
																AZINPHOS-METHYL	CHLORPYRIFOS	DEMETON-S	DIAZINON	DICHLORVOS	DIMETHOATE	DISULFOTON	MALATHION	METHAMIDOPHOS	METHIDATHION	PARATHION, METHYL	PHORATE	PHOSMET					
1	Mokelumne River @ Bruella Rd	C	12	12	12	12	12	12	12	12	12	12	12	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
	Bear Creek @ North Alpine Rd	M														5									3								
2	French Camp Slough @ Airport Way	C	12	12	12	12	12	12	12	12	12	12	12	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
		M														8																	
	Duck Creek @ Hwy 4	M														6																	
	Littlejohns Creek @ Jack Tone Rd	M												3		4																	
	Lone Tree Creek @ Jack Tone Rd	M														3																	
	Mormon Slough @ Jack Tone Rd	M														5																	
	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	M													3	8																	
3	Terminus Tract @ Hwy 12	C	12	12	12	12	12	12	12	12	12	12	12	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
		M												12		3																	
	Drain @ Woodbridge Rd	M														1																	
	Empire Tract @ 8 Mile Rd	R														4																	
4		R														5																	
	Roberts Island @ Whiskey Slough Pump	C	12	12	12	12	12	12	12	12	12	12	12	4	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
		M														4																	
	Bacon Island Pump @ Old River	R														3																	
	South McDonald Island Pump	R														2																	
5		R														6																	
	Walthall Slough @ Woodward Ave	C	12	12	12	12	12	12	12	12	12	12	12		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
7		M														2																	
	Union Island Drain @ Bonetti	C	12	12	12	12	12	12	12	12	12	12	12	4	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
		M														1																	
	Upper Robert Island Drain	R														4																	

C – Monitoring at a Core site.

R – Monitoring at a Represented site.

M – Management Plan Monitoring.

Table 2. SJCDWQC 2015 WY monitoring counts for carbamates, herbicides, group A, toxicity, and sediment parameters.

Core site information is bolded. Monthly monitoring at Core site includes MPM for Core sites. Complete schedule included in Appendix I.

SJCDWQC 2015 WY MONITORING SCHEDULE		PESTICIDES																	SEDIMENT					
		CARBAMATES									HERBICIDES						ORGANOCHLORINES	GROUP A	WATER COLUMN TOXICITY			PHYSICAL PARAMETER		SED TOX.
ZONE	SITE NAME	MONITORING TYPE	ALDICARB	CARBARYL	CARBOFURAN	DIURON	LINURON	METHOCARB	METHOMYL	OXAMYL	ATRAZINE	CYANAZINE	GLYPHOSATE	PARAQUAT	SIMAZINE	TRIFLURALIN	DIELDRIN	HCH	C. DUBIA	P. PROMELAS	S. CAPRICORNUTUM	GRAIN SIZE	TOC	H. AZTECA
1	Mokelumne River @ Bruella Rd	C	12	12	12	12	12	12	12	12	12	12	2	2	12	12			12	12	12	2	2	2
		M																			6			
	Coyote Creek tributary @ Jack Tone Rd	R																			7			
	Jahant Slough @ Cherokee Ln	R																			7			
	Mosher Creek @ North Alpine Rd	R																			8			
	Pixley Slough @ Furry Rd	R																			6			
2	French Camp Slough @ Airport Way	C	12	12	12	12	12	12	12	12	12	2	2	12	12				12	12	12	2	2	2
		M				2															2			2
	Duck Creek @ Hwy 4	M																	3			2	2	2
	Littlejohns Creek @ Jack Tone Rd	R				4																		
	Lone Tree Creek @ Jack Tone Rd	M																		2				
	Mormon Slough @ Jack Tone Rd	M																	2					
		R				4																2	2	2
	M				4																2	2	2	
3	Terminus Tract @ Hwy 12	C	12	12	12	12	12	12	12	12	12	2	2	12	12				12	12	12	2	2	2
		M				2															4			
	Drain @ Woodbridge Rd	R				3													5		2	2	2	2
	Empire Tract @ 8 Mile Rd	R																	3		7	2	2	2
	Rindge Tract Drain	R																	3		6	2	2	2
	Staten Island @ Staten Island Rd	R																	5		3	2	2	2
4	Roberts Island @ Whiskey Slough Pump	C	12	12	12	12	12	12	12	12	12	2	2	12	12				12	12	12	2	2	2
		M				2													2		5			2
	Bacon Island Pump @ Old River	R				1													5		8	2	2	2
	Kellogg Creek along Hoffman Ln	M																				2	2	2
	South McDonald Island Pump	R				1													7		6	2	2	2
	East Orwood Tract Drain	R				6													1		4	2	2	2
5	Walthall Slough @ Woodward Ave	C	12	12	12	12	12	12	12	12	12	2	2	12	12				12	12	12	2	2	2
		M																3						2

			PESTICIDES														SEDIMENT							
6	Sand Creek @ Hwy 4 Bypass	M															3				2	2	2	
7	Union Island Drain @ Bonetti	C	12	12	12	12	12	12	12	12	12	2	2	12	12				12	12	12	2	2	2
		M																			3		6	
	Upper Robert Island Drain	R																6		8	2	2	2	

C – Monitoring at a Core site.
R – Monitoring at a Represented site.
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 (submitted May 1, 2015; pending approval) and ensures that monitoring will identify the constituent of concern if it is discharged to the watershed. 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 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 Revised Surface Water Quality Management Plan (SQMP).

The Coalition utilized the flowchart in Figure 1 to determine which sites require focused outreach and MPM for the 2016 WY, 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 within the next three years and new management plans, or reinstated management plans, initiated 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 that occur, 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. The Coalition will not conduct MPM for constituents requiring source identification and workplans, as proposed in the SQMP; monitoring will be determined in the workplans. The constituents requiring workplans include field parameters (DO, pH, and SC), nutrients (ammonia and nitrate/nitrite), and bacteria (*E. coli*). The SQMP lists the 10 year compliance deadlines for constituents that require a workplan (Table 17, page 65).

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

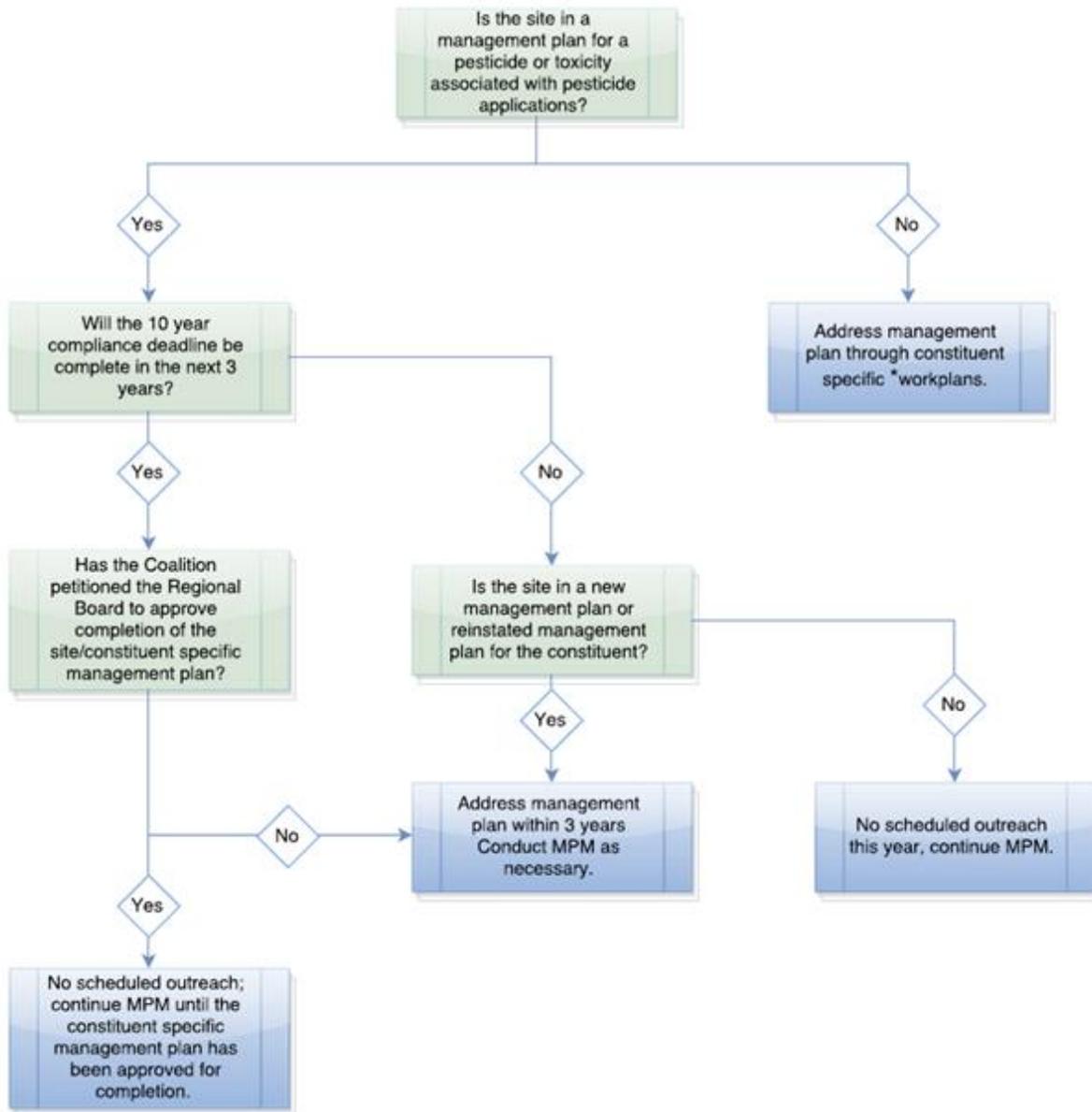
EVALUATION	MONITORING DECISION
10 year deadline is not within the next three years and the management plan was initiated prior to the 2016 WY.	Continue MPM.
10 year deadline is not within the next three years and a management plan for applied pesticides or toxicity was reinstated in the 2016 WY.	Resume MPM.
Constituent was petitioned to be removed.	Continue MPM until approved for removal.
10 year deadline is not within the next three years for newly initiated management plans.	MPM will begin in conjunction 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 continued MPM.

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 data, which provides the amount of applications of the constituent of concern, and past exceedances. The Coalition used the following process in determining 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, or toxicity) and 2) an evaluation of monitoring frequency (past exceedances and PUR evaluations). Each site subwatershed section also includes MPM constituent specific figures based on the PUR data of the pounds applied from 2006 through 2014 for each month. Below each figure is a table noting the months of past sampling and exceedances by year. In the same figure is a sum of use from 2006 through 2014. The PUR data from 2013 and 2014, from the County Agricultural Commissioners, are preliminary.

Figure 1. 2016 WY management plan monitoring decision tree.



*Workplan timelines are proposed in the SQMP (submitted May 1, 2015).

Table 4. SJCDWQC results of management plan strategy flowchart analysis for the 2016 WY.

The MPM schedule is included in the Excel workbook as well as in Appendix I.

SITE	CONSTITUENT	10 YR COMPLIANCE DEADLINE	10 YEAR DEADLINE NEXT 3 YRS	PETITIONED FOR COMPLETION	ADDRESS WITHIN 3 YRS	2016 FOCUSED OUTREACH	2016 MPM
Bear Creek @ North Alpine Rd	Chlorpyrifos	2021		X			X
	Malathion	2021		X			X
Drain @ Woodbridge	Chlorpyrifos	2020		X			X
Duck Creek @ Hwy 4	Chlorpyrifos	2016	X				X
	<i>C. dubia</i>	2019					X
	<i>H. azteca</i>	2023					X
East Orwood Tract Drain	<i>S. capricornutum</i>	2026			X		
French Camp Slough @ Airport Way	Chlorpyrifos	2016	X			X	X
	Diuron	2018	X		X	X	X
	<i>S. capricornutum</i>	2024				X	X
	<i>H. azteca</i>	2018	X	X		X	X
Kellogg Creek along Hoffman Ln	<i>P. promelas</i>	2016	X	X			
	<i>H. azteca</i>	2016	X	X			X
Littlejohns Creek @ Jack Tone Rd	Copper	2018	X	X			X
	Chlorpyrifos	2016	X	X			X
Lone Tree Creek @ Jack Tone Rd	Chlorpyrifos	2016	X			X	X
	<i>P. promelas</i>	2019				X	X
Mokelumne River @ Bruella Rd	<i>S. capricornutum</i>	2016	X		X		X
Mormon Slough @ Jack Tone Rd	Chlorpyrifos	2017	X	X			X
	<i>C. dubia</i>	2019		X			X
Roberts Island @ Whiskey Slough Pump	Chlorpyrifos	2017	X	X			X
	Diuron	2019		X			X
	<i>C. dubia</i>	2019					X
	<i>S. capricornutum</i>	2019					X
	<i>H. azteca</i>	2017	X	X			X
Sand Creek @ Hwy 4 Bypass	Dieldrin	2017	X				X
	<i>H. azteca</i>	2017	X				X
Terminus Tract Drain @ Hwy 12	Chlorpyrifos	2019					X
	Diuron	2026			X		X
	<i>S. capricornutum</i>	2026			X		X
	<i>H. azteca</i>	2017	X				X
Union Island Drain @ Bonetti Rd	Chlorpyrifos	2026			X		X
	<i>S. capricornutum</i>	2018	X				X
	<i>H. azteca</i>	2018	X				X

SITE	CONSTITUENT	10 YR COMPLIANCE DEADLINE	10 YEAR DEADLINE NEXT 3 YRS	PETITIONED FOR COMPLETION	ADDRESS WITHIN 3 YRS	2016 FOCUSED OUTREACH	2016 MPM
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Copper	2019		X		X	X
	Chlorpyrifos	2017	X			X	X
	Diuron	2017	X	X		X	X
	<i>H. azteca</i>	2019				X	X
Upper Roberts Island Drain	<i>C. dubia</i>	2026			X		
Walthall Slough @ Woodward Ave	Chlorpyrifos	2022		X			X
	HCH	2020					X
	<i>H. azteca</i>	2021		X			X

Total Maximum Daily Load Monitoring

The SJCDWQC will monitor in accordance with adopted Basin Plan provisions or, as directed by the Executive Officer, parameters that are part of an adopted TMDL with a source of agriculture. 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 5). The new TMDL compliance monitoring strategy focuses on periods of peak pesticide use, and allows the monitoring program to better meet the TMDL monitoring requirements by using representative monitoring in Delta waterways. The 2016 Annual Report will include the status and analysis of the TMDL monitoring for the water year.

Table 5. SJCDWQC Delta Diazinon and Chlorpyrifos TMDL compliance locations.

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

MONITORING AT A CORE SITE

In the 2016 WY, the Coalition will monitor within six of the seven zones in the SJCDWQC boundary for 12 months (October 2015 through September 2016) at the designated Core sites (Attachment B of the Order, Table 1, page 5). The Order does not specify a monitoring location in Zone 6 (Contra Costa Zone); the Coalition will use monitoring information from Roberts Island @ Whiskey Slough Pump (Zone 4) as representative of Zone 6 because both zones share similar land uses including field crops, grains, hay, and pastureland. If a water quality exceedance occurs at Roberts Island @ Whiskey Slough Pump, the Coalition will include members of Zone 6 in its evaluation for outreach.

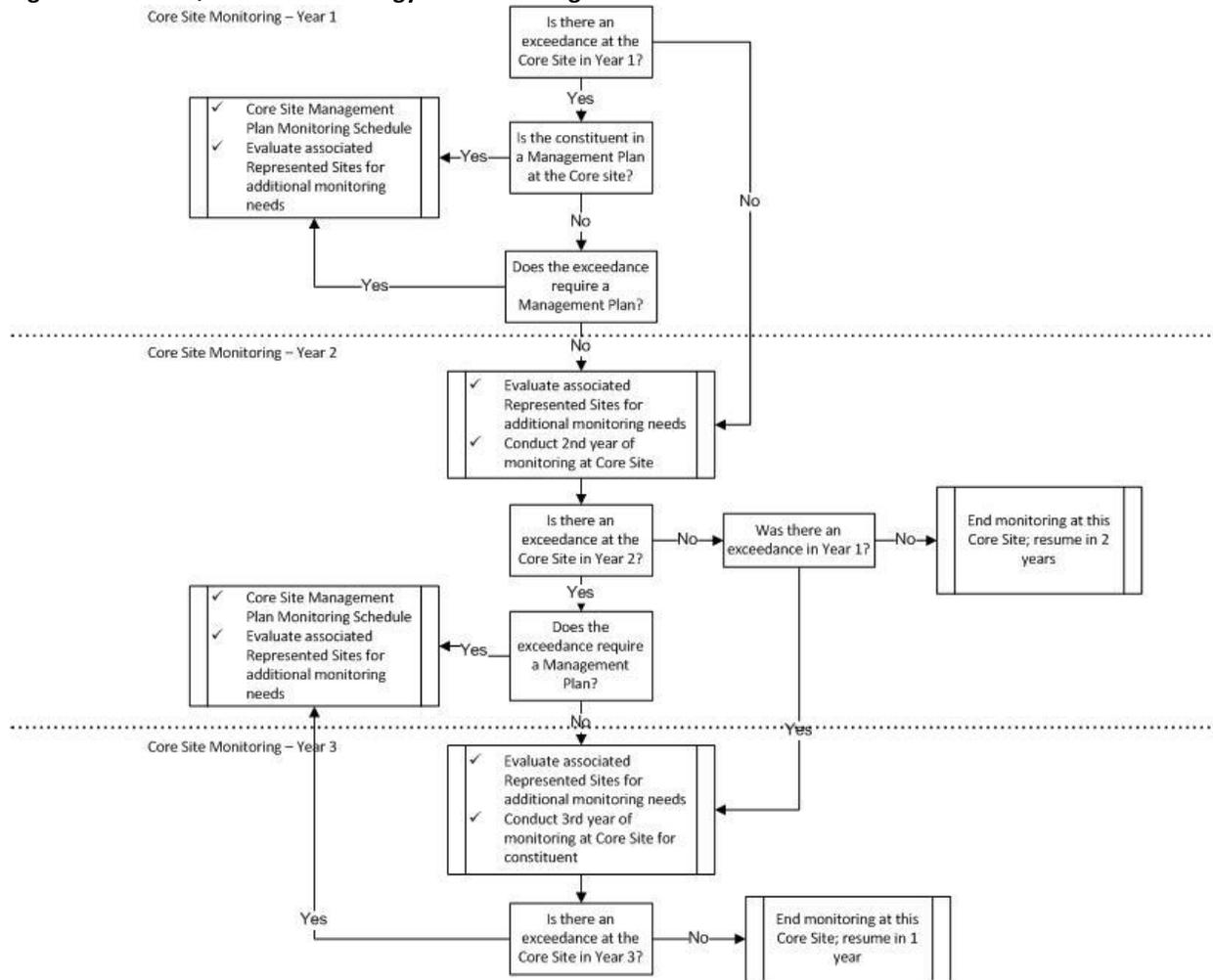
Table 6 includes a list of Core sites scheduled for monitoring in the 2016 WY. The Coalition will monitor the Core site in each zone for a minimum of two consecutive years before rotating to the second Core site in the zone. The 2016 WY is the second consecutive year in which monitoring shall occur at the indicated Core sites. If the concentration of a constituent exceeds the WQTL at a Core site, monitoring will occur for an additional third consecutive year (Attachment B of the Order, page 3). Walthall Slough @ Woodward Ave, the only monitoring location in Zone 5, is both the Core and Represented site for the zone and will not rotate. The flowchart in Figure 2 describes the monitoring strategy at a Core site.

Table 6. SJCDWQC Core sites by zone.

ZONE	SITE TYPE	SITE NAME	STATION CODE	LATITUDE	LONGITUDE
1	Core	Mokelumne River @ Bruella Rd	531XMRABR	38.16010	-121.20510
2	Core	French Camp Slough @ Airport Way	531SJC504	37.88170	-121.24930
3	Core	Terminus Tract Drain @ Hwy 12	544XTTHWT	38.11660	-121.49360
4 and 6	Core	Roberts Island @ Whiskey Slough Pump	544RIAWSP	37.96698	-121.46366
5	Core	Walthall Slough @ Woodward Ave	544WSAWAV	37.77046	-121.52551
7	Core	Union Island Drain @ Bonetti Rd	544UIDABR	37.87170	-121.52551

There is no Core site in Zone 6; Roberts Island @ Whiskey Slough Pump will represent water quality in the zone.

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



The Coalition will monitor general water quality parameters, nutrients, bacteria, metals, pesticides, and water column and sediment toxicity at each Core site as listed in Table 4, Attachment B of the Order (page 8). The Coalition will monitor for the parameters listed in Table 7 during the 2016 WY at Core sites listed in Table 6.

Table 7. SJCDWQC parameters to be monitored at the Core sites for the 2015 WY.

PARAMETER GROUP	MEASURED PARAMETER	MONITORING FREQUENCY
Water Column Sampling		
Photo	Photo documentation	With every monitoring event
Physical Parameters	Estimated flow (cfs, field measure)	Monthly
	pH (field measure)	Monthly
	Electrical Conductivity (at 25°C, field measure)	Monthly
	Dissolved Oxygen (DO, field measure)	Monthly
	Temperature (field measure)	Monthly
	Turbidity	Monthly
	Total Suspended Solids (TSS)	Monthly
	Hardness (as CaCO ₃)	Monthly
	Total Organic Carbon (TOC)	Monthly

PARAMETER GROUP		MEASURED PARAMETER	MONITORING FREQUENCY
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
	Group A	Hexachlorocyclohexane (gamma-HCH)	As needed to characterize 303d listed waterbodies ²
		Hexachlorocyclohexane (alpha-HCH)	
		Hexachlorocyclohexane (beta-HCH)	
		Hexachlorocyclohexane (delta-HCH)	
	Organophosphates	Azinphos-methyl	Monthly
		Chlorpyrifos	Monthly
		Diazinon	Monthly
		Dichlorvos	Monthly
		Dimethoate	Monthly
		Demeton-s	Monthly
		Disulfoton (Disyton)	Monthly
		Malathion	Monthly
		Methamidophos	Monthly
		Methidathion	Monthly
		Parathion-methyl	Monthly
		Phorate	Monthly
		Phosmet	Monthly
		Herbicides	Atrazine
	Cyanazine		Monthly
	Diuron		Monthly
	Glyphosate		One storm and one irrigation ³
	Linuron		Monthly
Paraquat	One storm and one irrigation ³		
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	
	Soluble Orthophosphate	Monthly	

Sediment Sampling

PARAMETER GROUP	MEASURED PARAMETER	MONITORING FREQUENCY
Toxicity	<i>Hyalella azteca</i>	March, September
Pesticides and Sediment Pesticides	Bifenthrin	As Needed ⁴
	Cyfluthrin	As Needed ⁴
	Cypermethrin	As Needed ⁴
	Deltamethrin	As Needed ⁴
	Esfenvalerate/Fenvalerate	As Needed ⁴
	Lambda-Cyhalothrin	As Needed ⁴
	Permethrin	As Needed ⁴
	Fenpropathrin	As Needed ⁴
	Chlorpyrifos	As Needed ⁴
	Piperonyl butoxide (PBO)	As Needed ⁴
	Total Organic Carbon	March, September
Grain Size	March, September	

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

² The only location where HCH will be monitored is Walthall Slough @ Woodward Ave due to HCH being in a management plan for this location.

³ Glyphosate and Paraquat shall be monitored twice a year during high TSS events: one storm and one irrigation.

⁴ Pesticide analyses shall be performed on sediment samples measuring significant toxicity and < 80% organism survival compared to the control.

CORE SITE PESTICIDES

The 2016 WY is the second consecutive year of monitoring at the Core sites under the Order. 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 (herein referred to as Regional Board) organized a Pesticide Evaluation Advisory Workgroup, which recommended some elements of the monitoring process. However, disagreement over some of the elements among workgroup participants requires Regional Board input. As of July 2015, a process for identifying the pesticides to monitor has not yet been approved. Therefore, the Coalition will monitor monthly for actively registered pesticide listed in Table 7. There is an exception for monitoring the Group A pesticide, hexachlorocyclohexane (HCH), since it is currently in a management plan (Walthall Slough @ Woodward Ave). 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 metals was required, and if so, the specific metals, timing, and frequency of monitoring.

In order to evaluate the need to monitor for 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. There is currently no required TMDL monitoring within the SJCDWQC area 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 Mokelumne River @ Bruella Rd, none of the Core site waterbodies are listed for metals on the 2010 California 303d List of Water Quality Limited Segments; the Lower Mokelumne River is listed for copper, mercury, and zinc.

If a metal is not a cause of a 303(d) listing for the Core site waterbody, the Coalition reviews past monitoring results to determine if the site was adequately characterized; if there were exceedances of the WQTL for the metal, or if toxicity test results indicated that the metal was the source of toxicity. 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 phase of metals at all sites.

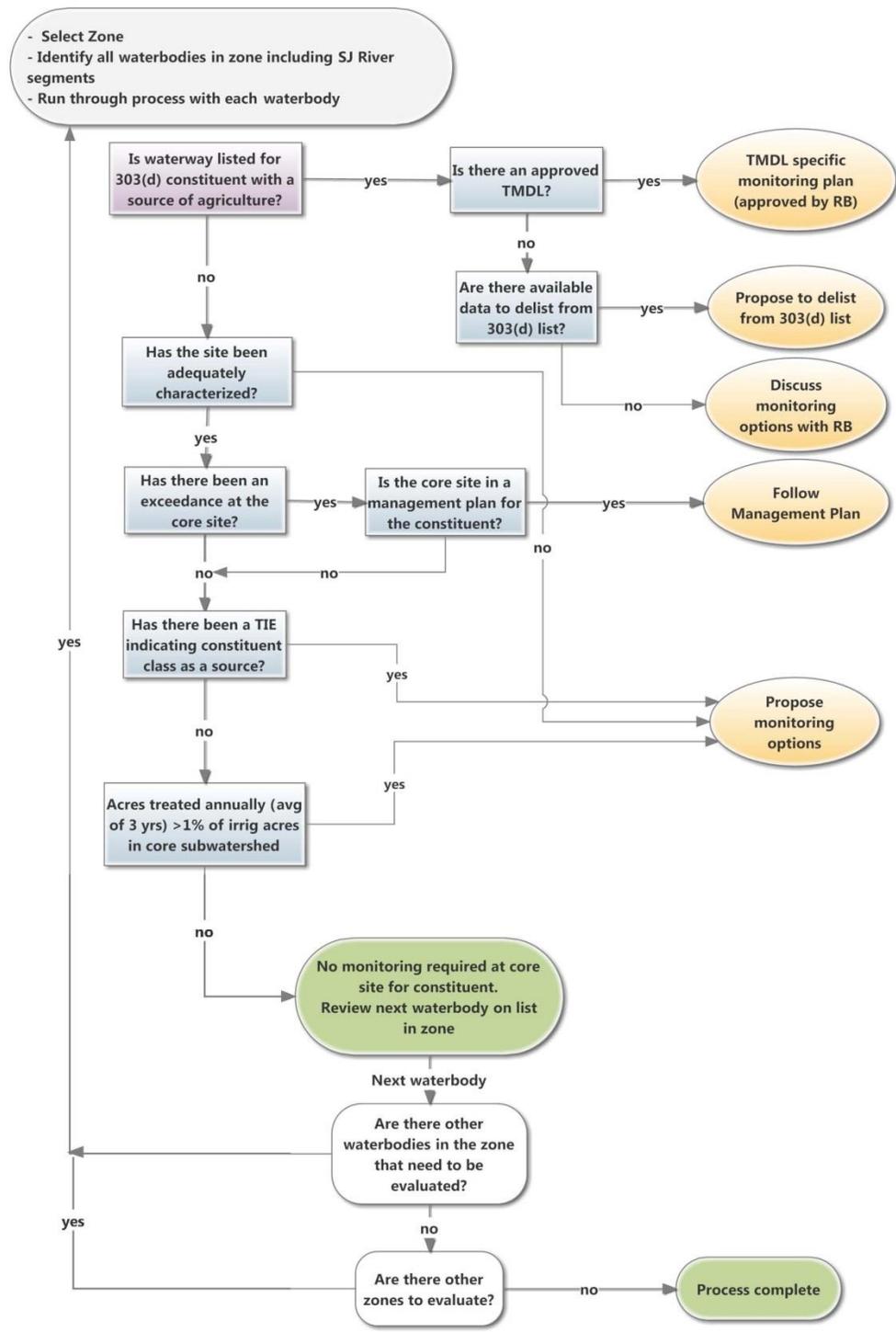
The relationship between total and dissolved phase concentrations has consequences for the determination of adequate characterization. The goal of adequate characterization is to establish that the concentration of the metal does not exceed the WQTL at any time and does not impair beneficial uses. The Coalition can use the combined history of monitoring for the total phase and the dissolved

phase to demonstrate adequate characterization provided there are no exceedances of the WQTL for either the total or dissolved phase of any metal.

If the decision tree in Figure 3 indicates that a metal should be monitored, the Coalition will monitor the total fraction for arsenic, boron, molybdenum, and selenium; and the dissolved phase 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 sediments and become settled or concentrated in the bed of the waterbodies. These compounds can result in water contamination when the sediments are mobilized into 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 events) in order to capture sediment-bound metals.

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



Mokelumne River @ Bruella Rd

Mokelumne River @ Bruella Rd is the Core site in Zone 1. The decisions for monitoring for metals at Mokelumne River @ Bruella Rd during the 2016 WY are outlined in Table 8; the monitoring plan is based on results from 2006 through June 2015. Metals monitoring results are listed in Table 9. Only concentrations of copper exceeded the WQTLs in samples collected from Mokelumne River @ Bruella Rd (Table 8). The site is also 303(d) listed for copper, zinc, and mercury.

Table 8. Results of the flowchart analysis for Mokelumne River @ Bruella Rd outlined in Figure 3.

"X" indicates a monitoring decision.

FLOWCHART QUESTION	AS	B	CD	CU	PB	MO	NI	SE	ZN	HG
1. Is site on 303d list for constituent?	No	No	No	Yes	No	No	No	No	Yes	Yes
2. Has the site been adequately characterized?	Yes	No								
3. Has there been an exceedance?	No	No	No	Yes	No	No	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	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 2016 WY	X	X	X		X	X	X	X	X	X

Monitoring Decision #4- Monitoring plan

Dissolved Copper

During the 2015 WY, the Coalition monitored for copper during two storm events (December 2014 and February 2015); there were detections of copper during both events, but did not exceed the WQTL. At the time of this report, scheduled monitoring for copper during two irrigation events (July and August 2015) had not yet occurred; the Coalition will include results from those months in an addendum submitted with the 2016 Annual Report. The only exceedance of the copper WQTL occurred in 2007; however, the Coalition reviewed PUR data from the past three years and found that copper is applied to more than 1% of the acreage. Therefore, monitoring will continue for dissolved copper in the Mokelumne River @ Bruella Rd site subwatershed during two storm and two irrigation events.

Monitoring Decision #5 - No monitoring

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

The Coalition did not monitor for the constituents listed above during the 2015 WY. Past monitoring history showed no exceedances of any of the listed constituents. Working through the flowchart in

Figure 3 results in a decision of no monitoring (Monitoring Decision #5 of Table 8) at Mokelumne River @ Bruella Road for all constituents listed above. As discussed above, 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.

Table 9. Mokelumne River @ Bruella Rd site subwatershed dissolved and total metals monitoring results (2006-June 2015).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

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	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2015	Feb	2/9/2015	NA	NA	NA	NA	0.68	NA	NA	NA	NA	NA	NA	NA	NA	NA	4
2015	Jul ¹	--	NA	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
2015	Aug ¹	--	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	8	0	8	0	0	8	4	0	8	0
Samples collected in 2008			7	7	0	7	0	10	0	7	0	0	7	7	0	7	3
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	3	3	0	0	0	0	0	0	0	0	3
Samples collected in 2011			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
Samples collected in 2013			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2014			9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Samples collected in 2015 ¹			0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Exceedance Summary																	
Total Samples Collected			41	41	21	41	26	47	21	41	21	21	41	37	21	41	29
Total Exceedances			0	0	0	0	0	3	0	0	0	0	0	0	0	0	NA
% Exceedances			0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	NA

¹—At the time of this report, scheduled sampling had not yet occurred in July and August 2015. Results from those months will be included in addendum.

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 2016 WY are outlined in Table 10; the monitoring plan is based on results from 2006 through June 2015. Metals monitoring results are listed in Table 11.

Table 10. Results of the flowchart analysis for French Camp Slough @ Airport Way outlined in Figure 3.

“X” indicates a monitoring decision.

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 2016 WY	X	X	X		X	X	X	X	X

Monitoring Decision #4- Propose monitoring plan

Dissolved Copper

The Coalition received approval to remove copper from the French Camp Slough @ Airport Way site subwatershed management plan on February 27, 2013; however monitoring continued at the Core site to continue characterizing copper applications. During the 2015 WY, the Coalition monitored for copper during two storm events (December 2014 and February 2015); there were detections on both events, but none exceeded the WQTL. At the time of this report, scheduled monitoring for copper during two irrigation events (July and August 2015) had not yet occurred. Since copper is applied to greater than one percent of the acreage within the site subwatershed, the Coalition will continue monitoring for dissolved copper in the French Camp Slough @ Airport Way site subwatershed during two storm and two irrigation events.

Monitoring Decision #5 - No monitoring

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

The Coalition did not monitor for the constituents listed above during the 2015 WY. Past monitoring history showed no exceedances of any of the listed constituents. Working through the flowchart in Figure 3 results in a decision of no monitoring (Monitoring Decision #5 of Table 10) at French Camp Slough @ Airport Way for all of the constituents listed above.

Table 11. French Camp Slough @ Airport Way site subwatershed dissolved and total metals monitoring results (2006 – June 2015).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

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 ¹	--	NA	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
2015	Aug ¹	--	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 ¹			0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Exceedance Summary																	
Total Collected			41	41	21	41	33	54	23	43	21	21	41	37	21	41	31
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 2015. Results from those months will be included in addendum.

Terminous Tract Drain @ Hwy 12

Terminous Tract Drain @ Hwy 12 is the Core site in Zone 3. The decisions for monitoring for metals at Terminous Tract Drain @ Hwy 12 during the 2016 WY is outlined in Table 12; the monitoring plan is based on results from 2006 through June 2015. Metals monitoring results are listed in Table 13. Only concentrations of arsenic exceeded the WQTL in samples collected from Terminous Tract Drain @ Hwy 12.

Table 12. Results of the flowchart analysis for Terminous Tract Drain @ Hwy 12 outlined in Figure 3.

"X" indicates a monitoring decision.

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?	No	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	X								
4. Propose monitoring plan in MPU				X					
5. No monitoring during the 2016 WY		X	X		X	X	X	X	X

Monitoring Decision #4- Propose monitoring plan

Dissolved Copper, Total Arsenic

During the 2015 WY, the Coalition monitored for copper during two storm events (December 2014 and February 2015); there were detections on both events, but none exceeded the WQTL. At the time of this report, scheduled monitoring for copper during two irrigation events (July and August 2015) had not yet occurred. Since copper is applied to more than 1% of the acreage, the Coalition will continue monitoring during two storm and two irrigation events. The Coalition monitored for arsenic in every month of the 2015 WY; there were detections of arsenic in all samples, but none exceeded the WQTL. At the time of this report, monitoring had not yet occurred from July through September. Due to eight exceedances of the WQTL for arsenic, the Coalition will continue to conduct MPM for arsenic every month in the 2016 WY.

