Data Report and Quality Assurance Evaluation

For Current Use Pesticide Monitoring during the 2023 Water Year

Version 1.0
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Prepared By:

MPSL

MLJ ENVIRONMENTAL

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LIST OF ACRONYMS

ACRONYM	DEFINITION
AFDW	Ash Free Dry Weight
CEDEN	California Environmental Data Exchange Network
COC	Chain of Custody
CUP	Current Use Pesticide
CV RDC	Central Valley Regional Data Center
CVRWQCB	Central Valley Regional Water Quality Control Board
CWSC	California Water Science Center

DMT	Data Management Team
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
Delta RMP	Delta Regional Monitoring Program
EC50	Half Maximal Effective Concentration
EDD	Electronic Data Deliverable
EPA	U.S. Environmental Protection Agency
GRTS	Generalized Random Tessellation Stratified
GC/MS/MS	Gas Chromatography/Tandem Mass Spectrometry
HLB	Hydrophilic Lipophilic Balance
LC50	Lethal Concentration 50
LC/MS/MS	Liquid Chromatography/Tandem Mass Spectrometry
LCS	Laboratory Control Spike
MDL	Method Detection Limit
MLJ	MLJ Environmental
MPSL-MLML	Marine Pollution Studies Laboratory at Moss Landing Marine Laboratories
MQO	Measurement Quality Objective
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N	Nitrogen
NFM	National Field Manual
OCRL	Organic Pesticide Research Laboratory
PER	Pacific EcoRisk
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QAPrP	Quality Assurance Program Plan
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SC	Specific Conductance
SD	Standard Deviation
SM	Standard Methods
SOP	Standard Operating Procedures
SPE	Solid Phase Extraction
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TAC	Test Acceptability Criteria

TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TN	Total Nitrogen
TSS	Total Suspended Solids
USGS	U.S. Geological Survey
WY	Water Year

LIST OF UNITS

°C	degrees Celsius
cm	centimeter
L	liter
m	meter
mg	milligram
mL	milliliter
ng	nanogram
NTU	Nephelometric Turbidity Unit
µg	microgram
µm	micrometer (micron)
µS	microsiemen

INTRODUCTION

BACKGROUND

This report summarizes monitoring conducted by the Delta Regional Monitoring Program (Delta RMP) during Water Year (WY) 2023 for the Current Use Pesticide (CUP) project. Included are descriptions of monitoring locations, sample collection activities, weather and streamflow conditions, field and laboratory analytical methods, analytical and test results, and data verification of the WY 2023 data. These data represent the first year of sampling the Central Delta and South Delta subregions, and the third year of monitoring under the revised CUP monitoring design approved by the Delta RMP Steering Committee in 2018 (see **Study Background**).

A Quality Assurance Project Plan (QAPP, version 1.0) for the CUP project was submitted to the Central Valley Regional Water Quality Control Board (CVRWQCB) for review and approval on June 1, 2022. A revised QAPP was conditionally approved by the CVRWQCB on October 12, 2022; the final version (version 1.3) of the QAPP was approved on January 23, 2023. An amendment to the QAPP (version 1.4) including updates to the analytical requirements and standard operating procedures (SOPs) was approved by the CVRWQCB on October 25, 2023, and is the approved version of the QAPP at the time of preparing this report.

ANALYTICAL SCOPE

Water Year 2023 Delta RMP CUP monitoring included the sampling and analysis of numerous pesticides, ancillary parameters, and a single metal (copper). During the sampling for these analytes, field measurements were performed for a suite of water quality parameters. Potential biological impacts of the above analytes were assessed with the performance of five toxicity tests, conducted on the full-strength ambient samples. The analyses conducted for WY 2023 are defined in **Table 1**.

Table 1. Analytical scope of WY 2023 monitoring.

Analyte Category	Analyte/Parameter	Matrix	Fractions/ Endpoints
Field Measures	Dissolved Oxygen	Water	--
	Oxygen Saturation	Water	--
	pH	Water	--
	Salinity	Water	--

Analyte Category	Analyte/Parameter	Matrix	Fractions/ Endpoints
	Specific Conductivity	Water	--
	Temperature	Air, Water	--
	Turbidity	Water	--
Current Use Pesticides	Pesticide Suite [1]	Water	Dissolved, Particulate
Trace Metals	Copper	Water	Dissolved
Ancillary Parameters	Total Suspended Solids	Water	Particulate
	Dissolved Organic Carbon [2]	Water	Dissolved
	Total Organic Carbon [2]	Water	Total
	Hardness [3]	Water	Dissolved
	Calcium [3]	Water	Dissolved
	Magnesium [3]	Water	Dissolved
	Nitrate + Nitrite as N [4]	Water	Total
	Nitrogen, Total Kjeldahl [4]	Water	Dissolved, Total
	Nitrogen, Total [4]	Water	Dissolved, Total
Aquatic Toxicity	*Ceriododaphnia dubia* (6-8 day Chronic)	Water	Reproduction, Survival
	Chironomus dilutus (10-day Chronic)	Water	Growth, Survival
	Hyalella azteca (96-hour Acute)	Water	Survival
	Pimephales promelas (7-day Chronic)	Water	Growth, Survival
	Selenastrum capricornutum (96-hour Chronic)	Water	Growth

[1] See **Appendix B** for the complete list of current use pesticide constituents.
[2] Total and dissolved organic carbon measurements are used to calculate the particulate fraction of organic carbon.
[3] Hardness by calculation (SM 2340 B) is obtained by the sum of calcium and magnesium measurements (EPA 200.7).
[4] Nitrate + nitrite as N, total Kjeldahl nitrogen, and dissolved Kjeldahl nitrogen are used to calculate the total and dissolved fractions of total nitrogen present.

Toxicity Identification Evaluations

Toxicity Identification Evaluations (TIEs) are follow-up toxicity tests recommended by the TIE Advisory Committee (a select group of appropriate CUP Technical Advisory Committee representatives). The toxicity laboratory notifies the TIE Advisory Committee by telephone, text message, and email within 24 hours of observation that a sample (or samples) exceeds the TIE triggers outlined in the CUP QAPP (v1.4).

Delta RMP TIE testing (as described in the CUP QAPP section 13.3) has the primary goal of identifying whether pesticides are causing or contributing to toxic effects. This includes identification (or exclusion) of other factors (i.e., water quality conditions or other toxicants) contributing to reduced survival, growth, or reproduction. A phased TIE

approach is used, to the extent possible, to achieve these goals by initially focusing on treatments that identify major classes of contaminants including pesticides. If the cause of an observed effect is not clear after initial TIE testing, or if further detail describing the type or specific toxicant is desired, then the TIE Advisory Committee may choose to have the laboratory conduct additional TIE treatments. TIEs are expected to use the minimum number of test replicates and organisms per replicate required by the method, unless otherwise determined in consultation with the TIE Advisory Committee.

INVOLVED ORGANIZATIONS

Water Year 2023 Delta RMP CUP monitoring involved six organizations performing administrative, laboratory, and/or field tasks. Organization details are included in **Table 2**.

Table 2. Involved organizations for WY 2023 monitoring.

ORGANIZATION	TASK(S)
Marine Pollution Studies Laboratory at Moss Landing Marine Laboratories (MPSL-MLML)	Data Management, Quality Assurance
MLJ Environmental (MLJ)	Project Management, Data Management, Quality Assurance
U.S. Geological Survey (USGS) California Water Science Center (CWSC)	Sample Collection
USGS Organic Chemistry Research Laboratory (OCRL)	Sample Analysis
Babcock Laboratories	Sample Analysis
Pacific EcoRisk (PER)	Toxicity Testing

SAMPLING OVERVIEW

Sampling logistics for WY 2023 Delta RMP CUP monitoring are summarized in **Table 3** and detailed in the sections that follow.

Table 3. Sampling event information for Events 1-6 of CUP WY 2023 monitoring.

Event	Season	CEDEN Code	Station Name	USGS Site Number	Target Latitude	Target Longitude	Date	Time
1	First Flush	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	11/9/2022	07:15
1	First Flush	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	11/9/2022	11:00
1	First Flush	CENT-001	Central Delta Subregion - Cent-001	375009121331801	37.8357268	-121.5550367	11/10/2022	11:55
1	First Flush	CENT-002	Central Delta Subregion - Cent-002	375516121310201	37.9210245	-121.5173525	11/10/2022	10:50
1	First Flush	SOUT-001	South Delta Subregion - Sout-001	380310121295501	38.05283389	-121.498638	11/9/2022	12:15
1	First Flush	SOUT-002	South Delta Subregion - Sout-002	375730121224601	37.95822551	-121.3794921	11/9/2022	11:25
1	First Flush	SOUT-003	South Delta Subregion - Sout-003	380246121283201	38.04623104	-121.4755671	11/9/2022	12:45
1	First Flush	SOUT-004	South Delta Subregion - Sout-004	374827121245501	37.80751255	-121.4153544	11/10/2022	09:10
2	Winter Storm 1	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	2/28/2023	14:05
2	Winter Storm 1	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	2/28/2023	10:35

Event	Season	CEDEN Code	Station Name	USGS Site Number	Target Latitude	Target Longitude	Date	Time
2	Winter Storm 1	CENT-003	Central Delta Subregion - Cent-003	380439121343201	38.07762352	-121.5755328	2/27/2023	10:45
2	Winter Storm 1	CENT-004	Central Delta Subregion - Cent-004	380217121354801	38.03804218	-121.5966783	2/27/2023	09:55
2	Winter Storm 1	SOUT-005	South Delta Subregion - Sout-005	380220121290001	38.03876226	-121.4833785	2/27/2023	12:15
2	Winter Storm 1	SOUT-006	South Delta Subregion - Sout-006	380158121224701	38.03282669	-121.379842	2/27/2023	14:30
2	Winter Storm 1	SOUT-007	South Delta Subregion - Sout-007	375952121243601	37.99765428	-121.4100412	2/28/2023	09:45
2	Winter Storm 1	SOUT-008	South Delta Subregion - Sout-008	380509121330901	38.08578304	-121.5526236	2/27/2023	11:25
3	Spring Snow Melt	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	4/26/2023	08:00
3	Spring Snow Melt	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	4/27/2023	11:15
3	Spring Snow Melt	CENT-005	Central Delta Subregion - Cent-005	375405121365001	37.90152637	-121.6139983	4/26/2023	12:30
3	Spring Snow Melt	CENT-006	Central Delta Subregion - Cent-006	375933121312401	37.99242035	-121.5233604	4/27/2023	09:45
3	Spring Snow Melt	SOUT-009	South Delta Subregion - Sout-009	374913121293301	37.82028364	-121.4924756	4/26/2023	13:45
3	Spring Snow Melt	SOUT-010	South Delta Subregion - Sout-010	380020121263901	38.00563838	-121.4442958	4/27/2023	10:35
3	Spring Snow Melt	SOUT-011	South Delta Subregion - Sout-011	374737121182701	37.79368491	-121.3074659	4/26/2023	14:45
3	Spring Snow Melt	SOUT-012	South Delta Subregion - Sout-012	380600121291901	38.10007379	-121.4886924	4/27/2023	13:05

Event	Season	CEDEN Code	Station Name	USGS Site Number	Target Latitude	Target Longitude	Date	Time
4	Early Summer	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	6/12/2023	08:30
4	Early Summer	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	6/12/2023	13:00
4	Early Summer	CENT-007	Central Delta Subregion - Cent-007	380600121360201	38.10000839	-121.600551	6/13/2023	11:20
4	Early Summer	CENT-008	Central Delta Subregion - Cent-008	380231121352501	38.0420581	-121.5901535	6/13/2023	10:20
4	Early Summer	SOUT-013	South Delta Subregion - Sout-013	375710121202901	37.95268409	-121.3414959	6/12/2023	12:40
4	Early Summer	SOUT-014	South Delta Subregion - Sout-014	380228121254801	38.04105492	-121.4299205	6/13/2023	12:45
4	Early Summer	SOUT-016	South Delta Subregion - Sout-016	380524121285101	38.08990602	-121.4807977	6/13/2023	12:10
4	Early Summer	SOUT-025	South Delta Subregion - Sout-025	375500121191701	37.91662685	-121.3214378	6/12/2023	12:00
5	Mid-Summer	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	7/31/2023	07:30
5	Mid-Summer	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	7/31/2023	15:45
5	Mid-Summer	CENT-009	Central Delta Subregion - Cent-009	375928121344001	37.99108559	-121.577781	7/31/2023	12:40
5	Mid-Summer	CENT-010	Central Delta Subregion - Cent-010	375835121305201	37.97645722	-121.514616	7/31/2023	13:30
5	Mid-Summer	SOUT-017	South Delta Subregion - Sout-017	380230121295201	38.04165821	-121.497708	8/1/2023	11:15
5	Mid-Summer	SOUT-019	South Delta Subregion - Sout-019	380303121275401	38.05089205	-121.4650347	8/1/2023	10:10

Event	Season	CEDEN Code	Station Name	USGS Site Number	Target Latitude	Target Longitude	Date	Time
5	Mid-Summer	SOUT-020	South Delta Subregion - Sout-020	380620121292201	38.10562651	-121.4893732	8/1/2023	12:05
5	Mid-Summer	SOUT-026	South Delta Subregion - Sout-026	380028121272101	38.00774335	-121.4557558	8/1/2023	10:40
5R	Mid-Summer (Resample)	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	8/10/2023	14:00
5R	Mid-Summer (Resample)	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	8/10/2023	08:45
5R	Mid-Summer (Resample)	CENT-009	Central Delta Subregion - Cent-009	375928121344001	37.99108559	-121.577781	8/10/2023	10:15
5R	Mid-Summer (Resample)	CENT-010	Central Delta Subregion - Cent-010	375835121305201	37.97645722	-121.514616	8/10/2023	09:40
6	Late Summer	511ULCABR	Ulatis Creek at Brown Road	11455261	38.307	-121.7942	9/6/2023	08:30
6	Late Summer	544LSAC13	San Joaquin R at Buckley Cove	375831121223701	37.971833	-121.373619	9/5/2023	13:15
6	Late Summer	CENT-011	Central Delta Subregion - Cent-011	380205121360101	38.03491941	-121.600466	9/5/2023	10:15
6	Late Summer	CENT-012	Central Delta Subregion - Cent-012	380123121304901	38.02319907	-121.5137194	9/5/2023	11:15
6	Late Summer	SOUT-021	South Delta Subregion - Sout-021	374911121313501	37.81976863	-121.5264586	9/6/2023	11:40
6	Late Summer	SOUT-022	South Delta Subregion - Sout-022	380302121250601	38.0506533	-121.4183431	9/5/2023	14:00

Event	Season	CEDEN Code	Station Name	USGS Site Number	Target Latitude	Target Longitude	Date	Time
6	Late Summer	SOUT-023	South Delta Subregion - Sout-023	375945121220801	37.99589916	-121.3688435	9/5/2023	12:50
6	Late Summer	SOUT-024	South Delta Subregion - Sout-024	380350121295301	38.06387662	-121.498171	9/5/2023	11:50

STUDY BACKGROUND

The current monitoring design is focused on understanding pesticide occurrence and toxicity within the Sacramento/San Joaquin Delta by sampling a large number of sites (i.e., 36 per year), selected using a Generalized Random Tessellation Stratified (GRTS) approach. The GRTS approach generates a random sample of points across the Delta, helping to eliminate site selection bias and increasing the likelihood that cumulatively the data will be representative of the Delta as a whole. The Delta RMP can analyze current use pesticide data across regions or over time to evaluate status and trends within the Delta.

For logistical reasons, this revised design divides the Delta into six sub-regions based on water source **(Figure 1** and **Figure 2)**, and only two adjacent sub-regions are sampled in any WY (**Table 4**). For the two sub-regions sampled, one sub-region is sampled completely (i.e., 24 GRTS sites) within a WY and the other sub-region is partially sampled (i.e., 12 GRTS sites). The remaining 12 GRTS sites within the partially sampled sub-region are sampled in the following WY.

In addition to the GRTS sites, two Delta input sites sampled during the 2015-2017 Delta RMP monitoring (i.e., Ulatis Creek at Brown Road and San Joaquin River at Buckley Cove) continue to be sampled as part of the current CUP monitoring program. It was decided to continue sampling at the two fixed sites to provide an ongoing, long-term monitoring data record. Additionally, these sites were chosen because they generally had the highest concentrations of pesticides and the most instances of aquatic toxicity of the five sites sampled in 2015-2017.

Under the current monitoring design, samples are to be collected during six targeted events during each monitoring year, to include two fall/winter storms; either a third storm event or dry weather during spring runoff; and the spring, summer, and fall irrigation periods. A total of 48 environmental water samples are planned per year (i.e., 24 in one completely sampled sub-region, 12 in the partially sampled sub-region, and 12 samples collected at the fixed sites; see **Table 4**).

The rotating sub-regional strategy is designed to complete sampling of the entire Delta over four years of monitoring. Water Year 2023 constituted the third year of monitoring according to this strategy and as such included complete sampling of Subregion 4 in the South Delta and partial sampling of Subregion 5 in the Central Delta. The remaining 12 samples for Subregion 5 are scheduled to be collected during WY 2024, along with the 24 Subregion 6 sites.

Table 4 displays the numbers of GRTS sites sampled in each sub-region by water year and event, along with the fixed sites sampled during the first three years of the current CUP

monitoring program, together with the sites planned for sampling during WY 2024 (Year 4 of the current program). Year 1 monitoring was accomplished during WY 2019; Year 2 monitoring extended throughout WY 2020 and 2021; Year 3 monitoring was completed during WY 2023.

Table 4. Count of sites in each Subregion by WY and event.

WY	Event	Event Type	GRTS Sites Subregion 1	GRTS Sites Subregion 2	GRTS Sites Subregion 3	GRTS Sites Subregion 4	GRTS Sites Subregion 5	GRTS Sites Subregion 6	Fixed Site 1	Fixed Site 2	Total
WY 2019 (Year 1)	Event 1	Storm	4	2	--	--	--	--	1	1	8
	Event 2	Storm	4	2	--	--	--	--	1	1	8
	Event 3	Storm	4	2	--	--	--	--	1	1	8
	Event 4	Irrigation	4	2	--	--	--	--	1	1	8
	Event 5	Irrigation	4	2	--	--	--	--	1	1	8
	Event 6	Irrigation	4	2	--	--	--	--	1	1	8
WY 2020 (Year 2)	Event 1	Storm	--	2	4	--	--	--	1	1	8
	Event 2	Storm	--	2	4	--	--	--	1	1	8
WY 2021 (Year 2)	Event 3 [1]	Spring Snowmelt	--	2	4	--	--	--	1	1	8
	Event 4	Irrigation	--	2	4	--	--	--	1	1	8
	Event 5	Irrigation	--	2	4	--	--	--	1	1	8
	Event 6	Irrigation	--	2	4	--	--	--	1	1	8
WY 2023 (Year 3)	Event 1	Storm	--	--	--	4	2	--	1	1	8
	Event 2	Storm	--	--	--	4	2	--	1	1	8
	Event 3	Spring Snowmelt	--	--	--	4	2	--	1	1	8
	Event 4	Irrigation	--	--	--	4	2	--	1	1	8
	Event 5	Irrigation	--	--	--	4	2	--	1	1	8
	Event 6	Irrigation	--	--	--	4	2	--	1	1	8
WY 2024 (Year 4) [planned]	Event 1	Storm	--	--	--	--	2	4	1	1	8
	Event 2	Storm	--	--	--	--	2	4	1	1	8
	Event 3	Storm	--	--	--	--	2	4	1	1	8
	Event 4	Irrigation	--	--	--	--	2	4	1	1	8
	Event 5	Irrigation	--	--	--	--	2	4	1	1	8
	Event 6	Irrigation	--	--	--	--	2	4	1	1	8
Total Samples			**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**192**

[1] Samples were collected from subregions 2 and 3 in March 2020 but were not tested for toxicity due to COVID-19 restrictions. Chemical analyses were run on the March 2020 samples; however, all sites scheduled for Event 3 in Year 2 were resampled and analyzed for both chemical constituents and toxicity in March of 2021.

Figure 1. Delta subregions with fixed and GRTS sampling sites in WY 2023.

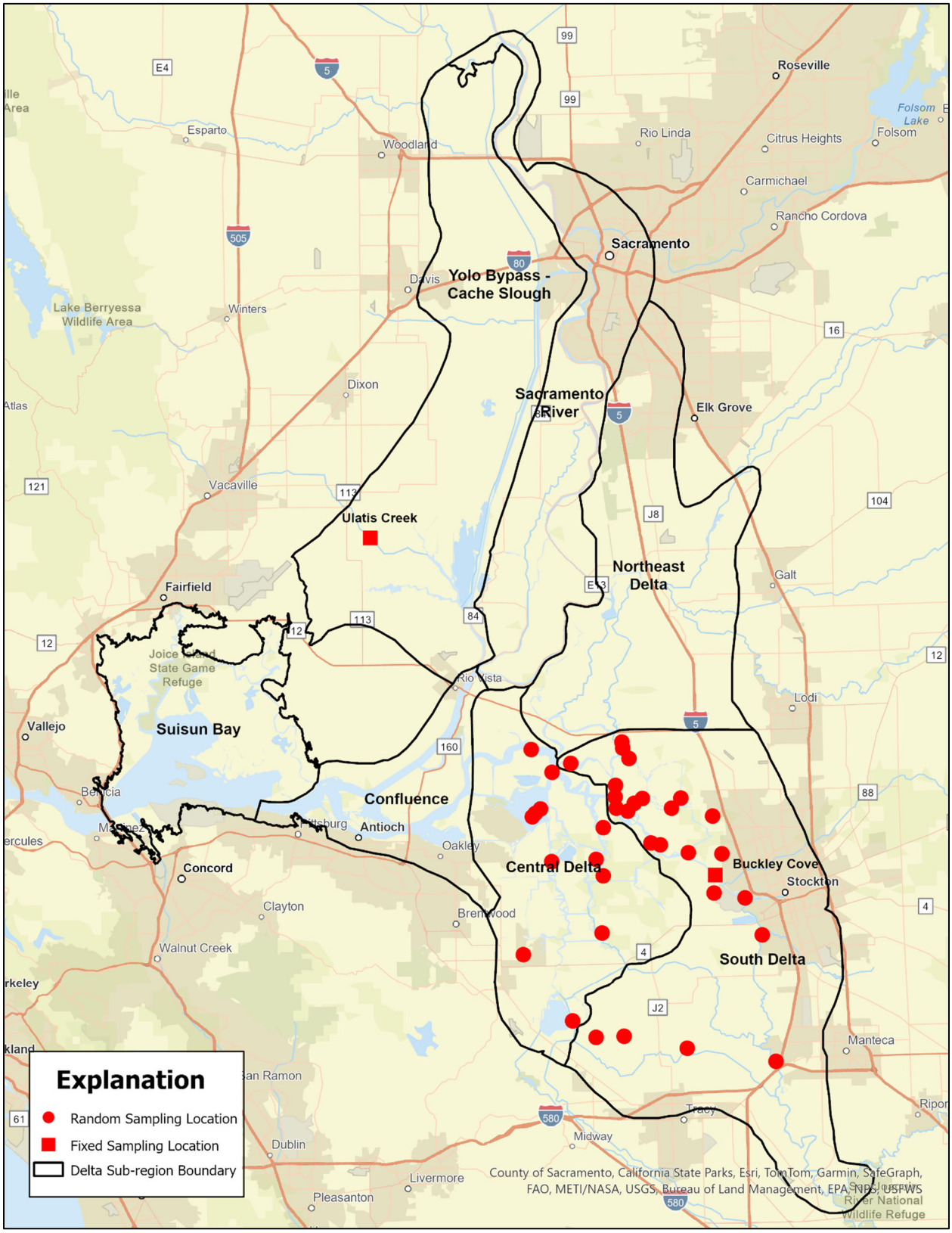
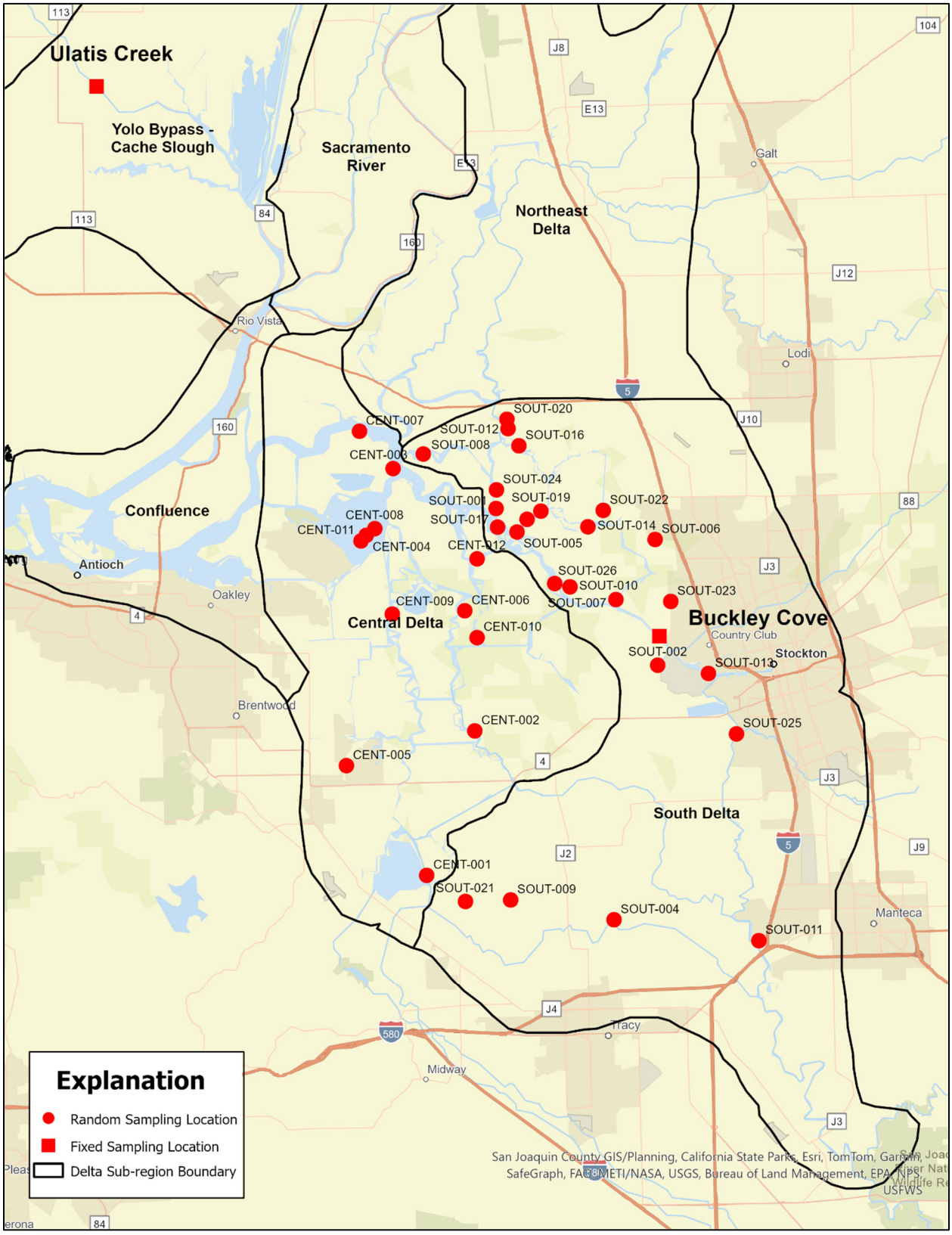


Figure 2. Fixed and GRTS sites sampled in WY 2023 (detailed map).



SAMPLING METHODS

Sampling for WY 2023 was conducted by personnel from the U.S. Geological Survey (USGS) California Water Science Center (CWSC) at sites shown in **Figure 1** and **Figure 2** and following procedures described in the CUP QAPP (v1.4). Water samples were collected concurrently for the analyses of pesticides, metals, ancillary parameters, and aquatic toxicity testing as listed in **Table 1**. Monitoring photos taken by field crews during each event are provided in **Appendix A**.

All samples were collected as grab samples and all sites were accessed by boat with the exception of the fixed sampling station, Ulatis Creek at Browns Road. The study design approved by the Delta RMP called for grab samples because of the large volume of water required for collecting toxicity and pesticide samples concurrently. Samples were collected by submerging narrow-mouthed bottles at mid-channel to a depth of 0.5 meters (m), and on the ebb tide (between the high and low tide) for tidally influenced sites.

Pesticide samples were collected in pre-cleaned, baked amber-glass bottles and transported on ice to the USGS Organic Chemistry Research Laboratory (OCRL) in Sacramento, California. Samples for analysis by Babcock Laboratories were collected in Teflon bottles, processed at the USGS CWSC, and shipped on ice to the laboratory in Riverside, California. Teflon bottles were cleaned prior to each sampling event according to the procedures outlined in the CUP QAPP (v1.4) and were triple rinsed with native water prior to sample collection. Water samples for toxicity analyses were collected in 4-liter, amber-glass bottles provided by Pacific EcoRisk (PER). Bottles were triple rinsed with native water on-site before sample collection. Ten bottles were collected at each site and transported on ice to the USGS CWSC where they were picked up by a PER courier at the end of each sampling day.

SAMPLE COLLECTION COMPLETENESS

Sample collection completeness is based on the number of expected samples successfully collected and transported to the laboratories for analysis. Sample completeness is assessed as each analysis scheduled for each site over all events in the year; sample completeness counts by individual constituent are provided in Appendix **Table C.2**. All 17,808 analyses scheduled for WY 2023 monitoring were successfully collected and transferred to the appropriate laboratories. In addition to the originally planned sample collection, 1,419 extra analyses were scheduled as a part of the resampling effort for the Event 5 toxicity samples (see description of field activities for **Event 5**, below). With these additional samples, all 19,227 analyses were successfully collected and transferred to the laboratories; sample collection completeness was 100% for WY 2023.

Field Quality Control (QC) samples are required to be collected at an annual rate of 5% of the environmental samples according to the CUP QAPP (v1.4). Field duplicate and field blank samples each comprised 5.8% of the total environmental samples for which they were required during WY 2023. Field QC percentages by individual analyte are provided in Appendix **Table C.4**. All field QC individual analyte percentages were 5% or greater for WY 2023, with the exception of total suspended solids (TSS) field duplicates, which comprised 1.9% of the total samples collected.

FIELD ACTIVITIES

Summaries for each event are described below. Additional details regarding weather, temperature, and habitat information are included in Appendix A and noted on field sheets. Rainfall and discharge for WY 2023 are shown in **Figure 3** for the Sacramento River and **Figure 4** for the San Joaquin River.

Figure 3. Sacramento River rainfall amounts and tidally filtered daily discharge for WY 2023.

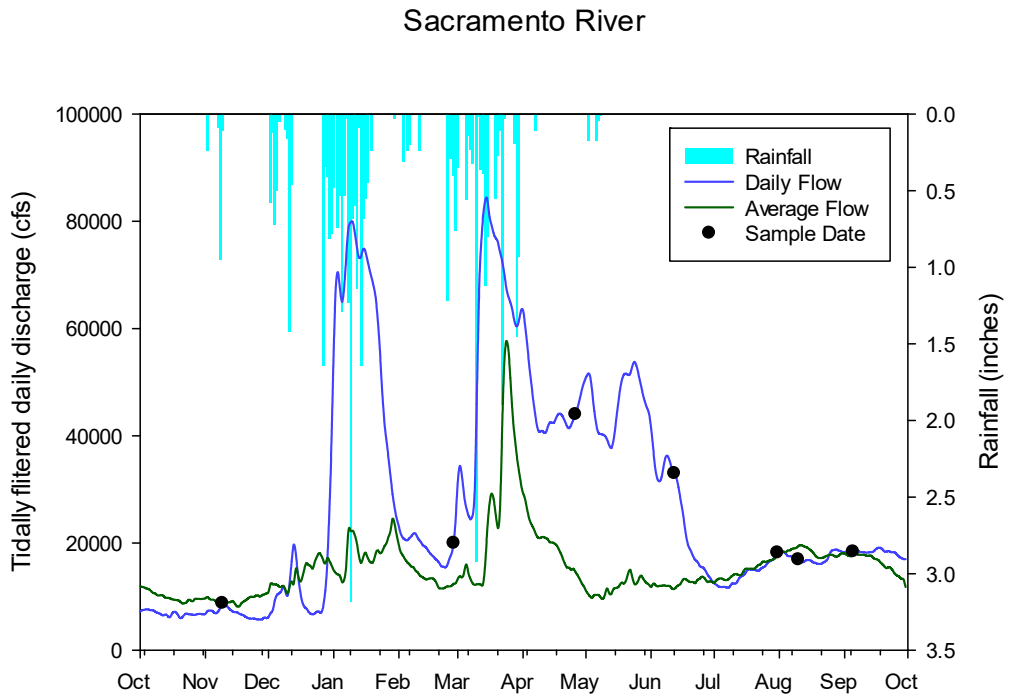
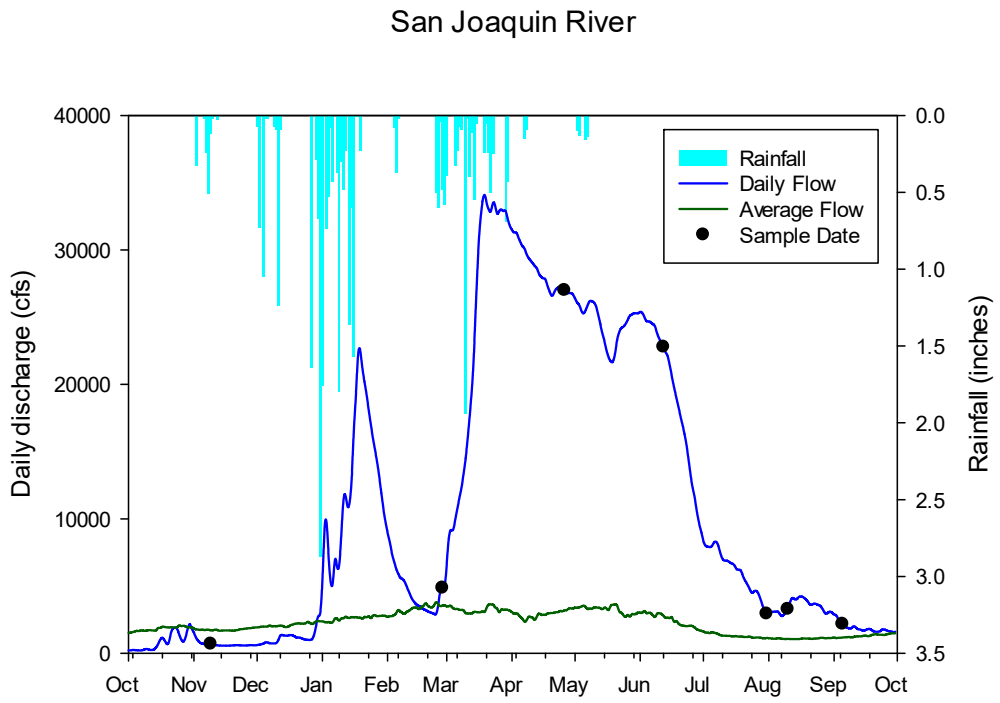


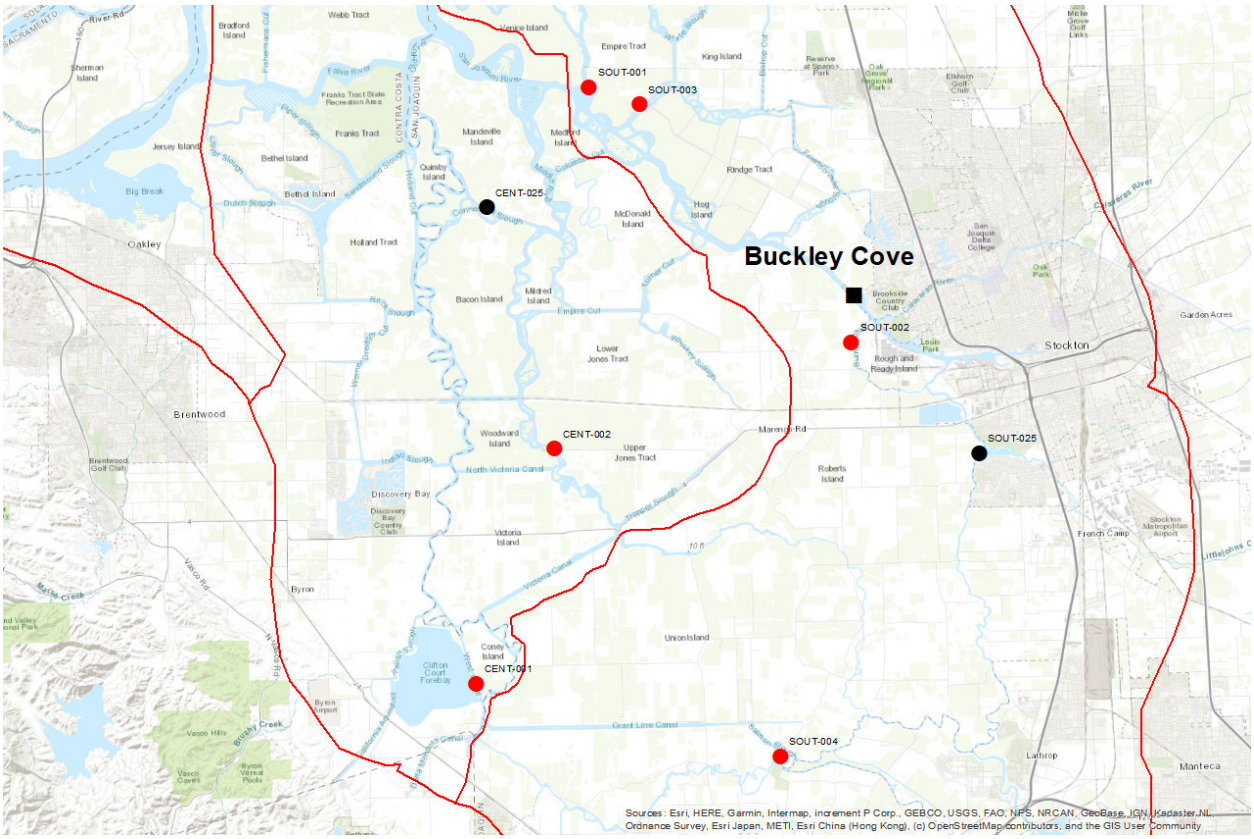
Figure 4. San Joaquin River rainfall amounts and tidally filtered daily discharge for WY 2023.



Event 1

Event 1 samples were collected on November 9 and 10, 2022. This was the first sampling event of WY 2023 and is Event 1 of the third year of sampling under the current monitoring design. It was a first-flush sampling event. During this event field crews were operating under a conditional approval of the Delta RMP QAPP per the State Water Resources Control Board (SWRCB) Quality Assurance (QA) Officer. For this event the sampling trigger was set at 0.5" of rainfall occurring within 24 hours at sites located in the Stockton area (for southern Delta sites) and the Dixon area (for Ulatis Creek).

Figure 5. Map of sampling locations for Event 1 of WY 2023.



No precipitation occurred in October 2022 (the first month of WY 2023) in the study area. A very minor rainfall event occurred on November 1 and 2, 2022, which produced less than 0.25" of rainfall at most locations in the study area. Additional rainfall began on November 5, 2022 and continued through November 8, 2022. The sampling trigger was met at sites in the Stockton and Dixon areas on the morning of November 8, 2022 (**Figure 6**). Runoff from this storm event caused a minor increase in stage/flow at Ulatis Creek which peaked in the evening of November 8th (**Figure 7**). Storm total precipitation ranged from approximately 1.0" in the Stockton area to 1.5" in the Dixon area.

Figure 6. Rainfall totals as of 2:24PM on November 8, 2022.
Data obtained from the California Nevada River Forecast Center.

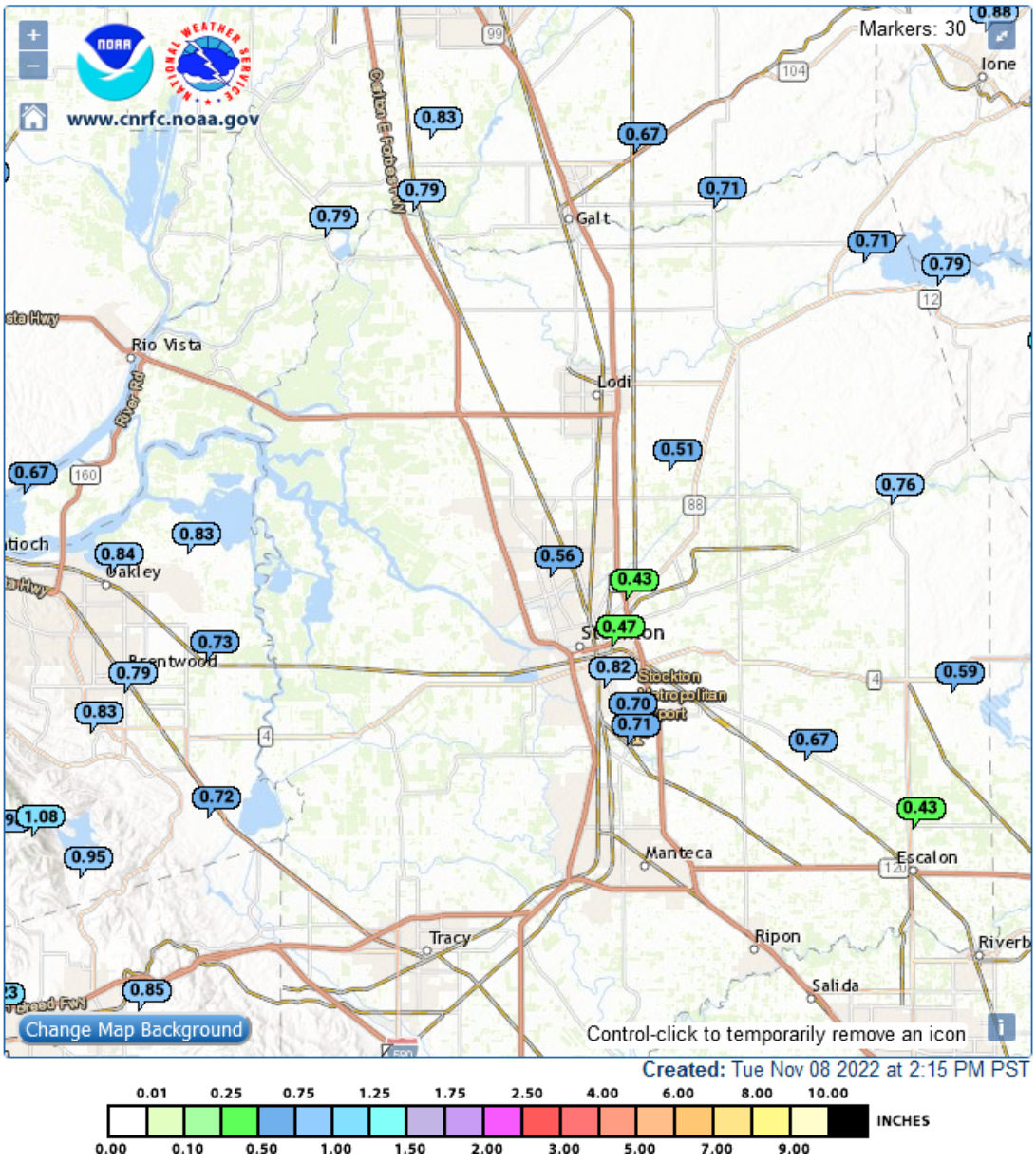
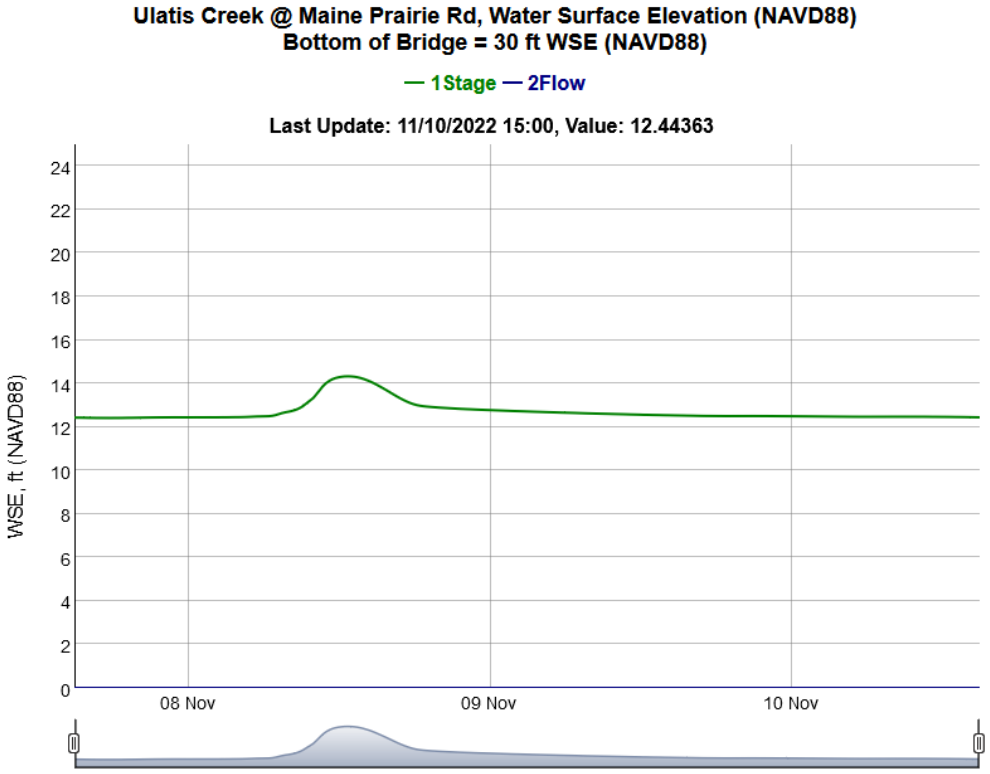


Figure 7. Stage at Ulatis Creek during minor rainfall event on November 9 and 10, 2022. All of the data and information in this plot is raw, unrefined, and has not been reviewed by qualified staff. The plots come directly from the monitoring equipment and are displayed in unedited format. The dot on the figure indicates the approximate sampling time.



USGS personnel for Delta RMP sampling Event 1 of WY 2023 consisted of Matthew De Parsia, Jim Orlando, and Matt Uychutin. The weather on both days was partly cloudy to sunny and cold.

On November 9, 2022, the crew sampled Ulatis Creek at 07:15. Flows were slightly elevated above normal low-flow for this site and it appeared that the stream level add recently receded approximately 0.5' from its peak (**Figure A.1**). Samples were collected from near the center of flow by wading. Water depth at the point of collection was approximately 1.5'. Following sampling at Ulatis the crew returned to Sacramento, picked up the sampling boat, and drove to Ladd's Marina in Stockton. Samples were collected from the San Joaquin River at Buckley Cove at 11:00 (**Figure A.2**). Note that the sampling location was moved approximately 100 yards south of where samples had been collected in past years to be closer to the actual target coordinates for site 544LSAC13. The sampling point was moved at the request of the Delta RMP Program Manager and CVRWQCB personnel. All samples collected at Buckley Cove were within 100 meters of the target coordinates. Additional details were recorded in deviation form 2021_11.

From Buckley Cove, the crew motored about 0.5 miles to site SOUT-002 located on Burns Cutoff west of Rough and Ready Island. Samples were collected at the target coordinates at 11:25 (**Figure A.3**). From this site, the crew motored north up the San Joaquin River to site SOUT-001 located on Little Potato Slough. Samples were collected at the target coordinates at 12:15 (**Figure A.4**). The crew then moved approximately 0.5 miles to site SOUT-003 on White Slough. Samples were collected at the target coordinates at 12:45 (**Figure A.5**). The crew then returned to Ladd's Marina, pulled the boat and returned to Sacramento. Samples were kept on wet ice and transported to the USGS CWSC at the Sacramento State campus. Toxicity samples were picked up by Pacific EcoRisk courier at approximately 16:15.

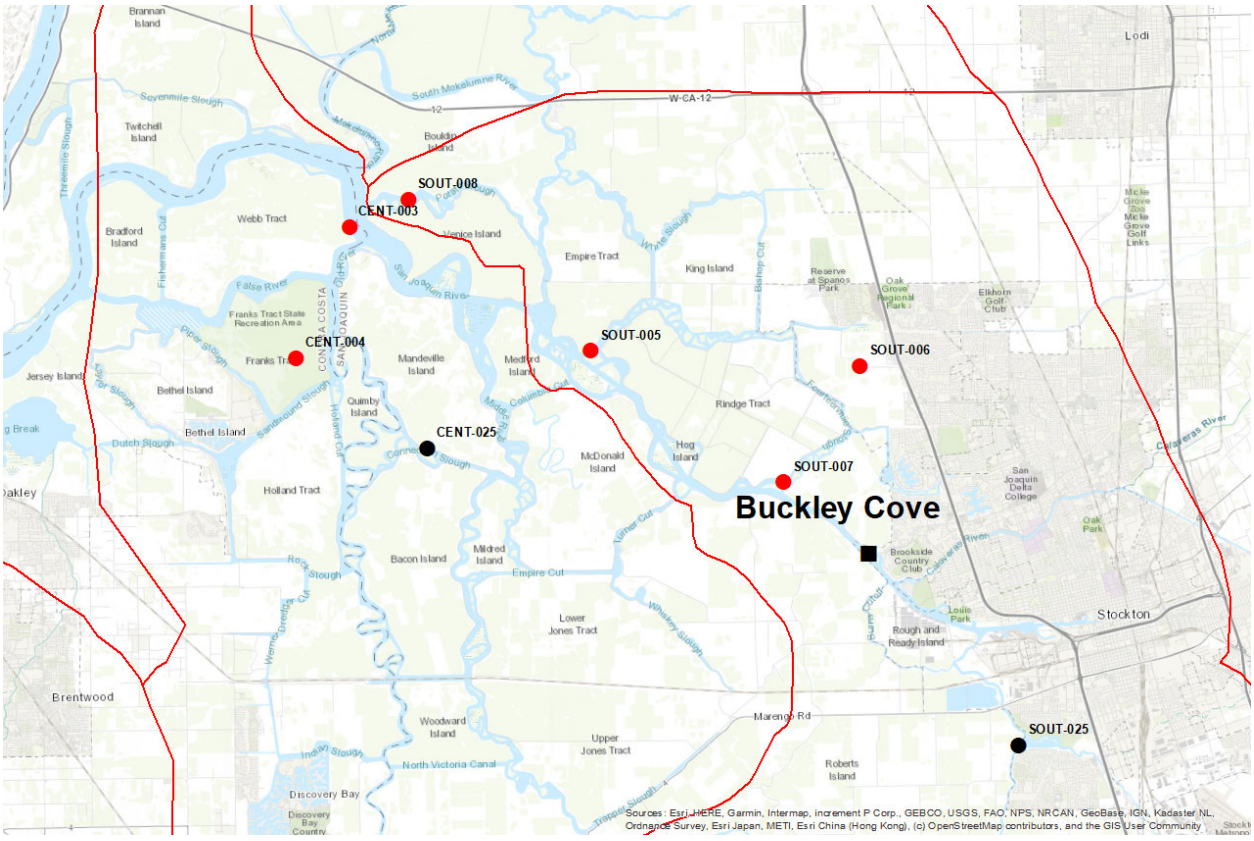
On November 10, 2022, USGS collected samples from sites SOUT-004, CENT-002, and CENT-001. The boat was launched from Tracy Oasis Marina on Grant Line Canal at approximate 08:45. The crew then motored east on Grant Line Canal past the recently removed Grant Line Canal Barrier. The barrier was breached on November 7, 2022, although excavators were at the site removing rocks and concrete as we passed (**Figure A.6**). Samples were collected at site SOUT-004 on Old River at 09:10. It was noted that flows were strongly west to east during sample collection and that a good amount of floating aquatic vegetation was present in the channel (**Figure A.7**). From there the crew motored approximately 11 miles to site CENT-002 located on Middle River approximately 100 yards north of the new, Bacon Island/Woodward Island bridge. Samples (including a toxicity replicate) were collected at 10:50 (**Figure A.8**). The crew then returned south to site CENT-001 located on Old River a few hundred yards north of the intake to Clifton Court Forebay. Samples were collected at the target coordinates at 11:55 (**Figure A.9**). The crew then returned to Tracy Oasis Marina, pulled the boat and returned to Sacramento. Samples were kept on wet ice and transported to the USGS CWSC at the Sacramento State campus. Toxicity samples were picked up by Pacific EcoRisk courier at approximately 16:00.

Event 2

This was the second sampling event of WY 2023 and is Event 2 of the third year of sampling under the current monitoring design. Samples were collected February 27 and 28, 2023. This event was a storm sampling event. For this event the sampling trigger was set at 2X to 3X base flows with at least 10 rain free days prior to sampling. Prior to sampling there had not been any significant rainfall since about mid-January. This sampling event was scheduled in advance to meet the QAPP requirement to sample Event 2 by the end of February if rainfall sampling triggers had not been met. Coincidentally, this timing aligned with a significant rainfall event which started on February 24, 2023, and continued through March 1, 2023. Elevated runoff at Ulatis Creek occurred on February

25, 27, and 28, 2023, with the highest stage occurring the afternoon of February 28 (sample collected at this time). Sampling sites are shown in **Figure 8**.

Figure 8. Map of sampling locations for Event 2 of WY 2023.



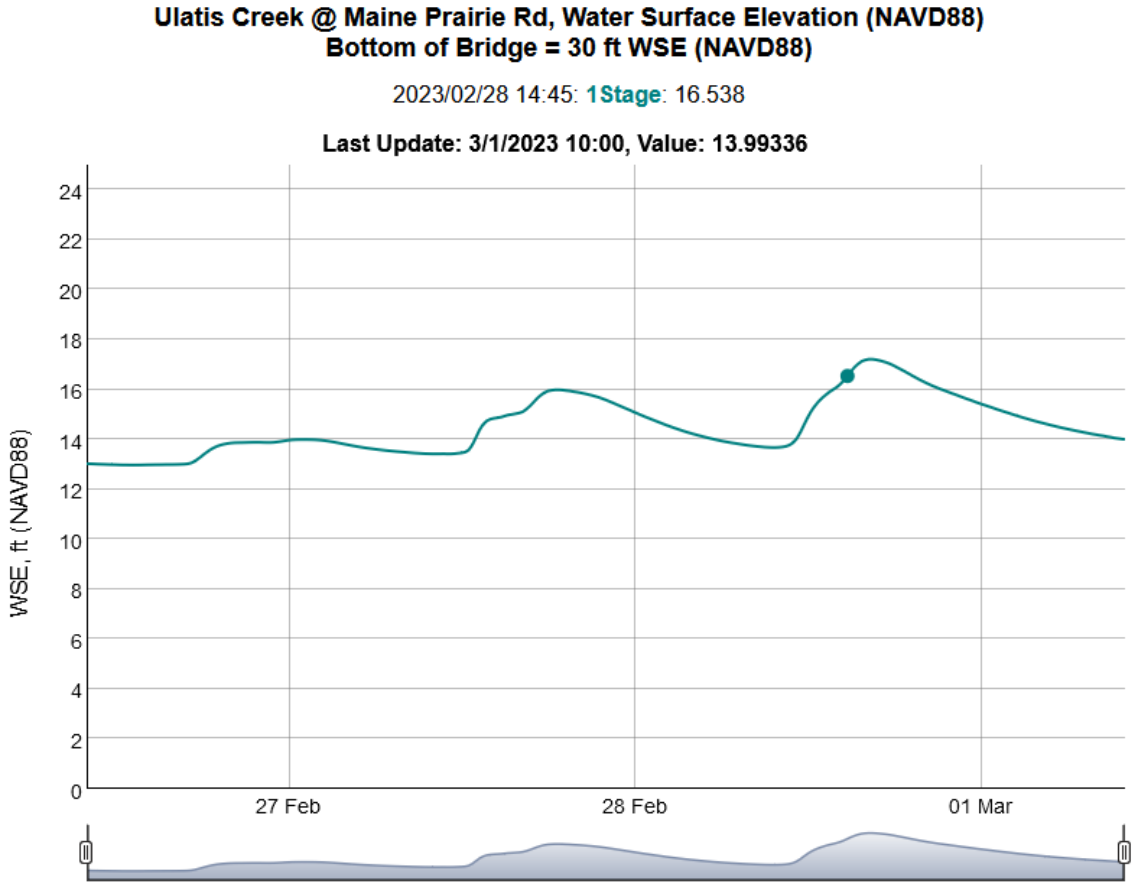
A series of atmospheric river storms impacted the region from the end of December 2022 to mid-January 2023. Due to several factors, sampling could not take place to capture these events. No significant precipitation occurred from mid-January up until the end of February 2023. Precipitation began on February 23, 2023, with roughly 0.5" in the Stockton area and nearly 1" in the Ulatis Creek area. Due to antecedent dry conditions this initial rainfall produced only approximately 1' rise in stage on Ulatis Creek. Rainfall ranging from intermittent to heavy at times occurred through February 28, 2023 (**Table 5**). Rainfall occurring on February 26, 27, and 28, 2023, produced 3 flow peaks at Ulatis Creek with the largest flows occurring on February 28 (**Figure 9**).

Table 5. Event 2 rainfall totals for Vacaville and Stockton, CA.
Data from CoCoRaHS (https://maps.cocorahs.org/).

Date	Vacaville Rainfall (in)	Stockton Rainfall (in)
2/22/2023	0	0
2/23/2023	0.89	0.5
2/24/2023	0.3	0.6

Date	Vacaville Rainfall (in)	Stockton Rainfall (in)
2/25/2023	0.1	0.04
2/26/2023	0.65	0.48
2/27/2023	0.7	0.58
2/28/2023	0.52	0.39

Figure 9. Stage at Ulatis Creek during Event 2.
The dot on the figure indicates the approximate sampling time.



The USGS personnel for Delta RMP sampling Event 2 of WY 2023 consisted of Matthew De Parsia, Jim Orlando, and Matt Uychutin. Sampling occurred over a 2-day span from February 27-28, 2023. The weather on both days was overcast and windy with near constant rain (heavy at times).