Monitoring Decision #5 - No monitoring

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

The Coalition did not monitor for the constituents listed above during the 2015 WY. Past monitoring history showed no exceedances of any of the listed constituents. Working through the flowchart in Figure 3 results in a decision of no monitoring (Monitoring Decision #5 of Table 12) for all of the constituents listed above at Terminous Tract Drain @ Hwy 12.

Table 13. Terminous Tract Drain @ Hwy 12 site subwatershed dissolved and total metals monitoring results (2006-June 2015).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

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	Oct	10/21/2014	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20
2014	Nov	11/18/2014	6.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14
2014	Dec	12/4/2014	6.3	NA	NA	NA	2.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	74
2015	Jan	1/20/2015	8.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6
2015	Feb	2/9/2015	9.7	NA	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	23
2015	Mar	3/17/2015	7.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29
2015	Apr	4/21/2015	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	41
2015	May	5/19/2015	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	53
2015	Jun	6/16/2015	7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6
2015	Jul ¹	--	--	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
2015	Aug ¹	--	--	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
2015	Sep ¹	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
Sample Counts 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	8	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	1	0
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
Samples collected in 2014			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2015 ¹			9	0	0	0	2	0	0	0	0	0	0	0	0	0	9
Exceedance Summary																	
Total Collected			53	44	24	44	26	44	24	44	24	24	44	40	24	45	33
Total Exceedances			8	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances			15.1%	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

¹– At the time of this report, scheduled sampling had not yet occurred in July through September 2015. Results from those months will be included in addendum.

Roberts Island @ Whiskey Slough Pump

Roberts Island @ Whiskey Slough Pump is the Core site in Zone 4. The decisions for monitoring for metals Roberts Island @ Whiskey Slough Pump during the 2016 WY are outlined in Table 14; the monitoring plan is based on results from 2008 through June 2015; which includes results from two upstream sites, Roberts Island along House Rd and Roberts Island @ Holt Rd. Results from all three locations are included in Table 15 as part of the assessment of previous exceedances. During the 2015 WY, there was an exceedance of the WQTL for arsenic.

Table 14. Results of the flowchart analysis for Roberts Island @ Whiskey Slough Pump outlined in Figure 3.

"X" indicates a monitoring decision.

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?	No	Yes							
3. Has there been an exceedance?	Yes	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			X					
5. No monitoring during the 2016 WY		X	X		X	X	X	X	X

Monitoring Decision #4 – Propose monitoring plan

Dissolved Copper, Total Arsenic

During the 2015 WY, the Coalition monitored for copper during two storm events (December 2014 and February 2015); there were detections on both events, but none exceeded the WQTL. At the time of this report, scheduled monitoring for copper during two irrigation events (July and August 2015) had not yet occurred. The Coalition will monitor for dissolved copper in the Roberts Island @ Whiskey Slough Pump site subwatershed during two storm and two irrigation events since copper is applied to more than 1% of the acreage. Due to an exceedance of the WQTL for arsenic in February 2015 (Table 15), the Coalition will continue to monitor for arsenic during two storm and two irrigation events in the 2016 WY.

Monitoring Decision #5 - No monitoring

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

The Coalition did not monitor for the constituents listed above during the 2015 WY. Past monitoring history showed no exceedances of any of the listed constituents. Working through the flowchart in Figure 3 results in a decision of no monitoring (Monitoring Decision #5 of Table 14) for all of the constituents listed above at Roberts Island @ Whiskey Slough Pump.

Table 15. Roberts Island @ Whiskey Slough Pump site subwatershed dissolved and total metals monitoring results (2006-June 2015).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date. This table includes counts in the Sample and Exceedance Summary from two upstream sites (House Rd and Holt Rd locations).

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)	
Roberts Island @ Whiskey Slough Pump	2014	Dec	12/4/2014	4.3	NA	NA	NA	0.97	NA	NA	NA	NA	NA	NA	NA	NA	NA	35	
Roberts Island @ Whiskey Slough Pump	2015	Feb	2/9/2015	12	NA	NA	NA	2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	264	
Roberts Island @ Whiskey Slough Pump	2015	Jul ¹	--	--	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	
Roberts Island @ Whiskey Slough Pump	2015	Aug ¹	--	--	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	
Sample Count Summary																			
Samples collected in 2006				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Samples collected in 2007				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2008				6	6	0	6	0	6	0	6	0	0	6	6	0	6	0	0
Samples collected in 2009				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Samples collected in 2015 ¹				2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
Exceedance Summary																			
Total Collected				23	21	15	21	17	21	15	21	15	15	21	21	15	21	19	
Total Exceedances				3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances				13.0%	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

¹– At the time of this report, scheduled sampling had not yet occurred in July and August 2015. Results from those months will be included in addendum.

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 2016 WY is outlined in Table 16; the monitoring plan is based on results from 2009 through June 2015. Metals monitoring results are listed in Table 17 and no metal concentration has exceeded the WQTL.

Table 16. Results of the flowchart analysis for Walthall Slough @ Woodward Ave outlined in Figure 3.

"X" indicates a monitoring decision.

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								
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									
5. No monitoring during the 2016 WY	X	X	X	X	X	X	X	X	X

Monitoring Decision #5 - No monitoring

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

Walthall Slough @ Woodward Ave was monitored for all metals in 2008, 2010, and 2013 and is considered fully characterized. The Coalition did not monitor for the constituents listed above during the 2015 WY. Past monitoring history showed no exceedances of any of the listed constituents.

Working through the flowchart in Figure 3 results in a decision of no monitoring (Monitoring Decision #5 of Table 16) for all of the constituents listed above at Walthall Slough @ Woodward Ave.

Table 17. Walthall Slough @ Woodward Ave site subwatershed dissolved and total metals monitoring results (2006- June 2015).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

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)
Sample Counts Summary																	
Samples collected in 2006			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2007			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Samples collected in 2008			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
Exceedance Summary																	
Total Collected			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
% Exceedances			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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 2016 WY are outlined in Table 18; the monitoring plan is based on results from October 2014 through June 2015. Concentrations of arsenic exceeded the WQTL in samples collected in the 2015 WY (Table 19).

Table 18. Results of the flowchart analysis for Union Island Drain @ Bonetti Rd outlined in Figure 2.

"X" indicates a monitoring decision.

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?	No	Yes							
3. Has there been an exceedance?	Yes	No	No	No	Yes	No	Yes	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 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					
5. No monitoring during the 2016 WY		X	X		X	X	X	X	X

Monitoring Decision #4 – Propose monitoring plan

Total Arsenic, Dissolved Copper

During the 2015 WY, the Coalition monitored for dissolved copper during two storm events; there was one detection but did not exceed the WQTL. At the time of this report, scheduled monitoring during two irrigation events had not yet occurred. Since copper is applied to great than 1% of the total acres, the Coalition will monitor for dissolved copper during two storm and two irrigation events. During the 2015 WY, there was an exceedance of the WQTL for arsenic in February 2015 (Table 19). Therefore, the Coalition will continue monitoring for arsenic during two storm and two irrigation events.

Monitoring Decision #5 - No monitoring

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

The Coalition did not monitor for the constituents listed above during the 2015 WY. Past monitoring history showed no exceedances of any of the listed constituents. Working through the flowchart in Figure 3 results in a decision of no monitoring (Monitoring Decision #5 of Table 18) at Union Island @ Bonetti Rd.

Table 19. Union Island Drain @ Bonetti Rd site subwatershed dissolved and total metals monitoring results (October 2014 through June 2015).

Total Suspended Solids (TSS) results are included as a measurement of sediment mobilization. An exceedance of a WQTL is highlighted in blue. "NA" indicates that a constituent was not analyzed on that date.

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	7.7	NA	NA	NA	0.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	392
2015	Feb	2/9/2015	24	NA	NA	NA	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	122
2015	Jul ¹	--	--	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
2015	Aug ¹	--	--	NA	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--
Sample Counts Summary																	
Samples collected in 2015 ¹			2	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Exceedance Summary																	
Total Samples Collected			2	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Total Exceedances			1	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
% Exceedances			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	NA

¹– At the time of this report, scheduled sampling had not yet occurred in July and August 2015. Results from those months will be included in addendum.

MONITORING AT A REPRESENTED SITE

In the 2016 WY, the Coalition will monitor at 19 of 20 Represented sites within the Coalition boundary; Mokelumne River Drain @ North Lower Sacramento Rd is not scheduled for monitoring. Sites that are marked as “to be determined” (TBD) in the Order are identified in this Monitoring Plan Update. Delta Zones 3, 4, and 7 have TBD for all Represented site locations within Table 1 of Attachment B of the Order. The Coalition evaluated potential monitoring locations that would represent the hydrological units (HUC 12) within the zones. Monitoring locations within 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. access road 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 2016 WY. Table 20 lists all of the Represented sites that the Coalition will monitor in the 2015 WY including the HUC 12 represented by the site, the site name, station code, latitude, and longitude.

Table 20. 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	Mokelumne River @ Bruella Rd		531XMRABR	38.16010	-121.20510
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	Bear Creek @ North Alpine Rd	Lower Bear Creek	531BCANAR	38.07431	-121.21100
1	Represented	Mosher Creek @ North Alpine Rd	Mosher Creek	531MCANAR	38.06088	-121.20900
1	Represented	Mokelumne River Drain @ North Lower Sacramento Rd ¹	Murphy Creek-Mokelumne River	531MRDNL5	38.19557	-121.29400
1	Represented	Pixley Slough @ Furry Rd	Pixley Slough	531XPSAFR	38.08256	-121.24100
2	Core	French Camp Slough @ Airport Way		531SJC504	37.88170	-121.24930
2	Represented	Duck Creek @ Hwy 4	Lower Duck Creek	531XDCAHF	37.94910	-121.18100
2	Represented	Unnamed Drain to Lone Tree Creek @ Jack Tone Rd	Lower Lone Tree Creek	531UDLTAJ	37.85358	-121.14600
2	Represented	Mormon Slough @ Jack Tone Rd	McLeod Lake-Mormon Slough	544MSAJTR	37.96470	-121.14900
2	Represented	Lone Tree Creek @ Jack Tone Rd	Middle Lone Tree Creek	531XLTCJR	37.83760	-121.14400
2	Represented	Littlejohns Creek @ Jack Tone Rd	Simmons Creek-Littlejohns Creek	531XLCAJR	37.88960	-121.14600
3	Core	Terminus Tract Drain @ Hwy 12		544XTTHWT	38.11660	-121.49360

ZONE	SITE TYPE	SITE NAME	HUC	STATION CODE	LATITUDE	LONGITUDE
3	Represented	Drain @ Woodbridge Rd	Hog Slough	544DAWRXX	38.15256	-121.50095
3	Represented	Empire Tract @ 8 Mile Rd	Venice Island-Little Connection Slough	544ETAEMR	38.05972	-121.48403
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
4	Core	Roberts Island @ Whiskey Slough Pump		544RIAWSP	37.96698	-121.46366
4	Represented	Bacon Island Pump @ Old River	Mandeville Island-Connection Slough	544BIPAOR	37.97935	-121.56945
4	Represented	Kellogg Creek along Hoffman Ln	Lower Kellogg Creek	544XKCAHL	37.88190	-121.65220
4	Represented	South McDonald Island Pump	Fivemile Creek-San Joaquin River	544SMCDIP	37.98928	-121.46285
4	Represented	East Orwood Tract Drain	Jersey Island-Taylor Slough	544EOWDTD	37.92857	-121.56067
5	Core	Walthall Slough @ Woodward Ave²	Walthall Slough-San Joaquin River	544WSAWAV	37.77046	-121.29227
6	Core	Roberts Island @ Whiskey Slough Pump ³		544RIAWSP	37.96698	-121.46366
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. Mokelumne River @ Bruella 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. Roberts Island @ Whiskey Slough Pump 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 2016 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 for water quality impairments at Represented sites when an exceedance of a WQTL occurs at an associated Core site and monitors accordingly (Attachment B of the Order, pages 3-4).

The Coalition reviewed past exceedances at the Core site in each zone and used the strategy outlined in the flowchart in Figure 4 to determine which constituents to monitor at the Represented sites within

that zone. In the first year of monitoring under the new Order, the Coalition evaluated Represented sites based on management plan constituents at the Core site. The 2016 WY marks the second year of monitoring at the Represented sites, and will therefore include constituents that were exceedances at the Core site but that are not in management plans at the Core site. Once monitoring at a Represented site is initiated, the Coalition will monitor at the Represented site during the period when there is the highest potential to have the constituent present in the waterbody. Monitoring will occur for a minimum of two years. Monitoring period and frequency are based on exceedances at the Core site and an assessment of available pesticide use data.

When water column toxicity occurred at the Core site, the Coalition used Toxicity Identification Evaluations (TIEs), if possible, to identify the pesticides potentially associated with toxicity. The Coalition conducts TIEs when toxicity to *C. dubia* and *P. promelas* results in less than 50% survival compared to the control and when toxicity to *S. capricornutum* results in less than 50% growth compared to the control. Table 21 is 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 a toxic sample, then the Coalition used PUR data ranging from 2012 through 2014 to identify application periods for the groups of chemicals that are generally associated with toxicity. The Coalition determined the monitoring frequency for toxicity at Represented sites by analyzing months of high pesticide applications as well as past toxicity at the Core site.

If sediment toxicity to *H. azteca* occurred at a Core site, the Coalition will monitor for sediment toxicity in March and September at each Represented site in the Core site zone.

Each site subwatershed section below includes 1) analysis and discussion of management plan constituents (applied pesticides, metals, or toxicity), and 2) analysis discussion of monitoring constituents based on past Core site exceedances or toxicity. Each of the two sections includes a justification for the monitoring frequency. Sand Creek @ Hwy 4 Bypass and Walthall Slough @ Woodward Ave (as discussed in the Core Site Pesticides section) are an exception to the monitoring plan for applied pesticides.

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



Table 21. 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		X
METALS	COPPER HYDROXIDE	X		X

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

ZONE 1 – MOKELUMNE RIVER @ BRUELLA RD ZONE

The Coalition will monitor the following management plan constituents at Mokelumne River @ Bruella Rd in the 2016 WY:

- *S. capricornutum* water column toxicity from March through August.

Monitoring at the Core site during the 2015 WY resulted in two exceedances of the WQTL for pH and two samples toxic to *S. capricornutum* (Table 22). Samples collected in March and June 2015 were toxic to *S. capricornutum* (63% and 82% growth compared to the control, respectively); since the growth was greater 50%, no TIE was performed.

The Coalition evaluated each Represented site in the Mokelumne River @ Bruella Rd Zone based on monitoring results at the Core site: toxicity to *S. capricornutum*. The exceedances of the WQTL for pH are difficult to source and will be addressed in constituent specific workplans.

Table 22. Zone 1 Management Plan Constituents and 2015 WY Exceedances.

Core site information is bolded. Monitoring at the Core site will represent water quality at Mokelumne River Drain @ North Lower Sacramento Rd; therefore, the Represented site is not included in this table.

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

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

X – Indicates exceedance of WQTL or toxicity in 2015WY.

X^M - Indicates there was an exceedance of WQTL or toxicity in 2015WY and the constituent is in a management plan.

Bear Creek @ North Alpine Rd

Bear Creek @ North Alpine Rd is a Represented site within the Mokelumne River @ Bruella Rd Zone. The Coalition initiated monitoring at this site in 2008 and continued monitoring through 2015. During the 2015 WY, in addition to MPM for chlorpyrifos and malathion, the Coalition monitored for water column toxicity to *S. capricornutum* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Bear Creek @ North Alpine Rd site subwatershed is currently in a management plan for DO, pH, *E. coli*, chlorpyrifos, and malathion. The Coalition will conduct MPM in the 2016 WY for chlorpyrifos and malathion (Table 22). The remaining constituents (DO, pH, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans. Since there were no exceedances of pH for the past three years, the Coalition will petition to remove pH from the Bear Creek @ North Alpine Rd site subwatershed management plan in August 2015.

Chlorpyrifos

During the 2015 WY, the Coalition conducted MPM for chlorpyrifos during months of past exceedances: October 2014 and January 2015; there were no detections of chlorpyrifos in the samples. Monitoring is also scheduled in July and August 2015 to characterize water quality during periods of high applications of chlorpyrifos and again in September 2015 due to a past exceedance in 2011; however, at the time of this report, monitoring had not yet occurred. As mentioned above, monitoring results from July through September 2015 will be addressed in an addendum included in the 2016 Annual Report. The last exceedance of the WQTL for chlorpyrifos (0.067 µg/L) in this site subwatershed occurred in October 2011. Since there were no exceedances of the WQTL for chlorpyrifos for three years (Figure 5), the Coalition will petition to remove chlorpyrifos from the site subwatershed's management plan in August 2015. In the 2016 WY, the Coalition will continue to conduct MPM for chlorpyrifos at Bear Creek @ North Alpine Rd in October, January, and July through September.

Malathion

During the 2015 WY, the Coalition conducted MPM for malathion during months of past exceedances: January and May 2015; there were no detections of malathion in the samples. At the time of this report, monitoring had not yet occurred in September 2015. The most recent exceedance of the WQTL for malathion (0.089 µg/L) occurred in September 2011. Since there were no exceedances of the WQTL for malathion for three years (Figure 6), the Coalition will petition to remove malathion from the site subwatershed's management plan in August 2015. Over the past three years, the greatest applications of malathion occurred in May, accounting for 79% of all applications (Figure 6). In the 2016 WY, the Coalition will continue MPM for malathion in the Bear Creek @ North Alpine Rd site subwatershed in January, May, and September.

Figure 5. Bear Creek @ North Alpine Rd 2006-2014 chlorpyrifos use and monitoring.

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

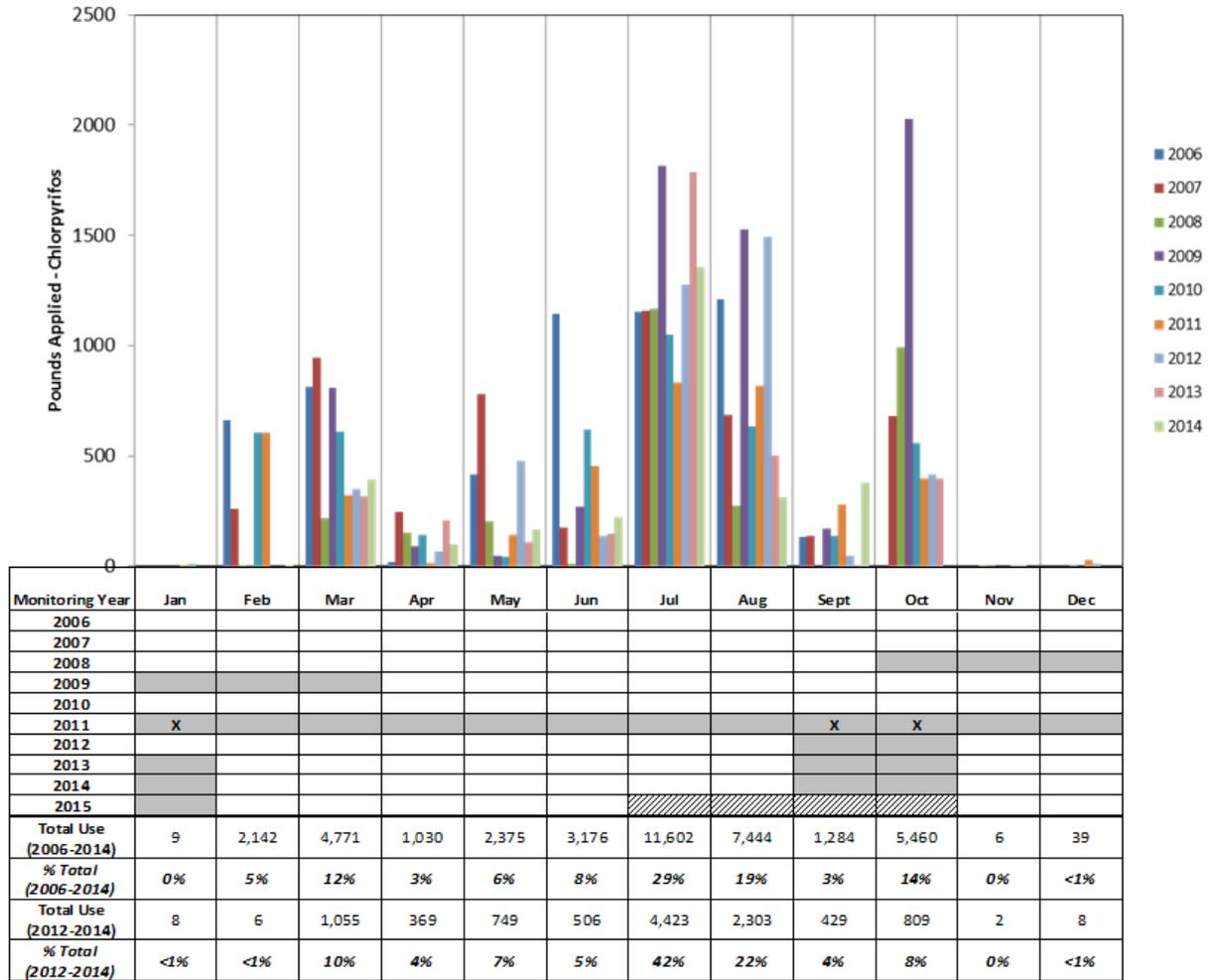
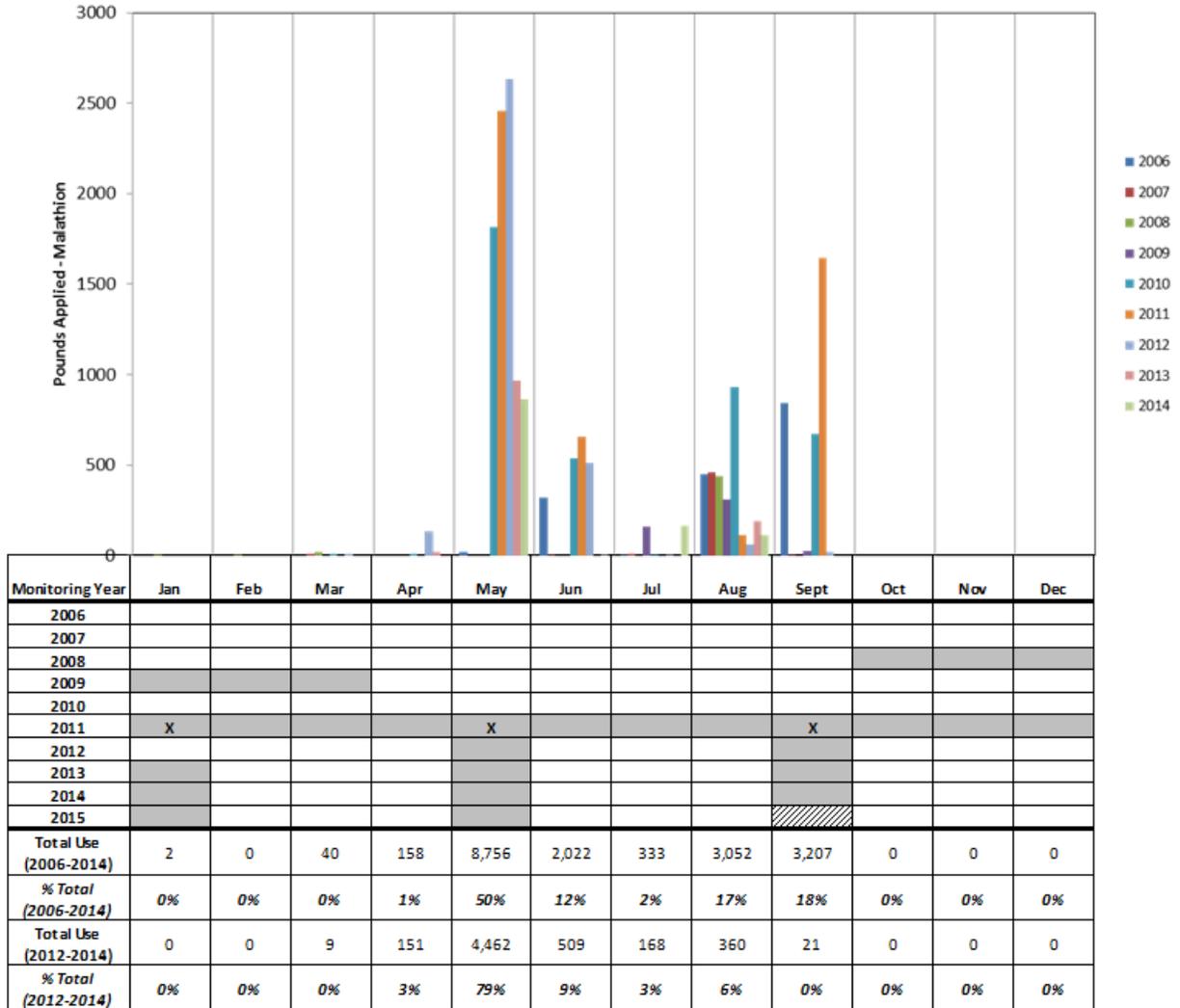


Figure 6. Bear Creek @ North Alpine Rd 2006-2014 malathion use and monitoring.

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

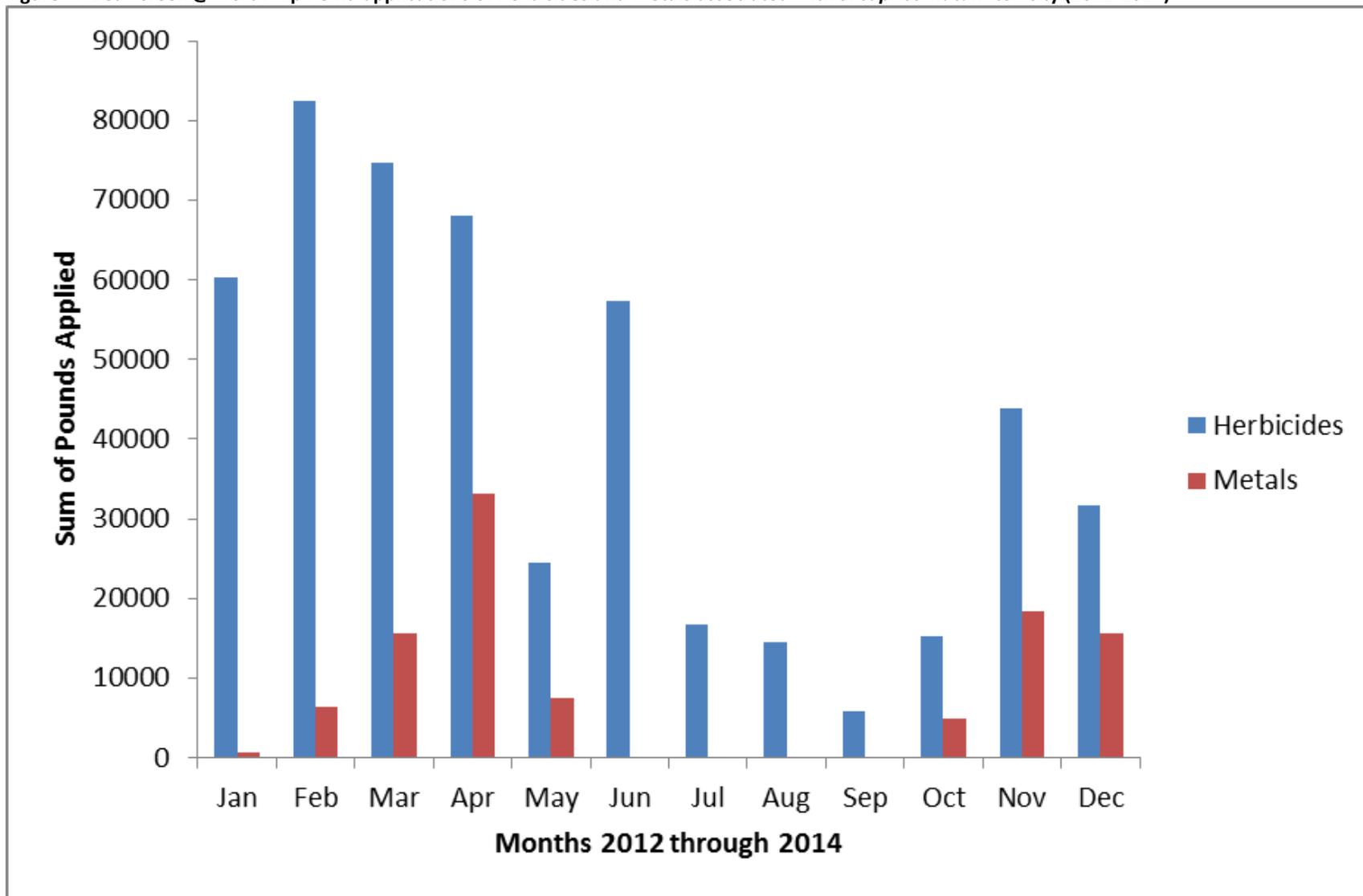


Monitoring Based on Core Site Exceedances

The Coalition monitored for water column toxicity to *S. capricornutum* at Bear Creek @ North Alpine Rd from November 2014 through June 2015; there were no toxic samples. At the time this report was written, scheduled monitoring had not yet occurred in July and August 2015.

In addition to monitoring in the 2015 WY (all months except October and September), water column toxicity to *S. capricornutum* was monitored during 18 sampling events from October 2008 through March 2009, and monthly in 2011 during Assessment Monitoring; no toxicity occurred. Out of a total of 40 sampling events, toxicity to *S. capricornutum* has not occurred on any occasions. The PUR data from 2012 through 2014 indicate high applications of herbicides and metals in this site subwatershed (Figure 7); despite this, there were no toxic samples. Although toxicity to *S. capricornutum* occurred at the Core site twice in 2015, the Coalition believes past monitoring data is adequate in showing that toxicity to *S. capricornutum* is not an issue in the Bear Creek @ North Alpine Rd site subwatershed. Therefore, no monitoring will occur in the 2016 WY.

Figure 7. Bear Creek @ North Alpine Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012-2014).



Coyote Creek Tributary @ Jack Tone Rd

Coyote Creek tributary @ Jack Tone Rd is a Represented site within the Mokelumne River @ Bruella Rd Zone. Monitoring was initiated at this site in the 2015 WY. In the 2015 WY, the Coalition conducted monitoring for water column toxicity to *S. capricornutum* based on exceedances at the Core site and herbicide/metal applications in the site subwatershed. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

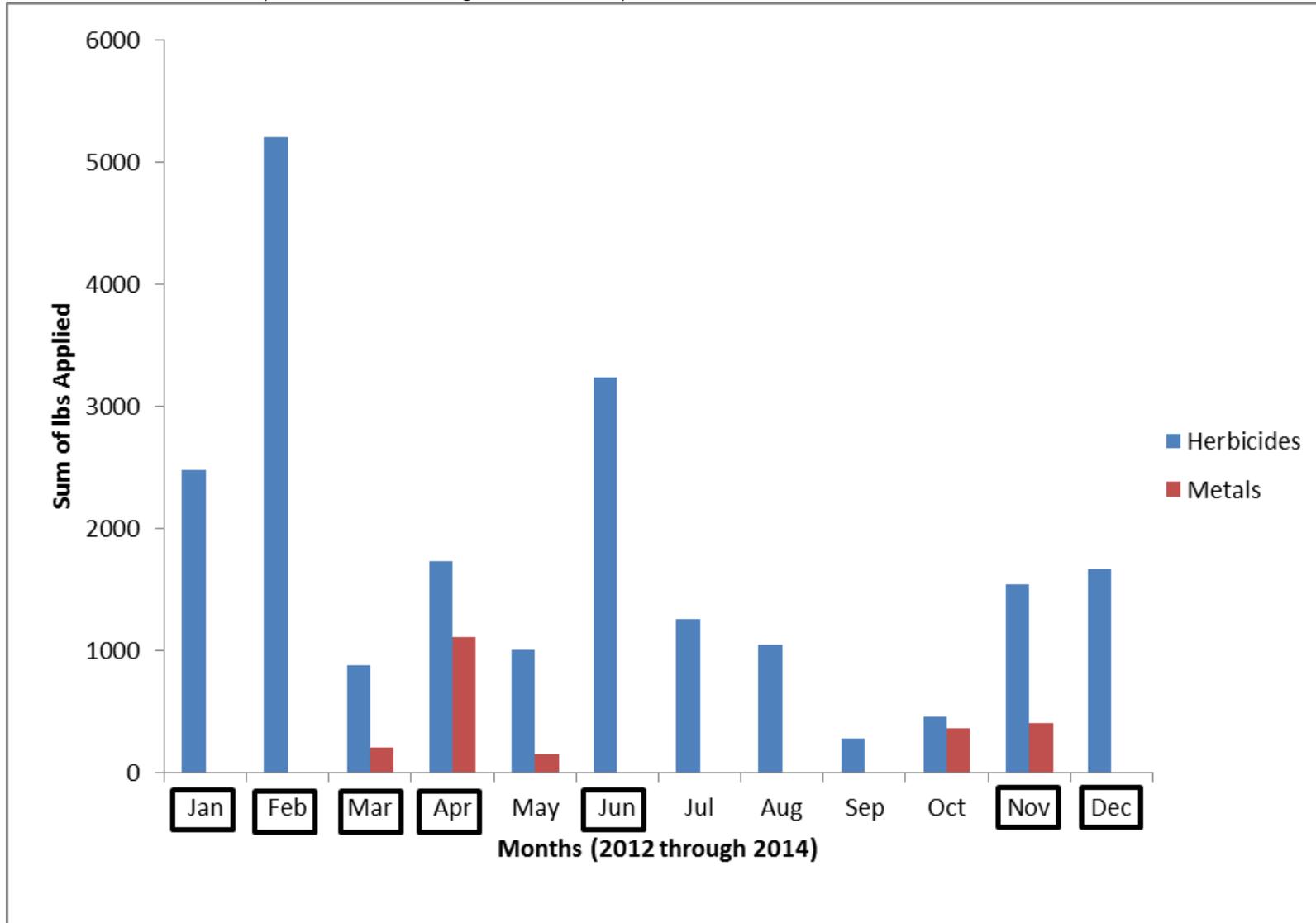
Monitoring Based on Management Plan

The Coyote Creek tributary @ Jack Tone Rd site subwatershed is currently in a management plan for DO due to four exceedances during the 2015 WY. Working through the management plan flowchart strategy in Figure 1, exceedances of the WQTL for DO are difficult to source and will be addressed in constituent specific workplans. The Coalition will not conduct MPM at this site subwatershed in the 2016 WY.

Monitoring Based on Core site Exceedances

During the 2015 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Coyote Creek tributary @ Jack Tone Rd from December 2014 through March 2015; there were no toxic samples. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for water column toxicity to *S. capricornutum* for a second year. The PUR data from 2012 through 2014 indicate months of greatest applications of herbicides occurred in December through February, April, and June; the peak occurred in February with over 6000 lbs of AI herbicides applied during the three year stretch (Figure 8). The Coalition will continue monitoring for toxicity to *S. capricornutum* for a second year during the months of peak application of herbicides: November through February, April, and June in the 2016 WY. Monitoring will also continue during the month of March due to toxic samples at the Core site.

Figure 8. Coyote Creek tributary @ Jack Tone Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012-2014).
 Boxed months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2016 WY.



Jahant Slough @ Cherokee Ln

Jahant Slough @ Cherokee Ln is a Represented site within the Mokelumne River @ Bruella Rd Zone. The Coalition initiated monitoring at this site in the 2015 WY. In the 2015 WY, the Coalition conducted monitoring for water column toxicity to *S. capricornutum* based on exceedances at the Core site and herbicide/metal applications in the site subwatershed. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

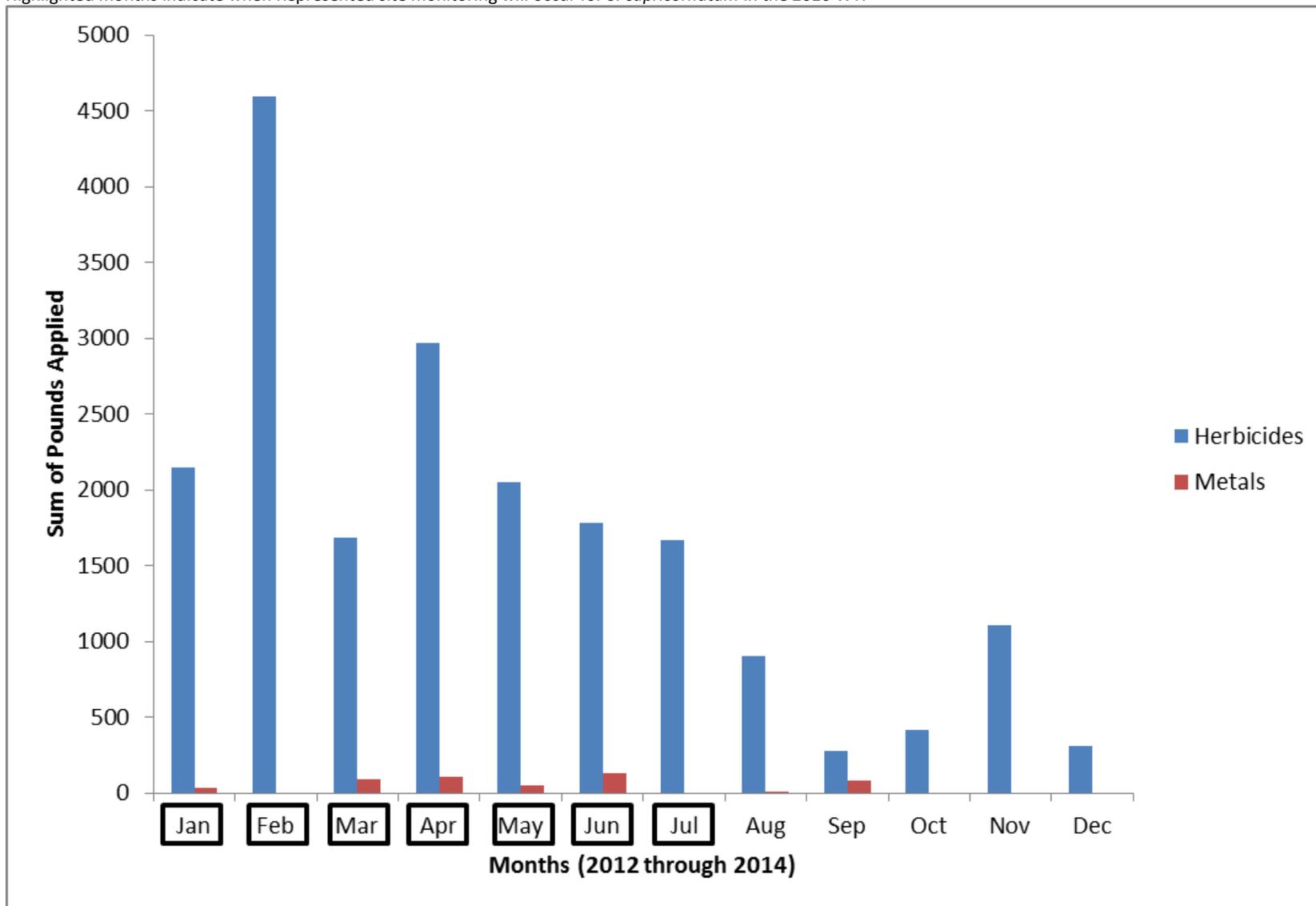
The Jahant Slough @ Cherokee Ln site subwatershed is currently in a management plan for DO due to three exceedances during the 2015 WY. Following the flowchart strategy in Figure 1, exceedances of the WQTL for DO are difficult to source and will be addressed in constituent specific workplans. The Coalition will not conduct MPM at this site subwatershed in the 2016 WY.

Monitoring Based on Core site Exceedances

During the 2015 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Jahant Slough @ Cherokee Ln from January through March 2015; there were no toxic samples. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for water column toxicity to *S. capricornutum* for a second year. The PUR data from 2012 through 2014 indicate peak applications of herbicides associated with toxicity to algae from January through July; there were very few applications of metals, amounting to less than 490 lbs of Al applied in the past three years (Figure 9). In the 2016 WY, the Coalition will continue monitoring for toxicity to *S. capricornutum* from January through July.

Figure 9. Jahant Slough @ Cherokee Ln applications of herbicides and metals associated with *S. capricornutum* toxicity (2012-2014).

Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2016 WY.



Mokelumne River Drain @ North Lower Sacramento Rd

The Coalition will not monitor at Mokelumne River Drain @ North Lower Sacramento Rd in the 2016 WY. Scouting indicated no water within the channel and the dry channel does not appear to receive any runoff throughout the year. There is mature vegetation growing within the channel indicating little to no runoff. Instead of monitoring at Mokelumne River Drain @ North Lower Sacramento Rd, the Coalition will use water quality results from the Core site, Mokelumne River @ Bruella Rd, to represent the Murphy Creek-Mokelumne HUC 12. The Coalition will review water quality impairments that occur at Mokelumne River @ Bruella Rd to determine if outreach is required for growers within the Mokelumne River Drain @ North Lower Sacramento Rd.

Mosher Creek @ North Alpine Rd

Mosher Creek @ North Alpine Rd is a Represented site within the Mokelumne River @ Bruella Rd Zone. The Coalition initiated monitoring at this site in the 2015 WY. In the 2015 WY, the Coalition conducted monitoring for water column toxicity to *S. capricornutum* based on exceedances at the Core site and herbicide/metal applications in the site subwatershed. The site was dry on all sampling events during the 2015 WY except in April. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

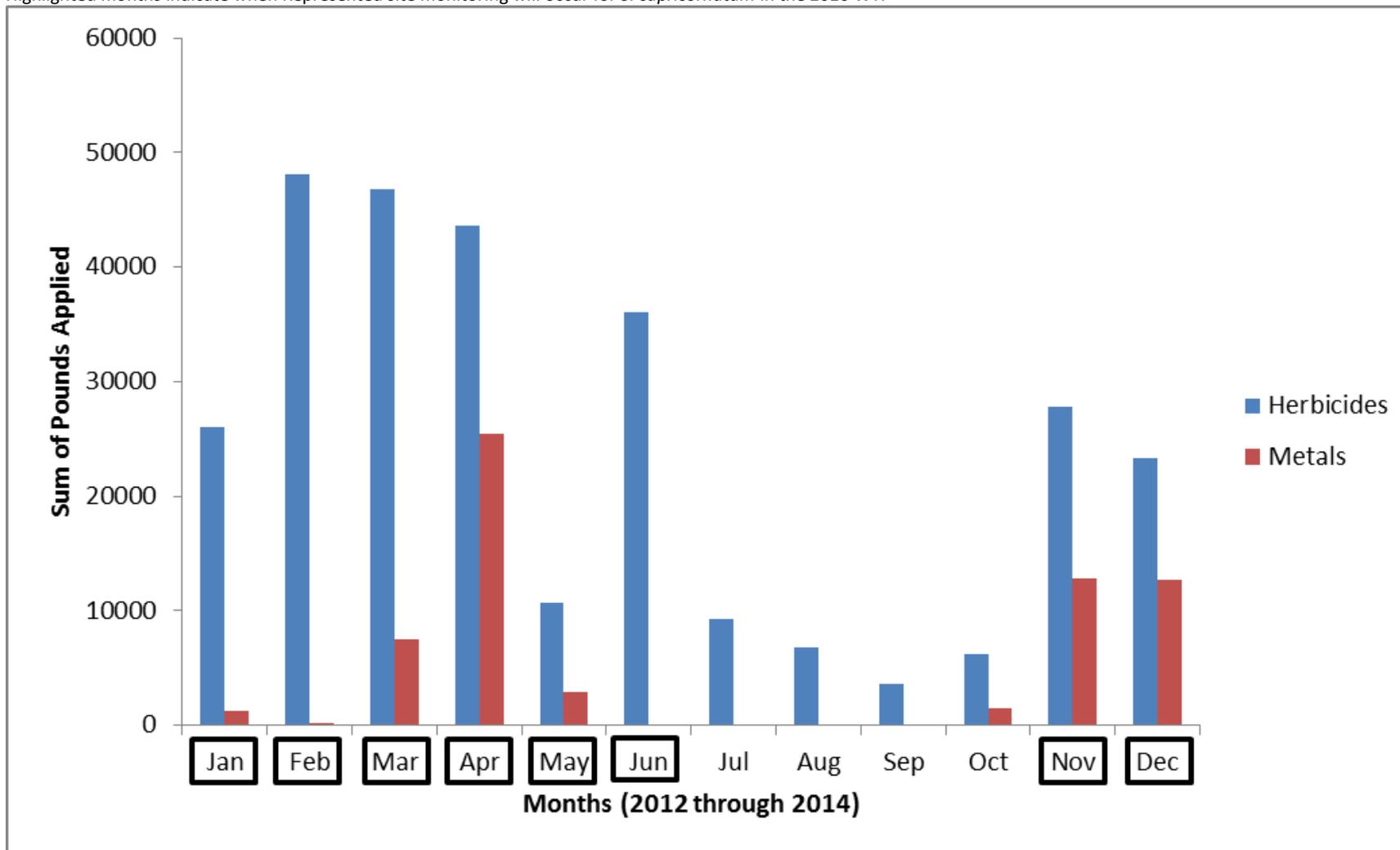
Monitoring Based on Management Plan

The Mosher Creek @ North Alpine Rd site subwatershed is currently not in a management plan for any constituent; therefore, no MPM is required.

Monitoring Based on Core site Exceedances

During the 2015 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Mosher Creek @ North Alpine Rd from November 2014 through June 2015; there were no toxic samples. At the time of this report, monitoring had not yet occurred in July and August 2015. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for water column toxicity to *S. capricornutum* for a second year. The PUR data from 2012 through 2014 indicate applications of herbicides associated with toxicity to algae occurred every month; there were applications of metals from September through May (Figure 10). The peak applications of herbicides and metals occurred from November through June. Therefore, in the 2016 WY, the Coalition will continue monitoring for toxicity to *S. capricornutum* for a second year during the months of peak applications of herbicides and metals: November through June.

Figure 10. Mosher Creek @ North Alpine Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012-2014).
 Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2016 WY.



Pixley Slough @ Furry Rd

Pixley Slough @ Furry Rd is a Represented site within the Mokelumne River @ Bruella Rd Zone. The Coalition initiated monitoring at this site in the 2015 WY. In the 2015 WY, the Coalition conducted monitoring for water column toxicity to *S. capricornutum* based on exceedances at the Core site and herbicide/metal applications in the site subwatershed. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

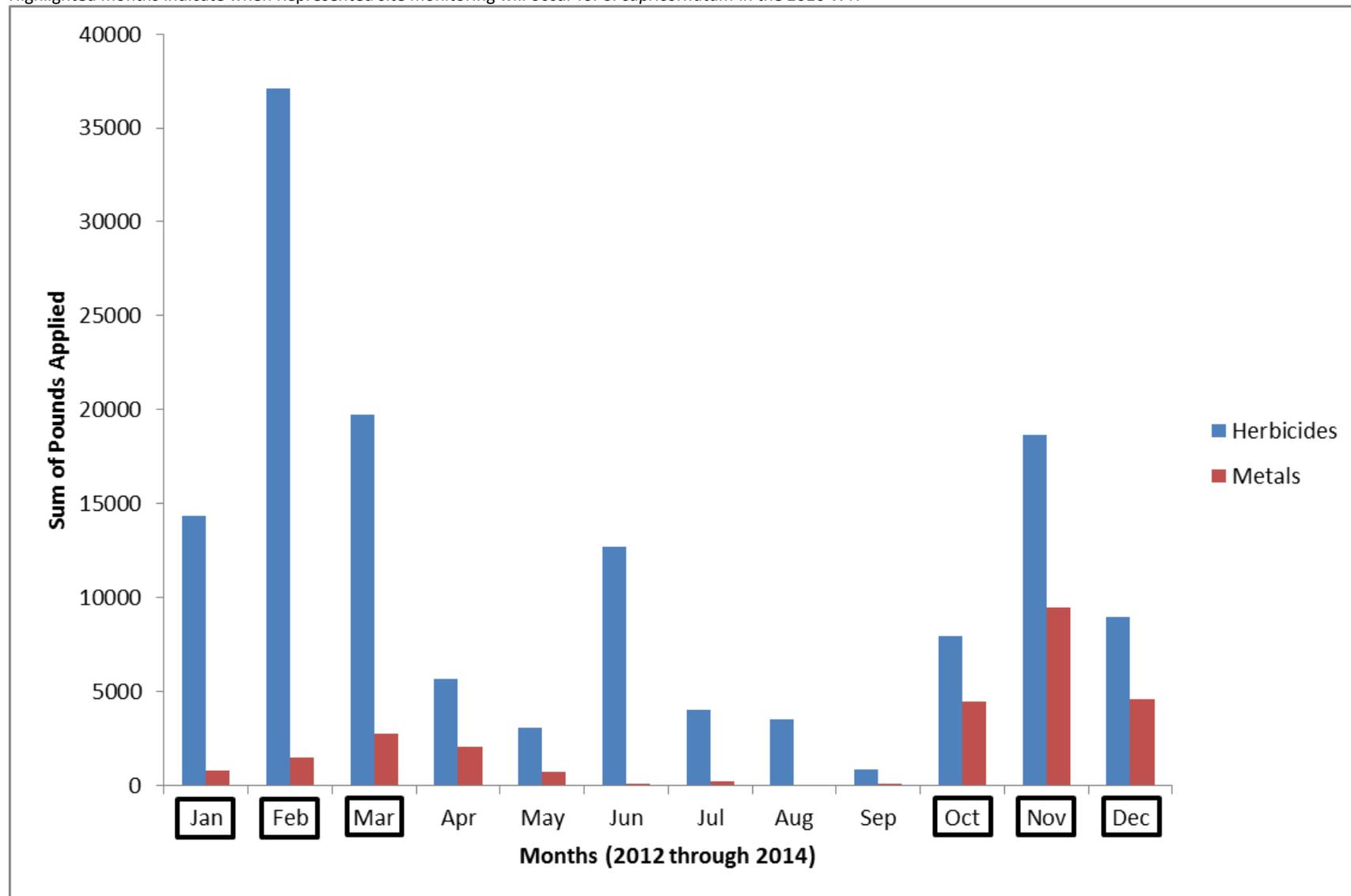
The Pixley Slough @ Furry Rd site subwatershed is currently not in a management plan for any constituent. Therefore, no MPM is scheduled in the 2016 WY.

Monitoring Based on Core site Exceedances

During the 2015 WY, the Coalition monitored for water column toxicity to *S. capricornutum* at Pixley Slough @ Furry Rd from November 2014 through February 2015; there were no toxic samples. The site was either dry or non-contiguous during three out of the four sampling events. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for water column toxicity to *S. capricornutum* for a second year. The PUR data from 2012 through 2014 indicate peak applications of herbicides associated with toxicity to algae occurred from November through March, with the greatest applications of near 40,000 lbs of AI in February; peak applications for metals occurred in November and December (Figure 11). During the 2016 WY, the Coalition will continue monitoring for toxicity to *S. capricornutum* for a second year during months of peak applications of herbicides and metals: October through March.

Figure 11. Pixley Slough @ Furry Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012-2014).

Highlighted months indicate when Represented site monitoring will occur for *S. capricornutum* in the 2016 WY.



ZONE 2 – FRENCH CAMP SLOUGH @ AIRPORT WAY ZONE

The Coalition will monitor the following management plan constituents at French Camp Slough @ Airport Way in the 2016 WY:

- chlorpyrifos in October, January, February, April, May, and July through September.
- diuron in January and February.
- *S. capricornutum* water column toxicity in February and April.
- *H. azteca* sediment toxicity in March and September.

Monitoring at the Core site during the 2015 WY resulted in exceedances of the WQTLs for DO, *E. coli*, ammonia as N, chlorpyrifos, and diuron (Table 23). The Coalition evaluated Represented sites within the French Camp Slough @ Airport Way Zone for based on monitoring results at the Core site: exceedances of the WQTL for chlorpyrifos and diuron. The remaining constituents (DO, *E. coli*, and ammonia as N) are difficult to source and will be addressed in constituent specific workplans. Due to no exceedances of the WQTL for pH in three years, the Coalition will petition to remove the constituent from the site subwatershed’s management plan in August 2015.

Table 23. Zone 2 Management Plan Constituents and 2015 WY Exceedances.

Core site information is bolded.

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

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

X – Indicates exceedance of WQTL or toxicity in 2015WY.

X^M - Indicates there was an exceedance of WQTL or toxicity in 2015WY and the constituent is in a management plan.

Duck Creek @ Hwy 4

Duck Creek @ Hwy 4 is a Represented site within the French Camp Slough @ Airport Way Zone. The Coalition initiated monitoring at this site in 2004 and continued monitoring through 2015. In the 2015 WY, the Coalition conducted MPM for chlorpyrifos, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca*. The site was dry during the May 2015 sampling event. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 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 23). The Coalition will conduct MPM during the 2016 WY for chlorpyrifos, water column toxicity to *C. dubia*, and sediment toxicity to *H. azteca*. Following the flowchart strategy in Figure 1, the remaining constituents (DO, SC, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans.

Chlorpyrifos

During the 2015 WY, the Coalition monitored for chlorpyrifos in this site subwatershed from April through June 2015; an exceedance of the WQTL for chlorpyrifos (0.076 µg/L) occurred in April 2015. At the time of this report, scheduled monitoring for chlorpyrifos from July through September 2015 had not yet occurred. The last exceedance of the WQTL for chlorpyrifos (0.12 µg/L) occurred in September 2011. The PUR data from the last three years indicate the greatest applications of chlorpyrifos occurred during the summer months, with the peak in July accounting for 54% of all applications (Figure 12). In the 2016 WY, the Coalition will continue to conduct MPM for chlorpyrifos from April through September.

Water column toxicity to *C. dubia*

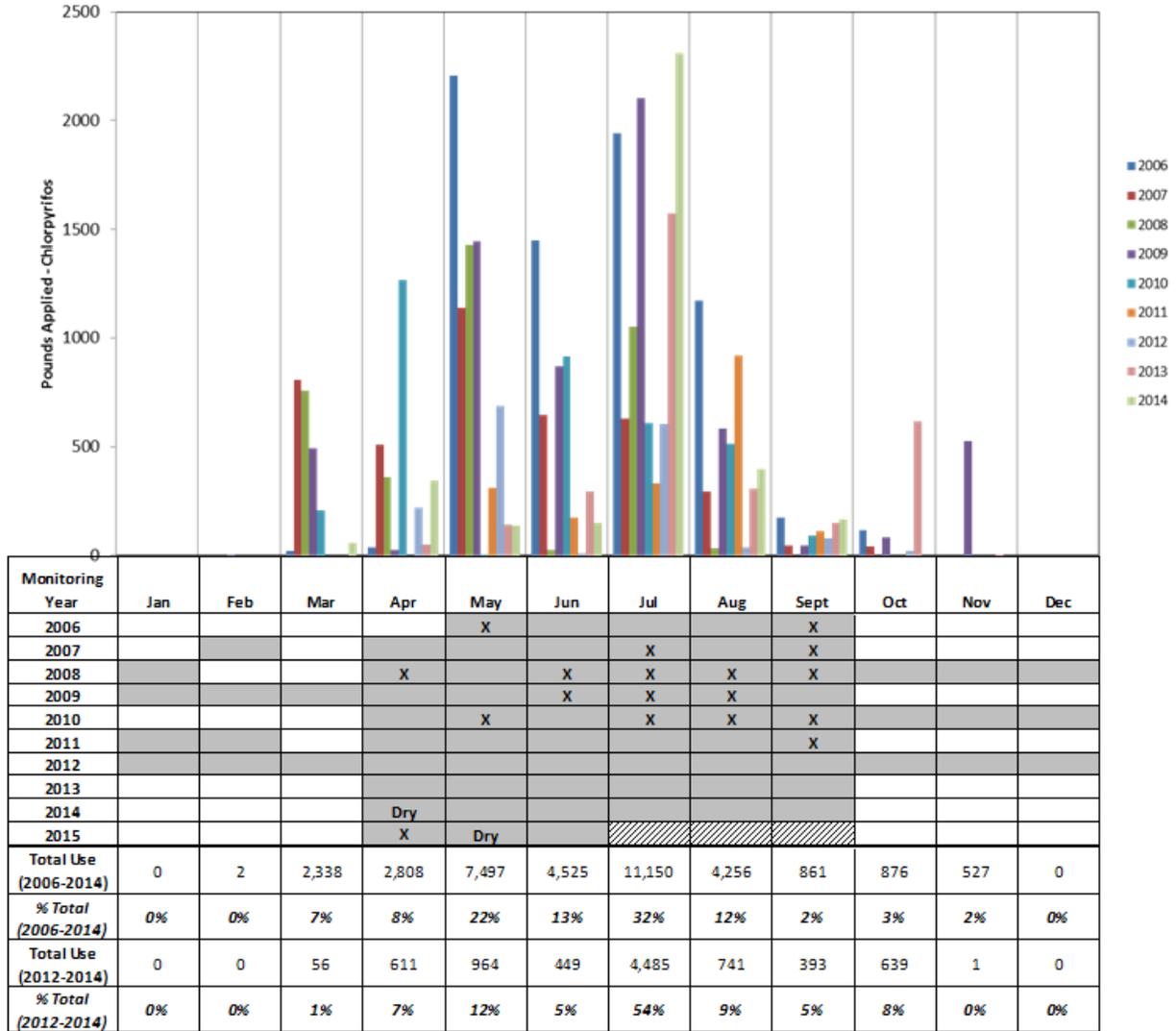
Monitoring for water column toxicity to *C. dubia* occurred in April during the 2015 WY; the samples were not toxic although an exceedance of chlorpyrifos, which is commonly associated with toxicity to *C. dubia*, occurred on the same sampling event. At the time of this report, scheduled monitoring for toxicity to *C. dubia* had not yet occurred in July and September 2015. The last toxic samples in this site subwatershed were collected in September 2011 (35% survival compared to the control). In five out of the six past toxic samples, exceedances of the WQTL for chlorpyrifos also occurred. The Coalition will continue MPM for toxicity to *C. dubia* in the Duck Creek @ Hwy 4 site subwatershed in April, July, and September in the 2016 WY.

Sediment toxicity to *H. azteca*

Monitoring for sediment toxicity occurs twice a year – in March and September. The Coalition will conduct MPM for sediment toxicity to *H. azteca* in March and September in the 2016 WY.

Figure 12. Duck Creek @ Hwy 4 2006-2014 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.



Monitoring Based on Core site Exceedances

As stated above, Duck Creek @ Hwy 4 is in a management plan for chlorpyrifos and monitoring is addressed through the management plan strategy. The Coalition received approval to remove water column toxicity to *S. capricornutum* from the Duck Creek @ Hwy 4 management plan on May 21, 2012; no monitoring for algae toxicity will occur in the 2016 WY.

In the 2014 MPU, the Coalition decided that no monitoring was necessary 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 Coalition will not monitor for diuron at Duck Creek @ Hwy 4 in the 2016 WY.

Littlejohns Creek @ Jack Tone Rd

Littlejohns Creek @ Jack Tone Rd is a Represented site within the French Camp Slough @ Airport Way Zone. The Coalition initiated monitoring at this site in 2004 and continued monitoring through 2015. In the 2015 WY, in addition to MPM for copper and chlorpyrifos, the Coalition monitored for diuron due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Littlejohns Creek @ Jack Tone Rd site subwatershed is in a management plan for DO, pH, *E. coli*, copper, and chlorpyrifos (Table 23). The Coalition will conduct MPM during the 2016 WY for copper and chlorpyrifos. Following the flowchart strategy in Figure 1, the remaining constituents (DO, SC, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans.

Copper

During the 2015 WY, the Coalition monitored for dissolved copper during months of high applications and past exceedances in February, April, May, and June 2015; there was one detection (2.2 µg/L) in the February sample, but no samples exceeded the WQTL for copper. At the time of this report, scheduled monitoring in September 2015 had not yet occurred. The last exceedance of the WQTL for the dissolved fraction of copper occurred in May 2011. Since there were no exceedances in the past three years, the Coalition will petition to remove copper from the Littlejohns Creek @ Jack Tone Rd management plan in August 2015. The PUR data from 2012 through 2014 indicate the greatest applications of copper occurred from March through May; the peak applications, which accounted for 60% of all applications within the past three years, occurred in April (Figure 13). According to the PUR data, applications of copper in February, June, and September accounted for 3% or less of all applications in the site subwatershed within the past three years (Figure 13). The Coalition also monitored during these months for five years or more without an exceedance; therefore, the Coalition will discontinue MPM for copper in February, June, and September. The Coalition will continue MPM for dissolved copper in April

and May in the 2016 WY. The Coalition will also add March to the monitoring schedule due to the spike in applications of copper during this month in 2014 (Figure 13).

Chlorpyrifos

In the 2015 WY, the Coalition monitored for chlorpyrifos in November 2014, February, and April through June 2015; there were no detections of chlorpyrifos in the samples. At the time of this report, scheduled monitoring for chlorpyrifos in July and August 2015 had not yet occurred. The last exceedance of the WQTL for chlorpyrifos in this site subwatershed occurred in November 2011 (0.022 µg/L). Since there were no exceedances in the past three years, the Coalition will petition to remove chlorpyrifos from the Littlejohns Creek @ Jack Tone Rd management plan in August 2015. The PUR data from the past three years indicate highest applications of chlorpyrifos occur in the summer months from May through August; peak usage occurred in May, July, and August with 25% of total applications in each month within the past three years (Figure 14). According to the PUR data, applications of chlorpyrifos during November, February, and April accounted for 1% or less of all applications in the site subwatershed within the past three years (Figure 14). The Coalition also monitored during these months for three years or more without an exceedance; therefore, the Coalition will discontinue MPM for chlorpyrifos in November, February, and April. In the 2016 WY, the Coalition will continue MPM for chlorpyrifos from May through August.

Figure 13. Littlejohns Creek @ Jack Tone Rd 2006-2014 copper 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.

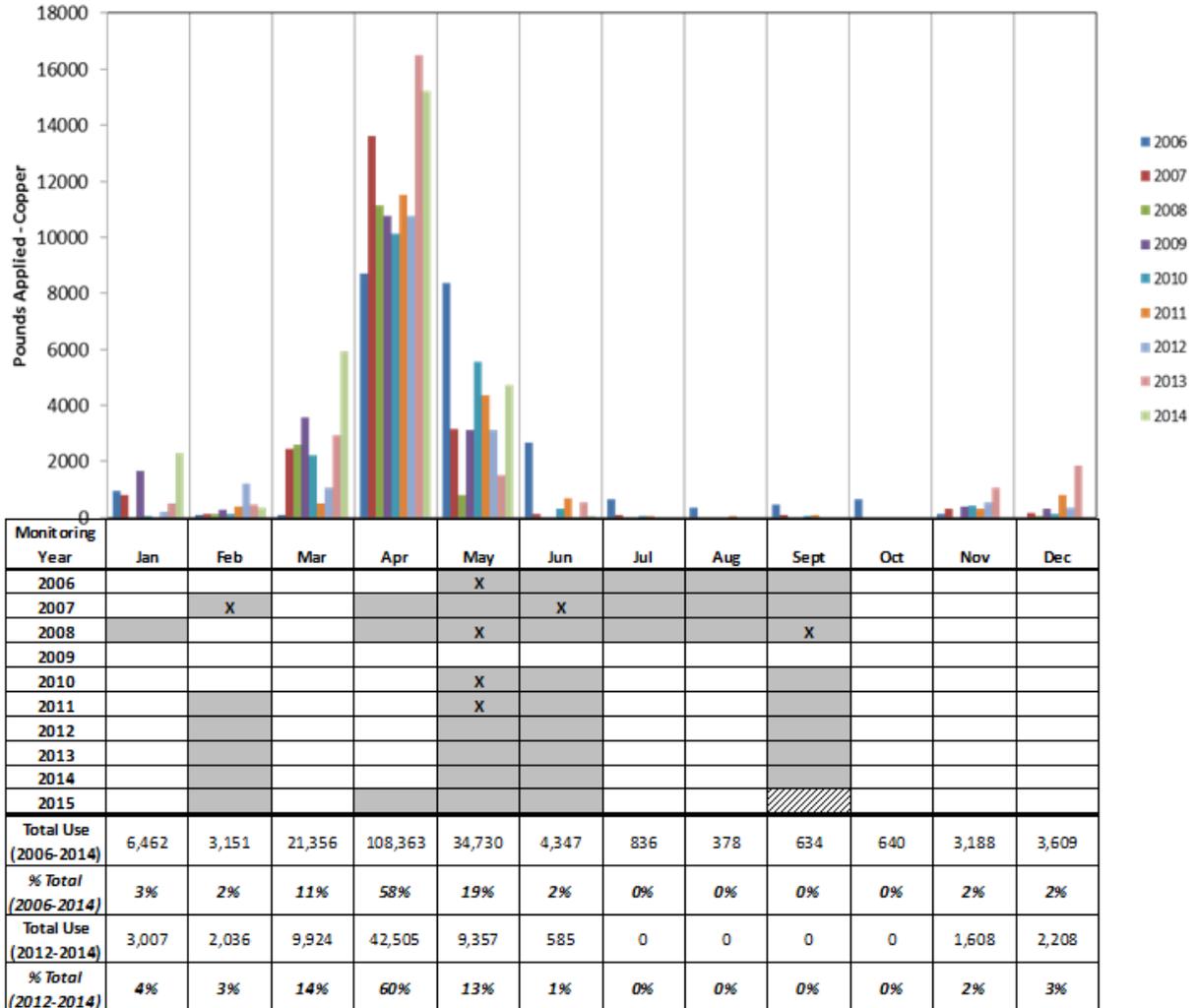
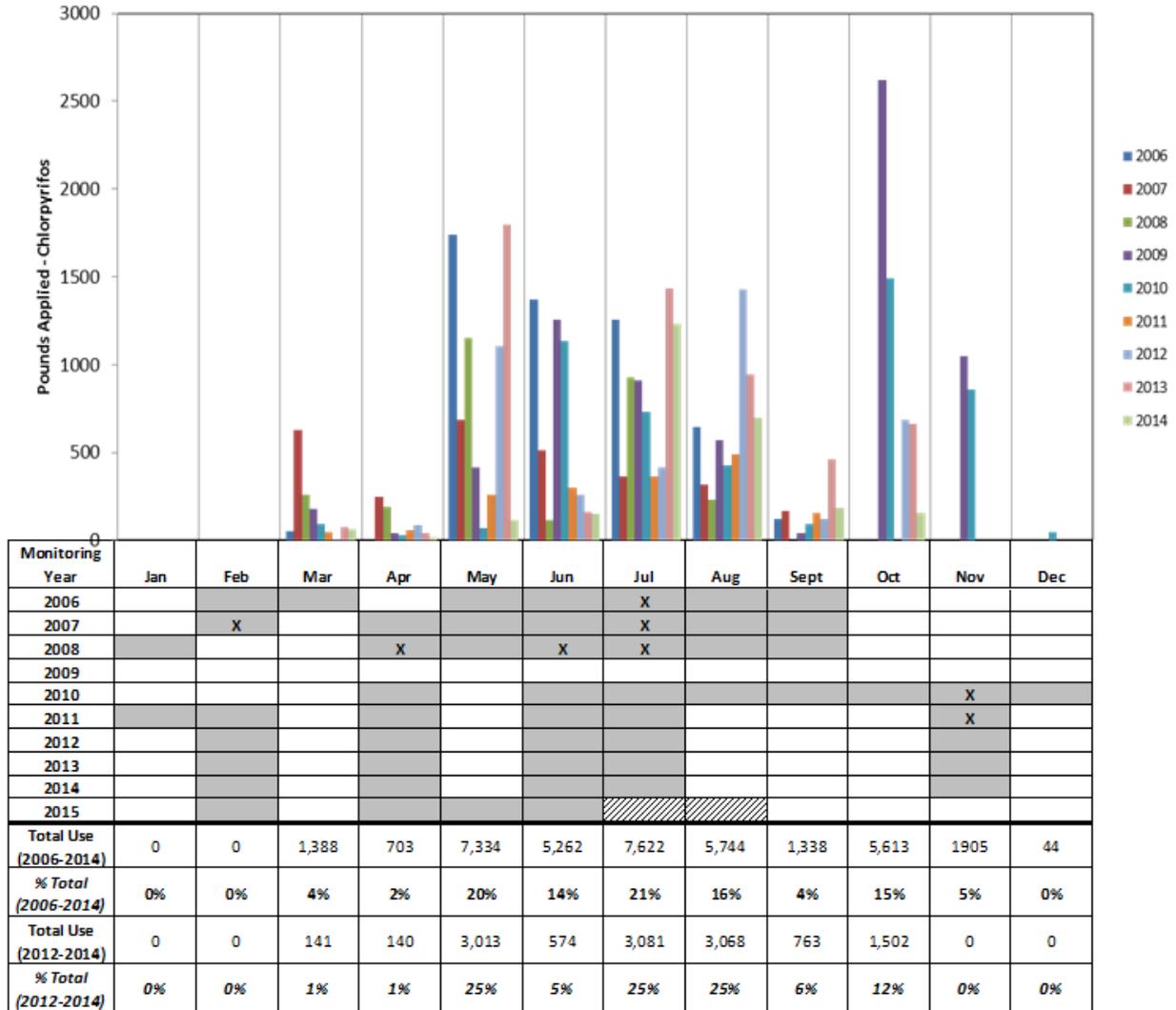


Figure 14. Littlejohns Creek @ Jack Tone Rd 2006-2014 chlorpyrifos use and monitoring.