On February 27, 2023, the crew launched the boat from Paradise Point Marina north of Stockton. The crew proceeded to site CENT-004 located in Franks Tract. Conditions were rough with rain, wind, and swells. Water samples were collected at 09:55 at the target coordinates (**Figure A.10**). The crew then proceeded to site CENT-003 which was sampled at 10:45 at the target coordinates located near the confluence of the San Joaquin River and Old River (**Figure A.11**). The crew next traveled east on Potato Slough to site SOUT-

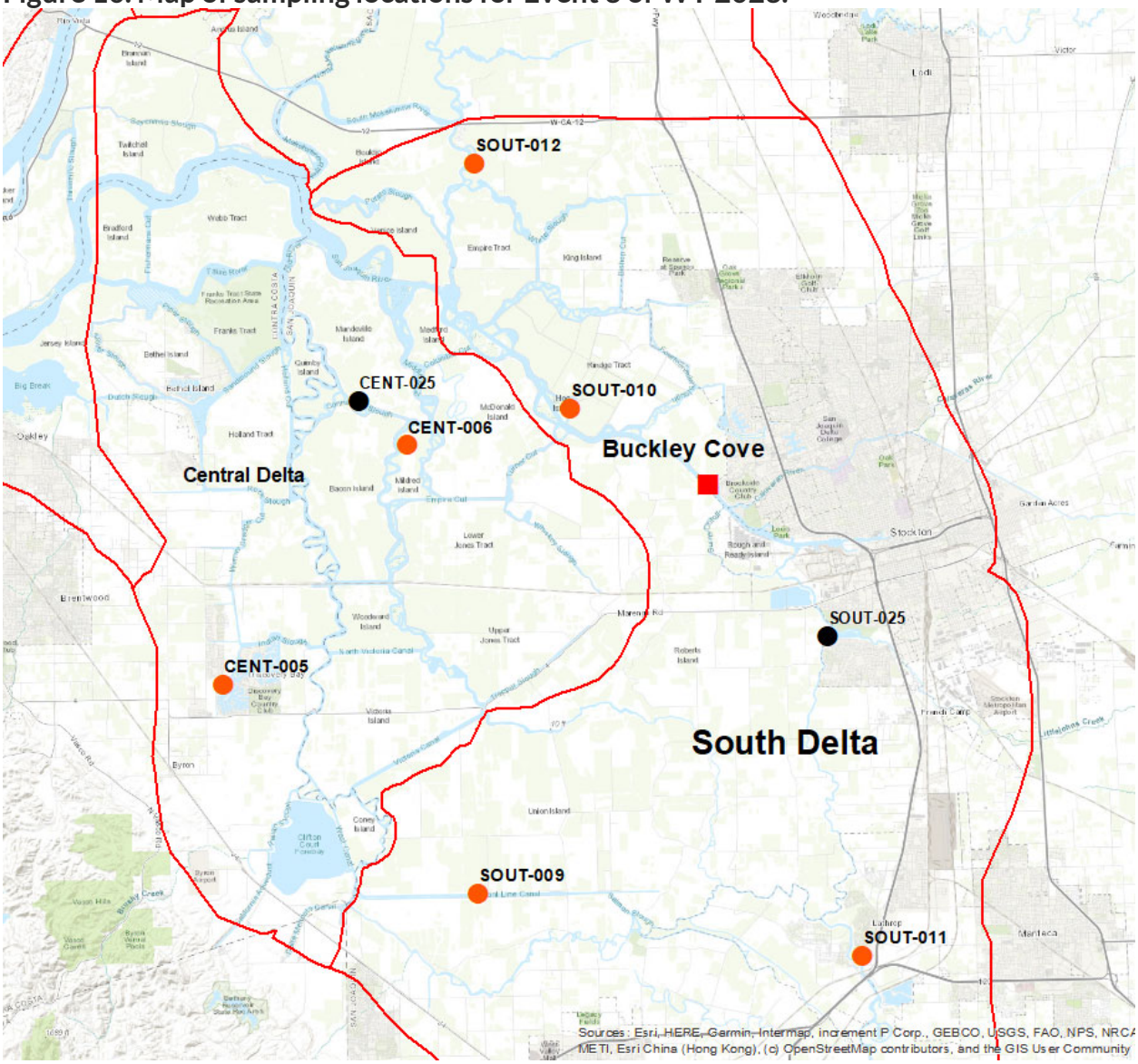
008 and sampling took place at 11:25 at the target coordinates (**Figure A.12**). Following collection, the crew proceeded south on Potato Slough to site SOUT-005 located on White Slough at the confluence with the San Joaquin River. Sampling took place at 12:15 at the target coordinates (**Figure A.13**). The crew then returned to Paradise Point Marina to warm up and dry out a bit. At approximately 14:00, the crew departed the marina and proceeded West on White Slough to site SOUT-006, which is on the outlet of Mosher Creek, which flows through Stockton. While traveling to the site, stormwater runoff was seen being pumped into the slough from a residential area approximately ¼ mile west of site SOUT-006 (**Figure A.14**). Sampling took place at the SOUT-006 target coordinates at 14:40 (**Figure A.15**). The field crew then returned to Paradise Point Marina, loaded the boat, and returned to Sacramento. Toxicity samples were picked up by Pacific EcoRisk courier at approximately 17:00.

On February 28, 2023, USGS collected samples from sites SOUT-007, Buckley Cove, and Ulatis Creek. The boat was launched from Ladd's Marina in Stockton at approximate 09:30. The crew then motored north on the San Joaquin River to site SOUT-007 where samples were collected at 9:45 (**Figure A.16**). From here the crew motored back to Buckley Cove and collected the sample there at 10:35 (**Figure A.17**). The crew then pulled the boat and returned it to Sacramento. The crew then drove to Ulatis Creek at Brown Rd, arriving to find flows elevated and unwadeable (**Figure A.18**). Samples were collected from the bridge using a weighted bottle sampler at 14:05 (**Figure A.19**). It was noted that stage continued to rise during the time the crew was on site. Toxicity samples were delivered to Pacific EcoRisk laboratories at approximately 16:00 by USGS personnel.

Event 3

This was the third sampling event of WY 2023 and is Event 3 of the third year of sampling under the current monitoring design. Samples were collected April 26 and 27, 2023. This was a spring snowmelt runoff sampling event. While Event 3 could have been sampled as a storm runoff event, QAPP criteria for such an event were not met following the Event 2 sampling in late February. Following the Event 2 storm sampling, rainfall occurred within the study area on 22 of the 31 days in March. The QAPP requirement for 10 consecutive days of dry weather was not met during this period. April was generally dry and no storms that met QAPP storm sampling triggers occurred. Therefore, sampling occurred to meet the QAPP guideline to sample Event 3 prior to the end of April.

Figure 10. Map of sampling locations for Event 3 of WY 2023.



Rainfall in March and warm temperatures in April resulted in significant snowmelt runoff and high stream flows in the San Joaquin and Sacramento rivers during the Event 3 sampling (**Figure 11** and **Figure 12**). As a result of the large volumes of fresh water entering the Delta, specific conductance values were generally less than 150 µS/cm at the sites sampled.

Figure 11. Streamflow for the San Joaquin River at Vernalis during Event 3.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.

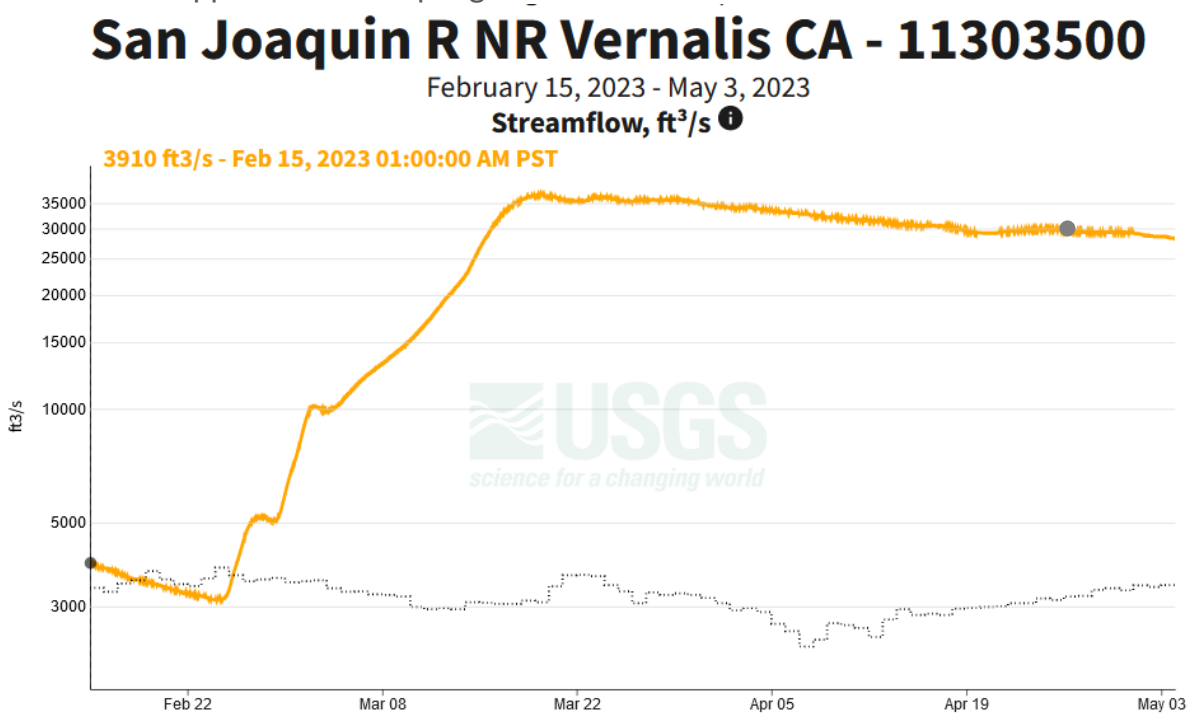
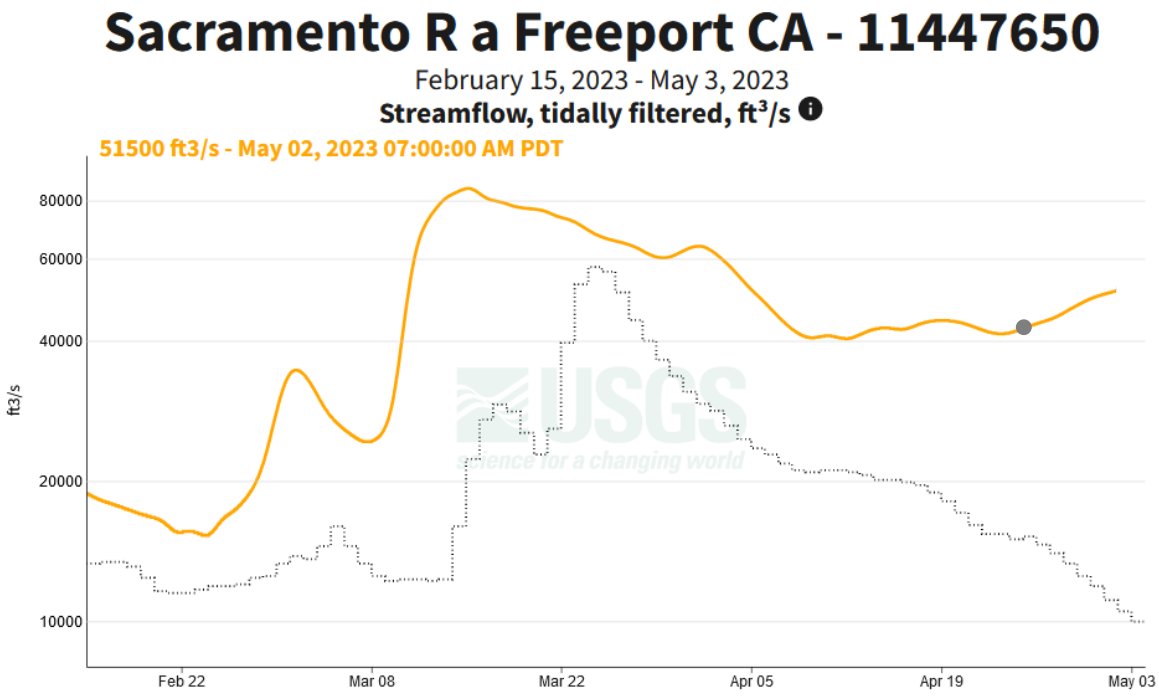


Figure 12. Streamflow for the Sacramento River at Freeport during Event 3.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.



The USGS personnel for Delta RMP sampling Event 3 of WY 2023 consisted of Jim Orlando, Robert Vroman, and Matt Uychutin. Sampling occurred over a 2-day span from April 26-27, 2023. The weather on both days clear and hot.

On April 26, 2023, the crew drove to the Ulatis Creek at Brown Rd site early in the morning. Sampling occurred at 08:00 by wading on the upstream side of the bridge (**Figure A.20**). The crew then returned to Sacramento, picked up the boat and proceeded to Tracy Oasis marina on Grant Line Canal west of Stockton. The crew then proceeded to site CENT-005 located in deep in the Discovery Bay subdivision. Water samples were collected at 12:30 at the target coordinates (**Figure A.21**). The crew then motored back to the Grant Line Canal and collected samples at site SOUT-009 at 13:45 (**Figure A.22**) At this time it was noted that flows were strongly seaward. The crew next traveled west through Old River to the San Joaquin River near Mossdale where samples were collected at site SOUT-011 at 14:45. Flows on the San Joaquin were very high and fast and standing waves were present at the railroad bridge a few hundred meters upstream of the sampling site (**Figure A.23**). The field crew then returned to Tracy Oasis Marina, loaded the boat, and returned to Sacramento. Toxicity samples were picked up by a Pacific EcoRisk courier at approximately 18:00.

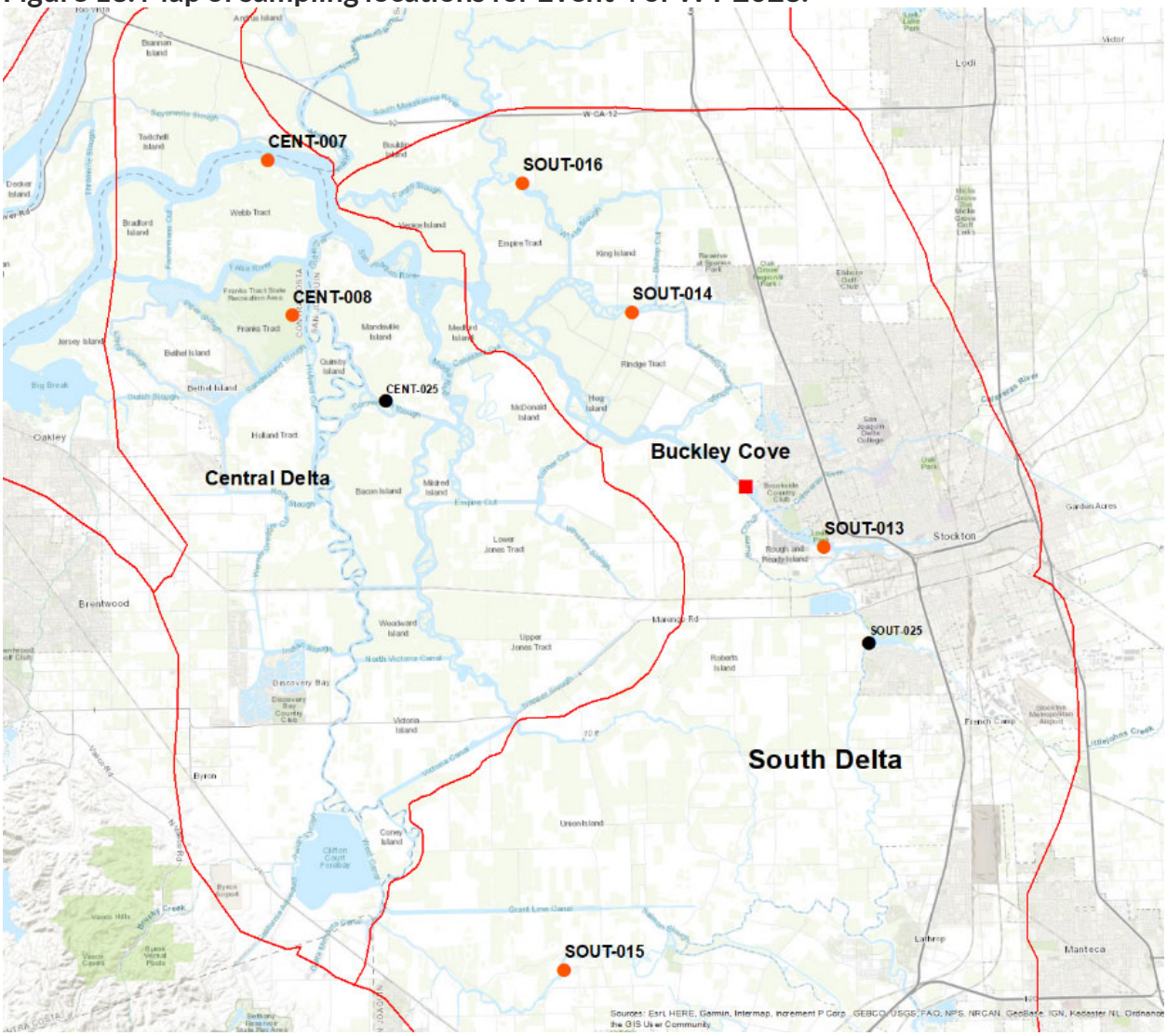
On April 27, 2023, USGS collected samples from sites CENT-006, SOUT-010, Buckley Cove, and SOUT-012. The boat was launched from Ladd's Marina in Stockton at approximate 08:30. The crew then motored to Mildred Island where samples were collected at site CENT-006 on northwest side of the flooded island at 09:45 (**Figure A.24**). From here the crew motored east to site SOUT-010 on the San Joaquin River and collected the sample there at 10:35 (**Figure A.25**). This site is in a small cove of Hog Island in the San Joaquin River. There were several derelict boats as well as numerous rundown structures showing signs of habitation immediately adjacent to the site. The crew then returned to the Buckley Cove site and collected samples there (including a toxicity replicate) at 11:15 (**Figure A.26**). The crew pulled the boat and drove to Tower Park Marina on Little Potato Slough. The boat was launched at 12:45 and after a very short sail, samples were collected at site SOUT-012 at 13:05 on Little Potato Slough. This sampling site was adjacent to several residences and boat docks (**Figure A.27**). The crew then returned to Sacramento and toxicity samples were picked up by the PER courier at approximately 16:00.

Event 4

This was the fourth sampling event of WY 2023 and is Event 4 of the third year of sampling under the current monitoring design. Samples were collected June 12 and 13, 2023. This was an irrigation runoff sampling event. This was the first of three irrigation

runoff events planned for WY 2023 with Event 5 scheduled for July 31 and August 1, 2023, and Event 6 planned for September 5 and 6, 2023.

Figure 13. Map of sampling locations for Event 4 of WY 2023.



No significant rainfall occurred in the study are since the last sampling event in April. However, elevated snowmelt runoff continued to enter the Delta from both the Sacramento and San Joaquin Rivers (**Figure 14** and **Figure 15**). It was noted during sampling that specific conductance was relatively low at all of the Delta sampling sites.

Figure 14. Streamflow for the San Joaquin River at Vernalis during Event 4.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.

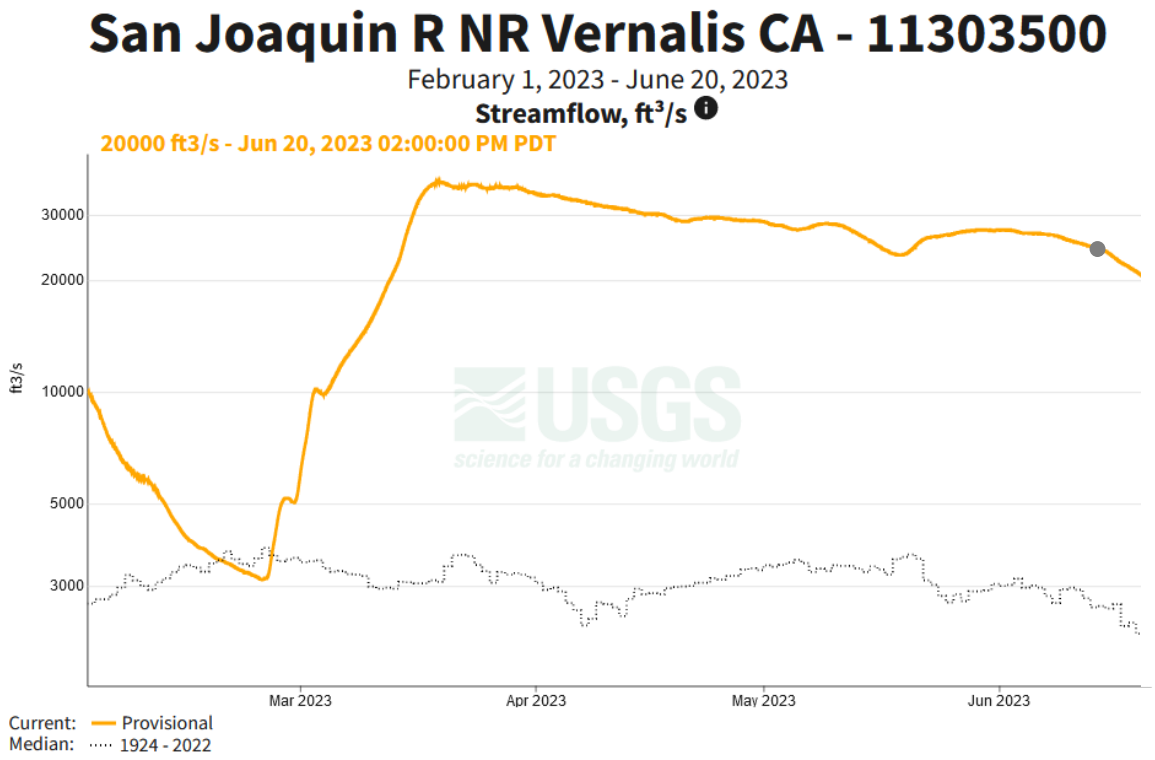
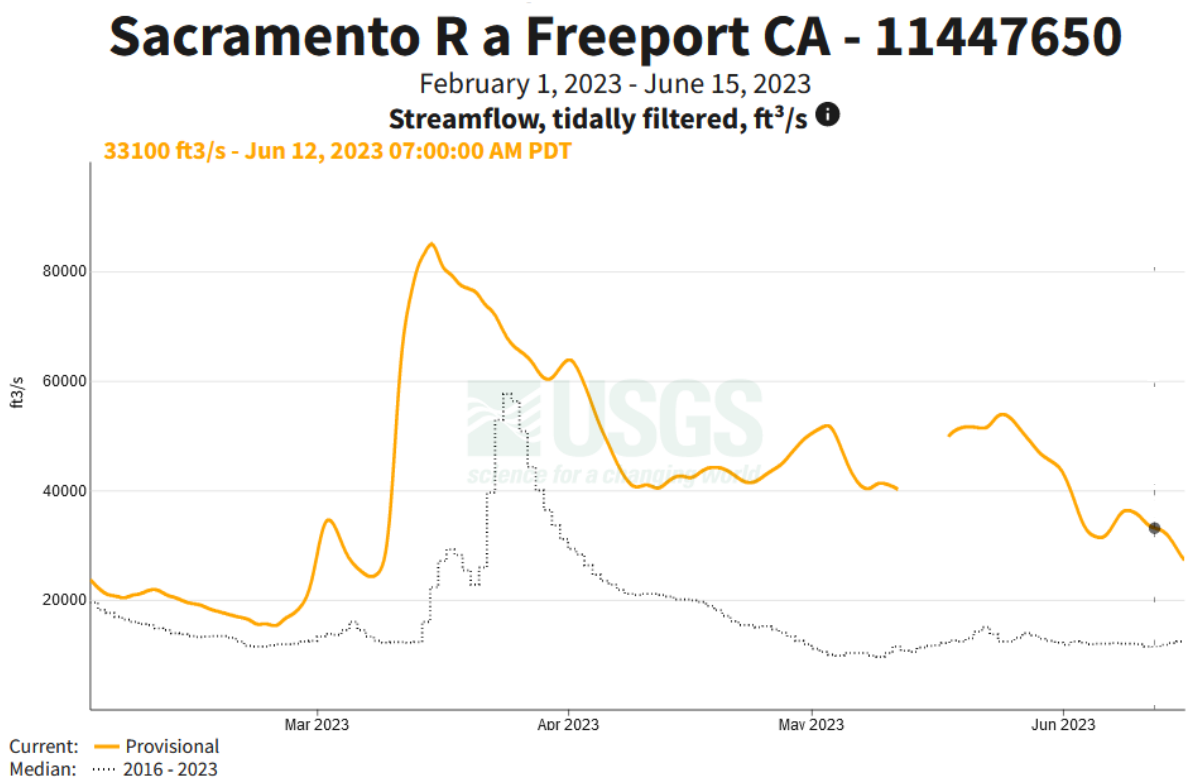


Figure 15. Streamflow for the Sacramento River at Freeport during Event 4.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.



The USGS personnel for Delta RMP sampling Event 4 of WY 2023 consisted of Jim Orlando, Matt De Parsia, and Matt Uychutin. Sampling occurred over a 2-day span from June 12-13, 2023. The weather on June 12, 2023, was partly cloudy, breezy, and cool while on June 13, 2023, the weather was clear and warm.

On June 12, 2023, the crew drove to the Ulatis Creek at Brown Road site early in the morning. Sampling occurred at 08:30 by wading on the upstream side of the bridge (**Figure A.28**). Quite a bit of floating aquatic vegetation and new tule growth was noted at the site compared to Event 3. The crew then drove to Ladd's Marina in Stockton and launched the boat. Water samples were collected at 12:00 at SOUT-025 (**Figure A.29**). It was noted that stream flow was quite rapid at this site and that it appeared that bottom sediment was being resuspended in the turbulent flows. The oversample site SOUT-025 was sampled because prior reconnaissance had determined that site SOUT-015 was inaccessible. This change was approved by the Delta RMP Program Manager prior to sampling. The crew then motored approximately 4 miles downstream on the San Joaquin River to site SOUT-013 which is located near the port of Stockton. Samples were collected at the target coordinates at 12:40 (**Figure A.30**). The crew then continued down

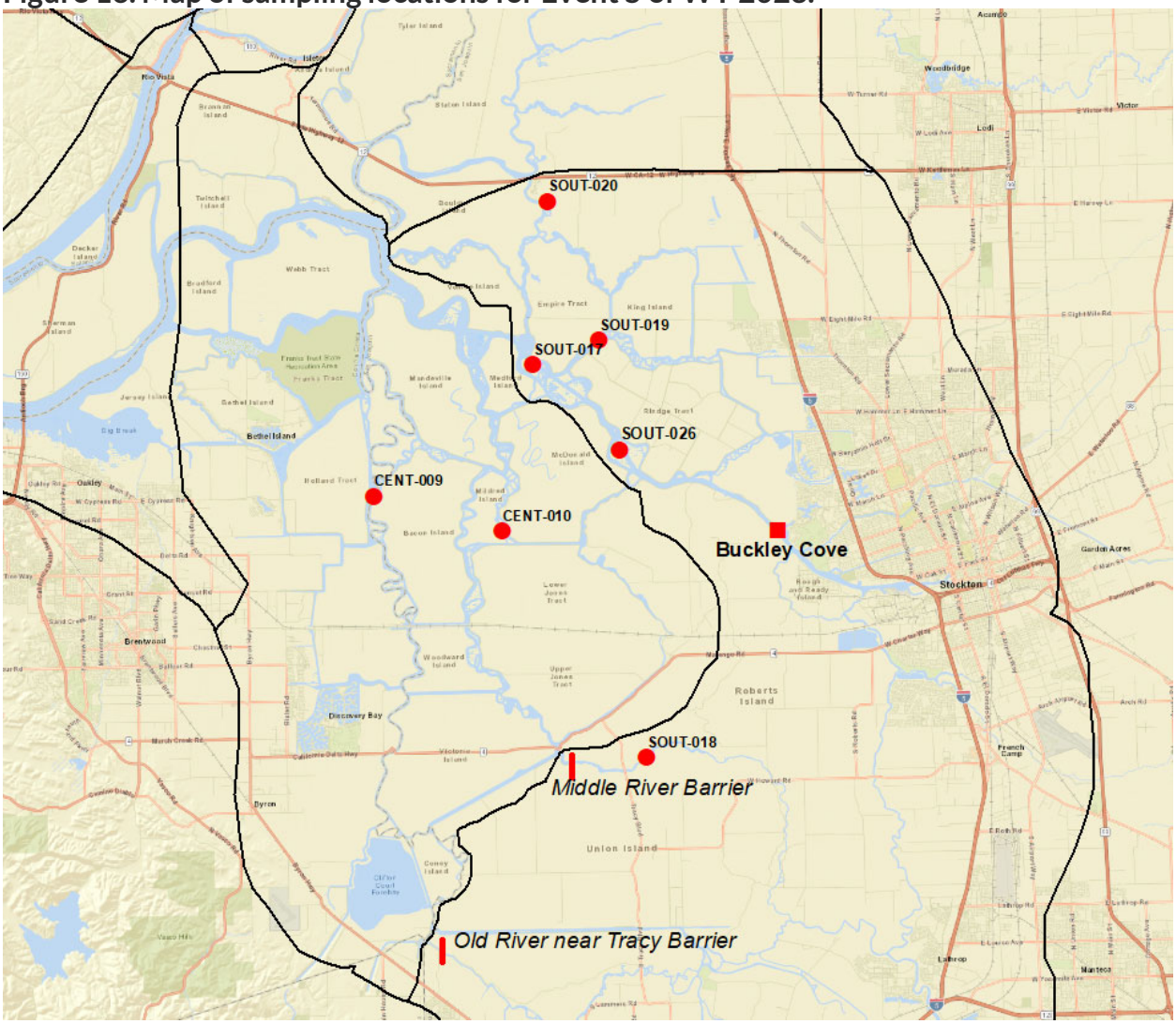
the San Joaquin River to Buckley Cove where samples were collected at 13:00 (**Figure A.31**). Toxicity samples were picked up by the Pacific EcoRisk courier at approximately 16:00.

On June 13, 2023, USGS collected samples from sites CENT-008, CENT-007, SOUT-016, and SOUT-014. The boat was launched from Paradise Point Marina near Stockton at approximate 09:00. The crew then motored to Franks Tract where samples were collected at site CENT-008 on eastern side of the flooded island at 10:20 (**Figure A.32**). Conditions were windy with moderate swells which made station keeping difficult. From here the crew motored north to site CENT-007 on the San Joaquin River and collected the sample there at 11:20 (**Figure A.33**). Conditions were still windy, but the swells were lessened due to the site's position near the levee. The crew then motored east to site SOUT-016 on White Slough just north of Empire Tract. Samples were collected at the target coordinates at 12:10 (**Figure A.34**). The crew then motored southeast to site SOUT-014 located on White Slough and collected samples there at 12:45 (**Figure A.35**). Toxicity samples were picked up by PER courier at approximately 17:00.

Event 5

This was the fifth sampling event of WY 2023. Samples were collected July 31 and August 1, 2023. This was an irrigation runoff sampling event. Three of the four toxicity samples collected on July 31, 2023 (Sites 544LSAC13, CENT-009 and CENT-010) failed to meet temperature criteria at the PER laboratory as they were left in a vehicle overnight at their facility and all the ice in the sample coolers melted. Additionally, the toxicity laboratory control test for *C. dilutus* for the other sample collected on July 31, 2023 (511ULCABR) failed during testing. These two factors led to all of these sites being resampled for toxicity, pesticides, and Babcock analytes on August 10, 2023 by USGS personnel. Note that Ulatis Creek (511ULCABR) was only resampled for *C. dilutus* toxicity testing as all other original tests were okay.

Figure 16. Map of sampling locations for Event 5 of WY 2023.



No significant rainfall occurred in the study area since the last sampling event in June. Snowmelt runoff into the Delta decreased significantly during this period also (**Figure 17** and **Figure 18**).

Figure 17. Streamflow for the San Joaquin River at Vernalis during Event 5.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.

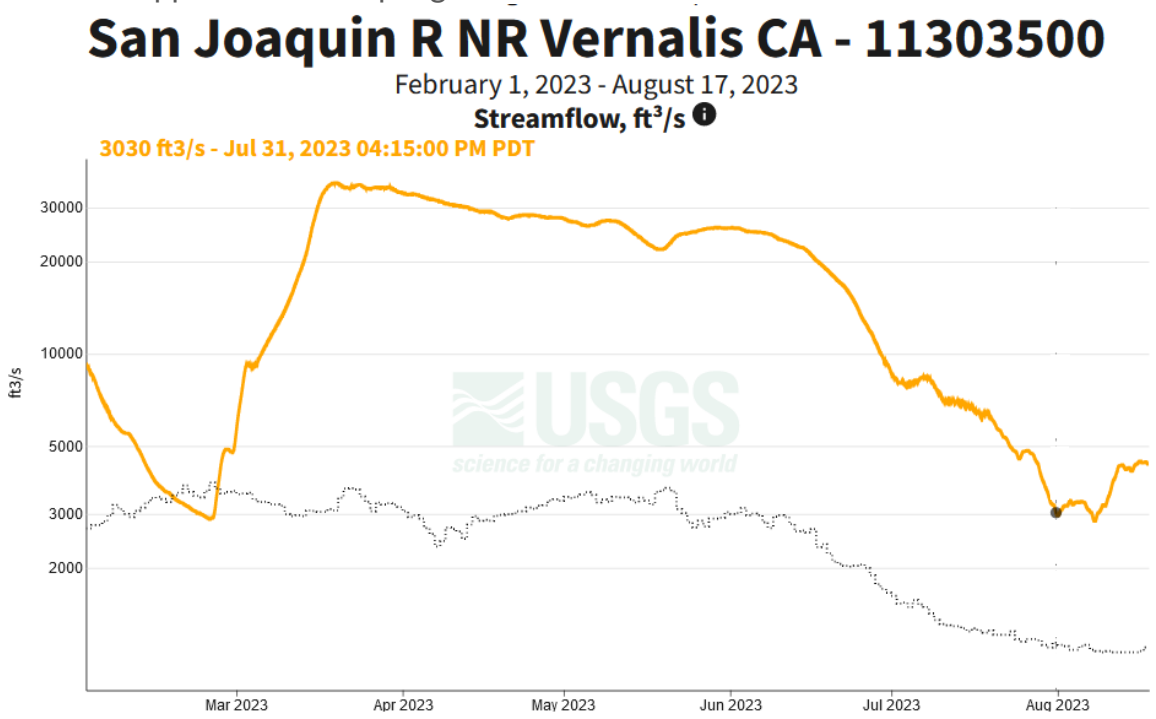
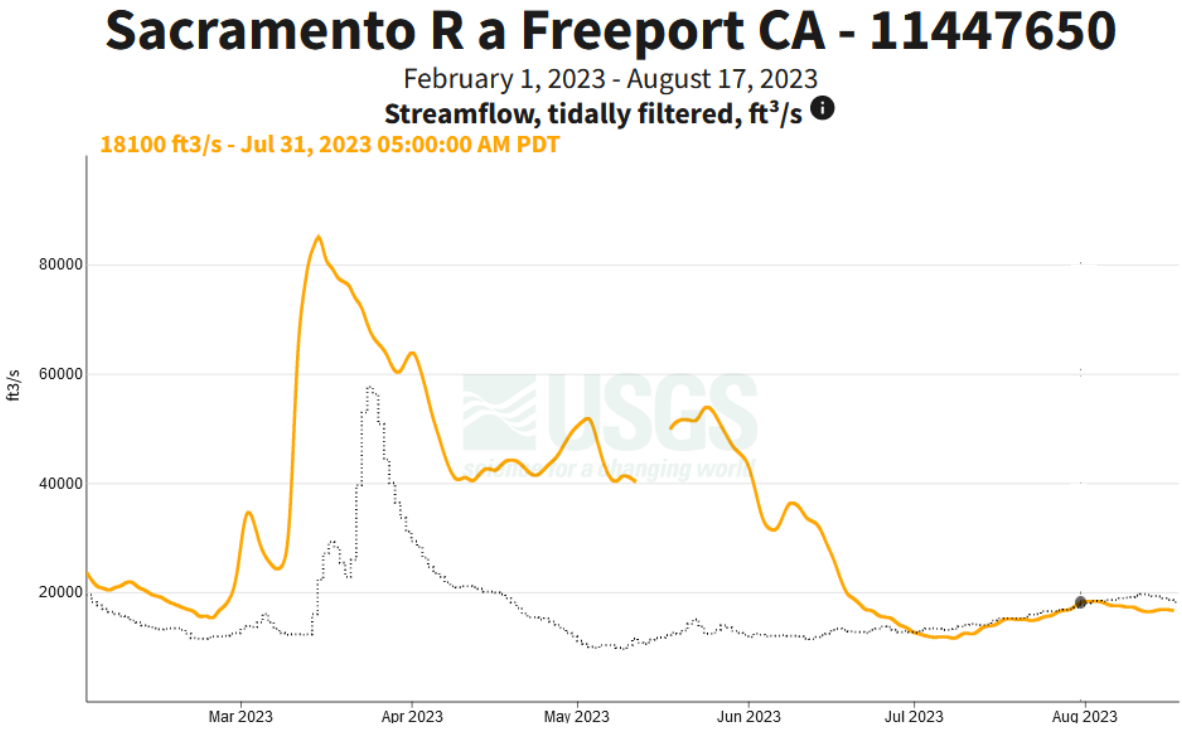


Figure 18. Streamflow for the Sacramento River at Freeport during Event 5.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.



The USGS personnel for Delta RMP sampling Event 5 of WY 2023 consisted of Jim Orlando, Matt De Parsia, Matt Uychutin, Mike Gross, and Elisabeth LaBarberra. Initial sampling occurred on July 31 and August 1, 2023. The weather on both days was clear and quite warm.

On July 31, 2023, the crew drove to the Ulatis Creek at Brown Road site early in the morning. Sampling occurred at 07:30 by wading on the upstream side of the bridge (**Figure A.36**). There appeared to be less floating aquatic vegetation at the site compared to Event 4. Overall site vegetation looked quite healthy, and fish, amphibians, and water birds were noted at the site. The crew then picked up the boat in Sacramento, drove to Discovery Bay and launched the boat. The crew attempted to access site SOUT-018 but was unable to reach it due to a recently emplaced flow barrier and low water conditions. The crew then motored to site CENT-009 on Old River between Holland Tract and Bacon Island (**Figure A.37**). Samples were collected at the target coordinates at 12:40. The crew then motored east to site CENT-010 on Latham Slough next to Mildred Island (**Figure A.38**). Samples were collected here at 13:30. The crew then returned to Discovery Bay, pulled the boat and drove to Ladd's Marina in Stockton. Samples were collected at the Buckley Cove site at 15:45 (**Figure A.39**). The crew then returned to Sacramento and toxicity samples were picked up by PER courier at 18:00.

On August 1, 2023, USGS collected samples from sites SOUT-019, SOUT-026, SOUT-017, and SOUT-020. The boat was launched from Paradise Point Marina near Stockton at approximate 09:00. The crew then motored West to site SOUT-019 on White Slough where samples were collected at 10:10 (**Figure A.40**). A toxicity replicate sample was collected at this site. The crew then motored south to the oversample site SOUT-026 (replacement for the unreachable site SOUT-018) on the San Joaquin River (**Figure A.41**). Samples were collected at 10:40. The crew then motored north on the San Joaquin River to site SOUT-017 (**Figure A.42**) and samples were collected at 11:15. Finally, the crew motored north to site SOUT-020 on Little Potato Slough near Tower Marina (**Figure A.43**). Samples were collected at the target coordinates at 12:05. This site was located at a bend in the channel, in close proximity to several houses built on an island. It was also noted that an excavator was removing a drainage pipe from the channel about 100 meters north of the site during the time of sample collection. It was also noted by the crew that this site was very close to a site sampled in an earlier event (Event 3 sites SOUT-012). The crew returned to Paradise Point Marina, pulled the boat, and returned to Sacramento. Toxicity samples were picked up by PER courier at approximately 15:00.

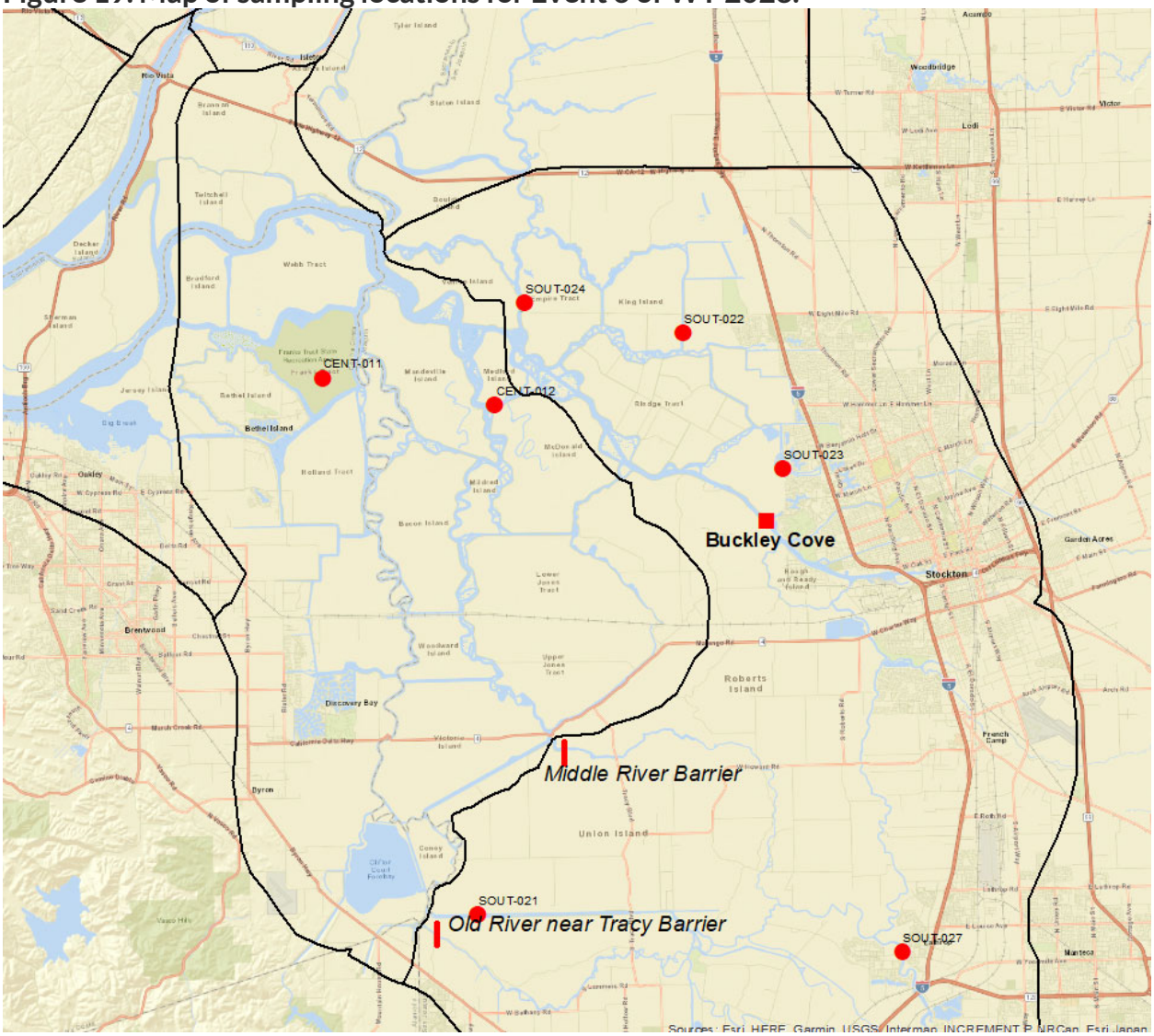
Event 5 Resample August 10, 2023

As described above, due to the loss of four (4) samples improperly stored overnight at the PER laboratory, sites 544LSAC13, CENT-009, CENT-010 and 511ULCABR needed to be resampled. Additional details can be found in the deviation section of this report (**2022-10: Event 5 Sample Receipt at Elevated Temperature**). Sampling took place on August 10, 2023. The USGS personnel for the resample event included Jim Orlando, Matt Uychutin, and Elisabeth LaBarberra. The team first trailered the boat to Ladd's Marina in Stockton and collected samples at the Buckley Cove site at 8:45 (**Figure A.44**). The crew then motored about 40 minutes west to site CENT-010 where samples were collected at 9:40 (**Figure A.45**). The crew then continued on to site CENT-009 where samples were collected at 10:15 (**Figure A.46**) The crew then returned to Stockton, pulled the boat and returned it to Sacramento. The crew then drove out to the Ulatis Creek site where samples were collected at 14:00 (**Figure A.47**). The group then delivered the toxicity samples to the PER laboratory in Vacaville at approximately 15:00.

Event 6

This was the sixth and final sampling event of WY 2023 and is Event 6 of the third year of sampling under the current monitoring design. Samples were collected September 5 and 6, 2023. This was an irrigation runoff sampling event. With this event, sampling was completed for the South Delta subregion (**Figure 19**).

Figure 19. Map of sampling locations for Event 6 of WY 2023.



No significant rainfall occurred in the study since the last sampling event in August. Flows on the San Joaquin River continued to be above the long-term average whereas Sacramento River flows were very close to the long-term average for the dates on which sampling occurred (**Figure 20** and **Figure 21**).

Figure 20. Streamflow for the San Joaquin River at Vernalis during Event 6.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.

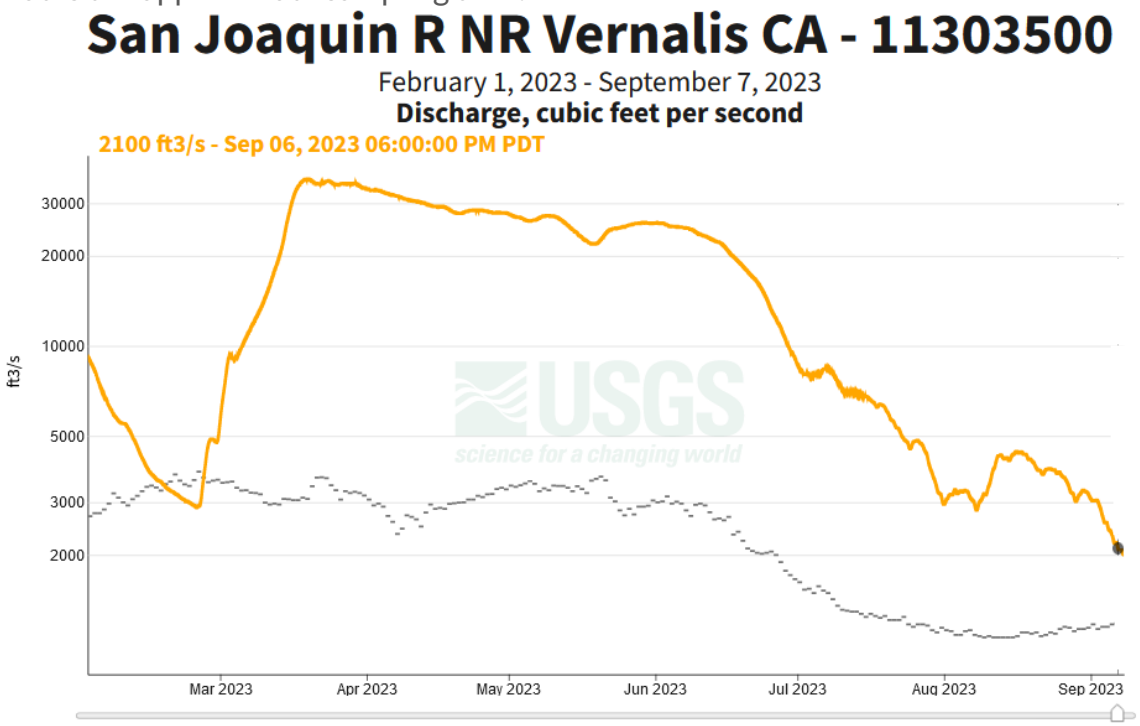
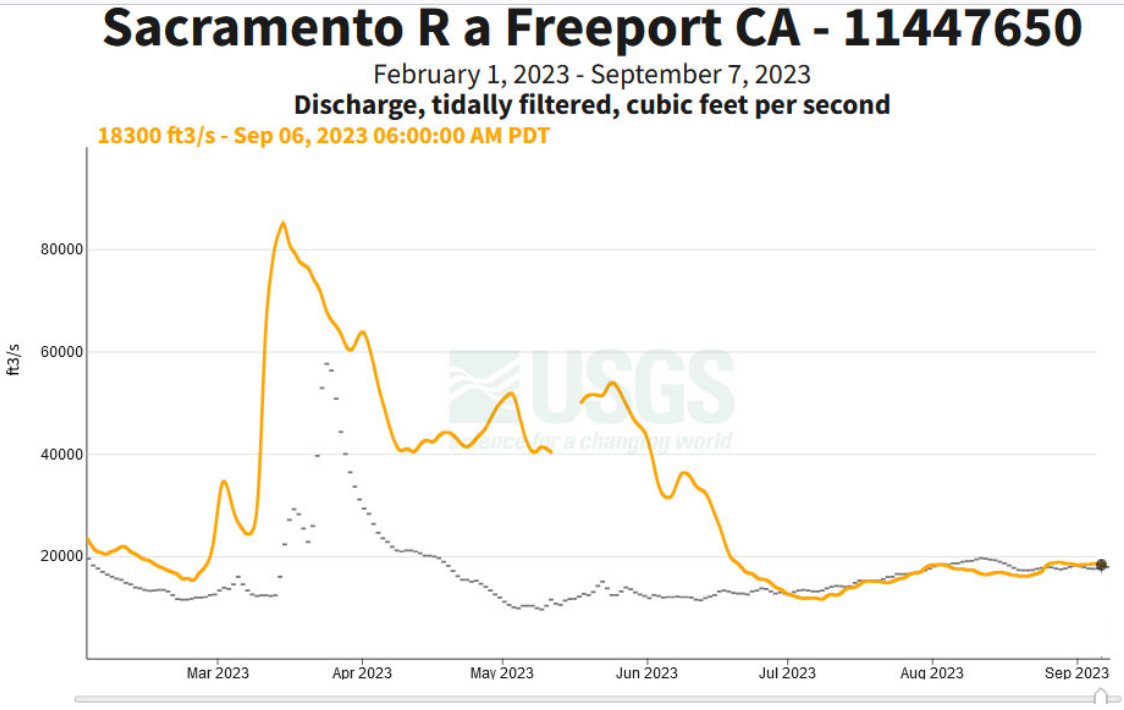


Figure 21. Streamflow for the Sacramento River at Freeport during Event 6.
The dashed line indicates the historical median flow for the period. The dot on the figure indicates the approximate sampling time.



The USGS personnel for Delta RMP sampling Event 6 of WY 2023 consisted of Jim Orlando, Matt De Parsia, Matt Uychutin. Sampling occurred on September 5 and 6, 2023. The weather on both days was clear and seasonable.

On September 5, 2023, the crew picked up the boat in Sacramento and drove to Paradise Point marina near Stockton. The crew launched the boat and motored about 45 minutes to Franks Tract. Sampling took place at CENT-011 at 10:15 (**Figure A.48**). The crew then motored to site CENT-012 on Columbia Cut near the confluence with Middle River (**Figure A.49**). Samples were collected at the target coordinates at 11:20. While motoring to the next site the crew observed Department of Boating and Waterways personnel spraying herbicide on aquatic vegetation along the San Joaquin River (**Figure A.50**). The crew continued motoring north to site SOUT-024 on Little Connection Slough (**Figure A.51**). This site was located at the abandoned Herman and Helens marina. Samples were collected here at 11:50. It was noted that aquatic vegetation near this site was yellow and drying out, likely due to recent herbicide applications. The crew then motored southeast to site SOUT-023. It was noted that along the way many areas of aquatic vegetation looked to be yellow and dying. Site SOUT-023 was located on Fourteenmile Slough on the edge of Stockton in an area surrounded by homes (**Figure A.52**). Samples were collected here at 12:50. The crew next motored over to the Buckley Cove site. Along the way the crew passed a second large freighter traversing the San Joaquin River that morning. Samples were collected at Buckley Cove at 13:15 (**Figure A.53**). The crew then motored north to Site SOUT-022 which was located very near the Paradise Point Marina (**Figure A.54**). Samples were collected there at 14:00. The crew then pulled the boat and returned to Sacramento. Toxicity samples were picked up by PER courier at approximately 17:00.

On September 6, 2023, USGS collected samples from Ulatis Creek and SOUT-021. The crew first drove out to Ulatis Creek and collected samples there at 8:30 (**Figure A.55**). It was quite windy at the site, but it was noted that the water had a faint odor of treated wastewater. The crew returned to Sacramento, picked up the boat Marina, and drove to Tracy Oasis Marina located on the Grant Line Canal north of Tracy. The SOUT-021 site was located about a mile west of the marina and samples were collected at 11:40 (**Figure A.56**). It was noted that several pipes in the area were discharging drain water into the Grant Line canal near the sampling site (**Figure A.57**). The crew returned to the marina, pulled the boat, and returned to Sacramento. Toxicity samples were picked up by PER courier at approximately 15:00.

ANALYTICAL OVERVIEW

FIELD MEASUREMENTS

During each of the six sampling events described in the **Sampling Overview**, the USGS CWSC took basic water-quality measurements (water temperature, specific conductivity, DO, pH, and turbidity) at a depth of 0.5 m using a YSI EXO multi-parameter meter equipped with conductivity/temperature, DO, pH, and turbidity sensors. The meter was calibrated using appropriate procedures and standards before each sampling event as described in the USGS National Field Manual (U.S. Geological Survey, variously dated). Basic water-quality parameter data are shown in **Table 33**.

Field Measurement Completeness

During WY 2023 all 416 required field measurements were successfully collected (**Table C.3**). Field measurement completeness for WY 2023 was 100%.

ANALYTICAL LABORATORY METHODS

The preparation and analytical methods applied to Delta RMP CUP samples are identified in **Table 6**.

Table 6. Analytical laboratory methods for WY 2023 monitoring.

Lab	Matrix	Fractions	Analyte	Preparation Method	Analytical Method
USGS OCRL	Water	Dissolved, Particulate	Pesticides	USGS-OCRL GC/MS/MS	USGS-OCRL GC/MS/MS
USGS OCRL	Water	Dissolved, Particulate	Pesticides	USGS-OCRL LC/MS/MS	USGS-OCRL LC/MS/MS
USGS OCRL	Water	Particulate	Total Suspended Solids	None	EPA 160.2
Babcock	Water	Dissolved	Copper	EPA 200.2	EPA 200.8
Babcock	Water	Dissolved	Dissolved Organic Carbon	None	SM 5310 B
Babcock	Water	Total	Total Organic Carbon	None	SM 5310 B
Babcock	Water	Dissolved	Hardness	EPA 200.2/ EPA 200.7	SM 2340 B
Babcock	Water	Dissolved	Calcium	EPA 200.2/ EPA 200.7	EPA 200.7

Lab	Matrix	Fractions	Analyte	Preparation Method	Analytical Method
Babcock	Water	Dissolved	Magnesium	EPA 200.2/ EPA 200.7	EPA 200.7
Babcock	Water	Total	Nitrate + Nitrite as N	None	EPA 353.2
Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	EPA 351.2	EPA 351.2
Babcock	Water	Dissolved, Total	Nitrogen, Total	None	Calculated
PER	Water	Survival, Growth	*Pimephales promelas* (Chronic)	None	EPA 821/R-02-013
PER	Water	Reproduction, Survival	*Ceriodaphnia dubia* (Chronic)	None	EPA 821/R-02-013
PER	Water	Growth	*Selenastrum capricornutum* (Chronic)	None	EPA 821/R-02-013
PER	Water	Survival, Growth	*Chironomus dilutus* (Chronic)	None	EPA 600/R-99-064M
PER	Water	Survival	*Hyalella azteca* (Acute)	None	EPA 821/R-02-012

Analytical Methods – USGS OCRL

Pesticide concentrations in surface water were measured by the USGS OCRL using two methods: (1) liquid chromatography/tandem mass spectrometry (LC/MS/MS) and (2) gas chromatography/tandem mass spectrometry (GC/MS/MS). Thirty compounds were analyzed using GC/MS/MS and 148 compounds were analyzed using LC/MS/MS; all methods are described in the USGS OCRL Standard Operating Procedures for Water Extraction Using Hydrophilic Lipophilic Balance (HLB) Solid Phase Extraction (SPE) and Analysis via LC-MS/MS and GC-MS/MS, Version 6 (OCRL-WATER-PEST_06). Individual constituents and the associated methods are provided in **Appendix B**.

Analytical Methods – Babcock

Calcium, magnesium, hardness, copper, dissolved organic carbon (DOC), total organic carbon (TOC), nitrate + nitrite as nitrogen (N), total Kjeldahl nitrogen (TKN), and total nitrogen (TN) analyses were performed by Babcock Laboratories. Hardness, DOC, and TOC were analyzed according to Standard Methods (SM) for the Examination of Water and Wastewater (21st edition). Calcium, magnesium, copper, nitrate + nitrite as N, and TKN were analyzed using U.S. Environmental Protection Agency (EPA) test methods.

Finally, TN was calculated based on contributing analyses using the EPA methods specified in **Table 6**.

Toxicity Methods – PER

Toxicity testing was conducted on five test species by PER according to the methodology defined by the U.S. EPA. Chronic toxicity testing for *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* followed the protocols outlined in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA-821-R-02-013, 2002). *Chironomus dilutus* water-only testing protocols and measurement quality objective (MQOs) are defined by the Surface Water Ambient Monitoring Program (SWAMP). Organism responses to sample water were evaluated at various endpoints, including survival and growth (measured as ash-free dry weight per surviving individual) for *C. dilutus*, survival and reproduction (measured as number of young per female) for *C. dubia*, survival and growth (measured as biomass as weight per original individual) for *P. promelas*, and growth (measured as total cell count) for *S. capricornutum*.

Acute 96-hour toxicity testing for *Hyalella azteca* followed acute protocols and MQOs outlined in SWAMP Guidance and *Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA 821/R-02-012, 2002). The response of *H. azteca* was evaluated as the survival of individuals.

ANALYTICAL COMPLETENESS

Analytical completeness is based on the number of constituents in each sample successfully analyzed and reported by the laboratory. Completeness is assessed as each analysis scheduled for each site over all events in the year; completeness counts by individual constituent are provided in Appendix **Table C.2**. A total of 19,222 of the expected 19,227 constituents scheduled for analysis were successfully reported and the overall analytical completeness was 99.97% for WY 2023.

A total of five results were not reported during WY 2023, all of which were associated with a toxicity batch tested for *C. dilutus* for Event 1. During this analysis the sublethal endpoint was not recorded by the laboratory technician due to a procedural oversight and the associated results were only reported as organism survival rather than survival and growth. See **Deviations and Corrective Actions** for further discussion.

DATA VERIFICATION OVERVIEW

VERIFICATION PROCESS

The U.S. EPA defines data verification as *the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual specifications.* Verification of Delta RMP CUP data was performed by MLJ Environmental (MLJ) and the Marine Pollution Studies Laboratory at Moss Landing Marine Laboratories (MPSL-MLML) based on the sample handling requirements and MQOs of the CUP QAPP (v1.4). Verification of instrument tuning, calibration standards, calibration verifications, and internal standards were the responsibility of the submitting laboratory.

Initial data verification by MLJ staff was conducted as individual electronic data deliverables (EDDs) received by the laboratories were processed and uploaded into the Central Valley Regional Data Center (CV RDC). These data processing steps occurred according to the procedures outlined in the CUP QAPP (v1.4). All project data underwent a final verification review by MPSL-MLML staff as a part of the data finalization process, at which point all verified data were assigned a classification and the corresponding California Environmental Data Exchange Network (CEDEN) compliance code described in the following sections.

Compliant

Data classified as "Compliant" meet all requirements specified in the CUP QAPP (v1.4). These data are considered usable for their intended purpose without additional assessment.

Qualified

Data classified as "Qualified" do not meet one or more of the requirements specified in the CUP QAPP (v1.4). These data are considered usable for their intended purpose following an additional assessment to determine the scope and impact of the deficiency.

Estimated

Data classified as "Estimated" (i.e., EPA "J" flag) are assigned to data batches and sample results that are not considered quantifiable.

Screening

Data classified as "Screening" are considered non-quantitative and may or may not meet the minimum requirements specified in the CUP QAPP (v1.4). These data may not be usable for their intended purpose and require additional assessment.

Rejected

Data classified as "Rejected" do not meet the minimum requirements specified in the CUP QAPP (v1.4). These data are not considered usable for their intended purpose.

Not Applicable

Data classified as "Not Applicable" were not verified since there were no CUP QAPP (v1.4) requirements for the specific parameter (e.g., oxygen saturation) or a failure was reported and could not be verified.

Verified Datasets

This report details the above verification process as applied to the datasets appearing in **Table 7**. The findings of the data verification process are outlined in the sections below. A complete summary of the completeness and QC sample acceptability for each analysis performed during WY 2023 is provided in **Appendix C**.

Table 7. Verified datasets associated with WY 2023 monitoring.

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
USGS OCRL	Pesticides	Samplewater, Particulate (>0.70 µm)	12	12	USGS-OCRL_DRMP_CUP_1320_W_GCMSMS; USGS-OCRL_DRMP_CUP_1382_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1407_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1432_W_GCMSMS; USGS OCRL_DRMP_CUP_ 1467_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1493_W_GCMSMS; USGS-OCRL_DRMP_CUP_1317_W_LCMSMS; USGS-OCRL_DRMP_CUP_1379_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1405_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1431_W_LCMSMS; USGS OCRL_DRMP_CUP_ 1464_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1492_W_LCMSMS
USGS OCRL	Pesticides	Samplewater (<0.7 µm)	12	12	USGS-OCRL_DRMP_CUP_1320_W_GCMSMS; USGS-OCRL_DRMP_CUP_1382_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1407_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1432_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1467_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1493_W_GCMSMS; USGS-OCRL_DRMP_CUP_1317_W_LCMSMS; USGS-OCRL_DRMP_CUP_1379_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1405_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1431_W_LCMSMS; USGS OCRL_DRMP_CUP_ 1464_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1492_W_LCMSMS

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
USGS OCRL	Total Suspended Solids	Samplewater, Particulate (>0.70 µm)	7	7	USGS-OCRL_DRMP_CUP_902_W_TSS; USGS-OCRL_DRMP_CUP_903_W_TSS; USGS-OCRL_DRMP_CUP_904_W_TSS; USGS-OCRL_DRMP_CUP_905_W_TSS; USGS-OCRL_DRMP_CUP_906_W_TSS; USGS-OCRL_DRMP_CUP_907_W_TSS; USGS-OCRL_DRMP_CUP_908_W_TSS
Babcock	Calcium and Magnesium	Samplewater	15	15	Babcock_DRMP_CUP_2K21067_W_M; Babcock_DRMP_CUP_2L02016_W_M; Babcock_DRMP_CUP_3C08024_W_M; Babcock_DRMP_CUP_3C09070_W_M; Babcock_DRMP_CUP_3E05048_W_M; Babcock_DRMP_CUP_3E15048_W_M; Babcock_DRMP_CUP_3F13052_W_M; Babcock_DRMP_CUP_3F16049_W_M; Babcock_DRMP_CUP_3F29049_W_M; Babcock_DRMP_CUP_3G10077_W_M; Babcock_DRMP_CUP_3H18058_W_M; Babcock_DRMP_CUP_3H23079_W_M; Babcock_DRMP_CUP_3H31056_W_M; Babcock_DRMP_CUP_3I15049_W_M; Babcock_DRMP_CUP_3I18066_W_M
Babcock	Hardness	Samplewater	8	8	Babcock_DRMP_CUP_2L02016_W_HARD; Babcock_DRMP_CUP_3C08024_W_HARD; Babcock_DRMP_CUP_3E15048_W_HARD; Babcock_DRMP_CUP_3G10077_W_HARD; Babcock_DRMP_CUP_3H23079_W_HARD; Babcock_DRMP_CUP_3I18066_W_HARD; Babcock_DRMP_CUP_3H31056_W_HARD; Babcock_DRMP_CUP_3F16049_W_HARD

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
Babcock	Copper	Samplewater	15	15	Babcock_DRMP_CUP_2K21067_W_M; Babcock_DRMP_CUP_2L02016_W_M; Babcock_DRMP_CUP_3C08024_W_M; Babcock_DRMP_CUP_3C09070_W_M; Babcock_DRMP_CUP_3E05048_W_M; Babcock_DRMP_CUP_3E15048_W_M; Babcock_DRMP_CUP_3F13052_W_M; Babcock_DRMP_CUP_3F16049_W_M; Babcock_DRMP_CUP_3F29049_W_M; Babcock_DRMP_CUP_3G10077_W_M; Babcock_DRMP_CUP_3H18058_W_M; Babcock_DRMP_CUP_3H23079_W_M; Babcock_DRMP_CUP_3H31056_W_M; Babcock_DRMP_CUP_3I15049_W_M; Babcock_DRMP_CUP_3I18066_W_M
Babcock	Nitrate + Nitrite as N	Samplewater	14	14	Babcock_DRMP_CUP_2K16062_W_NO3+2; Babcock_DRMP_CUP_2K29053_W_NO3+2; Babcock_DRMP_CUP_3C08054_W_NO3+2; Babcock_DRMP_CUP_3C17046_W_NO3+2; Babcock_DRMP_CUP_3E06014_W_NO3+2; Babcock_DRMP_CUP_3E08079_W_NO3+2; Babcock_DRMP_CUP_3F02030_W_NO3+2; Babcock_DRMP_CUP_3F24002_W_NO3+2; Babcock_DRMP_CUP_3G06070_W_NO3+2; Babcock_DRMP_CUP_3H17061_W_NO3+2; Babcock_DRMP_CUP_3H29059_W_NO3+2; Babcock_DRMP_CUP_3I01054_W_NO3+2; Babcock_DRMP_CUP_3I22052_W_NO3+2; Babcock_DRMP_CUP_3I25048_W_NO3+2

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
Babcock	Nitrogen, Total Kjeldahl	Samplewater	18	18	Babcock_DRMP_CUP_2K17042_W_TKN; Babcock_DRMP_CUP_2K17043_W_TKN; Babcock_DRMP_CUP_3C15052_W_TKN; Babcock_DRMP_CUP_3C15054_W_TKN; Babcock_DRMP_CUP_3C17007_W_TKN; Babcock_DRMP_CUP_3E14005_W_TKN; Babcock_DRMP_CUP_3E14006_W_TKN; Babcock_DRMP_CUP_3G05039_W_TKN; Babcock_DRMP_CUP_3G07060_W_TKN; Babcock_DRMP_CUP_3H22078_W_TKN; Babcock_DRMP_CUP_3H27007_W_TKN; Babcock_DRMP_CUP_3I28046_W_TKN; Babcock_DRMP_CUP_3J02016_W_TKN; Babcock_DRMP_CUP_3J02053_W_TKN; Babcock_DRMP_CUP_3I03006_W_TKN; Babcock_DRMP_CUP_3I03007_W_TKN; Babcock_DRMP_CUP_3F06064_W_TKN; Babcock_DRMP_CUP_3F14057_W_TKN

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
Babcock	Nitrogen, Total	Samplewater	14	14	Babcock_DRMP_CUP_3A03032_W_Ncalc; Babcock_DRMP_CUP_3C07092_W_Ncalc; Babcock_DRMP_CUP_3E09086_W_Ncalc; Babcock_DRMP_CUP_3F05020_W_Ncalc; Babcock_DRMP_CUP_3G05050_W_Ncalc; Babcock_DRMP_CUP_3H28075_W_Ncalc; Babcock_DRMP_CUP_3I14095_W_Ncalc; Babcock_DRMP_CUP_2K22008_W_Nit; Babcock_DRMP_CUP_3C07092_W_Nit; Babcock_DRMP_CUP_3E09086_W_Nit; Babcock_DRMP_CUP_C3F2773_W_Nit; Babcock_DRMP_CUP_C3H1131_W_Nit; Babcock_DRMP_CUP_C3H2155_W_Nit; Babcock_DRMP_CUP_C3I1768_W_Nit
Babcock	Total Organic Carbon	Samplewater	9	9	Babcock_DRMP_CUP_2K21007_W_TOC; Babcock_DRMP_CUP_3C15012_W_TOC; Babcock_DRMP_CUP_3C23026_W_TOC; Babcock_DRMP_CUP_3E11033_W_TOC; Babcock_DRMP_CUP_3F29031_W_TOC; Babcock_DRMP_CUP_3G07030_W_TOC; Babcock_DRMP_CUP_3H24041_W_TOC; Babcock_DRMP_CUP_3I06039_W_TOC; Babcock_DRMP_CUP_3I27041_W_TOC

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
Babcock	Dissolved Organic Carbon	Samplewater	10	10	Babcock_DRMP_CUP_2K21008_W_DOC; Babcock_DRMP_CUP_3C21021_W_DOC; Babcock_DRMP_CUP_3C24034_W_DOC; Babcock_DRMP_CUP_3E11028_W_DOC; Babcock_DRMP_CUP_3F13028_W_DOC; Babcock_DRMP_CUP_3F29032_W_DOC; Babcock_DRMP_CUP_3H24040_W_DOC; Babcock_DRMP_CUP_3H31036_W_DOC; Babcock_DRMP_CUP_3J02017_W_DOC; Babcock_DRMP_CUP_3I15019_W_DOC
PER	*Pimephales promelas* (Chronic)	Samplewater	13	13	PER_DRMP_CUP_1122PP_C1_W_TOX; PER_DRMP_CUP_1122PP_C2_W_TOX; PER_DRMP_CUP_0223PP_C1_W_TOX; PER_DRMP_CUP_0223PP_C2_W_TOX; PER_DRMP_CUP_0423PP_C1_W_TOX; PER_DRMP_CUP_0423PP_C2_W_TOX; PER_DRMP_CUP_0623PP_C1_W_TOX; PER_DRMP_CUP_0623PP_C2_W_TOX; PER_DRMP_CUP_0823PP_C1_W_TOX; PER_DRMP_CUP_0823PP_C2_W_TOX; PER_DRMP_CUP_0823PP_C3_W_TOX; PER_DRMP_CUP_0923PP_C1_W_TOX; PER_DRMP_CUP_0923PP_C2_W_TOX

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
PER	*Ceridodaphnia dubia* (Chronic)	Samplewater	13	13	PER_DRMP_CUP_1122CD_C1_W_TOX; PER_DRMP_CUP_1122CD_C2_W_TOX; PER_DRMP_CUP_0223CD_C1_W_TOX; PER_DRMP_CUP_0223CD_C2_W_TOX; PER_DRMP_CUP_0423CD_C1_W_TOX; PER_DRMP_CUP_0423CD_C2_W_TOX; PER_DRMP_CUP_0623CD_C1_W_TOX; PER_DRMP_CUP_0623CD_C2_W_TOX; PER_DRMP_CUP_0823CD_C1_W_TOX; PER_DRMP_CUP_0823CD_C2_W_TOX; PER_DRMP_CUP_0823CD_C3_W_TOX; PER_DRMP_CUP_0923CD_C1_W_TOX; PER_DRMP_CUP_0923CD_C2_W_TOX
PER	*Selenastrum capricornutum* (Chronic)	Samplewater	13	13	PER_DRMP_CUP_1122SC_C1_W_TOX; PER_DRMP_CUP_1122SC_C2_W_TOX; PER_DRMP_CUP_0223SC_C1_W_TOX; PER_DRMP_CUP_0223SC_C2_W_TOX; PER_DRMP_CUP_0423SC_C1_W_TOX; PER_DRMP_CUP_0423SC_C2_W_TOX; PER_DRMP_CUP_0623SC_C1_W_TOX; PER_DRMP_CUP_0623SC_C2_W_TOX; PER_DRMP_CUP_0823SC_C1_W_TOX; PER_DRMP_CUP_0823SC_C2_W_TOX; PER_DRMP_CUP_0823SC_C3_W_TOX; PER_DRMP_CUP_0923SC_C1_W_TOX; PER_DRMP_CUP_0923SC_C2_W_TOX

Lab	Analytical Category	CEDEN Matrix	Datasets Produced	Datasets Reviewed	Reviewed Dataset (Batch) IDs
PER	*Chironomus dilutus* (Chronic)	Samplewater	12	12	PER_DRMP_CUP_1122CHD_C1_W_TOX; PER_DRMP_CUP_1122CHD_C2_W_TOX; PER_DRMP_CUP_0223CHD_C1_W_TOX; PER_DRMP_CUP_0223CHD_C2_W_TOX; PER_DRMP_CUP_0423CHD_C1_W_TOX; PER_DRMP_CUP_0423CHD_C2_W_TOX; PER_DRMP_CUP_0623CHD_C1_W_TOX; PER_DRMP_CUP_0623CHD_C2_W_TOX; PER_DRMP_CUP_0823CHD_C2_W_TOX; PER_DRMP_CUP_0823CHD_C3_W_TOX; PER_DRMP_CUP_0923CHD_C1_W_TOX; PER_DRMP_CUP_0923CHD_C2_W_TOX
PER	*Hyalella azteca* (Acute)	Samplewater	13	13	PER_DRMP_CUP_1122HA_C1_W_TOX; PER_DRMP_CUP_1122HA_C2_W_TOX; PER_DRMP_CUP_0223HA_C1_W_TOX; PER_DRMP_CUP_0223HA_C2_W_TOX; PER_DRMP_CUP_0423HA_C1_W_TOX; PER_DRMP_CUP_0423HA_C2_W_TOX; PER_DRMP_CUP_0623HA_C1_W_TOX; PER_DRMP_CUP_0623HA_C2_W_TOX; PER_DRMP_CUP_0823HA_C1_W_TOX; PER_DRMP_CUP_0823HA_C2_W_TOX; PER_DRMP_CUP_0823HA_C3_W_TOX; PER_DRMP_CUP_0923HA_C1_W_TOX; PER_DRMP_CUP_0923HA_C2_W_TOX

DATA VERIFICATION: SAMPLE HANDLING

During data verification, storage and holding times of Delta RMP CUP samples were evaluated to ensure the integrity of the target analyte(s) in each matrix. For consistency with the State Water Resources Control Board's SWAMP and the Code of Federal Regulations, Title 40 *Protection of the Environment*, Section 136 *Guidelines Establishing Test Procedures for the Analysis of Pollutants*, Delta RMP holding times are defined as follows:

- *Pre-Preservation/Extraction*: Required holding times for sample preservation or extraction begin at the time of sample collection and conclude when the sample is preserved or extracted, respectively.
- *Pre-Analysis*: Required holding times for sample analysis begin either at the time of sample collection, filtration, or extraction and conclude when sample analysis is completed.

In WY 2023, 52 Delta RMP CUP samples were verified against the sample handling requirements in **Table 8**.

99.96% of verified sample results (22,471 of 22,481) met these Delta RMP CUP requirements (Appendix **Table C.5**). Analyses resulting in qualification appear in **Table 9**. Details can be found in the deviation section of this report, and more specifically **2022-04: Event 2 Ceriodaphnia Batch Failed Test Acceptability Criteria in One Batch**.

Table 8. Sample handling requirements defined in the CUP QAPP.

Analyte/ Parameter Group	Pre-Preservation/Extraction		Pre-Analysis	
	Storage	Initial Preservation/Holding Requirements	Holding Time	Storage
TSS (Water)	0 to 6 °C in dark	Cool to 4 ±2 °C	7 days	0 – 6 °C in dark
Calcium and Magnesium (Dissolved)	0 to 6 °C in dark	Filter and acidify within 24 hours of collection	6 months	0 – 6 °C in dark
Hardness (Dissolved)	0 to 6 °C in dark	Filter and acidify within 24 hours of collection	6 months	0 – 6 °C in dark
DOC (Water)	0 to 6 °C in dark	Filter and acidify within 24 hours of collection	28 days	0 – 6 °C in dark

Analyte/ Parameter Group	Pre-Preservation/Extraction		Pre-Analysis	
	Storage	Initial Preservation/Holding Requirements	Holding Time	Storage
TOC (Water)	0 to 6 °C in dark	Acidify within 24 hours of collection	28 days	0 – 6 °C in dark
Nitrate + Nitrite as N	0 to 6 °C in dark	Acidify within 24 hours of collection	28 days	0 – 6 °C in dark
TKN	0 to 6 °C in dark	Acidify within 24 hours of collection	28 days	0 – 6 °C in dark
TKN (Dissolved)	0 to 6 °C in dark	Filter and acidify within 24 hours of collection	28 days	0 – 6 °C in dark
Copper (Dissolved)	0 to 6 °C in dark	Filter in the field as soon as possible after collection	6 months	0 – 6 °C in dark
Pesticides (Dissolved)	0 to 6 °C in dark	Extract within 48 hours of collection	Not to exceed 30 days	≤ −20 °C in dark
Pesticides (Particulate)	0 to 6 °C in dark	Extract within 48 hours of collection	Not to exceed 30 days	≤ −20 °C in dark
Aquatic Toxicity Tests	0 to 6 °C in dark	Initiate Test within 48 hours of sample collection	NA	NA

Table 9. Sample handling qualification WY 2024 monitoring.
Results appearing in this table were all flagged with the CEDEN QA code: H. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	Sample ID	Sample Date	Matrix	Fractions	Analyte	Project Qualifier	Description
PER_DRMP_CUP_0223CD_C1_W_TOX	Cent-003	2/27/2023	Water	Reproduction, Survival	*Ceriodaphnia dubia*	Qualified	Hold time violations. Initial test failed to meet TAC. Sample retested 65 hours past hold time.
PER_DRMP_CUP_0223CD_C1_W_TOX	Cent-004	2/27/2023	Water	Reproduction, Survival	*Ceriodaphnia dubia*	Qualified	Hold time violations. Initial test failed to meet TAC. Sample retested 65 hours past hold time.
PER_DRMP_CUP_0223CD_C1_W_TOX	Sout-005	2/27/2023	Water	Reproduction, Survival	*Ceriodaphnia dubia*	Qualified	Hold time violations. Initial test failed to meet TAC. Sample retested 65 hours past hold time.
PER_DRMP_CUP_0223CD_C1_W_TOX	Sout-006	2/27/2023	Water	Reproduction, Survival	*Ceriodaphnia dubia*	Qualified	Hold time violations. Initial test failed to meet TAC. Sample retested 65 hours past hold time.
PER_DRMP_CUP_0223CD_C1_W_TOX	Sout-008	2/27/2023	Water	Reproduction, Survival	*Ceriodaphnia dubia*	Qualified	Hold time violations. Initial test failed to meet TAC. Sample retested 65 hours past hold time.

DATA VERIFICATION: USGS CALIFORNIA WATER SCIENCE CENTER

The USGS CWSC equipment used to take field data measurements must be calibrated according to Table 18 of the CUP QAPP (v1.4). At a minimum, the following equipment must be calibrated:

- Thermometers
- DO meters
- pH meters
- Conductivity meters
- Multi-parameter field meters

After post-calibration checks are performed, the percent drift should be evaluated to confirm compliance with the CUP QAPP (v1.4). Non-compliant results should not be reported unless they have been flagged to indicate non-compliance.

Of the 416 field measurement results reported, all 364 verified results met Delta RMP MQOs. None of the 52 oxygen saturation results were verified since no MQO exists for this field measurement. Affected oxygen saturation results were classified as “Not Applicable”.

DATA VERIFICATION: USGS ORGANIC CHEMISTRY RESEARCH LABORATORY

Delta RMP CUP chemistry data verification assesses QC samples associated with contamination, precision, and accuracy. For consistency with SWAMP, QC sample definitions are based on the January 2022 *Surface Water Ambient Monitoring Program Quality Assurance Program Plan* (SWAMP QAPrP).

CONTAMINATION

For USGS OCRL's pesticide and TSS analyses, contamination is assessed with the analysis of field blanks and laboratory blanks. Associated data verification results are detailed below.

Field Blanks

A field blank is a sample of analyte-free media that is carried to the sampling site, exposed to the sampling conditions, returned to the laboratory, and treated as a routine environmental sample. Preservatives, if any, are added to the sample container in the same manner as the environmental sample. The field blank matrix should be comparable to the sample of interest. This blank is used to provide information about contaminants that may be introduced during sample collection, storage, and transport.

For WY 2023 Delta RMP CUP monitoring, field blanks were collected for pesticides and TSS analyses. Six pesticide (i.e., three for analysis by GC/MS/MS and three for analysis by LC/MS/MS) and three TSS field blanks were analyzed. All of these results (100%, **Table C.6**) met the Delta RMP MQO with analytical results below the reporting limit (RL).

Laboratory Blanks

A laboratory blank is free from the target analyte(s) and is used to represent the environmental sample matrix as closely as possible. The laboratory blank is processed simultaneously with and under the same conditions and steps of the analytical procedures (e.g., including exposure to all glassware, equipment, solvents, reagents, labeled compounds, internal standards, and surrogates that are used with samples) as all samples in the analytical batch (including other QC samples). The laboratory blank is used to determine if target analytes or interferences are present in the laboratory environment, reagents, or instruments. Results of laboratory blanks provide a measurement of bias introduced by the analytical procedure.

For WY 2023 Delta RMP CUP monitoring, laboratory blanks were prepared and analyzed for all pesticide and TSS batches. Six TSS and twelve pesticide laboratory blanks were analyzed at the required frequency of one per 20 samples or per batch (whichever was more frequent) with the exception of the batch identified in **Table 10**. Details can be found in the deviation section of this report (**2022-14: USGS Batches Missing Lab Duplicates and Lab Blank**).

Table 10. Laboratory blank omission for WY 2023 samples analyzed by USGS ORCL. Results appearing in this table were all flagged with the CEDEN Lab Submission Code: QI (Incomplete QC).

DATASET ID	ANALYTE	PROJECT QUALIFIER
USGS-OCRL_DRMP_CUP_906_W_TSS	TSS	Qualified

For the laboratory blanks that were analyzed, 100% (**Table C.7**) met the Delta RMP MQO with analytical results below the method detection limit (MDL).

ACCURACY

For USGS OCRL's Delta RMP pesticide analyses, accuracy is studied with the analysis of MS samples, laboratory control spike (LCS) samples, and surrogates. Associated data verification results are detailed below.

Matrix Spikes

A matrix spike (MS) is a sample prepared by adding a known amount of the target analyte to an environmental sample in order to increase the concentration of the target analyte. The MS is used to determine the effect of the matrix on a method's recovery efficiency and is a measure of accuracy. The MS is analyzed exactly like an environmental sample within the laboratory batch. The purpose of analyzing the MS is to determine whether the sample matrix contributes bias to the analytical results.

For WY 2023 Delta RMP CUP monitoring, six pesticide MS samples (i.e., three MSD pairs) were prepared and analyzed at the required frequency of 1 per 20 samples. All of these results (100%, **Table C.11**) met the 70-130% Delta RMP recovery MQO.

Laboratory Control Samples

An LCS is a sample matrix representative of the environmental sample (e.g., water, sand) that is prepared in the laboratory and is free from the analytes of interest. The LCS is spiked with verified amounts of analytes or a material containing known and verified

amounts of analytes. It is either used to establish intra-laboratory or analyst-specific precision and bias, or to assess the performance of a portion of the measurement system.

For WY 2023 Delta RMP CUP monitoring, LCSs were prepared and analyzed for all pesticide batches at the required frequency of one per 20 samples or per batch (whichever was more frequent). In addition, a single LCS sample was run on the whole sample water matrix prior to the filtration process per the procedures approved in the OCRL-WATER-PEST_06 analytical SOP. This additional sample is run annually to assess any potential bias or analyte loss that may be introduced during sample processing prior to when the dissolved and particulate fractions are spiked for their respective extractions and analyses. All LCS results (100%, **Table C.12**) met the 70-130% Delta RMP recovery MQO.

Surrogates

A surrogate is a non-target analyte that has similar chemical properties to the analyte of interest. The surrogate standard is added to the sample in a known amount and used to evaluate the response (i.e., loss of analyte) of the analyte to sample preparation and analysis procedures.

For Delta RMP CUP monitoring in WY 2023, the surrogates $^{13}C_{12}$- p,p'-DDE, $^{13}C_6$-cis-permethrin, and d_{14}-trifluralin were added to all dissolved and particulate pesticide samples analyzed by GC/MS/MS; $^{13}C_3$-atrazine, ^{13}C-fipronil, d_4-imidacloprid, $^{13}C_6$-metolachlor, $^{13}C_3$-tebuconazole, and d_{14}-trifluralin were added to all dissolved and particulate pesticide samples analyzed by LC/MS/MS. All of these results (100%, **Table C.13**) met the 70-130% Delta RMP recovery MQO.

PRECISION

For USGS OCRL's Delta RMP CUP analyses, precision is studied with the analysis of field duplicates, laboratory duplicates, and matrix spike duplicates (MSDs). Associated data verification results are detailed below. Relative percent difference (RPD) is calculated for each duplicate pair as a measure of precision.

Field Duplicates

A field duplicate is an independent sample that is collected as close as possible to the same point in space, time, and collection methodology as the field sample.

For WY 2023 Delta RMP CUP monitoring, field duplicates collected and analyzed for pesticide and TSS analyses appear in **Table 11**.

Table 11. Field duplicates for WY 2023 samples analyzed by USGS OCRL.

DUPLICATE ID	SAMPLE DATE	ANALYTE
Cent-003	2/27/2023	Pesticides by GC/MS Pesticides by LC/MS/MS
511ULCABR	6/12/2023	Pesticides by GC/MS Pesticides by LC/MS/MS
Sout-017	8/1/2023	Pesticides by GC/MS Pesticides by LC/MS/MS TSS

All of these results (100%; see **Table C.8**) met the Delta RMP MQO with RPD <25% (not applicable or n/a if concentration of either sample is < RL).

Laboratory Duplicates

A laboratory duplicate is an analysis or measurement of the target analyte(s) performed identically on two sub-samples of the same sample, usually taken from the same container. The results from laboratory duplicate analyses are used to evaluate analytical or measurement precision, and include variability associated with sub-sampling and the matrix (not the precision of field sampling, preservation, or storage internal to the laboratory).

For WY 2023 Delta RMP CUP monitoring, pesticide and TSS laboratory duplicates were analyzed at the required frequency of one per 20 samples or per batch (whichever was more frequent) with the exception of those batches identified in **Table 12**. Details can be found in the deviation section of this report (**2022-14: USGS Batches Missing Lab Duplicates and Lab Blank**).

Table 12. Laboratory duplicate omission for WY 2023 samples analyzed by USGS ORCL.
Results appearing in this table were all flagged with the CEDEN Lab Submission Code: QI (Incomplete QC).

Dataset ID	Analytes	Project Qualifier
USGS-OCRL_DRMP_CUP_1317_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1405_W_LCMSMS; USGS-OCRL_DRMP_CUP_ 1464_W_LCMSMS; USGS-OCRL_DRMP_CUP_1320_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1407_W_GCMSMS; USGS-OCRL_DRMP_CUP_ 1467_W_GCMSMS	Dissolved and Particulate Pesticides	Qualified
USGS-OCRL_DRMP_CUP_907_W_TSS	TSS	Qualified

For the analyzed laboratory duplicates, 66.7% (4 of 6, **Table C.9**) of results met the Delta RMP MQO with RPD<25% (n/a if concentration of either sample < RL). USGS staff discussed the TSS laboratory duplicates outside of MQOs and have worked to ensure the TSS analyses are as precise as possible. Analyses resulting in qualification appear in **Table 13**.

Table 13. Laboratory duplicate precision qualification for WY 2023 samples analyzed by USGS OCRL.
Results appearing in this table were all flagged with the CEDEN QA code: IL. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	Duplicate ID	Analyte	Matrix	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD	Project Qualifier
USGS-ORCL_DRMP_CUP_902_W_TSS	Sout-001	TSS	Water	7.1	2.4	99	Qualified
USGS-ORCL_DRMP_CUP_906_W_TSS	Sout-020	TSS	Water	2	5.7	96	Qualified

Matrix Spike Duplicates

A matrix spike duplicate (MSD) is prepared by splitting a matrix spike sample. Both the MS and MSD samples are analyzed exactly like an environmental sample within the laboratory batch. The purpose of analyzing the MS and MSD samples is to determine whether the sample matrix contributes bias to the analytical results, and to measure precision of the duplicate analyses.

For WY 2023 Delta RMP CUP monitoring, three pesticide MSD pairs were prepared and analyzed at the required frequency of one per 20 samples. Of these results, 99.9% (1,052

of 1,053, **Table C.10**) met the Delta RMP MQO with RPD <25%. Analyses resulting in qualification appear in **Table 14**.

Table 14. Matrix spike/matrix spike duplicate precision qualification for WY 2023 samples analyzed by USGS OCRL.
Results appearing in this table were all flagged with the CEDEN QA code: IL. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	MS/MSD ID	Analyte	Matrix, Fraction	MS Result (ng/L)	MSD Result (ng/L)	RPD	Project Qualifier
USGS-ORCL_DRMP_CUP_1492_W_LCMSMS	Cent-012	Fipronil Deslfinyl Amide	Water, Particulate	41.8	57.8	32.13	Qualified

DATA VERIFICATION: BABCOCK LABORATORIES

The Delta RMP CUP chemistry data verification for samples analyzed by Babcock Laboratories assesses QC samples associated with contamination, precision, and accuracy.

CONTAMINATION

For Babcock analyses, contamination is assessed with the analysis of field blanks and laboratory blanks. Associated data verification results are detailed below.

Field Blanks

For WY 2023 Delta RMP CUP monitoring, field blanks were collected for all Babcock analyses (i.e., eight for TKN and TN and four for calcium, copper, magnesium, hardness, nitrate + nitrite as N, DOC, TOC). Of these results, 97.7% (43 of 44, **Table C.6**) met the Delta RMP MQO with analytical results below the RL. Analyses resulting in qualification appear in **Table 15**.

Table 15. Field blank qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: IP. QA code definitions are provided in Appendix **Table C.1**.

Field Blank ID	Sample Date	Analyte	Sample Result (mg/L)	RL (mg/L)	Project Qualifier
Sout-011	4/26/2023	DOC	6.9	0.3	Qualified

Laboratory Blanks

For WY 2023 Delta RMP CUP project monitoring, laboratory blanks were prepared and analyzed for all Babcock batches at the required frequency of one per 20 samples or per batch (whichever was more frequent).

While 94.4% (84 of 89, **Table C.7**) of these results met the Delta RMP MQO with analytical results below the MDL, five samples produced results above the MDL. Qualified laboratory blanks and the environmental samples associated with detectable laboratory blank results are listed in **Table 16** and **Table 17**, respectively.

Additional laboratory blanks for DOC and TOC were performed due to concerns regarding the DOC field blank contamination observed with the April 2023 sampling event (**Table 15**). No environmental samples were included with this analysis; the results showed no detections in the USGS blank water or introduced by the filtration process performed by USGS. Details can be found in the deviation section of this report (**2022-09: Event 3 DOC Field Blank Contamination and Field Filtering Update**). Field contamination did not occur in samples collected after April. Results are included in laboratory blank acceptability presented in Appendix **Table C.7**.

Table 16. Laboratory blank qualification for WY 2023 samples analyzed by Babcock. Results appearing in this table were all flagged with the CEDEN QA codes: IP, VIP. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	Lab Blank ID	Analyte	Blank Result (mg/L)	MDL (mg/L)	Project Qualifier
Babcock_DRMP_CUP_2L02016_W_M	2L02016-BLK1	Calcium	0.79	0.33	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	2K17042-BLK1	TKN	0.0926	0.09	Qualified
Babcock_DRMP_CUP_3F29031_W_TOC	C3F0131-01	TOC	0.2	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	2K21007-BLK1	TOC	0.226	0.13	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	K21008-BLK1	DOC	0.282	0.19	Qualified

Table 17. Laboratory blank qualification: associated environmental samples for WY 2023 samples analyzed by Babcock. Results appearing in this table were all flagged with the CEDEN QA code: FI. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	Sample ID	Sample Date	Analyte	Sample Result (mg/L)	MDL (mg/L)	Project Qualifier
Babcock_DRMP_CUP_2L02016_W_M	511ULCABR	11/9/2022	Calcium	24	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	544LSAC13	11/9/2022	Calcium	14	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	Cent-001	11/10/2022	Calcium	17	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	Cent-002	11/10/2022	Calcium	18	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	Sout-001	11/9/2022	Calcium	17	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	Sout-002	11/9/2022	Calcium	21	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	Sout-003	11/9/2022	Calcium	19	0.33	Qualified
Babcock_DRMP_CUP_2L02016_W_M	Sout-004	11/10/2022	Calcium	27	0.33	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	511ULCABR	11/9/2022	TKN	0.8	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	544LSAC13	11/9/2022	TKN	0.4	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	Cent-001	11/10/2022	TKN	0.2	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	Cent-002	11/10/2022	TKN	0.3	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	Sout-001	11/9/2022	TKN	0.3	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	Sout-002	11/9/2022	TKN	0.4	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	Sout-003	11/9/2022	TKN	0.4	0.09	Qualified
Babcock_DRMP_CUP_2K17042_W_TKN	Sout-004	11/10/2022	TKN	0.4	0.09	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	511ULCABR	11/9/2022	TOC	6.6	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	544LSAC13	11/9/2022	TOC	2.4	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	Cent-001	11/10/2022	TOC	2.8	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	Cent-002	11/10/2022	TOC	2.9	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	Sout-001	11/9/2022	TOC	2.6	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	Sout-002	11/9/2022	TOC	2.5	0.13	Qualified
Babcock_DRMP_CUP_2K21007_W_TOC	Sout-003	11/9/2022	TOC	2.9	0.13	Qualified

Dataset ID	Sample ID	Sample Date	Analyte	Sample Result (mg/L)	MDL (mg/L)	Project Qualifier
Babcock_DRMP_CUP_2K21007_W_TOC	Sout-004	11/10/2022	TOC	2.5	0.13	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	511ULCABR	11/9/2022	DOC	6.9	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	544LSAC13	11/9/2022	DOC	2.6	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	Cent-001	11/10/2022	DOC	2.7	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	Cent-002	11/10/2022	DOC	3	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	Sout-001	11/9/2022	DOC	2.6	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	Sout-002	11/9/2022	DOC	2.6	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	Sout-003	11/9/2022	DOC	3.1	0.19	Qualified
Babcock_DRMP_CUP_2K21008_W_DOC	Sout-004	11/10/2022	DOC	2.4	0.19	Qualified

ACCURACY

For Delta RMP CUP project analyses performed by Babcock Laboratories, accuracy is studied with the analysis of MS samples and LCSs. Associated data verification results are detailed below.

Matrix Spikes

For WY 2023 Delta RMP CUP monitoring calcium, copper, magnesium, nitrate + nitrite as N, DOC, TOC, and TKN were prepared and analyzed at the required frequency of 1 per 20 samples or per batch (whichever was more frequent). Of these results, 90.7% (147 of 162, **Table C.11**) met the Delta RMP recovery MQOs: 70-130% for calcium and magnesium; 75-125% for copper; 80-120% for DOC, TOC, and TKN; and 90-110% for nitrate + nitrite as N. Analyses resulting in qualification appear in **Table 18**.

Table 18. Matrix spike/matrix spike duplicate accuracy qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: GB. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	MS/MSD ID	Analyte	Matrix	MS % Recovery	MSD % Recovery	Project Qualifier
Babcock_DRMP_CUP_3E06014_W_NO3+2	511ULCABR	Nitrate + Nitrite as N	Water	84	86	Qualified
Babcock_DRMP_CUP_3C23026_W_TOC	000NONPJ	TOC	Water	82 [1]	71	Qualified
Babcock_DRMP_CUP_2K17043_W_TKN	000NONPJ	TKN	Water	149	131	Qualified
Babcock_DRMP_CUP_3C15052_W_TKN	000NONPJ	TKN	Water	0	4	Qualified
Babcock_DRMP_CUP_3E14006_W_TKN	511ULCABR	TKN	Water	69	81 [1]	Qualified
Babcock_DRMP_CUP_3G05039_W_TKN	000NONPJ	TKN	Water	237	208	Qualified
Babcock_DRMP_CUP_3G07060_W_TKN	Sout-025	TKN	Water	17	51	Qualified
Babcock_DRMP_CUP_3G27007_W_TKN	511ULCABR	TKN	Water	101 [1]	126	Qualified
Babcock_DRMP_CUP_3J02016_W_TKN	Cent-011	TKN	Water	78	74	Qualified

[1] Result met MQO but listed for information purpose to show MS/MSD % recovery pair.

Laboratory Control Samples

For WY 2023 Delta RMP CUP monitoring, LCSs were prepared and analyzed for all calcium, magnesium, copper, nitrate + nitrite as N, DOC, TOC, and TKN batches at the required frequency of one per 20 samples or per batch (whichever was more frequent). Of these results, 97.3% (72 of 74, **Table C.12**) met Delta RMP recovery MQOs: 85-115% for calcium, magnesium, and copper; 80-120% for DOC and TOC; and 90-110% for nitrate + nitrite as N and TKN. Analyses resulting in qualification appear in **Table 19**.

Table 19. Laboratory control sample qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: EUM. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	LCS ID	Analyte	Fraction	LCS (% Recovery)	Project Qualifier
Babcock_DRMP_CUP_3C17007_W_TKN	3C17007-BS1	TKN	Dissolved	83	Qualified
Babcock_DRMP_CUP_3H22078_W_TKN	3H22078-BS1	TKN	Total	88	Qualified

Additional Qualification

Sample results in **Table 20** were flagged by the laboratory and qualified as estimated for exceeding the instrument calibration range.

Table 20. Calibration-related qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: CJ. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	Sample ID	Sample Date	Analyte	Result (mg/L)	Project Qualifier
Babcock_DRMP_CUP_3C08054	511ULCABR-DUP	2/28/2023	Nitrate + Nitrite as N	1.61	Estimated
Babcock_DRMP_CUP_3C08054	511ULCABR-MS	2/28/2023	Nitrate + Nitrite as N	2.14	Estimated
Babcock_DRMP_CUP_3C08054	511ULCABR-MSD	2/28/2023	Nitrate + Nitrite as N	2.09	Estimated
Babcock_DRMP_CUP_3C08054	544LSAC13-MS	2/28/2023	Nitrate + Nitrite as N	1.2	Estimated
Babcock_DRMP_CUP_3E06014	511ULCABR-DUP	4/26/2023	Nitrate + Nitrite as N	3.3	Estimated

Dataset ID	Sample ID	Sample Date	Analyte	Result (mg/L)	Project Qualifier
Babcock_DRMP_CUP_3E06014	511ULCABR-MS	4/26/2023	Nitrate + Nitrite as N	3.75	Estimated
Babcock_DRMP_CUP_3E06014	511ULCABR-MSD	4/26/2023	Nitrate + Nitrite as N	3.78	Estimated
Babcock_DRMP_CUP_3E06014	Cent-005-MS	4/26/2023	Nitrate + Nitrite as N	1.28	Estimated

PRECISION

For Delta RMP CUP analyses performed by Babcock Laboratories, precision is studied with the analysis of field duplicates, laboratory duplicates, and MSDs. Associated data verification results are detailed below.

Field Duplicates

For WY 2023 Delta RMP CUP monitoring, field duplicates collected and analyzed for calcium, copper, magnesium, hardness, nitrate + nitrite as N, DOC, TOC, TKN, and TN analyses appear in **Table 21**.

Table 21. Field duplicates for WY 2023 samples analyzed by Babcock.

DUPLICATE ID	SAMPLE DATE	ANALYTE
Cent-005	4/26/2023	Calcium, Magnesium, Copper, Hardness, Nitrate + Nitrite as N, TKN, TN, TOC, DOC
511ULCABR	7/31/2023	Calcium, Magnesium, Copper, Hardness, Nitrate + Nitrite as N, TKN, TN, TOC, DOC
511ULCABR	8/10/2023	Calcium, Magnesium, Copper, Hardness, Nitrate + Nitrite as N, TKN, TN, TOC, DOC

93.9% (31 of 33, **Table C.8**) of these results met the Delta RMP MQO with RPD <25% (n/a if concentration of either sample < RL). Analyses resulting in qualification appear in **Table 22**.

Table 22. Field duplicate qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: FDP. QA code definitions are provided in Appendix **Table C.1**.

DATASET ID	DUPLICATE ID	ANALYTE	MATRIX	SAMPLE RESULT (mg/L)	DUPLICATE RESULT (mg/L)	RPD	PROJECT QUALIFIER
Babcock_DRMP_CUP_3E14005_W_TKN	Cent-005	TKN	Water	0.3	0.4	29	Qualified
Babcock_DRMP_CUP_3H22078_W_TKN	511ULCABR	TKN	Water	1	1.4	33	Qualified

Laboratory Duplicates

For WY 2023 Delta RMP CUP monitoring, calcium, copper, magnesium, nitrate + nitrite as N, DOC, TOC, and TKN laboratory duplicates were analyzed at the required frequency of

one per 20 samples or per batch (whichever was more frequent). Of these results, 97.4% (76 of 78, **Table C.9**) met Delta RMP RPD MQOs: <20% for calcium, magnesium and nitrate + nitrite as N; and <25% for copper, DOC, TOC, and TKN (n/a if concentration of either sample < RL). Analyses resulting in qualification appear in **Table 23**.

Table 23. Laboratory duplicate precision qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: IL. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	Duplicate ID	Analyte	Matrix	Sample Result	Duplicate Result	RPD	Project Qualifier
Babcock_DRMP_CUP_2K21067_W_M	Sout-003	Copper	Water	2 µg/L	3.81 µg/L	63	Qualified
Babcock_DRMP_CUP_2K17043_W_TKN	000NONPJ	TKN	Water	NR [1]	0.798 mg/L	26	Qualified

[1] Native sample result from a non-project sample (000NONPJ) was not reported by the laboratory.

Matrix Spike Duplicates

For WY 2023 Delta RMP CUP monitoring, calcium, copper, magnesium, nitrate + nitrite as N, DOC, TOC, and TKN MSD pairs were prepared and analyzed at the required frequency of one per 20 samples or per batch (whichever was more frequent). Of these results, 99.8% met Delta RMP RPD MQOs: <20% for calcium, magnesium, and nitrate + nitrite as N; and <25% for copper, DOC, TOC, and TKN. Analyses resulting in qualification appear in **Table 24**.

Table 24. Matrix spike/matrix spike duplicate precision qualification for WY 2023 samples analyzed by Babcock.
Results appearing in this table were all flagged with the CEDEN QA code: IL. QA code definitions are provided in Appendix **Table C.1**.

Dataset ID	MS/MSD ID	Analyte	Matrix	MS Result (mg/L)	MSD Result (mg/L)	RPD	Project Qualifier
Babcock_DRMP_CUP_3G07060_W_TKN	Sout-025	TKN	Water	0.166	0.513	102	Qualified

DATA VERIFICATION: PACIFIC ECORISK

Delta RMP CUP toxicity data verification assesses QC samples associated with negative and positive controls that address sensitivity, test manipulations, tolerance thresholds, and intra-laboratory precision for both acute and chronic test methods. Also verified are the associated water quality measurements and required testing parameters to assess toxicity test conditions. For consistency with SWAMP, QC sample definitions are based on the January 2022 SWAMP QAPrP.

NEGATIVE CONTROLS

Laboratory control water is used to evaluate the health and sensitivity of test organisms. It must be used with each analytical batch and produce bioassay results meeting all test acceptability criteria for the species of interest.

Additional control water for manipulated samples (i.e., a treatment control) is used to evaluate the effects of manipulations upon the test organisms. The same treatment must be performed on the control water when manipulations are performed on one or more of the ambient samples in the analytical batch and a treatment control not meeting test acceptability criteria indicates that the sample treatment may be negatively affecting the test organism response.

Additional control water (i.e., a tolerance control) for unmanipulated samples is used to evaluate the effects of parameters near or beyond the tolerance threshold(s) of the test organism(s). They can be performed when samples have parameters near the tolerance threshold of the organism and the tolerance control must meet the test acceptability criteria if it is to be used for statistical comparisons. A tolerance control not meeting test acceptability criteria indicates that the sample parameter(s) outside of the test organisms' tolerance range may be negatively affecting the test organism response.

For WY 2023 Delta RMP CUP monitoring, laboratory control water was used for all toxicity testing batches except when conductivity was insufficient for the test species (see **Table 25).** All results (100%, **Table C.14**) met the MQO specified in the CUP QAPP (v1.4).

Table 25. Additional control water for WY 2023 toxicity samples.

Tox Batch ID	QA Control ID	Sample ID	Sample Date	Organism	Reason for Additional Control
PER_DRMP_CUP_0423CD_C1_W_TOX	DRMP_0423CD_CC1_CNSL	Sout-009	4/26/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0423CD_C1_W_TOX	DRMP_0423CD_CC1_CNSL	Sout-011	4/26/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0423CD_C2_W_TOX	DRMP_0423CD_CC2_CNSL	544LSAC13	4/27/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0423CD_C2_W_TOX	DRMP_0423CD_CC2_CNSL	Sout-010	4/27/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0423CD_C2_W_TOX	DRMP_0423CD_CC2_CNSL	Sout-012	4/27/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0623CD_C1_W_TOX	DRMP_0623CD_CC1_CNSL	544LSAC13	6/21/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0623CD_C1_W_TOX	DRMP_0623CD_CC1_CNSL	Sout-013	6/12/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0623CD_C1_W_TOX	DRMP_0623CD_CC1_CNSL	Sout-025	6/12/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0623CD_C2_W_TOX	DRMP_0623CD_CC2_CNSL	Cent-007	6/13/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0623CD_C2_W_TOX	DRMP_0623CD_CC2_CNSL	Cent-008	6/13/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0623CD_C2_W_TOX	DRMP_0623CD_CC2_CNSL	Sout-016	6/13/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.
PER_DRMP_CUP_0823CD_C2_W_TOX	DRMP_0823CD_CC1_CNSL	Sout-020	8/1/2023	*Ceriodaphnia dubia*	Conductivity insufficient for test species; alternative control used in toxicity statistical analysis.

POSITIVE CONTROLS

Reference Toxicant Test

A reference toxicant test is used to assess intra-laboratory precision. One reference toxicant test is required per batch when using organisms that are either commercially supplied or wild-caught. Monthly reference toxicant tests are required for laboratories utilizing in-house cultures. The last-plotted data point (LC50 or EC50) should be within two standard deviations (SDs) of the cumulative mean.

For WY 2023 Delta RMP CUP monitoring, reference toxicant tests were performed at the required frequency and all results met the MQO specified in the CUP QAPP (v1.4).

Test Acceptability Criteria

The required number of organisms were processed per replicate, and organism survival met the test criteria for all batches except those appearing in **Table 26.** The minimum test acceptability requirements specified in the CUP QAPP (v1.4) were met by 100% of toxicity testing results (**Table C.14**). Analyses resulting in qualification appear in **Table 26**. Details can be found in the deviation section of this report (**2022-02: Event 1 *Chironomus* Larvae Missed Growth Endpoints; 2022-03: Event 1 *Chironomus* larvae initial weights greater than 0.012 mg/ individual AFDW; 2022-04: Event 2 *Ceriodaphnia* Batch Failed Test Acceptability Criteria in One Batch; 2022-07: Event 3 *Chironomus* larvae initial weights greater than 0.012 mg/ individual AFDW; 2022-12: Event 5R Hyalella Incorrect Number Org Per Rep; 2022-13: Event *6 Ceriodaphnia* Batch No Final Ammonia in One Batch**).

Table 26. Organism and survival qualifications for WY 2023 toxicity samples.
Results appearing in this table were all flagged with the CEDEN QA code: TAF, TOQ, TMO, TEM, PRM, RLST, and TMSD. QA code definitions are provided in Appendix **Table C.1**.

TOX BATCH ID	SAMPLE ID	SAMPLE DATE	ORGANISM	ISSUE	PROJECT QUALIFIER
PER_DRMP_CUP_1122CHD_C1_W_TOX	All samples in batch	11/09/2022	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_1122CHD_C2_W_TOX	All samples in batch	11/10/2022	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_0423CHD_C2_W_TOX	Cent-006	4/27/2023	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_0423CHD_C2_W_TOX	Sout-010	4/27/2023	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_0423CHD_C2_W_TOX	Sout-012	4/27/2023	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_0423CHD_C2_W_TOX	544LSAC13	4/27/2023	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_0423CHD_C2_W_TOX	CNEG	4/28/2023	*Chironomus dilutus*	Test organisms exceed maximum weight requirement at test initiation	Qualified
PER_DRMP_CUP_0421CHD_C1_W_TOX	511ULCABR	11/09/22	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_1122CHD_C1_W_TOX	Sout-001	11/09/22	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified

Tox Batch ID	Sample ID	Sample Date	Organism	Issue	Project Qualifier
PER_DRMP_CUP_1122CHD_C1_W_TOX	Sout-002	11/09/22	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_1122CHD_C2_W_TOX	Cent-002	11/10/22	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_1122CHD_C2_W_TOX	Cent-002-Field Duplicate	11/10/22	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_1122CHD_C2_W_TOX	CNEG	11/11/22	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0223CHD_C1_W_TOX	Cent-003	2/27/2023	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0223CHD_C1_W_TOX	CNEG	2/28/2023	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0623CHD_C1_W_TOX	Sout-025	6/12/2023	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0623CHD_C2_W_TOX	Cent-008	6/13/2023	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0623CHD_C2_W_TOX	CNEG	6/14/2023	*Chironomus dilutus*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_1122PP_C1_W_TOX	511ULCABR	11/09/22	*Pimephales promelas*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0823PP_C2_W_TOX	CNEG	8/2/2023	*Pimephales promelas*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_1122HA_C1_W_TOX	544LSAC13	11/09/22	*Hyalella azteca*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0223HA_C1_W_TOX	CNEG	2/28/2023	*Hyalella azteca*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0423HA_C2_W_TOX	Sout-002	4/27/2023	*Hyalella azteca*	Unequal quantity of organisms per replicate was used	Qualified

Tox Batch ID	Sample ID	Sample Date	Organism	Issue	Project Qualifier
PER_DRMP_CUP_0823HA_C2_W_TOX	CNEG	8/2/2023	*Hyalella azteca*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0823HA_C3_W_TOX	All samples in batch	8/10/2023	*Hyalella azteca*	Unequal quantity of organisms per replicate was used	Qualified
PER_DRMP_CUP_0223PP_C1_W_TOX	Cent-003	02/27/23	*Pimephales promelas*	Organism was missing at the end of the test	Qualified
PER_DRMP_CUP_0823PP_C1_W_TOX	511ULCABR	7/23/2023	*Pimephales promelas*	Organism was missing at the end of the test	Qualified
PER_DRMP_CUP_0223HA_C2_W_TOX	511ULCABR	02/28/23	*Hyalella azteca*	Organism was missing at the end of the test	Qualified
PER_DRMP_CUP_1122CHD_C1_W_TOX	All samples in batch	11/09/22	*Chironomus dilutus*	Endpoint (Growth) was not analyzed by the laboratory	Qualified
PER_DRMP_CUP_1122PP_C1_W_TOX	511ULCABR	11/09/22	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0223PP_C1_W_TOX	Sout-006	02/27/23	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0223PP_C2_W_TOX	544LSAC13	02/28/23	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0423PP_C1_W_TOX	511ULCABR	4/26/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0423PP_C1_W_TOX	Sout-009	4/26/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified

Tox Batch ID	Sample ID	Sample Date	Organism	Issue	Project Qualifier
PER_DRMP_CUP_0623PP_C1_W_TOX	511ULCABR	6/12/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C1_W_TOX	544LSAC13	6/12/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C1_W_TOX	Sout-013	6/12/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C1_W_TOX	Sout-025	6/12/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C2_W_TOX	Cent-007	6/13/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C2_W_TOX	Cent-008	6/13/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C2_W_TOX	Sout-014	6/13/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0623PP_C2_W_TOX	Sout-016	6/13/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0823PP_C2_W_TOX	Sout-019	8/1/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified

Tox Batch ID	Sample ID	Sample Date	Organism	Issue	Project Qualifier
PER_DRMP_CUP_0823PP_C2_W_TOX	Sout-020	8/1/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0823PP_C2_W_TOX	Sout-026	8/1/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0823PP_C3_W_TOX	Cent-009	8/10/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0823PP_C3_W_TOX	Cent-010	8/10/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0823PP_C3_W_TOX	544LSAC13	8/10/2023	*Pimephales promelas*	Low survival in toxicity test resulted from test interference due to pathogen-related mortality	Qualified
PER_DRMP_CUP_0423CD_C2_W_TOX	Cent-006	4/27/2023	*Ceriodaphnia dubia*	Replicate was lost or destroyed	Qualified
PER_DRMP_CUP_0423CD_C2_W_TOX	CNEG	4/28/2023	*Ceriodaphnia dubia*	Replicate was lost or destroyed	Qualified
PER_DRMP_CUP_0623CD_C1_W_TOX	Sout-013	6/12/2023	*Ceriodaphnia dubia*	Replicate was lost or destroyed	Qualified
PER_DRMP_CUP_0823CD_C2_W_TOX	Sout-020	8/1/2023	*Ceriodaphnia dubia*	Replicate was lost or destroyed	Qualified
PER_DRMP_CUP_0823PP_C1_W_TOX	511ULCABR	7/31/2023	*Pimephales promelas*	Test percent minimum significant difference (PMSD) exceeded EPA upper PMSD bound indicating insufficient sensitivity to detect toxicity	Qualified

Tox Batch ID	Sample ID	Sample Date	Organism	Issue	Project Qualifier
PER_DRMP_CUP_0823PP_C2_W_TOX	Sout-020	8/1/2023	*Pimephales promelas*	Test percent minimum significant difference (PMSD) exceeded EPA upper PMSD bound indicating insufficient sensitivity to detect toxicity	Qualified
PER_DRMP_CUP_0923PP_C1_W_TOX	544LSAC13	9/5/2023	*Pimephales promelas*	Test percent minimum significant difference (PMSD) exceeded EPA upper PMSD bound indicating insufficient sensitivity to detect toxicity	Qualified
PER_DRMP_CUP_0923SC_C2_W_TOX	511ULCABR	9/6/2023	*Selenastrum capricornutum*	Test percent minimum significant difference (PMSD) exceeded EPA upper PMSD bound indicating insufficient sensitivity to detect toxicity	Qualified
PER_DRMP_CUP_0223CD_C1_W_TOX	Cent-003	2/27/2023	*Ceriodaphnia dubia*	Endpoint considered not toxic; per EPA method, when both the relative difference from control and the test percent minimum significant difference (PMSD) are less than EPA lower PMSD bound (10th percentile)	Compliant
PER_DRMP_CUP_0423PP_C1_W_TOX	Sout-009	4/26/2023	*Pimephales promelas*	Endpoint considered not toxic; per EPA method, when both the relative difference from control and the test percent minimum significant difference (PMSD) are less than EPA lower PMSD bound (10th percentile)	Compliant

TOX BATCH ID	SAMPLE ID	SAMPLE DATE	ORGANISM	ISSUE	PROJECT QUALIFIER
PER_DRMP_CUP_0423PP_C2_W_TOX	544LSAC13[1]	4/27/2023	*Pimephales promelas*	Endpoint considered not toxic; per EPA method, when both the relative difference from control and the test percent minimum significant difference (PMSD) are less than EPA lower PMSD bound (10th percentile)	Compliant

1Field Duplicate

FIELD DUPLICATES

For WY 2023 Delta RMP CUP monitoring, field duplicates collected and analyzed for all aquatic toxicity test species appear in **Table 27**. All of these results (100%, **Table C.8**) met the Delta RMP MQO by having an RPD <25%.

Table 27. Field duplicates for WY 2023 toxicity samples.

Duplicate ID	Sample Date	Analyte
Cent-002	11/10/2022	Aquatic Toxicity Tests
544LSAC13	4/27/2023	Aquatic Toxicity Tests
Sout-019	8/1/2023	Aquatic Toxicity Tests

WATER QUALITY PARAMETERS

Water quality parameters (i.e., temperature, pH, DO, specific conductance, hardness, alkalinity, and ammonia) are monitored to assess toxicity testing conditions and are required to meet the MQOs specified in the CUP QAPP (v1.4). Deviations from recommended test conditions were noted in the data set.

For WY 2023 Delta RMP CUP monitoring, the required number of organisms were processed per replicate, and organism survival met the test criteria for all toxicity testing batches except those appearing in **Table 28**.

In addition, water quality parameters for toxicity testing were measured at the required frequency for all toxicity testing batches except those appearing in **Table 28**. Water quality parameter MQOs specified in the CUP QAPP (v1.4) were met by 95.9% of toxicity testing results. Details can be found in the deviation section of this report (**2022-13: Event 6 Ceriodaphnia Batch No Final Ammonia in One Batch**).

Table 28. Water quality parameter qualifications for WY 2023 toxicity samples.
Results appearing in this table were all flagged with the CEDEN QA code: TWN. QA code definitions are provided in Appendix **Table C.1**.

Tox Batch ID	Sample IDs	Sample Date	Organism	Missing Water Quality Parameter	Project Qualifier
PER_DRMP_CUP_0823CD_C2_W_TOX	544LSAC13	8/10/2023	*Ceriodaphnia dubia*	Old DO solution Day 6	Qualified
PER_DRMP_CUP_0923CD_C1_W_TOX	Cent-011	9/5/2023	*Ceriodaphnia dubia*	Final Specific Conductivity was not recorded	Qualified
PER_DRMP_CUP_0923CD_C2_W_TOX	All samples in the batch	9/6/2023	*Ceriodaphnia dubia*	Final Ammonia was not measured	Qualified
PER_DRMP_CUP_0223CHD_C2_W_TOX	All samples in batch	2/28/2023	*Chironomus dilutus*	Old DO solution Day 1	Qualified

Tox Batch ID	Sample IDs	Sample Date	Organism	Missing Water Quality Parameter	Project Qualifier
PER_DRMP_CUP_0223PP_C2_W_TOX	Sout-012	4/27/2023	*Pimephales promelas*	Old DO solution Day 4	Qualified
PER_DRMP_CUP_0623SC_C2_W_TOX	CNEG	6/14/2023	*Selenastrum capricornutum*	Alkalinity not recorded at initiation	Qualified
PER_DRMP_CUP_0923SC_C2_W_TOX	CNEG	9/7/2023	*Selenastrum capricornutum*	Initial pH outside required 7.4-7.6 range	Qualified

SUMMARY

CHEMISTRY RESULTS

Pesticides

A total of 52 environmental samples (48 regular and four Event 5 resamples) were analyzed for dissolved pesticides by the USGS OCRL during WY 2023. During this period, 71 pesticides were detected in the dissolved phase (24 fungicides, 23 herbicides, 23 insecticides, and the synergist piperonyl butoxide). Each of the 52 samples analyzed contained multiple pesticides ranging from 7 to 42 pesticides per sample. Frequently detected pesticides included azoxystrobin and methoxyfenozide (100% of samples), metolachlor (94%), chlorantraniliprole (92%), hexazinone (75%), fluridone (73%), 3,4-DCA (71%), diuron (67%), pendimethalin (63%), imidacloprid (62%), fluopyram (56%), and dithiopyr (50%). Maximum concentrations ranged from below reporting limits to 831 ng/L (fluridone).

Of the 14,141 environmental and QC sample results for dissolved pesticides, 7,259 (51%) met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant" (see definition of **Compliant**). The remaining 6,882 results were qualified for missing laboratory duplicates in their associated batch (**Table 29**).

The 52 environmental samples were also analyzed for suspended-sediment-associated (i.e., particulate) pesticides by the USGS OCRL. During this period, five pesticides were detected on suspended sediments. The pesticides detected included bifenthrin (three detections), dithiopyr (two detections), fluridone (one detection), oxyfluorfen (four detections), and pendimethalin (five detections). Fourteen of the 15 detections in suspended sediment occurred during Event 1 and Event 2 storm sampling.

Of the 13,756 environmental and QC sample results for particulate pesticides, 7,057 (51%) met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant". The remaining 6,699 results were qualified for missing laboratory duplicates in their associated batch **Table 29**).

A total of 173 QC sample results were analyzed for pesticides as the total fraction of the sample matrix (see **Laboratory Control Samples**). This requirement is completed on an annual basis to assess any potential bias or analyte loss that may be introduced during sample processing prior to when the dissolved and particulate fractions are spiked for their respective extractions and analyses. 100% of the total fraction results met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant" (**Table 29**).

Trace Metals

A total of 49 environmental samples were analyzed for dissolved copper by Babcock. Copper was detected in 43 of the 49 (88%) samples, with concentrations ranging from 0.84 µg/L to 5.4 µg/L. Of the total environmental and QC results evaluated for WY 2023, 93 out of 95 (98%) met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant" (**Table 29**). The remaining two results were qualified for findings addressed in **Table 23**.

Ancillary Parameters

A total of 52 environmental samples were analyzed for TSS by USGS OCRL. Fifty-one out of 68 (75%) environmental and QC sample results met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant". The remaining 17 results were qualified for findings addressed in **Table 10**, **Table 12**, and **Table 13**.

A total of 49 environmental samples were analyzed for calcium, magnesium, hardness, nitrate + nitrite as N, DOC, TOC, TKN, and TN by Babcock. Of these environmental and QC results, 843 out of 924 (91%) met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant". Of the remaining results, eight results were estimated (**Table 20**), and 73 results were qualified for findings addressed in **Table 15**, **Table 16**, **Table 17**, **Table 22**, **Table 23**, **Table 24**, **Table 18**, and **Table 19**.