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



Monitoring Based on Core site Exceedances

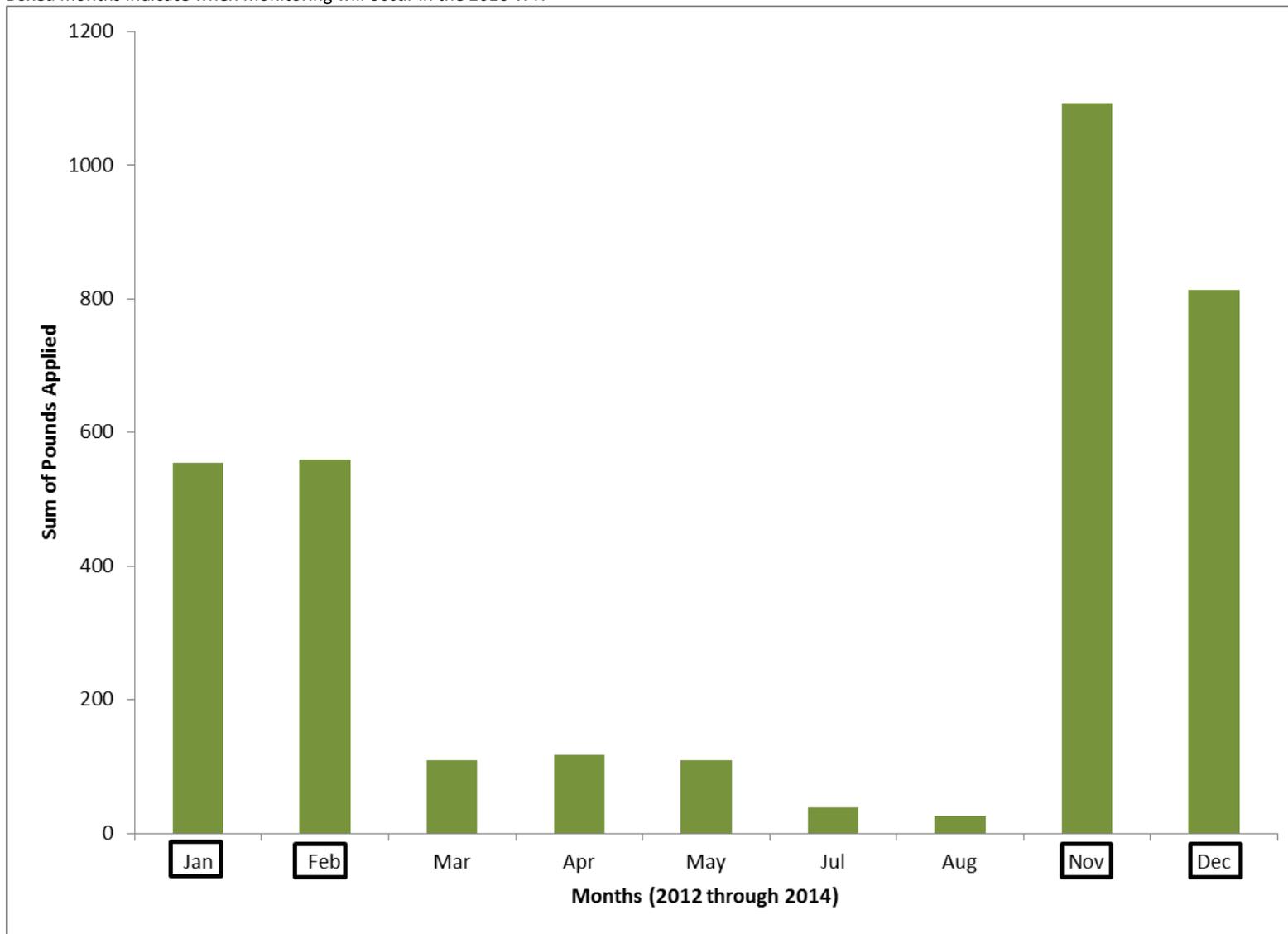
As stated above, Littlejohns Creek @ Jack Tone Rd is in a management plan for chlorpyrifos and monitoring will follow the management plan strategy. The Coalition received approval to remove water column toxicity to *S. capricornutum* from the Littlejohns Creek @ Jack Tone Rd management plan on February 27, 2013; no monitoring is scheduled in the 2016 WY.

In the 2015 WY, the Coalition monitored for diuron from November 2014 through February 2015; there were no detections of diuron in the samples collected. In addition to the monitoring from the 2015 WY, 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 flowchart above (Figure 4), the Coalition will monitor for diuron for a second year. Recent PUR data from 2012 through 2014 indicate highest applications of diuron in the winter months from November through February (Figure 15). Therefore, the Coalition will continue to monitor for diuron for a second year from November through February during the 2016 WY.

In the 2014 MPU, the Coalition decided that no monitoring was necessary for sediment toxicity to *H. azteca* in this site subwatershed. Past monitoring data indicated one toxic sample through six years of monitoring (September 2004 through 2010). The Coalition will not monitor for sediment toxicity to *H. azteca* in the 2016 WY.

Figure 15. Applications of diuron in the Littlejohns Creek @ Jack Tone Rd site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.



Lone Tree Creek @ Jack Tone Rd

Lone Tree Creek @ Jack Tone Rd is a Represented site within the French Camp Slough @ Airport Way Zone. The Coalition initiated monitoring at this site in 2004 and continued monitoring through 2015. In the 2015 WY, the Coalition conducted MPM for chlorpyrifos and water column toxicity to *P. promelas* during months of past exceedances. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Lone Tree Creek @ Jack Tone Rd site subwatershed is in a management plan for DO, pH, SC, ammonia, *E. coli*, chlorpyrifos, and water column toxicity to *P. promelas* (Table 23). The Coalition will conduct MPM during the 2016 WY for chlorpyrifos and toxicity to *P. promelas*. Following the flowchart strategy in Figure 1, the remaining constituents (DO, pH, SC, ammonia, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans.

Chlorpyrifos

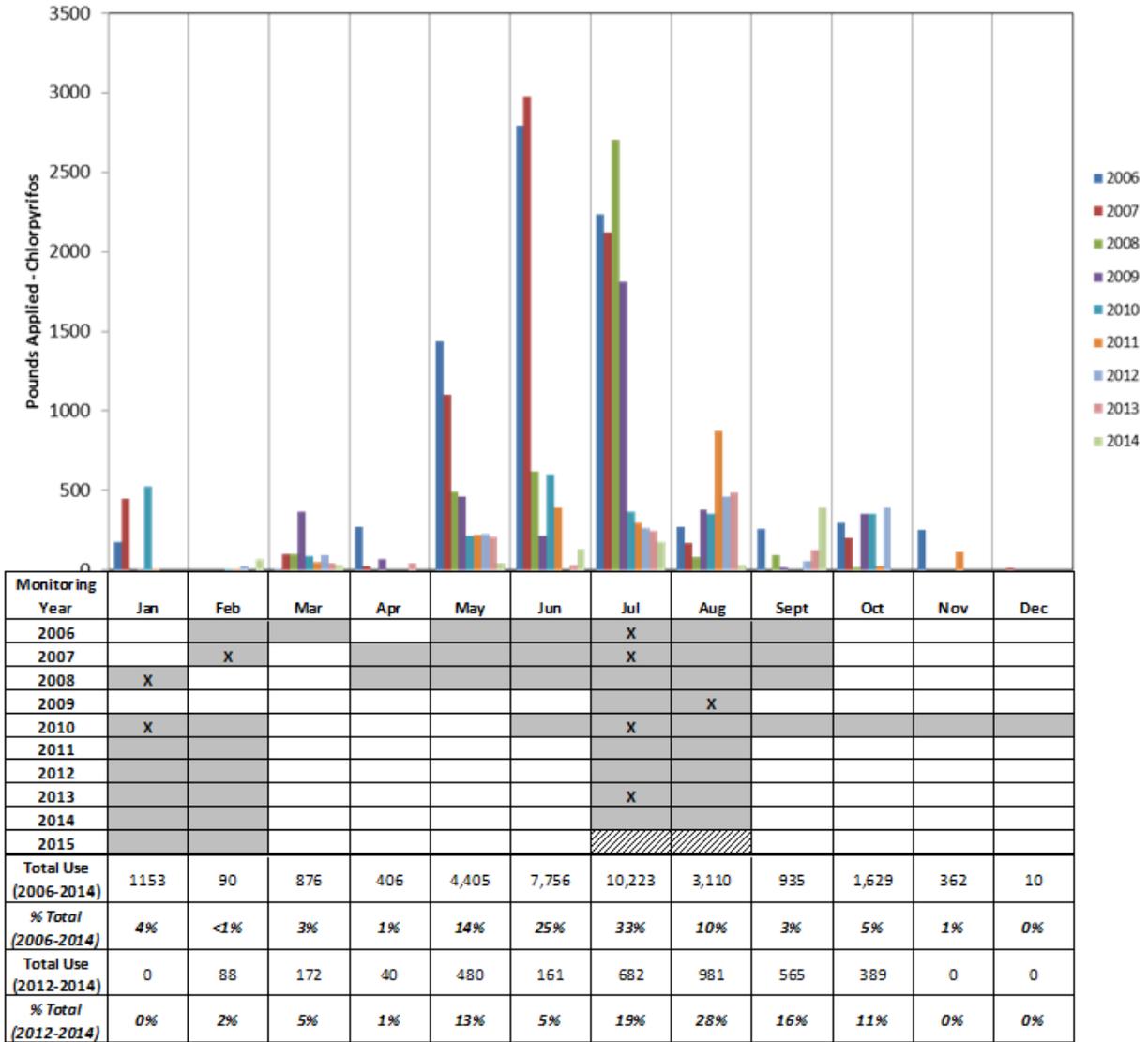
During the 2015 WY, the Coalition conducted MPM for chlorpyrifos in January and February 2015; there were no detections. At the time of this report, scheduled monitoring in July and August 2015 had not yet occurred. The last exceedance of the WQTL for chlorpyrifos occurred in July 2013 (0.026 µg/L). The PUR data from 2012 through 2014 indicate highest applications of chlorpyrifos in the summer months from May through September; the peak applications occurred in August which accounted for 28% of all applications within the past three years (Figure 16). According to the PUR data, applications of chlorpyrifos during January and February accounted for 2% or below of all applications in the site subwatershed within the past three years (Figure 16). The Coalition also 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 2016 WY, the Coalition will continue MPM for chlorpyrifos July and August. Due to a notable increase in applications of chlorpyrifos in the month of September (16% of all applications in the past three years), the Coalition will add September to the monitoring schedule.

Water column toxicity to *P. promelas*

The Coalition conducted MPM for toxicity to *P. promelas* in January and February of the 2015 WY; there were no toxic samples. The last toxicity occurred in January 2008. In the 2016 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 16. Lone Tree Creek @ Jack Tone Rd 2006-2014 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.



Monitoring Based on Core site Exceedances

As stated above, Lone Tree Creek @ Jack Tone Rd is in a management plan for chlorpyrifos and monitoring will follow the management plan strategy.

The Coalition received approval to remove diuron, water column toxicity to *S. capricornutum*, and sediment toxicity to *H. azteca* from the Lone Tree Creek @ Jack Tone Rd management plan on May 21, 2012; no monitoring is necessary for these constituents in the 2016 WY.

Mormon Slough @ Jack Tone Rd

Mormon Slough @ Jack Tone Rd is a Represented site within the French Camp Slough @ Airport Way Zone. The Coalition initiated monitoring at this site in 2006 and continued monitoring through 2015. In the 2015 WY, in addition to MPM for chlorpyrifos and water column toxicity to *C. dubia* during months of past exceedances, the Coalition monitored for diuron and sediment toxicity to *H. azteca* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Mormon Slough @ Jack Tone Rd site subwatershed is in a management plan for DO, pH, chlorpyrifos, and water column toxicity to *C. dubia* (Table 23). The Coalition will conduct MPM during the 2016 WY for chlorpyrifos and toxicity to *C. dubia*. Following the flowchart strategy in Figure 1, the remaining constituents (DO and pH) are difficult to source and will be addressed in constituent specific workplans.

Chlorpyrifos

During the 2015 WY, the Coalition monitored for chlorpyrifos in May 2015; there was no detection of chlorpyrifos in the sample. As the time of this report; scheduled monitoring had not yet occurred from July through September 2015. The last exceedance of the WQTL for chlorpyrifos occurred in September 2011 (0.110 µg/L). Since there were no exceedances in the past three years, the Coalition will petition to remove chlorpyrifos from the Mormon Slough @ Jack Tone Rd management plan in August 2015. The PUR data from 2012 through 2014 indicate high applications of chlorpyrifos during the summer months with peaks in July and August totaling 39% and 34% respectively, of all chlorpyrifos applied in the past three years (Figure 17). The Coalition will continue MPM for chlorpyrifos at Mormon Slough @ Jack Tone Rd in May, and July through September in the 2016 WY. The Coalition will also add April to the monitoring schedule due a spike in applications of chlorpyrifos in 2014.

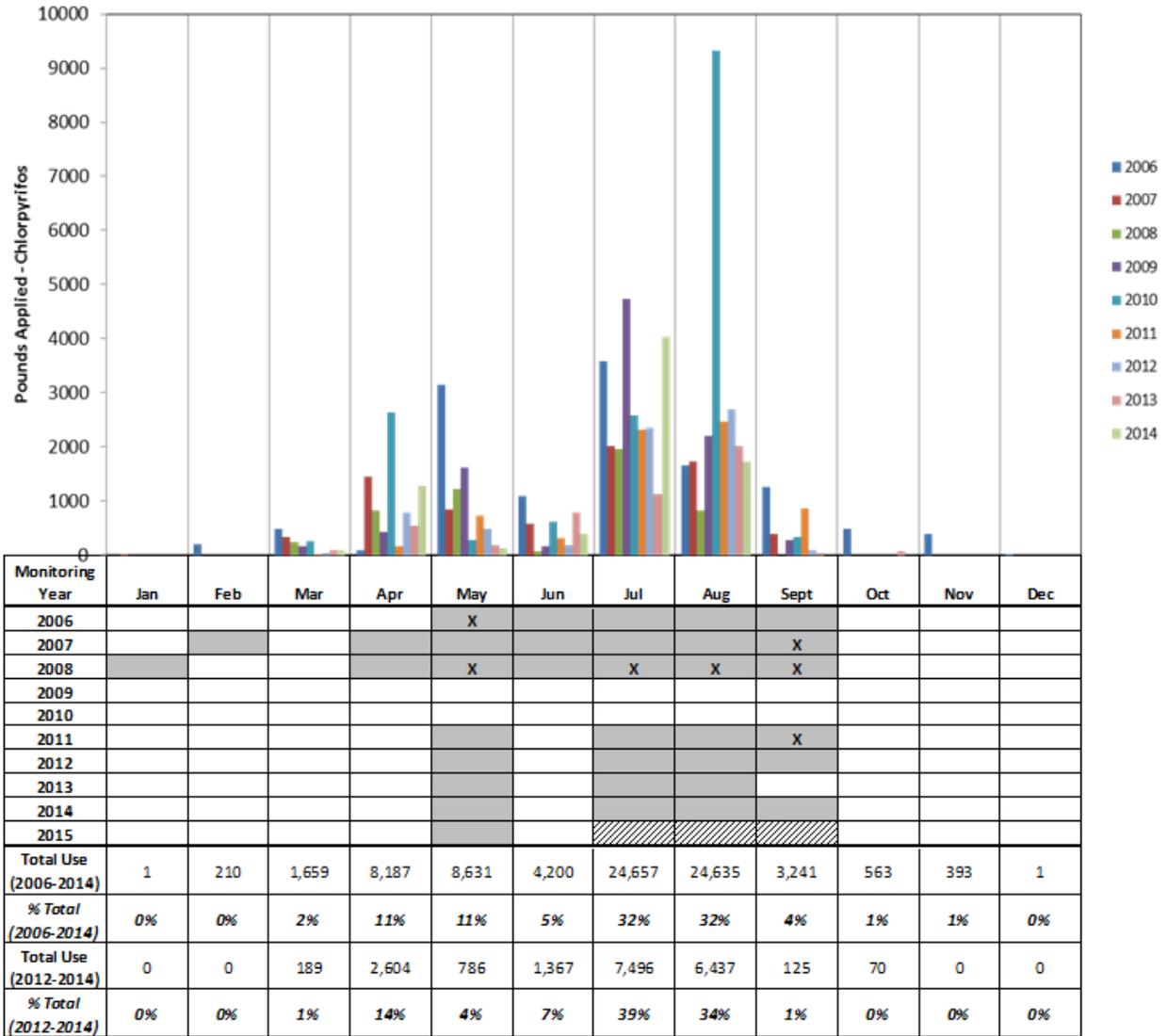
Water column toxicity to *C. dubia*

Monitoring for toxicity to *C. dubia* occurred in May during the 2015 WY; the sample was not toxic. At the time of this report, scheduled monitoring had not yet occurred in September 2015. The last toxic sample occurred in May 2008 and coincided with an exceedance of the WQTL for chlorpyrifos. Since no

toxicity occurred in the past three years, the Coalition will petition to remove water column toxicity to *C. dubia* from the Mormon Slough @ Jack Tone Rd management plan in August 2015. The Coalition will continue MPM for toxicity to *C. dubia* in the Mormon Slough @ Jack Tone Rd site subwatershed in May and September of the 2016 WY.

Figure 17. Mormon Slough @ Jack Tone Rd 2006-2014 chlorpyrifos use and monitoring.

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



Monitoring Based on Core site Exceedances

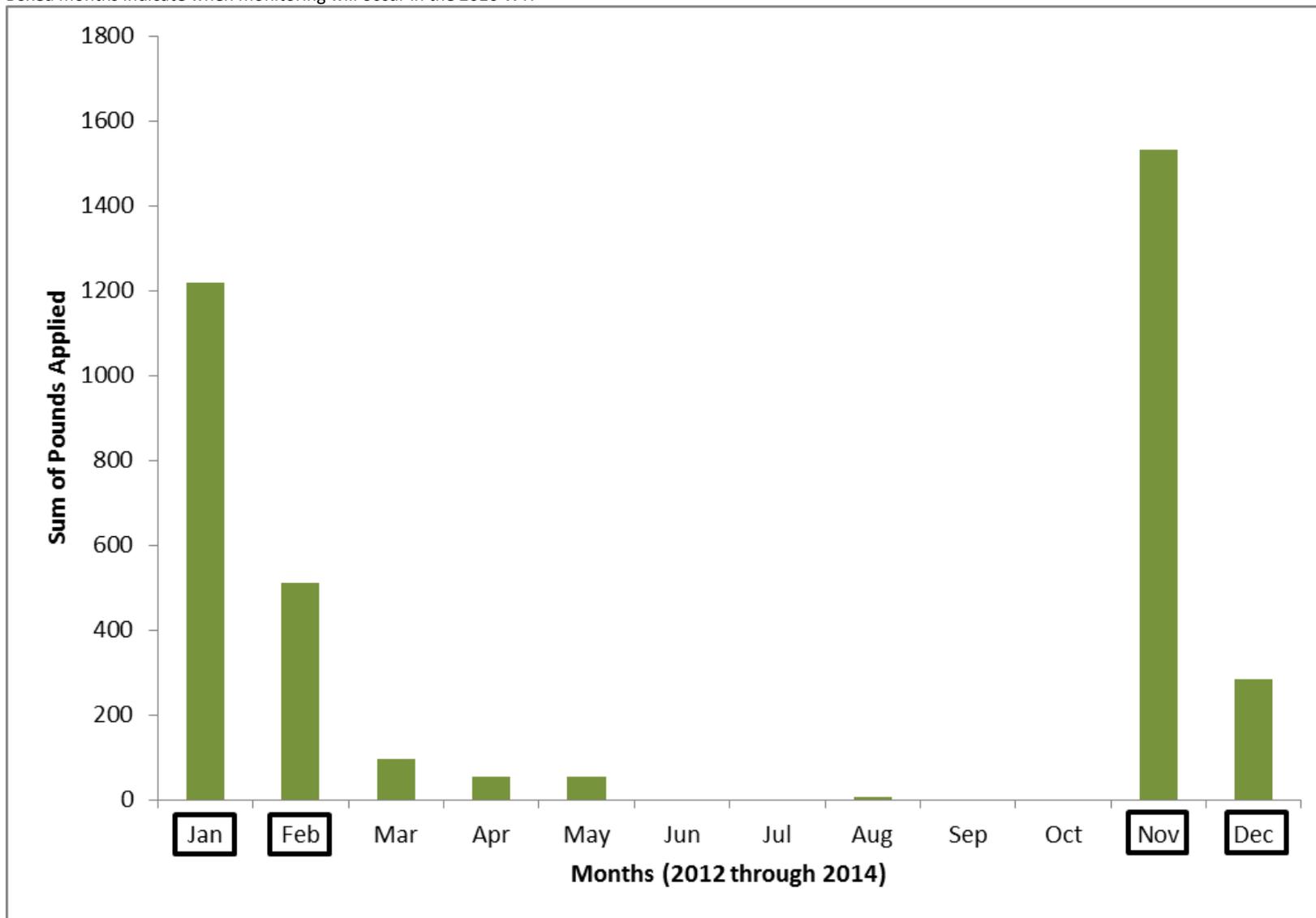
As stated above, Littlejohns Creek @ Jack Tone Rd is in a management plan for chlorpyrifos and monitoring will follow the management plan strategy. The Coalition received approval to remove water column toxicity to *S. capricornutum* from the site subwatershed on August 22, 2014; no monitoring is scheduled in the 2016 WY.

In the 2015 WY, the Coalition monitored for diuron from November 2014 through February 2015; there was one detection in February 2015 (0.56 µg/L), but no samples exceeded the WQTL for diuron. In addition to the monitoring in the 2015 WY, 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 flowchart above (Figure 4), the Coalition will monitor for diuron for a second year. Recent PUR data from 2012 through 2014 indicate highest applications of diuron in the winter months from November through February (Figure 18). Therefore, the Coalition will continue to monitor for diuron from November through February during the 2016 WY.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 18. Applications of diuron in the Mormon Slough @ Jack Tone Rd site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.



Unnamed Drain to Lone Tree Creek @ Jack Tone Rd

Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is a Represented site within the French Camp Slough @ Airport Way Zone. The Coalition initiated monitoring at this site in 2006 and continued monitoring through 2015. In the 2015 WY, the Coalition conducted MPM for copper, chlorpyrifos, diuron, and sediment toxicity to *H. azteca* during months of past exceedances. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Unnamed Drain to Lone Tree Creek @ Jack Tone Rd site subwatershed is in a management plan for DO, SC, *E. coli*, copper, lead, chlorpyrifos, diuron, and sediment toxicity to *H. azteca* (Table 23). The Coalition will conduct MPM during the 2016 WY for copper, chlorpyrifos, diuron, and toxicity to *H. azteca*. Following the flowchart strategy in Figure 1, the remaining constituents (DO, SC, lead, *E. coli*) are difficult to source and will be addressed in constituent specific workplans.

Copper

During the 2015 WY, the Coalition monitored for dissolved copper in April and May 2015; there were no detections of copper in the samples. At the time of this report, scheduled monitoring from July through September 2015 had not yet occurred. The last exceedance of the WQTL for copper occurred in May 2010. Since there were no exceedances in the past three years, the Coalition will petition to remove copper from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd management plan in August 2015. The PUR data from 2012 through 2014 indicate highest applications of copper from March through May with the peak occurring in April (48% of total applications within the past three years); although past exceedances occurred from July through September, applications were drastically reduced within the past three years (0% of total use in each of the months; Figure 19). Monitoring also occurred from July through September for five or more years without an exceedance; therefore the Coalition will discontinue MPM during these months. In the 2016 WY, the Coalition will continue MPM for dissolved copper in April and May; due to a large increase in applications in March in 2014, the Coalition will add March to the 2016 MPM schedule.

Chlorpyrifos

During the 2015 WY, the Coalition conducted MPM for chlorpyrifos from November 2014 through February 2015, May, and June 2015; two exceedances of the WQTL occurred in the January (0.075 µg/L) and June (0.025 µg/L) sampling events. At the time of this report, scheduled monitoring had not yet occurred from July through September 2015. The PUR data from 2012 through 2014 indicate highest applications occurred during the summer months with peaks in May and July, each accounting for 31% of total use in the past three years (Figure 20). According to the PUR data, applications of chlorpyrifos during February accounted for 0% of all applications in the site subwatershed within the past three

years (Figure 20). The Coalition also monitored during this month for six years (one dry event) without an exceedance; therefore, the Coalition will discontinue MPM for chlorpyrifos in February. In the 2016 WY, the Coalition will continue MPM in November through January, and May through September.

Diuron

During the 2015 WY, the Coalition conducted MPM for diuron in November and December 2014, and January and February 2015; there was a detection (0.23 µg/L) in the February sample, but no samples exceeded the WQTL for diuron. The last exceedance of the WQTL for diuron occurred in February 2012 (2.4 µg/L). Since there were no exceedances in the past three years, the Coalition will petition to remove diuron from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd management plan in August 2015. The PUR data from 2012 through 2014 indicate highest applications of diuron occurred during the winter months, peaking in February with 42% of total applications of diuron in the past three years (Figure 21). In the 2016 WY, the Coalition will continue MPM in November through February.

Sediment toxicity to *H. azteca*

Monitoring for sediment toxicity occurs twice a year – once during the storm season and once during the irrigation season. The Coalition will conduct MPM for *H. azteca* sediment toxicity in March and September during the 2016 WY.

Figure 19. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2006-2014 copper 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.

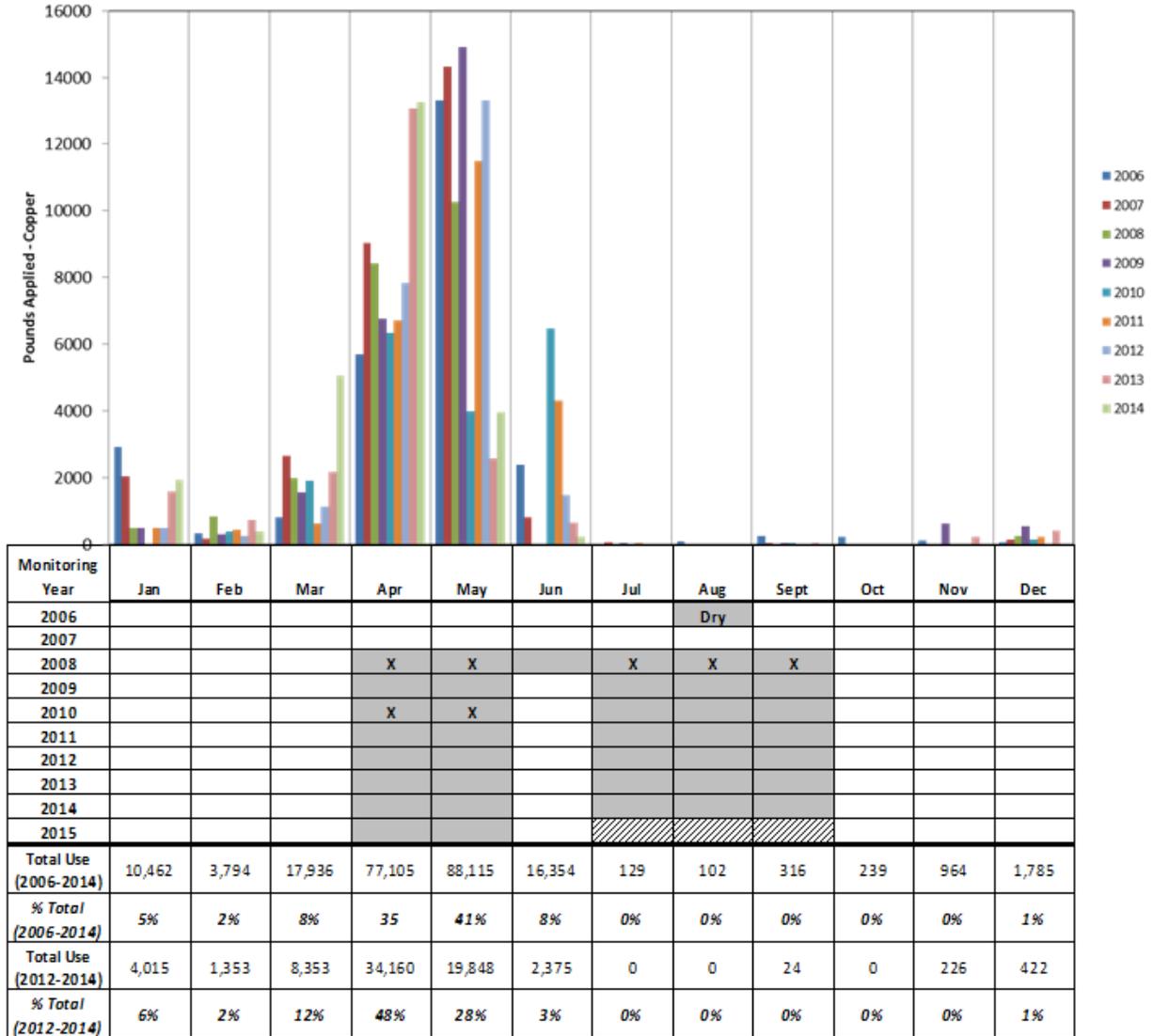


Figure 20. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2006-2014 chlorpyrifos use and monitoring. Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.

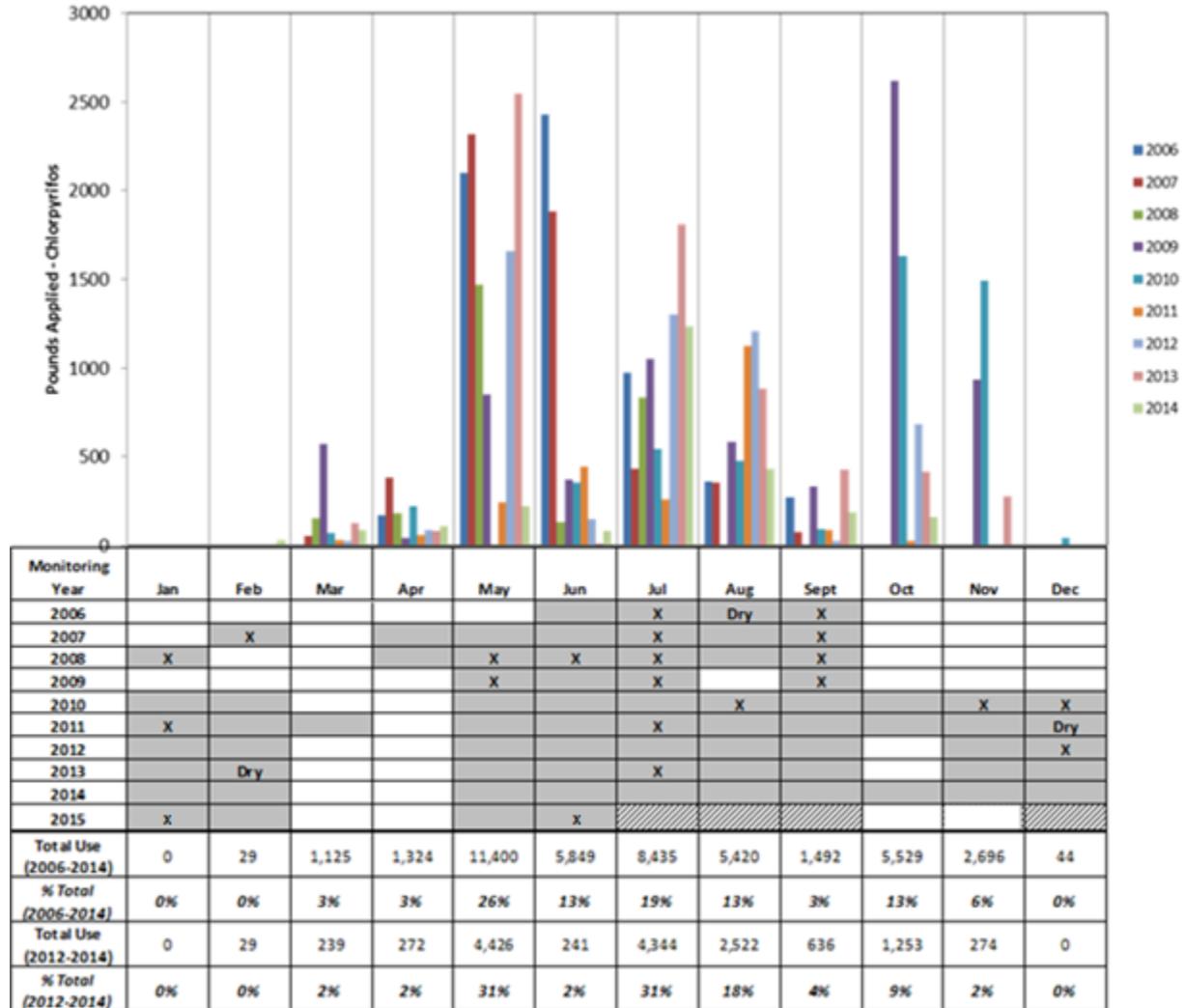
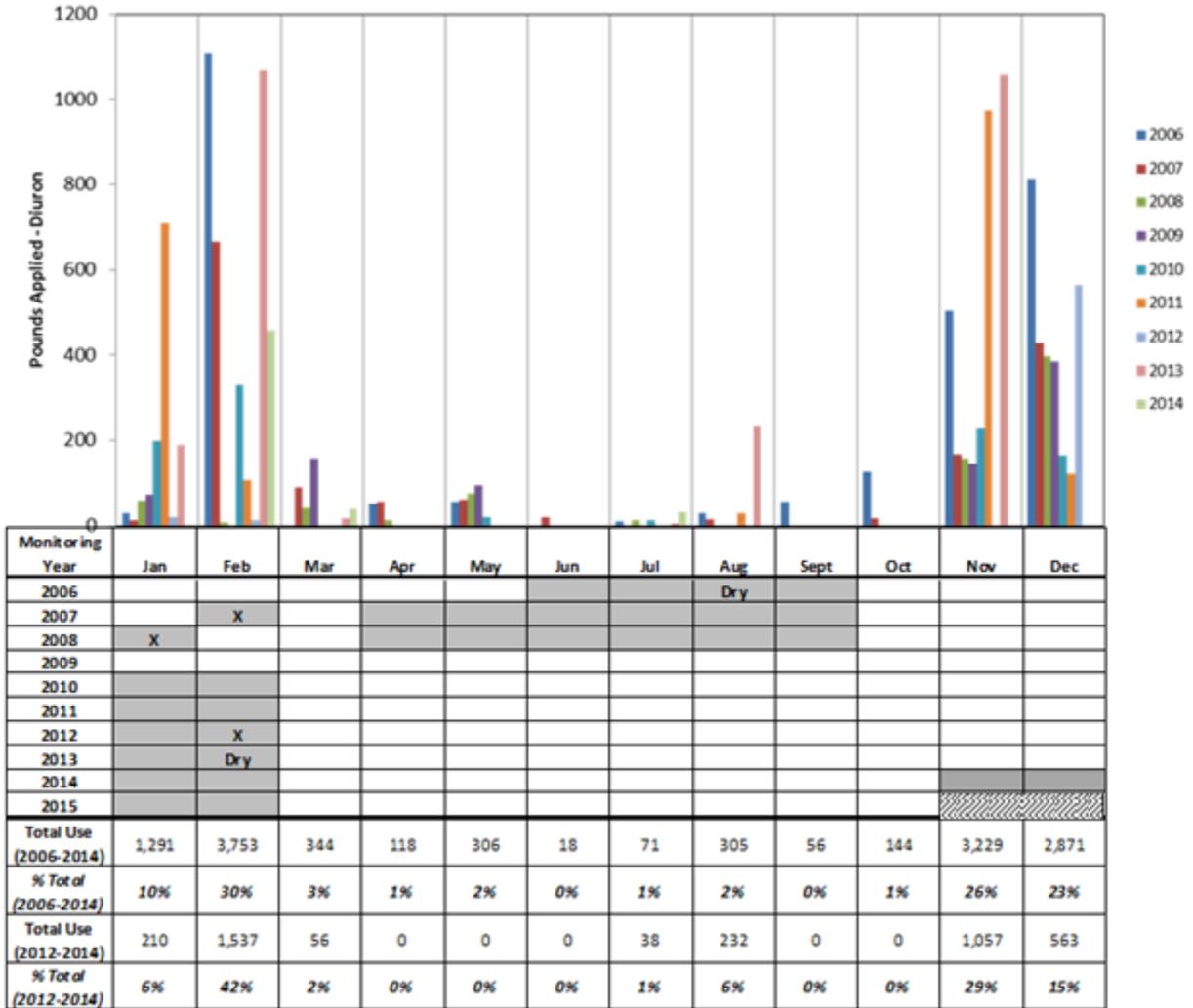


Figure 21. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd 2006-2014 diuron use and monitoring.
 Shaded cells represent months of past monitoring. "X" indicates months in which exceedances occurred. Hatched cells indicate where scheduled monitoring has not yet occurred.