Table 29. Summary of verified chemistry results for WY 2023 monitoring.
Counts of results include all environmental and QC sample results. Percentage of total for each count by analyte category, laboratory, and fraction is in parenthesis next to sample count. Analyte categories are defined in **Table 1**.

Analyte Category	Lab	Fraction	Compliant	Qualified	Estimated	Rejected	Total
Ancillary Parameters	Babcock	Dissolved	490 (94%)	34 (6%)	0	0	524
Ancillary Parameters	Babcock	Total	353 (88%)	39 (10%)	8 (2%)	0	400
Ancillary Parameters	OCRL	Particulate	51 (75%)	17 (25%)	0	0	68
Ancillary Parameters Subtotal			*894 (90%)*	*90 (9%)*	*8 (0.8%)*	*0*	*992*
Trace Metals	Babcock	Dissolved	93 (98%)	2 (2%)	0	0	95
Trace Metals Subtotal			*93 (98%)*	*2 (2%)*	*0*	*0*	*95*
Pesticides	OCRL	Dissolved	7,259 (51%)	6,882 (49%)	0	0	14,141
Pesticides	OCRL	Particulate	7,057 (51%)	6,699 (49%)	0	0	13,756
Pesticides	OCRL	Total	173 (100%)	0	0	0	173

Analyte Category	Lab	Fraction	Compliant	Qualified	Estimated	Rejected	Total
Pesticides Subtotal			*14,489 (52%)*	*13,581 (48%)*	*0*	*0*	*28,070*
Total Verified Results			**15,476 (53%)**	**13,673 (47%)**	**8 (0.03%)**	**0**	**29,157**

Water Quality Metrics

By July 1, annually the CVRWQCB provides a list of relevant water quality metrics to which Delta RMP results should be compared when reporting data. Metrics used for reporting WY 2023 results were provided on June 22, 2022. There are 156 CUP constituents to which results are compared, all of which are pesticides analyzed by USGS OCRL; water quality metrics are provided in Appendix **Table B.2**.

Of the 52 field samples, 17 contained at least one pesticide with a concentration above the water quality metrics. Imidacloprid was detected above its metric of 10.0 ng/L in 14 of the 17 samples that contained at least one pesticide. Bifenthrin was detected above its metric of 0.05 ng/L in five samples. Fipronil, dichlorvos, and naled were each detected above their respective metric concentrations in one sample each.

For WY 2023, 99.9% (16,973 of 16,995) of the environmental results compared to a metric were below the metrics provided. A total of 22 results were reported above their respective metrics, which included results for bifenthrin, dichlorvos, fipronil, imidacloprid, and naled. These results are summarized in **Table 30**.

Table 30. Summary of WY 2023 results above the Water Quality Metrics provided by the CVRWQCB.

Analyte	Water Quality Metric (ng/L)	Fraction	Count of Results Above Metrics							
			Event 1 (First Flush)	Event 2 (Winter Storm)	Event 3 (Spring Snow Melt)	Event 4 (Early Summer)	Event 5 (Mid-Summer)	Event 5R (Mid-Summer)	Event 6 (Late Summer)	Total
Bifenthrin	0.05	Particulate	1	2	--	--	--	--	--	**3**
Bifenthrin	0.05	Dissolved	--	1	--	--	1	--	--	**2**
Dichlorvos	5.8	Dissolved	--	--	--	--	1	--	--	**1**
Fipronil	11	Dissolved	--	1	--	--	--	--	--	**1**
Imidacloprid	10	Dissolved	4	4	1	--	1	1	3	**14**
Naled	10	Dissolved	--	--	--	--	1	--	--	**1**
Total			**5**	**8**	**1**	**0**	**4**	**1**	**3**	**22**

TOXICITY TESTING

A total of 48 environmental samples were analyzed by PER for each of the following aquatic toxicity test species: *Ceriodaphnia dubia*, *Pimephales promelas*, *Selenastrum capricornutum*, *Chironomus dilutus*, and *Hyalella azteca*. Of the 534 environmental and QC sample results, 139 results (26%) were qualified for organism and survival findings (see

Table 26) and/or missing water quality parameters (see **Table 28**). The remaining 395 environmental sample and QC results met the MQOs specified in the CUP QAPP (v1.4) and are considered "Compliant" (74%, **Table 31**).

During WY 2023, 28 toxicity tests produced results that were significantly different from the control. These test results are outlined in **Table 32**. Four of the five test species had significant results for at least one endpoint, with *S. capricornutum* being the only species for which no significant reductions were observed during the WY.

Only one of the significant results had a percent control of 50% or less compared to the control, which is the threshold at which the decision to conduct a TIE is presented to the TIE Advisory Committee. A TIE was conducted for the *H. azteca* samples collected from Sout-006 on February 27, 2023, which had a 0% survival rate. TIE results suggested pyrethroid-induced toxicity but could not rule out metals as a potential cause for some toxicity. Several pesticides, including the pyrethroid bifenthrin, were detected in the pesticide samples collected concurrently.

Table 31. Summary of verified toxicity test results for WY 2023 monitoring.

LAB	ORGANISM	ENDPOINT	COMPLIANT	QUALIFIED	ESTIMATED	REJECTED	TOTAL
PER	*Ceriodaphnia dubia*	Reproduction	64 (81%)	15 (19%)	0	0	79
PER	*Ceriodaphnia dubia*	Survival	64 (81%)	15 (19%)	0	0	79
PER	*Chironomus dilutus*	Growth	37 (65%)	20 (35%)	0	0	57
PER	*Chironomus dilutus*	Survival	37 (59%)	26 (41%)	0	0	63
PER	*Hyalella azteca*	Survival	55 (86%)	9 (14%)	0	0	64
PER	*Pimephales promelas*	Growth	39 (61%)	25 (39%)	0	0	64
PER	*Pimephales promelas*	Survival	39 (61%)	25 (39%)	0	0	64
PER	*Selenastrum capricornutum*	Growth	60 (94%)	4 (6%)	0	0	64
Total Verified Results			**395 (74%)**	**139 (26%)**	**0**	**0**	**534**

Table 32. Samples with toxicity endpoints significantly different from controls in WY 2023.

Station Code	Sample Date	Organism	Endpoint	Pct Control	Sig. Effect [1]	TIE?	TIE Narrative
Sout-001	11/9/2022	*Chironomus dilutus*	Survival	83	SG	No	None
Cent-001	11/10/2022	*Chironomus dilutus*	Growth [2]	83	SG	No	None
Cent-002	11/10/2022	*Chironomus dilutus*	Growth [2]	80	SL	No	None
Sout-004	11/10/2022	*Chironomus dilutus*	Growth [2]	83	SG	No	None
Cent-003	2/27/2023	*Ceriodaphnia dubia*	Reproduction [3]	90	SG [4]	No	None
Cent-004	2/27/2023	*Chironomus dilutus*	Survival	89	SG	No	None
Sout-006	2/27/2023	*Hyalella azteca*	Survival	0	SL	Yes	Toxicity removal in C_{18} and WCX; toxicity reduced in carboxylesterase and increased with PBO. May be multiple toxicants: organic and/or a metal; carboxylesterase and PBO tests suggest pyrethroids.
Sout-007	2/28/2023	*Chironomus dilutus*	Survival	80	SL	No	None
511ULCABR	2/28/2023	*Chironomus dilutus*	Survival	74	SL	No	None
Sout-009	4/26/2023	*Pimephales promelas*	Growth [5]	89	SG [4,6]	No	None
Sout-011	4/26/2023	*Pimephales promelas*	Growth [5]	87	SG	No	None
544LSAC13 [7]	4/27/2023	*Pimephales promelas*	Growth [5]	91	SG [4]	No	None
544LSAC13	6/12/2023	*Pimephales promelas*	Growth [5]	77	SL [6]	No	None
544LSAC13	6/12/2023	*Pimephales promelas*	Survival	70	SL [6]	No	None
Sout-025	6/12/2023	*Pimephales promelas*	Survival	76	SL	No	None
Cent-008	6/13/2023	*Chironomus dilutus*	Growth [2]	80	SL	No	None
Sout-014	6/13/2023	*Chironomus dilutus*	Growth [2]	84	SG	No	None
Sout-014	6/13/2023	*Pimephales promelas*	Growth [5]	76	SL [6]	No	None
Sout-016	6/13/2023	*Chironomus dilutus*	Growth [2]	87	SG	No	None
Sout-016	6/13/2023	*Pimephales promelas*	Growth [5]	72	SL [6]	No	None

Station Code	Sample Date	Organism	Endpoint	Pct Control	Sig. Effect [1]	TIE?	TIE Narrative
Sout-016	6/13/2023	*Pimephales promelas*	Survival	78	SL[6]	No	None
Sout-019 [7]	8/1/2023	*Pimephales promelas*	Growth [5]	84	SG [6]	No	None
Sout-019 [7]	8/1/2023	*Pimephales promelas*	Survival	81	SG [6]	No	None
Sout-026	8/1/2023	*Pimephales promelas*	Growth [5]	75	SL[6]	No	None
Sout-026	8/1/2023	*Pimephales promelas*	Survival	78	SL[6]	No	None
Cent-009	8/10/2023	*Pimephales promelas*	Growth [5]	85	SG [6]	No	None
Cent-010	8/10/2023	*Pimephales promelas*	Growth [5]	72	SL[6]	No	None
Cent-010	8/10/2023	*Pimephales promelas*	Survival	74	SL[6]	No	None

[1] Significant effect: SG (Significant Greater Similarity) indicates significantly different from the control and greater similarity to control, Percent effect equal to or smaller than the evaluation threshold; SL (Significant Less Similarity) indicates significantly different from the control and less similarity to control, Percent effect value larger than the evaluation threshold.
[2] Growth for *Chironomus dilutus* is evaluated as the ash-free dry weight.
[3] Reproduction for *Ceriodaphnia dubia* is evaluated as the number of young per female.
[4] Endpoint considered not toxic; per EPA method, when both the relative difference from control and the test percent minimum significant difference (PMSD) are less than EPA lower PMSD bound (10th percentile).
[5] Growth for *Pimephales promelas* is evaluated as biomass as weight per original individual (dry weight per surviving individual).
[6] Low survival in toxicity test resulted from test interference due to pathogen-related mortality.
[7] Field Duplicate.

FIELD MEASUREMENTS

Per **Table C.3**, there were no completeness concerns associated with WY 2023 Delta RMP CUP monitoring. Field measurement results appear in their entirety in **Table 33**.

DATA AVAILABILITY

All analytical and field parameter results generated by USGS CWSC and USGS OCRL will be made available for download through the USGS National Water Information System (NWIS; https://nwis.waterdata.usgs.gov/ca/nwis/qwdata) using the sampling event and station identification information found in **Table 3** and **Table 33**. All project data, including the USGS datasets as well as those provided by Babcock and PER will be published to CEDEN and can be accessed through the Advance Query Tool (https://ceden.waterboards.ca.gov/AdvancedQueryTool) under the project code "2022 Delta RMP Current Use Pesticides".

Table 33. Sampling event information and basic water quality parameters measured during sample collection.

Event	CEDEN Code	USGS Site Number	Date	Time	Water Temp °C	pH	DO (mg/L)	DO (% saturation)	SC (µS/cm)	Salinity (ppt)	Turbidity (NTU)
1	544LSAC13	375831121223701	11/9/2022	11:00	14.0	7.7	8.9	86.6	263	0.13	1.4
1	511ULCABR	11455261	11/9/2022	7:15	10.9	7.8	7.9	71.7	505	0.25	33.2
1	Sout-001	380310121295501	11/9/2022	12:15	14.3	7.7	9.4	71.3	423	0.21	1.6
1	Sout-002	375730121224601	11/9/2022	11:25	13.0	7.8	9.4	89.4	425	0.21	4.2
1	Sout-003	380246121283201	11/9/2022	12:45	14.3	7.7	9.3	90.7	499	0.24	1.7
1	Sout-004	374827121245501	11/10/2022	9:10	12.8	7.6	9.1	86.3	445	0.22	2.2
1	Cent-001	375009121331801	11/10/2022	11:55	13.7	7.7	9.2	89.0	554	0.27	1.9
1	Cent-002	375516121310201	11/10/2022	10:50	13.9	7.6	9.1	88.3	557	0.27	1.6
2	544LSAC13	375831121223701	2/28/2023	10:35	8.5	7.8	11.0	94.4	323	0.16	21.0
2	511ULCABR	11455261	2/28/2023	14:05	8.5	8.1	11.2	96.1	322	0.15	160.8
2	Sout-005	380220121290001	2/27/2023	12:15	8.9	7.7	10.8	92.8	314	0.15	6.9
2	Sout-006	380158121224701	2/27/2023	14:30	8.8	7.7	9.0	76.8	233	0.11	9.8
2	Sout-007	375952121243601	2/28/2023	9:45	8.9	7.9	11.1	95.6	426	0.21	12.2
2	Sout-008	380509121330901	2/27/2023	11:25	8.8	7.8	11.1	95.1	209	0.10	6.8
2	Cent-003	380439121343201	2/27/2023	10:45	9.0	7.6	11.0	94.9	228	0.11	11.0
2	Cent-004	380217121354801	2/27/2023	9:55	8.6	7.8	11.0	94.6	259	0.12	18.1
3	544LSAC13	375831121223701	4/27/2023	11:15	18.0	7.4	7.6	80.8	131	0.06	7.3
3	511ULCABR	11455261	4/26/2023	8:00	18.8	8.1	4.7	50.4	982	0.49	5.6
3	Sout-009	374913121293301	4/26/2023	13:45	17.6	7.4	7.7	81.0	114	0.05	11.6
3	Sout-010	380020121263901	4/27/2023	10:35	17.8	7.7	7.6	79.5	124	0.06	8.3
3	Sout-011	374737121182701	4/26/2023	14:45	17.5	7.4	7.8	81.9	108	0.05	10.2
3	Sout-012	380600121291901	4/27/2023	13:05	18.2	7.6	9.0	94.9	89	0.04	3.4
3	Cent-005	375405121365001	4/26/2023	12:30	19.8	8.1	8.6	94.7	315	0.15	6.8
3	Cent-006	375933121312401	4/27/2023	9:45	18.8	7.5	8.0	85.9	146	0.07	4.6

Event	CEDEN Code	USGS Site Number	Date	Time	Water Temp °C	pH	DO (mg/L)	DO (% saturation)	SC (µS/cm)	Salinity (ppt)	Turbidity (NTU)
4	544LSAC13	375831121223701	6/12/2023	13:00	20.0	7.2	8.2	90.3	85	0.04	8.2
4	511ULCABR	11455261	6/12/2023	8:30	16.0	7.9	5.4	55.6	779	0.38	3.6
4	Sout-13	375710121202901	6/12/2023	12:40	19.4	7.2	8.2	89.5	83	0.04	12.2
4	Sout-14	380228121254801	6/13/2023	12:45	21.7	7.3	7.4	84.1	138	0.06	4.8
4	Sout-25	375500121191701	6/12/2023	12:00	13.0	7.2	8.3	90.3	79	0.04	13.8
4	Sout-16	380524121285101	6/13/2023	12:10	19.8	7.3	8.2	89.1	92	0.04	3.8
4	Cent-07	380600121360201	6/13/2023	11:20	19.7	7.4	8.4	91.9	96	0.04	6.1
4	Cent-08	380231121352501	6/13/2023	10:20	20.6	7.4	8.0	88.5	111	0.05	7.1
5	544LSAC13	375831121223701	7/31/2023	15:45	26.3	7.4	7.9	99.5	209	0.10	4.5
5	511ULCABR	11455261	7/31/2023	7:30	20.7	7.5	2.6	28.9	714	0.35	14.1
5	Sout-17	380230121295201	8/1/2023	11:15	25.2	7.3	6.8	82.2	139	0.06	2.9
5	Sout-26	380028121272101	8/1/2023	10:40	25.6	7.1	6.1	74.9	185	0.09	3.4
5	Sout-19	380303121275401	8/1/2023	10:10	25.2	7.1	6.1	74.6	143	0.07	2.5
5	Sout-20	380620121292201	8/1/2023	12:05	23.1	7.4	8.1	95.0	110	0.05	3.6
5	Cent-09	375928121344001	7/31/2023	12:40	25.6	7.6	7.4	90.2	144	0.07	2.5
5	Cent-10	375835121305201	7/31/2023	13:30	26.1	7.3	6.7	82.9	157	0.07	2.6
5R	544LSAC13	375831121223701	8/10/2023	8:45	25.1	7.2	7.1	86.3	305	0.14	5.2
5R	511ULCABR	11455261	8/10/2023	14:00	22.9	7.6	4.9	56.5	793	0.39	14.5
5R	Cent-09	375928121344001	8/10/2023	10:15	24.7	7.5	7.4	89.2	173	0.08	1.5
5R	Cent-10	375835121305201	8/10/2023	9:40	24.9	7.2	7.0	83.9	152	0.07	2.4
6	544LSAC13	375831121223701	9/5/2023	13:15	23.0	7.3	6.5	75.5	259	0.12	8.6
6	511ULCABR	11455261	9/6/2023	8:30	20.3	7.6	2.8	30.6	672	0.33	20.3
6	Sout-21	374911121313501	9/6/2023	11:40	21.8	7.7	8.8	100.7	313	0.15	6.4
6	Sout-22	380302121250601	9/5/2023	14:00	24.2	7.8	8.4	100.4	140	0.07	3.1
6	Sout-23	375945121220801	9/5/2023	12:50	24.4	7.2	5.2	62.6	313	0.15	5.4
6	Sout-24	380350121295301	9/5/2023	11:50	22.2	7.5	7.8	89.6	144	0.07	1.6

Event	CEDEN Code	USGS Site Number	Date	Time	Water Temp °C	pH	DO (mg/L)	DO (% saturation)	SC (µS/cm)	Salinity (ppt)	Turbidity (NTU)
6	Cent-11	380205121360101	9/5/2023	10:15	22.6	8.3	9.1	104.6	302	0.14	1.1
6	Cent-12	380123121304901	9/5/2023	11:20	23.2	7.5	7.3	85.8	171	0.08	1.7

DEVIATIONS AND CORRECTIVE ACTIONS

There were twelve deviations to the Delta RMP CUP QAPP which occurred during WY 2023 and were associated with current use pesticides and aquatic toxicity. Relevant CUP QAPP deviation forms are outlined in (**Table 34**) and a summary for each is provided below. These forms have been drafted and are included in **Appendix D**.

2022-01: Event 1 Chironomus Larvae Delayed Shipment

Deviation 2022-01 (CUP Event 1) was related to a shipping delay by UPS which did not allow the *C. dilutus* organisms to arrive a day prior to test initiation as planned. The normal protocol is to order the larvae to arrive a day before needed to allow any attrition to occur in holding, rather than in the testing. PER informed the TIE Advisory Committee of the larvae situation and asked for guidance on next steps. The TIE Advisory Committee recommended initiating the midge toxicity tests on November 10, 2022, for samples collected on November 9, 2022, despite organisms arriving less than 48 hours prior to test initiation. Since the deviation was due to uncontrollable circumstances, there are no corrective actions. If this happens again, PER will continue to follow the same procedures of notifying the TIE Advisory Committee to receive guidance on next steps.

2022-02: Event 1 Chironomus Larvae Missed Growth Endpoints

Deviation 2022-02 (CUP Event 1) occurred on November 22, 2022, when organism weights were not collected upon termination of a 10-day water exposure for a *C. dilutus* control test initiated on November 10, 2022. It was agreed by the TIE Advisory Committee to report the survival results (which were recorded) and not retest the water outside of hold time. The PER staff member responsible for the deviation was issued a performance evaluation by PER and additional training/review of the Delta RMP requirements. A QA Code of TEM (Endpoint not analyzed or reported by the laboratory) was applied to the samples in the test batch PER_DRMP_CUP_1122CHD_C1_W_TOX (**Table 26**).

2022-03: Event 1 Chironomus larvae initial weights greater than 0.012 mg/ individual AFDW

Deviation 2022-03 (CUP Event 1) was related to the initial weights of the *C. dilutus* larvae, which were greater than the SWAMP MQO of less than or equal to 0.12 mg/individual as ash free dry weight (AFDW). Upon completion of drying process, PER reported the initial weights as AFDW on November 19, 2022, and November 23, 2022, for two batches of *C. dilutus* larvae that had samples collected on November 9 and 10, 2022. PER processed the toxicity data in preparation of submitting the data report and found that the mean AFDW

was greater than 0.12 mg/individual. PER informed the TIE Advisory Committee of the non-conformance of T_0 (initial) weights on December 22, 2022. The starting weight requirement is targeted to reduce pupation/hatching during the 10-day test and to ensure that measurable growth occurs during the test; no pupation or hatching occurred in these specific toxicity tests and therefore initial weights were assessed to have no detrimental impacts on testing. The organisms were received as larvae and were of the correct age for testing. Corrective action involved assigning a Tox Test Level QA Code of TAF (test organisms exceed the maximum weight requirement at test initiation) to the samples in each test batch, and data were submitted with TAF flags (**Table 26**).

2022-04: Event 2 Ceriodaphnia Batch Failed Test Acceptability Criteria in One Batch

Deviation 2022-04 (CUP Event 2) occurred on March 4, 2023, when PER observed that a *C. dubia* chronic toxicity test did not meet test acceptability criteria (TAC) of ≥ 80% average survival in the control. It was noted that organism quality and a technical mistake by PER staff are likely the cause of the TAC failure in this test. PER provided an email to alert TIE Advisory Committee members of the incident and requested a retest due to TAC failure. A retest was initiated on March 6, 2023, per recommendation from the TIE Advisory Committee which includes the CVRWQCB QA Representative; the five environmental samples associated with original failed test were re-analyzed six days out of the 48-hour hold time. Corrective action included: 1) the PER Quality Manager discussed solution renewal and organism transfer process with technician associated with the technical error, 2) a Tox Test Level QA Code of H (Holding Time violation as occurred) was applied to the samples the test batch, and 3) the following laboratory batch comment was applied "Original analysis performed within hold time but did not meet TAC(≥ 80% average survival in control). Initial test performed on February 28, 2023. Reported reanalysis initiated six days out of hold time."

2022-05: Event 1 Missed Resolution Reporting Timeline for TSS

Deviation 2022-05 (CUP Event 1) was related to a missed reporting timeline for TSS. During the review of the CEDEN EDD, the Data Management Team (DMT) noticed that although the November USGS results were received within 60 days of pesticide analysis (reported within 43 days of analysis), the TSS results (which were reported in the same file) were analyzed earlier and were reported 3 days past the 60-day deadline (per CVRWQCB Resolution R5-2021-0054). The deviation was not noticed until the EDD was received and reviewed since the preliminary results do not include the analysis date. This deviation only affects the timing for when preliminary results were received for TSS; there were no hold time violations associated with these results. Corrective actions involved more specific tracking of reporting timelines when multiple analysis methods are

presented in a single file, and the re-iteration of the requirement for reporting of preliminary results for both TSS and Pesticides within the 60-day limit.

2022-07: Event 3 Chironomus larvae initial weights greater than 0.012 mg/ individual AFDW

Deviation 2022-07 (CUP Event 3) occurred on May 12, 2023, and was related to the initial weights of *C. dilutus* larvae, which were greater than the SWAMP MQO of less than or equal to 0.12 mg/individual AFDW and affected two control batches. The SWAMP MQO of ≤0.12 mg/individual is targeted to reduce the likelihood of pupation/hatching during the 10-day test and to ensure that measurable growth occurs during the test. No impact on the test results was expected given that no pupation or hatching occurred during testing, and the age of the organisms was confirmed at nine days old. Corrective action involved assigning a Tox Test Level QA Code of TAF (test organisms exceed the maximum weight requirement at test initiation) to the samples in each test batch, and data was submitted with TAF flags (**Table 26**).

2022-08: Events 1 and 3 Chironomus Test Temperature at 20 C

Deviation 2022-08 (CUP Events 1 and 3) occurred on June 12, 2023, when *C. dilutus* tests were performed at two different temperatures (Events 1 and 3 were at 20 °C and Event 2 was at 23 °C). It was determined, in consultation with the CVRWQCB QA Representative that a deviation occurred in Events 1 and 3 from the recommended SWAMP test temperature of 23 °C. An interim project manager at PER was overseeing the first three test events and two of them were conducted at 20°C to reflect the freshwater sediment manual requirements, whereas one was conducted at 23°C which matches SWAMP guidance. The impact of the two different test temperatures on *C. dilutus* toxicity test performance is expected to be minimal. The SWAMP MQO for *C. dilutus* temperature requires that the temperature not vary more than 3 degrees. No flagging for temperature variation was necessary. Corrective actions included: 1) PER will run the Event 4 *C. dilutus* test at 23 °C, 2) PER will note in their Event 4 laboratory report the deviation that occurred for Events 1 and 3 testing, and 3) Update to the Delta RMP Data Management SOP to reflect the test temperature of 23 °C for *C. dilutus* testing under EPA 600/R-99-064.

2022-09: Event 3 DOC Field Blank Contamination and Field Filtering Update

Deviation 2022-09 (CUP Event 3) occurred on May 26, 2023, and was related to a detection in a field blank for DOC (6.9 mg/L; **Table 15**). This detection prompted a conversation about sample handling and potential for contamination between Babcock, MLJ, USGS, MLML, and the SWRCB QA Officer. It was determined that field blanks are filtered in the USGS laboratory prior to being sent to Babcock for analysis; therefore, the

preparation/preservation code should indicate “LabFiltered” and not “FieldFiltered”. USGS agreed to review sample preparation protocols included in the USGS National Field Manual (NFM) to ensure that adequate language is included regarding potential sources of contamination during the filtration process. Corrective actions included: 1) A second set of DOC and TOC blanks were taken at USGS and sent for analysis to determine if contamination was consistent, 2) Review of USGS NFM sampling protocols to determine if the issue of organic solvent contamination is discussed, including steps to be taken to avoid contamination and determine if SOPs need to be revised, 3) USGS will review filtration SOPs with staff doing filtration specifically addressing concerns about organic carbon contamination, 4) USGS will revise chain-of-custody (COC) forms to indicate laboratory filtered, and 5) Revise CUP Babcock data received to date.

2022-10: Event 5 Sample Receipt at Elevated Temperature

Deviation 2022-10 (CUP Event 5) occurred on August 1, 2023, and was related to a sample receipt at an elevated hold temperature. This deviation was noted by PER on the morning of August 1, 2023, when it was discovered that three of the four samples collected on July 31, 2023, had hold temperatures above the acceptable range of ≤6 °C. Corrective actions involved resampling for all samples out of hold temperature and re-sampling was scheduled for August 10, 2023. Additionally, the Delta RMP sample pickup instruction sheet was revised to remind PER staff to bring 10 bags of wet ice during pickups, and to add ice to keep sample temperatures in the acceptable range of ≤6°C. Storage and transport procedures were updated to include the use of foam inserts and wet ice instead of bubble wrap and blue ice packs. PER couriers were instructed not to leave samples in vehicles overnight and ensure that coolers are packed appropriately with wet ice for the night.

2022-11: Event 5 Chironomus Batch Failed Test Acceptability Criteria in One Batch

Deviation 2022-11 (CUP Event 5) occurred on August 4, 2023, and was related to a *C. dilutus* batch that failed TAC. On August 4, 2023, it was noted that there was 67.5% average survival observed in the control treatment for samples collected on July 31, 2023, and therefore the control batch for *C. dilutus* would not meet TAC of ≥ 80% average survival. For corrective action, it was agreed to resample and retest for *C. dilutus* (survival and growth). Since resampling (and subsequent re-testing) was scheduled to occur on August 10, 2023, no further corrective actions or changes to PER’s quality control system were deemed necessary in relation to Deviation 2022-11.

2022-12: Event 5R Hyalella Incorrect Number Org Per Rep

Deviation 2022-12 (CUP Event 5R) occurred on August 11, 2023, and was related to a resample event that occurred on August 10, 2023, for three sites which included retesting

for *H. azteca*. On August 11, 2023, it was noted by PER staff at test setup that the water test was initiated with five organisms per replicate, instead of the 10 organisms per replicate as required by the Delta RMP to achieve comparability with SWAMP MQOs. For corrective actions, PER added additional notes to their Organism Order Log indicating that the Delta RMP required 10 organisms per replicate for testing. For final resolution, it was determined that the results of the affected tests would be reported, and a QA Code of TOQ (number of organisms in a toxicity test do not meet the minimum quantity per replicate at test initiation or an unequal quantity of organisms per replicate is used) would be applied to affected data (**Table 26**).

2022-13: Event 6 Ceriodaphnia Batch No Final Ammonia in One Batch

Deviation 2022-13 (CUP Event 6) occurred on September 13, 2023, and was related to a C. *dubia* batch with no recorded final ammonia results. It was discovered upon routine quality assurance review steps by PER that *C. dubia* final ammonia results were not collected at test termination which occurred on September 13, 2023. For corrective actions, it was agreed that future Delta RMP toxicity tests would be restricted to a select subset of PER staff who have multiple years of experience with the Delta RMP testing procedures. For final resolution, it was determined that a Tox Test Level QA Code of TWN (required water quality parameters not measured) would be applied to the samples in the affected test batch (**Table 28**).

2022-14: USGS Batches Missing Lab Duplicates and Lab Blank

Deviation 2022-14 occurred on November 3, 2023 and was related to missing lab duplicates (Events 1, 3, 5 (Pest) and 5R (TSS)) and a lab blank for Event 5 (TSS). Pesticide precision requirements are listed in Table 6 and Table 16 of CUP QAPP v1.3. Table 6 lists a lab duplicate on a per batch basis (including a footnote that a laboratory control spike duplicate, or a matrix control spike duplicate may function as a laboratory duplicate), while Table 16 indicates a matrix spike duplicate is required at a frequency of 1 per 20 samples (not required per batch). It was not clarified in the WY 2023 project kickoff meeting with USGS which occurred on September 14, 2022, that all batches require a laboratory duplicate if a matrix spike / matrix spike duplicate was not performed. Therefore, it was misinterpreted that only matrix spike duplicates were required, and the frequency was 1 per 20 samples (per Table 16). The missing precision samples were not identified in the data management review process due to oversight by the reviewer. The reason for missed QC requirements for TSS in batches from Events 5 and 5R can be attributed to laboratory error in planning for the correct amount of duplicate and blank samples required to meet the QAPP frequency as a result of the Event 5 resample. Corrective actions included retraining with MLJ staff, discussion with USGS to clarify QC

requirements, an amendment to update CUP QAPP v1.3 Table 16 and Batch flagging (**Table 10; Table 12**).

Table 34. Referenced deviations from the CUP QAPP for WY 2023.

Number	Status	Date	QAPP	Title	Description	Corrective Actions	Resolution
2022-01	Final	11/10/2022	Delta RMP CUP QAPP v1.3	CUP Event 1 Chironomus Larvae Delayed Shipment	*C. dilutus* larvae (expected 11/9/2022) were delayed by UPS and did not arrive until 11/10/2022. Per direction from the TIE Advisory Committee, PER initiated the tests prior to 48-hour waiting period in to avoid hold time violations.	The deviation was due to uncontrollable circumstances; there are no corrective actions. The same procedures of notifying the TIE Advisory Committee to receive guidance will be followed in the future if needed.	NA
2022-02	Final	11/20/2022	Delta RMP CUP QAPP v1.3	CUP Event 1 Chironomus Larvae Missed Growth Endpoints	On 11/21/2022, PER reported that an analysts failed to collect organism weights for the 10-day *C. dilutus* test that was initiated on 11/10/2022 and completed on 11/20/2022.	The staff member responsible for the deviation was issued a performance evaluation by PER and additional training/review of the Delta RMP requirements.	The error has not occurred in subsequent toxicity tests.
2022-03	Final	11/19/2022	Delta RMP CUP QAPP v1.3	CUP Event 1 Chironomus larvae initial weights greater than 0.012 mg/ individual AFDW	Initial weights of the *C. dilutus* larvae were greater than the SWAMP MQO of ≤0.12 mg/individual AFDW.	QA Code of TAF will be applied to the samples in each test batch.	Data submitted with TAF flags.

Number	Status	Date	QAPP	Title	Description	Corrective Actions	Resolution
2022-04	Out for Signa-tures	3/4/2023	Delta RMP CUP QAPP v1.3	CUP Event 2 *Ceriodaphnia* Batch Failed TAC in One Batch	PER technicians observed on 3/4/2023 that the control associated with the *C. dubia* chronic toxicity test had 78% survival and would therefore not meet TAC of ≥ 80% average survival in the control. The invalid test was terminated on 3/5/2023 for five environmental samples collected on 2/27/2023 (Event 2).	1) PER Quality Manager reviewed procedures with the technician responsible. 2) Tox Test Level QA Code of H applied to the samples the test batch. 3) Lab batch comment applied: "Test initiated 3/28/23 failed to meet TAC with <80% survival in the LABQA. All samples retested on 3/6/23; 6 days outside of hold time limit."	1) Procedures reviewed on 3/4/2023. The error has not occurred in subsequent toxicity tests. 2) Data submitted with H flag 3) Data submitted with batch comment.
2022-05	Final	2/14/2023	Delta RMP CUP QAPP v1.3	CUP Event 1 Missed Resolution Reporting Timeline for TSS	USGS reported Event 1 results for TSS on 1/11/2022 which was 3 days past the resolution deadline of 1/8/2022 (preliminary results due within 60 calendar days of analysis).	Reporting timelines are being tracked in a more specific manner when multiple analysis methods are presented in a single file to ensure preliminary data are reported within the 60- day limit.	USGS Events 2-4 preliminary data submission to the Delta RMP were all submitted within the timeline.
2022-07	Final	5/12/2023	Delta RMP CUP QAPP v1.3	CUP Event 3 Chironomus larvae initial weights greater than 0.012 mg/ individual AFDW	PER technicians noted the mean t(0) weights of the *C. dilutus* were greater than the SWAMP MQO of ≤0.12 mg/individual AFDW for the second control batch.	Toxicity Test level QA Code of TAF will be applied to the samples in each test batch.	Data submitted with TAF flags.

Number	Status	Date	QAPP	Title	Description	Corrective Actions	Resolution
2022-08	Final	6/12/2023	Delta RMP CUP QAPP v1.3	CUP Events 1 and 3 Chironomus Test Temperature at 20 C	*C. dilutus* tests were performed at different temperatures. Per the CVRWQCB QA Representative, Events 1 and 3 results (20°C) deviate from the recommended SWAMP test temperature of 23°C.	1) PER will run future *C. dilutus* test at 23 °C. 2) PER will note in their Event 4 Lab Report the deviation that occurred for Events 1 and 3. 3) Update the Delta RMP Data Management SOP to reflect the temperature of 23 °C for *C. dilutus* testing.	1) Event 4 *C. dilutus* test was run at 23 ° C 2) Event 4 report received 10/2/2023 with requested notes. 3) Data Management procedures specify the correct temperature range.
2022-09	Final	5/26/2023	Delta RMP CUP QAPP v1.3	CUP Event 3 DOC Field Blank Contamination and Field Filtering Update	Babcock notified staff of a detection of DOC (6.9 mg/L) in the field blank on 5/26/2023. In reviewing sample handling procedures, it was determined that DOC preparation/preservation codes should be updated based on the USGS filtering procedures.	1) USGS sent additional DOC and TOC blanks for analysis to determine if contamination was consistent. 2) USGS to review the National Field Manual for any additional procedures to avoid contamination. 3) USGS to review filtration procedures to minimize contamination. 4) USGS to revise COCs to indicate lab filtered. 5) Revise CUP data received to date to indicate lab filtered for DOC.	1) Analysis of blank water performed June 2023. 2) USGS Manuals reviewed; no additional procedures identified. 3) Filtration procedures were reviewed with staff. 4) COCs were revised for subsequent events. 5) Prep/preservation codes were revised in the CV RDC.

Number	Status	Date	QAPP	Title	Description	Corrective Actions	Resolution
2022-10	Final	8/1/2023	Delta RMP CUP QAPP v1.3	CUP Event 5 Sample Receipt at Elevated Temperature	Three of the four Event 5 samples were logged in by PER 8/1/2023 had temperatures above the acceptable range of ≤6°C.	Recollect samples outside of temperature requirements. Sample pickup instructions updated to bring/add extra ice to keep samples in temperature range. Foam inserts and wet ice will be used instead of bubble wrap and blue ice packs. PER couriers are not leave samples in vehicles overnight	Resampling for all the samples out of hold temperature occurred on 8/10/2023. No subsequent temperature requirement violations have occurred.
2022-11	Final	8/4/2023	Delta RMP CUP QAPP v1.3	CUP Event 5 *Chironomus* Batch Failed Test Acceptability Criteria in One Batch	Control for *C. dilutus* samples initiated on 8/1/2023 did not meet TAC (≥ 80% survival) at 67.5% average survival in the control treatment.	Resample and retest for *C. dilutus* 8/10/2023 recollection already scheduled (deviation 2022-10). No further corrective actions deemed necessary.	Resampling occurred on 8/10/2023.
2022-12	Final	8/11/2023	Delta RMP CUP QAPP v1.3	CUP Event 5R *Hyalella* Incorrect Number Org Per Rep	PER notified staff that *H. Azteca* samples recollected on 8/10/2023 were initiated with five organisms per replicate instead of 10.	PER added notes indicating that the Delta RMP requires 10 organisms per replicate. QA Codee of TOQ will be added to the results.	Data submitted with TOQ flags. Error has not occurred in subsequent tests.
2022-13	Out for Signa-tures	9/13/2023	Delta RMP CUP QAPP v1.3	CUP Event 6 *Ceriodaphnia* Batch No Final Ammonia in One Batch	PER discovered that the final ammonia results were not collected at termination of the C. *dubia* test on 9/13/2023.	Future Delta RMP toxicity tests will be run by PER staff who have experience with Delta RMP testing procedures. QA Code of TWN will be added to the results.	Data submitted with TOQ flags. Error has not occurred in subsequent tests.

Number	Status	Date	QAPP	Title	Description	Corrective Actions	Resolution
2022-14	Out for Signa-tures	11/3/2023	Delta RMP CUP QAPP v1.3	CUP USGS Batches Missing Lab Duplicates and Lab Blank	Review determined there was a missing lab duplicates for 6 pesticide batches and 1 Total Suspended Sediments (TSS); Lab Blank was missing for one TSS batch	Retraining with MLJ data management; Communication with USGS to discuss frequency; All batches are flagged with a QI; Amendment to QAPP Table 16; Kickoff Meeting will be clear on QC frequency requirements.	Retraining occurred on 11/3/2023 and USGS communication on 11/17/2023; QAPP amendment drafted.

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Delta RMP. Amendment to the CUP QAPP, Version 1.4. Approved October 25, 2023. https://deltarmp.org/Documents/DRMP_QAPP_CUP_Amendment_1.4_Final.pdf

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Appendix A. Sampling Photos for WY 2023 Monitoring (Current Use Pesticides Year 3)

Sampling for Year 3 of the Delta Regional Monitoring Program (RMP) Current Use Pesticides (CUP) monitoring during water year (WY) 2023 occurred over Events 1 through 6 in November of 2022 through September of 2023. Photos taken by field crews during each monitoring event are provided below.

Event 1 – November 9 and 10, 2022

Figure A.1. Ulatis Creek looking downstream at sunrise, November 9, 2022

Figure A.2. Matt De Parsia preparing to collect samples at Buckley cove, Nov 9, 2022.

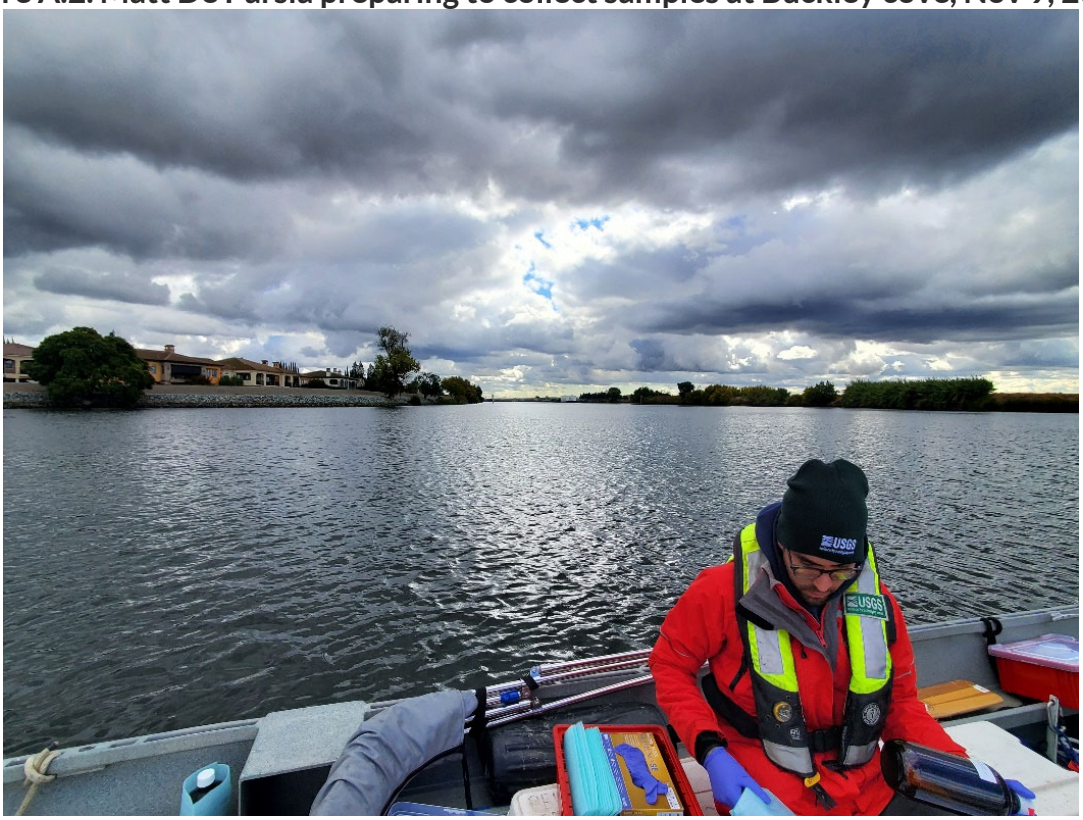


Figure A.3. Sampling at SOUT-002 on Burns Cutoff, November 9, 2022.

Figure A.4. SOUT-001 Little Potato Slough, November 9, 2022.

Figure A.5. SOUT-003 on White Slough, November 9, 2022.

Figure A.6. Grant Line Canal Barrier breaching work, November 10, 2022.

Figure A.7. SOUT-004 on Old River, November 10, 2022.

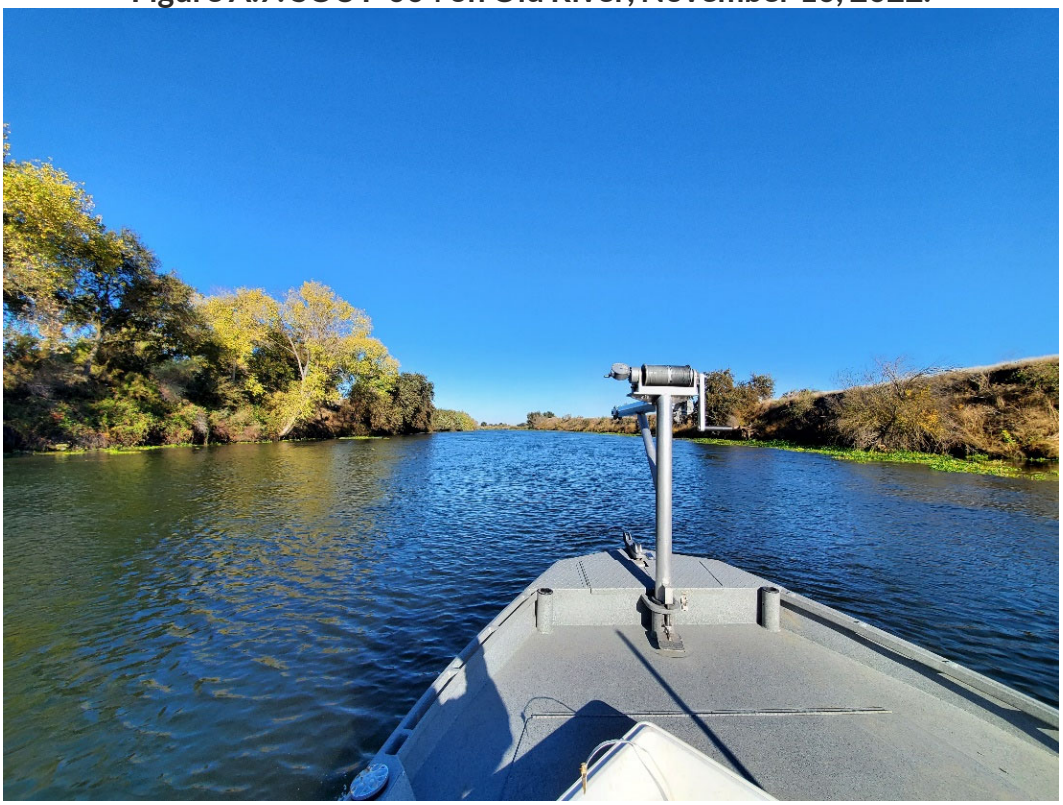
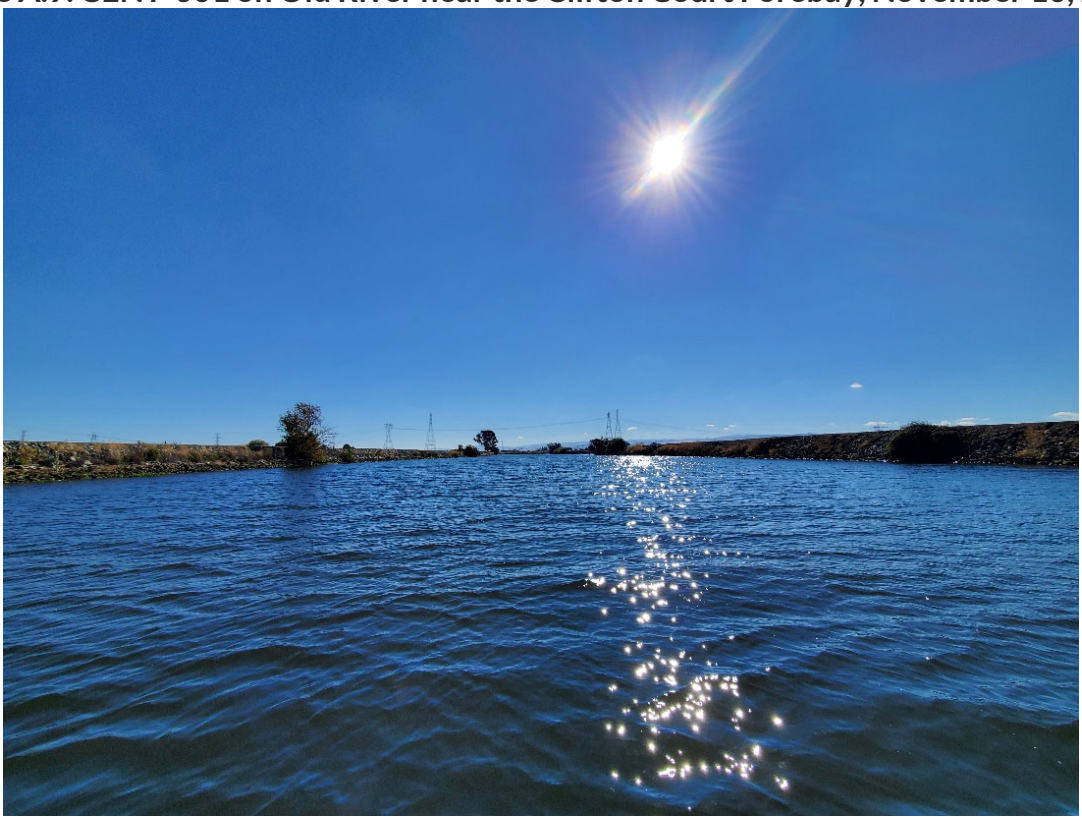


Figure A.8. CENT-002 on Middle River, November 10, 2022.

Figure A.9. CENT-001 on Old River near the Clifton Court Forebay, November 10, 2022.



Event 2 – February 27 and 28, 2023

Figure A.10. Sampling site CENT-004 in Franks Tract, February 27, 2023.

Figure A.11. Matt Uychutin and Matt De Parsia preparing to collect samples at CENT-003, February 27, 2023.

Figure A.12. Sampling site SOUT-008 on Potato Slough, February 27, 2023.

Figure A.13. SOUT-005 on White Slough, February 27, 2023.

Figure A.14. Stormwater runoff being pumped into White Slough, February 27, 2023.

Figure A.15. View from SOUT-006, February 27, 2023.

Figure A.16. Preparing to sample at SOUT-007, February 28, 2023.

Figure A.17. Buckley Cove, February 28, 2023.

Figure A.18. Ulatis Creek looking downstream, February 28, 2023.

Figure A.19. High flow sampling from the bridge at Ulatis Creek, February 28, 2023.

Event 3 – April 26 and 27, 2023

Figure A.20. Preparing to collect samples at Ulatis Creek, April 26, 2023.

Figure A.21. Approaching sampling site CENT-005 in Discovery Bay, April 26, 2023.

Figure A.22. Sampling site SOUT-009 on Grant Line Canal, April 26, 2023.

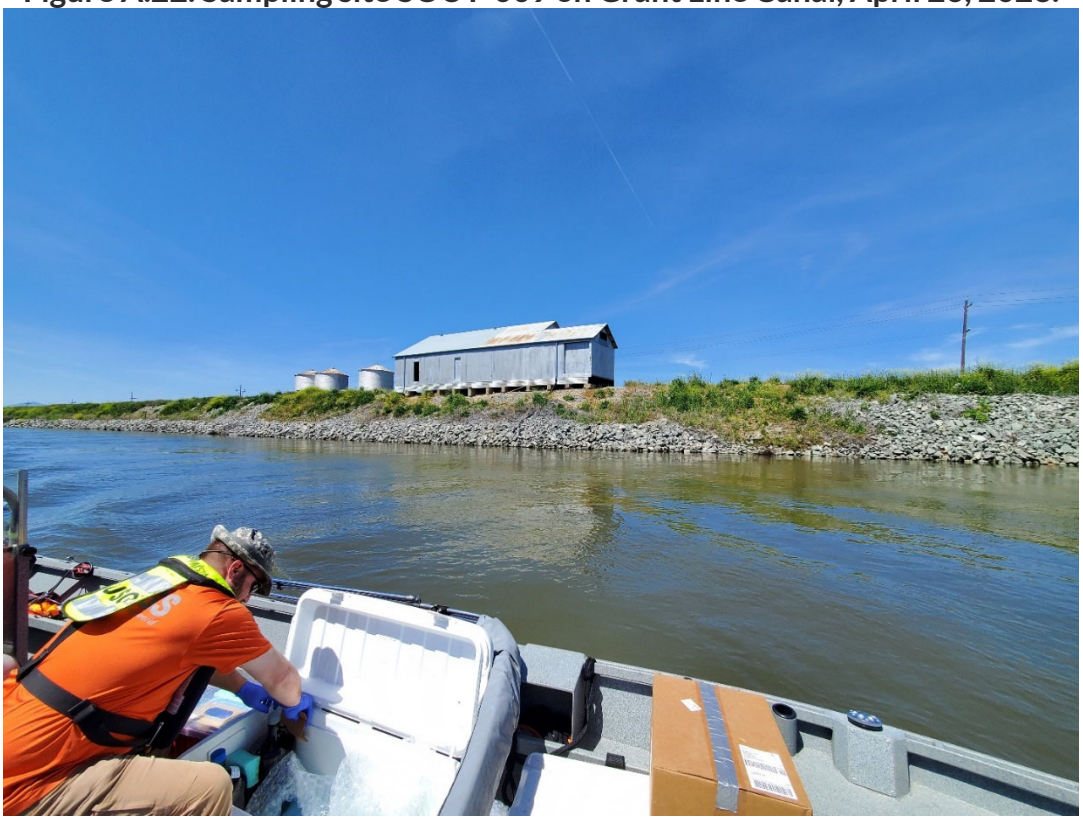


Figure A.23. SOUT-011 on the San Joaquin River near Mossdale, April 26, 2023.

Figure A.24. USGS personnel rinsing sample bottles at site CENT-006, April 27, 2023.

Figure A.25. View of site SOUT-010, April 27, 2023.

Figure A.26. View of the Buckley Cove sampling site, April 27, 2023.

Figure A.27. Sampling site SOUT-012, April 27, 2023.

Event 4 – June 12 and 13, 2023

Figure A.28. Ulatis Creek looking upstream, June 12, 2023.

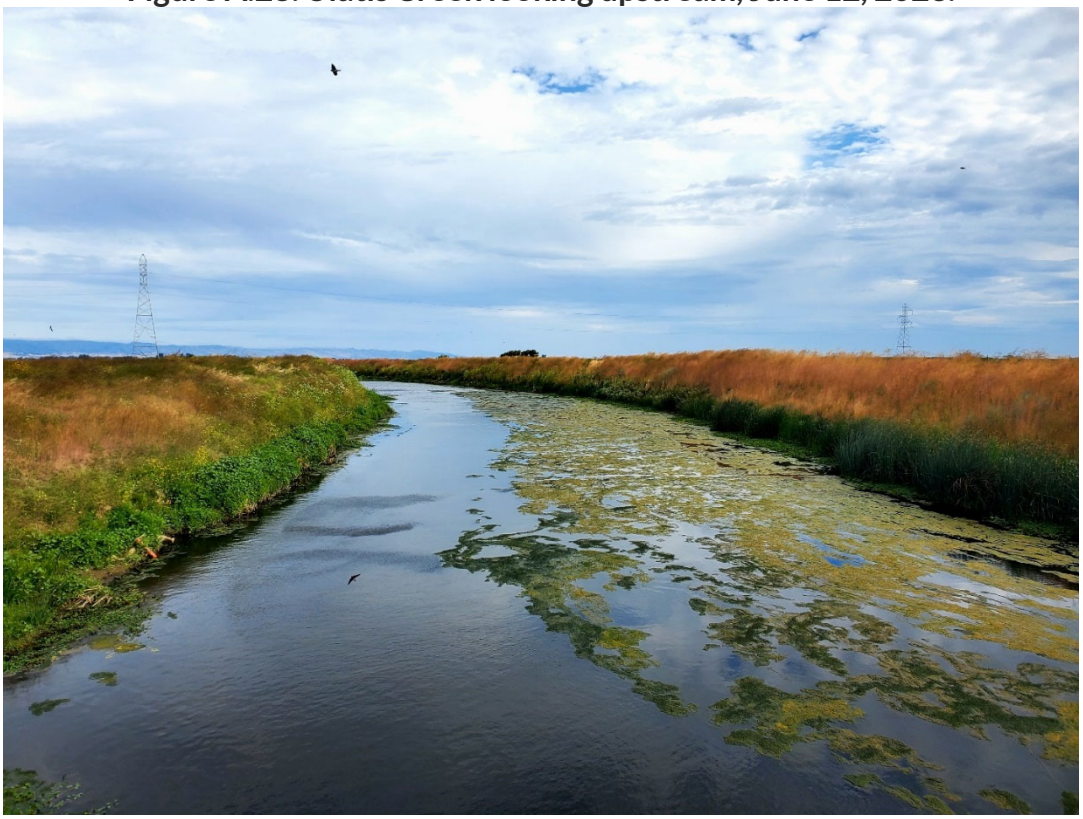


Figure A.29. Approaching SOUT-025 on the San Joaquin River, June 12, 2023.

Figure A.30. Sampling site SOUT-013 on the San Joaquin River near the port of Stockton, June 12, 2023.

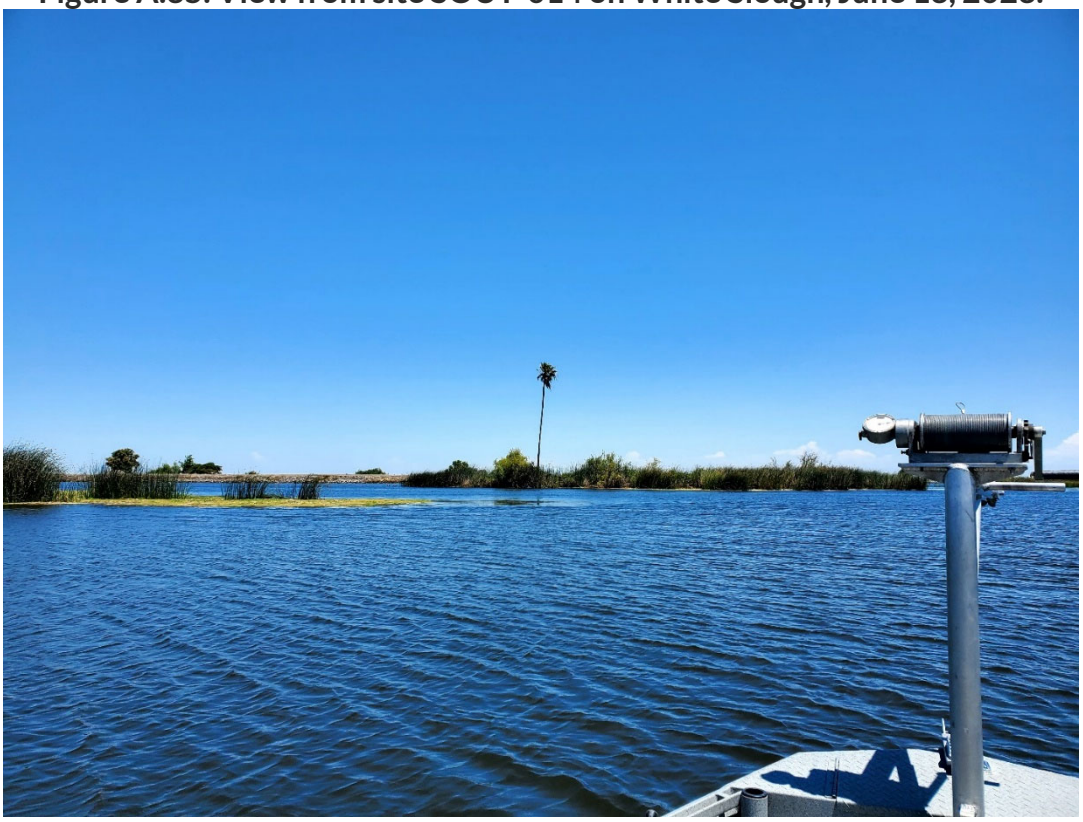
Figure A.31. USGS personnel rinsing sample bottles at Buckley Cove, June 12, 2023.

Figure A.32. Preparing to sample at site CENT-008 in Franks Tract, June 13, 2023.

Figure A.33. View of the CENT-007 sampling site, June 13, 2023.

Figure A.34. Preparing to sample at site SOUT-016, June 13, 2023.

Figure A.35. View from site SOUT-014 on White Slough, June 13, 2023.



Event 5 – July 31 and August 1, 2023

Figure A.36. Ulatis Creek looking upstream, July 31, 2023.

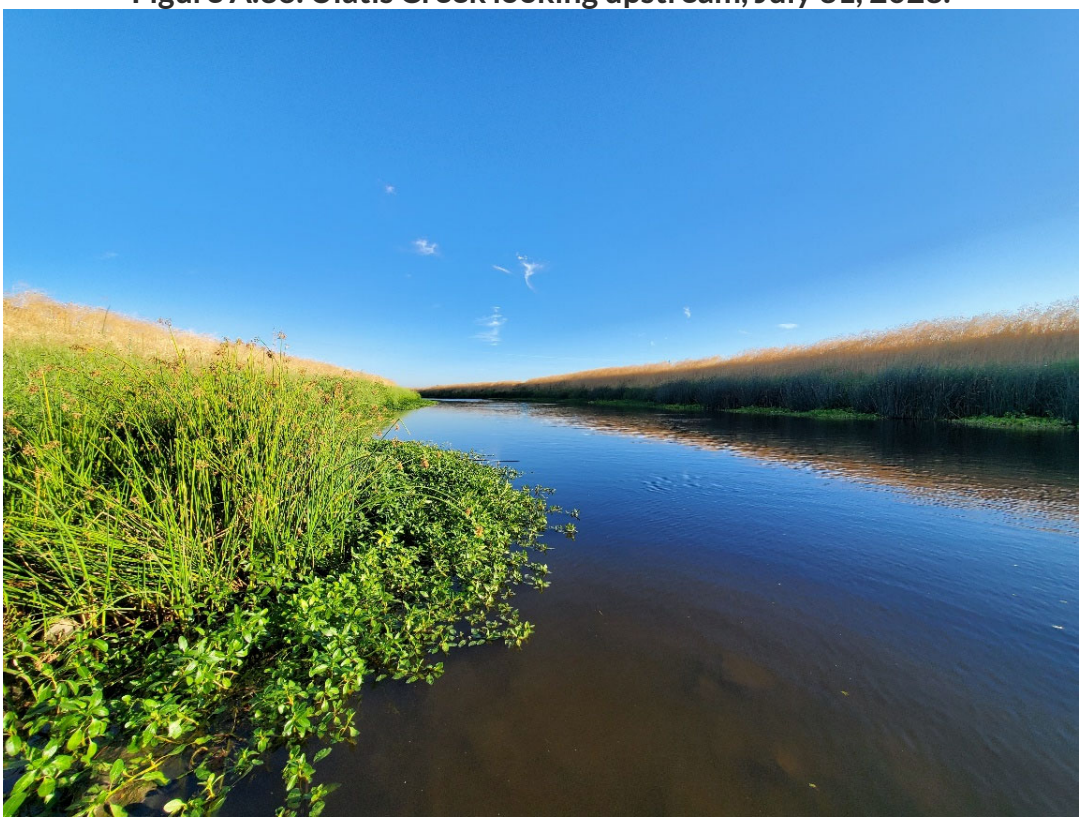


Figure A.37. Sampling site CENT-009 on Old River, July 31, 2023.

Figure A.38. Site CENT-010 on Latham Slough near Mildred Island, July 31, 2023.

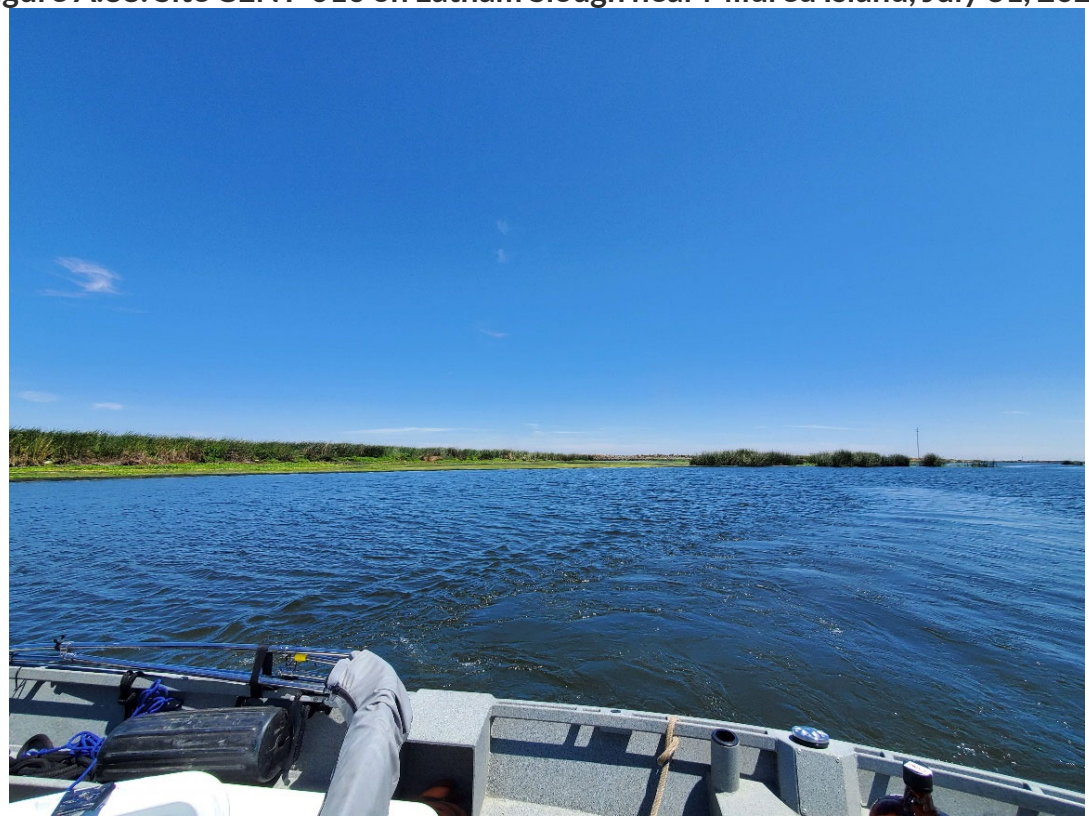


Figure A.39. USGS personnel approaching the Buckley Cove site, July 31, 2023.

Figure A.40. Rinsing toxicity sample bottles at site SOUT-019, August 1, 2023.

Figure A.41. View of SOUT-026 sampling site on the San Joaquin River, August 1, 2023.

Figure A.42. Sampling site SOUT-017 on the San Joaquin River, August 1, 2023.

Figure A.43. View from site SOUT-020 on Little Potato Slough, August 1, 2023.

Event 5 Resample – August 10, 2023

Figure A.44. View of the Buckley Cove site on the morning of August 10, 2023.

Figure A.45. View of the CENT-010 site on the morning of August 10, 2023.

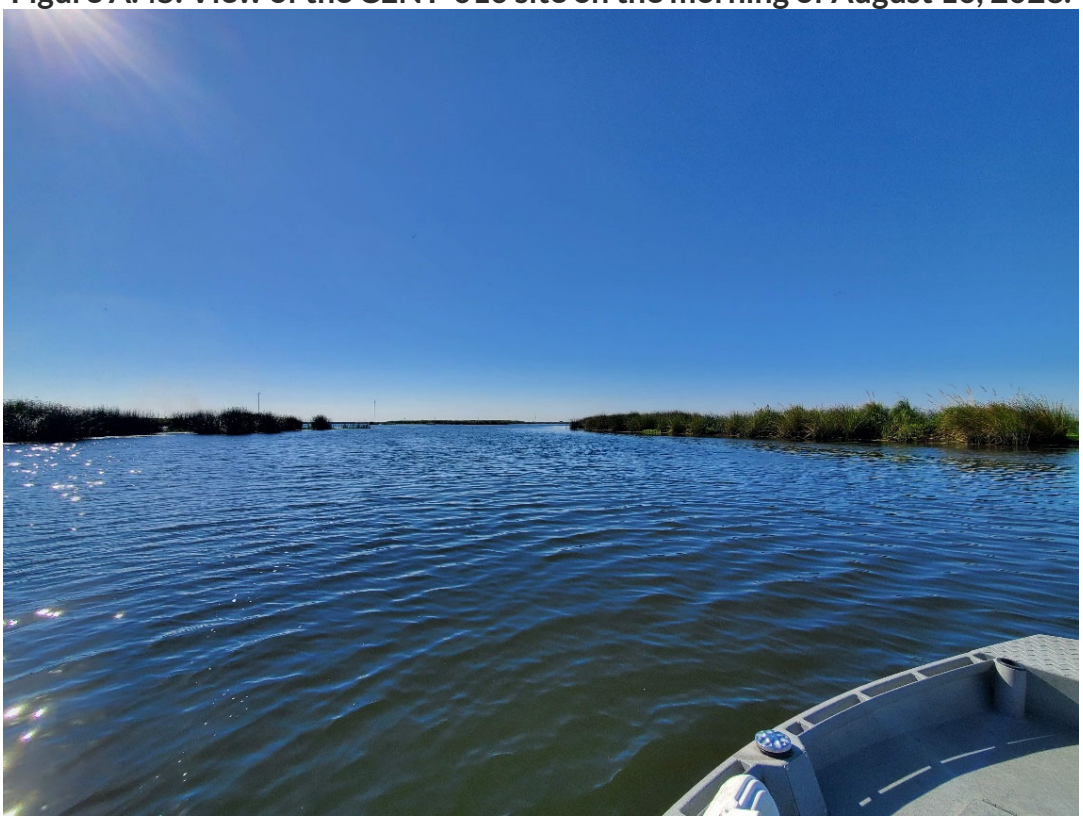
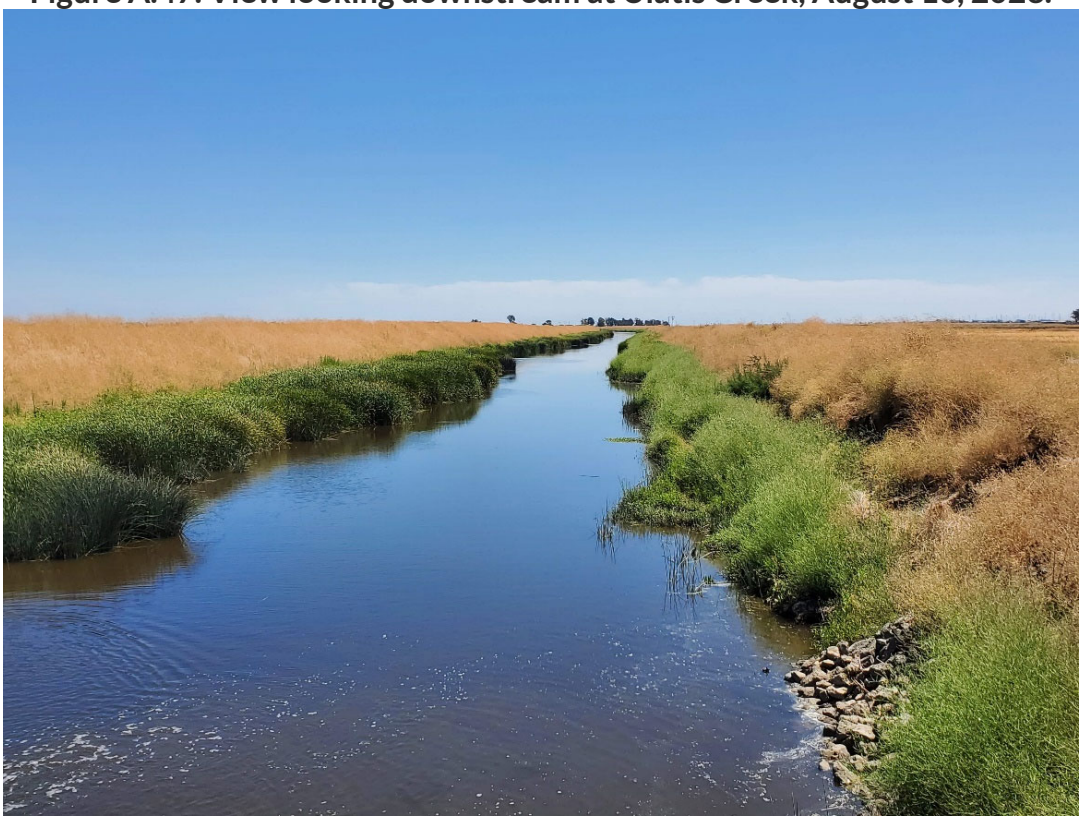


Figure A.46. Washing toxicity sample bottles at site CENT-009 site, August 10, 2023.

Figure A.47. View looking downstream at Ulatis Creek, August 10, 2023.



Event 6 – September 5 and 6, 2023

Figure A.48. Rinsing sample bottles at CENT-011 at Franks Tract, September 5, 2023.

Figure A.49. Preparing to sample site CENT-012 on Columbia Cut, September 5, 2023.

Figure A.50. Aquatic vegetation being sprayed with herbicide along the San Joaquin River, September 5, 2023.

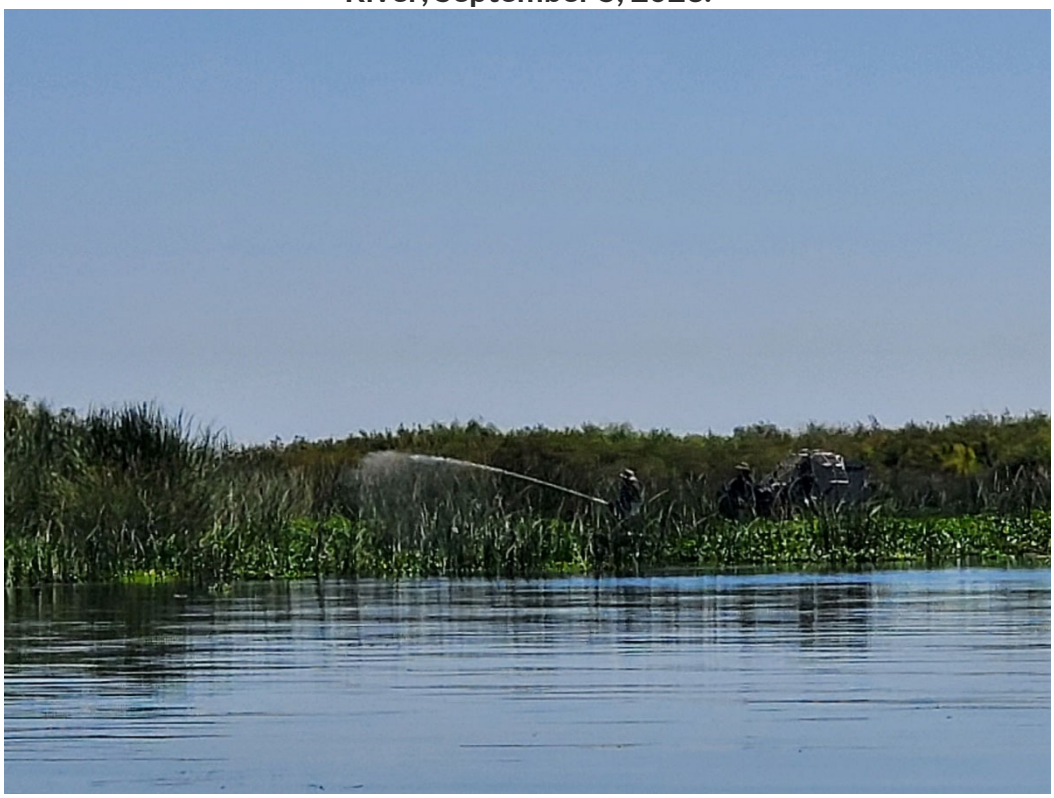


Figure A.51. The SOUT-024 sampling site, September 5, 2023.

Figure A.52. Preparing to sample at site SOUT-023, September 5, 2023.

Figure A.53. Looking upstream from the Buckley Cove sampling site, September 5, 2023.

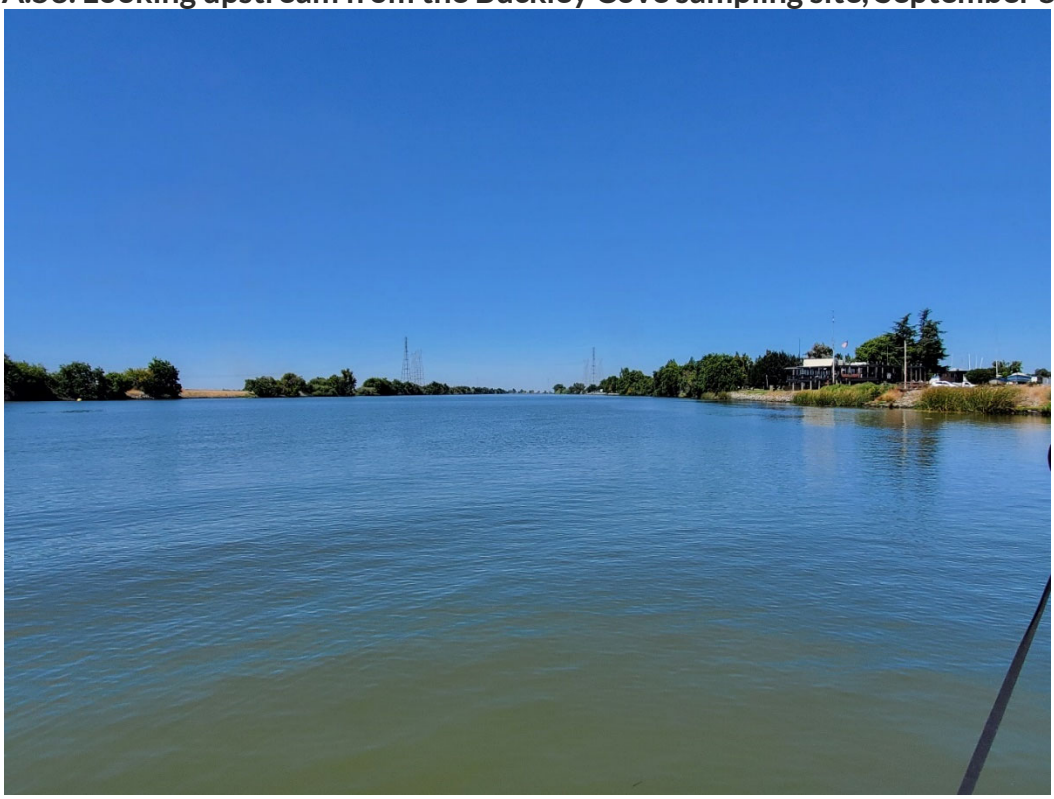


Figure A.54. Sampling site SOUT-022 on Bishop Cut near Paradise Point Marina, September 5, 2023.

Figure A.55. View downstream from the Ulatis Creek bridge, September 6, 2023.

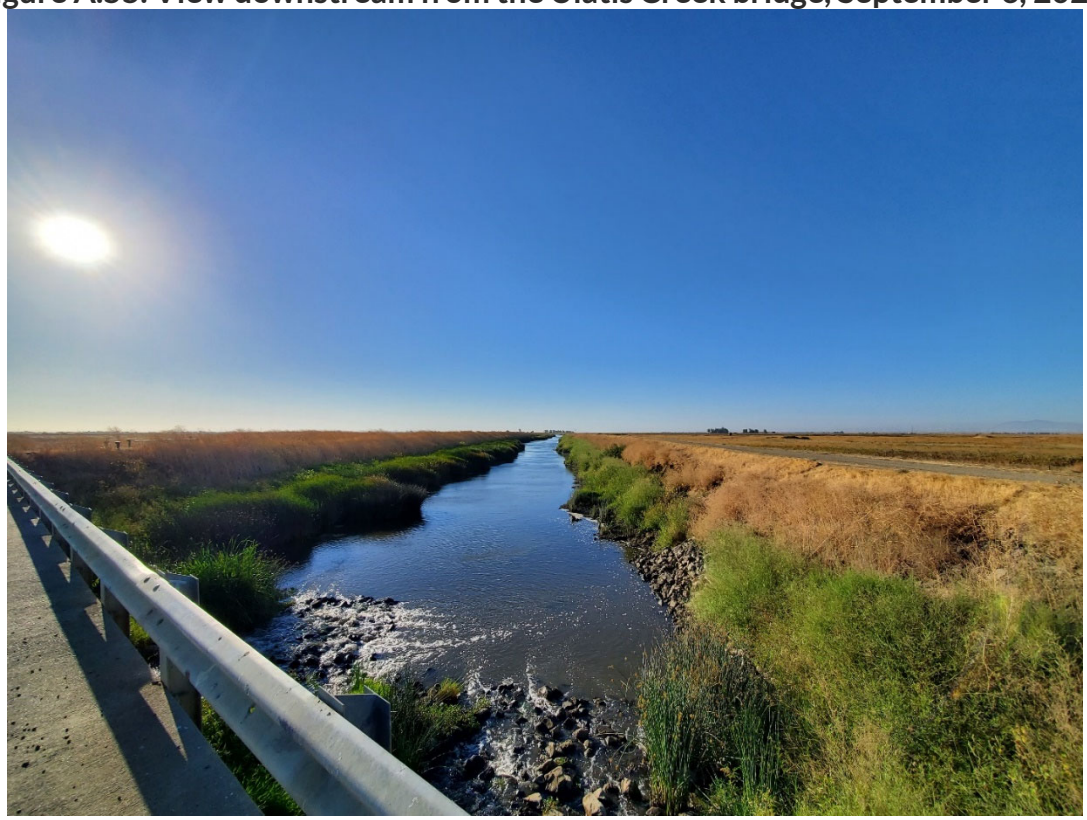


Figure A.56. Preparing to sample at SOUT-021 on Grant Line Canal, September 6, 2023.

Figure A.57. Drain water being discharged into Grant Line Canal near site SOUT-021, September 6, 2023.

Appendix B. List of Current Use Pesticide Constituents

Constituents Analyzed

Table B.1. Water Year 2023 current use pesticides and chemistry parameters.

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
Babcock	Water	Calculated	Nitrogen, Total	Not Applicable	Dissolved	mg/L
Babcock	Water	Calculated	Nitrogen, Total	Not Applicable	Total	mg/L
Babcock	Water	EPA 200.7	Calcium	7440702	Dissolved	mg/L
Babcock	Water	EPA 200.7	Magnesium	7439954	Dissolved	mg/L
Babcock	Water	EPA 200.8	Copper	7440508	Dissolved	µg/L
Babcock	Water	EPA 351.2	Nitrogen, Total Kjeldahl	7727379	Dissolved	mg/L
Babcock	Water	EPA 351.2	Nitrogen, Total Kjeldahl	7727379	Total	mg/L
Babcock	Water	EPA 353.2	Nitrate + Nitrite as N	Not Applicable	Total	mg/L
Babcock	Water	SM 2340 B	Hardness	Not Applicable	Dissolved	mg/L
Babcock	Water	SM 5310 B	Dissolved Organic Carbon	Not Applicable	Dissolved	mg/L
Babcock	Water	SM 5310 B	Total Organic Carbon	Not Applicable	Total	mg/L
OCRL	Water	EPA 160.2	Total Suspended Solids	Not Applicable	Particulate	mg/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Acibenzolar-S-methyl	135158542	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Allethrin	584792	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Benfluralin	1861401	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Bifenthrin	82657043	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Chlorfenapyr	122453730	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Chlorothalonil	1897456	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Cyfluthrin, Total	68359375	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Cyhalofop-butyl	122008859	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Cyhalothrin, Total	68085858	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Cypermethrin, Total	52315078	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Dacthal	1861321	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	DDD(p,p')	72548	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	DDE(p,p')	72559	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	DDT(p,p')	50293	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Deltamethrin	52918635	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Dithiopyr	97886458	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Esfenvalerate	66230044	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Ethalfluralin	55283686	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Ethofenprox	80844071	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Fenpropathrin	39515418	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Methoprene	40596698	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Nitrapyrin	1929824	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Pentachloroanisole	1825214	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Pentachloronitrobenzene	82688	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Permethrin, Total	52645531	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Phenothrin	26002802	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Tefluthrin	79538322	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Tetramethrin	7696120	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	T-Fluvalinate	102851069	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_GC/MS/MS	Trifluralin	1582098	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Acetamiprid	135410207	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Atrazine	1912249	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Azoxystrobin	131860338	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Bentazon	25057890	Dissolved	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Benzobicyclon	156963665	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Benzovindiflupyr	1072957711	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Boscalid	188425856	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Boscalid-5-hydroxy	661463872	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Broflanilide	1207727045	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Bromuconazole	116255482	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Butralin	33629479	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Carbaryl	63252	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Carbendazim	10605217	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Carbofuran	1563662	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Chlorantraniliprole	500008457	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	34256821	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Chlorpyrifos	2921882	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Chlorpyrifos oxon	5598152	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Clomazone	81777891	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Clothianidin	210880925	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Clothianidin-Desmethyl	135018154	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Coumaphos	56724	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cyantraniliprole	736994631	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cyazofamid	120116883	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cyclaniliprole	1031756985	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cycloate	1134232	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cymoxanil	57966957	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cyproconazole	94361065	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Cyprodinil	121552612	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Desethyl-Atrazine	6190654	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Desisopropyl-Atrazine	1007289	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Desnitro-imidacloprid	115970177	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Desthio-prothioconazole	120983644	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Diazinon	333415	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Diazoxon	962583	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dichloroaniline, 3,5-	626437	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dichlorobenzenamine, 3,4-	95761	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dichlorophenyl Urea, 3,4-	2327028	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dichlorophenyl-3-methyl Urea, 3,4-	3567622	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dichlorvos	62737	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Difenoconazole	119446683	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dimethomorph	110488705	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Dinotefuran	165252700	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Diuron	330541	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	EPTC	759944	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Ethaboxam	162650773	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Etoxazole	153233911	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Famoxadone	131807573	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fenamidone	161326347	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fenbuconazole	114369436	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fenhexamid	126833178	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fenpyroximate	134098616	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fipronil	120068373	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fipronil Desulfinyl	205650653	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fipronil Desulfinyl Amide	1115248093	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fipronil Sulfide	120067836	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fipronil Sulfone	120068362	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Flonicamid	158062670	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Florpyrauxifen-Benzyl	1390661729	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluazinam	79622596	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fludioxonil	131341861	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Flufenacet	142459583	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluindapyr	1383809877	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Flumetralin	62924703	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluopicolide	239110157	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluopyram	658066354	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluoxastrobin	193740760	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Flupyradifurone	951659408	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluridone	59756604	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Flutolanil	66332965	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Flutriafol	76674210	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Fluxapyroxad	907204313	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Halauxifen-methyl	943831989	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Hexazinone	51235042	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Hydroxy-Imidacloprid, 5-	380912094	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Imazalil	35554440	Dissolved	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Imidacloprid	138261413	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Imidacloprid olefin	115086549	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Imidacloprid urea	120868668	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Indaziflam	950782862	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Indoxacarb	173584446	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Ipconazole	125225287	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Iprodione	36734197	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Isofetamid	875915789	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Kresoxim-methyl	143390890	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Malaoxon	1634782	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Malathion	121755	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Mandestrobin	173662970	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Mandipropamid	374726622	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Metalaxyl	57837191	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Metalaxyl-hydroxymethyl	85933499	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Metconazole	125116236	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Methoxyfenozide	161050584	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Metolachlor	51218452	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Myclobutanil	88671890	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Naled	300765	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Napropamide	15299997	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Novaluron	116714466	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Oryzalin	19044883	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Oxadiazon	19666309	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Oxathiapiprolin	1003318679	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Oxyfluorfen	42874033	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Paclobutrazol	76738620	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Pendimethalin	40487421	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Penoxsulam	219714962	Dissolved	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Penthiopyrad	183675823	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Phosmet	732116	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Picarbutrazox	500207045	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Picoxystrobin	117428225	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Piperonyl Butoxide	51036	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Prodiamine	29091212	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Prometon	1610180	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Prometryn	7287196	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Propanil	709988	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Propargite	2312358	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Propiconazole	60207901	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Propyzamide	23950585	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Pydiflumetofen	1228284647	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Pyraclostrobin	175013180	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Pyridaben	96489713	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Pyrimethanil	53112280	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Pyriproxyfen	95737681	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Quinoxyfen	124495187	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Sedaxane	874967676	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Simazine	122349	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Sulfoxaflor	946578003	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tebuconazole	107534963	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tebuconazole-tert-Butylhydroxy	212267646	Dissolved	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tebufenozide	112410238	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tebupirimfos	96182535	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tebupirimfos oxon	1035330369	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tetraconazole	112281773	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Thiabendazole	148798	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Thiacloprid	111988499	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Thiamethoxam	153719234	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Thiamethoxam Degradate (CGA-355190)	--	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Thiamethoxam Degradate (NOA-407475)	--	Dissolved	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Thiobencarb	28249776	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tolfenpyrad	129558765	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Triadimefon	43121433	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Triadimenol	55219653	Dissolved, Particulate	ng/L

LAB	MATRIX	METHOD	ANALYTE	CAS NUMBER	FRACTION	UNIT
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Triallate	2303175	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Tributyl Phosphorotrithioate, S,S,S-	78488	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Trifloxystrobin	141517217	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Triflumizole	68694111	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Triticonazole	131983727	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Valifenalate	283159900	Dissolved, Particulate	ng/L
OCRL	Water	USGS-OCRL_WATER-PEST_06_LC/MS/MS	Zoxamide	156052685	Dissolved, Particulate	ng/L

Water Quality Metrics

Table B.2. Water Year 2023 water quality metrics for current use pesticides and chemistry parameters.
Metrics used for WY 2023 results were provided on by CVRWQCB on June 22, 2022. Source code definitions are provided in **Table B.3**.

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Acetamiprid	135410207	Dissolved, Particulate	2,100	B
Acibenzolar-S-methyl	135158542	Dissolved, Particulate	26,000	B
Allethrin	584792	Dissolved, Particulate	1,050	L
Atrazine	1912249	Dissolved, Particulate	1,000	B,D
Azoxystrobin	131860338	Dissolved, Particulate	44,000	B
Benfluralin	1861401	Dissolved, Particulate	1,900	K
Bentazon	25057890	Dissolved	4,500,000	N
Benzobicyclon	156963665	Dissolved, Particulate	1,475	O
Benzovindiflupyr	1072957711	Dissolved, Particulate	950	K
Bifenthrin	82657043	Dissolved, Particulate	0.05	M
Boscalid	188425856	Dissolved, Particulate	116,000	B
Boscalid-5-hydroxy	Not Available	Dissolved, Particulate	--	Not Applicable
Broflanilide	1207727045	Dissolved, Particulate	5,930	M
Bromuconazole	116255482	Dissolved, Particulate	20,000	M
Butralin	33629479	Dissolved, Particulate	600,000	S
Carbaryl	63252	Dissolved, Particulate	500	B
Carbendazim	10605217	Dissolved, Particulate	830,000	S
Carbofuran	1563662	Dissolved, Particulate	750	M
Chlorantraniliprole	500008457	Dissolved, Particulate	3,020	B
Chlorfenapyr	122453730	Dissolved, Particulate	2,915	B
Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	34256821	Dissolved, Particulate	1,430	N

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Chlorothalonil	1897456	Dissolved, Particulate	600	B
Chlorpyrifos	2921882	Dissolved, Particulate	15	A
Chlorpyrifos Oxon	5598152	Dissolved, Particulate	--	Not Applicable
Clomazone	81777891	Dissolved, Particulate	167,000	N
Clothianidin	210880925	Dissolved, Particulate	50	B
Clothianidin-Desmethyl	135018154	Dissolved, Particulate	--	Not Applicable
Coumaphos	56724	Dissolved, Particulate	33.7	M
Cyantraniliprole	736994631	Dissolved, Particulate	6,560	B
Cyazofamid	120116883	Dissolved, Particulate	8,700	B
Cyclaniliprole	1031756985	Dissolved, Particulate	9,600	M
Cycloate	1134232	Dissolved, Particulate	30,000	E
Cyfluthrin, total	68359375	Dissolved, Particulate	0.12	M
Cyhalofop-butyl	122008859	Dissolved, Particulate	47,400	M
Cyhalothrin, Total	68085858	Dissolved, Particulate	6,200	P
Cymoxanil	57966957	Dissolved, Particulate	980	B
Cypermethrin, Total	52315078	Dissolved, Particulate	0.05	M
Cyproconazole	94361065	Dissolved, Particulate	60,000	S
Cyprodinil	121552612	Dissolved, Particulate	8,200	B
Dacthal	1861321	Dissolved, Particulate	11,000,000	N
DDD(p,p')	72548	Dissolved, Particulate	--	Not Applicable
DDE(p,p')	72559	Dissolved, Particulate	--	Not Applicable
DDT(p,p')	50293	Dissolved, Particulate	1	I
Deltamethrin	52918635	Dissolved, Particulate	0.026	B
Desethyl-Atrazine	6190654	Dissolved, Particulate	--	Not Applicable
Desisopropyl-Atrazine	1007289	Dissolved, Particulate	--	Not Applicable
Desnitro-imidacloprid	115970177	Dissolved, Particulate	--	Not Applicable
Desthio-prothioconazole	120983644	Dissolved, Particulate	4,800	N
Diazinon	333415	Dissolved, Particulate	100	A

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Diazoxon	962583	Dissolved, Particulate	--	Not Applicable
Dichloroaniline, 3,5-	626437	Dissolved, Particulate	--	Not Applicable
Dichlorobenzenamine, 3,4-	95761	Dissolved, Particulate	10,000	M
Dichlorophenyl Urea, 3,4-	2327028	Dissolved, Particulate	--	Not Applicable
Dichlorophenyl-3-methyl Urea, 3,4-	3567622	Dissolved, Particulate	7,100	N
Dichlorvos	62737	Dissolved, Particulate	5.8	B
Difenoconazole	119446683	Dissolved, Particulate	860	B
Dimethomorph	110488705	Dissolved, Particulate	107,000	B
Dinotefuran	165252700	Dissolved, Particulate	6,000,000	E
Dithiopyr	97886458	Dissolved, Particulate	6,110	B
Diuron	330541	Dissolved, Particulate	130	B
EPTC	759944	Dissolved, Particulate	40,000	B
Esfenvalerate	66230044	Dissolved, Particulate	0.0309	M
Ethaboxam	162650773	Dissolved, Particulate	50,000	M
Ethalfluralin	55283686	Dissolved, Particulate	400	B
Ethofenprox	80844071	Dissolved, Particulate	170	B
Etoxazole	153233911	Dissolved, Particulate	130	B
Famoxadone	131807573	Dissolved, Particulate	85	B
Fenamidone	161326347	Dissolved, Particulate	4,,700	B
Fenbuconazole	114369436	Dissolved, Particulate	27,000	B
Fenhexamid	126833178	Dissolved, Particulate	101,000	B
Fenpropathrin	39515418	Dissolved, Particulate	1.5	B
Fenpyroximate	134098616	Dissolved, Particulate	110	B
Fipronil	120068373	Dissolved, Particulate	11	B
Fipronil Desulfinyl	205650653	Dissolved, Particulate	530	K
Fipronil Desulfinyl Amide	1115248093	Dissolved, Particulate	--	Not Applicable
Fipronil Sulfide	120067836	Dissolved, Particulate	830	K
Fipronil Sulfone	120068362	Dissolved, Particulate	220	M

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Flonicamid	158062670	Dissolved, Particulate	200,000	E
Florpyrauxifen-Benzyl	1390661729	Dissolved, Particulate	16.2	O
Fluazinam	79622596	Dissolved, Particulate	690	B
Fludioxonil	131341861	Dissolved, Particulate	14,000	B
Flufenacet	142459583	Dissolved, Particulate	2450	O
Fluindapyr	1383809877	Dissolved, Particulate	31,000	K
Flumetralin	62924703	Dissolved, Particulate	770	K
Fluopicolide	239110157	Dissolved, Particulate	151,000	B
Fluopyram	658066354	Dissolved, Particulate	71,000	E
Fluoxastrobin	193740760	Dissolved, Particulate	45,000	B
Flupyradifurone	951659408	Dissolved, Particulate	460,000	E
Fluridone	59756604	Dissolved, Particulate	480,000	K
Flutolanil	66332965	Dissolved, Particulate	220,000	B
Flutriafol	76674210	Dissolved, Particulate	300,000	E
Fluxapyroxad	907204313	Dissolved, Particulate	120,000	E
Halauxifen-methyl	943831989	Dissolved, Particulate	135	O
Hexazinone	51235042	Dissolved, Particulate	7,000	B
Hydroxy-Imidacloprid, 5-	380912094	Dissolved, Particulate	--	Not Applicable
Imazalil	35554440	Dissolved	639,000	E
Imidacloprid	138261413	Dissolved, Particulate	10	B
Imidacloprid olefin	115086549	Dissolved, Particulate	--	Not Applicable
Imidacloprid urea	120868668	Dissolved, Particulate	47,400,000	L
Indaziflam	950782862	Dissolved, Particulate	100,000	E
Indoxacarb	173584446	Dissolved, Particulate	75,000	B
Ipconazole	125225287	Dissolved, Particulate	180	B
Iprodione	36734197	Dissolved, Particulate	120,000	B
Isofetamid	875915789	Dissolved, Particulate	86,000	B
Kresoxim-methyl	143390890	Dissolved, Particulate	30,300	B

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Malaoxon	1634782	Dissolved, Particulate	--	Not Applicable
Malathion	121755	Dissolved, Particulate	49	B
Mandestrobin	173662970	Dissolved, Particulate	5,400,000	S
Mandipropamid	374726622	Dissolved, Particulate	76,000	B
Metalaxyl	57837191	Dissolved, Particulate	1,200,000	B
Metalaxyl-hydroxymethyl	85933499	Dissolved, Particulate	--	Not Applicable
Metconazole	125116236	Dissolved, Particulate	2,900	B
Methoprene	40596698	Dissolved, Particulate	48,000	K
Methoxyfenozide	161050584	Dissolved, Particulate	3,100	B
Metolachlor	51218452	Dissolved, Particulate	8,000	B
Myclobutanil	88671890	Dissolved, Particulate	122,000	B
Naled	300765	Dissolved, Particulate	10	B
Napropamide	15299997	Dissolved, Particulate	350,000	B
Nitrapyrin	1929824	Dissolved, Particulate	103,000	B
Novaluron	116714466	Dissolved, Particulate	30	B
Oryzalin	19044883	Dissolved, Particulate	13,000	B
Oxadiazon	19666309	Dissolved, Particulate	880	B
Oxathiapiprolin	1003318679	Dissolved, Particulate	140,000	N
Oxyfluorfen	42874033	Dissolved, Particulate	330	B
Paclobutrazol	76738620	Dissolved, Particulate	8,000	B
Pendimethalin	40487421	Dissolved, Particulate	5,200	B
Penoxsulam	219714962	Dissolved	3,000	B
Pentachloroanisole	1825214	Dissolved, Particulate	--	Not Applicable
Pentachloronitrobenzene	82688	Dissolved, Particulate	6,000	S
Penthiopyrad	183675823	Dissolved, Particulate	100,000	B
Permethrin, Total	52645531	Dissolved, Particulate	3.3	L
Phenothrin	26002802	Dissolved, Particulate	470	M
Phosmet	732116	Dissolved, Particulate	750	B

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Picarbutrazox	500207045	Dissolved, Particulate	76,000	K
Picoxystrobin	117428225	Dissolved, Particulate	1,000	B
Piperonyl Butoxide	51036	Dissolved, Particulate	7,800	B
Prodiamine	29091212	Dissolved, Particulate	1,500	B
Prometon	1610180	Dissolved, Particulate	98,000	B
Prometryn	7287196	Dissolved, Particulate	1,040	B
Propanil	709988	Dissolved, Particulate	2,400	K
Propargite	2312358	Dissolved, Particulate	7,000	B
Propiconazole	60207901	Dissolved, Particulate	15,000	B
Propyzamide	23950585	Dissolved, Particulate	77,000	E
Pydiflumetofen	1228284647	Dissolved, Particulate	540,000	S
Pyraclostrobin	175013180	Dissolved, Particulate	1,500	B
Pyridaben	96489713	Dissolved, Particulate	44	B
Pyrimethanil	53112280	Dissolved, Particulate	20,000	B
Pyriproxyfen	95737681	Dissolved, Particulate	15	B
Quinoxyfen	124495187	Dissolved, Particulate	13,000	B
Sedaxane	874967676	Dissolved, Particulate	650,000	S
Simazine	122349	Dissolved, Particulate	4,000	D
Sulfoxaflor	946578003	Dissolved, Particulate	300,000	S
Tebuconazole	107534963	Dissolved, Particulate	11,000	B
Tebuconazole-tert-Butylhydroxy	212267646	Dissolved, Particulate	--	Not Applicable
Tebufenozide	112410238	Dissolved, Particulate	29,000	B
Tebupirimfos	96182535	Dissolved, Particulate	11	M
Tebupirimfos oxon	1035330369	Dissolved, Particulate	--	Not Applicable
Tefluthrin	79538322	Dissolved, Particulate	4	K
Tetraconazole	112281773	Dissolved, Particulate	43,000	S
Tetramethrin	7696120	Dissolved, Particulate	1,850	B
T-Fluvalinate	102851069	Dissolved, Particulate	64	K

Analyte	CAS Number	Fraction	Water Quality Metric (ng/L)	Source Code
Thiabendazole	148798	Dissolved, Particulate	42,000	B
Thiacloprid	111988499	Dissolved, Particulate	970	B
Thiamethoxam	153719234	Dissolved, Particulate	740	B
Thiamethoxam Degradate (CGA-355190)	Not Available	Dissolved, Particulate	--	Not Applicable
Thiamethoxam Degradate (NOA-407475)	Not Available	Dissolved, Particulate	--	Not Applicable
Thiobencarb	28249776	Dissolved, Particulate	1,000	K
Tolfenpyrad	129558765	Dissolved, Particulate	81.5	J
Triadimefon	43121433	Dissolved, Particulate	52,000	B
Triadimenol	55219653	Dissolved, Particulate	20,000	E
Triallate	2303175	Dissolved, Particulate	14,000	B
Tributyl Phosphorotrithioate, S,S,S-	78488	Dissolved, Particulate	1,000	R
Trifloxystrobin	141517217	Dissolved, Particulate	2,760	B
Triflumizole	68694111	Dissolved, Particulate	33,000	B
Trifluralin	1582098	Dissolved, Particulate	1,900	B
Triticonazole	131983727	Dissolved, Particulate	12,000	B
Valifenalate	283159900	Dissolved, Particulate	500,000	M
Zoxamide	156052685	Dissolved, Particulate	3,480	B

Table B.3. Water Year 2023 water quality metric source references.
Specific metrics for WY 2023 constituents are provided in **Table B.2**.

Source Code	SOURCE REFERENCE
A	Numeric water quality objective in the Basin Plan (PEP Attachment A)
B	US EPA Ambient Water Quality Criteria and Aquatic Life Benchmarks (2022) (Freshwater, µg/L): (PEP Attachment A)
C	DPR's "Benchmark Equivalents" developed by Surface Water Protection Program (Luo et al. 2013: http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/prioritization_report.pdf)
D	Maximum Contaminant Levels (MCLs), National Drinking Water Regulations (2022) and California State Water Resources Control Board's MCLs
E	US EPA Human Health Benchmarks for Pesticides (Chronic or Lifetime, ppb)
F	Drinking Water Notification Levels (2022)(PEP Attachment A)
G	Archived Advisory Levels for Drinking Water (PEP Attachment A)
H	US EPA Drinking Water Health Advisory (2018) (PEP Attachment A)
I	US EPA National Recommended Aquatic Life Criteria, Criterion Continuous Concentration
J	2021 Fish Acute US EPA OPP Aquatic Life Benchmark
K	2022 Vertebrates Chronic US EPA OPP Aquatic Life Benchmarks
L	2021 Invertebrates Acute US EPA OPP Aquatic Life Benchmarks
M	2022 Invertebrates Chronic US EPA OPP Aquatic Life Benchmarks
N	2021 Nonvascular Plants US EPA OPP Aquatic Life Benchmark
O	2021 Vascular Plants US EPA OPP Aquatic Life Benchmark
P	2021 Acute (Children) US EPA Human Health Benchmarks for Pesticides
Q	2021 Acute (Females 13-49 years) US EPA Human Health Benchmarks for Pesticides
R	2021 Chronic (Females 13-49 years) US EPA Human Health Benchmarks for Pesticides
S	2021 Chronic General Population US EPA Human Health Benchmarks for Pesticides

Appendix C. Summary of Completeness and Quality Control Sample Acceptability for WY 2023

The following sections outline the completeness and overall acceptability of each analysis completed for the Delta Regional Monitoring Program (Delta RMP) Current Use Pesticide (CUP) monitoring that occurred during WY 2023.

A total of 52 environmental samples were analyzed by the United State Geological Survey (USGS) Organic Chemistry Research Laboratory (OCRL), Babcock Laboratories (Babcock), and Pacific EcoRisk (PER).

All results for WY 2023 CUP Monitoring were reviewed according to the CUP QAPP v1.4 and the Delta RMP Data Management Standard Operating Procedures (SOP) and were flagged with California Environmental Data Exchange Network (CEDEN) comparable QA Codes. All codes applied to the WY 2023 monitoring results are defined in **Table C.1**.

Table C.1. QA Codes Used in Year 2 CEC Dataset (water, sediment, and tissue).

QA Code	QA Name
AWM	Detection limit increased due to dilution prior to final sample volume (not a secondary dilution)
BB	Sample > 4x spike concentration
CJ	Analyte concentration is in excess of the instrument calibration; considered estimated
D	EPA Flag - Analytes analyzed at a secondary dilution
EUM	LCS is outside of control limits
FDP	Field duplicate RPD above QC limit
FI	Analyte in field sample and associated blank
GB	Matrix spike recovery not within control limits
H	A holding time violation has occurred
HT	Analytical value calculated using results from associated tests
IL	RPD exceeds laboratory control limit
IP	Analyte detected in field or lab generated blank
M	A matrix effect is present
PJM	Result from re-extract/re-anal to confirm original result
PRM	Low survival in toxicity test resulted from test interference due to pathogen-related mortality
QAX	When the native sample for the MS/MSD or DUP is not included in the batch reported
RLST	Replicate lost or destroyed
SLM	Analyte results for R1 and/or R2 were lower than 10 times the MDL, therefore RPD acceptance limits do not apply

QA CODE	QA NAME
SN	See narrative and/or special notes
TAC	Alternative control used in toxicity statistical analysis
TAD	Additional metamorphosized or pupated organism accidently included in statistical analysis
TAF	Test organisms exceed the maximum weight requirement at test initiation
TCI	Conductivity insufficient for test species
TEM	Endpoint not analyzed or reported by the laboratory
TMM	Male replicate excluded from test analysis
TMO	Test organisms escaped or are otherwise missing
TMSD	Endpoint considered not toxic; per EPA method, when both the relative difference from control and the test percent minimum significant difference (PMSD) are less than EPA lower PMSD bound (10th percentile)
TOQ	Number of organisms in a toxicity test do not meet the minimum quantity per replicate at test initiation or an unequal quantity of organisms per replicate is used
TWN	Required water quality parameters not measured
TW	Water quality parameters outside recommended test method ranges

Summary of Completeness

Water Year 2023 monitoring samples were collected from a variety of matrices from 12 ambient and source monitoring sites over six sampling events, per the CUP Workplan (see **Sampling Overview**). An evaluation of field, transport and analytical completeness, along with field quality control sample completeness are provided in tables below.

Sample Completeness

Table C.2. Field and transport and analytical completeness for WY 2023.

Samples are counted as individual results, i.e., separate endpoints for toxicity results and separate sample fractions analyzed for chemistry results.

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
Calculated	Babcock	Dissolved, Total	Nitrogen, Total	96	2	98	100	98	100
EPA 200.7	Babcock	Dissolved	Calcium	48	1	49	100	49	100
EPA 200.7	Babcock	Dissolved	Magnesium	48	1	49	100	49	100
EPA 200.8	Babcock	Dissolved	Copper	48	1	49	100	49	100
EPA 351.2	Babcock	Dissolved, Total	Nitrogen, Total Kjeldahl	96	2	98	100	98	100
EPA 353.2	Babcock	Total	Nitrate + Nitrite as N	48	1	49	100	49	100
SM 2340 B	Babcock	Dissolved	Hardness	48	1	49	100	49	100
SM 5310 B	Babcock	Dissolved	Dissolved Organic Carbon	48	1	49	100	49	100
SM 5310 B	Babcock	Total	Total Organic Carbon	48	1	49	100	49	100
EPA 600/R-99-064M	**PER**	**Survival, Growth**	***Chironomus dilutus***	**96**	**0**	**96**	**100.0**	**91**	**94.8**
EPA 821/R-02-012	PER	Survival	*Hyalella azteca*	48	0	48	100	48	100
EPA 821/R-02-013	PER	Reproduction, Survival	*Ceriodaphnia dubia*	96	0	96	100	96	100
EPA 821/R-02-013	PER	Survival, Growth	*Pimephales promelas*	96	0	96	100	96	100
EPA 821/R-02-013	PER	Growth	*Selenastrum capricornutum*	48	0	48	100	48	100
EPA 160.2	OCRL	Particulate	Total Suspended Solids	48	4	52	100	52	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Acibenzolar-S-methyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Allethrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Benfluralin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Bifenthrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Chlorfenapyr	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Chlorothalonil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cyfluthrin, Total	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cyhalofop-butyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cyhalothrin, Total	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cypermethrin, Total	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Dacthal	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	DDD(p,p')	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	DDE(p,p')	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	DDT(p,p')	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Deltamethrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Dithiopyr	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Esfenvalerate	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Ethalfluralin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Ethofenprox	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Fenpropathrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Methoprene	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Nitrapyrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Pentachloroanisole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Pentachloronitrobenzene	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Permethrin, Total	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Phenothrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Tefluthrin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Tetramethrin	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	T-Fluvalinate	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Trifluralin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Acetamiprid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Atrazine	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Azoxystrobin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Bentazon	48	4	52	100	52	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Benzobicyclon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Benzovindiflupyr	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Boscalid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Boscalid-5-hydroxy	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Broflanilide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Bromuconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Butralin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Carbaryl	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Carbendazim	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Carbofuran	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chlorantraniliprole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chloro-N-(ethoxy methyl)-N-(2-ethyl-6-methylphenyl) acetamide, 2-	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chlorpyrifos	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chlorpyrifos oxon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Clomazone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Clothianidin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Clothianidin-Desmethyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Coumaphos	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyantraniliprole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyazofamid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyclaniliprole	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cycloate	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cymoxanil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyproconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyprodinil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desethyl-Atrazine	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desisopropyl-Atrazine	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desnitro-imidacloprid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desthio-prothioconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Diazinon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Diazoxon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichloroaniline, 3,5-	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorvos	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Difenoconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dimethomorph	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dinotefuran	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Diuron	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	EPTC	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Ethaboxam	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Etoxazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Famoxadone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenamidone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenbuconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenhexamid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenpyroximate	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Desulfinyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Desulfinyl Amide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Sulfide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Sulfone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flonicamid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Florpyrauxifen-Benzyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluazinam	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fludioxonil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flufenacet	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluindapyr	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flumetralin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluopicolide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluopyram	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluoxastrobin	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flupyradifurone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluridone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flutolanil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flutriafol	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluxapyroxad	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Halauxifen-methyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Hexazinone	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Imazalil	48	4	52	100	52	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Imidacloprid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Imidacloprid olefin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Imidacloprid urea	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Indaziflam	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Indoxacarb	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Ipconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Iprodione	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Isofetamid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Kresoxim-methyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Malaoxon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Malathion	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Mandestrobin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Mandipropamid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metalaxyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metalaxyl-hydroxymethyl	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Methoxyfenozide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metolachlor	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Myclobutanil	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Naled	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Napropamide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Novaluron	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oryzalin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oxadiazon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oxathiapiprolin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oxyfluorfen	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Paclobutrazol	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pendimethalin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Penoxsulam	48	4	52	100	52	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Penthiopyrad	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Phosmet	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Picarbutrazox	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Picoxystrobin	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Piperonyl Butoxide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Prodiamine	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Prometon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Prometryn	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propanil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propargite	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propiconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propyzamide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pydiflumetofen	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyraclostrobin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyridaben	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyrimethanil	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyriproxyfen	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Quinoxyfen	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Sedaxane	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Simazine	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Sulfoxaflor	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebuconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Tebuconazole-tert-Butylhydroxy	48	4	52	100	52	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebufenozide	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebupirimfos	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebupirimfos oxon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tetraconazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiabendazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiacloprid	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiamethoxam	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	96	8	104	100	104	100

Method	Lab	Fractions	Analyte	Env. Samples Scheduled	Added Samples [1]	Env. Samples Collected	Field Completeness (%)	Total Samples Analyzed	Analytical Completeness (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Thiamethoxam Degradate (NOA-407475)	48	4	52	100	52	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiobencarb	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tolfenpyrad	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triadimefon	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triadimenol	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triallate	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Trifloxystrobin	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triflumizole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triticonazole	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Valifenalate	96	8	104	100	104	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Zoxamide	96	8	104	100	104	100
Total				**17,808**	**1,419**	**19,227**	**100.0**	**19,222**	**99.97**

[1] Additional samples were collected as a part of the Event 5 resampling that took place on August 10, 2023.

Field Measurement Completeness

Table C.3. Field measurement completeness counts for WY 2023.

Analyte	Matrix	Samples Scheduled	Added Samples [1]	Measurements Taken	Completeness (%)
Dissolved Oxygen, mg/L	Water	48	4	52	100
Oxygen Saturation (%)	Water	48	4	52	100
pH	Water	48	4	52	100
Salinity	Water	48	4	52	100
Specific Conductivity, µS/cm	Water	48	4	52	100
Temperature, ºC	Water	48	4	52	100
Temperature, ºC	Air	48	4	52	100
Turbidity, NTU	Water	48	4	52	100
Total		**384**	**32**	**416**	**100.0**

[1] Additional measurements were collected as a part of the Event 5 resampling that took place on August 10, 2023.

Field Quality Control Frequency

Table C.4. Field quality control sample completeness for WY 2023 monitoring.
Samples are counted as individual results, i.e., separate endpoints for toxicity results and separate sample fractions analyzed for chemistry results.