Monitoring Based on Core site Exceedances

As stated above, Unnamed Drain to Lone Tree Creek @ Jack Tone Rd is in a management plan for chlorpyrifos and diuron; monitoring will follow the management plan strategy. The Coalition received approval to remove water column toxicity to *S. capricornutum* from the Unnamed Drain to Lone Tree Creek @ Jack Tone Rd management plan on May 21, 2012; no monitoring for algae toxicity will occur in the 2016 WY.

ZONE 3 – TERMINOUS TRACT DRAIN @ HWY 12 ZONE

The Coalition will monitor the following management plan constituents at Terminus Tract Drain @ Hwy 12 in the 2016 WY:

- arsenic for all months, from October through September.
- chlorpyrifos in January, August, and September.
- diuron in February and March.
- *S. capricornutum* water column toxicity in January, February, April, and May.
- *H. azteca* sediment toxicity in March and September.

Monitoring at the Core site during the 2015 WY resulted in exceedances of the WQTLs for DO, SC, *E. coli*, nitrate, chlorpyrifos, diuron, and also samples toxic to *C. dubia* and *S. capricornutum* (Table 24). Due to two exceedances of the WQTL for diuron (February and March 2015), the Coalition initiated a management plan for diuron in the Terminus Tract Drain @ Hwy 12 site subwatershed. Samples collected in October 2014 were toxic to *C. dubia* (15% survival compared to the control); the Coalition conducted a TIE which indicated non-polar organics and cationic metals as the causes of toxicity. The samples collected in February 2015 were toxic to *S. capricornutum* (21% survival compared to the control); the Coalition conducted a TIE which indicated non-polar organics as the cause of toxicity. Toxicity to *S. capricornutum* was previously approved for removal from the site’s management plan; however, due to the most recent toxic sample, the management plan for toxicity to *S. capricornutum* is now reinstated in this site subwatershed.

The Coalition evaluated each Represented site in the Terminus Tract Drain @ Hwy 12 Zone based on monitoring results at the Core site: exceedances of the WQTL for chlorpyrifos, diuron, and water column toxicity to *C. dubia* (non-polar organics and metals) and *S. capricornutum* (non-polar organics). The remaining constituents (DO, SC, *E. coli*, and nitrate) are difficult to source and will be addressed in constituent specific workplans.

Table 24. Zone 3 Management Plan Constituents and 2015 WY Exceedances.

Core site information is bolded.

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

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

X – Indicates exceedance of WQTL or toxicity in 2015WY.

X^M - Indicates there was an exceedance of WQTL or toxicity in 2015WY and the constituent is in a management plan.

Drain @ Woodbridge Rd

Drain @ Woodbridge Rd is a Represented site within the Terminous Tract Drain @ Hwy 12 Zone. The Coalition initiated monitoring at this site subwatershed in 2008 and continued monitoring through 2015. In the 2015 WY, in addition to MPM for chlorpyrifos during months of past exceedances, the Coalition monitored for sediment toxicity to *H. azteca* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

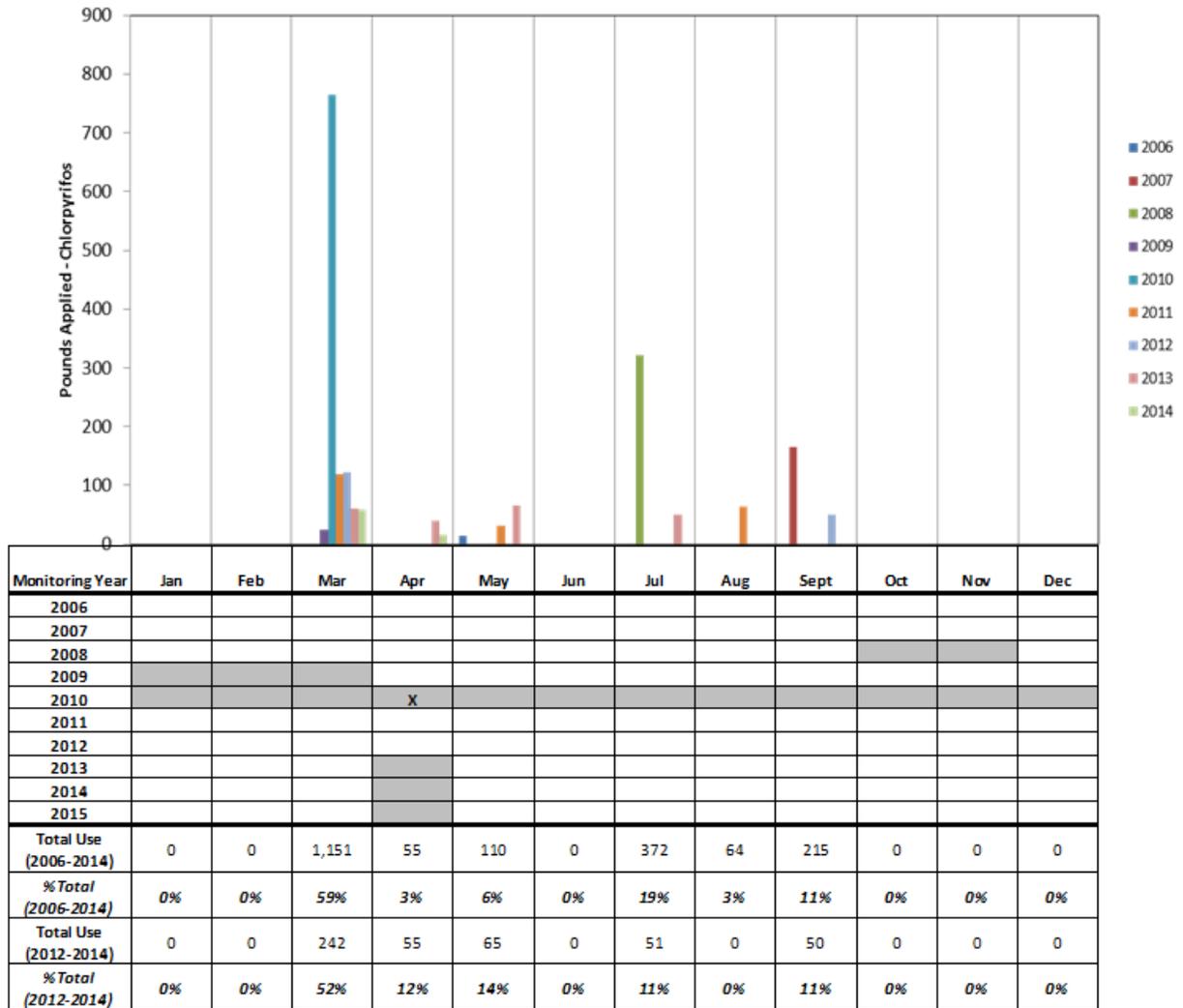
The Drain @ Woodbridge Rd site subwatershed is in a management plan DO, SC, *E. coli*, arsenic, and chlorpyrifos (Table 24). The Coalition will conduct MPM during the 2016 WY for chlorpyrifos. Following the flowchart strategy outlined in Figure 1, the remaining constituents (DO, SC, arsenic, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans.

Chlorpyrifos

During the 2015 WY, the Coalition conducted MPM for chlorpyrifos in April 2015; there were no detections of chlorpyrifos in the sample. The last exceedance of the WQTL for chlorpyrifos (0.029 µg/L) occurred in April 2010. Since there were no exceedances in the past three years, the Coalition will petition to remove chlorpyrifos from the Drain @ Woodbridge Rd management plan in August 2015. The PUR data from 2012 through 2014 indicate a steady decline in applications of chlorpyrifos in the site subwatershed in those three years (Figure 22). The Coalition will continue MPM for chlorpyrifos in April of the 2016 WY.

Figure 22. Drain @ Woodbridge Rd 2006-2014 chlorpyrifos use and monitoring.

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



Monitoring Based on Core site Exceedances

As discussed above, Drain @ Woodbridge Rd is in a management plan for chlorpyrifos, and the Coalition will conduct monitoring for chlorpyrifos according to the management plan strategy.

Due to two exceedances of the WQTL for diuron at the Core site during the 2015 WY, the Coalition evaluated the Drain @ Woodbridge Rd for diuron applications. The Coalition monitored for diuron at the site subwatershed on 17 sampling events from October 2008 through December 2010; there were 10 detections, but no samples exceeded the WQTL for diuron. Recent PUR data from 2012 through 2014 indicate applications of diuron in December, January, and March (Figure 23); one of the exceedances of the WQTL for diuron at the Core site occurred in March. The Coalition will monitor for diuron in December, January, and March during the 2016 WY.

Samples collected in February 2015 from the Core site were toxic to *S. capricornutum* and the TIE indicated non-polar organics as the cause for toxicity; therefore the Coalition will evaluate Drain @ Woodbridge Rd for toxicity to algae. Monitoring for water column toxicity to *S. capricornutum* occurred on 17 sampling events from October 2008 through December 2010; there were no toxic samples. The PUR data from 2012 through 2014 indicate the greatest applications of herbicides, most of which are non-polar organic compounds, occurred in May and June. Metal applications can also cause toxicity to algae, but there were very few applications with less than 500 lbs of AI applied in the past three years (Figure 24). Therefore, the Coalition will monitor for toxicity to *S. capricornutum* in May and June of the 2016 WY. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *S. capricornutum* at Drain @ Woodbridge Rd.

Samples collected in October 2014 from the Core site were toxic to *C. dubia* and the TIE indicated non-polar organics and cationic metals as the cause for toxicity; therefore, the Coalition will evaluate Drain @ Woodbridge Rd for toxicity to the water flea. Past monitoring for toxicity to *C. dubia* occurred on 17 events from October 2008 through December 2010; there were no toxic samples. The PUR data from 2012 through 2014 indicate that applications of insecticides, many of which are non-polar organic compounds, occurred primarily during the irrigation season from April through September; the peak applications occurred in June with 78,305 lbs of AI applied in the past three years (Figure 25). There were few applications of metals with a total of 471 lbs of AI applied in the past three years. In the 2016 WY, the Coalition will monitor for toxicity to *C. dubia* during the months of peak applications of insecticides: April through August. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *C. dubia* at Drain @ Woodbridge Rd.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 23. Applications of diuron in the Drain @ Woodbridge Rd site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

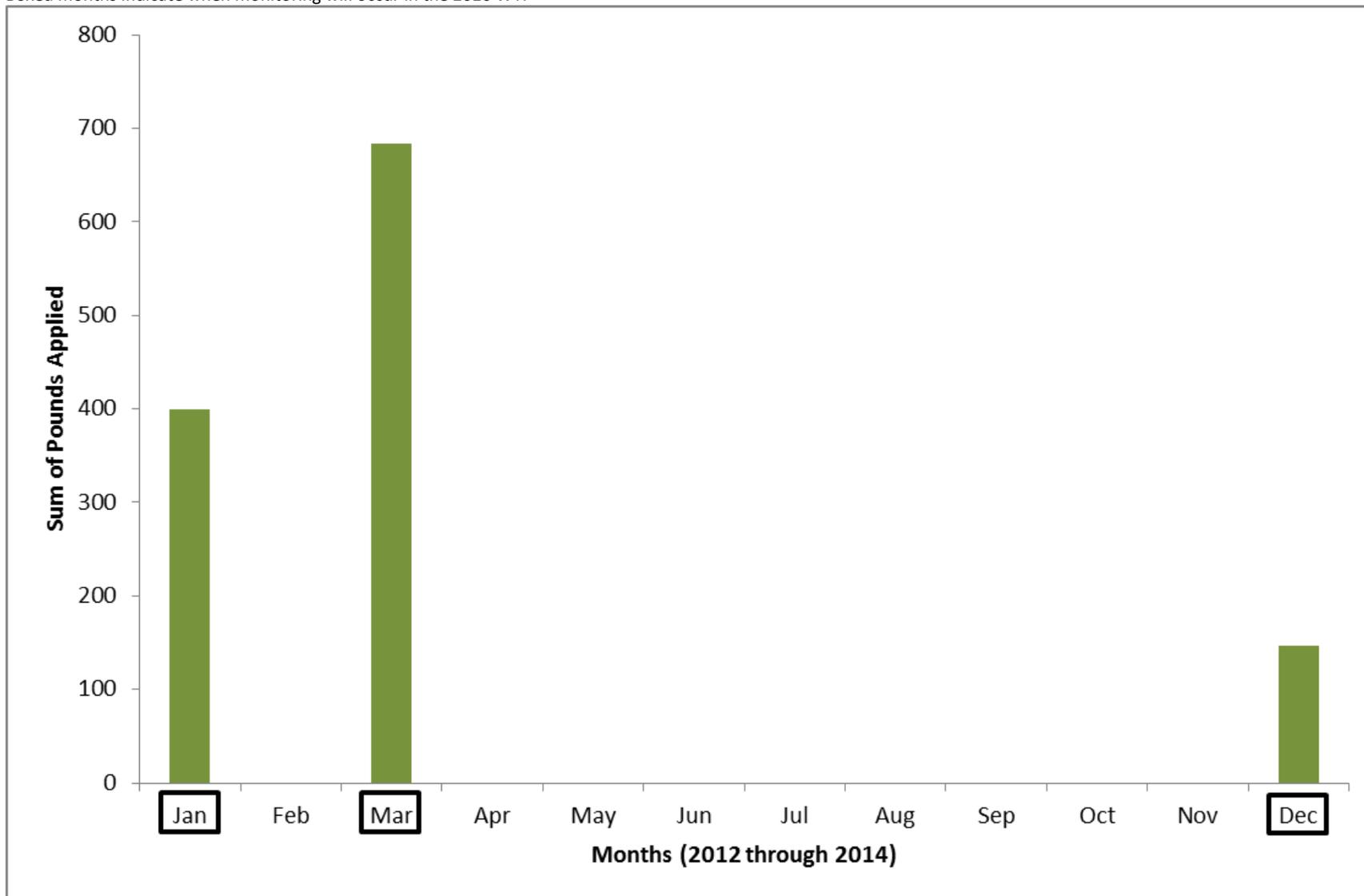


Figure 24. Drain @ Woodbridge Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012 through 2014).
 Boxed months indicate when monitoring will occur in the 2016 WY.

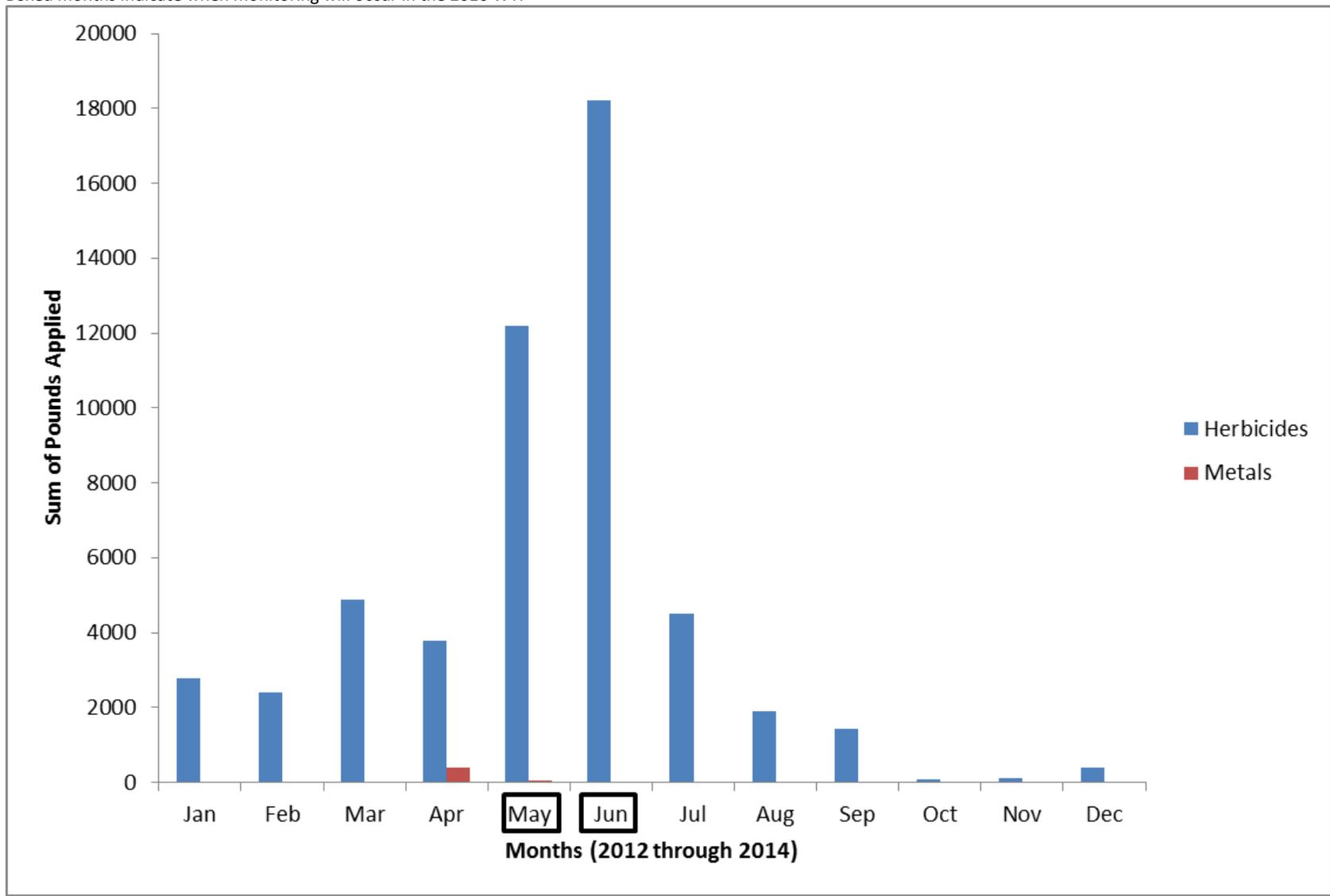
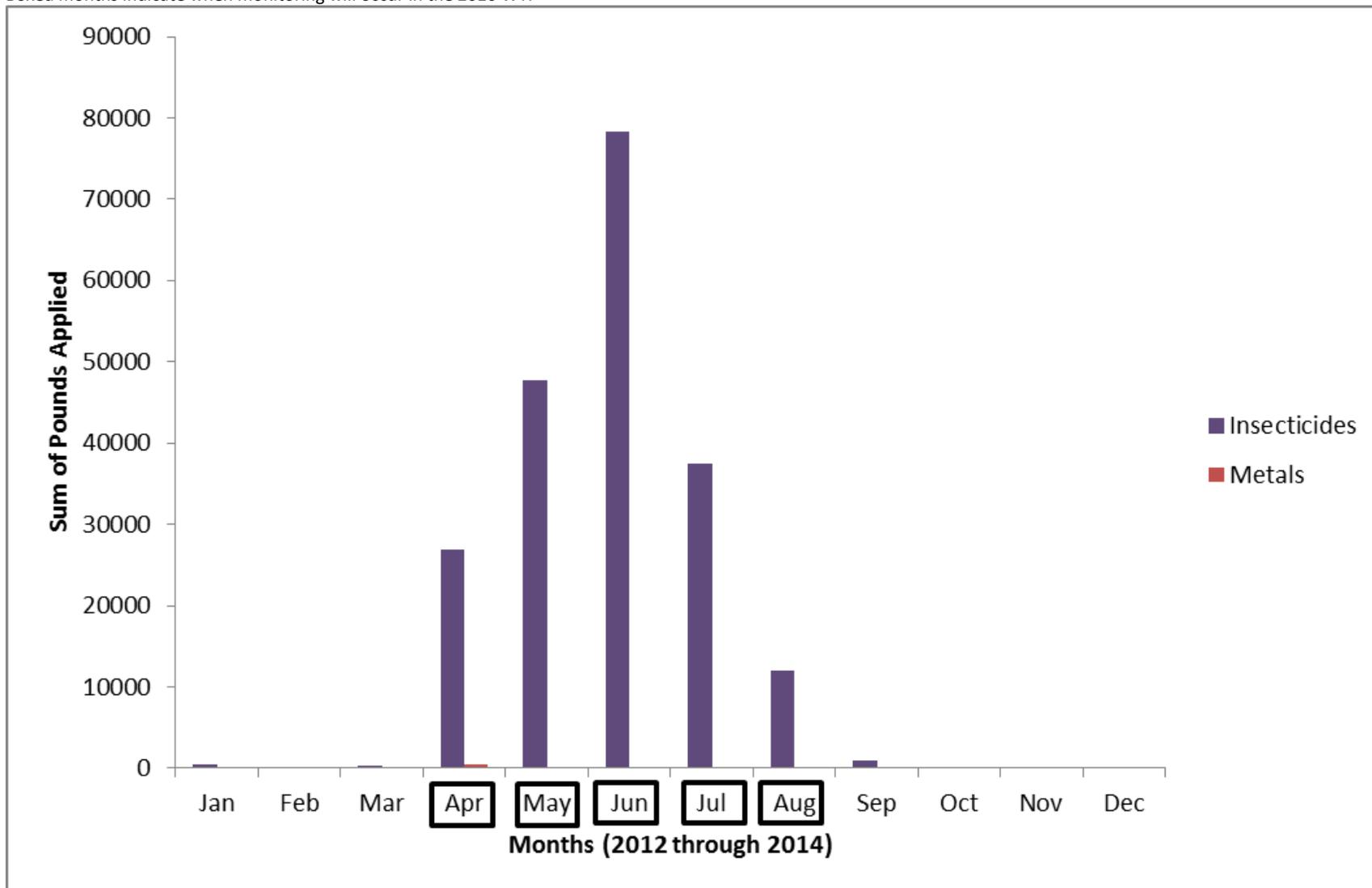


Figure 25. Drain @ Woodbridge Rd applications of insecticides and metals associated with *C. dubia* toxicity (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.



Empire Tract @ 8 Mile Rd

Empire Tract @ 8 Mile Rd is a Represented site within the Terminous Tract Drain @ Hwy 12 Zone. The Coalition initiated monitoring in this site subwatershed in 2013 and continued monitoring through 2015. In the 2015 WY, the Coalition monitored for chlorpyrifos and sediment toxicity to *H. azteca* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 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*, and arsenic (Table 24). Following the flowchart strategy outlined in Figure 1, these are difficult to source and will be addressed in constituent specific workplans. The Coalition will not conduct MPM at this site subwatershed in the 2016 WY.

Monitoring Based on Core site Exceedances

At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred in August and September of the 2015 WY. Additionally, monitoring for chlorpyrifos occurred during 11 sampling events from July 2013 through June 2014; there were no detections. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for chlorpyrifos for a second year. The PUR data from 2012 through 2014 indicate applications of chlorpyrifos occurred in the summer months of May, July through September, and in November; however, the applications were minor with a total of 319 lbs of AI of chlorpyrifos applied in the three year period (Figure 26). The Coalition will continue monitoring for chlorpyrifos for a second year in November and July through September, of the 2016 WY.

Due to two exceedances of the WQTL for diuron at the Core site during the 2015 WY, the Coalition will evaluate Empire Tract @ 8 Mile Rd for diuron applications. The Coalition monitored for diuron on 11 sampling events from July 2013 through June 2014; there were no detections of diuron in the samples. The PUR data from 2012 through 2014 indicate applications of diuron occurred from February through April; however, the applications were minor with a total of only 123 lbs of AI of diuron applied in site subwatershed in the three year period (Figure 27). Due to no past detections and few applications of diuron, the Coalition will not monitor for diuron in the Empire Tract @ 8 Mile Rd site subwatershed in the 2016 WY.

Samples collected in February 2015 from the Core site were toxic to *S. capricornutum* and the TIE indicated non-polar organics as the cause of toxicity; therefore the Coalition will evaluate Empire Tract @ 8 Mile Rd for toxicity to algae. The Coalition monitored for water column toxicity to *S. capricornutum* on six events in 2013; there were no toxic samples. The PUR data from 2012 through 2014 indicate year around applications of herbicides associated with toxicity to algae, most of which are non-polar organic

compounds, with peaks occurring from December through June; applications of metals only occurred in December (Figure 28). In the 2016 WY, the Coalition will monitor for toxicity to *S. capricornutum* during the months of greatest herbicide and metal applications: December through June. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *S. capricornutum* at Empire Tract @ 8 Mile Rd.

Samples collected in October 2014 from the Core site were toxic to *C. dubia* and the TIE indicated non-polar organics and cationic metals as the cause for toxicity; therefore, the Coalition will evaluate Empire Tract @ 8 Mile Rd for toxicity to the water flea. The Coalition monitored for water column toxicity to *C. dubia* on six events in 2013; there were no toxic samples. The PUR data indicate applications of insecticides, many of which are non-polar organic compounds, throughout the year; a spike in applications occurred in April with 55,618 lbs of AI applied in the past three years (Figure 29). The spike in April was a result of one large application of a soil fumigant, possibly to prep the fields for the irrigation season. The only applications of metals occurred in December. In the 2016 WY, the Coalition will monitor for toxicity to *C. dubia* during months of peak applications of insecticides: December, April, and July. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *C. dubia* at Empire Tract @ 8 Mile Rd.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 26. Applications of chlorpyrifos in the Empire Tract @ 8 Mile Rd site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

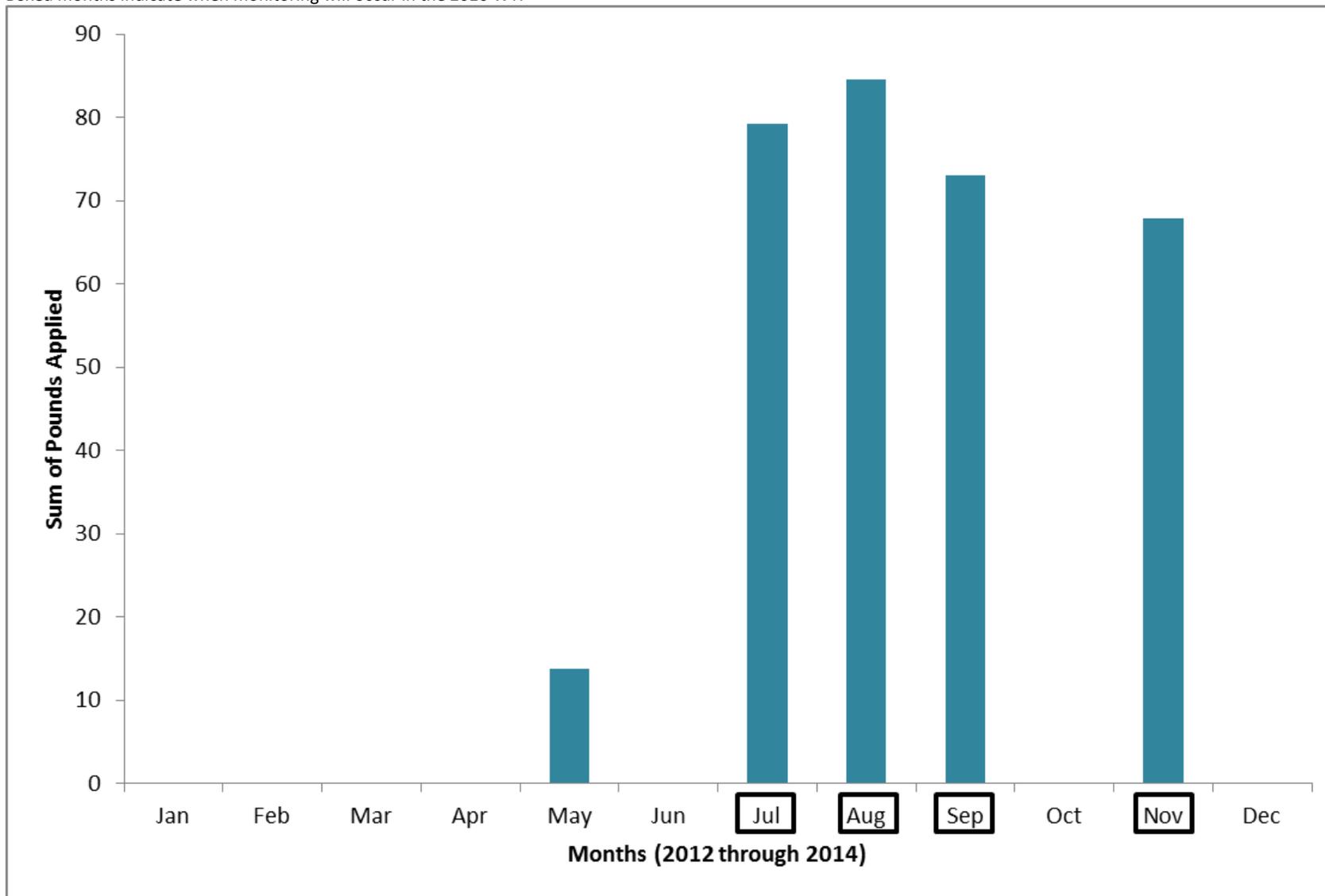


Figure 27. Applications of diuron in the Empire Tract @ 8 Mile Rd site subwatershed from 2012 through 2014.

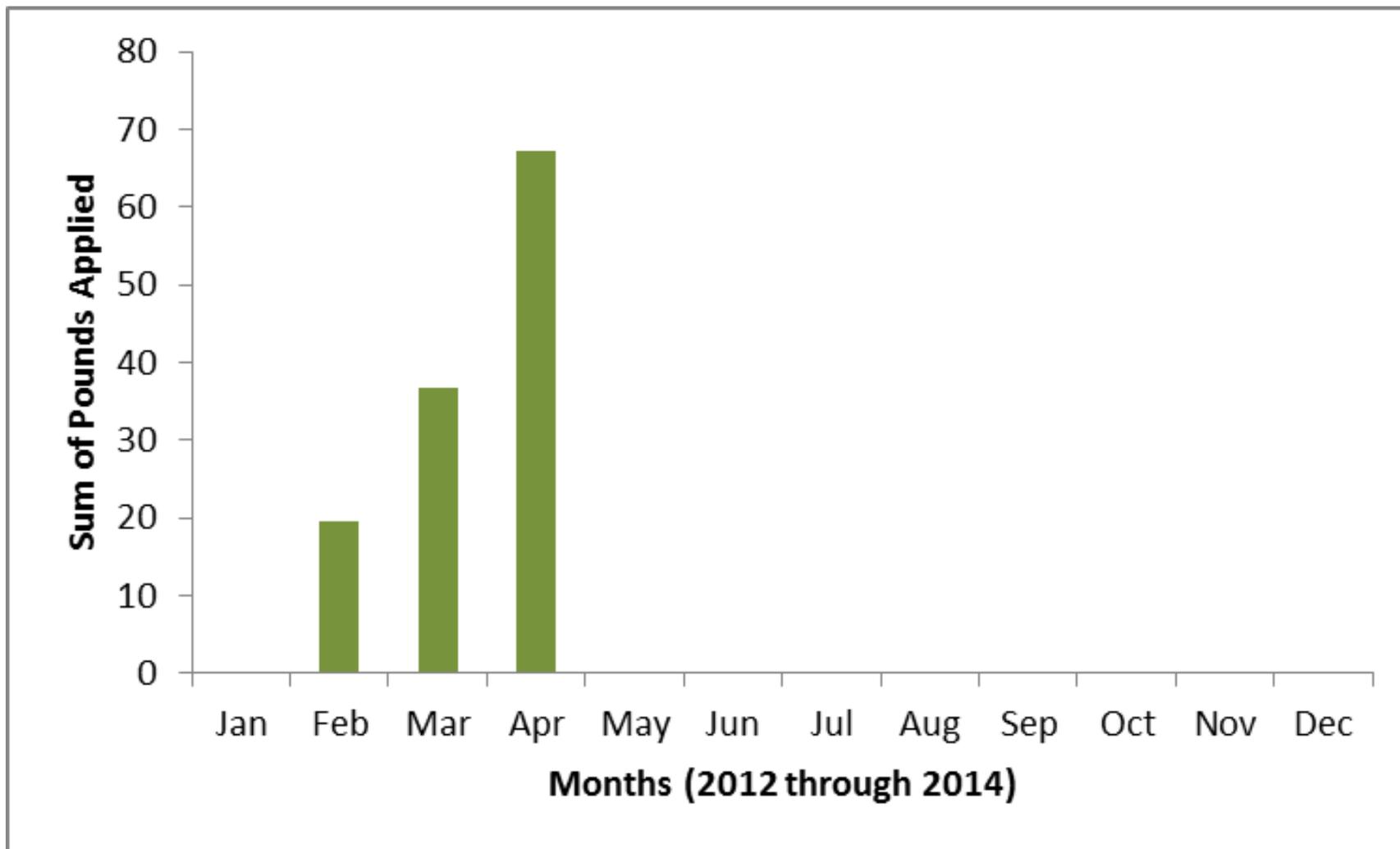


Figure 28. Empire Tract @ 8 Mile Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.