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
Calculated	Babcock	Dissolved, Total	Nitrogen, Total	98	6	8	6.1	8.2
EPA 200.7	Babcock	Dissolved	Calcium	49	3	4	6.1	8.2
EPA 200.7	Babcock	Dissolved	Magnesium	49	3	4	6.1	8.2
EPA 200.8	Babcock	Dissolved	Copper	49	3	4	6.1	8.2
EPA 351.2	Babcock	Dissolved, Total	Nitrogen, Total Kjeldahl	98	6	8	6.1	8.2
EPA 353.2	Babcock	Total	Nitrate + Nitrite as N	49	3	4	6.1	8.2
SM 2340 B	Babcock	Dissolved	Hardness	49	3	4	6.1	8.2
SM 5310 B	Babcock	Dissolved	Dissolved Organic Carbon	49	3	4	6.1	8.2
SM 5310 B	Babcock	Total	Total Organic Carbon	49	3	4	6.1	8.2
EPA 600/R-99-064M	PER	Survival, Growth	*Chironomus dilutus*	91	6	NA	6.6	NA
EPA 821/R-02-012	PER	Survival	*Hyalella azteca*	48	3	NA	6.3	NA
EPA 821/R-02-013	PER	Reproduction, Survival	*Ceriodaphnia dubia*	96	6	NA	5.2	NA
EPA 821/R-02-013	PER	Survival, Growth	*Pimephales promelas*	96	6	NA	6.3	NA
EPA 821/R-02-013	PER	Growth	*Selenastrum capricornutum*	48	3	NA	6.3	NA
EPA 160.2	**OCRL**	**Particulate**	**Total Suspended Solids**	**52**	**1**	**3**	**1.9**	**5.8**
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Acibenzolar-S-methyl	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Allethrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Benfluralin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Bifenthrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Chlorfenapyr	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Chlorothalonil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cyfluthrin, Total	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cyhalofop-butyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cyhalothrin, Total	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Cypermethrin, Total	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Dacthal	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	DDD(p,p')	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	DDE(p,p')	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	DDT(p,p')	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Deltamethrin	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Dithiopyr	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Esfenvalerate	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Ethalfluralin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Ethofenprox	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Fenpropathrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Methoprene	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Nitrapyrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Pentachloroanisole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Pentachloronitrobenzene	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Permethrin, Total	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Phenothrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Tefluthrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Tetramethrin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	T-Fluvalinate	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Particulate, Dissolved	Trifluralin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Acetamiprid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Atrazine	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Azoxystrobin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Bentazon	52	3	3	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Benzobicyclon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Benzovindiflupyr	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Boscalid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Boscalid-5-hydroxy	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Broflanilide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Bromuconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Butralin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Carbaryl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Carbendazim	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Carbofuran	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chlorantraniliprole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chlorpyrifos	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Chlorpyrifos oxon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Clomazone	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Clothianidin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Clothianidin-Desmethyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Coumaphos	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyantraniliprole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyazofamid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyclaniliprole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cycloate	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cymoxanil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyproconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Cyprodinil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desethyl-Atrazine	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desisopropyl-Atrazine	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desnitro-imidacloprid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Desthio-prothioconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Diazinon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Diazoxon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichloroaniline, 3,5-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dichlorvos	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Difenoconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dimethomorph	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Dinotefuran	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Diuron	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	EPTC	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Ethaboxam	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Etoxazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Famoxadone	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenamidone	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenbuconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenhexamid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fenpyroximate	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Desulfinyl	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Desulfinyl Amide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Sulfide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fipronil Sulfone	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flonicamid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Florpyrauxifen-Benzyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluazinam	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fludioxonil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flufenacet	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluindapyr	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flumetralin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluopicolide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluopyram	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluoxastrobin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flupyradifurone	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluridone	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flutolanil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Flutriafol	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Fluxapyroxad	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Halauxifen-methyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Hexazinone	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Imazalil	52	3	3	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Imidacloprid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Imidacloprid olefin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Imidacloprid urea	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Indaziflam	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Indoxacarb	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Ipconazole	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Iprodione	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Isofetamid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Kresoxim-methyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Malaoxon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Malathion	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Mandestrobin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Mandipropamid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metalaxyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metalaxyl-hydroxymethyl	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Methoxyfenozide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Metolachlor	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Myclobutanil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Naled	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Napropamide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Novaluron	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oryzalin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oxadiazon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oxathiapiprolin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Oxyfluorfen	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Paclobutrazol	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pendimethalin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Penoxsulam	52	3	3	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Penthiopyrad	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Phosmet	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Picarbutrazox	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Picoxystrobin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Piperonyl Butoxide	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Prodiamine	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Prometon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Prometryn	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propanil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propargite	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propiconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Propyzamide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pydiflumetofen	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyraclostrobin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyridaben	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyrimethanil	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Pyriproxyfen	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Quinoxyfen	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Sedaxane	104	6	6	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Simazine	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Sulfoxaflor	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebuconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Tebuconazole-tert-Butylhydroxy	52	3	3	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebufenozide	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebupirimfos	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tebupirimfos oxon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tetraconazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiabendazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiacloprid	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiamethoxam	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Dissolved	Thiamethoxam Degradate (NOA-407475)	52	3	3	5.8	5.8

Method	Lab	Fractions	Analyte	Env. Samples	Field Duplicates	Field Blanks	Field Duplicate %	Field Blank %
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Thiobencarb	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tolfenpyrad	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triadimefon	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triadimenol	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triallate	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Trifloxystrobin	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triflumizole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Triticonazole	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Valifenalate	104	6	6	5.8	5.8
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Particulate, Dissolved	Zoxamide	104	6	6	5.8	5.8
Total				**19222**	**1111**	**1100**	**5.8**	**5.8**

Summary of Sample Handling Acceptability

Hold Time Evaluations

Table C.5. Sample hold time acceptability for WY 2023 monitoring.
Counts include environmental and QC results collected in the field (environmental, field duplicate, field blank, and MS samples). Total nitrogen calculations are not included in hold time assessments.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
EPA 200.7	Babcock	Water	Dissolved	Calcium	6 months	64	64	100.0
EPA 200.7	Babcock	Water	Dissolved	Magnesium	6 months	64	64	100.0
EPA 200.8	Babcock	Water	Dissolved	Copper	6 months	64	64	100.0
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	28 days	130	130	100.0
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	28 days	82	82	100.0
SM 2340 B	Babcock	Water	Dissolved	Hardness	6 months	56	56	100.0
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	Acidify within 48 hours, analyze within 28 days	66	66	100.0
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	28 days	65	65	100.0
EPA 600/R-99-064M	PER	Water	Survival, Growth	*Chironomus dilutus*	48 hours	97	97	100.0
EPA 821/R-02-012	PER	Water	Survival	*Hyalella azteca*	48 hours	51	51	100.0
EPA 821/R-02-013	PER	Water	Reproduction, Survival	*Ceriodaphnia dubia*	48 hours	122	112	91.8
EPA 821/R-02-013	PER	Water	Survival, Growth	*Pimephales promelas*	48 hours	102	102	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
EPA 821/R-02-013	PER	Water	Growth	*Selenastrum capricornutum*	48 hours	51	51	100.0
EPA 160.2	OCRL	Water	Particulate	Total Suspended Solids	7 days	56	56	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Acibenzolar-S-methyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Allethrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	articulate, Dissolved	Benfluralin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Bifenthrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorfenapyr	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	articulate, Dissolved	Chlorothalonil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyfluthrin, Total	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalofop-butyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalothrin, Total	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cypermethrin, Total	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dacthal	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDD(p,p')	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE(p,p')	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDT(p,p')	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Deltamethrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dithiopyr	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Esfenvalerate	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethalfluralin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethofenprox	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpropathrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoprene	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Nitrapyrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloroanisole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloronitrobenzene	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin, Total	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Phenothrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tefluthrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetramethrin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	T-Fluvalinate	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Acetamiprid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Azoxystrobin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	Extract in 48 hrs, analyze in 30 days	61	61	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzobicyclon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzovindiflupyr	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid-5-hydroxy	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Broflanilide	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Bromuconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Butralin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbaryl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbendazim	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbofuran	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorantraniliprole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos oxon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clomazone	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin-Desmethyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Coumaphos	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyantraniliprole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyazofamid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyclaniliprole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cycloate	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cymoxanil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyproconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyprodinil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desethyl-Atrazine	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desisopropyl-Atrazine	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desnitro-imidacloprid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desthio-prothioconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazinon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazoxon	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichloroaniline, 3,5-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorvos	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Difenoconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dimethomorph	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dinotefuran	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diuron	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	EPTC	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethaboxam	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Etoxazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Famoxadone	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenamidone	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenbuconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenhexamid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpyroximate	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl Amide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfone	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flonicamid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Florpyrauxifen-Benzyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluazinam	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fludioxonil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flufenacet	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluindapyr	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flumetralin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopicolide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopyram	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluoxastrobin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flupyradifurone	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluridone	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutolanil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutriafol	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluxapyroxad	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Halauxifen-methyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hexazinone	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	Extract in 48 hrs, analyze in 30 days	61	61	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid olefin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid urea	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indaziflam	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indoxacarb	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ipconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Iprodione	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Isofetamid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Kresoxim-methyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malaoxon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malathion	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandestrobin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandipropamid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl-hydroxymethyl	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoxyfenozide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Myclobutanil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Naled	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Napropamide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Novaluron	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oryzalin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxadiazon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxathiapiprolin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxyfluorfen	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Paclobutrazol	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pendimethalin	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	Extract in 48 hrs, analyze in 30 days	61	61	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Penthiopyrad	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Phosmet	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picarbutrazox	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picoxystrobin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Piperonyl Butoxide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prodiamine	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometryn	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propanil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propargite	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propiconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propyzamide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pydiflumetofen	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyraclostrobin	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyridaben	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyrimethanil	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyriproxyfen	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Quinoxyfen	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sedaxane	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Simazine	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sulfoxaflor	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	Extract in 48 hrs, analyze in 30 days	61	61	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebufenozide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos oxon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetraconazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiabendazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiacloprid	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	Extract in 48 hrs, analyze in 30 days	61	61	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiobencarb	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tolfenpyrad	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimefon	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimenol	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triallate	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifloxystrobin	Extract in 48 hrs, analyze in 30 days	122	122	100.0

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Samples	Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triflumizole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triticonazole	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Valifenalate	Extract in 48 hrs, analyze in 30 days	122	122	100.0
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Zoxamide	Extract in 48 hrs, analyze in 30 days	122	122	100.0
Total						**22481**	**22471**	**99.96**

Quality Control Sample Acceptability: Contamination

Field Blanks Samples

Table C.6. Field blank (FB) acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
Calculated	Babcock	Water	Dissolved, Total	Nitrogen, Total	< RL	8	8	100
EPA 200.7	Babcock	Water	Dissolved	Calcium	< RL	4	4	100
EPA 200.7	Babcock	Water	Dissolved	Magnesium	< RL	4	4	100
EPA 200.8	Babcock	Water	Dissolved	Copper	< RL	4	4	100
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	< RL	8	8	100
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	< RL	4	4	100
SM 2340 B	Babcock	Water	Dissolved	Hardness	< RL	4	4	100
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	< RL	4	3	75
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	< RL	4	4	100
Babcock Subtotal						*44*	*43*	*97.7*
EPA 160.2	OCRL	Water	Particulate	Total Suspended Solids	< RL	3	3	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Acibenzolar-S-methyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Allethrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Benfluralin	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Bifenthrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorfenapyr	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorothalonil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyfluthrin, Total	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalofop-butyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalothrin, Total	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cypermethrin, Total	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dacthal	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDD(p,p')	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE(p,p')	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDT(p,p')	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Deltamethrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dithiopyr	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Esfenvalerate	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethalfluralin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethofenprox	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpropathrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoprene	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Nitrapyrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloroanisole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloronitrobenzene	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin, Total	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Phenothrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tefluthrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetramethrin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	T-Fluvalinate	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Acetamiprid	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Azoxystrobin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	< RL	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzobicyclon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzovindiflupyr	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid-5-hydroxy	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Broflanilide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Bromuconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Butralin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbaryl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbendazim	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbofuran	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorantraniliprole	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos oxon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clomazone	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin-Desmethyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Coumaphos	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyantraniliprole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyazofamid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyclaniliprole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cycloate	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cymoxanil	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyproconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyprodinil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desethyl-Atrazine	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desisopropyl-Atrazine	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desnitro-imidacloprid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desthio-prothioconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazinon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazoxon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichloroaniline, 3,5-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorvos	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Difenoconazole	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dimethomorph	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dinotefuran	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diuron	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	EPTC	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethaboxam	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Etoxazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Famoxadone	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenamidone	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenbuconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenhexamid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpyroximate	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl Amide	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfone	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flonicamid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Florpyrauxifen-Benzyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluazinam	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fludioxonil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flufenacet	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluindapyr	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flumetralin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopicolide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopyram	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluoxastrobin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flupyradifurone	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluridone	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutolanil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutriafol	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluxapyroxad	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Halauxifen-methyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hexazinone	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	< RL	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid olefin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid urea	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indaziflam	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indoxacarb	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ipconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Iprodione	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Isofetamid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Kresoxim-methyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malaoxon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malathion	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandestrobin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandipropamid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl-hydroxymethyl	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoxyfenozide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Myclobutanil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Naled	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Napropamide	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Novaluron	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oryzalin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxadiazon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxathiapiprolin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxyfluorfen	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Paclobutrazol	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pendimethalin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	< RL	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Penthiopyrad	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Phosmet	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picarbutrazox	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picoxystrobin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Piperonyl Butoxide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prodiamine	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometryn	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propanil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propargite	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propiconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propyzamide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pydiflumetofen	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyraclostrobin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyridaben	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyrimethanil	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyriproxyfen	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Quinoxyfen	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sedaxane	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Simazine	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sulfoxaflor	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	< RL	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebufenozide	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos oxon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetraconazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiabendazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiacloprid	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	< RL	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiobencarb	< RL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FB Samples	FB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tolfenpyrad	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimefon	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimenol	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triallate	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifloxystrobin	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triflumizole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triticonazole	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Valifenalate	< RL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Zoxamide	< RL	6	6	100
OCRL Subtotal						*1056*	*1056*	*100.0*
Total						**1100**	**1099**	**99.9**

Laboratory Blank Samples

Table C.7. Laboratory blank (LB) acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
Calculated	Babcock	Water	Dissolved, Total	Nitrogen, Total	< MDL	1	1	100
EPA 200.7	Babcock	Water	Dissolved	Calcium	< MDL	10	9	90
EPA 200.7	Babcock	Water	Dissolved	Magnesium	< MDL	10	10	100
EPA 200.8	Babcock	Water	Dissolved	Copper	< MDL	9	9	100
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	< MDL	21	20	95.2
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	< MDL	15	15	100
SM 2340 B	Babcock	Water	Dissolved	Hardness	< MDL	2	2	100
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	< MDL	11	10	90.9
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	< MDL	10	8	80
Babcock Subtotal						*89*	*84*	*94.4*
EPA 160.2	OCRL	Water	Particulate	Total Suspended Solids	< MDL	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Acibenzolar-S-methyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Allethrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Benfluralin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Bifenthrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorfenapyr	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorothalonil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyfluthrin, Total	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalofop-butyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalothrin, Total	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cypermethrin, Total	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dacthal	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDD(p,p')	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE(p,p')	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDT(p,p')	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Deltamethrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dithiopyr	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Esfenvalerate	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethalfluralin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethofenprox	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpropathrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoprene	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Nitrapyrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloroanisole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloronitrobenzene	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin, Total	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Phenothrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tefluthrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetramethrin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	T-Fluvalinate	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Acetamiprid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Azoxystrobin	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	< MDL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzobicyclon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzovindiflupyr	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid-5-hydroxy	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Broflanilide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Bromuconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Butralin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbaryl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbendazim	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbofuran	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorantraniliprole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos oxon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clomazone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin-Desmethyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Coumaphos	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyantraniliprole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyazofamid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyclaniliprole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cycloate	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cymoxanil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyproconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyprodinil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desethyl-Atrazine	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desisopropyl-Atrazine	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desnitro-imidacloprid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desthio-prothioconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazinon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazoxon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichloroaniline, 3,5-	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorvos	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Difenoconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dimethomorph	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dinotefuran	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diuron	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	EPTC	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethaboxam	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Etoxazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Famoxadone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenamidone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenbuconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenhexamid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpyroximate	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl Amide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flonicamid	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Florpyrauxifen-Benzyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluazinam	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fludioxonil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flufenacet	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluindapyr	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flumetralin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopicolide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopyram	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluoxastrobin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flupyradifurone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluridone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutolanil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutriafol	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluxapyroxad	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Halauxifen-methyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hexazinone	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	< MDL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid olefin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid urea	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indaziflam	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indoxacarb	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ipconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Iprodione	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Isofetamid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Kresoxim-methyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malaoxon	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malathion	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandestrobin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandipropamid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl-hydroxymethyl	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoxyfenozide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Myclobutanil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Naled	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Napropamide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Novaluron	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oryzalin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxadiazon	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxathiapiprolin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxyfluorfen	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Paclobutrazol	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pendimethalin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	< MDL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Penthiopyrad	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Phosmet	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picarbutrazox	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picoxystrobin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Piperonyl Butoxide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prodiamine	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometryn	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propanil	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propargite	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propiconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propyzamide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pydiflumetofen	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyraclostrobin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyridaben	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyrimethanil	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyriproxyfen	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Quinoxyfen	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sedaxane	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Simazine	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sulfoxaflor	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	< MDL	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebufenozide	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos oxon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetraconazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiabendazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiacloprid	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	< MDL	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiobencarb	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tolfenpyrad	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimefon	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimenol	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triallate	< MDL	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LB Samples	LB Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifloxystrobin	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triflumizole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triticonazole	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Valifenalate	< MDL	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Zoxamide	< MDL	12	12	100
OCRL Subtotal						*2112*	*2112*	*100.0*
Total						**2201**	**2196**	**99.8**

Quality Control Sample Acceptability: Precision

Field Duplicate Samples

Table C.8. Field duplicate (FD) acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
Calculated	Babcock	Water	Dissolved, Total	Nitrogen, Total	RPD ≤ 25 [1]	6	6	100
EPA 200.7	Babcock	Water	Dissolved	Calcium	RPD ≤ 25 [1]	3	3	100
EPA 200.7	Babcock	Water	Dissolved	Magnesium	RPD ≤ 25 [1]	3	3	100
EPA 200.8	Babcock	Water	Dissolved	Copper	RPD ≤ 25 [1]	3	3	100
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	RPD ≤ 25 [1]	6	4	66.7
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	RPD ≤ 25 [1]	3	3	100
SM 2340 B	Babcock	Water	Dissolved	Hardness	RPD ≤ 25 [1]	3	3	100
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	RPD ≤ 25 [1]	3	3	100
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	RPD ≤ 25 [1]	3	3	100
Babcock Subtotal						*33*	*31*	*93.9*
EPA 600/R-99-064M	PER	Water	Survival, Growth	*Chironomus dilutus*	RPD ≤ 25	6	6	100
EPA 821/R-02-012	PER	Water	Survival	*Hyalella azteca*	RPD ≤ 25	3	3	100
EPA 821/R-02-013	PER	Water	Reproduction, Survival	*Ceriodaphnia dubia*	RPD ≤ 25	6	6	100
EPA 821/R-02-013	PER	Water	Survival, Growth	*Pimephales promelas*	RPD ≤ 25	6	6	100
EPA 821/R-02-013	PER	Water	Growth	*Selenastrum capricornutum*	RPD ≤ 25	3	3	100
PER Subtotal						*24*	*24*	*100.0*

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
EPA 160.2	OCRL	Water	Particulate	Total Suspended Solids	RPD ≤ 25 [1]	1	1	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Acibenzolar-S-methyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Allethrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Benfluralin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Bifenthrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorfenapyr	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorothalonil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyfluthrin, Total	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalofop-butyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalothrin, Total	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cypermethrin, Total	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dacthal	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDD(p,p')	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE(p,p')	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDT(p,p')	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Deltamethrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dithiopyr	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Esfenvalerate	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethalfluralin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethofenprox	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpropathrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoprene	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Nitrapyrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloroanisole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloronitrobenzene	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin, Total	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Phenothrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tefluthrin	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetramethrin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	T-Fluvalinate	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Acetamiprid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Azoxystrobin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	RPD ≤ 25 [1]	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzobicyclon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzovindiflupyr	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid-5-hydroxy	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Broflanilide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Bromuconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Butralin	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbaryl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbendazim	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbofuran	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorantraniliprole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos oxon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clomazone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin-Desmethyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Coumaphos	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyantraniliprole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyazofamid	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyclaniliprole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cycloate	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cymoxanil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyproconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyprodinil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desethyl-Atrazine	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desisopropyl-Atrazine	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desnitro-imidacloprid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desthio-prothioconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazinon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazoxon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichloroaniline, 3,5-	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorvos	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Difenoconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dimethomorph	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dinotefuran	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diuron	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	EPTC	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethaboxam	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Etoxazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Famoxadone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenamidone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenbuconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenhexamid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpyroximate	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl Amide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flonicamid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Florpyrauxifen-Benzyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluazinam	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fludioxonil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flufenacet	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluindapyr	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flumetralin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopicolide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopyram	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluoxastrobin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flupyradifurone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluridone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutolanil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutriafol	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluxapyroxad	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Halauxifen-methyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hexazinone	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	RPD ≤ 25 [1]	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid olefin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid urea	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indaziflam	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indoxacarb	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ipconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Iprodione	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Isofetamid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Kresoxim-methyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malaoxon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malathion	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandestrobin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandipropamid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl-hydroxymethyl	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoxyfenozide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Myclobutanil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Naled	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Napropamide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Novaluron	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oryzalin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxadiazon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxathiapiprolin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxyfluorfen	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Paclobutrazol	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pendimethalin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	RPD ≤ 25 [1]	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Penthiopyrad	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Phosmet	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picarbutrazox	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picoxystrobin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Piperonyl Butoxide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prodiamine	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometryn	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propanil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propargite	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propiconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propyzamide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pydiflumetofen	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyraclostrobin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyridaben	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyrimethanil	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyriproxyfen	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Quinoxyfen	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sedaxane	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Simazine	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sulfoxaflor	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	RPD ≤ 25 [1]	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebufenozide	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos oxon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetraconazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiabendazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiacloprid	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	RPD ≤ 25 [1]	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total FD Samples	FD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	RPD ≤ 25 [1]	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiobencarb	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tolfenpyrad	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimefon	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimenol	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triallate	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifloxystrobin	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triflumizole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triticonazole	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Valifenalate	RPD ≤ 25 [1]	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Zoxamide	RPD ≤ 25 [1]	6	6	100
OCRL Subtotal						*1054*	*1054*	*100.0*
Total						**1111**	**1109**	**99.8**

[1] RPD criteria not applicable if the concentration of either sample is below the RL.

Laboratory Duplicate Samples

Table C.9. Laboratory duplicate (LD) acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LD Samples	LD Samples in Limits	Acceptability Met (%)
EPA 200.7	Babcock	Water	Dissolved	Calcium	RPD ≤ 20	7	7	100
EPA 200.7	Babcock	Water	Dissolved	Magnesium	RPD ≤ 20	7	7	100
EPA 200.8	Babcock	Water	Dissolved	Copper	RPD ≤ 25	7	6	85.7
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	RPD ≤ 25	17	16	94.1
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	RPD ≤ 20	14	14	100
SM 2340 B	Babcock	Water	Dissolved	Hardness	RPD ≤ 25	4	4	100
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	RPD ≤ 25	12	12	100
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	RPD ≤ 25	10	10	100
Babcock Subtotal						*78*	*76*	*97.4*
EPA 160.2	OCRL	Water	Particulate	Total Suspended Solids	RPD ≤ 25	6	4	66.7
Total						**84**	**80**	**95.2**

Matrix Spike Duplicate Samples

Table C.10. Matrix spike duplicate (MSD) acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
EPA 200.7	Babcock	Water	Dissolved	Calcium	RPD ≤ 20	8	8	100
EPA 200.7	Babcock	Water	Dissolved	Magnesium	RPD ≤ 20	8	8	100
EPA 200.8	Babcock	Water	Dissolved	Copper	RPD ≤ 25	8	8	100
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	RPD ≤ 25	18	17	94.4
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	RPD ≤ 20	14	14	100
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	RPD ≤ 25	10	10	100
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	RPD ≤ 25	9	8	88.9
Babcock Subtotal						*75*	*73*	*97.3*
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Acibenzolar-S-methyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Allethrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Benfluralin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Bifenthrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorfenapyr	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorothalonil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyfluthrin, Total	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalofop-butyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalothrin, Total	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cypermethrin, Total	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dacthal	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDD(p,p')	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE(p,p')	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDT(p,p')	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Deltamethrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dithiopyr	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Esfenvalerate	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethalfluralin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethofenprox	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpropathrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoprene	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Nitrapyrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloroanisole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloronitrobenzene	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin, Total	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Phenothrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tefluthrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetramethrin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	T-Fluvalinate	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Acetamiprid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Azoxystrobin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	RPD ≤ 25	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzobicyclon	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzovindiflupyr	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid-5-hydroxy	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Broflanilide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Bromuconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Butralin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbaryl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbendazim	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbofuran	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorantraniliprole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos oxon	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clomazone	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin-Desmethyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Coumaphos	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyantraniliprole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyazofamid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyclaniliprole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cycloate	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cymoxanil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyproconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyprodinil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desethyl-Atrazine	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	articulate, Dissolved	Desisopropyl-Atrazine	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desnitro-imidacloprid	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desthio-prothioconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazinon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazoxon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichloroaniline, 3,5-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorvos	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Difenoconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dimethomorph	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dinotefuran	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diuron	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	EPTC	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethaboxam	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Etoxazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Famoxadone	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenamidone	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenbuconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenhexamid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpyroximate	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl Amide	RPD ≤ 25	6	5	83.3
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfone	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flonicamid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Florpyrauxifen-Benzyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluazinam	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fludioxonil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flufenacet	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluindapyr	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flumetralin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopicolide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopyram	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluoxastrobin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flupyradifurone	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluridone	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutolanil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutriafol	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluxapyroxad	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Halauxifen-methyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hexazinone	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	RPD ≤ 25	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid olefin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid urea	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indaziflam	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indoxacarb	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ipconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Iprodione	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Isofetamid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Kresoxim-methyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malaoxon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malathion	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandestrobin	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandipropamid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl-hydroxymethyl	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoxyfenozide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Myclobutanil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Naled	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Napropamide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Novaluron	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oryzalin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxadiazon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxathiapiprolin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxyfluorfen	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Paclobutrazol	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pendimethalin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	RPD ≤ 25	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Penthiopyrad	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Phosmet	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picarbutrazox	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picoxystrobin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Piperonyl Butoxide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prodiamine	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometryn	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propanil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propargite	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propiconazole	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propyzamide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pydiflumetofen	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyraclostrobin	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyridaben	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyrimethanil	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyriproxyfen	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Quinoxyfen	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sedaxane	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Simazine	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sulfoxaflor	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	RPD ≤ 25	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebufenozide	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos oxon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetraconazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiabendazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiacloprid	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	RPD ≤ 25	3	3	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiobencarb	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tolfenpyrad	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimefon	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimenol	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triallate	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifloxystrobin	RPD ≤ 25	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MSD Samples	MSD Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triflumizole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triticonazole	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Valifenalate	RPD ≤ 25	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Zoxamide	RPD ≤ 25	6	6	100
OCRL Subtotal						*1053*	*1052*	*99.9*
Total						**1128**	**1125**	**99.7**

Quality Control Sample Acceptability: Accuracy

Matrix Spike Samples

Table C.11. Matrix spike (MS) recovery acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
EPA 200.7	Babcock	Water	Dissolved	Calcium	PR 70-130	16	16	100
EPA 200.7	Babcock	Water	Dissolved	Magnesium	PR 85-115	16	16	100
EPA 200.8	Babcock	Water	Dissolved	Copper	PR 75-125	16	16	100
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	PR 80-120	36	25	69.4
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	PR 90-110	40	38	95.0
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	PR 80-120	20	20	100
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	PR 80-120	18	16	88.9
Babcock Subtotal						*162*	*147*	*90.7*
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Acibenzolar-S-methyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Allethrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Benfluralin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Bifenthrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorfenapyr	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorothalonil	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyfluthrin, Total	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalofop-butyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyhalothrin, Total	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Cypermethrin, Total	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dacthal	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDD(p,p')	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE(p,p')	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDT(p,p')	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Deltamethrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Dithiopyr	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Esfenvalerate	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethalfluralin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethofenprox	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpropathrin	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoprene	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Nitrapyrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloroanisole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Pentachloronitrobenzene	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin, Total	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Phenothrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tefluthrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetramethrin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	T-Fluvalinate	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Acetamiprid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Azoxystrobin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	PR 70-130	6	6	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzobicyclon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Benzovindiflupyr	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Boscalid-5-hydroxy	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Broflanilide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Bromuconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Butralin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbaryl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbendazim	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Carbofuran	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorantraniliprole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Chlorpyrifos oxon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clomazone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Clothianidin-Desmethyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Coumaphos	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyantraniliprole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyazofamid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyclaniliprole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cycloate	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cymoxanil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyproconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Cyprodinil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desethyl-Atrazine	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desisopropyl-Atrazine	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desnitro-imidacloprid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Desthio-prothioconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazinon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diazoxon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichloroaniline, 3,5-	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorobenzenamine, 3,4-	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl Urea, 3,4-	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorophenyl-3-methyl Urea, 3,4-	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dichlorvos	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Difenoconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dimethomorph	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Dinotefuran	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Diuron	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	EPTC	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ethaboxam	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Etoxazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Famoxadone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenamidone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenbuconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenhexamid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fenpyroximate	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Desulfinyl Amide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil Sulfone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flonicamid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Florpyrauxifen-Benzyl	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluazinam	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fludioxonil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flufenacet	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluindapyr	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flumetralin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopicolide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluopyram	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluoxastrobin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flupyradifurone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluridone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutolanil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Flutriafol	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fluxapyroxad	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Halauxifen-methyl	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hexazinone	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Hydroxy-Imidacloprid, 5-	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	PR 70-130	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid olefin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid urea	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indaziflam	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Indoxacarb	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Ipconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Iprodione	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Isofetamid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Kresoxim-methyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malaoxon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Malathion	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandestrobin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Mandipropamid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metalaxyl-hydroxymethyl	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Methoxyfenozide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Myclobutanil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Naled	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Napropamide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Novaluron	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oryzalin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxadiazon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxathiapiprolin	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Oxyfluorfen	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Paclobutrazol	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pendimethalin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	PR 70-130	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Penthiopyrad	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Phosmet	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picarbutrazox	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Picoxystrobin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Piperonyl Butoxide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prodiamine	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Prometryn	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propanil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propargite	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propiconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Propyzamide	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pydiflumetofen	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyraclostrobin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyridaben	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyrimethanil	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Pyriproxyfen	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Quinoxyfen	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sedaxane	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Simazine	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Sulfoxaflor	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	PR 70-130	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebufenozide	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebupirimfos oxon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tetraconazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiabendazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiacloprid	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiamethoxam Degradate (CGA-355190)	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	PR 70-130	6	6	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Thiobencarb	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tolfenpyrad	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimefon	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triadimenol	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triallate	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tributyl Phosphorotrithioate, S,S,S-	PR 70-130	12	12	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total MS Samples	MS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifloxystrobin	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triflumizole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Triticonazole	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Valifenalate	PR 70-130	12	12	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Zoxamide	PR 70-130	12	12	100
OCRL Subtotal						*2106*	*2106*	*100.0*
Total						**2268**	**2253**	**99.3**

Laboratory Control Spike Samples

Table C.12. Laboratory control spike (LCS) recovery acceptability for WY 2023.
Per updated analysis procedures, an additional LCS sample will be run annually for pesticide analyzed by the USGS OCRL on the whole sample water matrix prior to filtration and will be reported as the total sample fraction.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
EPA 200.7	Babcock	Water	Dissolved	Calcium	PR 85-115	8	8	100
EPA 200.7	Babcock	Water	Dissolved	Magnesium	PR 70-130	8	8	100
EPA 200.8	Babcock	Water	Dissolved	Copper	PR 85-115	7	7	100
EPA 351.2	Babcock	Water	Dissolved, Total	Nitrogen, Total Kjeldahl	PR 90-110	18	16	88.9
EPA 353.2	Babcock	Water	Total	Nitrate + Nitrite as N	PR 90-110	14	14	100
SM 5310 B	Babcock	Water	Dissolved	Dissolved Organic Carbon	PR 80-120	10	10	100
SM 5310 B	Babcock	Water	Total	Total Organic Carbon	PR 80-120	9	9	100
Babcock Subtotal						*74*	*72*	*97.3*
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Acibenzolar-S-methyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Allethrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Benfluralin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Bifenthrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Chlorfenapyr	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Chlorothalonil	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyfluthrin, Total	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyhalofop-butyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyhalothrin, Total	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cypermethrin, Total	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dacthal	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	DDD(p,p')	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	DDE(p,p')	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	DDT(p,p')	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Deltamethrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dithiopyr	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Esfenvalerate	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Ethalfluralin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Ethofenprox	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fenpropathrin	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Methoprene	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Nitrapyrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pentachloroanisole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pentachloronitrobenzene	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Permethrin, Total	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Phenothrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tefluthrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tetramethrin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	T-Fluvalinate	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Trifluralin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Acetamiprid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Atrazine	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Azoxystrobin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Bentazon	PR 70-130	7	7	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Benzobicyclon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Benzovindiflupyr	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Boscalid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Boscalid-5-hydroxy	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Broflanilide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Bromuconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Butralin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Carbaryl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Carbendazim	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Carbofuran	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Chlorantraniliprole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide, 2-	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Chlorpyrifos	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Chlorpyrifos oxon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Clomazone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Clothianidin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Clothianidin-Desmethyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Coumaphos	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyantraniliprole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyazofamid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyclaniliprole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cycloate	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cymoxanil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyproconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Cyprodinil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Desethyl-Atrazine	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Desisopropyl-Atrazine	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Desnitro-imidacloprid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Desthio-prothioconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Diazinon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Diazoxon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dichloroaniline, 3,5-	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dichlorobenzenamine, 3,4-	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dichlorophenyl Urea, 3,4-	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dichlorophenyl-3-methyl Urea, 3,4-	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dichlorvos	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Difenoconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dimethomorph	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Dinotefuran	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Diuron	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	EPTC	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Ethaboxam	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Etoxazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Famoxadone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fenamidone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fenbuconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fenhexamid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fenpyroximate	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fipronil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fipronil Desulfinyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fipronil Desulfinyl Amide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fipronil Sulfide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fipronil Sulfone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Flonicamid	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Florpyrauxifen-Benzyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluazinam	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fludioxonil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Flufenacet	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluindapyr	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Flumetralin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluopicolide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluopyram	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluoxastrobin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Flupyradifurone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluridone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Flutolanil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Flutriafol	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Fluxapyroxad	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Halauxifen-methyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Hexazinone	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Hydroxy-Imidacloprid, 5-	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Imazalil	PR 70-130	7	7	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Imidacloprid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Imidacloprid olefin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Imidacloprid urea	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Indaziflam	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Indoxacarb	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Ipconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Iprodione	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Isofetamid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Kresoxim-methyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Malaoxon	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Malathion	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Mandestrobin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Mandipropamid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Metalaxyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Metalaxyl-hydroxymethyl	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Metconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Methoxyfenozide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Metolachlor	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Myclobutanil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Naled	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Napropamide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Novaluron	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Oryzalin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Oxadiazon	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Oxathiapiprolin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Oxyfluorfen	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Paclobutrazol	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pendimethalin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Penoxsulam	PR 70-130	7	7	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Penthiopyrad	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Phosmet	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Picarbutrazox	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Picoxystrobin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Piperonyl Butoxide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Prodiamine	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Prometon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Prometryn	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Propanil	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Propargite	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Propiconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Propyzamide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pydiflumetofen	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pyraclostrobin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pyridaben	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pyrimethanil	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Pyriproxyfen	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Quinoxyfen	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Sedaxane	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Simazine	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Sulfoxaflor	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tebuconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Tebuconazole-tert-Butylhydroxy	PR 70-130	7	7	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tebufenozide	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tebupirimfos	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tebupirimfos oxon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tetraconazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Thiabendazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Thiacloprid	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Thiamethoxam	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Thiamethoxam Degradate (CGA-355190)	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Dissolved	Thiamethoxam Degradate (NOA-407475)	PR 70-130	7	7	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Thiobencarb	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tolfenpyrad	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Triadimefon	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Triadimenol	PR 70-130	13	13	100

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total LCS Samples	LCS Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Triallate	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Tributyl Phosphorotrithioate, S,S,S-	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Trifloxystrobin	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Triflumizole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Triticonazole	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Valifenalate	PR 70-130	13	13	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved, Total	Zoxamide	PR 70-130	13	13	100
OCRL Subtotal						*2284*	*2284*	*100.0*
Total						**2358**	**2356**	**99.9**

Surrogate Samples

Table C.13. Surrogate recovery acceptability for WY 2023.

Method	Lab	Matrix	Fractions	Analyte	Acceptability Criteria	Total Surrogate Samples	Surrogate Samples in Limits	Acceptability Met (%)
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	DDE-$^{13}C_{12}$(p,p') (Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Permethrin-$^{13}C_6$, cis- (Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_GC/MS/MS	OCRL	Water	Particulate, Dissolved	Trifluralin-d_{14}(Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Atrazine-$^{13}C_3$ (Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Fipronil-$^{13}C_4$ $^{15}N_2$ (Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Imidacloprid-d_4 (Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Metolachlor-$^{13}C_6$ (Surrogate)	PR 70-130	152	152	100
USGS-OCRL_WATER-PEST_06_LC/MS/MS	OCRL	Water	Particulate, Dissolved	Tebuconazole-$^{13}C_3$ (Surrogate)	PR 70-130	152	152	100
Total						**1216**	**1216**	**100.0**

Toxicity Control Samples

Table C.14. Toxicity control sample acceptability for WY 2023.

Method	Lab	Control	Matrix	Organism	Endpoint	Acceptability Criteria	Total Control Samples	Control Samples Within Limits	Acceptability Met (%)
EPA 600/R-99-064M	PER	Negative Control	Water	*Chironomus dilutus*	Survival	≥ 80%	12	12	100
					Growth [1]	≥ 0.60 mg	11	11	100
EPA 821/R-02-013	PER	Negative Control	Water	*Ceriodaphnia dubia*	Reproduction [2]	60% of females ≥3 broods and average ≥15 young	13	13	100
					Survival	≥ 80%	13	13	100
EPA 821/R-02-013	PER	Salinity Control	Water	*Ceriodaphnia dubia*	Reproduction [2]	60% of females ≥3 broods and average ≥15 young	5	5	100
					Survival	≥ 80%	5	5	100
EPA 821/R-02-013	PER	Negative Control	Water	*Pimephales promelas*	Survival	≥ 80%	13	13	100
					Growth [3]	≥ 0.25 mg	13	13	100
EPA 821/R-02-013	PER	Negative Control	Water	*Selenastrum capricornutum*	Growth [4]	Growth >200,000 cells/mL and variability <20%	13	13	100
EPA 821/R-02-012	PER	Negative Control	Water	*Hyalella azteca*	Survival	≥ 90%	13	13	100
Total							**111**	**111**	**100**

[1] Growth for *Chironomus dilutus* is evaluated as the ash-free dry weight per surviving individual.
[2] Reproduction for *Ceriodaphnia dubia* is evaluated as the number of young per female.
[3] Growth for *Pimephales promelas* is evaluated as biomass as weight per original individual.
[4] Growth for *Selenastrum capricornutum* is evaluated as total cell count.

Appendix D. Deviation Forms

2022-01. Event 1 Chironomus Larvae Delayed Shipment

Deviation Report / Corrective Action Form

Title:	**CUP Event 1 Chironomus Larvae Delayed Shipment**
Deviation Number:	2022-01_CUPv1.2_Dev_Event1_PER_Chironomus_LateShipment
Prepared By:	Cassandra Lamerdin

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.2

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	11/10/2022	*Chironomus* larvae that were ordered to ship on Tuesday and arrive on November 9, 2022 were delayed by UPS and did not arrive until the morning of November 10, 2022. The normal protocol is to order the larvae to arrive a day before needed to allow any attrition to occur in holding, rather than in the testing.
Date TIE Advisory Committee (including CVRWQCB QA Representative) Notified:	11/10/22022	PER informed the TIE Advisory Committee of the larvae situation and asked for guidance on next steps.
Deviation Form sent for Review:	12/27/2022	Will Hagan (DRMP QA Officer) and Stephen Clark Pacific EcoRisk Technical Director.
Deviation Form Sent for Signatures:	1/9/2023	

Description of Deviation/Change:

On November 10, 2022, PER informed the TIE Advisory Committee that all water quality parameters were in range for the species tested for samples collected on November 9 and 10th for the CUP Event 1 monitoring. However, the *Chironomus* larvae that were ordered to ship on Tuesday and arrive on November 9, 2022 were delayed by UPS and did not arrive until the morning of November 10, 2022. PER assessed the culture and noted that the larvae looked great, despite the extra day in shipping. The temperature was about 20°C, the dissolved oxygen was in range, PER did not see many mortalities, and the larvae were a good size and color (very active). The normal protocol is to order the larvae to arrive a day before needed to allow any attrition to occur in holding, rather than in the testing. The sediment manual states, "The organisms should appear healthy, behave normally, feed well, and have low mortality in cultures, during holding (e.g., <20% for 48 h before the start of a test), and in test controls." By initiating Batch 1 testing on November 10 (within hold time), PER would not be following their normal protocol and would not be able to fully assess the mortality threshold for the 48 hours before testing. If PER were to wait the full 48 hours, some of the samples would be out of hold time. The TIE Advisory Committee recommended initiating the midge toxicity tests on November 10, 2022 for samples collected on November 9, 2022 despite organisms arriving less than 48 hours prior to test initiation.

Reason for Deviation/Change

A shipping delay by UPS caused the deviation which did not allow the *C. dilutus* organisms to arrive a day prior to test initiation as planned.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

There was discussion within the TIE Advisory Committee regarding the benefit of waiting at least 24 hours from receipt of organisms until the initiation of the test which would result in one sample being outside of hold time by a couple of hours. By initiating Batch 1 testing today, the laboratory would not be able to fully assess the mortality threshold for the 48 hrs. before testing. However, it was agreed by a majority of the TIE Advisory Committee members that it was more important to meet hold time requirements. There does not appear to be any impact on the results of the analysis due to utilizing organisms that were received less than 24 hours prior to the initiation of the tests.

Corrective Action	By Date	By Whom
Since the deviation was due to uncontrollable circumstances, there are no corrective actions. If this happens again, PER will continue to follow the same procedures of notifying the TIE Advisory Committee to receive guidance on next steps.	NA	NA

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: Stephan Clark C4D43551B2BC478... Stephen Clark	Date:	1/17/2023
Regional Board QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B... Selina Cole	Date:	1/17/2023
DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446... Melissa Turner	Date:	1/18/2023
DRMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E56040F... Will Hagan	Date:	1/17/2023

2022-02. Event 1 Chironomus Larvae Missed Growth Endpoints

Deviation Report / Corrective Action Form

Title:	**CUP Event 1 Chironomus Larvae Missed Growth Endpoints**
Deviation Number:	2022-02_CUPv1.2_Dev_Event1_PER_Chironomus_MissedEndpoints
Prepared By:	Cassandra Lamerdin
Included:	PER Evaluation of Non-Conforming Data

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.2

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	11/20/2022	Organism weights were not collected upon termination of the 10-day water exposure for *Chironomus* Control 1 of test initiated on 11/10/2022.
Date TIE Advisory Committee (including CVRWQCB QA Representative) Notified:	11/21/2022	PER informed the TIE Advisory Committee of the technician error and the missing growth endpoints.
Date Non - Conformance Report sent:	12/07/2022	Email including the non-conforming report was sent by PER to DRMP Technical Program Manager, Regional Board QA Representative, and the Program QAO.
Deviation Form sent for Review:	12/27/2022	Will Hagan (DRMP QA Officer) and Stephen Clark Pacific EcoRisk Technical Director.
Deviation Form Sent for Signatures:	1/9/2023	

Description of Deviation/Change:

On November 21, 2022, PER reported to the TIE Advisory Committee that one of their analysts failed to collect organism weights for the 10-day *C. dilutus* test that was initiated on November 10, 2022 and completed on November 20, 2022. The samples included in the batch were 511ULCABR, 544LSAC13, Sout-001, Sout-002, and Sout-003. It was also agreed by the TIE Advisory Committee to report the survival results (which were recorded) and not retest the water outside of hold-time. This will result in the second endpoint not being reported for the five environmental samples listed above.

Reason for Deviation/Change

The *C. dilutus* test using Control 1 was terminated on 11/20/2022 by one of PER's more experienced scientists. During termination, this staff member performed all other test termination requirements except for sacrificing the organisms for final weights. It was determined that human error occurred by staff for failing to follow the method requirements included in their training as well as to review the additional Study Guidance sheet that specified that organisms must be collected for day 10 termination weights, since this step is not required for all clients.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

For Event 1, the toxicity analysis will not be complete for the *C. dilutus* growth endpoint (missing for 5 samples). However, survival was recorded for all samples for this species. The missing endpoint may have a minimal impact on overall understanding of chronic toxicity to *C. dilutus* for this event although survival was recorded as a second endpoint for toxicity assessment. Three of the sites were rotating sites and two were fixed locations. Less impact is expected for the fixed locations due to the longer history of monitoring at these locations.

Corrective Action	By Date	By Whom
The staff member responsible for the deviation was issued a performance evaluation by PER and additional training/review of the DRMP requirements.	11/21/2022	Stephen Clark, PER

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: Stephan Clark C4D43551B2BC478...	Date:	1/17/2023
	Stephen Clark		
Regional Board QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	1/17/2023
	Selina Cole		
DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	1/18/2023
	Melissa Turner		
DRMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E56040F...	Date:	1/17/2023
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	11/20/22	Technical Mistake by PER Staff	X
Client & Test Date:	Delta RMP (11/10/22)	Organism Quality	
Species:	*Chironomus dilutus*	Water Quality	
Test:	Chronic Toxicity	Solution Preparation	
Test ID:	98707-98711	Feeding/Food Quality	
Project Number:	35355	Resident Organism Interference	
Manager on Duty:	TK	Undetermined	
Individuals Involved:	GR	Technical Experience	

2.0 Evaluation and Cause Analysis

It was observed during termination of the second control on 11/21/22 that the organisms were not collected for weights upon termination of the 10-day Water Exposure *Chironomus* Control-01. An investigation was performed to determine the reason for the invalidated test.

Technical Mistake by PER Staff

The test was terminated on 11/20/22 at 1350 by GR, one of PER's more experienced scientists trained in the 10-day *Chironomus* water exposure test. During termination, he measured ammonias, collected samples for old water quality parameters, and counted the remaining organisms. However, GR forgot his training to retrieve the organisms to measure their weights for the weight endpoint. When interviewed, GR admitted that he failed to review the Study Guidance sheet that specified that organisms were to be collected for T10 weights since this is not the case for all clients..

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?

GR was issued a Performance Evaluation for not following the SOP and the Study Guidance sheet. The client was notified and decided to only report the survival data and not to do a retest.

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

GR was retrained in the 10-day *Chironomus* water exposure test, with an emphasis on collecting organisms for T10 weights. He was also reminded to always completely read the Study Guidance sheets before maintaining a test.

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There were no additional incidents within thirty days following this incident.

Incident Open Date: 11/20/22 Incident Close Date: 12/20/22

Prepared By: Kevin Lung Quality Manager's Signature: Kevin Lung

Technical Director: Stephen Clark Technical Director's Signature: 12-20-22

Subject: Re: Corrective Action Report - Delta RMP Chironomus Ctl 1
Date: Wednesday, November 23, 2022 at 8:28:36 AM Pacific Standard Time
From: Stevi Vasquez
To: Stephen Clark, Kevin Lung
CC: Alison Briden

Kevin,

We will not be performing a retest on the Control 1 Chironomus. We will just be reporting the survival data.

Stevi

From: Stephen Clark <slclark@pacificecorisk.com>
Date: Tuesday, November 22, 2022 at 12:12 PM
To: Kevin Lung <klung@pacificecorisk.com>
Cc: Stevi Vasquez <svasquez@pacificecorisk.com>, Alison Briden <abriden@pacificecorisk.com>
Subject: Re: Corrective Action Report - Delta RMP Chironomus Ctl 1

We use our standard non-conforming data report. I will review and submit it to them.

From: Stevi Vasquez <svasquez@pacificecorisk.com>
Date: Tuesday, November 22, 2022 at 11:33 AM
To: Kevin Lung <klung@pacificecorisk.com>
Cc: Stephen Clark <slclark@pacificecorisk.com>
Subject: Corrective Action Report - Delta RMP Chironomus Ctl 1

Kevin,

The Delta RMP Program Manager has requested that we send our corrective action report for the 10-d *C. dilutus* Control 1 testing for which the final weights were not collected so that they can include that in their QAPP deviation report. I'm awaiting final response as to whether or not they'd like us to perform a retest but will follow-up with you as soon as I know more.

Stephen can send out the corrective action report when it's completed.

Thank you,
Stevi

Study Guidance Form

Client:	Delta RMP	Test Date:	11/10/22
Sample Description:	Ambient Water	Test ID #:	-
Species and Test Description:	C. Chironomus C1	Project #:	35355

Special Instructions:

COLLECT T0 WEIGHTS AND T10 WEIGHTS!!!

Measure and record ammonia at initiation and termination - CONTROL TOO!!
INITIATION AMMONIA CAN BE TRANSCRIBED FROM LOG-INS

WQ Analysts: Please make sure ALL old WQ fields are complete prior to dumping aliquots. Double check any anomalous values with another meter and record on observation sheet as appropriate.

Be sure to feed according to attached feeding sheet

**Aerate any test treatments that measure ≤2.5 mg/L; see SVV if low, but >2.5 mg/L

**At initiation, please have second analyst confirm all test replicates have been loaded with 10 orgs each
Confirmation signoff: RM

Please be very thorough with observations regarding extra organisms found ("hitchhikers"), dead organisms, missing organisms, pupated organisms - the more info the better!

General Guidance:

10 Day Acute *Chironomus dilutus* Toxicity Test Data

Client: **Delta RMP** Project#: **35355** Batch #:

Small Flake Food Daily Preparation				
Day	Date	Tetramin (g)	Deionized Water (mL)	Sign-off
0	11/10/22	0.15002 g	25 mL	TF
1	11/11/22	1.8g	300ml	NP
2	11/12/22	0.150	25ml	JR
3	11/13/22	1.8g	300ml	RG
4	11/14/22	1.8g	300 ml	TK
5	11/15/22	1.8g	1	RG
6	11/16/22	1.8g	300ml	TK
7	11/17/22	0.30g	50ml	JR
8	11/18/22	1.2g	200ml	RG
9	11/19/22	1	1	RG

Mix 150 mg small flakes (powder, #50 sieved) in 25 mL Type I water daily to make a 6 mg/mL slurry.

Feeding Regime (recommended):
Days 0 - 3: 2mg Fish Food Flakes (0.4 mL of 6 mg/mL slurry)
Days 4 - 6: 4mg Fish Food Flakes (0.7 mL of 6 mg/mL slurry)
Days 7 - 9: 6mg Fish Food Flakes (1 mL of 6 mg/mL slurry)

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 544LSAC13
Test ID#: 98707 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		4.00	10	10	10	10	Date: 11/10/22 Sol. Prep: KM Initi. Time: 1555 Initi. Sign-off: KM Sample ID: 6058 Feed: KM
100%	20.4	7.67		8.9		263		4.00	10	10	10	10	
Meter ID	138A	pH24		RDO2		EC14		DRSOU	New WQ: SVV				
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22 Count Time: 1632 Count Signoff: RB Feed: RB
100%	19.9		7.66		4.4		281		10	10	9	10	
Meter ID	140A		PH24		RDO2		EC13				Old WQ: BJ		
Lab Control	19.9	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22 Sol. Prep: RB Maint. Time: 1303 Maint. Signoff: SC Sample ID: 6181 Feed: SC
100%	19.5	7.73	7.58	9.3	7.1	266	290		10	10	9	10	
Meter ID	120A	pH24	pH24	RDO2	RDO2	EC13	EC13		New WQ: IGL		Old WQ: IGL		
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22 Count Time: 1524 Count Signoff: KM Feed: RB
100%	20.2		7.56		7.5		300		10	6	9	10	
Meter ID	131A		pH24		RDO2		EC13				Old WQ: EK		
Lab Control	20.4	7.92	7.32	8.5	7.1	336	348		10	10	10	10	Date: 11/14/22 Sol. Prep: KM Maint. Time: 1445 Maint. Signoff: TK Sample ID: 6181 Feed: TK
100%	20.3	7.64	7.48	8.9	7.7	274	284		10	NO	8	10	
Meter ID	140A	pH24	pH24	RDO2	RDO2	EC14	EC13		New WQ: KM		Old WQ: JB		
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22 Count Time: 1625 Count Signoff: RB Feed: RB
100%	20.1		7.65		4.1		287		10	10	8	9	
Meter ID	131A		pH24		RDO2		EC14				Old WQ: KM		
Lab Control	20.2	7.91	7.38	8.2	7.2	336	345		10	9	10	9	Date: 11/16/22 Sol. Prep: KM Maint. Time: 1430 Maint. Signoff: TK Sample ID: 6181 Feed: TK
100%	20.1	7.68	7.32	9.9	6.1	263	278		10	10	8	9	
Meter ID	140A	pH24	pH24	RDO2	RDO2	EC14	EC13		New WQ: KM		Old WQ: JB		
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22 Count Time: 0932 Count Signoff: SC Feed: SC
100%	19.6		7.46		6.3		276		10	10	8	9	
Meter ID	131A		pH24		RDO2		EC14				Old WQ: EK		
Lab Control	20.0	7.95	7.41	7.5	6.2	342	352		10	8	10	9	Date: 11/18/22 Sol. Prep: KM Maint. Time: 1521 Maint. Signoff: KM Sample ID: 6181 Feed: KM
100%	20.1	7.70	7.38	9.0	6.5	267	278		10	10	8	9	
Meter ID	131A	pH30	pH24	RDO5	RDO2	EC13	EC14		New WQ: KM		Old WQ: AR		
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22 Count Time: 0931 Count Signoff: RB Feed: RB
100%	20.0		7.39		6.8		288		9	9	8	9	
Meter ID	131A		pH30		RDO5		EC13				Old WQ: JC		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/20/22 Term Time: 1350 Term Signoff: KM
100%	20.6		7.40		5.1		289	1.28	9	9	8	9	
Meter ID	138A		pH30		RDO5		EC13	DRSOU			Old WQ: EK		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 511ULCABR
Test ID#: 98708 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13961 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22
100%	20.3	7.76		8.6		505		<1.00	10	10	10	10	Sol. Prep: JK
													Initi. Time: 1535
													Initi. Sign-off: JF
Meter ID	138A	pH24		RD12		EC14		DR3XD	New WQ: SVV				Sample ID: 63180
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Feed: JF
100%	20.0		7.77		5.1		508		10	10	10	12	Date: 11/11/22
Meter ID	140A		pH24		RD12		EC13				Old WQ: BS		Count Time: 1042
Lab Control	19.9	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Count Signoff: RB
100%	19.7	7.81	7.79	8.7	7.0	504	512		10	10	10	12	Feed: RB
													Date: 11/12/22
Meter ID	120A	pH21	pH24	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Sol. Prep: RB
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Maint. Time: 1305
100%	20.1		7.83		7.7		563		10	10	10	12	Maint. Signoff: SK
Meter ID	131A		pH24		RD12		EC13				Old WQ: EK		Sample ID: 63180
Lab Control	20.4	7.92	7.32	8.5	7.7	336	348		10	10	10	10	Feed: JF
100%	20.2	7.68	7.85	9.8	9.0	508	523		10	10	10	12	Date: 11/13/22
													Sol. Prep: JK
Meter ID	140A	pH24	pH26	RD12	RD14	EC16	EC13		New WQ: KM		Old WQ: BS KS		Maint. Time: 1445
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Maint. Signoff: TK
100%	20.0		7.91		3.7		515		10	10	10	9	Sample ID: 63180
Meter ID	131A		pH24		RD12		EC16				Old WQ: KM		Feed: TK
Lab Control	20.2	7.81	7.36	8.2	7.2	336	347		10	9	10	9	Date: 11/14/22
100%	20.1	7.66	7.73	9.3	4.7	515	515		10	10	10	9	Sol. Prep: JK
													Maint. Time: 1430
Meter ID	140A	pH24	pH24	RD12	RD12	EC16	EC16		New WQ: KL		Old WQ: BS KS		Maint. Signoff: TK
Lab Control	19.9		7.59		6.0		345		10	9	10	9	Sample ID: 63180
100%	19.7		7.75		6.6		524		10	10	10	9	Feed: TK
Meter ID	120A		pH24		RD12		EC14				Old WQ:		Date: 11/15/22
Lab Control	20.0	7.95	7.41	7.5	6.2	347	352		10	8	10	9	Count Time: 1025
100%	20.3	7.62	7.65	7.0	6.6	527	517		10	10	10	8	Count Signoff: RB
													Feed: RB
Meter ID	131A	pH30	pH24	RD12	RD12	EC15	EC14		New WQ: KM		Old WQ: AK		Date: 11/16/22
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Count Time: 1035
100%	20.0		7.73		6.9		537		10	10	10	8	Count Signoff: RB
Meter ID	131A		pH30		RD15		EC13				Old WQ: JF		Feed: RB
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/17/22
100%	20.6		8.06		6.8		550	1.42	10	10	10	8	Term Time: 1350
Meter ID	138A		pH30		RD15		EC13	DR3XD			Old WQ: KL		Term Signoff: JF

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: Sout-001
Test ID#: 98709 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22; Sol. Prep: [illegible]
100%	20.3	7.73		9.1		431		<1.00	10	~~10~~ 11	~~10~~ 12	10	Initi. Time: 1555; Initi. Sign-off: [illegible]
													Sample ID: 63183
Meter ID	138A	PH24		RD12		EC14		DR3800	New WQ: SV				Feed: TF
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22; Count Time: 1042; Count Signoff: RD
100%	19.9		7.68		5.3		444		10	11	12	10	Feed: RG
Meter ID	140A		PH24		RD12		EC13				Old WQ: BT		
Lab Control	19.9	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22; Sol. Prep: RG
100%	19.6	7.75	7.61	9.5	7.1	416	450		10	11	12	10	Maint. Time: 1303; Maint. Signoff: [illegible]
													Sample ID: 63183
Meter ID	120A	PH24	PH24	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Feed: [illegible]
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22; Count Time: 1524; Count Signoff: RG
100%	20.1		7.71		7.6		484		10	11	12	10	Feed: RG
Meter ID	131A		PH24		RD12		EC13				Old WQ: EK		
Lab Control	20.4	7.42	7.32	8.5	7.7	336	348		10	10	10	10	Date: 11/14/22; Sol. Prep: [illegible]
100%	20.2	7.73	7.67	10.5	8.0	440	438		10	11	12	10	Maint. Time: 1145; Maint. Signoff: TV
													Sample ID: 63183
Meter ID	140A	PH24	PH24	RD12	RD15	EC14	EC13		New WQ: KM		Old WQ: TR		Feed: TV
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22; Count Time: 1025; Count Signoff: RG
100%	20.2		7.75		3.5		449		8	10	8	8	Feed: RG
Meter ID	131A		PH24		RD12		EC14				Old WQ:		
Lab Control	20.2	7.81	7.36	8.2	7.2	336	347		10	9	10	9	Date: 11/16/22; Sol. Prep: [illegible]
100%	20.1	7.71	7.49	9.5	5.5	437	444		8	10	8	8	Maint. Time: 1430; Maint. Signoff: TV
													Sample ID: 63183
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC16		New WQ: [illegible]		Old WQ: JB		Feed: TV
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22; Count Time: 0830; Count Signoff: [illegible]
100%	19.6		7.56		6.8		446		8	10	8	8	Feed: [illegible]
Meter ID	131A		PH24		RD12		EC14				Old WQ: EK		
Lab Control	20.0	7.95	7.41	7.8	6.2	342	352		10	8	10	9	Date: 11/18/22; Sol. Prep: RG
100%	20.3	7.66	7.59	10.9	7.0	437	436		8	10	8	8	Maint. Time: 1525; Maint. Signoff: RD
													Sample ID: 63183
Meter ID	131A	PH30	PH24	RD15	RD12	EC13	EC14		New WQ: HT		Old WQ: AL		Feed: RG
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22; Count Time: 0935; Count Signoff: RG
100%	20.1		7.57		7.0		500		8	10	8	8	Feed: RG
Meter ID	131A		PH30		RD15		EC13				Old WQ: [illegible]		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/20/22; Term Time: 1330
100%	20.6		7.56		6.4		453	1.33	8	9	8	8	Term Signoff: EK
Meter ID	138A		PH30		RD15		EC13	DR3800			Old WQ: EK		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: Sout-002
Test ID#: 98710 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22 Sol. Prep: YK
100%	20.3	7.65		9.2		414		<1.00	11 TF ~~10~~ 11/11/22	12 TF ~~10~~ 11/12	10	10	Initi. Time: 1535 Initi. Sign-off: TF
													Sample ID: 63182
Meter ID	138A	PH24		RD12		EC14		DR3900	New WQ: CVY				Feed: TF
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22 Count Time: 1042
100%	19.8		7.70		5.1		429		11	12	10	10	Count Signoff: RG Feed: RG
Meter ID	140A		PH24		RD12		EC13				Old WQ: BJ		
Lab Control	19.9	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22 Sol. Prep: RG
100%	19.8	7.67	7.48	9.5	6.6	410	428		11	12	10	10	Maint. Time: 1303 Maint. Signoff: JR
													Sample ID: 63182
Meter ID	120A	PH24	PH24	RD12	RD12	EC15	EC13		New WQ: KL		Old WQ: KL		Feed: JR
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22 Count Time: 1524
100%	19.9		7.61		7.7		478		11	12	10	10	Count Signoff: RG Feed: RG
Meter ID	131A		PH24		RD12		EC13				Old WQ: RK		
Lab Control	20.4	7.92	7.32	8.5	7.7	336	348		10	10	10	10	Date: 11/14/22 Sol. Prep: YK
100%	20.1	7.71	7.81	10.6	7.9	432	432		11	12	10	10	Maint. Time: 1145 Maint. Signoff: TK
													Sample ID: [illegible] 63182
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC14		New WQ: KM		Old WQ: JB		Feed: TK
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22 Count Time: 1023
100%	20.1		7.70		3.2		444		10	12	10	10	Count Signoff: RG Feed: RG
Meter ID	131A		PH24		RD12		EC16				Old WQ: KM		
Lab Control	20.2	7.91	7.36	8.2	7.2	336	347		10	9	10	9	Date: 11/16/22 Sol. Prep: [illegible]
100%	20.1	7.71	7.44	10.6	7.0	430	434		10	12	10	10	Maint. Time: 1430 Maint. Signoff: TK
													Sample ID: 63182
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC16		New WQ: KM		Old WQ: JB		Feed: TK
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22 Count Time: 0930
100%	19.5		7.52		7.1		433		10	12	10	10	Count Signoff: JR Feed: JR
Meter ID	136A		PH24		RD12		EC14				Old WQ: RK		
Lab Control	20.0	7.95	7.41	7.5	6.2	342	352		10	8	10	9	Date: 11/18/22 Sol. Prep: RL
100%	20.4	7.61	7.45	10.7	6.9	426	434		10	12	10	10	Maint. Time: 1515 Maint. Signoff: RG
													Sample ID: 63182
Meter ID	131A	PH30	PH24	RD15	RD12	EC13	EC14		New WQ: HTT		Old WQ: AK		Feed: RG
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22 Count Time: 0935
100%	20.1		7.49		6.9		474		10	12	10	9	Count Signoff: RG Feed: RG
Meter ID	131A		PH30		RD15		EC13				Old WQ: JR		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/20/22 Term Time: 1350
100%	20.8		7.49		6.1		457	1.38	10	12	10	9	Term Signoff: YK
Meter ID	138A		PH30		RD15		EC13	DR3900			Old WQ: RK		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: Sout-003
Test ID#: 98711 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22 Sol. Prep: [illegible]
100%	20.3	7.68		9.0		499		<1.00	10	10	10	10	Initi. Time: 153[illegible] Initi. Sign-off: [illegible] Sample ID: 63[illegible]
Meter ID	138A	PH24		RD12		EC14		DR3800	New WQ: SVV				Feed: [illegible]
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22 Count Time: 1042
100%	19.9		7.70		5.1		508		10	10	10	10	Count Signoff: RG Feed: RG
Meter ID	140A		PH24		RD12		EC15				Old WQ: BT		
Lab Control	19.9 (corrected)	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22 Sol. Prep: RG
100%	19.8	7.70	7.55	9.4	7.2	497	513		10	10	10	10	Maint. Time: 1203 Maint. Signoff: SR Sample ID: 63184
Meter ID	120A	PH24	PH24	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Feed: SR
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22 Count Time: 1524
100%	20.1		7.63		7.9		532		10	10	10	10	Count Signoff: [illegible] Feed: RG
Meter ID	131A		PH24		RD12		EC13				Old WQ: EK		
Lab Control	20.4	7.92	7.32	8.5	7.7	336	348		10	10	10	10	Date: 11/14/22 Sol. Prep: [illegible]
100%	20.1	7.75	7.2	10.3	8.0	505	523		10	10	10	10	Maint. Time: [illegible] Maint. Signoff: TK Sample ID: 63184
Meter ID	140A	PH24	PH26	RD12	RD14	EC16	EC13		New WQ: KM		Old WQ: JB		Feed: TK
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22 Count Time: [illegible]
100%	20.0		7.71		3.9		529		10	8	10	9	Count Signoff: RG Feed: RG
Meter ID	131A		PH24		RD12		EC16				Old WQ: KM		
Lab Control	20.2	7.81	7.36	8.2	7.2	336	347		10	9	10	9	Date: 11/16/22 Sol. Prep: [illegible]
100%	20.0	7.72	7.50	11.0	6.7	507	517		10	8	10	9	Maint. Time: 1430 Maint. Signoff: TK Sample ID: 63182
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC16		New WQ: YL		Old WQ: JB		Feed: TK
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22 Count Time: 0930
100%	19.6		7.54		7.2		517		10	8	10	9	Count Signoff: SR Feed: SR
Meter ID	131A		PH24		RD12		EC14				Old WQ: EK		
Lab Control	20.0	7.95	7.41	7.5	6.2	342	352		10	8	10	9	Date: 11/18/22 Sol. Prep: RG
100%	20.4	7.71	7.45	10.1	6.9	513	517		10	8	10	9	Maint. Time: 1525 Maint. Signoff: RG Sample ID: 63[illegible]
Meter ID	131A	PH30	PH24	RD15	RD12	EC13	EC14		New WQ: KJT		Old WQ: AF		Feed: RG
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22 Count Time: 0935
100%	20.1		7.52		7.0		520		10	8	10	9	Count Signoff: RG Feed: RG
Meter ID	131A		PH30		RD15		EC13				Old WQ: SR		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/20/22 Term Time: 1350
100%	20.8		7.46		5.7		515	1.32	10	8	10	9	Term Signoff: YK
Meter ID	138A		PH30		RD15		EC13	DR3800			Old WQ: EK		

Comments and Observations

Client: Delta RMP 1 Test Date: 11/10/22

Sample Description: Ambient Test ID #: —

Species and Test Description: 10 Day Chronic Chiro Project #: 35355

Date	Initials	Description of Observation:
11/11/22	RG	- 1 dead body found in 544LSAC13-C
		- 12 in ULCABR-D confirmed (?)
11/11/22	TF	Corrected init. count ULCABR-D
		Corrected SOUT-1 B init count
		Corrected SOUT 1-C, SOUT 2 AB init counts
11/11/22	RG	11 in SOUT 1 B confirmed by TF
		12 in Sout 1 C confirmed by TF
		11 + 12 in Sout 2 A + B confirmed by TF
11/12/22	KL	all % sat below 110
11/12/22	JR	Corrected temp SOUT-003 LWC
11/14/22	TK	Wrote mortality in wrong rep
11/15/22	RG	- 1 dead pulled from A-1-B
		- only 9 counted in Ctrl-D, LSAC-D, ULCABR-D, Sout003D
		- only 8 counted in Sout001 A, C, D, Sout003 B
		- only 10 counted in Sout001B, Sout002 A,
11/16/22	RC	- only 9 counted in LSAC-A B, Sout 2 D
		- ~~ULCABR, dropped to 2.4~~ RC 11/19/22
		DO
		- ULCABR D/O dropped to 2.4 @1627,
		- Treatment aerated
11/20/22	JR	- SOUT-001-B no body cont by RIL

General Guidance:

1) All observations are to be recorded on this sheet and transcibed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical obversations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08 AB New chem of 100% effluent > 10% different than previous day.
Confirmed on second meter and confirmed conductivity of sample.
New sample had >10% difference in conductivity than previous sample.