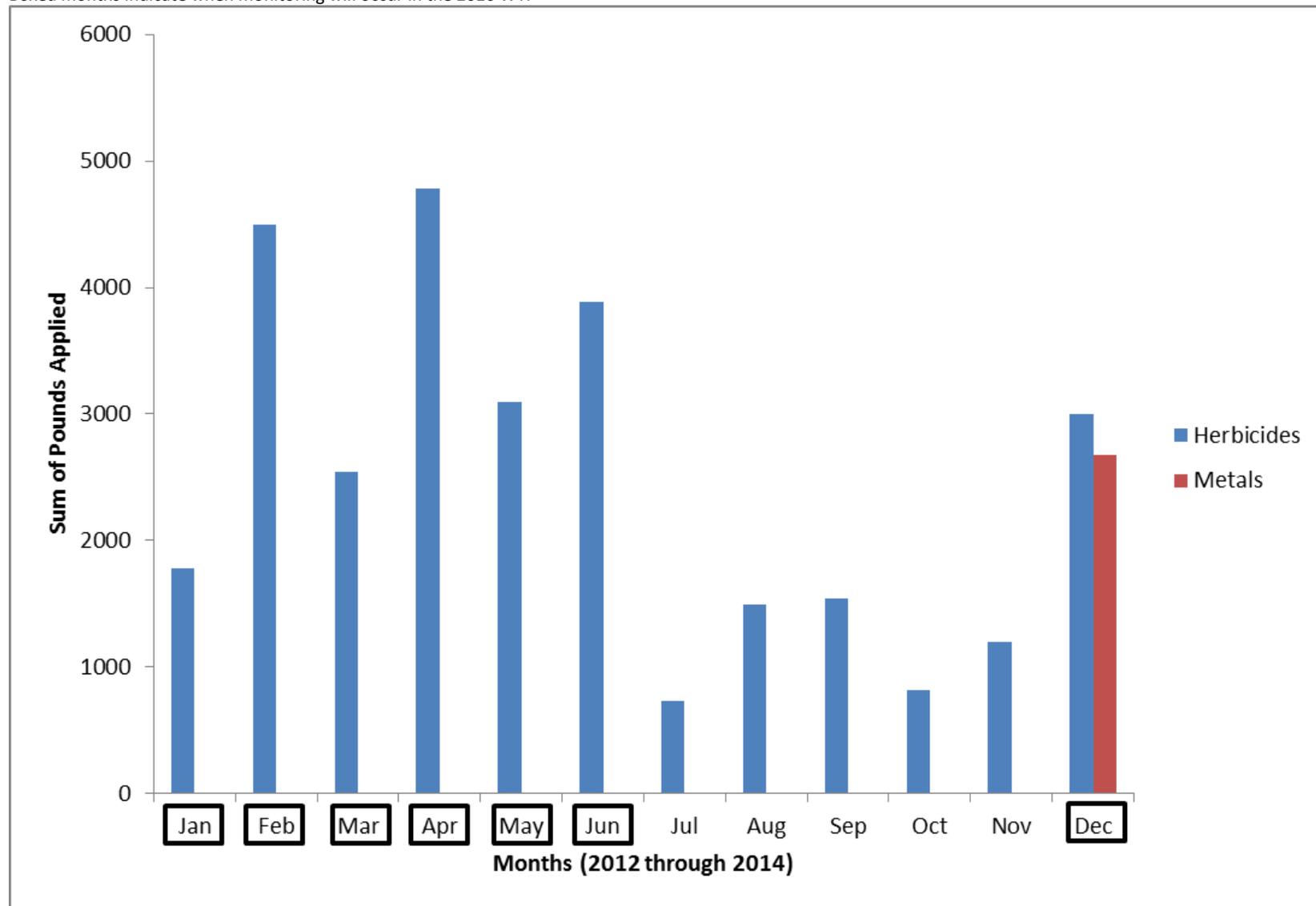
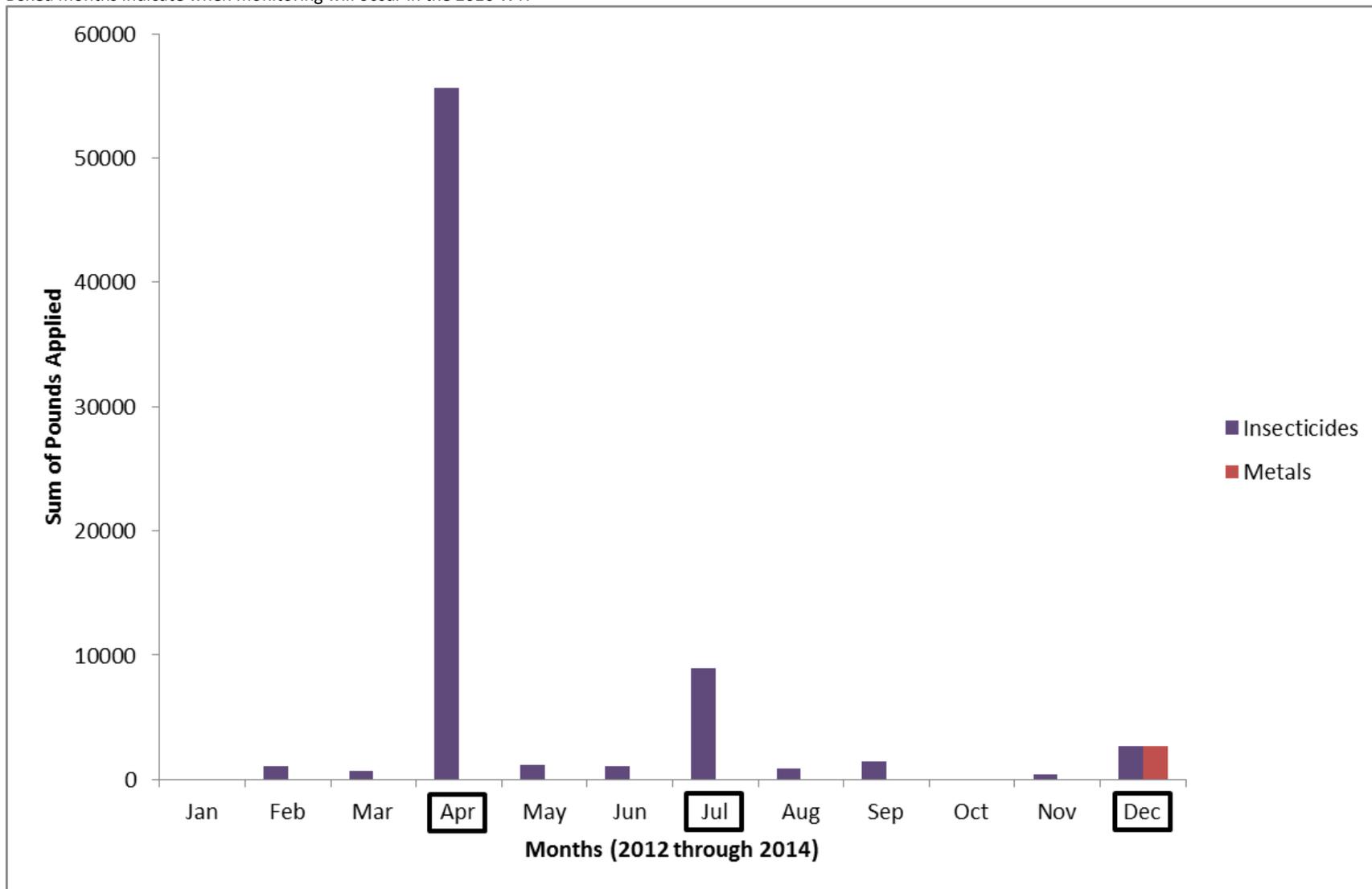


Figure 29. Empire Tract @ 8 Mile Rd applications of insecticides and metals (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.



Rindge Tract Drain

Rindge Tract Drain is a Represented site within the Terminous Tract Drain @ Hwy 12 Zone. The Coalition began monitoring at this site subwatershed in 2015. In the 2015 WY, the Coalition monitored for chlorpyrifos and sediment toxicity to *H. azteca* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Rindge Tract Drain site subwatershed is not in a management plan for any constituents; therefore, no MPM will occur in the 2016 WY.

Monitoring Based on Core site Exceedances

During the 2015 WY, the Coalition monitored for chlorpyrifos in October 2014 and March 2015; there were no detections. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred in August and September of the 2015 WY. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for chlorpyrifos for a second year. The PUR data from 2012 through 2014 indicate applications of chlorpyrifos in February, March, and August through October for a total of 2,371 lbs of AI applied in the past three years (Figure 30). Further review of the PUR data indicates that chlorpyrifos applications in February began in 2014; therefore the Coalition will add February to the monitoring schedule to further evaluate applications of chlorpyrifos in February. In the 2016 WY, the Coalition will monitor for chlorpyrifos in October, February, March, August, and September.

Due to the exceedances at the Core site during the 2015 WY, the Coalition evaluated the Rindge Tract Drain for diuron applications. Monitoring for diuron has not occurred in this site subwatershed. Recent PUR data indicate no applications of diuron occurred in this site subwatershed in the past three years. Therefore, the Coalition will not monitor for diuron in the Rindge Tract Drain site subwatershed in the 2016 WY.

Samples collected in February 2015 from the Core site were toxic to *S. capricornutum* and the TIE indicated non-polar organics as the cause of toxicity; therefore the Coalition will evaluate Rindge Tract Drain for toxicity to algae. Monitoring for water column toxicity to *S. capricornutum* has not occurred in this site subwatershed. The PUR data from 2012 through 2014 indicate applications of herbicides associated with toxicity to algae, most of which are non-polar organic compounds, occurred year around with peaks from January through June; applications of metals only occurred in April with less than 550 lbs of AI applied in the past three years (Figure 31). In the 2016 WY, the Coalition will monitor for toxicity to *S. capricornutum* in the months of highest applications of herbicides: January through June. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *S. capricornutum* at Rindge Tract Drain.

Samples collected in October 2014 from the Core site were toxic to *C. dubia* and the TIE indicated non-polar organics and cationic metals as the cause for toxicity; therefore, the Coalition will evaluate Rindge Tract Drain for toxicity to the water flea. The PUR data from 2012 through 2014 indicate a large number of applications of insecticides associated with toxicity to the water flea from February through April, with the peak of 371,665 lbs of AI applied in April (Figure 32). Applications of metals were minor with a total of 572 lbs of AI applied. In the 2016 WY, the Coalition will monitor for toxicity to *C. dubia* during the months of greatest applications of insecticides: February through April. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *C. dubia* at Rindge Tract Drain.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 30. Applications of chlorpyrifos in the Rindge Tract Drain site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

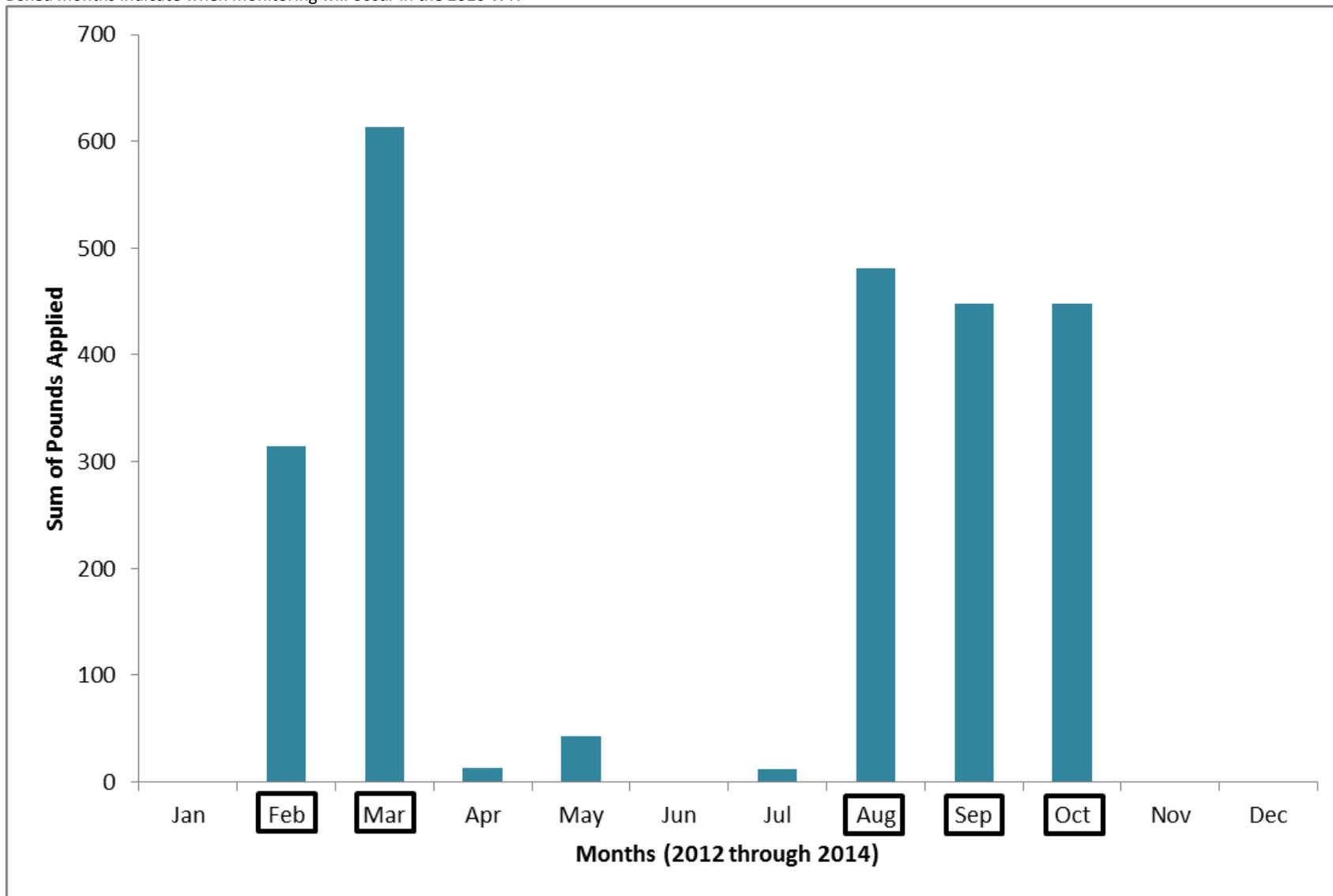


Figure 31. Rindge Tract Drain applications of herbicides and metals associated with *S. capricornutum* toxicity (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.

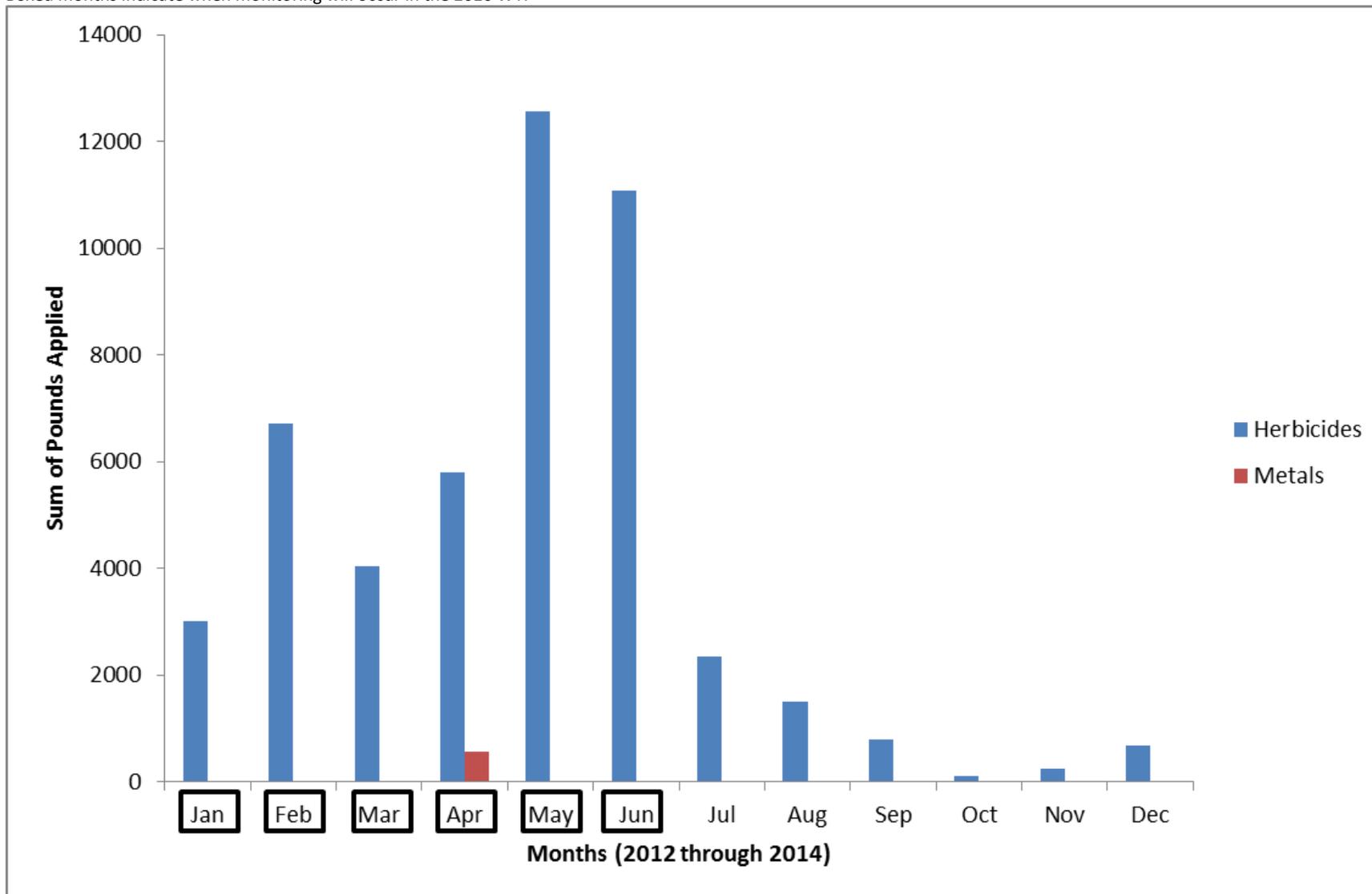
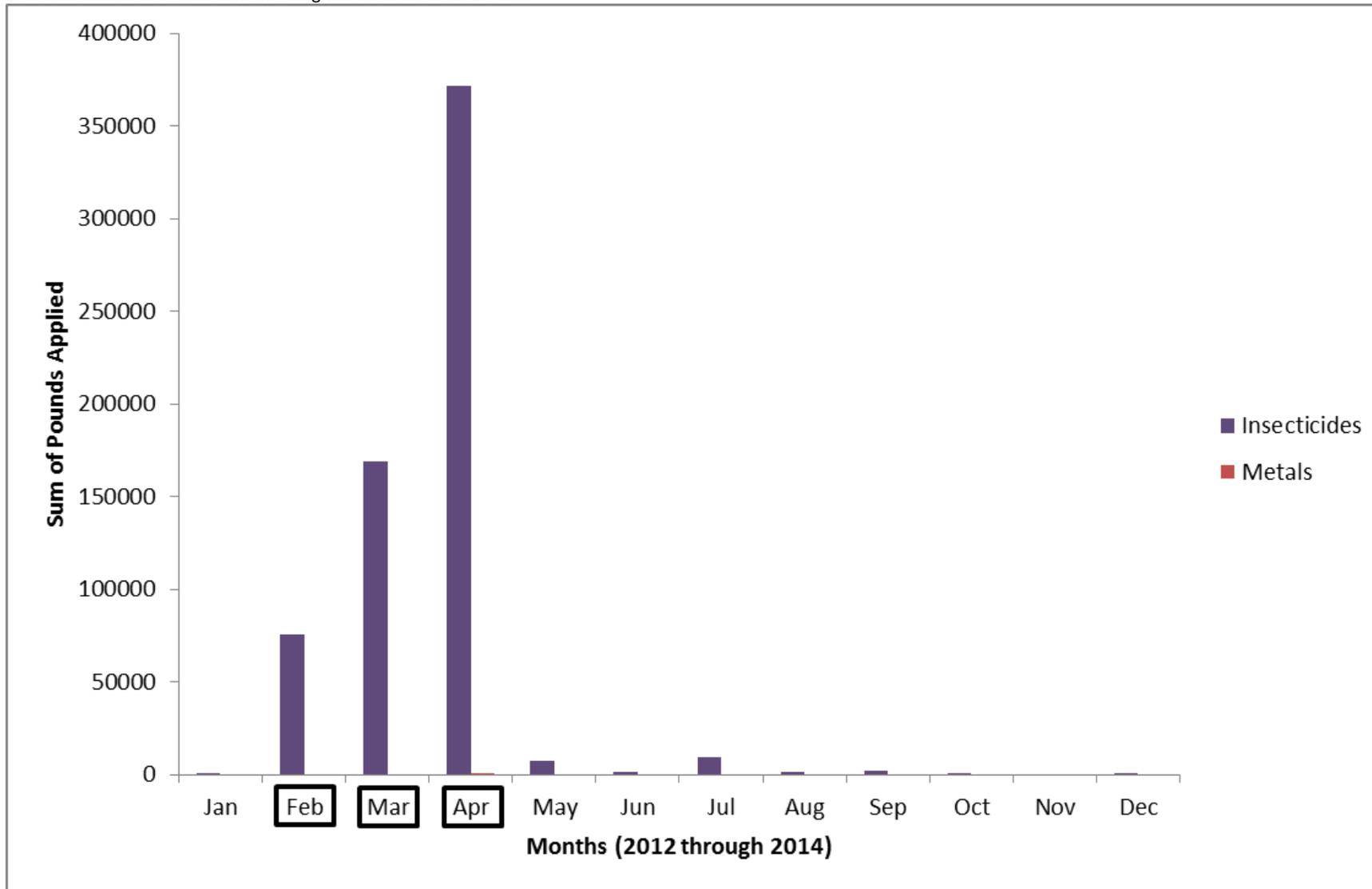


Figure 32. Rindge Tract Drain applications of insecticides and metals associated with *C. dubia* toxicity (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.



Staten Island Drain @ Staten Island Rd

Staten Island Drain @ Staten Island Rd is a Represented site within the Terminous Tract Drain @ Hwy 12 Zone. The Coalition began monitoring at this site subwatershed in 2015. In the 2015 WY, the Coalition monitored for sediment toxicity to *H. azteca* due to past exceedances at the Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The Staten Island Drain @ Staten Island Rd site subwatershed is not in a management plan for any constituents; no MPM will occur in the 2016 WY.

Monitoring Based on Core site Exceedances

In the 2014 MPU, the Coalition decided that no monitoring was necessary for chlorpyrifos in this site subwatershed because there were no applications of the pesticide. The PUR data from 2012 through 2014 indicate no applications of chlorpyrifos in the Staten Island Drain subwatershed in the last three years. Therefore, the Coalition will not monitor for chlorpyrifos at Staten Island Drain @ Staten Island Rd in the 2016 WY.

Due to the exceedances at the Core site during the 2015 WY, the Coalition evaluated the Staten Island Drain @ Staten Island Rd for diuron applications. Monitoring for diuron has not occurred in this site subwatershed. Recent PUR indicate no applications of diuron occurred in this site subwatershed in the past three years. Therefore, the Coalition will not monitor for diuron in the Staten Island Drain site subwatershed in the 2016 WY.

Samples collected in February 2015 from the Core site were toxic to *S. capricornutum* and the TIE indicated non-polar organics as the cause of toxicity; therefore the Coalition will evaluate Staten Island Drain @ Staten Island Rd for toxicity to algae. Monitoring for water column toxicity to *S. capricornutum* has not occurred in this site subwatershed. The PUR data from 2012 through 2014 indicate highest applications of herbicides associated with toxicity to algae, most of which are non-polar organic compounds, occurred from April through June, with the peak applications in May (15,922 lbs of AI); applications of metals also occurred in April and May, although the total amount was less than 42 lbs of AI in the past three years (Figure 33). The Coalition will monitor for toxicity to *S. capricornutum* during the months of highest applications of herbicides: April through June. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *S. capricornutum* at Staten Island Drain @ Staten Island Rd.

Samples collected in October 2014 from the Core site were toxic to *C. dubia* and the TIE indicated non-polar organics and cationic metals as the cause for toxicity; therefore, the Coalition will evaluate Staten Island Drain @ Staten Island Rd for toxicity to the water flea. The PUR data from 2012 through 2014 indicate applications of insecticides associated with toxicity to the water flea occurred during the

irrigation season from April through November; there were very few applications of metals, amounting to less than 45 lbs of AI applied in the past three years. The peak applications of insecticides occurred from April through August (Figure 34). During the 2016 WY, the Coalition will monitor for toxicity to *C. dubia* during months of greatest applications of insecticides: April through August. According to the strategy outlined in the flowchart for monitoring at Represented sites (Figure 4), this will count as Year 1 of monitoring for toxicity to *C. dubia* at Staten Island Drain @ Staten Island Rd.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 33. Staten Island Drain @ Staten Island Rd applications of herbicides and metals associated with *S. capricornutum* toxicity (2012 through 2014).
Boxed months indicate when monitoring will occur in the 2016 WY.

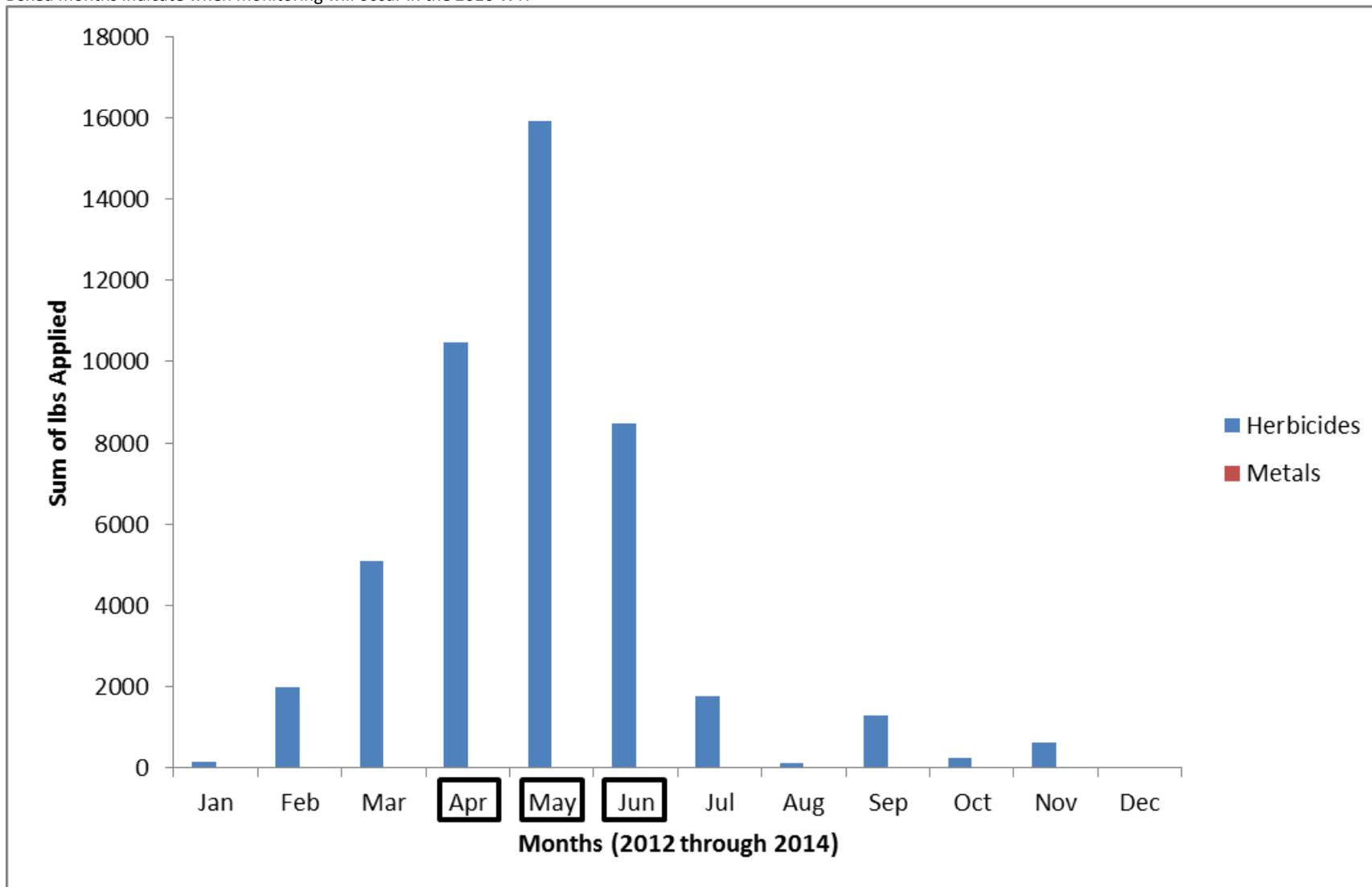
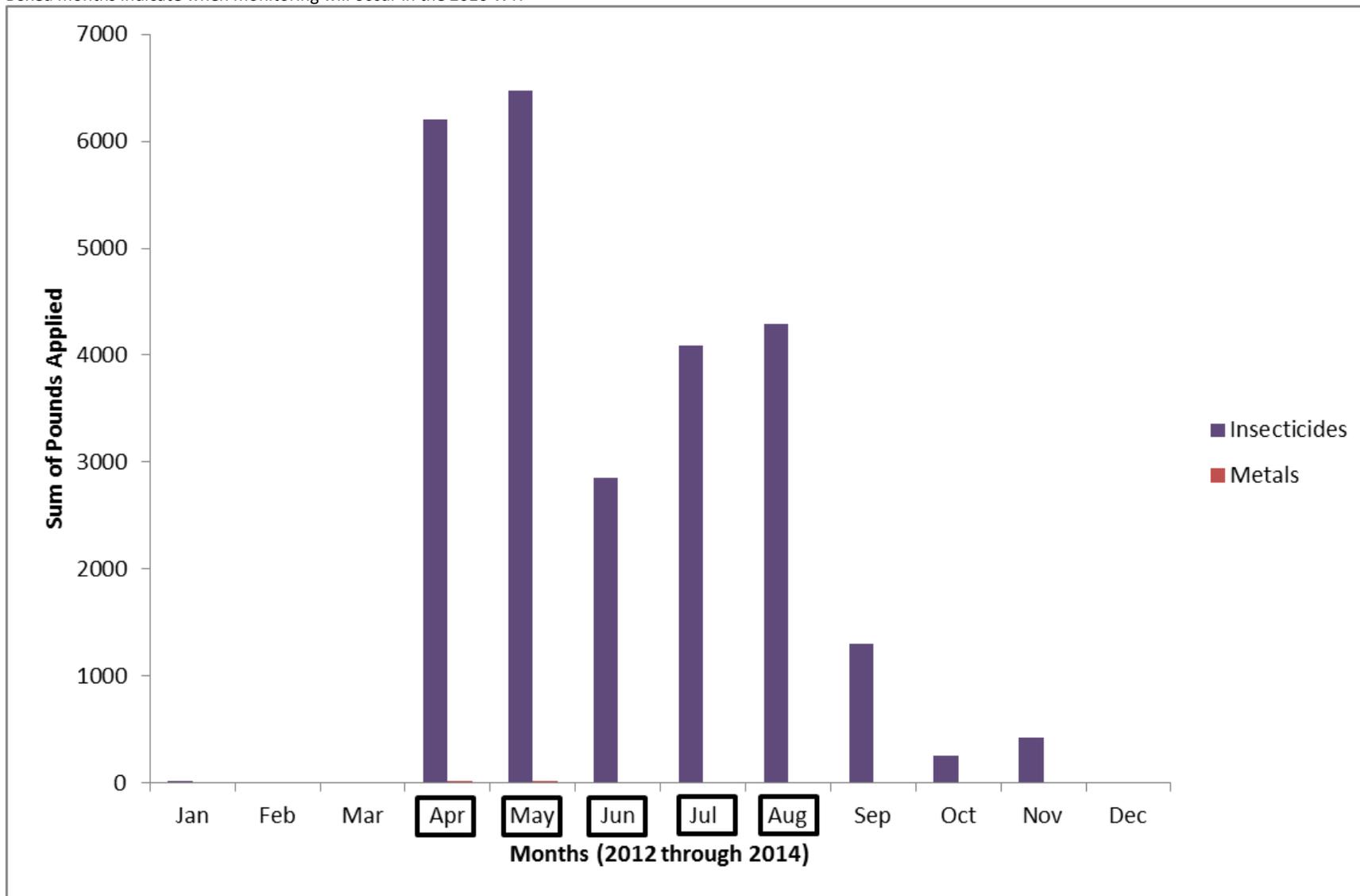


Figure 34. Staten Island Drain @ Staten Island Rd applications of insecticides and metals (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.



ZONE 4 – ROBERTS ISLAND @ WHISKEY SLOUGH PUMP ZONE

The Coalition will monitor the following management plan constituents at Roberts Island @ Whiskey Slough Pump in the 2016 WY:

- chlorpyrifos in January, February, August, and September.
- Diuron in January and July.
- *C. dubia* water column toxicity in March and July.
- *S. capricornutum* water column toxicity in January, February, April, May, and July.
- *H. azteca* sediment toxicity in March and September.

Roberts Island @ Whiskey Slough Pump also represents water quality in Zone 6 since there is no Core site in that zone.

Monitoring results from the Core site during the 2015 WY resulted in exceedances of the WQTL for DO, pH, SC, *E. coli*, arsenic, and toxicity to *S. capricornutum* (Table 25). The samples collected in February 2015 were toxic to *S. capricornutum* (60% growth compared to the control); since the toxic samples results were greater than 50% growth compared to the control, no TIE was conducted.

Due to no exceedances of the WQTLs for chlorpyrifos and diuron in the past three years, the Coalition will petition to remove chlorpyrifos and diuron from the site subwatershed’s management plan in August 2015.

The Coalition evaluated the Represented sites in the Roberts Island @ Whiskey Slough Pump Zone based on monitoring results from the Core site: toxicity to *S. capricornutum*. The remaining constituents (DO, pH, SC, *E. coli*, and arsenic) are difficult to source and will be addressed in constituent specific workplans.

Table 25. Zone 4 Management Plan Constituents and 2015 WY Exceedances.

Core site information is bolded.

SITE NAME	DO	pH	SC	<i>E. COLI</i>	NITRATE + NITRITE	ARSENIC	CHLORPYRIFOS	DDE	DDT	DIURON	<i>C. DUBIA</i>	<i>S. CAPRICORNUTUM</i>	<i>P. PROMELAS</i>	<i>H. AZTECA</i>
Roberts Island @ Whiskey Slough Pump	X^M	X	X^M	X^M		X	M	M		M	M	X^M		M
Bacon Island Pump @ Old River	X ^M		X ^M	M		M						X		
Kellogg Creek along Hoffman Ln	M	X ^M	M	M				M	M				M	M
South McDonald Island Pump	X ^M		X ^M									X ^M		
East Orwood Tract Drain	X ^M	X	X ^M									X ^M		

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

X – Indicates exceedance of WQTL or toxicity in 2015WY.

X^M - Indicates there was an exceedance of WQTL or toxicity in 2015WY and the constituent is in a management plan.

Bacon Island Pump @ Old River

Bacon Island Pump @ Old River is a Represented site within the Roberts Island @ Whiskey Slough Pump Zone. The Coalition began monitoring at this site subwatershed in 2014. In the 2015 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 Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

Bacon Island Pump @ Old River is in a management plan for DO, SC, *E. coli*, and arsenic (Table 25). Following the flowchart strategy outlined in Figure 1, these constituents (DO, SC, arsenic, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans. Therefore, no MPM is scheduled in the Bacon Island Pump @ Old River site subwatershed in the 2016 WY.

Monitoring Based on Core site Exceedances

During the 2015 WY, monitoring for chlorpyrifos occurred in the site subwatershed in May 2015; there was no detection. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred in August 2015. Additionally, Bacon Island Pump @ Old River was monitored for chlorpyrifos during nine sampling events from January through September 2014; there were no detections. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for chlorpyrifos for a second year. The PUR data from 2012 through 2014 indicate applications of chlorpyrifos only occurred in April (150 lbs AI), July (140 lbs AI), and August (401 lbs AI) in the past three years (Figure 35). In the 2016 WY, the Coalition will monitor for chlorpyrifos in April, July, and August.

The Coalition monitored for diuron in December 2014 of the 2015 WY; no diuron was detected. Additionally, Bacon Island Pump @ Old River was monitored for diuron during six events from January 2014 through June 2014; there were no exceedances of the WQTL. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for diuron for a second year. The PUR data from 2012 through 2014 indicated that the only applications of diuron in this site subwatershed occurred in December (1,927 lbs of AI) (Figure 36). Therefore, the Coalition will continue to monitor for diuron at Bacon Island Pump @ Old River in December in the 2016 WY.

In the 2015 WY, monitoring for water column toxicity to *S. capricornutum* at Bacon Island Pump @ Old River occurred from December 2014 through April 2015 and again in June 2015; there was one toxic sample in February 2015 (9% growth compared to the control). Due to the magnitude of the chronic toxicity, the Coalition conducted a TIE which indicated non-polar organics as the cause of toxicity. At the time this report was written, scheduled monitoring for toxicity to *S. capricornutum* had not yet occurred in July and August 2015. Additionally, water column toxicity to *S. capricornutum* was monitored during nine events at Bacon Island Pump @ Old River from January 2014 through September 2014; no toxicity

occurred. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for water column toxicity to *S. capricornutum* for a second year. The PUR data from 2012 through 2014 indicate applications of herbicides associated with toxicity to algae occurred in every month except January, October, and November; there were no applications of metals in this site subwatershed in the past three years (Figure 37). Peak applications of herbicides occurred in April and June with over 4,500 lbs of AI applied over the past three years. In the 2016 WY, the Coalition will continue monitoring for toxicity to *S. capricornutum* during the months of highest applications and past toxic samples: December, and February through August.

During the 2015 WY, monitoring for water column toxicity to *C. dubia* occurred in December 2014 and March through May 2015; there were no toxic samples. At the time this report was written, scheduled monitoring for toxicity to *C. dubia* had not yet occurred from July through September 2015. Additionally, water column toxicity to *C. dubia* was monitored during six events at Bacon Island Pump @ Old River from January 2014 through June 2014; no toxicity occurred. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for toxicity to *C. dubia* for a second year. The PUR data from 2012 through 2014 indicate there were applications of insecticides associated with toxicity to the water flea in this site subwatershed; there no were applications of metals in the past three years (Figure 38). The greatest applications of insecticides occurred in December (587 lbs of AI), February (699 lbs of AI), March (1,364 lbs of AI), May (666 lbs of AI), with a significant spike in August (10,069 lbs of AI). In the 2016 WY, the Coalition will continue monitoring for toxicity to *C. dubia* during months of peak applications of insecticides: December, February, March, May, and August.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 35. Applications of chlorpyrifos in the Bacon Island Pump @ Old River site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

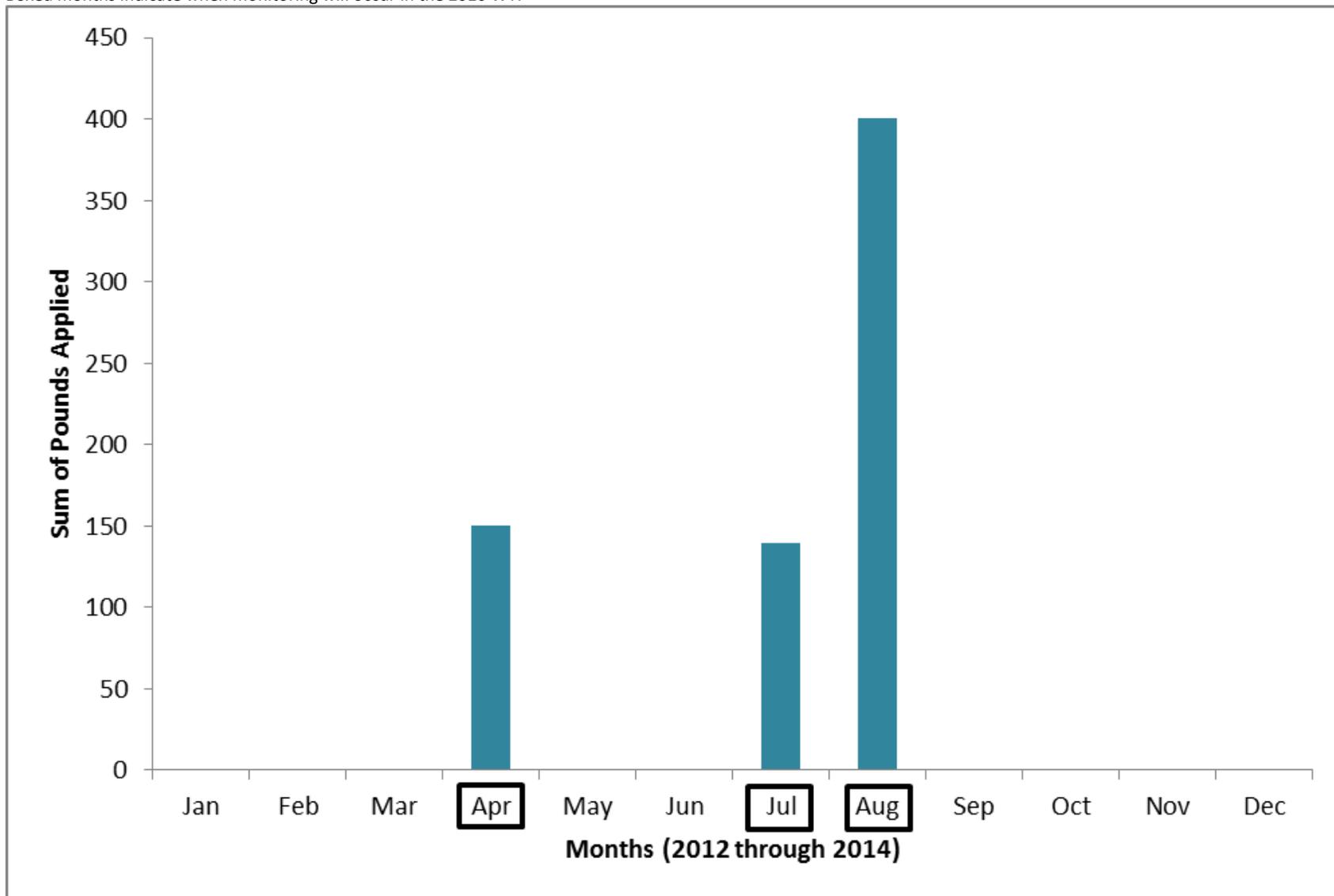


Figure 36. Applications of diuron in the Bacon Island Pump @ Old River site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

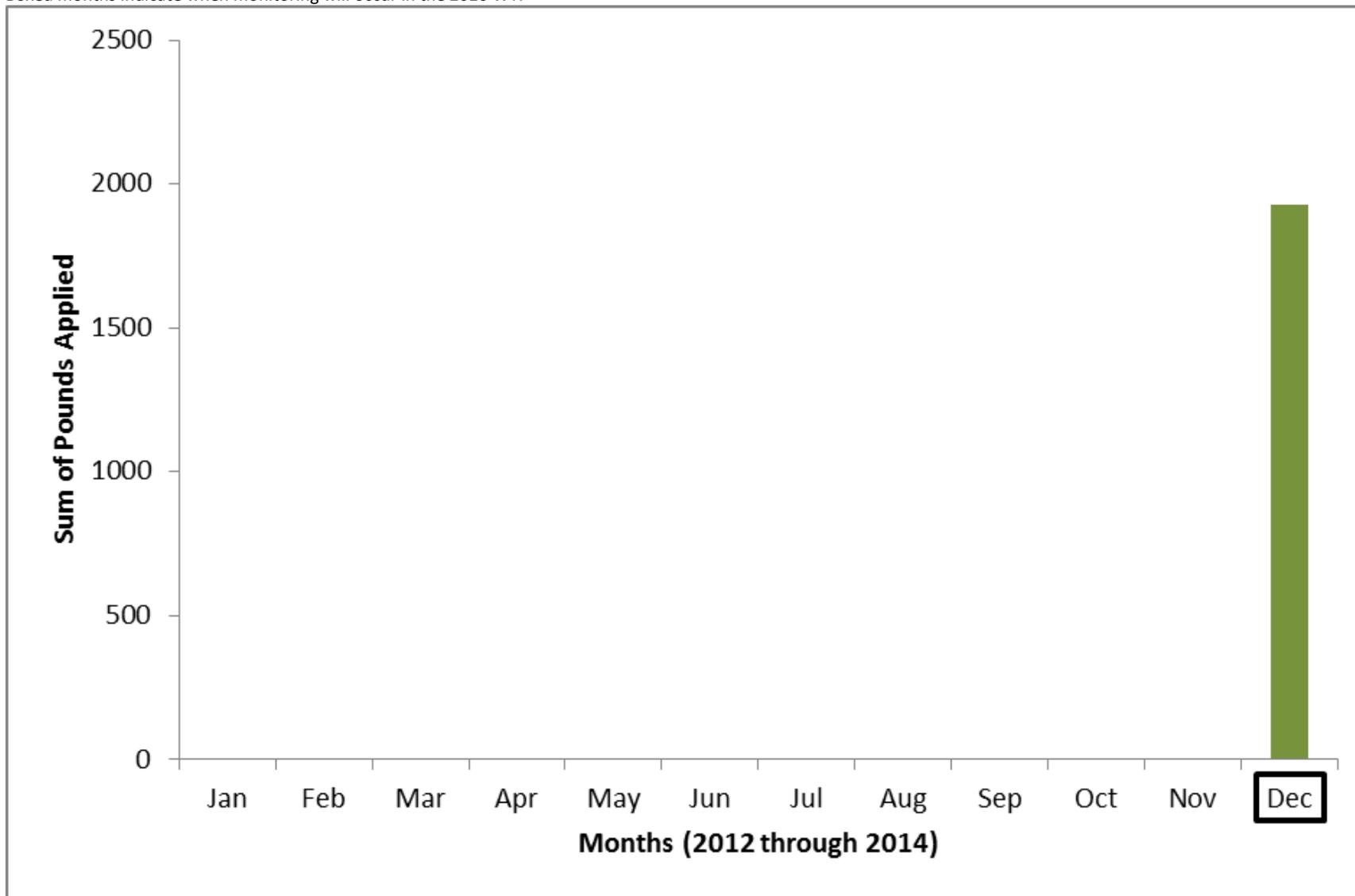


Figure 37. Bacon Island Pump @ Old River applications of herbicides and metals associated with *S. capricornutum* toxicity (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.

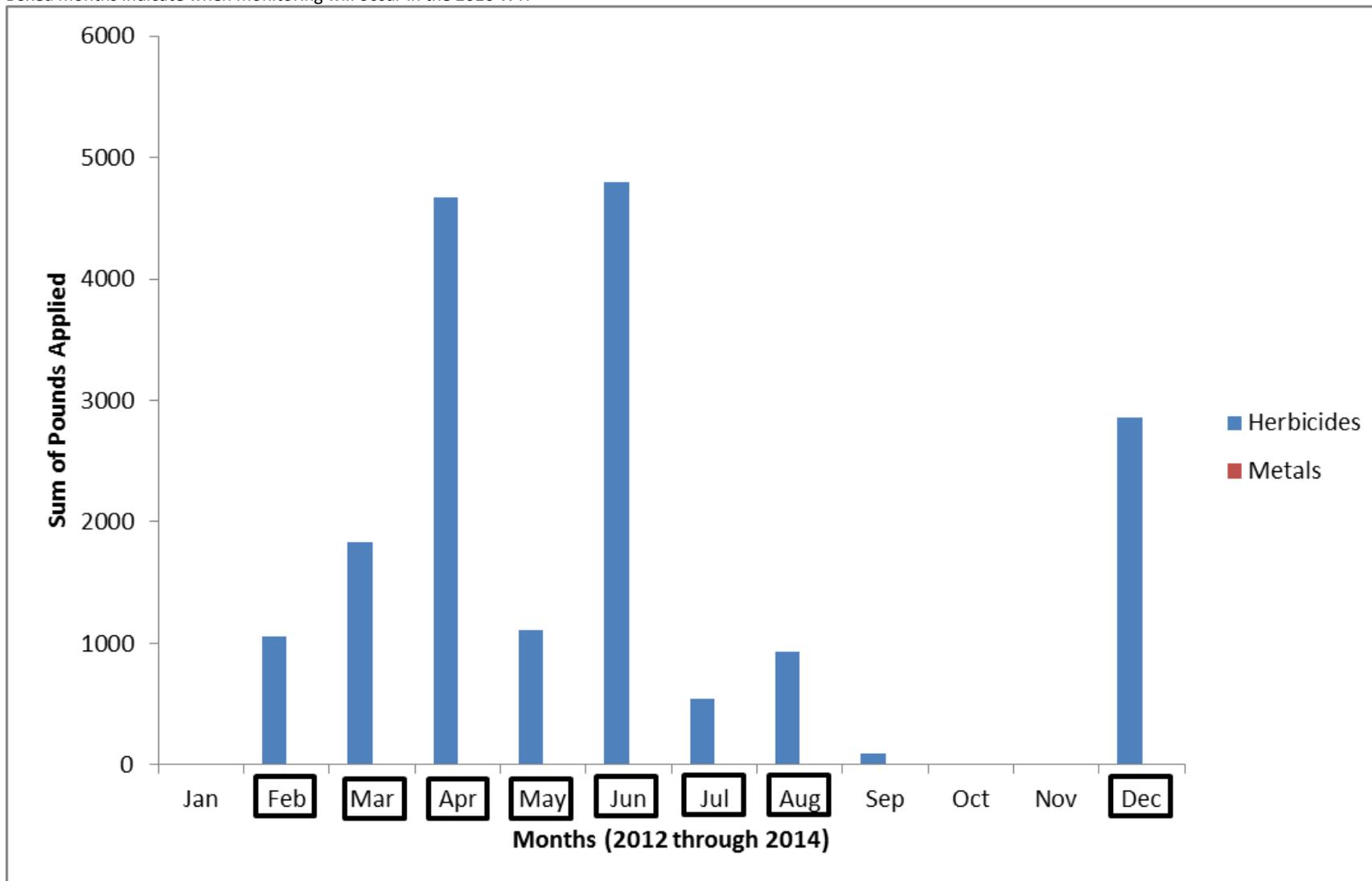
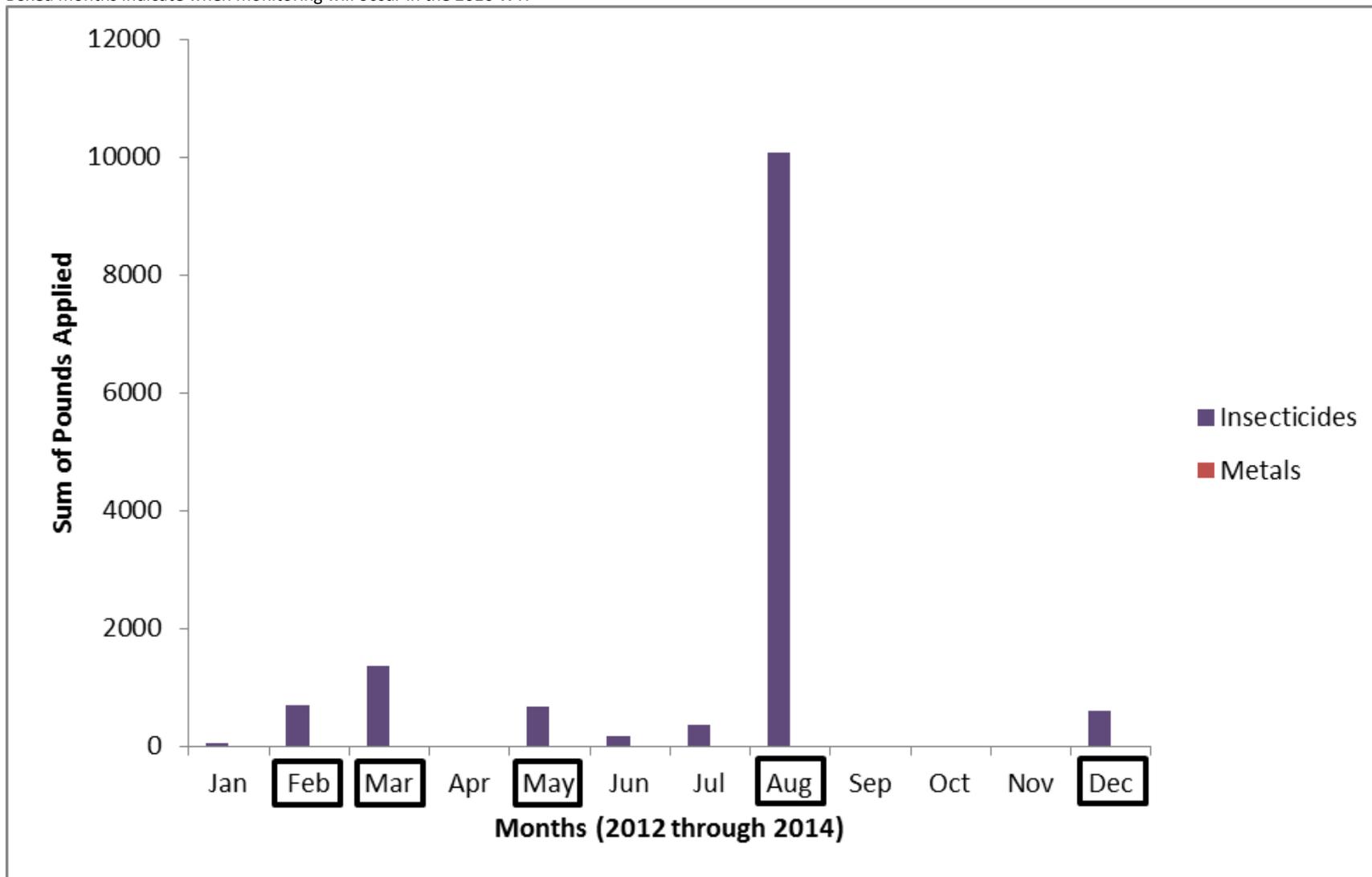


Figure 38. Bacon Island Pump @ Old River applications of insecticides and metals associated with *C. dubia* toxicity (2012 through 2014).
Boxed months indicate when monitoring will occur in the 2016 WY.



Kellogg Creek along Hoffman Ln

Kellogg Creek along Hoffman Ln is a Represented site within the Roberts Island @ Whiskey Slough Pump Zone. The Coalition began monitoring at this site subwatershed in 2009. In the 2015 WY, the Coalition conducted MPM for sediment toxicity to *H. azteca*. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

Kellogg Creek along Hoffman Ln is in a management plan for DO, pH, SC, *E. coli*, water column toxicity to *P. promelas*, and sediment toxicity to *H. azteca* (Table 25). The Coalition will conduct MPM during the 2016 WY for toxicity to *H. azteca*. The remaining constituents (DO, pH, SC, and *E. coli*) are difficult to source and will be addressed in constituent specific workplans.

Water column toxicity to *P. promelas*

The Coalition monitored for water column toxicity to *P. promelas* on 24 sampling events from September 2005 through September 2008; there were no toxic samples. This management plan was transferred from an upstream site, Kellogg Creek @ Hwy 4. Monitoring for toxicity to *P. promelas* has not occurred at this site since 2008 and will not occur in the 2016 WY. The Coalition will petition to remove toxicity to *P. promelas* from the Kellogg Creek along Hoffman Ln management plan in August 2015.

Sediment toxicity to *H. azteca*

Sediment toxicity monitoring is conducted twice a year – once during the storm season and once during the irrigation season. The Coalition will conduct MPM for *H. azteca* sediment toxicity in March and September. Since no toxicity has occurred for three years, the Coalition will petition to remove toxicity to *H. azteca* from the Kellogg Creek along Hoffman Ln management plan in August 2015.

Monitoring Based on Core site Exceedances

The Coalition received approval to remove chlorpyrifos and water column toxicity to *C. dubia* from the Kellogg Creek along Hoffman Ln management plan on February 27, 2013 and water column toxicity to *S. capricornutum* on August 22, 2014. Therefore, no monitoring is necessary for these constituents in the 2016 WY. As mentioned above the site subwatershed is in a management plan for sediment toxicity to *H. azteca*; therefore, monitoring will follow the management plan strategy.

In the 2014 MPU, the Coalition determined that no monitoring was necessary for diuron in this site subwatershed. Past monitoring data indicated no exceedances of the WQTL for diuron in the site subwatershed. Recent PUR data also indicated very few applications in the site subwatershed. The Coalition will not monitor diuron in the 2016 WY.

South McDonald Island Pump

South McDonald Island Pump is a Represented site within the Roberts Island @ Whiskey Slough Pump Zone. The Coalition began monitoring at this site subwatershed in 2015. In the 2015 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 Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The South McDonald Island Pump site subwatershed is in a management plan for DO and SC (Table 25). These are difficult to source and will be addressed in constituent specific workplans. This site subwatershed is also in a new management plan for water column toxicity to *S. capricornutum* due to toxic samples in February 2015 (44% growth compared to control) and March 2015 (73% growth compared to control). Working through the 2016 management plan strategy flowchart (Figure 1), the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, no MPM will occur at South McDonald Island Pump in the 2016 WY.

Monitoring Based on Core site Exceedances

The Coalition monitored for chlorpyrifos in May and June 2015; there were no detections of chlorpyrifos in the samples. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred in September 2015. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for chlorpyrifos for a second year. According to PUR data from 2012 through 2014, applications of chlorpyrifos occurred only in May (113 lbs of AI) and September (38 lbs of AI) in the past three years. In the 2016 WY, the Coalition will monitor for chlorpyrifos in May and September.

During the 2015 WY, the Coalition monitored for diuron in November 2014 and April 2015; there were no detections of diuron in the samples. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for diuron for a second year. The PUR data from 2012 through 2014 indicate applications of diuron only occurred in April (44 lbs of AI) in the past three years (Figure 40). Therefore, the Coalition will monitor for diuron in April in the 2016 WY.

The South McDonald Island Pump site subwatershed is now in a management plan for toxicity to *S. capricornutum*. The Coalition will initiate MPM in conjunction with outreach in order to assess the efficacy of management practices. However, since monitoring for toxicity to algae has only occurred for one year in this site subwatershed, the Coalition will evaluate based on the strategy for monitoring at the Represented site and monitor for a second year in order to better characterize water quality in the site subwatershed (Figure 4). The PUR data from 2012 through 2014 indicate applications of herbicides associated with toxicity to algae occurred throughout the year, with peaks from February through June; peak applications of metals occurred in November with 315 lbs of AI applied (Figure 41). In the 2016

WY, the Coalition will continue monitoring for toxicity to *S. capricornutum* for a second year in this site subwatershed during the months of greatest applications of herbicides and metals: November, and February through June.

Monitoring for water column toxicity to *C. dubia* occurred from April through June 2015; there were no toxic samples. At the time this report was written, scheduled monitoring for toxicity to *C. dubia* had not yet occurred from July through September 2015. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for toxicity to *C. dubia* for a second year. The PUR data from 2012 through 2014 indicate applications of insecticides associated with toxicity to the water flea occurred from March through November; applications of metals were minor, totaling less than 320 lbs of AI in the past three years). The peak applications of insecticides occurred in March (22,197 lbs of AI), April (6607 lbs of AI), May (8360 lbs of AI), and July (12,192 lbs of AI), which is consistent with trends of insecticide applications during the irrigation season. During the 2016 WY, the Coalition will continue monitoring for toxicity to *C. dubia* during months of greatest insecticide applications: March through September.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 39. Applications of chlorpyrifos in the South McDonald Island Pump site subwatershed from 2012 through 2014.
Boxed months indicate when monitoring will occur in the 2016 WY.

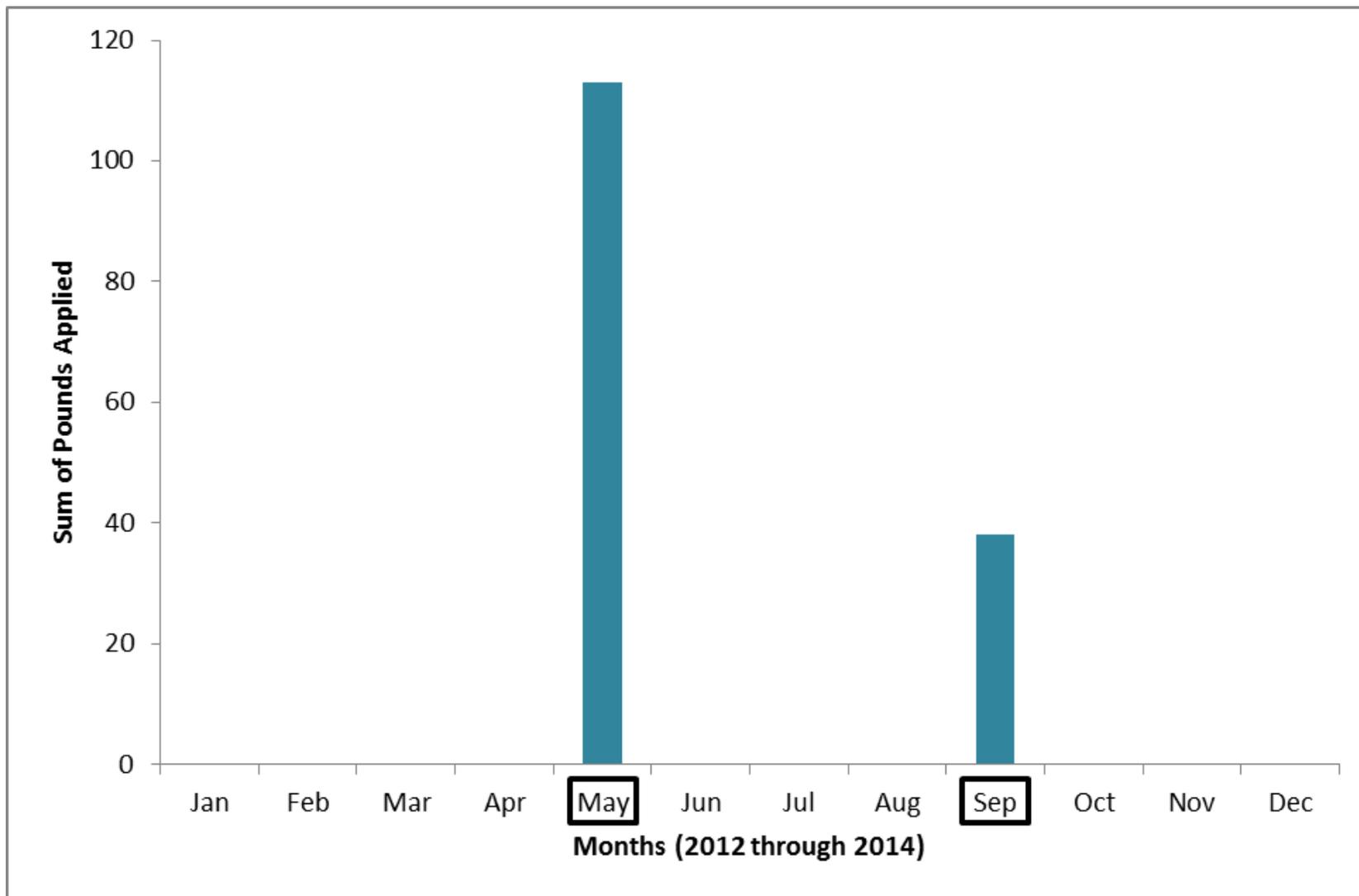


Figure 40. Applications of diuron in the South McDonald Island Pump site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

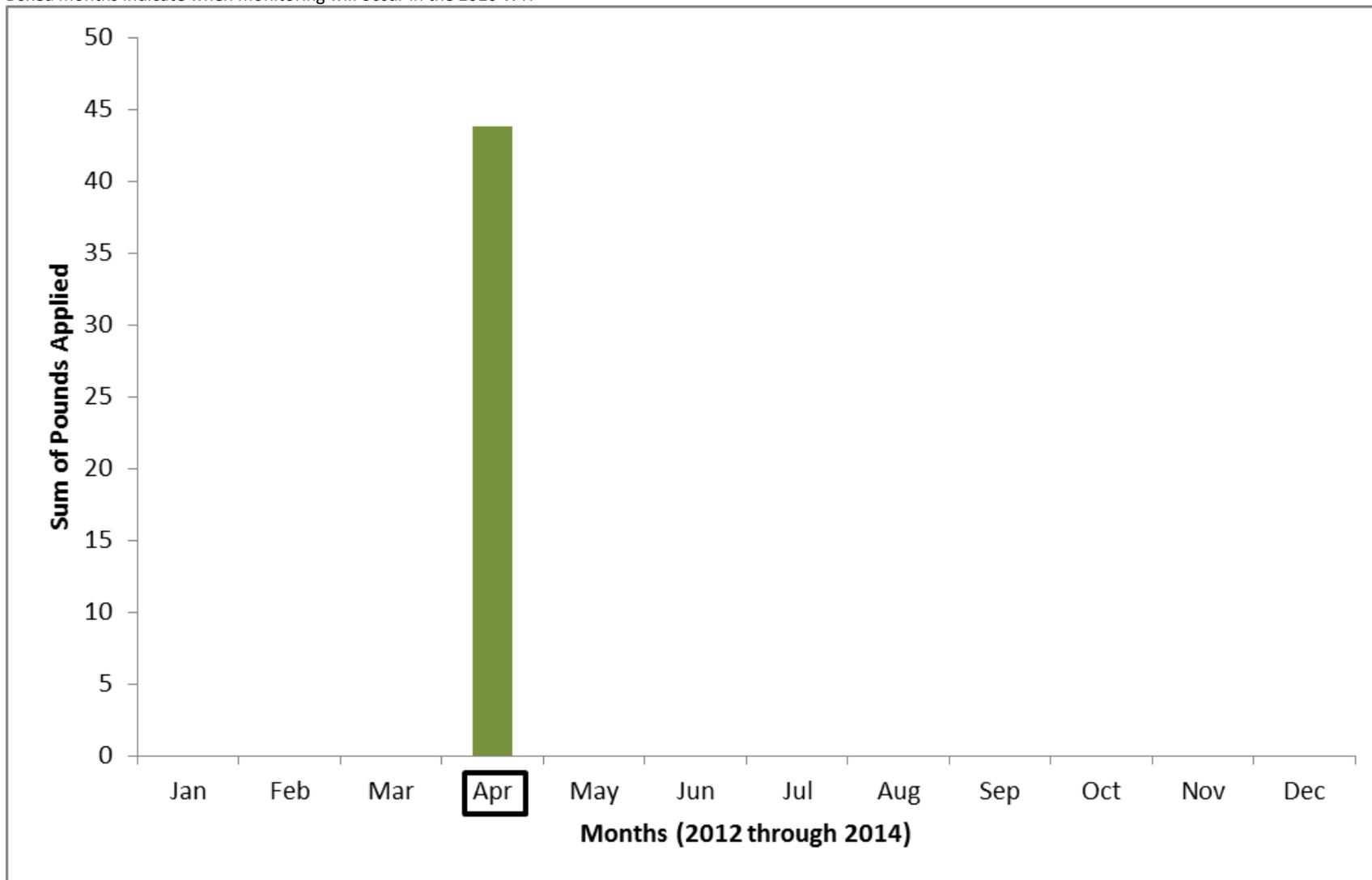


Figure 41. South McDonald Island Pump applications of herbicides and metals associated with *S. capricornutum* toxicity (2012 through 2014).
 Boxed months indicate when monitoring will occur in the 2016 WY.

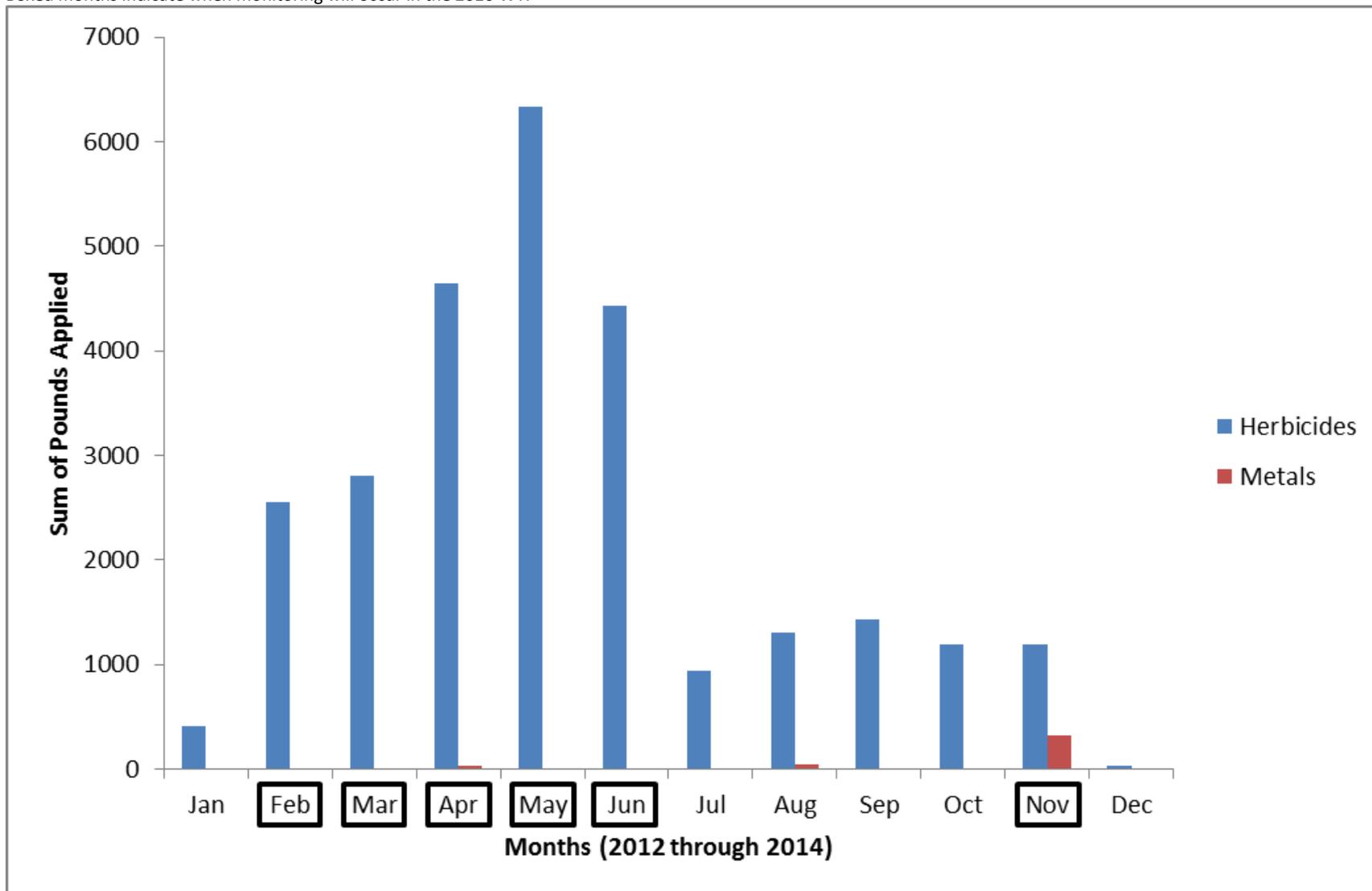
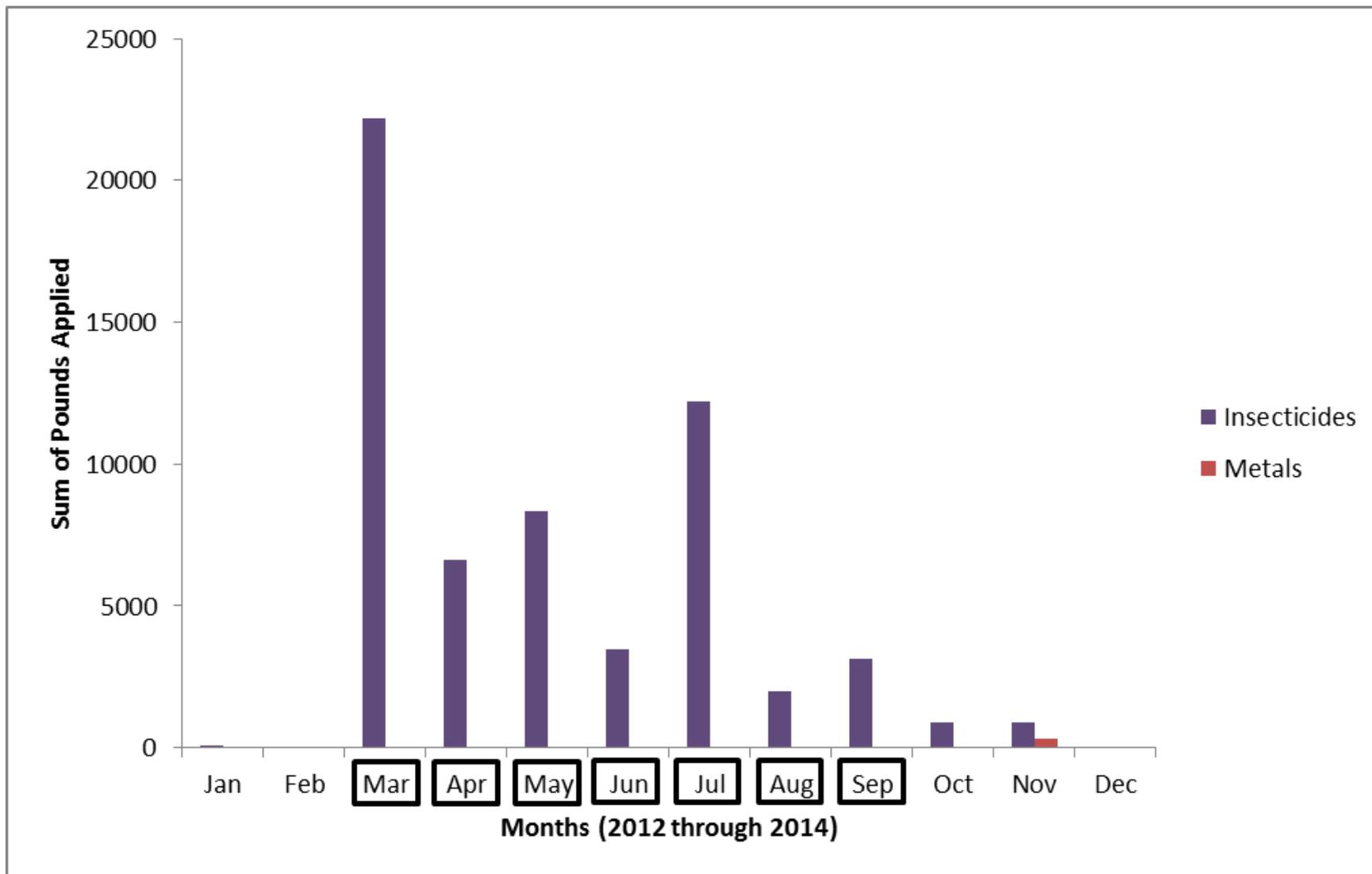


Figure 42. South McDonald Island Pump applications of insecticides, metals, and pyrethroids (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.