Pacific EcoRisk Environmental Consulting and Testing

Weigh Pan Progress Sheet

Client / Project	Delta RMP
Test ID	98707 - 98711
Organism	*C. dilutus*
Test Material	Ambient Water
Control Batch	Control 1
Test Start Date	11/10/22
Pan Size Needed	*C. dilutus* pans
Date Needed By	11/19/22
Termination Date	11/20/22

Pans Numbered	Date	11/10/22	Signoff	YGC
Pans In Furnace@550°C for 2h	Date	11/11/22 @1048	Signoff	YGC
Pans Placed In Desiccator	Date	11/11/22	Signoff	YGC
Initial Weights	Date	AEL 11/18/22 ~~11/17/22~~ 11/18/22	Signoff	AEL 11/18/22 ~~EK~~ AEL
Test Termination	Date		Signoff	
Pans in Oven at 100°C	Date		Signoff	
Pans Placed In Desicator	Date		Signoff	
Dry Weights	Date		Signoff	
Pans In Furnace@550°C for 2h	Date		Signoff	
Pans Placed In Desicator	Date		Signoff	
Ash-Free Dry Weights	Date		Signoff	

Pacific EcoRisk

10 day Chronic *Chironomus dilutus* Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: 544LSAC13
Test ID #: 98707 Project #: 35355
Test Date:

Initial Wt. Date 11/18/22 Sign-off: AEL
Dry Wt Date: Sign-off:
Final Ashed Wt Date: Sign-off:

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms			Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
						Larvae	Pupae	Adult		
1	Lab Control	A	115.09							
2		B	130.62							
3		C	99.33							
4		D	96.92							
5	100%	A	102.34							
6		B	116.60							
7		C	107.17							
8		D	105.16							
QA 1			112.50							
Balance ID			BAL04							

Pacific EcoRisk

10 day Chronic *Chironomus dilutus* Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: 511ULCABR
Test ID #: 98708 Project #: 35355
Test Date:

Initial Wt. Date 11/18/22 Sign-off: AEL
Dry Wt Date: Sign-off:
Final Ashed Wt Date: Sign-off:

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms			Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
						Larvae	Pupae	Adult		
1	Lab Control	A	115.09							
2		B	130.62							
3		C	99.33							
4		D	96.92							
9	100%	A	90.71							
10		B	110.76							
11		C	103.77							
12		D	115.45							
QA 2			101.87							
Balance ID			BAL04							

10 day Chronic *Chironomus dilutus* Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: Sout-001
Test ID #: 98709 Project #: 35355
Test Date:

Initial Wt. Date 11/18/22 Sign-off: AE
Dry Wt Date: Sign-off:
Final Ashed Wt Date: Sign-off:

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms			Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
						Larvae	Pupae	Adult		
1	Lab Control	A	115.09							
2		B	130.62							
3		C	99.33							
4		D	96.92							
13	100%	A	117.87							
14		B	112.10							
15		C	106.18							
16		D	102.53							
QA 2			101.87							
Balance ID			BAL04							

Pacific EcoRisk

10 day Chronic *Chironomus dilutus* Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: Sout-002
Test ID #: 98710 Project #: 35355
Test Date:

Initial Wt. Date 11/18/22 Sign-off: AEL
Dry Wt Date: Sign-off:
Final Ashed Wt Date: Sign-off:

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms			Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
						Larvae	Pupae	Adult		
1	Lab Control	A	115.09							
2		B	130.62							
3		C	99.33							
4		D	96.92							
17	100%	A	135.37							
18		B	113.82							
19		C	115.42							
20		D	111.91							
QA 3			114.11							
Balance ID			BAL04							

10 day Chronic *Chironomus dilutus* Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: Sout-003
Test ID #: 98711 Project #: 35355
Test Date: _____

Initial Wt. Date 11/18/22 Sign-off: AEL
Dry Wt Date: _____ Sign-off: _____
Final Ashed Wt Date: _____ Sign-off: _____

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms			Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
						Larvae	Pupae	Adult		
1	Lab Control	A	115.09							
2		B	130.62							
3		C	99.33							
4		D	96.92							
21	100%	A	105.39							
22		B	100.15							
23		C	139.88							
24		D	133.28							
QA 3			114.11							
Balance ID			BAL04							

2022-03. Event 1 Chironomus larvae initial weights greater than 0.012 mg/ individual AFDW

Deviation Report / Corrective Action Form

Title:	**CUP Event 1 *Chironomus* larvae initial weights greater than 0.012 mg/ individual AFDW**
Deviation Number:	2022-03_CUPv1.2_Dev_Event1_PER_Chironomus_InitialWeights
Prepared By:	Cassandra Lamerdin
Attached:	PER Evaluation of Non-Conforming: Data111922_C_Chiron_10dWater_DeltaRMP_S1.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.2

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	11/19/2022	Upon completion of drying process, the initial weights were reported as Ash Free Dry Weights (AFDW) on 11/19 and 11/23 for two batches of *Chironomus* larvae that had samples collected on November 9 and 10th, 2022.
Date TIE Advisory Committee (including CVRWQCB QA Representative) Notified:	12/22/2022	PER processed the toxicity data in preparation of submitting the data report and found that the mean AFDW was greater than 0.12 mg/individual. PER informed the TIE Advisory Committee of the non-conformance of T_0 (initial) weights.
Deviation Form sent for Review:	01/18/2023	Will Hagan (DRMP QA Officer) and Stephen Clark (Pacific EcoRisk Technical Director).
Deviation Form Sent for Signatures:	2/1/2023	

Description of Deviation/Change:

In preparing the laboratory report, Pacific EcoRisk (PER) noted that the mean t(0) weights of the *Chironomus* were greater than the SWAMP MQO of ≤0.12 mg/individual AFDW. The organisms were received as larvae and were of the correct age for testing. PER needed to use larvae from an outside vendor vs in house organisms due to the timing of storm event sampling. Two batches of tests were initiated. One batch had an AFDW of 0.18 mg/individual and the other 0.20 mg/individual.

Reason for Deviation/Change

As noted in the non-conforming report attached to this deviation form, the organisms were of the correct age for this method (8-9 days old) but had a greater AFDW than the SWAMP MQO; organism quality is the most likely cause of the greater organism weight. In this case, organism quality is referring to very robust (large) organisms provided by the vendor that was the likely cause of the organisms exceeding the dry weight threshold at test initiation since they weren't held at PER for any significant time prior to test initiation. This is the opposite of organism quality that is poor leading to invalid tests (not meeting test acceptability criteria).

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

The lower weight is presumably targeted to reduce pupation/hatching during the 10-day test; no pupation or hatching occurred in these tests even though the organism ash free dry weight was >0.12 mg/individual and therefore there is no impact expected.

Corrective Action	By Date	By Whom
Tox Test Level QA Code of TAF [Test organisms exceed the maximum weight requirement at test initiation] will be applied to the samples in each test batch.	Prior to Electronic Data Deliverable Submission	Alison Briden PER Data Manager

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: Stephan Clark C4D43551B2BC478...	Date:	2/2/2023
	Stephen Clark		

Regional Board Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	2/2/2023
	Selina Cole		

Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	2/2/2023
	Melissa Turner		

DRMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E56040F...	Date:	2/2/2023
	Will Hagan		

2022-04. Event 2 Ceriodaphnia Batch Failed Test Acceptability Criteria in One Batch

Deviation Report / Corrective Action Form

Title:	**CUP Event 2 *Ceriodaphnia* Batch Failed Test Acceptability Criteria in One Batch**
Deviation Number:	2022-04_CUPv1.3_Dev_Event2_PER_Cerio_FailedTAC
Prepared By:	Cassandra Lamerdin
Attached:	030423_DeltaRMP_NCD_CeriodaphniaFailedTAC.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	3/4/2023	It was observed on 3/4/2023 by Pacific Ecorisk (PER) that the *Ceriodaphnia dubia* chronic toxicity test did not meet test acceptability criteria (TAC) of ≥ 80% average survival in the control.
Date TIE Advisory Committee Notified:	3/4/2023	PER provided an email to alert Toxicity Identification Evaluation (TIE) TAC members of the incident and request a retest due to TAC failure.
Date CVRWQCB QA Representative Notified:	3/4/2023	
Deviation Form sent for Review:	3/23/2023	Stephen Clark (Pacific EcoRisk Technical Director).
Deviation Form sent for Review:	3/29/2023	Will Hagan (Delta RMP QA Officer)
Deviation Form Sent for Signatures:	4/12/2023	

Description of Deviation/Change:

It was observed on 3/4/2023 during test maintenance that the control associated with the *Ceriodaphnia dubia* (*C. dubia*) chronic toxicity test would not meet test acceptability criteria (TAC) of ≥ 80% average survival in the control. There was78% survival (7 of 9 organisms survived) in the control treatment. The invalid test was terminated on 3/5/2023 and affected five environmental samples which were collected on February 27, 2023 (Event 2).

Reason for Deviation/Change

A major contributing factor was determined to be a technical mistake by a laboratory technician. The analyst performing test maintenance on 3/1/2023 missed transferring one organism. This was discovered on 3/2/2023 during test maintenance. Test protocol states that lack of an organism requires the replicate to be removed from assessing mean survival during testing. The subsequent loss of one organism along with two mortalities in the lab control resulted in a 78% survival which is below TAC.

Other potential factors like water and food quality, organism handling, and solution preparation were ruled out as causes for TAC failure.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

A retest was initiated on 3/6/2023 per recommendation from the TIE Advisory Committee which includes the Regional Board QA Officer. The five environmental samples (Sout-005, Sout-006, Sout-008, Cent-003 and Cent-004) associated with original failed test were re-analyzed six days out of the 48-hour hold time.

Corrective Action	By Date	By Whom
The PER Quality Manager discussed solution renewal and organism transfer process with technician associated with the technical error.	3/4/2023	Kevin Lung PER Quality Manager
Tox Test Level QA Code of H (Holding Time violation as occurred) will be applied to the samples the test batch.	Prior to Electronic Data Deliverable Submission	Alison Briden PER Data Manager
The following lab batch comment will be applied "Original analysis performed within hold time but did not meet test acceptability criteria (TAC)(≥ 80% average survival in control). Initial test performed on 2/28/23. Reported reanalysis initiated 6 days out of hold time."	Prior to Electronic Data Deliverable Submission	Alison Briden PER Data Manager

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:		Date:	

	Stephen Clark		

CVRWQCB QA Representative:		Date:	
	Selina Cole		

Delta RMP Program Manager:		Date:	
	Melissa Turner		

Delta RMP QA Officer:		Date:	
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	3/4/23	Technical Mistake by PER Staff	X
Client & Test Date:	Delta RMP 2/28/23	Organism Quality	X
Species:	*Ceriodaphnia dubia*	Water Quality	
Test:	Chronic Toxicity	Solution Preparation	
Test ID:	98937, 98938, & 98940-98942	Feeding/Food Quality	
Project Number:	35355	Resident Organism Interference	
Manager on Duty:	TF	Technical Experience	
Individuals Involved:	GR, TK	Undetermined	

2.0 Evaluation and Cause Analysis

It was observed on 3/4/23 during test maintenance that the Delta RMP *Ceriodaphnia dubia* chronic toxicity test would not meet test acceptability criteria (TAC) of ≥80% average survival in the control; the control had 78% survival on day four. On 3/5/23, the invalid testing was terminated. An investigation was performed to determine why the control had not met TAC.

Organism Quality

The survival was 98.3% was on 2/28/23 in culture board 5677 that was used to initiate the tests, and survival was 96.7% when the culture board was terminated on 3/2/23. There were 20.1 neonates per female on day seven for this culture board, which is lower than our typical range of 25-35 offspring/female. Another client test was initiated the same day as the invalid Delta RMP test but only used neonates from three cups from board 5677, and there was 90% survival in the associated lab control treatment with the only mortality associated with organisms sourced from one cup from board 5677. A reference toxicant test was also initiated on 2/28/23 with organisms were sourced from boards 5678 and 5679, and this test met TAC with 100% survival. The unusual mortalities and lower than normal reproduction in organisms sourced from board 5677 indicate that organism quality is likely a contributing factor to the test failing to meet TAC.

Water Quality/Food

During the investigation, it was confirmed that all test temperatures and conductivity values were within the expected range throughout the duration of the test. The same water batch and YCT were in use throughout the duration of the test. A new batch of *Selenastrum* that met PER's QC testing requirements was placed into use on 3/3/23. The pitcher of control water had also been in use during the entire test, making it unlikely that the control water had been contaminated from that source either. It is unlikely that these factors contributed to the tests failing to meet TAC.

Technical Mistake by PER Staff

RIL was unable to find an organism in vial J of the control treatment when performing test maintenance on 3/2/23 and the missing organisms was confirmed by FR. This indicates that the organism was not transferred the previous day by GR during test maintenance. Due to the lack of an organism, the replicate needed to be removed from assessing mean survival during testing. Typically, in a 10-replicate test, two mortalities in the lab control treatment are acceptable as the test acceptability criteria of 80% survival is still achieved. However, the loss of one organism along with two mortalities in the lab control treatment during the this testing resulted in 78% survival, which is below TAC. Therefore, a technical mistake during the transfer of organisms contributed to the test failing to meet TAC.

Other Factors

An investigation was performed on other factors that could have impacted testing including technical experience, organism handling, and solution preparation. The investigation determined that there were no additional likely contributing factors to the control not meeting TAC.

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?

With client approval, a retest was initiated on 3/6/23 (Test ID #100149-100154).

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

The Quality Manager engaged GR to review his solution renewal and organisms transfer process. No changes to our quality system are currently required. No further preventative actions are necessary.

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There have been no other related issues in the thirty days following this incident.

Incident Open Date: 3/4/23 Incident Close Date: 4/4/23

Prepared By: Kevin Lung Quality Manager's Signature: Kevin Lung

Technical Director: Stephen Clark Technical Director's Signature: Stephen Clark

Study Guidance Form

Client:	Delta RMP	Test Date:	2/28/23
Sample Description:	Ambient Water	Test ID #:	-
Species and Test Description:	C. Cerio	Project #:	35355

Special Instructions:

SWAMP MQO conductivity range: 100-1900 uS/cm (Program requirement 130-1900 uS/cm)

Measure and record ammonia at initiation and termination - CONTROL TOO!!
INITIATION AMMONIA CAN BE TRANSCRIBED FROM LOG-INS
If test **does not** meet TAC on Day 5, record "N/A" in the field for Ammonia

WQ Analysts: Please make sure ALL old WQ fields are complete prior to dumping aliquots. Double check any anomalous values with another meter and record on observation sheet as appropriate.

**At initiation, please have second analyst confirm all test replicates have been loaded.
Confirmation signoff: KL

TIE Trigger 50% mort/Reduction
Inform LM/QA ASAP!

General Guidance:

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Delta RMP** Material: **Sout-005** Test Date: 2/28/23

Project #: 35355 Test ID: 98937 Randomization: — Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.90		8.0		334	<1.00	24.7	0	0	0	0	0	0	0	0	0	0
1	8.21	7.70	9.2	7.9	334		24.8	X/0	0	0	0	0	0	0	0	0	0
2	7.80	7.87	8.9	7.0	339		24.4	—	0	0	0	0	0	0	0	0	—/0
3	7.73	7.90	9.0	7.6	350		25.3	—	5	3	0	0	5	6	0	0	—
4	8.05	8.60	9.2	8.4	338		24.9	—	0	X/0	0	5	0	0	5	4	—
5	8.05	7.79	7.6	8.4	343	NA	25.0	—	10	—	0	8	9	10	9	8	—
6								—		—							—
7								—									—
8								—									—
							Total=	X/0		X/3							—/0

SIGN-OFF

Date: 2/27/23 New WQ: Test Init.: TK
Sol'n Prep: DR Old WQ: PR Time: 1415

Date: 3/1/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1314

Date: 3/2/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1602

Date: 3/3/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1610

Date: 3/4/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1545

Date: 3/5/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1530

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: Old WQ: Counts:
Time:

Mean Neonates/Female =

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.80		8.8		311	<1.00	24.6	0	0	0	0	0	0	0	0	0	0
1	8.05	7.67	10.0	8.1	319		25.1	0	0	0	0	0	0	0	0	0	0
2	7.76	7.78	9.1	7.0	324		24.6	0	0	0	0	0	0	0	0	0	0
3	7.59	7.76	9.4	7.8	313		25.3	0	6	5	0	0	5	3	0	0	4
4	7.91	8.48	10.8	8.4	331		25.0	5	0	0	0	4	0	0	6	5	0
5	7.77	8.00	9.2	8.5	316	NA	25.0	X/14	12	11	0	9	12	13	11	12	13
6								—									
7								—									
8								—									
							Total=	X/19									

Sample ID

64000
64000
64000
64000
64000
64000

Mean Neonates/Female =

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Delta RMP | Material: Sout-006 | Test Date: 2/28/23

Project #: 35355 | Test ID: 98938 | Randomization: — | Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	SIGN-OFF
0	7.90		8.0		334	<1.00	24.7	0	0	0	0	0	0	0	0	0	0	Date: 2/28/23 New WQ: JR Sol'n Prep: JR Test Init.: TK Time: 1415
1	8.21	7.70	9.2	7.9	449		24.8	X/0	0	0	0	0	0	0	0	0	0	Date: 3/1/23 New WQ: Sol'n Prep: Old WQ: Counts: Time: 1314
2	7.80	7.87 (7.78)	8.9	7.0 (6.8)	339		24.4	—	0	0	0	0	0	0	0	0	X/0	Date: 3/2/23 New WQ: Sol'n Prep: Old WQ: Counts: Time: 1102
3	7.73	7.90	9.0	7.6	350		25.3	—	5	3	0	0	5	6	0	0	—	Date: 3/3/23 New WQ: Sol'n Prep: Old WQ: Counts: Time: 1610
4	8.05	8.60 (8.48)	9.2	8.4	333		24.9	—	0	X/0	0	5	0	0	5	4	—	Date: 3/4/23 New WQ: Sol'n Prep: RG Old WQ: Counts: Time: 1545
5	8.05	7.99	7.6	8.4	343	NA	25.0	—	10	—	0	8	9	10	9	8	—	Date: 3/5/23 New WQ: Sol'n Prep: TK Old WQ: Counts: TK Time: 1530
6								—		—							—	Date: New WQ: Sol'n Prep: Old WQ: Counts: Time:
7								—									—	Date: New WQ: Sol'n Prep: Old WQ: Counts: Time:
8								—									—	Date: Old WQ: Counts: Time:
							Total=	X/0		X/3							X/0	Mean Neonates/Female =

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	Sample ID
0	7.76		8.4		225	<1.00	24.7	0	0	0	0	0	0	0	0	0	0	64001
1	7.87	7.62	9.8	7.6	223		24.6	0	0	0	0	0	0	0	0	0	0	64001
2	7.75	7.78	9.2	6.8	244		24.3	0	0	0	0	0	0	0	0	0	0	64001
3	7.62	7.84	9.5	7.9	251		25.1	0	5	4	0	0	0	6	0	0	5	64001
4	7.84	8.13	10.0	8.3	231		24.7	5	0	0	0	6	7	0	5	6	0	64001
5	7.82	8.04	9.2	8.5	230	NA	24.9	12	11	11	0	11	12	11	13	11	12	64001
6																		
7																		
8																		
							Total=											Mean Neonates/Female =

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Delta RMP** Material: **Sout-008** Test Date: 2/28/23

Project #: 35355 Test ID: 98940 Randomization: — Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.90		8.0		334	<1.00	24.7	0	0	0	0	0	0	0	0	0	0
1	8.21	7.70	9.2	7.9	335 419		24.8	X/0	0	0	0	0	0	0	0	0	0
2	7.80	7.87	8.9	7.0	337		24.4	–	0	0	0	0	0	0	0	0	-/0
3	7.73	7.90	9.0	7.6	350		25.3	–	5	3	0	0	5	6	0	0	–
4	8.05	8.00	9.2	8.4	338		24.9	–	0	X/0	0	5	0	0	5	4	–
5	8.05	7.99	7.6	8.4	843	NA	25.0	–	10	–	0	8	9	10	9	8	–
6								–		–							–
7								–									–
8								–									–
							Total=	X/0		X/3							-/0

SIGN-OFF

Date: 2/28/23 New WQ: Test Init: TK
Sol'n Prep: Old WQ: Time: 1445

Date: 3/1/23 New WQ: 10 Counts:
Sol'n Prep: Old WQ: Time: 1314

Date: 3/2/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1602

Date: 3/3/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time: 1610

Date: 3/4/23 New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: 3/5/23 New WQ: Counts: TK
Sol'n Prep: Old WQ: Time: 1530

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: Old WQ: Counts:
Time:

Mean Neonates/Female =

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.76		9.0		208	<1.00	24.8	0	0	0	0	0	0	0	0	0	0
1	7.82	7.63	10.1	8.1	219		24.6	0	0	0	0	0	0	0	0	0	0
2	7.76	7.71	9.4	6.8	218		24.9	0	0	0	0	0	0	0	0	0	0
3	7.55	7.78	9.7	7.9	213		25.0	0	5	3	0	0	0	3	0	0	4
4	7.84	8.37	10.2	8.2	210		24.8	5	0	0	0	7	6	0	1	5	0
5	7.82	7.97	9.2	8.6	208	NA	24.8	12	11	12	0	11	14	12	11	12	11
6																	
7																	
8																	
							Total=										

Sample ID

LL4002
64002
64007
64002
64002
64002

Mean Neonates/Female =

Pacific EcoRisk

Environmental Consulting and Testing

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Delta RMP
Project #: 35355 Test ID: 98941
Material: Cent-003
Randomization:
Test Date: 2/28/23
Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	A	B	C	D	E	F	G	H	I	J
0	7.90		8.0		334	<1.00	24.7	0	0	0	0	0	0	0	0	0	0
1	8.21	7.70	9.2	7.9	419		24.8	x/0	0	0	0	0	0	0	0	0	0
2	7.80	7.87	8.9	7.0	339		24.4	–	0	0	0	0	0	0	0	0	–/0
3	7.73	7.90	9.0	7.6	350		25.3	–	5	3	0	0	5	6	0	0	–
4	8.05	8.60	9.2	8.4	338		24.9	–	0	x/0	0	5	0	0	5	4	–
5	8.05	7.99	7.6	8.4	343	NA	25.0	–	10	–	0	8	9	10	9	8	–
6								–		–							–
7								–									–
8								–									–
							Total=	x/0		x/3							–/0

SIGN-OFF

Date	Sol'n Prep	New WQ	Old WQ	Counts / Test Init.	Time
2/28/23	[illegible]	TR		Test Init.: TK	1415
3/1/23	[illegible]	[illegible]	[illegible]	[illegible]	1314
3/2/23	[illegible]	[illegible]	[illegible]	[illegible]	1602
3/3/23	[illegible]	[illegible]	[illegible]	CD	1610
3/4/23	RB	[illegible]	[illegible]	CD	1545
3/5/23	TK	[illegible]	[illegible]	TK	1530

Mean Neonates/Female =

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	A	B	C	D	E	F	G	H	I	J	Sample ID
0	7.77		9.1		226	<1.00	24.8	0	0	0	0	0	0	0	0	0	0	64003
1	7.77	7.66	11.1	8.1	228		24.7	0	0	0	0	0	0	0	0	0	0	64003
2	7.78	7.66	9.3	6.8	262		24.7	0	0	0	0	0	0	0	0	0	0	64003
3	7.61	7.74	10.1	7.8	226		25.1	0	5	4	0	0	5	6	0	0	5	64003
4	7.80	8.20	10.3	8.1	227		24.7	4	6	0	0	4	0	0	0	4	4	64003
5	7.80	8.00	9.3	8.5	226	NA	24.8	11	12	9	0	9	10	12	12	12	10	64003
6																		
7																		
8																		
							Total=											Mean Neonates/Female =

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Delta RMP** Material: **Cent-004** Test Date: 2/28/23

Project #: 35355 Test ID: 98942 Randomization: _____ Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.90		8.0		334	<1.00	24.7	0	0	0	0	0	0	0	0	0	0
1	8.21	7.70	9.2	7.9	419 (SC 355)		24.8	X/0	0	0	0	0	0	0	0	0	0
2	7.80	7.87	8.9	7.0	339 (MS 3/1/23)		24.4	-	0	0	0	0	0	0	0	0	-/0
3	7.73	7.90	9.0	7.6	350		25.3	-	5	3	0	0	5	6	0	0	-
4	8.05	8.60	9.2	8.4	338		24.9	-	0	X/0	0	5	0	0	5	4	-
5	8.05	7.99	7.6	8.4	343	NA	25.0	-	10	-	0	8	9	10	9	8	-
6								-		-							-
7								-									-
8								-									-
							Total=	X/0		X/3							-/0

SIGN-OFF

Date: 2/28/23 New WQ: Test Init: TK
Sol'n Prep: 7.2 7.2 Time: 1445

Date: 3/1/23 New WQ: 7.85 Counts: 10
Sol'n Prep: 7.1 Old WQ: 7.87 Time: 1314

Date: 3/2/23 New WQ: 8.1 Counts: Lost
Sol'n Prep: 7.1 Old WQ: 8.1 Time: 1602

Date: 3/3/23 New WQ: 7.82 Counts: 10
Sol'n Prep: 7.1 Old WQ: 8.1 Time: 1610

Date: 3/4/23 New WQ: 7.82 Counts: 10
Sol'n Prep: 7.6 Old WQ: 8.1 Time: 1515

Date: 3/5/23 New WQ: 7.80 Counts: TK
Sol'n Prep: TK Old WQ: 8.1 Time: 1530

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Date: Old WQ: Counts:
Time:

Mean Neonates/Female =

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	Sample ID
0	7.76		9.1		258	<1.00	24.8	0	0	0	0	0	0	0	0	0	0	L04004
1	7.77	7.72	11.1	7.8	256		24.8	0	0	0	0	0	0	0	0	0	0	04004
2	7.84	7.64	9.7	6.8	264		24.9	0	0	0	0	0	0	0	0	0	0	64004
3	7.64	7.72	10.0	7.8	259		25.2	0	4	6	0	0	5	4	5	4	4	64004
4	7.86	8.11	10.3	8.3	256		24.5	5	0	0	0	3	0	0	0	0	0	64004
5	7.83	8.01	9.1	8.4	259	NA	24.7	13	11	10	0	7	14	12	10	12	11	64004
6																		
7																		
8																		
							Total=											

Mean Neonates/Female =

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Delta RMP** Material: **Meter ID's** Test Date: 2/28/23

Project #: 35355 Test ID: - Randomization: Control Water: Mod EPAMH

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	SIGNOFF
Meter ID's	0	PH26		RD15		EC15	DR3800	146A	Date: 2/28/23 New WQ: JR
	1	PH26	PH24	RD14	RD10	EC15		111A	Date: 3/1/23 New WQ: MP Old WQ: BT
	2	PH26	PH29	RD14	RD14	EC5		144A	Date: 3/2/23 New WQ: SF Old WQ: EL
	3	PH24	PH26	RD15	RD14	EC11		111A	Date: 3/3/23 New WQ: SF Old WQ: SF
	4	PH29	PH26	RD14	RD19	EC15		136A	Date: 3/4/23 New WQ: SF Old WQ: SF
	5	PH26	PH30	RD15	RD14	EC13	NA	136A	Date: 3/5/23 New WQ: JR Old WQ: JR
	6								Date: New WQ: Old WQ:
	7								Date: New WQ: Old WQ:
	8								Date: New WQ: Old WQ:
								Total=	

Comments and Observations

Client: Delta RMP — Test Date: 2/28/23

Sample Description: Ambient Water — Test ID #: -

Species and Test Description: C. Cerio — Project #: 35355

Date	Initials	Description of Observation:
2/28/23	JK	Board # 5677
		Row Board cup
		A 5677 1H
		B 2F
		C 3E
		D 3H
		E 4G
		F 6E
		G 5F
		H 5H
		I 5I
		J 5J
2/27/23	JR	- % sat < 110% for all treatments
3/1/23	YR	- % sats ≤ 110 - shaken
		- cond. remeasured
		- HT conf. UNC-A mort
3/2/23	RL	% sat < 110%
		[illegible] conf ✓
		[illegible] 2 neonates conf by FR
		[illegible] C-J, conf by FR, [illegible]
3/2/23	GL	∘ Transcription error
3/3/23	CD	D3 Control Zero Conf. by FR

Neonates	
2200	✓
0600	
Other	

General Guidance:

1) All observations are to be recorded on this sheet and transcribed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical observations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08 AB New chem of 100% effluent > 10% different than previous day.
Measured on second meter and confirmed conductivity of sample.
New sample had >10% difference in conductivity than previous sample.

Comments and Observations

Client: DRMP
Sample Description: Ambient C.
Species and Test Description: C. dene
Test Date: 2/28/23
Test ID #: —
Project #: 35355

Date	Initials	Description of Observation:
3/4/23	CD	Ctl mort Conf by TR
		D4 C-D zero Conf by ND
		D rep may be ↗
3/4/23	SJ	Many a transcription errors
3/5/23	TK	D rep orgs are ↗

General Guidance:
1) All observations are to be recorded on this sheet and transcibed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical obversations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08	AB	New chem of 100% effluent > 10% different than previous day. Confirmed on second meter and confirmed conductivity of sample. New sample had >10% difference in conductivity than previous sample.

Pacific EcoRisk

Chronic *Ceriodaphnia* Culture Log

Board ID# 5677

Culture Water MF July '23

Day	Row 1 A	B	C	D	E	F	G	H	I	J	Row 2 A	B	C	D	E	F	G	H	I	J	Row 3 A	B	C	D	E	F	G	H	I	J
0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	6	0	0	0	0	0	0	5	0	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	0	6	4	6	5	3	4	0	6	6	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5	6	5	4	7	7	7	8	8	10	0	+	-	+	+	+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	+
6	0	0	0	10	0	0	3	4	0	5	-	+	+	+	+	+	+	+	+	X	-	+	+	+	+	+	+	+	+	+
7	3	3	4	6	2	10	0	0	12	4	+	+	+	+	-	-	+	-	+	X	+	-	+	+	-	+	-	-	+	+
8	3	3	5	9	7	10	11	13	5	0	-	+	+	+	+	-	+	+	+	X	+	+	+	-	-	-	-	+	+	+
9	0	0	0	0	3	0	0	0	0	14	-	-	-	-	-	+	-	-	-	X	-	-	-	-	+	+	+	-	+	-
10	5	4	5	12	6	11	4	1	12	0	+	+	+	+	+	-	+	+	+	X	+	+	+	+	+	+	-	-	-	+
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	/	/	/	/	/	/	/	/
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	/	/	/	/	/	/	/	/
13	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	/	/	/	/	/	/	/	/
TC	19	20	20	23	24	20	15	17	28	15																				
D7	19	20	20	23	24	20	15	17	28	15																				
D13																														

TC Mean Neonates*: 20.1 #3rdBroods 10

D7 Mean Neonates 20.1

D13 Mean Neonates

Day 6 Day 7 Day 8

Source Board ID# 5673

Day	Row 4 A	B	C	D	E	F	G	H	I	J	Row 5 A	B	C	D	E	F	G	H	I	J	Row 6 A	B	C	D	E	F	G	H	I	J
0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	—	—	—	—	—	—	—	+	+	+	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	+	—	+	+	+	+	+	—	—	—	+	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5	—	+	+	+	+	+	+	+	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
6	+	+	+	+	+	+	+	+	+	+	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
7	—	+	—	+	+	—	—	+	+	—	+	—	+	+	—	—	+	—	—	—	+	+	—	+	—	—	+	+	+	+
8	+	+	+	—	+	+	+	—	—	+	M	+	+	—	+	+	—	+	+	+	+	+	+	+	—	+	—	+	+	—
9	—	—	—	+	+	+	+	—	+	—	M	+	+	+	—	—	+	—	X	—	—	—	+	—	+	+	—	—	+	M
10	+	+	+	+	+	—	+	+	+	+	M	+	+	—	+	+	—	+	X	—	+	M	+	+	+	—	+	+	+	M
11	/	/	/	/	/	/	/	/	/	/	M	/	/	/	/	/	/	/	X	/	/	M	/	/	/	/	/	/	/	M
12	/	/	/	/	/	/	/	/	/	/	M	/	/	/	/	/	/	/	X	/	/	M	/	/	/	/	/	/	/	M
13	/	/	/	/	/	/	/	/	/	/	M	/	/	/	/	/	/	/	X	/	/	M	/	/	/	/	/	/	/	M

Day	Date	Time	Signoff	pH	DO	Conductivity New / Old	Temp	% Survival
0	2/20/23	1435	[illegible]	7.83	8.5	347 / —	25.3	100
1	2/21/23	1026	[illegible]	—	—	— / —	25.7	100
2	2/22/23	915	[illegible]	8.05	8.4	355 / 383	25.4	100
3	2/23/23	1326	[illegible]	—	—	— / —	24.4	100
4	2/24/23	1009	[illegible]	7.91	7.9	344 / 333	24.8	98.3
5	2/25/23	1047	[illegible]	—	—	— / —	24.9	98.3
6	2/26/23	1145	[illegible]	7.43	9.0	336 / 313	25.0	98.3
7	2/27/23	1425	[illegible]	7.91	9.1	376 / 327	25.4	98.3
8	2/28/23	1613	[illegible]	7.88	6.7	367 / 382	25.3	98.3
9	3/1/23	1122	[illegible]	7.83	9.3	351 / 355	24.9	96.7
10	3/2/23	1248	[illegible]	—	—	— / —	25.4	96.7
11	/ /					/		
12	/ /					/		
13	/ /					/		

Comments
good, small, active
good small active
good, small, active
good, small, active
Good, small, active
good, small, active
good, active, nice broods
good, active, good broods
good, active
good, active, nice broods

* Mean neonates when standard test termination criteria (TC) was met. TC= ≥60% surviving females with 3rd brood neonates.

TERM PER CD

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: [redacted] Material: Lab Water Control Test Date: 2/28/23

Project #: 19038 Test ID: - Randomization — Control Water: ModEPAMH

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
Lab Water Control 87	0	7.86		8.4		337	25.0	0	0	0	0	0	0	0	0	0	0
	1	7.81	7.75	8.7	6.1	341	24.7	0	0	0	0	0	0	0	0	0	0
	2	7.97	7.73	8.6	6.2	352	25.6	0	0	0	0	0	0	0	0	0	0
	3	7.80	7.90	9.5	7.8	346	26.0	4 (3) 3/4/23 JL	5 (0) 3/3/23 JR	5	5	5 (4) 3/3/23 JR	5 (4) 3/4/23 JR	5	5	5	4
	4	7.99	7.99	9.0	8.6	333	25.9	0	3	0	0	0	0	0	7	0	5
	5	7.93	8.01	8.0	8.1	342	25.8	7	9	8	8	10	12	9	0	9	0
	6	—	8.03	—	8.4	366	25.4	X/0	15	20	18	21	17	15	18	17	16
	7							—									
	8							—									
							Total=	X/10	27	33	31	35	34	29	30	31	25

mean neonates/female = 28.5

Comments and Observations

Client: [redacted] CH 7
Sample Description:
Species and Test Description: C.ceriodaphnia

Test Date: 2/28/23
Test ID #: multiple
Project #: 19038

Date	Initials	Description of Observation:
2/28/23	JAL	Board # 5677 + 5679
		Row Board cup A 5677 6B B | 6F C | 6H D 5679 1G E | 1H F | 2D G | 3I H | 3H I | 4C J | 4E
		FRA shaken until %sat ≤110%
3/1/23	JAL	All 100% shaken until %sat ≤110%
3/2/23	JAL	Rechecked CCS cond EC13,416 Day 2 zero conf FR %sat ≤110% for all
3/3/23	JAL	%sat ≤110% for all Day 3 zero conf. ND water in mixing box
3/4/23	JAL	%sat ≤110% for all TSR F very small neonate

Neonates	
2200	✓
0600	
Other	

General Guidance:
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4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical observations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08 AB New chem of 100% effluent > 10% different than previous day.
Measured on second meter and confirmed conductivity of sample.
New sample had >10% difference in conductivity than previous sample.

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Reference Toxicant — Material: Sodium Chloride — Test Date: 2/28/23
Project #: 37597 — Test ID: 100120 — Randomization: 10.6.1 — Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Temp (°C)	A	B	C	D	E	F	G	H	I	J
0	7.89		7.8		355		25.0	0	0	0	0	0	0	0	0	0	0
1	7.99	7.89	9.2	7.4	337	369	25.1	0	0	0	0	0	0	0	0	0	0
2	7.87	7.47	9.1	7.8	340	406	~~24.3~~ 24.4	0	0	0	0	0	0	0	0	0	0
3	7.73	7.92	9.0	8.4	339	378	24.7	0	0	0	4	0	0	0	0	0	5
4	8.01	8.46	9.0	8.4	335	374	25.0	6	6	5	0	6	7	6	0	4	0
5	7.98	8.15	8.9	8.6	~~410~~ 356	393	24.7	10	14	13	11	12	9	15	0	12	14
6	8.10	8.23	9.1	8.6	354	399	24.0	14	17	17	15	0	16	19	0	20	19
7																	
8																	
							Total=	30	37	35	30	18	32	40	0	36	38

SIGN-OFF

Date: 2/25/23 New WQ: [illegible] Test Init.: [illegible] ITT
Soln Prep: TT Time: 1358

Date: 3/1/23 New WQ: SB Counts: TK
Soln Prep: JAL Old WQ: BJ Time: 1100

Date: 3/2/23 New WQ: SB Counts: AT
Soln Prep: JAL Old WQ: CA Time: 1210

Date: 3/3/23 New WQ: SB Counts: JAL
Soln Prep: JAL Old WQ: CA Time: 1311

Date: 3/4/23 New WQ: SB Counts: MD
Soln Prep: MD Old WQ: SB Time: 1600 TT

Date: 3/5/23 New WQ: [illegible] Counts: [illegible]
Soln Prep: MR Old WQ: CA Time: 1516

Date: 3/6/23 New WQ: MC Counts: MD
Soln Prep: LC Old WQ: CA Time: 1220

Date: New WQ: Counts:
Soln Prep: Old WQ: Time:

Date: Old WQ: Counts:
Time:

Mean Neonates/Female = ~~29.6~~ 32.9

500 mg/L

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Temp (°C)	A	B	C	D	E	F	G	H	I	J
0	7.88		7.7		1304		25.2	0	0	0	0	0	0	0	0	0	0
1	7.95	7.80	9.4	7.6	1309	1512	25.1	0	0	0	0	0	0	0	0	0	0
2	7.79	7.66	9.1	7.8	1320	1524	24.1	0	0	0	0	0	0	0	0	0	0
3	7.75	7.91	9.0	8.5	1304	1562	24.5	0	0	6	0	0	4	5	0	0	0
4	8.00	8.35	8.9	8.5	1255	1440	25.2	4	6	0	1	4	0	0	0	5	4
5	7.94	8.17	9.0	8.5	1317	1358	24.9	10	10	8	9	7	7	13	0	12	11
6	8.03	8.18	9.0	8.6	1303	1333	25.0	0	16	15	0	8	16	13	0	0	16
7																	
8																	
							Total=	14	32	29	10	19	27	31	0	17	31

RT BATCH NUMBER (LC 3/6)

378
378
378
378
378
378
378/379

Mean Neonates/Female = ~~21.0~~ 23.3

LC 3/6

Comments and Observations

Client:	Pacific EcoRisk	Test Date:	2/28/23
Sample Description:	Ref Tox	Test ID #:	100120
Species and Test Description:	C. Cerio	Project #:	37597

Date	Initials	Description of Observation:
		Board # 5679 + 5678 — Neonates: 2200 ✓; 0600; Other
2/28/23	HT	Row / Board cup
		5679: A 5B
		B 5I
		C 6D
		D 6G
		E 6H
		5678: F 2C
		G 2B
		H 5C
		I 5H
		J 3I
		~~transcript error~~
3/1/23	TK	~~Wrote temp of soln plus in wrong box.~~
3/2/23	RB	2100 set after mix ND confirm of 2 zero
3/3/23	JAL	Day 3 control 0 conf ND
3/4/23	WO	~~day~~ % sat <110
		- 6H zeroes - possible male
		based on shape
		- 500H also possible male
		* all H's are mostly likely male
3/5/23	[illegible]	recheck and conf, % sat <110%
3/6/23	ISL	H- confirmed male by HD, corrected math

General Guidance:

1) All observations are to be recorded on this sheet and transcribed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical observations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08 AB New chem of 100% effluent > 10% different than previous day.
Measured on second meter and confirmed conductivity of sample.
New sample had >10% difference in conductivity than previous sample.

2022-05. Event 1 Missed Resolution Reporting Timeline for TSS

Deviation Report / Corrective Action Form

Title:	**CUP Event 1 Missed Resolution Reporting Timeline for TSS**
Deviation Number:	2022-05_CUPv1.3_Dev_Event1_USGS_MissedResolutionTimelineTSS.docx
Prepared By:	Cassandra Lamerdin

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	2/14/2023	Data Management Team (DMT) staff checked that all preliminary results from USGS were reported within 60 days of sample analysis; all results were within this time frame except TSS.
60-day Preliminary Results Reporting Deadline:	TSS: 1/8/2023 Pesticide: 1/29/23	Preliminary results must be reported within 60 days of sample analysis to the CVRWQCB. Sample analysis occurred on 11/10/ 2022 for total suspended solids (TSS) and 11/30/22 for pesticides.
Date Preliminary Lab Results from USGS Submitted to DRMP:	1/11/2023	USGS sent preliminary lab results for samples collected on November 9 and 10, 2022, for review.
Date Preliminary Lab Results from USGS Submitted to CVRWQCB:	1/12/2023	CVRWQCB notification of USGS preliminary data receipt.
Date EDD was submitted by USGS.	1/20/2023	USGS submitted an electronic data deliverable (EDD) which reported an analysis date of 11/10/2022 for Total Suspended Sediment (TSS).

	Date	Notes/Description (optional)
Date DRMP Program Manager Notified:	2/15/2023	The DMT Data Manager (DM) notified the DRMP Program Manager of the situation and indicated that all results met the reporting time frame except TSS.
Date CVRWQCB QA Representative Notified:	2/15/2023	The DRMP Program Manager notified Selina Cole of the situation to clarify if this constitutes a deviation of the Resolution R5-2021-0054 reporting timeline requirements.
Deviation Form sent for Review:	03/23/2023	Jim Orlando (USGS Project Manager)
Deviation Form sent for Review:	03/29/2023	Will Hagan (DRMP QA Officer)
Deviation Form sent for Signatures:	4/12/2023	

Description of Deviation/Change:

On November 9-10, 2022, the USGS conducted sampling activities for eight sites during the first flush sampling event (Event 1).

Based on the Regional Board Resolution R5-2021-0054, preliminary results are required to be reported within 60 calendar days of the sample analysis date. USGS analyzed samples for TSS on 11/10/22 and therefore the results should have been reported to the Regional Board by 1/8/2023. USGS reported Event 1 TSS results with their pesticide results (analyzed on 11/30/22) on 1/11/2023 which was 3 days past the 60- day deadline. The DRMP reported the preliminary results to the Regional Board on 1/12/23.

Reason for Deviation/Change

During the review of the CEDEN EDD, the Data Management Team (DMT) noticed that although the November USGS results were received within 60 days of pesticide analysis (reported within 43 days of analysis), the TSS results (which were reported in the same file) were analyzed earlier and were reported 3 days past the 60-day deadline. The deviation was not noticed until the EDD was received and reviewed since the preliminary results do not include the analysis date.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

This deviation only affects the timing for when preliminary results were received for TSS; there were no hold time violations associated with these results.

Corrective Action	By Date	By Whom
Resolution reporting timelines are being tracked in a more specific manner when multiple analysis methods are presented in a single file.	Prior to preliminary data submission to the CVRWQCB.	Cassandra Lamerdin, DRMP Data Manager
Preliminary results for both TSS and Pesticides will be reported within the 60- day limit.	Event 2 preliminary data submission to the DRMP.	Matt De Parsia, USGS Data Manager

ACKNOWLEDGED BY:

USGS Project Manager:	DocuSigned by: Jim Orlando B4DDF22E261F427...	Date:	6/8/2023
	Jim Orlando		
CVRWQCB QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	6/2/2023
	Selina Cole		
Delta RMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	6/5/2023
	Melissa Turner		
Delta RMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E56040F...	Date:	6/5/2023
	Will Hagan		

2022-07. Event 3 Chironomus larvae initial weights greater than 0.012 mg/ individual AFDW

Deviation Report / Corrective Action Form

Title:	**CUP Event 3 (WY23) *Chironomus* larvae initial weights greater than 0.012 mg/ individual AFDW**
Deviation Number:	2022-07_CUP1.3_Dev_Event3_PER_Chironomus_InitialWeights
Prepared By:	Cassandra Lamerdin
Attached:	NonConformingDataReport_DeltaRMPChiron_052823.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	05/12/2023	Upon completion of drying process, the initial weights were recorded as Ash-Free Dry Weight (AFDW) on 5/12/2023 for the second control batch of *Chironomus dilutus* larvae. This test batch was initiated on 4/28/2023.
Date DRMP Program Manager was notified:	05/22/2023	Stevi Vasquez, Project Manager at Pacific EcoRisk (PER), notified Melissa Turner (DRMP Technical Program Manager) of upcoming deviation in that *C. dilutus* testing was initiated with organisms above the measurement quality objective (MQO) of ≤0.12 mg/individual AFDW for the second control batch.
Date CVRWQCB QA Representative Notified:	05/24/2023	Cassandra Lamerdin (DRMP Data Manager) informed Selina Cole (Region 5 QA Representative) of the non-conformance of mean initial (t(0)) weights.

	Date	Notes/Description (optional)
Deviation Form sent for Review:	06/15/2023	Will Hagan (DRMP QA Officer) and Stephen Clark (Pacific EcoRisk Technical Director).
Deviation Form Sent for Signatures:	07/14/2023	

Description of Deviation/Change:

PER discovered that the t(0) weights of *Chironomus dilutus* were greater than the SWAMP MQO of ≤0.12 mg/individual AFDW for the second control batch. Two batches of tests were initiated on 04/27/2023 and 04/28/2023 respectively. The first batch (Control Batch 1) had a mean AFDW of 0.06 mg/individual and the second batch (Control Batch 2) of 0.17 mg/individual.

Reason for Deviation/Change

As noted in the non-conforming report attached to this deviation form, the organisms were received as egg cases on 04/18/2023. All egg cases were recorded as hatching on 4/19/2023 and were of the correct age at test initiation (9 days old). Even though the organisms were of the correct age for this method (8-9 days old), they had a greater AFDW than the SWAMP MQO for one of the two batches (Control Batch 2); therefore, organism quality cannot be ruled out as a likely cause of the greater organism weight. Another possible reason for the larger organisms in Control Batch 2 could be attributed to greater food density. The lab technician noted that the organisms in Control Batch 2 were visually larger than those in Control Batch 1. It was deemed possible that the hatch number was lower in the egg case source for Control Batch 2 thus leading to more food availability per organism.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

The SWAMP MQO of ≤0.12 mg/individual is presumably targeted to reduce the likelihood of pupation/hatching during the 10-day test. For both test batches, no pupation or hatching occurred even though the organism AFDW in Control Batch 2 was >0.12 mg/individual. No impact on the test results is expected since there was no pupation, and the age of the organisms was confirmed at 9 days old.

Corrective Action	By Date	By Whom
The Tox Test Level QA Code of TAF [Test organisms exceed the maximum weight requirement at test initiation] will be applied to the samples in Control Batch 2.	Prior to Electronic Data Deliverable Submission	Stevi Vasquez, PER Data Manager

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: Stephan Clark C4D43551B2BC478...	Date:	10/31/2023
	Stephen Clark		

Regional Board QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	10/30/2023
	Selina Cole		

DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	10/31/2023
	Melissa Turner		

DRMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E56040F...	Date:	11/1/2023
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	4/28/23	Technical Mistake by PER Staff	
Client & Test Date:	Delta RMP; 4/28/23	Organism Quality	
Species:	*Chironomus dilutus*	Water Quality	
Test:	10d Chronic Toxicity	Solution Preparation	
Test ID:	100880-100884	Feeding/Food Quality	
Project Number:	35355	Organism Handling	
Manager on Duty:	CD	Technical Experience	
Individuals Involved:	N/A	Undetermined	X

2.0 Evaluation and Cause Analysis

The T_0 final ash free dry weight measurements associated with Delta RMP's 10-day chronic water exposure *Chironomus dilutus* toxicity tests were not ≤ 0.12 mg/individual as required by the SWAMP MQO. Two batches of tests were initiated. The organisms used to start testing on 4/27 had a mean ash free dry weight of 0.06 mg/individual (Control 1/Batch 1) while the mean ash free dry weight for those used to initiate testing on 4/28 was 0.17 mg/individual (Control 2/Batch 2). An investigation was performed to determine the cause of the increased weight of the organisms used for test initiation on 4/28.

Organism Quality

The batch 2 testing was initiated on 4/28 using 9-day old larvae from Aquatic BioSystems Inc. (PER's primary vendor) from batch #13695, which was received as egg cases on 4/18. The egg cases were received in good condition at arrival with acceptable water quality parameters. The organisms were held in-house and monitored closely until they were 9 days old when they were used for test initiation, which is within the required age range for this test method. The culture was observed to be in "good" condition for the duration of holding. It is possible that the egg case used as the source organisms for Control 2 produced larger larvae at hatch than the egg case used for Control 1 and that a larger starting larval hatch weight produced larvae greater than the MQO nine days later at test initiation. Therefore, organism quality cannot be ruled out as a contributing factor to the test failing to meet TAC.

Feeding

Five egg cases were received on 4/18 and each was placed in a pan to hatch. All egg cases were noted as hatching on 4/19 by EJS, an experienced analyst. During investigation, it was determined that the 8-day old organisms used to load control 1 for the Delta RMP samples had a t(0) AFDW of 0.06 mg/individual, which met the SWAMP MQO. When interviewed, KL who

maintained the tests on 4/29 and 4/30 stated that the organisms in Control 2 were obviously larger than those in Control 1, despite only a one-day age difference (but coming from different egg case sources). As the hatch from the egg cases can vary, it is possible that a lower density of hatch occurred for Control 2 but they grew larger than the Control 1 organisms due to having more food per organism in the culture. Therefore, food density cannot be ruled out as a contributing factor to the test exceeding the SWAMP MQO.

Other Factors

An investigation was performed on other factors that could have impacted testing including test conditions and water quality. The investigation did not identify additional contributing factors to the organisms not meeting the ash free dry weight limit of ≤ 0.12 mg/individual.

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?

The results were reported to the client and no retest was scheduled; therefore, no corrective actions are necessary at this time.

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

The Quality Management team will provide additional oversight on hatch success/feeding of *Chironomus* cultures to gather additional information if this can be a driver for exceeding the SWAMP MQO. Staff will be retrained, as warranted, any adjustments to our feeding procedures.

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There were no additional incidents within thirty days following this incident.