East Orwood Tract Drain

East Orwood Tract Drain is a Represented site within the Roberts Island @ Whiskey Slough Pump Zone. The Coalition began monitoring at this site subwatershed in 2015. In the 2015 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 Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

The East Orwood Tract Drain site subwatershed is in a management plan for DO and SC (Table 25). These are difficult to source and will be addressed in constituent specific workplans. This site subwatershed is also in a new management plan for water column toxicity to *S. capricornutum* due to toxic samples in February 2015 (67% growth compared to control) and May 2015 (76% growth compared to control). Working through the 2016 management plan strategy flowchart (Figure 1), the Coalition will address water column toxicity to *S. capricornutum* within three years of management plan initiation; therefore, no MPM will occur at East Orwood Tract Drain in the 2016 WY.

Monitoring Based on Core site Exceedances

The Coalition monitored for chlorpyrifos in October 2014 and February 2015; there were no detections of chlorpyrifos in the samples. At the time this report was written, scheduled monitoring for chlorpyrifos had not yet occurred in July and September 2015. The PUR data indicate applications of chlorpyrifos occurred in October, February, March, and June through September; the peak applications occurred in August with 1,973 lbs of AI applied (Figure 43). In the 2016 WY, the Coalition will continue to monitor for chlorpyrifos for a second year during the months of greatest applications: October, February, March, and July through September.

During the 2015 WY, the Coalition monitored for diuron in December 2014 and April 2015; there were no detections of diuron in the samples. The PUR data indicate high applications of diuron from December through May, where the peak occurred in March with over 3,000 lbs of AI applied (Figure 44). The Coalition will continue monitoring for diuron in this site subwatershed for a second year during the months of greatest applications: December through May.

The East Orwood Tract Drain site subwatershed is now in a management plan for toxicity to *S. capricornutum*. The Coalition will initiate MPM in conjunction with outreach within the next three years in order to assess the efficacy of management practices. However, since monitoring has only occurred for one year in this site subwatershed, the Coalition will monitor for a second year based on the strategy for monitoring at the Represented site (Figure 4). The PUR data from 2012 through 2014 indicate applications of herbicides associated with toxicity to algae in every month; peak applications of herbicides occurred in February, April, May, and June. There were no applications of metals in this site subwatershed (Figure 45). In the 2016 WY, the Coalition will continue monitoring for toxicity to *S.*

capricornutum in this site subwatershed for a second year during months of greatest applications of herbicides: February, and April through June.

Monitoring for water column toxicity to *C. dubia* occurred in October and December 2014, February, March, and June 2015; there were no toxic samples. At the time this report was written, scheduled monitoring for toxicity to *C. dubia* had not yet occurred in July and September 2015. The PUR data from 2012 through 2014 indicate peak applications of insecticides associated with toxicity to the water flea occurred in March (465 lbs of AI). There were no applications of metals in this site subwatershed. In the 2016 WY, the Coalition will continue monitoring for toxicity to *C. dubia* in this site subwatershed for a second year during months of greatest applications of insecticides: March.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 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 will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 43. Applications of chlorpyrifos in the East Orwood Tract Drain site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

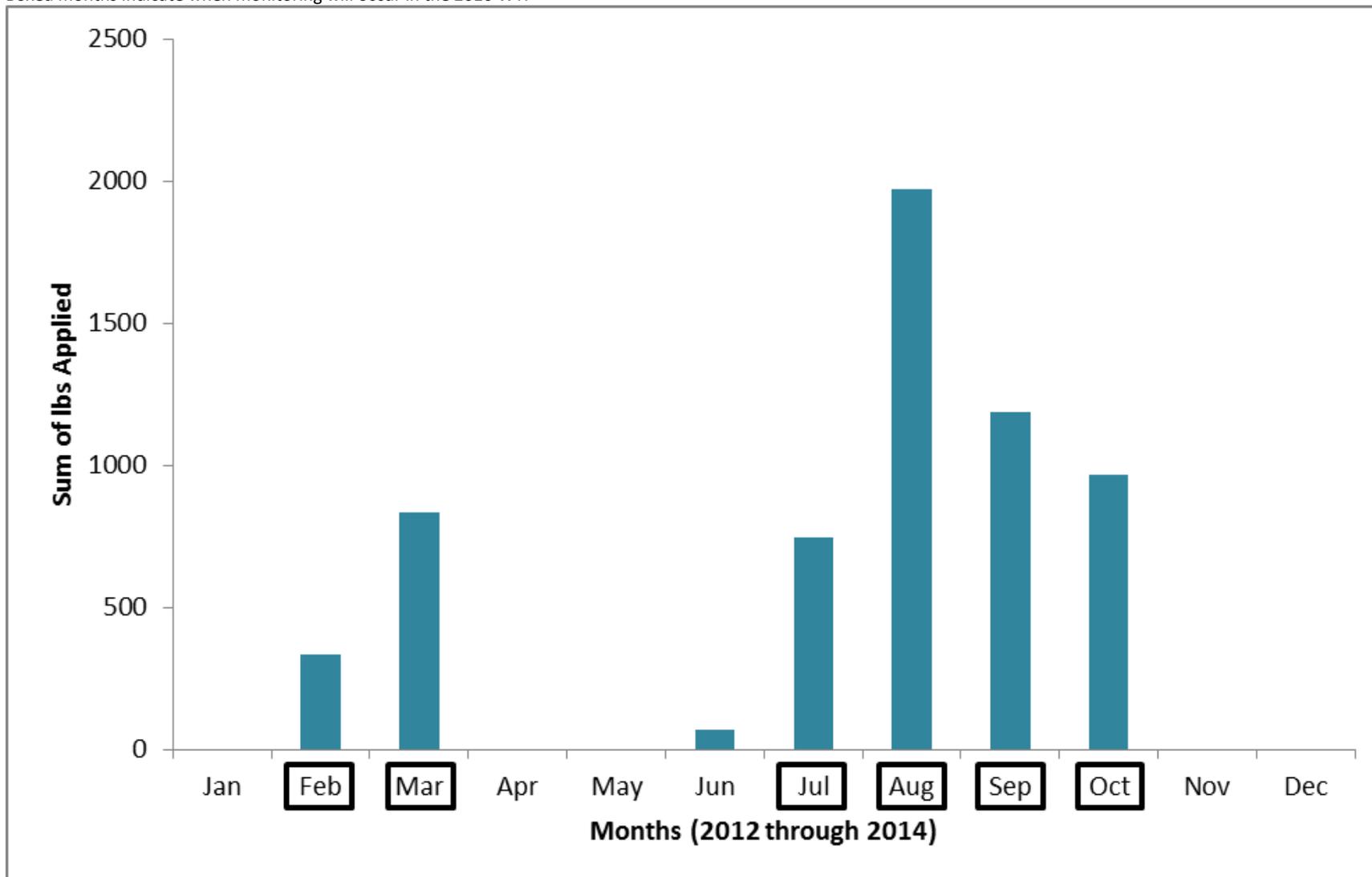


Figure 44. Applications of diuron in the East Orwood Tract Drain site subwatershed from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

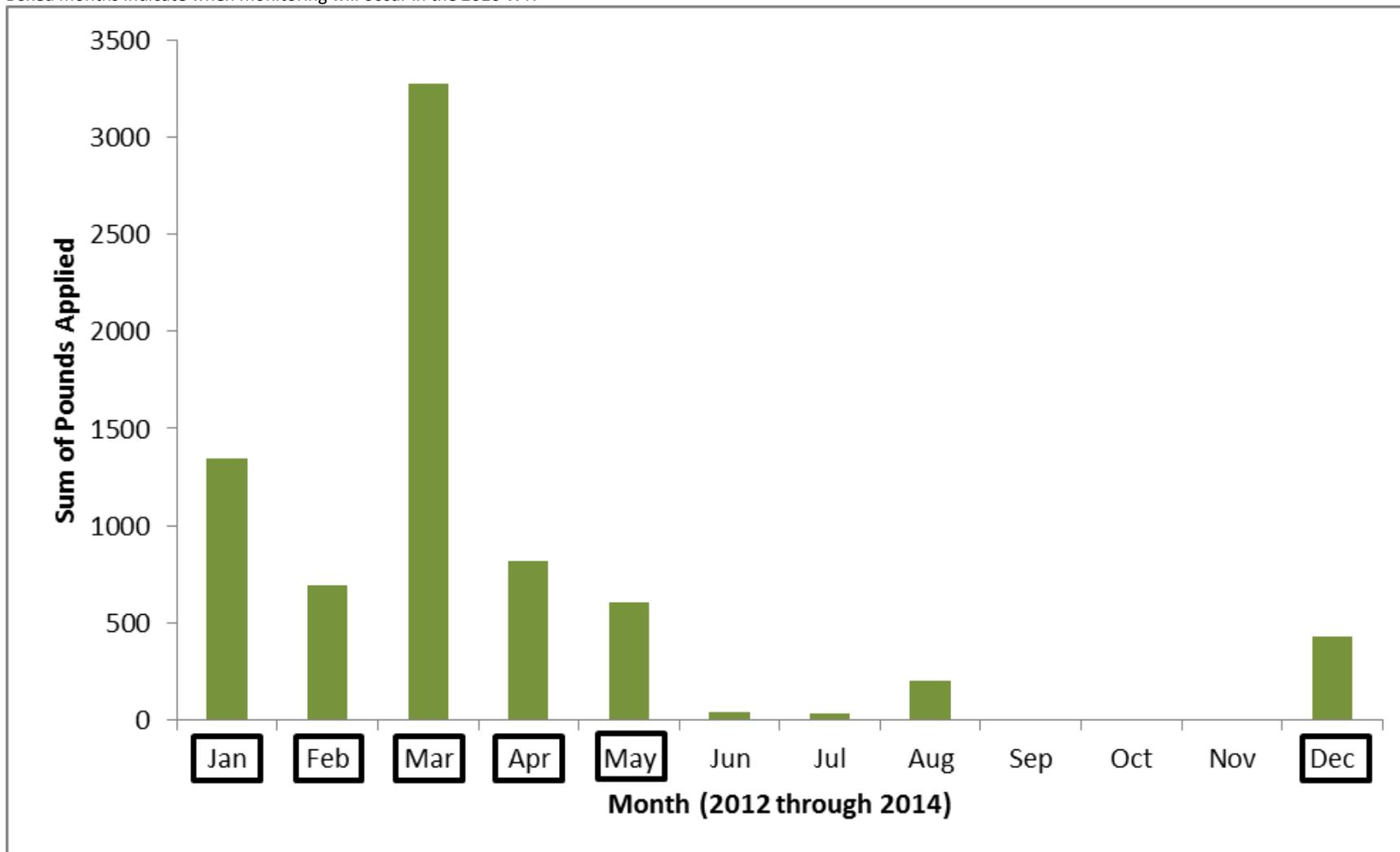


Figure 45. East Orwood Tract Drain applications of herbicides and metals associated with *S. capricornutum* (2012 through 2014).
 Boxed months indicate when monitoring will occur in the 2016 WY.

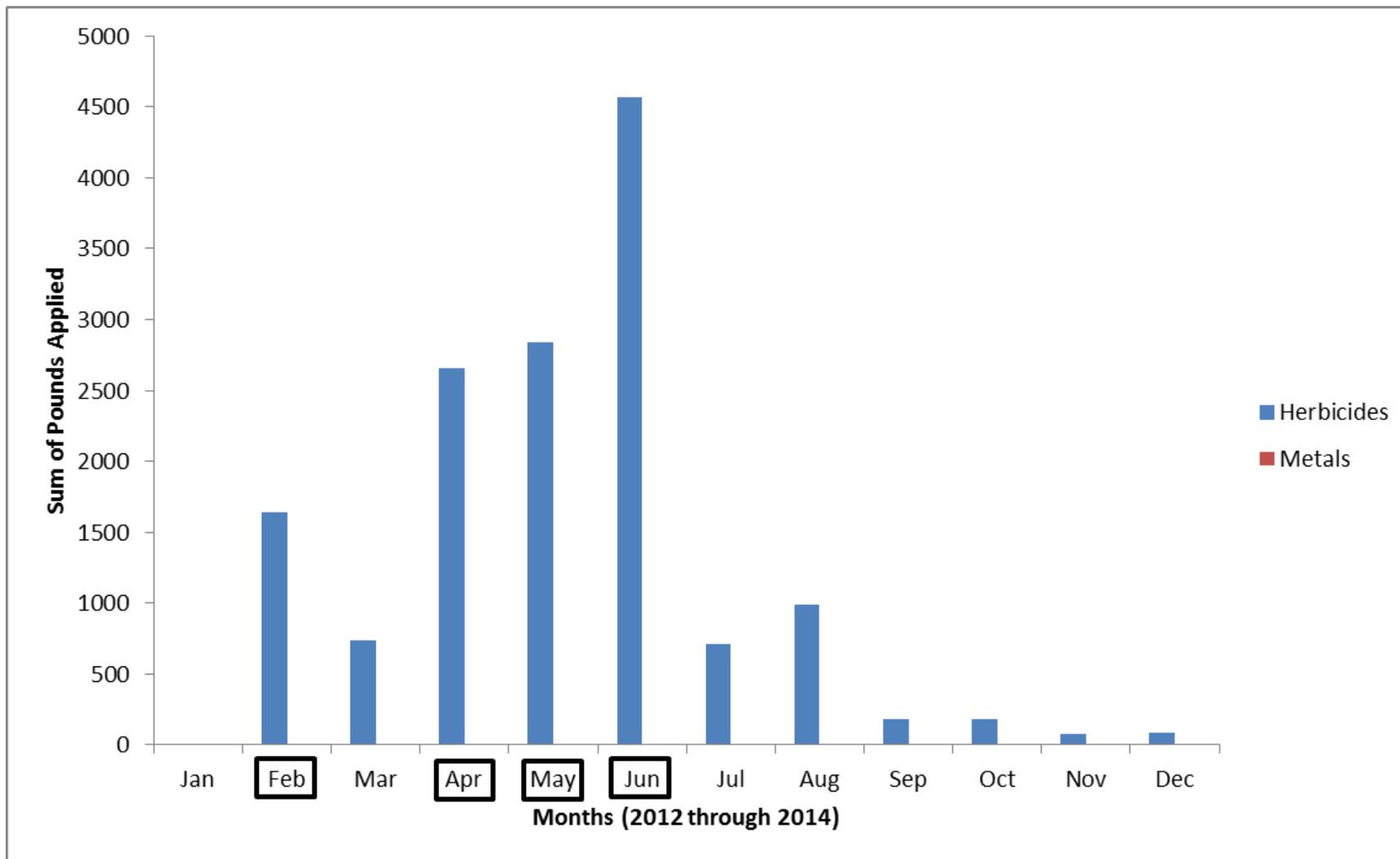
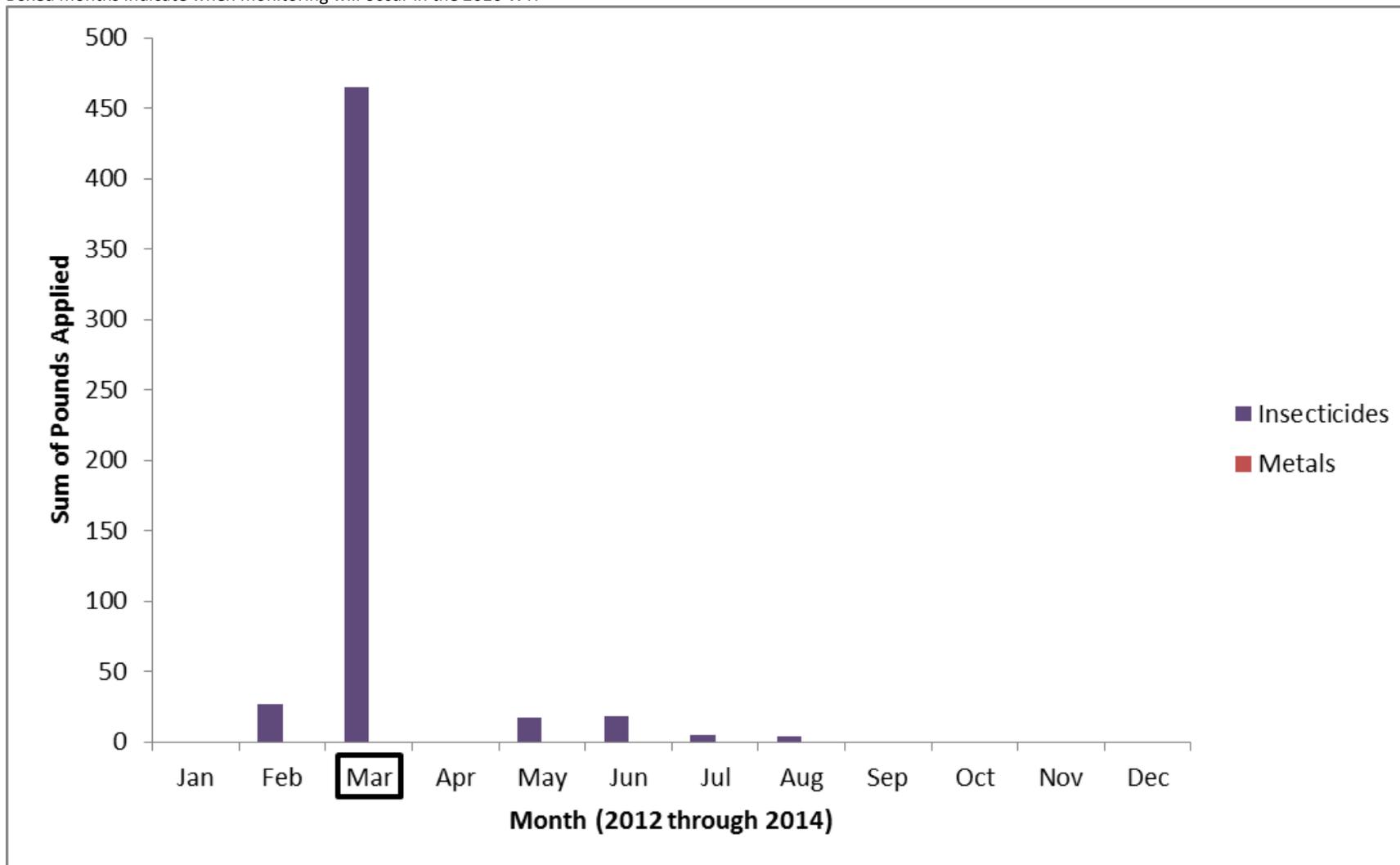


Figure 46. East Orwood Tract Drain applications of insecticides and metals (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.



ZONE 5 – WALTHALL SLOUGH @ WOODWARD AVE ZONE

The Coalition will monitor the following management plan constituents at Walthall Slough @ Woodward Ave in the 2016 WY:

- chlorpyrifos in October and September.
- HCH from November through January.
- *H. azteca* sediment toxicity in March and September.

There are no represented sites in Zone 5; the Walthall Slough @ Woodward Ave site subwatershed will represent water quality for the entire zone. Since no exceedance of the WQTL for chlorpyrifos, HCH, and sediment toxicity to *H. azteca* occurred in the past three years, the Coalition will petition to remove these constituents from the site subwatershed's management plan in August 2015.

ZONE 6 – ROBERTS ISLAND @ WHISKEY SLOUGH PUMP ZONE

As discussed above, monitoring results from samples collected at Roberts Island @ Whiskey Slough Pump, the Core site in Zone 4, 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 2015 WY, the Coalition conducted MPM for dieldrin and sediment toxicity to *H. azteca*. There is very little agriculture (402 irrigated acres) within this 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, dieldrin, and sediment toxicity to *H. azteca*. Constituents such as DO, SC, *E. coli*, DDE, and DDT are difficult to source and will be addressed in constituent specific workplans. The potential sources of all listed constituents are unknown due to increased urbanization and lack of agriculture in the southern portion of the site subwatershed.

The Coalition will conduct MPM during months of past exceedances for dieldrin (May, June, and August) and continue to monitor *H. azteca* sediment toxicity in March and September in the 2016 WY. Since no exceedance of the WQTL for dieldrin has occurred for three years, the Coalition will petition to remove dieldrin from the Sand Creek @ Hwy 4 Bypass management plan in August 2015.

ZONE 7 - UNION ISLAND DRAIN @ BONETTI RD ZONE

The Coalition will monitor the following management plan constituents at Union Island Drain @ Bonetti Rd in the 2016 WY:

- chlorpyrifos in February.
- *C. dubia* toxicity in March, May, and August.
- *S. capricornutum* toxicity in January, February, and April through July.
- *H. azteca* sediment toxicity in 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 represented members and significant urban contributions in the area.

Monitoring results from the Core site during the 2015 WY indicated exceedances of the WQTL for DO, SC, chlorpyrifos, simazine, and toxicity to *S. capricornutum*. Samples collected in January, February, April, and June 2015 were toxic to *S. capricornutum* (87%, 61%, 88%, and 76% growth compared to the control, respectively). Since the toxic sample results were greater than 50% growth compared to the control, no TIEs were conducted. Due to the exceedance of the WQTL for chlorpyrifos, the Coalition will add chlorpyrifos to the Union Island Drain @ Bonetti Rd site subwatershed management plan; MPM will commence in the 2016 WY during the month of past exceedance (February).

The Coalition evaluated the Represented site in the Union Island Drain @ Bonetti Rd Zone based on monitoring results at the Core site: exceedance of the WQTL for chlorpyrifos and toxicity to *S. capricornutum*. The remaining constituents (DO and SC) are difficult to source and will be addressed in constituent specific workplans.

Table 26. Zone 7 Management Plan Constituents and 2015 WY Exceedances.

Core site information is bolded.

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

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

X – Indicates exceedance of WQTL or toxicity in 2015WY.

X^M - Indicates there was an exceedance of WQTL or toxicity in 2015WY and the constituent is in a management plan.

Upper Roberts Island Drain

Upper Roberts Island Drain is a Represented site within the Union Island Drain @ Bonetti Rd Zone. The Coalition began monitoring at this site subwatershed in 2015. In the 2015 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 Core site. Below is an analysis of monitoring results from the 2015 WY as well as the rationale for the proposed monitoring in the 2016 WY.

Monitoring Based on Management Plan

Upper Roberts Island Drain is in a management plan for DO and SC due to exceedances during all months of monitoring in the 2015 WY (Table 26). These constituents are difficult to source and will be addressed in constituent specific workplans. This site subwatershed is also in a new management plan for water column toxicity to *C. dubia* due to toxic samples in March (0% survival compared to control) and May (35% survival compared to control). Working through the 2016 management plan strategy flowchart (Figure 1), the Coalition will address water column toxicity to *C. dubia* within three years of management plan initiation; therefore, no MPM will occur at Upper Roberts Island Drain in the 2016 WY.

Monitoring Based on Core site Exceedances

Due to the exceedance at the Core site during the 2015 WY, the Coalition evaluated Upper Roberts Island Drain for chlorpyrifos applications. Monitoring for chlorpyrifos has not occurred in this site subwatershed. The PUR data from 2012 through 2014 indicate peak applications of chlorpyrifos in February (197 lbs of AI), March (239 lbs of AI), April (198 lbs of AI), and August (413 lbs of AI) (Figure 47). Therefore, the Coalition will monitor for chlorpyrifos from February through April, and in August during the 2016 WY. According to the strategy outlined in the flowchart (Figure 4), this will count as Year 1 of monitoring at a Represented site for chlorpyrifos.

Due to the exceedance at the Core site during the 2015 WY, the Coalition evaluated Upper Roberts Island Drain for simazine applications. Monitoring for simazine has not occurred in this site subwatershed. The Coalition reviewed PUR data from 2012 through 2014 and determined there were no applications of simazine in this site subwatershed. Therefore, no monitoring for simazine will occur during the 2016 WY.

During the 2015 WY, the Coalition monitored for water column toxicity to *S. capricornutum* from December 2014 through February 2015, April, and May 2015; there were no toxic samples. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for toxicity to *S. capricornutum* for a second year. The PUR data from 2012 through 2014 indicate year-around applications of insecticides associated with toxicity to algae, with peaks from December through June and September; there were insignificant applications of metals amounting to less than 10 lbs of AI in the past three years (Figure 48). During the 2016 WY, the Coalition monitor for toxicity to *S. capricornutum* for a second year during months of greatest applications of herbicides: December through June, and September.

The Upper Roberts Island Drain site subwatershed is now in a management plan for toxicity to *C. dubia*. The Coalition will initiate MPM in conjunction with outreach, within the next three years, in order to assess the efficacy of management practices. The toxic samples occurred in March and May 2015 (0% and 35% survival compared to the control, respectively). Due to the magnitude of toxicity, the Coalition

conducted a TIE for the March 2015 sample which indicated non-polar organics as the cause of toxicity. The May 2015 sample lost toxicity prior to initiation of TIE, and therefore TIE treatments did not provide any additional information. Since monitoring has only occurred for one year in this site subwatershed, the Coalition will monitor for a second year based on the strategy for monitoring at the Represented site (Figure 4). The PUR data from 2012 through 2014 indicate applications of insecticides associated to toxicity to the water flea occurred throughout the irrigation season from April, May, and July through September; applications of metals were minor, amounting to less than 10 lbs of AI in the past three years (Figure 49). The peak applications of insecticides occurred in April (17,286 lbs of AI), July (14,259 lbs of AI), and August (11,460 lbs of AI). During the 2016 WY, the Coalition will monitor for toxicity to *C. dubia* in this site subwatershed for a second year during the months of greatest applications of insecticides and past toxicity: March through May, and July through September.

The Coalition monitored for sediment toxicity to *H. azteca* in the site subwatershed in March 2015 and plans to monitor again in September 2015; samples collected in March 2015 were toxic to *H. azteca* (34% survival compared to the control). Further analysis indicated bifenthrin, chlorpyrifos, lambda-cyhalothrin, and cyhalothrin were detected in the sediment samples. The Coalition will provide additional analysis of sediment chemistry in the 2016 Annual Report. As outlined in the Coalition's strategy for monitoring at a Represented site in the flowchart above (Figure 4), the Coalition will monitor for sediment toxicity to *H. azteca* in March and September for a second year in the 2016 WY.

Figure 47. Upper Roberts Island Drain applications of chlorpyrifos from 2012 through 2014.

Boxed months indicate when monitoring will occur in the 2016 WY.

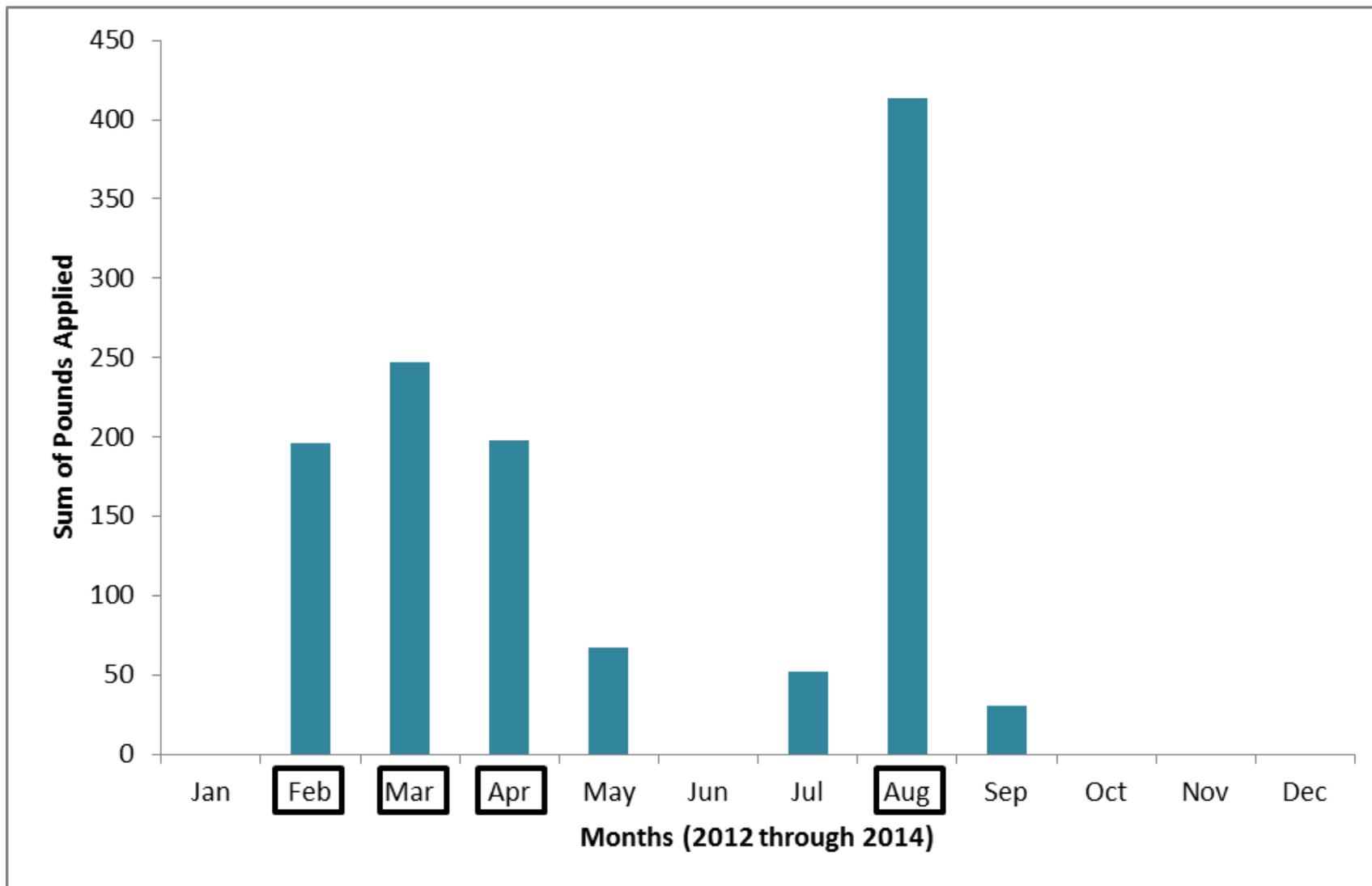


Figure 48. Upper Roberts Island Drain applications of herbicides and metals (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.

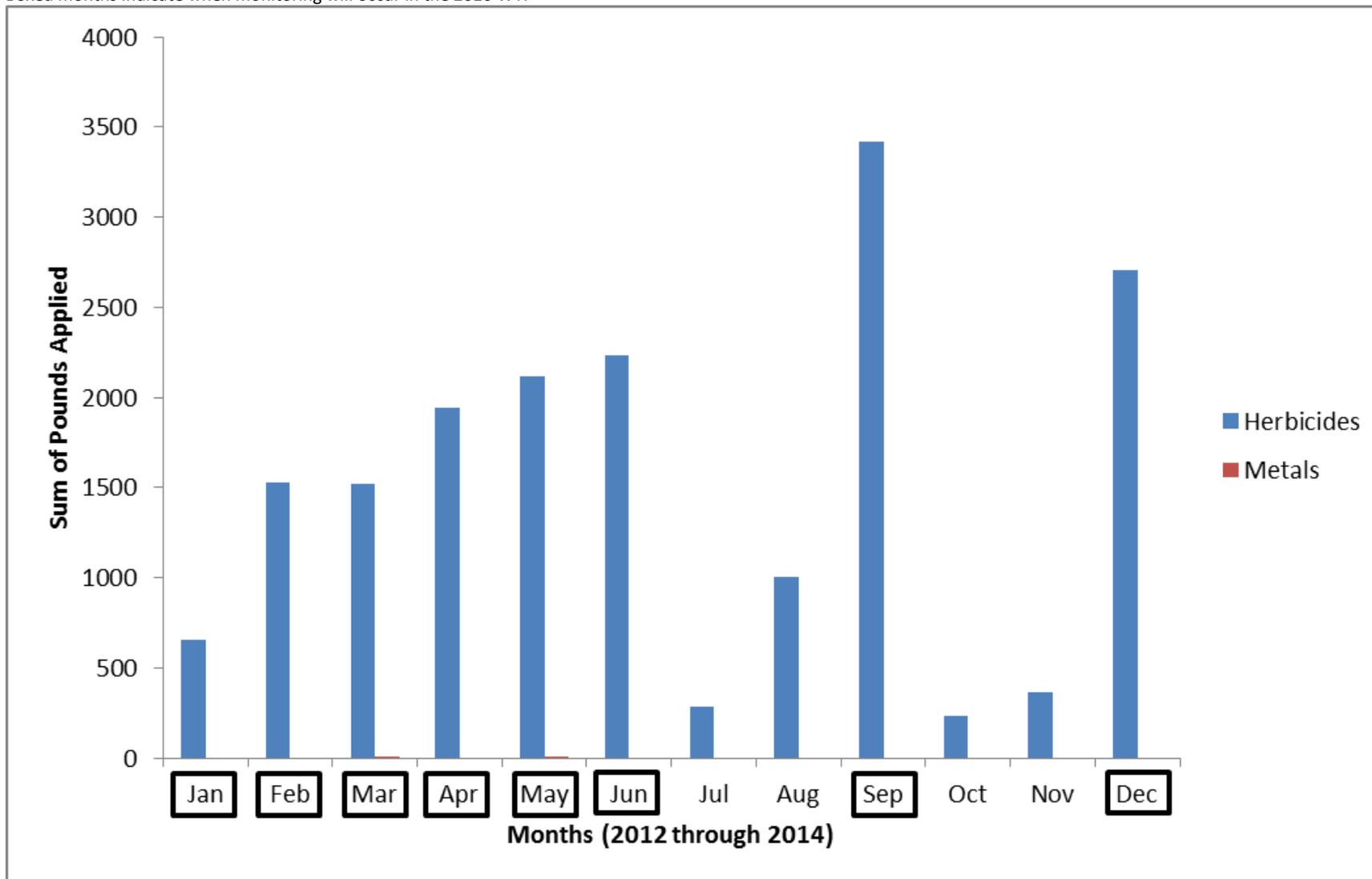


Figure 49. Upper Roberts Island Drain applications of insecticides and metals (2012 through 2014).

Boxed months indicate when monitoring will occur in the 2016 WY.