Incident Open Date: 4/28/23 Incident Close Date: 5/28/23

Prepared By: Kevin Lung Quality Manager's Signature: Kevin Lung

Technical Director: Stephen Clark Technical Director's Signature:

Control 1 - Initiate 4/27/23 **T0 weights**

Pan ID	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt (mg)	Ashed Pan + Larvae Wt (mg)	# Live Organisms (Larvae)	Mean Dry Weight (mg)	Mean Ash Free Dry Wt (mg)
1	133.22	134.63	134.03	10	0.14	0.06
2	123.26	124.33	123.67	10	0.11	0.07
3	148.15	149.17	148.45	10	0.10	0.07
4	157.08	158.01	157.4	10	0.09	0.06
				Mean =	0.11	0.06

Control 2 - Initiated 4/28/23 **T0 weights**

Pan ID	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt (mg)	Ashed Pan + Larvae Wt (mg)	# Live Organisms (Larvae)	Mean Dry Weight (mg)	Mean Ash Free Dry Wt (mg)
1	140.75	143.51	141.54	10	0.28	0.20
2	129.65	133.71	132	10	0.41	0.17
3	204.48	208.71	206.82	10	0.42	0.19
4	149.16	151.48	150.07	10	0.23	0.14
				Mean =	0.33	0.17

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 544LSAC13
Test ID#: 100880 Project #: 35355
Test Date: 4/28/23

Organism Log#: 13695 Age: 9 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: ~~327~~ 328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23; Sol. Prep: CD; Initi. Time: 1420
100%	20.0	7.30		8.8		121		<1.00	10	10	10	10	Initi. Sign-off: KG 04/28; Sample ID: 68056 68059; Feed: KG
Meter ID	146A	PH30		RD12		EC15		DR3800	New WQ: CD				
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23; Count Time: 1435
100%	20.7		7.45		7.0		127		10	10	9	10	Count Signoff: KL; Feed: KL
Meter ID	146A		PH26		RD14		EC16				Old WQ: DC		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23; Sol. Prep: MCM; Maint. Time: 1255
100%	20.7	7.69	7.43	8.9	6.9	126	132		10	10	9	10	Maint. Signoff: KL; Sample ID: 68059; Feed: KL
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ: [illegible]		
Lab Control	20.6		7.57		7.0		321		10	10	10	10	Date: 5/1/23; Count Time: 1334
100%	20.7		7.42		7.2		124		10	10	9	10	Count Signoff: TP; Feed: TP
Meter ID	137A		PH29		RD10		EC11				Old WQ: MP		
Lab Control	20.6	7.88	7.57	8.2	6.6	311 ~~309~~	324		10	10	10	10	Date: 5/2/23; Sol. Prep: MCM; Maint. Time: 1315
100%	20.5	7.73	7.47	8.9	6.8	115	128		10	10	9	10	Maint. Signoff: TK; Sample ID: 68059; Feed: TK
Meter ID	133A	PH27	PH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: SJ		
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23; Count Time: 1601
100%	21.0		7.36		7.0		114		10	10	9	9	Count Signoff: BK; Feed: BK
Meter ID	132A		PH24		RD14		EC15				Old WQ: SJ		
Lab Control	20.1	7.96	7.43	7.9	~~7.1~~ 6.9	312	342		10	10	10	10	Date: 5/4/23; Sol. Prep: TK; Maint. Time: 1701
100%	20.2	7.72	7.41	8.3	7.0	109	137		10	10	9	9	Maint. Signoff: ESS; Sample ID: 68059; Feed: [illegible]
Meter ID	127A	PH29	PH30	RD14	RD15	EC15	EC13		New WQ: MP		Old WQ: MH		
Lab Control	20.4		7.47		6.8		301		10	10	10	10	Date: 5/5/23; Count Time: 1222
100%	20.3		7.48		7.1		128		10	10	9	9	Count Signoff: MP; Feed: MP
Meter ID	138A		PH29		RD10		EC15				Old WQ: MP		
Lab Control	20.4	7.90	7.29	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23; Sol. Prep: MP; Maint. Time: 1312
100%	20.4	7.51	7.17	9.8	4.6	~~113~~ 112	128		10	10	9	9	Maint. Signoff: MP; Sample ID: 68059; Feed: MP
Meter ID	138A	PH30	PH30	RD14	RD14	EC16	EC16		New WQ: MH		Old WQ: BS		
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23; Count Time: 1700
100%	20.6		7.09		5.7		133		10	10	9	9	Count Signoff: KL; Feed: KL
Meter ID	141A		PH29		RD10		EC15				Old WQ: CA		
Lab Control	19.9		7.40		5.6		364	2.03	10	10	10	10	Date: 5/8/23; Term Time: 1100
100%	20.2		7.45		6.4		150	1.61	10	10	9	9	Term Signoff: BA
Meter ID	138A		PH29		RD10		EC11	DR3800			Old WQ: MP		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: SOUT-010
Test ID#: 100882 Project #: 35355
Test Date: 4/28/23

Organism Log#: 13695 Age: 9 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 4/28/23 327328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep CO
100%	20.0	7.27		9.9		118		<1.00	10	10	10	10	Initi. Time: 1420 Initi. Sign-off: KL
													Sample ID: 68058
Meter ID	146A	DH30		RD12		EC15		DR3800	New WQ: CO				Feed: KL
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/30/23 Count Time: 1435
100%	20.7		7.35		7.1		116		9 10 KL 4/30	10	10	10	Count Signoff: KL Feed: KL
Meter ID	146A		PH26		RD14		EC16				Old WQ: DC		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 5/1/23 Sol. Prep MCM
100%	20.7	7.68	7.42	9.1	7.1	118	120		10	10	10	10	Maint. Time: 1755 Maint. Signoff: KL
													Sample ID: 68058
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ:		Feed: KL
Lab Control	20.6		7.57		7.0		321		10	10	10	10	Date: 5/1/23 Count Time: 1336
100%	20.6		7.47		7.8		116		10	10	10	10	Count Signoff: KL Feed: KL
Meter ID	140A		PH29		RD10		EC11				Old WQ: MP		
Lab Control	20.6	7.88	7.57	8.2	6.6	317 326	324		10	10	10	10	Date: 5/2/23 Sol. Prep MCM
100%	20.6	7.60	7.41	9.3	7.1	111	112		10	10	10	10	Maint. Time: 1515 Maint. Signoff: TK
													Sample ID: 68058
Meter ID	133A	PH27	PH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: KL		Feed: TK
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23 Count Time: 1603
100%	20.8		7.33		7.0		107		10	10	10	10	Count Signoff: KL Feed: KL
Meter ID	137A		PH29		RD14		EC15				Old WQ: KL		
Lab Control	20.1	7.96	7.43	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep TK
100%	20.3	7.51	7.18	9.6	6.7	107	126		10	10	10	10	Maint. Time: 1420 Maint. Signoff: KL
													Sample ID: 68058
Meter ID	107A	PH29	PH30	RD14	RD15	EC15	EC13		New WQ: MP		Old WQ: MH		Feed: KL
Lab Control	20.4		7.47		6.8		701		10	10	10	10	Date: 5/5/23 Count Time: 1220
100%	20.5		7.31		6.1		117		10	10	10	10	Count Signoff: MP Feed: MP
Meter ID	138A		PH29		RD10		EC11				Old WQ: MH		
Lab Control	20.4	7.90	7.29	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep MP
100%	20.2	7.48	7.13	10.1	4.9	106	119		10	10	10	10	Maint. Time: 1312 Maint. Signoff: MP
													Sample ID: 68058
Meter ID	138A	PH30	PH30	RD14	RD14	EC16	EC11		New WQ: MH		Old WQ: BJ		Feed: MP
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23 Count Time: 1700
100%	20.6		7.17		6.5		518 NM		10	10	10	10	Count Signoff: KL Feed: KL
Meter ID	146A		PH29		RD10		EC15				Old WQ: CA		
Lab Control	19.9		7.40		5.6		364	2.03	10	10	10	10	Date: 5/8/23 Term Time: 1120
100%	20.2		7.25		5.4		130	1.98	10	10	10	10	Term Signoff: KL
Meter ID	138A		PH29		RD10		EC11	DR3800			Old WQ: MP		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Organism Log#: 13695 Age: 9 day
Test Material: CENT-006
Organism Supplier: ABS
Test ID#: 100883 Project #: 35355
Control/Diluent: Reformulated EPAMH
Test Date: 4/28/23
Control Water Batch: CW 327328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep CD
100%	20.1	7.40		9.1		139		<1.00	10	10	10	10	Initi. Time: 1420 Initi. Sign-off: PD
													Sample ID: 68000
Meter ID	146A	PH30		RD12		EC15		DR3800	New WQ: CD				Feed: 1126
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23 Count Time: 1435
100%	20.7		7.36		6.9		139		10	9/10	10	10	Count Signoff: KL Feed: KL
Meter ID	146A		PH26		RD14		EC16				Old WQ: CC		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23 Sol. Prep MCM
100%	20.7	7.61	7.41	9.1	6.8	131	147		9	10	10	10	Maint. Time: 1255 Maint. Signoff: KL
													Sample ID: 68000
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ: KL		Feed: KL
Lab Control	20.6		7.57		7.0		321		10	10	10	10	Date: 5/1/23 Count Time: 1320
100%	20.8		7.52		7.6		137		9	10	10	10	Count Signoff: Feed:
Meter ID	146A		PH29		RD10		EC11				Old WQ: MP		
Lab Control	20.6	7.83	7.37	8.2	6.6	317	324		10	10	10	10	Date: 5/2/23 Sol. Prep MCM
100%	20.5	7.61	7.39	9.3	7.0	129	136		9	10	10	10	Maint. Time: 1316 Maint. Signoff: TK
													Sample ID: 68000
Meter ID	135A	PH27	PH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: SJ		Feed: TK
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23 Count Time: 1020
100%	20.7		7.32		7.0		131		9	10	10	10	Count Signoff: BR Feed: BR
Meter ID	132A		PH29		RD14		EC15				Old WQ: BR		
Lab Control	20.1	7.96	7.43	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep TK
100%	20.3	7.61	7.23	9.5	6.4	125	148		9	10	10	10	Maint. Time: 1205 Maint. Signoff: TK
													Sample ID: 68000
Meter ID	146A	PH29	PH29	RD14	RD14	EC15	EC15		New WQ: MP		Old WQ: MH		Feed: ES
Lab Control	20.4		7.97		6.8		701		10	10	10	10	Date: 5/5/23 Count Time: 1220
100%	20.7		7.35		6.3		153		9	10	9	10	Count Signoff: MH Feed: MP
Meter ID	146A		PH29		RD10		EC15				Old WQ: MP		
Lab Control	20.4	7.90	7.29	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep 1142
100%	20.3	7.42	7.10	10.7	5.5	128	145		9	10	9	10	Maint. Time: 1312 Maint. Signoff: MH
													Sample ID: 68000
Meter ID	132A	PH30	PH30	RD14	RD14	EC16	EC16		New WQ: MH		Old WQ: BS		Feed: MP
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23 Count Time: 1020
100%	20.7		7.21		6.5		136		9	10	9	10	Count Signoff: KL Feed: KL
Meter ID	146A		PH29		RD10		EC15				Old WQ: CA		
Lab Control	19.9		7.90		5.9		309	2.03	10	10	10	10	Date: 5/8/23 Term Time: 1100
100%	20.3		7.34		5.9		148	1.71	9	10	9	10	Term Signoff: MP
Meter ID	138A		PH24		RD10		EC11	DR3800			Old WQ: MP		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: SOUT-012
Test ID#: 100884 Project #: 35355
Test Date: 4/28/23

Organism Log#: 13695 Age: 9 day
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 4/28/23 327-328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep CD Initi. Time: 1420 Initi. Sign-off: PB Sample ID: 68057 Feed: CD
100%	20.0	7.49		10.3 9.6		85		<1.00	10	10	10	10	
Meter ID	146A	pH30		RD12		EC15		DR3800	New WQ: CD				
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23 Count Time: 1435 Count Signoff: KL Feed: KL
100%	20.7		7.25		6.7		88		10	10	10	10	
Meter ID	146A		pH26		RD14		EC16				Old WQ: CA		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23 Sol. Prep MCM Maint. Time: 1355 Maint. Signoff: KL Sample ID: 68057 Feed: KL
100%	20.7	7.68	7.34	9.6	6.7	81	91		10	10	10	10	
Meter ID	132A	pH30	pH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ: JO		
Lab Control	20.6		7.57		7.0		321		10	10	10	10	Date: 5/1/23 Count Time: 1334 Count Signoff: MP Feed: MP
100%	20.5		7.43		7.4		87		10	10	10	10	
Meter ID	114A		pH29		RD10		EC11				Old WQ: MP		
Lab Control	20.6	7.88	7.57	8.2	6.6	313 326	324		10	10	10	10	Date: 5/2/23 Sol. Prep MCM Maint. Time: 1335 Maint. Signoff: TK Sample ID: 68057 Feed: TK
100%	20.4	7.59	7.40	9.0	7.2	78	80.7		10	10	10	10	
Meter ID	155A	pH27	pH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: SP		
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23 Count Time: Count Signoff: MK Feed: MK
100%	20.8		7.34		7.3		786		10	10	10	10	
Meter ID	132A		pH29		RD14		EC15				Old WQ: SP		
Lab Control	20.1	7.96	7.93	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep TK Maint. Time: 1402 Maint. Signoff: SJ Sample ID: 68057 Feed: CSS
100%	20.4	7.81	7.18	9.7	6.6	84	87		10	10	10	10	
Meter ID	107A	pH29	pH30	RD14	RD15	EC15	EC13		New WQ: MT		Old WQ: MT		
Lab Control	20.4		7.97		6.8		701		10	10	10	10	Date: 5/5/23 Count Time: 1220 Count Signoff: MT Feed: MT
100%	20.4		7.92		6.5		115		10	10	9	10	
Meter ID	138A		pH29		RD10		RD15				Old WQ: MT		
Lab Control	20.4	7.90	7.29	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep MT Maint. Time: 1312 Maint. Signoff: MT Sample ID: 68057 Feed: MT
100%	20.4	7.49	7.09	9.8	4.5	80	90		10	10	9	10	
Meter ID	138A	pH30	pH31	RD14	RD14	EC16	EC16		New WQ: MT		Old WQ: BJ		
Lab Control	20.7		7.03		5.9		314		10	10	10	16	Date: 5/7/23 Count Time: 1300 Count Signoff: KL Feed: KL
100%	20.4		7.15		6.4		82.7		10	10	9	10	
Meter ID	146A		pH29		RD10		EC15				Old WQ: CA		
Lab Control	19.9		7.40		5.6		369	2.03	10	10	10	10	Date: 5/8/23 Term Time: 1100 Term Signoff: TK
100%	20.1		7.25		5.4		92	1.40	10	10	9	10	
Meter ID	138A		pH29		RD10		EC11	DR3800			Old WQ: MP		

Pacific EcoRisk Environmental Consulting and Testing

Weigh Pan Progress Sheet

Client / Project	Delta RMP
Test ID	100876-100879
Organism	*C. dilutus*
Test Material	T0 Weights
Control Batch	Control 1
Test Start Date	4/27/23
Pan Size Needed	*C. dilutus* pans
Date Needed By	4/26/23
Termination Date	4/27/23

Pans Numbered	Date	04/20/23	Signoff	DC
Pans In Furnace@550°C for 2h	Date	04/21/23	Signoff	DC
Pans Placed In Desiccator	Date	04/21/23	Signoff	DC
Initial Weights	Date	4/26/23	Signoff	MD
Test Termination	Date	4/27/23	Signoff	RG
Pans in Oven at 100°C	Date	4/27/23	Signoff	RG
Pans Placed In Desicator	Date	4/28/23	Signoff	RG
Dry Weights	Date	5/8/23	Signoff	AP
Pans In Furnace@550°C for 2h	Date	5/8/23 @1200	Signoff	AP
Pans Placed In Desicator	Date	5/8/23 @ 1400	Signoff	AP
Ash-Free Dry Weights	Date	5/12/23	Signoff	HT

Pacific EcoRisk

Chironomus dilutus Sediment Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: Control 1 - T0 Weights
Test ID #: 100876-100879 Project #: 35355
Test Date: 4/27/23

Initial Wt. Date 4/26/23 Sign-off: NLS
Dry Wt Date: 5/8/23 Sign-off: MP
Final Ashed Wt Date: 5/12/23 Sign-off: HT

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms: Larvae	Pupae	Adult	Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
1	Lab Control	A	123.22	134.63	134.03	10	—	—		
2		B	123.26	124.33	123.67	10	—	-		
3		C	149.15	149.17	148.45	10	—	—		
4		D	157.08	158.01	157.40	10	—	—		
QA 1			141.33	141.37	141.40					
Balance ID			BAL04	BAL04	BAL04					

Pacific EcoRisk Environmental Consulting and Testing

Weigh Pan Progress Sheet

Client / Project	Delta RMP
Test ID	100880-100884
Organism	*C. dilutus*
Test Material	T0 Weights
Control Batch	Control 2
Test Start Date	4/28/23
Pan Size Needed	*C. dilutus* pans
Date Needed By	4/27/23
Termination Date	4/28/23

Pans Numbered	Date	04/20/23	Signoff	DC
Pans In Furnace@550°C for 2h	Date	04/21/23	Signoff	DC
Pans Placed In Desiccator	Date	04/21/23	Signoff	DC
Initial Weights	Date	4/26/23	Signoff	MD
Test Termination	Date	4/28/23	Signoff	RG
Pans in Oven at 100°C	Date	4/28/23	Signoff	RG
Pans Placed In Desicator	Date	4/29/23	Signoff	DC
Dry Weights	Date	5/8/23	Signoff	AP
Pans In Furnace@550°C for 2h	Date	5/8/23 @ 1200	Signoff	AP
Pans Placed In Desicator	Date	5/8/23 @ 1400	Signoff	AP
Ash-Free Dry Weights	Date	5/12/23	Signoff	HT

Comments: Hard to tell which pan is which - corrected & placed in red pan which is now engraved MD 4/26/23

Pacific EcoRisk

Chironomus dilutus Sediment Toxicity Test Weight Data

Client: **Delta RMP**
Test Material: Control 2 - T0 Weights
Test ID #: 100880-100884 Project #: 35355
Test Date: 4/28/23

Initial Wt. Date 4/26/23 Sign-off: MM
Dry Wt Date: 5/8/23 Sign-off: AP
Final Ashed Wt Date: _____ Sign-off: _____

Pan ID	Treatment	Rep	Initial Ashed Pan Wt (mg)	Dry Pan + Larvae Wt. (mg)	Ashed Pan + Larvae Wt. (mg)	# of Live Organisms: Larvae	Pupae	Adult	Mean Dry Weight (mg)	Mean Ash Free Dry Wt. (mg)
1	Lab Control	A	~~124.61~~ 140.75	143.57	141.54	10	–	–		
2		B	~~204.45~~ 127.65	133.71	~~131~~ 132.00	10	–	–		
3		C	~~199.21~~ 204.93	208.71	206.82	10	–	–		
4		D	149.16 (159.41)	151.48	150.07	10	–	–		
QA 1			~~140.70~~	159.44	159.52					
Balance ID			BA104	BA104	BA104					

DocuSign Envelope ID: B1E2A95B-3D27-4A95-970B-1AC9462B1109

Pacific EcoRisk — Environmental Consulting and Testing

Test Organism Husbandry Log

Organism Log #: 13695
Date Received: 4/18/23
Species: Chironomus dilutus
Source: ABS
Client Name:

Total # of Orgs: 5 egg cases
Initial Mortality: —
Age/Hatch Date: 4/19/23
Culture Water: Ref. EPAmod
Test Type: A C
Temp Adj?: Y N
Term Date:

Temp Adj		
Init.	Date	Temp

Instructions/Comments:

Δ Water 4/24

4/28/23 – Testing completed – skip water Δ
* consolidate into one tray

Date	Time	Temp (°C)	D.O. (mg/L)	Sal (ppt) or Cond (µS/cm)	Feeding AM	Feeding Noon	Feeding PM	Mort.	Observations of Organism Health	Water Δ?	Sign-off
4/18/23	1523	20.2 Meter ID: 48A	7.3 Meter ID: RD12	514 Meter ID: EC13	—	—	—	—	good, not hatched	N	EP
4/19/23	1718	22.4 Meter ID: 142A	8.7 Meter ID: RD15	385 Meter ID: EC15	—	—	ESS	0	good hatching	added No	ESS
4/20/23	1740	22.7 Meter ID: 146A	8.5 Meter ID: RD10	411 Meter ID: EC16	MCM	—	TF	0	Not visible	N	TF
4/21/23	1725	22.6 Meter ID: 142A	8.5 Meter ID: RD10	405 Meter ID: EC15	JAC	—	TF	0	Not visible	Ref. E added	TF
4/22/23	1652	22.7 Meter ID: 146A	7.8 Meter ID: RD10	427 Meter ID: EC15	MD	—	RG	0	Not visible	N	RG
4/23/23	1642	22.2 Meter ID: 133A	5.9 Meter ID: RD15	414 Meter ID: EC15	HT	—	JK	0	Barely visible	Added Ref. E	JK
4/24/23	1555	22.8 Meter ID: 114A	6.0 Meter ID: RD14	360 Meter ID: EC11	MD	—	ESS	0	Barely visible good	Y	ESS
4/25/23	1659	22.9 Meter ID: 107A	7.9 Meter ID: RD14	391 Meter ID: EC11	MCM	—	ESS	0	Good	N	ESS
4/26/23	1535	23.1 Meter ID: 19A	8.7 Meter ID: RD10	373 Meter ID: EC13	MD	—	TF	3	OK, lots of extra food	Y	TF
4/27/23	1722	22.6 Meter ID: 107A	6.2 Meter ID: RD10	401 Meter ID: EC11	JAC	—	JW	0	Good	N	JK
4/28/23	1649	22.0 Meter ID: 107A	7.1 Meter ID: RD10	425 Meter ID: EC11	MD	—	RG	0	good	~~Y~~ N	RG
4/29/23	1742	23.0 Meter ID: 133A	8.8 Meter ID: RD10	325 Meter ID: EC13	JAC	—	RG	0	good	~~N~~	RG
4/30/23	1445	22.6 Meter ID: 146A	7.2 Meter ID: RD10	340 Meter ID: EC13	HT	—	JD	0	Good	N	KL
5/1/23	1700	22.4 Meter ID: 107A	7.8 Meter ID: RD15	360 Meter ID: EC15	MD	—	—	0	good	N	TK

Margin notes: 74; 70; 10 d; *

Pacific EcoRisk — Environmental Consulting and Testing

Test Organism Husbandry Log

Organism Log #: 13695 — Total # of Orgs: 5 egg cases — Initial Mortality: —

Date Received: 4/18/23 — Age/Hatch Date: 4/19/23

Species: C. dilutus — Culture Water: Ref. EPA MH

Source: ABS — Test Type: A C — Temp Adj?: Y N

Client Name: Delta RMP — Term Date: 5/8/23

Instructions/Comments: log cont.

Temp Adj		
Init.	Date	Temp

Date	Time	Temp (°C)	D.O. (mg/L)	Sal (ppt) or Cond (uS/cm)	Feeding AM	Feeding Noon	Feeding PM	Mort.	Observations of Organism Health	Water △?	Sign-off
5/2/23	1641	22.1 Meter ID: 132A	8.6 Meter ID: RD10	332 Meter ID: EC13	—	-	JK	0	good	Y	JK
5/3/23	1715	22.5 Meter ID: 132A	6.8 Meter ID: RD10	345 Meter ID: EC16	TK	—	TK	0	Good	N	KL
5/4/23	1750	22.5 Meter ID: 146A	8.2 Meter ID: RD10	357 Meter ID: EC15	JAL	—	MD	0	good	Y	ND
5/5/23	1716	22.5 Meter ID: 146A	7.8 Meter ID: RD10	332 Meter ID: EC15	MD	—	JK	0	good	Y	JK
5/6/23	1645	22.0 Meter ID: 133/1	7.4 Meter ID:	354 Meter ID:	JAL	—	AL	0	good	N	AL
5/7/23	1746	22.5 Meter ID: 137A	7.6 Meter ID: RD15	377 Meter ID: EC11			JD	0	good	N	JD
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							

TERM

2022-08. Events 1 and 3 Chironomus Test Temperature at 20 C

Deviation Report / Corrective Action Form

Title:	**CUP Events 1 and 3 (WY23) *Chironomus* Test Temperature at 20°C**
Deviation Number:	2022-08_CUP1.3_Dev_Event1_3_PER_*Chironomus*_TestTemp.docx
Prepared By:	Cassandra Lamerdin
Included:	DeltaRMP_NonConformingData_ChironomusTemperature_080123.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	06/12/2023	Discussion between Stevi Vasquez (Pacific EcoRisk (PER) Program Manager), Melissa Turner (DRMP Program Manager), and Selina Cole (CVRWQCB QA Representative) determined that there was a deviation from the SWAMP MQOs for test temperature for Events 1 and 3 for 10-Day Chronic Freshwater *Chironomus dilutus*.
Date DRMP Program Manager was notified:	06/12/2023	
Date CVRWQCB QA Representative Notified:	06/12/2023	
Deviation Form sent for Review:	07/25/2023	Will Hagan (DRMP QA Officer) and Stephen Clark (PER Technical Director).
Deviation Form Sent for Signatures:	10/25/2023	

Description of Deviation/Change:

In preparing for Event 4 (June 2023) toxicity testing, Stevi Vasquez, PER Project Manager, sent an inquiry to Melissa Turner, DRMP Technical Program Director, to explain that the *Chironomus dilutus* tests were performed at two different temperatures (Event 1 and 3 were at 20 °C and Event 2 was at 23 °C) and to discuss which temperature should be used and which event(s) would be a deviation. A conference call was held on June 12, 2023 with Stevi Vasquez (PER), Melissa Turner (DRMP Program Manager), Cassandra Lamerdin (DRMP QA Manager), and Selina Cole (CVRWQCB QA Representative) to discuss the issue.

It was determined, in consultation with the CVRWQCB QA representative Selina Cole, that a deviation occurred in Events 1 and 3 from the recommended SWAMP test temperature of 23 °C.

Reason for Deviation/Change

During a CA Environmental Laboratory Accreditation Program (ELAP) audit, the assessor determined that the acute *C. dilutus* water test should reference the EPA acute manual (EPA-821-R-02-012), which requires testing at either 20 °C or 25 °C, rather than the freshwater sediment manual (EPA 600/R-99/064) which requires testing at 23 °C. Effective January 2022, PER adjusted their temperature for this test to 20°C (the lower of the two options). However, SWAMP recommendations are to use 23°C.

In Spring 2022, during the review of the Water Year 2021 CUP Data Report, it was discussed and agreed that a more appropriate method reference is to apply the freshwater sediment manual requirements. With this change to a method reference, PER is now able to use the SWAMP recommended temperature of 23°C based on a study-specific requirement.

An interim project manager at PER was overseeing the first three test events and two of them were conducted at 20°C to reflect the previous decision (also reflected in the PER SOP) and one was conducted at 23°C which matches SWAMP guidance. Once the discrepancy was noted, Stevi Vasquez contacted the DRMP Program Manager and a conversation was initiated with the CVRWQCB QA Officer, Selina Cole, to determine next steps. It was agreed to conduct future tests at 23 °C and to note the deviation that occurred during Event 1 and 3 testing.

There is no need to adjust the PER SOP since the PER contracting process and Quality Assurance program allows for project-specific temperature adjustments, as is the case for the reference of EPA 600/R-99-064 for acute *C. dilutus* testing.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

The impact of the two different test temperatures on *C. dilutus* toxicity test performance is expected to be minimal. The SWAMP MQO for *C. dilutus* temperature requires that the temperature not vary more than 3 degrees. No flagging for temperature variation was necessary. Test temperature is not explicitly noted in the QAPP; however, it is referenced in the Data Management SOP. Therefore, the Data Management SOP will need to be revised to reflect the updated temperature and method references.

Corrective Action	By Date	By Whom
PER will run the Event 4 *Chironomus* test at 23 °C	June 14, 2023	Stevi Vasquez PER Project Manager
PER will note in their Event 4 Lab Report the deviation in temperature that occurred for Events 1 and 3 testing.	Prior to Laboratory Data Report Submission; Completed August 1, 2023	Stevi Vasquez PER Project Manager
Update the DRMP Data Management SOP to reflect the test temperature of 23 °C for *C. dilutus* testing under EPA EPA 600/R-99-064.	August 24, 2023	Cassandra Lamerdin, DRMP Data Manager

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: STEPHEN CLARK C4D43551B2BC478...	Date:	1/2/2024
	Stephen Clark		

CVRWQCB QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	1/2/2024
	Selina Cole		

DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	1/2/2024
	Melissa Turner		

DRMP QA Officer:	DocuSigned by: Will Hagan A4691C48F968433...	Date:	1/2/2024
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	Events 1 and 3	Technical Mistake by PER Staff	X
Client & Test Date:	Delta RMP Events 1 and 3	Organism Quality	
Species:	*Chironomus dilutus*	Water Quality	
Test:	10d Chronic Toxicity	Solution Preparation	
Test ID:	Multiple	Feeding/Food Quality	
Project Number:	35355	Organism Handling	
Manager on Duty:	CD	Technical Experience	
Individuals Involved:	SVV, AB	Undetermined	

2.0 Evaluation and Cause Analysis

During events one and three of the Delta RMP 10 day *Chironomus dilutus* testing, tests were run at 20°C instead of 23°C as recommended by SWAMP. An investigation was performed to determine the cause of the discrepancy of test temperatures.

Technical mistake by PER Staff

During a CA ELAP audit, the assessor determined that the acute *C. dilutus* water test should reference EPA acute manual (EPA-821-R-02-012), which requires testing at either 20°C or 25°C, rather than the freshwater sediment manual (EPA 600/R-99/064) which requires testing at 23°C. Effective January 2022, PER adjusted their temperature for this test to 20°C (the lower of the two options). However, SWAMP recommendations are to use 23°C.

In Spring 2022, during the review of the Water Year 2021 CUP Data Report, it was discussed and agreed that a more appropriate method reference is to apply the freshwater sediment manual requirements. With this change to a method reference, PER is now able to use the SWAMP recommended temperature of 23°C based on a study-specific requirement.

An interim project manager at PER was overseeing the first three test events and two of them were conducted at 20°C to reflect the previous decision (also reflected in the PER SOP) and one was conducted at 23°C which matches SWAMP guidance. Once the discrepancy was noted, Stevi Vasquez contacted the DRMP Program Manager and a conversation was initiation with the CVRWQCB QA Officer, Selina Cole, to determine next steps. It was agreed to conduct future tests at 23°C and to note the deviation that occurred during Event 1 and 3 testing.

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?

PER will run the future Delta RMP events *Chironomus* testing at 23°C. There is no need to adjust the PER SOP since the PER's contracting process and Quality Assurance program allows for project specific temperature adjustments, as is the case for the reference of EPA 600/R-99-064 for acute *C. dilutus* testing.

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

No changes to our quality system have been made at this time. Therefore, no further preventative actions are necessary.

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There were no additional incidents within thirty days following this incident.

Incident Open Date: 6/12/23 Incident Close Date: 7/12/23

Prepared By: Kevin Lung Quality Manager's Signature:

Technical Director: Stephen Clark Technical Director's Signature:

Study Guidance Form

Client:	Delta RMP	Test Date:	11/10/22
Sample Description:	Ambient Water	Test ID #:	-
Species and Test Description:	C. Chironomus C	Project #:	35355

Special Instructions:

COLLECT T0 WEIGHTS AND T10 WEIGHTS!!!

Measure and record ammonia at initiation and termination - CONTROL TOO!!
INITIATION AMMONIA CAN BE TRANSCRIBED FROM LOG-INS

WQ Analysts: Please make sure ALL old WQ fields are complete prior to dumping aliquots. Double check any anomalous values with another meter and record on observation sheet as appropriate.

Be sure to feed according to attached feeding sheet

**Aerate any test treatments that measure ≤2.5 mg/L; see SVV if low, but >2.5 mg/L

**At initiation, please have second analyst confirm all test replicates have been loaded with 10 orgs each
Confirmation signoff: RM

Please be very thorough with observations regarding extra organisms found ("hitchhikers"), dead organisms, missing organisms, pupated organisms - the more info the better!

General Guidance:

Pacific EcoRisk Environmental Consulting and Testing

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 544LSAC13
Test ID#: 98707 Project #: 35355
Test Date: 11/10/22

Organism Log#: 1461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22 Sol. Prep
100%	20.4	7.67		8.9		263		<1.00	10	10	10	10	Initi. Time: 1555 Initi. Sign-off:
													Sample ID: 6314
Meter ID	138A	PH24		RD12		EC14		DR30	New WQ: SW				Feed:
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22 Count Time: 1632
100%	19.9		7.66		4.4		281		10	10	9	10	Count Signoff: RG Feed: RG
Meter ID	140A		PH24		RD12		EC13				Old WQ: BT		
Lab Control	19.9	7.72	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22 Sol. Prep RO
100%	19.5	7.73	7.58	9.3	7.1	266	290		10	10	9	10	Maint. Time: 1303 Maint. Signoff: SC
													Sample ID: 6318
Meter ID	120A	PH24	PH24	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Feed:
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22 Count Time: 1524
100%	20.2		7.56		7.5		300		10	6	9	10	Count Signoff: RG Feed: RG
Meter ID	131A		PH24		RD12		EC13				Old WQ: EK		
Lab Control	20.4	7.92	7.32	8.5	7.1	336	348		10	10	10	10	Date: 11/14/22 Sol. Prep
100%	20.3	7.64	7.48	8.9	7.7	274	284		10	9 10	8	10	Maint. Time: 1445 Maint. Signoff:
													Sample ID: 6318
Meter ID	140A	PH24	PH24	RD12	RD13	EC13	EC13		New WQ: KM		Old WQ: JTB		Feed:
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22 Count Time: 1025
100%	20.1		7.65		4.1		257		10	10	8	9	Count Signoff: RG Feed: RG
Meter ID	131A		PH24		RD12		EC14				Old WQ: KM		
Lab Control	20.2	7.91	7.36	8.2	7.2	336	314		10	9	10	9	Date: 11/16/22 Sol. Prep
100%	20.1	7.68	7.32	9.9	6.1	203	275		10	10	8	9	Maint. Time: 1430 Maint. Signoff: TK
													Sample ID: 6318
Meter ID	140A	PH24	PH24	RD12	RD12	EC14	EC14		New WQ: KM		Old WQ: JTB		Feed:
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22 Count Time: 0932
100%	19.6		7.46		6.3		276		10	10	8	9	Count Signoff: SC Feed: SC
Meter ID	131A		PH24		RD12		EC14				Old WQ:		
Lab Control	20.0	7.95	7.41	7.5	6.2	342	332		10	8	10	9	Date: 11/18/22 Sol. Prep
100%	20.1	7.70	7.38	9.0	6.5	207	278		10	10	8	9	Maint. Time: 1520 Maint. Signoff:
													Sample ID:
Meter ID	131A	PH30	PH24	RD15	RD12	EC13	EC14		New WQ: KM		Old WQ: AK		Feed:
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22 Count Time: 1535
100%	20.0		7.39		6.8		298		9	9	8	9	Count Signoff: RG Feed: RG
Meter ID	131A		PH30		RD15		EC13				Old WQ: JR		
Lab Control	20.7		7.35		5.4		415	1.16	10	8	10	9	Date: 11/20/22 Term Time: 1520
100%	20.6		7.40		5.1		259	1.28	9	9	8	9	Term Signoff:
Meter ID	138A		PH30		RD15		EC13	DR30			Old WQ: EK		

Pacific EcoRisk — Environmental Consulting and Testing

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 511ULCABR
Test ID#: 98708 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/12/22
100%	20.3	7.76		8.6		505		<1.00	10	10	10	10	Sol. Prep:
													Initi. Time: 1555
Meter ID	135A	pH34		RD12		EC14		W330	New WQ: SVV				Initi. Sign-off:
Lab Control	20.0		7.63		6.1		378		10	10	10	10	Sample ID: 6351
100%	20.0		7.77		5.1		508		10	10	10	12	Feed:
Meter ID	140A		pH34		RD12		EC13				Old WQ: BJ		Date: 11/11/22
Lab Control	19.9	7.92	7.59	8.6	6.7	333	353		10	10	10	10	Count Time: 1040
100%	19.7	7.81	7.79	8.7	7.0	504	512		10	10	10	12	Count Signoff: RC
													Feed: RC
Meter ID	120A	pH31	pH34	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Date: 11/12/22
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Sol. Prep: RC
100%	20.1		7.83		7.7		563		10	10	10	12	Maint. Time: 1303
Meter ID	131A		pH34		RD12		EC13				Old WQ: EC		Maint. Signoff: RC
Lab Control	20.4	7.92	7.32	8.5	7.7	336	348		10	10	10	10	Sample ID: 6351
100%	20.2	7.65	7.85	9.8	9.0	503	523		10	10	10	12	Feed:
													Date: 11/13/22
Meter ID	140A	pH34	pH36	RD12	RD14	EC16	EC13		New WQ: KM		Old WQ: KM		Sol. Prep:
Lab Control	20.6		7.70		4.3		362		10	9	10	9	Maint. Time: 1135
100%	20.0		7.91		3.7		515		10	10	10	9	Maint. Signoff: RC
Meter ID	131A		pH34		RD12		EC16				Old WQ: KM		Sample ID: 6351
Lab Control	20.2	7.81	7.36	8.2	7.2	336	347		10	9	10	9	Feed:
100%	20.1	7.66	7.73	9.3	4.7	515	515		10	10	10	9	
													Date: 11/14/22
Meter ID	140A	pH34	pH34	RD12	RD12	EC16	EC16		New WQ:		Old WQ: JD		Sol. Prep:
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Maint. Time: 0930
100%	19.7		7.75		6.6		524		10	10	10	9	Maint. Signoff: RC
Meter ID	134A		pH34		RD12		EC14				Old WQ: RC		Sample ID: 6351
Lab Control	20.0	7.75	7.41	7.5	6.2	349	352		10	8	10	9	Feed:
100%	20.3	7.62	7.65	7.6	6.6	527	517		10	10	10	8	
													Date: 11/15/22
Meter ID	131A	pH30	pH34	RD12	RD12	EC15	EC14		New WQ: KM		Old WQ: KM		Sol. Prep:
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Maint. Time: 1525
100%	20.0		7.73		6.9		537		10	10	10	8	Maint. Signoff: RC
Meter ID	131A		pH30		RD15		EC13				Old WQ: JD		Sample ID: 6351
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Feed:
100%	20.6		5.06		6.8		550	1.42	10	10	10	8	
Meter ID	138A		pH30		RD15		EC13	DISCARD			Old WQ: KM		Term Time: 1355
													Term Signoff: KM

COPY

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: Sout-001
Test ID#: 98709 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22; Sol. Prep: KM
100%	20.3	7.73		9.1		431		<1.00	10	~~11~~ 10	~~12~~ 10	10	Initi. Time: 1555; Initi. Sign-off: TF; Sample ID: 63183
Meter ID	138A	PH24		RD12		EC14		DR3800	New WQ: SVV				Feed: TF
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22; Count Time: 1042
100%	19.9		7.68		5.3		444		10	11	12	10	Count Signoff: RC; Feed: RC
Meter ID	140A		PH24		RD12		EC13				Old WQ: BT		
Lab Control	19.9	7.92	7.59	8.6	6.7	333	353		10	10	10	10	Date: 11/12/22; Sol. Prep: RC
100%	19.6	7.75	7.61	9.5	7.1	416	450		10	11	12	10	Maint. Time: 1353; Maint. Signoff: RC; Sample ID: 63185
Meter ID	120A	PH24	PH24	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Feed: RC
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22; Count Time: 1524
100%	20.1		7.71		7.6		484		10	11	12	10	Count Signoff: RC; Feed: RC
Meter ID	131A		PH24		RD12		EC13				Old WQ: EK		
Lab Control	20.4	7.42	7.32	8.5	7.7	336	348		10	10	10	10	Date: 11/14/22; Sol. Prep: KM
100%	20.2	7.73	7.67	10.5	8.0	440	438		10	11	12	10	Maint. Time: 1145; Maint. Signoff: TK; Sample ID: 63187
Meter ID	140A	PH24	PH26	RD12	RD15	EC16	EC13		New WQ: KM		Old WQ: JR		Feed: TK
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22; Count Time: 1025
100%	20.2		7.75		3.5		449		8	10	8	8	Count Signoff: RC; Feed: RC
Meter ID	131A		PH24		RD12		EC16				Old WQ:		
Lab Control	20.2	7.81	7.56	8.7	7.2	336	341		10	9	10	9	Date: 11/16/22; Sol. Prep: [illegible]
100%	20.1	7.71	7.49	9.5	5.5	437	444		8	10	8	8	Maint. Time: 1430; Maint. Signoff: [illegible]; Sample ID: [illegible]
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC16		New WQ: [illegible]		Old WQ: JR		Feed: TK
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22; Count Time: [illegible]
100%	19.6		7.56		6.3		446		8	10	8	8	Count Signoff: [illegible]; Feed: [illegible]
Meter ID	131A		PH24		RD12		EC14				Old WQ: EK		
Lab Control	20.0	7.95	7.41	7.5	6.2	342	352		10	8	10	9	Date: 11/18/22; Sol. Prep: RC
100%	20.3	7.66	7.59	10.[illegible]	7.0	437	436		8	10	8	8	Maint. Time: 1525; Maint. Signoff: RC; Sample ID: [illegible]
Meter ID	131A	PH30	PH24	RD15	RD12	EC13	EC14		New WQ: HT		Old WQ: AR		Feed: RC
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22; Count Time: 0935
100%	20.1		7.57		7.0		500		8	10	8	8	Count Signoff: RC; Feed: RC
Meter ID	131A		PH30		RD15		EC13				Old WQ: JR		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/20/22; Term Time: 1350
100%	20.6		7.56		6.4		453	1.33	8	9	8	8	Term Signoff: TK
Meter ID	138A		PH30		RD15		EC13	DR3800			Old WQ: TK		

Pacific EcoRisk Environmental Consulting and Testing

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: Sout-002
Test ID#: 98710 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22 Sol. Prep: [illegible]
100%	20.3	7.65		9.2		414		<1.00	~~10~~ 11	~~10~~ 12	10	10	Initi. Time: 1755 Initi. Sign-off: [illegible]
													Sample ID: 63182
Meter ID	138A	PH24		RD12		EC14		DR3900	New WQ: CVV				Feed: [illegible]
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22 Count Time: 1042 Count Signoff: RG
100%	19.8		7.70		5.1		429		11	12	10	10	Feed: RG
Meter ID	140A		PH24		RD12		EC13				Old WQ: [illegible]		
Lab Control	19.9	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22 Sol. Prep: RG
100%	19.8	7.67	7.48	9.5	6.6	410	428		11	12	10	10	Maint. Time: 1503 Maint. Signoff: JR
													Sample ID: 63182
Meter ID	120A	PH24	PH24	RD12	RD12	EC13	EC13		New WQ: KL		Old WQ: KL		Feed: JR
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22 Count Time: 1524 Count Signoff: RG
100%	19.9		7.61		7.7		478		11	12	10	10	Feed: RG
Meter ID	131A		PH24		RD12		EC13				Old WQ: RG		
Lab Control	20.4	7.92	7.32	8.5	7.7	336	348		10	10	10	10	Date: 11/14/22 Sol. Prep: [illegible]
100%	20.1	7.71	7.68	10.6	7.9	432	430		11	12	10	10	Maint. Time: 1445 Maint. Signoff: TK
													Sample ID: 63182
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC13		New WQ: KM		Old WQ: JB		Feed: TK
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22 Count Time: 1025 Count Signoff: RG
100%	20.1		7.70		3.2		444		10	12	10	10	Feed: RG
Meter ID	131A		PH24		RD12		EC16				Old WQ: KM		
Lab Control	20.2	7.81	7.36	8.2	7.2	336	347		10	9	10	9	Date: 11/16/22 Sol. Prep: [illegible]
100%	20.1	7.71	7.44	10.6	7.0	430	434		10	12	10	10	Maint. Time: 1430 Maint. Signoff: TK
													Sample ID: 63182
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC18		New WQ: [illegible]		Old WQ: JB		Feed: TK
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22 Count Time: 0930 Count Signoff: JR
100%	19.5		7.52		7.1		433		10	12	10	10	Feed: JR
Meter ID	136A		PH24		RD12		EC14				Old WQ: RK		
Lab Control	20.0	7.95	7.41	7.5	6.2	342	352		10	8	10	9	Date: 11/18/22 Sol. Prep: RG
100%	20.4	7.71	7.45	10.7	6.9	426	434		10	12	10	10	Maint. Time: 1525 Maint. Signoff: RG
													Sample ID: 63182
Meter ID	131A	PH30	PH24	RD15	RD12	EC13	EC14		New WQ: HTT		Old WQ: AR		Feed: RG
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22 Count Time: 1135 Count Signoff: RG
100%	20.1		7.49		6.9		474		10	12	10	9	Feed: RG
Meter ID	131A		PH30		RD15		EC13				Old WQ: JR		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: [illegible] Term Time: [illegible] Term Signoff: [illegible]
100%	20.8		7.49		6.1		457	1.38	10	12	10	9	
Meter ID	135A		PH30		RD15		EC13	DR3900			Old WQ: RK		

COPY

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: Sout-003
Test ID#: 98711 Project #: 35355
Test Date: 11/10/22

Organism Log#: 13461 Age: 8 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 318

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.4	7.94		8.4		331		<1.00	10	10	10	10	Date: 11/10/22; Sol. Prep: [illegible]
100%	20.3	7.68		9.0		499		<1.00	10	10	10	10	Initi. Time: 155[illegible]; Initi. Sign-off: [illegible]; Sample ID: 63[illegible]
									New WQ: SUV				Feed: [illegible]
Meter ID	138A	PH24		RD12		EC14		DR3900					
Lab Control	20.0		7.63		6.1		338		10	10	10	10	Date: 11/11/22; Count Time: 1042
100%	19.9		7.70		5.1		508		10	10	10	10	Count Signoff: RG; Feed: RG
Meter ID	140A		PH24		RD12		EC13				Old WQ: BJ		
Lab Control	~~19.8~~ 19.9	7.92	7.59	8.6	6.9	333	353		10	10	10	10	Date: 11/12/22; Sol. Prep: RG
100%	19.8	7.70	7.55	9.4	7.2	497	513		10	10	10	10	Maint. Time: 1305; Maint. Signoff: JC; Sample ID: 63184
									New WQ: KL		Old WQ: KL		Feed: JC
Meter ID	120A	PH24	PH24	RD12	RD12	EC13	EC13						
Lab Control	20.5		7.56		7.1		348		10	10	10	10	Date: 11/13/22; Count Time: 1524
100%	20.1		7.63		7.9		532		10	10	10	10	Count Signoff: [illegible]; Feed: RG
Meter ID	131A		PH24		RD12		EC13				Old WQ: EL		
Lab Control	20.4	7.92	7.32	8.5	7.7	336	348		10	10	10	10	Date: 11/14/22; Sol. Prep: [illegible]
100%	20.1	7.75	7.76	10.3	8.0	505	523		10	10	10	10	Maint. Time: [illegible]; Maint. Signoff: TK; Sample ID: 63184
									New WQ: KM		Old WQ: JB		Feed: TK
Meter ID	140A	PH24	PH26	RD12	RD14	EC16	EC13						
Lab Control	20.0		7.70		4.3		362		10	9	10	9	Date: 11/15/22; Count Time: 1025
100%	20.0		7.71		3.9		529		10	8	10	9	Count Signoff: RG; Feed: RG
Meter ID	131A		PH24		RD12		EC16				Old WQ: KM		
Lab Control	20.2	7.81	7.36	8.2	7.2	336	347		10	9	10	9	Date: 11/16/22; Sol. Prep: [illegible]
100%	20.0	7.72	7.65	11.0	6.7	507	517		10	8	10	9	Maint. Time: 1430; Maint. Signoff: TK; Sample ID: 63185
									New WQ: YL		Old WQ: JB		Feed: TK
Meter ID	140A	PH24	PH24	RD12	RD12	EC16	EC16						
Lab Control	19.9		7.55		6.0		345		10	9	10	9	Date: 11/17/22; Count Time: 0932
100%	19.6		7.54		7.2		517		10	8	10	9	Count Signoff: JC; Feed: JC
Meter ID	134A		PH24		RD12		EC14				Old WQ: [illegible]		
Lab Control	20.0	7.85	7.41	7.5	6.2	342	352		10	8	10	9	Date: [illegible]; Sol. Prep: [illegible]
100%	20.4	7.71	7.45	10.1	6.9	513	517		10	8	10	9	Maint. Time: [illegible]; Maint. Signoff: [illegible]; Sample ID: [illegible]
									New WQ: [illegible]		Old WQ: AF		Feed: [illegible]
Meter ID	131A	PH30	PH24	RD15	RD12	EC15	EC14						
Lab Control	20.3		7.41		7.0		353		10	8	10	9	Date: 11/19/22; Count Time: 0935
100%	20.1		7.52		7.0		520		10	8	10	9	Count Signoff: RG; Feed: RG
Meter ID	131A		PH30		RD15		EC13				Old WQ: JC		
Lab Control	20.7		7.38		5.4		415	1.16	10	8	10	9	Date: 11/20/22; Term Time: 1350
100%	20.8		7.46		5.7		515	1.32	10	8	10	9	Term Signoff: [illegible]
Meter ID	138A		PH30		RD15		EC13	DR3900			Old WQ: EL		

Pacific EcoRisk Environmental Consulting and Testing

Study Guidance Form

Client:	Delta RMP 2	Test Date:	4/28/23
Sample Description:	Ambient Water	Test ID #:	-
Species and Test Description:	C. Chironomus	Project #:	35355

Special Instructions:

COLLECT T0 WEIGHTS AND T10 WEIGHTS!!!

Measure and record ammonia at initiation and termination - CONTROL TOO!!
INITIATION AMMONIA CAN BE TRANSCRIBED FROM LOG-INS

WQ Analysts: Please make sure ALL old WQ fields are complete prior to dumping aliquots. Double check any anomalous values with another meter and record on observation sheet as appropriate.

Be sure to feed according to attached feeding sheet

**Aerate any test treatments that measure ≤2.5 mg/L; see SVV if low, but >2.5 mg/L

**At initiation, please have second analyst confirm all test replicates have been loaded with 10 orgs each
Confirmation signoff: _____

Please be very thorough with observations regarding extra organisms found ("hitchhikers"), dead organisms, missing organisms, pupated organisms - the more info the better!

TIE Trigger: ≥50% reduction in survival or growth

Test run at 20°C

General Guidance:

Pacific EcoRisk — Environmental Consulting and Testing

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 544LSAC13
Test ID#: 100880 Project #: 35355
Test Date: 4/28/23

Organism Log#: 13695 Age: 9 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: EPA 4/28 327 328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep: CD
100%	20.0	7.30		8.8		121		<1.00	10	10	10	10	Initi. Time: 1420 Initi. Sign-off: KL 4/28 Sample ID: 68059
Meter ID	1461	DH30		RD12		EC15		DR3800	New WQ: CD				Feed: RL
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23 Count Time: 1435 Count Signoff: KL Feed: KL
100%	20.7		7.45		7.0		127		10	10	9	10	
Meter ID	146A		PH26		RD14		EC16				Old WQ: DC		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23 Sol. Prep: MCM Maint. Time: 1255 Maint. Signoff: KL Sample ID: 68059 Feed: KL
100%	20.7	7.69	7.43	8.9	6.9	126	132		10	10	9	10	
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC17		New WQ: KL		Old WQ: DC		
Lab Control	20.6		7.57		7.0		321		10	10	10	10	Date: 5/1/23 Count Time: 1334 Count Signoff: TK Feed: TK
100%	20.7		7.42		7.2		124		10	10	9	10	
Meter ID	129A		PH29		RD 10		EC 11				Old WQ: MP		
Lab Control	20.6	7.88	7.57	8.2	6.6	317	324		10	10	10	10	Date: 5/2/23 Sol. Prep: MCM Maint. Time: 1315 Maint. Signoff: TK Sample ID: 68059 Feed: TK
100%	20.5	7.73	7.47	8.9	6.8	115	128		10	10	9	10	
Meter ID	133A	PH 27	PH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: DC		
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23 Count Time: 1401 Count Signoff: MK Feed: MK
100%	21.0		7.36		7.0		114		10	10	9	9	
Meter ID	132A		PH24		RD14		EC15				Old WQ: DC		
Lab Control	20.1	7.96	7.43	7.9	7.7 (4/14/23)	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep: MC Maint. Time: 1307 Maint. Signoff: MK Sample ID: 68059 Feed: MK
100%	20.2	7.72	7.41	8.3	7.0	109	137		10	10	9	9	
Meter ID	107A	PH29	PH30	RD14	RD15	EC15	EC13		New WQ: MP		Old WQ: MH		
Lab Control	20.4		7.47		6.8		701		10	10	10	10	Date: 5/5/23 Count Time: 1220 Count Signoff: MK Feed: MK
100%	20.3		7.48		7.1		628		10	10	9	9	
Meter ID	138A		PH29		RD 10		EC15				Old WQ: MP		
Lab Control	20.4	7.90	7.29	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep: MC Maint. Time: 1312 Maint. Signoff: MK Sample ID: 68059 Feed: MK
100%	20.4	7.51	7.17	9.8	4.6	115	128		10	10	9	9	
Meter ID	138A	PH30	PH30	RD14	RD14	EC16	EC16		New WQ: MH		Old WQ: DC		
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23 Count Time: 1100 Count Signoff: KL Feed: KL
100%	20.6		7.09		5.7		133		10	10	9	9	
Meter ID	146A		PH29		RD10		EC15				Old WQ: CA		
Lab Control	19.9		7.40		5.6		364	2.03	10	10	10	10	Date: 5/8/23 Term Time: 1100 Term Signoff: MK
100%	20.2		7.45		6.4		850	1.61	10	10	9	9	
Meter ID	138A		PH29		RD 10		EC 11	DR3800			Old WQ: MP		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Organism Log#: 13695 Age: 9 days
Test Material: 544LSAC13 (field duplicate)
Organism Supplier: AES
Test ID#: 100881 Project #: 35355
Control/Diluent: Reformulated EPAMH
Test Date: 4/28/23
Control Water Batch: 325 327 328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep: CL
100%	20.0	7.28		9.7		123		<1.00	10	10	10	10	Initi. Time: 1400 Initi. Sign-off: RG
													Sample ID: 6805A
Meter ID	14A	pH30		RD12		EC15		DR3600	New WQ: CD				Feed: RG
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23 Count Time: 1435
100%	20.6		7.34		6.8		121		10	10	9	10	Count Signoff: KC Feed: KC
Meter ID	14A		pH26		RD14		EC16				Old WQ: KC		
Lab Control	20.7	7.99	7.53	8.5	6.8	317	334		10	10	10	10	Date: 4/30/23 Sol. Prep: MCM
100%	20.7	7.80	7.35	9.4	6.8	116	115		10	10	9	10	Maint. Time: 1230 Maint. Signoff: KC
													Sample ID: 6805A
Meter ID	13A	pH30	pH29	RD15	RD12	EC11	EC15		New WQ: KC		Old WQ: KC		Feed: KC
Lab Control	20.6		7.57		7.0		321		10	10	10	10	Date: [illegible] Count Time: 1330
100%	[illegible]		7.41		7.3		123		10	10	9	10	Count Signoff: [illegible] Feed: [illegible]
Meter ID	[illegible]		pH29		RD10		EC11				Old WQ: MH		
Lab Control	20.6	7.88	7.57	8.2	6.6	327 324	324		10	10	10	10	Date: 5/2/23 Sol. Prep: MCM
100%	20.6	7.69	7.40	9.1	6.9	112	116		10	10	9	10	Maint. Time: 1315 Maint. Signoff: TK
													Sample ID: 6805C
Meter ID	13A	pH31	pH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: SF		Feed: TK
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/1/23 Count Time: 1401
100%	20.9		7.35		7.2		114		10	10	9	10	Count Signoff: HR Feed: HR
Meter ID	13A		pH29		RD14		EC15				Old WQ: SF		
Lab Control	20.1	7.96	7.43	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep: TK
100%	20.3	7.60	7.33	9.1	7.2	114	134		10	10	9	10	Maint. Time: 1402 Maint. Signoff: TK
													Sample ID: 6805C
Meter ID	13A	pH29	pH30	RD17	RD15	EC15	EC15		New WQ: MH		Old WQ: MH		Feed: TK
Lab Control	20.1	7.97	7.47	6.8	6.8	301	301		10	10	10	10	Date: 5/5/23 Count Time: 1220
100%	20.4	7.36	7.36	6.7	6.7	124	124		10	10	9	10	Count Signoff: KC Feed: KC
Meter ID	13A		pH29		RD10		EC15				Old WQ:		
Lab Control	20.2	7.90	7.39	8.5	7.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep: KC
100%	20.4	7.36	7.25	10.1	8.5	113	128		10	10	9	10	Maint. Time: 1315 Maint. Signoff: KC
													Sample ID: 6805C
Meter ID	13A	pH30	pH30	RD14	RD14	EC16	EC16		New WQ: MH		Old WQ: RS		Feed: KC
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23 Count Time: 1200
100%	20.6		7.14		6.4		122		10	10	9	10	Count Signoff: KC Feed: KC
Meter ID	14A		pH29		RD10		EC15				Old WQ: CA		
Lab Control	19.9		7.40		5.6		364	2.03	10	10	10	10	Date: 5/8/23 Term Time: 1100
100%	20.2		7.15		6.1		149	1.60	10	10	9	10	Term Signoff: KC
Meter ID	13A		pH29		RD10		EC11	DR3500			Old WQ: MH		

Pacific EcoRisk — Environmental Consulting and Testing

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: SOUT-010
Test ID#: 100882 Project #: 35355
Test Date: 4/28/23

Organism Log#: 13695 Age: 1 day
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: EPA 4/26/23 327 328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep: CD Initi. Time: 1430 Initi. Sign-off: KL Sample ID: 68058 Feed: KL
100%	20.2	7.27		9.9		118		<1.00	10	10	10	10	
Meter ID	146A	PH30		RD12		EC15		DR3900	New WQ: CD				
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23 Count Time: 1435 Count Signoff: KL Feed: KL
100%	20.7		7.35		7.1		116		9 10 KL	10	10	10	
Meter ID	146A		PH26		RD14		EC16				Old WQ: DC		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23 Sol. Prep: MCM Maint. Time: 1255 Maint. Signoff: KL Sample ID: 68058 Feed: KL
100%	20.7	7.68	7.42	9.1	7.1	118	120		10	10	10	10	
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ: DC		
Lab Control	20.6		7.57		7.0		321						Date: Count Time: Count Signoff: Feed:
100%	20.6		7.47		7.8		116						
Meter ID	146A		PH29		RD10		EC11				Old WQ: MP		
Lab Control	20.6	7.88	7.57	8.2	6.6	317 329	324		10	10	10	10	Date: 5/1/23 Sol. Prep: MCM Maint. Time: 1315 Maint. Signoff: TK Sample ID: 68058 Feed: TK
100%	20.6	7.60	7.41	9.3	7.1	111	112		10	10	10	10	
Meter ID	132A	PH27	PH29	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: DC		
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/2/23 Count Time: 1120 Count Signoff: KL Feed: KL
100%	20.8		7.33		7.0		107		10	10	10	10	
Meter ID	132A		PH29		RD14		EC15				Old WQ: DC		
Lab Control	20.1	7.96	7.43	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep: TK Maint. Time: 1155 Maint. Signoff: KL Sample ID: 68058 Feed: KL
100%	20.3	7.51	7.18	9.6	6.7	107	126		10	10	10	10	
Meter ID	10707	PH29	PH30	RD14	RD15	EC15	EC13		New WQ: MP		Old WQ: MP		
Lab Control	20.4		7.47		6.8		701		10	10	10	10	Date: 5/5/23 Count Time: 1220 Count Signoff: KL Feed: KL
100%	20.5		7.31		6.1		117		10	10	10	10	
Meter ID	146A		PH29		RD10		EC17				Old WQ: MP		
Lab Control	20.4	7.90	7.39	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep: KL Maint. Time: 1210 Maint. Signoff: KL Sample ID: 68058 Feed: KL
100%	20.2	7.48	7.13	10.1	4.9	106	119		10	10	10	10	
Meter ID	146A	PH30	PH30	RD14	RD14	EC16	EC16		New WQ: MH		Old WQ: DC		
Lab Control	20.7		7.05		5.9		319		10	10	10	10	Date: 5/7/23 Count Time: 1220 Count Signoff: KL Feed: KL
100%	20.6		7.17		6.5		CF 510 NM		10	10	10	10	
Meter ID	146A		PH29		RD10		EC15				Old WQ: DC		
Lab Control	19.9		7.46		5.6		364	2.03	10	10	10	10	Date: 5/8/23 Term Time: 1100 Term Signoff: KL
100%	20.2		7.25		5.4		130	1.98	10	10	10	10	
Meter ID	138A		PH29		RD10		EC11	DR3900			Old WQ: MP		

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Organism Log#: 13695
Age: 9 days
Test Material: CENT-006
Organism Supplier: ABS
Test ID#: 100883 Project #: 35355
Control/Diluent: Reformulated EPAMH
Test Date: 4/28/23
Control Water Batch: 327328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control 2	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23; Sol. Prep: CD
100%	20.1	7.40		~~10.2~~ 9.1		139		<1.00	10	10	10	10	Initi. Time: 1420; Initi. Sign-off: KC
													Sample ID: 68060
Meter ID	146A	PH30		RD12		EC15		DR3800	New WQ: CD				Feed: KL
Lab Control	20.7		7.57		6.5		314		10	10	10	10	Date: 4/29/23; Count Time: 1435
100%	20.7		7.36		6.9		139		10	~~9~~ 10	10	10	Count Signoff: KL; Feed: KL
Meter ID	146A		PH26		RD14		EC16				Old WQ: DC		
Lab Control	20.7	7.49	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23; Sol. Prep: MCM
100%	20.7	7.61	7.41	9.1	6.8	131	147		9	10	10	10	Maint. Time: 1235; Maint. Signoff: KL
													Sample ID: 68060
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ: KL		Feed: KL
Lab Control	[illegible]		7.57		7.0		321		10	10	10	10	Date: [illegible]; Count Time: [illegible]
100%	20.8		7.52		7.6		137		9	10	10	10	Count Signoff: [illegible]; Feed: [illegible]
Meter ID	[illegible]		PH24		RD10		EC11				Old WQ: MT		
Lab Control	20.6	7.83	7.57	8.2	6.6	~~30~~ 317	324		10	10	10	10	Date: 5/2/23; Sol. Prep: MCM
100%	20.5	7.61	7.39	9.3	7.0	129	136		9	10	10	10	Maint. Time: 1215; Maint. Signoff: TK
													Sample ID: 68060
Meter ID	133A	PH27	PH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: SJ		Feed: TK
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23; Count Time: 1001
100%	20.7		7.32		7.0		131		9	10	10	10	Count Signoff: BR; Feed: BR
Meter ID	133A		PH24		RD14		EC15				Old WQ: SJ		
Lab Control	20.1	7.96	7.43	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23; Sol. Prep: TK
100%	20.3	7.61	7.23	9.5	6.4	125	148		9	10	10	10	Maint. Time: 1232; Maint. Signoff: SJ
													Sample ID: 68060
Meter ID	157A	PH24	PH29	RD14	RD14	EC15	EC15		New WQ: MP		Old WQ: MH		Feed: SJ
Lab Control	20.4		7.47		6.8		301		10	10	10	10	Date: 5/5/23; Count Time: 1220
100%	20.7		7.35		6.3		153		9	10	9	10	Count Signoff: MH; Feed: MH
Meter ID	148A		PH24		RD16		EC15				Old WQ: MP		
Lab Control	20.4	7.90	7.39	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23; Sol. Prep: MH
100%	20.5	7.42	7.10	10.7	5.5	128	145		9	10	9	10	Maint. Time: 1312; Maint. Signoff: MH
													Sample ID: 68060
Meter ID	148A	PH30	PH30	RD14	RD14	EC16	EC16		New WQ: MH		Old WQ: SJ		Feed: [illegible]
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23; Count Time: [illegible]
100%	20.7		7.21		6.5		136		9	10	9	10	Count Signoff: KL; Feed: KL
Meter ID	146A		PH29		RD14		EC15				Old WQ: CA		
Lab Control	19.9		7.40		5.8		369	2.03	10	10	10	10	Date: 5/8/23; Term Time: 1105
100%	20.3		7.39		5.9		148	1.71	9	10	9	10	Term Signoff: YA
Meter ID	138A		PH24		RD10		EC11	DR3800			Old WQ: MP		

Pacific EcoRisk Environmental Consulting and Testing

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Organism Log#: 13695 Age: 9 days
Test Material: SOUT-012
Organism Supplier: ABS
Test ID#: 100884 Project #: 35355
Control/Diluent: Reformulated EPAMH
Test Date: 4/28/23
Control Water Batch: 327 - 328

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	20.3	7.71		8.4		322		<1.00	10	10	10	10	Date: 4/28/23 Sol. Prep: CD Initi. Time: Initi. Sign-off: Sample ID: 68051 Feed:
100%	20.0	7.49		9.1 10.3		85		<1.00	10	10	10	10	
Meter ID	1466	DH30		RD12		EC15		DR3800	New WQ: CD				
Lab Control	20.7		7.57		6.5		319		10	10	10	10	Date: 4/29/23 Count Time: 1435 Count Signoff: KL Feed: KL
100%	20.7		7.25		6.7		88		10	10	10	10	
Meter ID	196A		PH26		RD19		EC16				Old WQ: CL		
Lab Control	20.7	7.99	7.53	8.5	6.8	319	334		10	10	10	10	Date: 4/30/23 Sol. Prep: MM Maint. Time: 1355 Maint. Signoff: KL Sample ID: 68057 Feed: KL
100%	20.7	7.68	7.34	9.6	6.7	81	91		10	10	10	10	
Meter ID	132A	PH30	PH24	RD15	RD12	EC11	EC15		New WQ: KL		Old WQ: JO		
Lab Control	20.6		7.57		7.0		321						Date: Count Time: Count Signoff: Feed:
100%	20.5		7.43		7.4		87						
Meter ID			PH29		RD16		EC11				Old WQ: MP		
Lab Control	20.6	7.88	7.57	8.2	6.6	312 326	324		10	10	10	10	Date: 5/2/23 Sol. Prep: EGM Maint. Time: 1345 Maint. Signoff: TK Sample ID: 68053 Feed: TK
100%	20.4	7.59	7.40	9.0	7.2	78	80.7		10	10	10	10	
Meter ID	155A	PH27	PH27	RD14	RD14	EC15	EC15		New WQ: TK		Old WQ: SJ		
Lab Control	20.7		7.61		6.7		321		10	10	10	10	Date: 5/3/23 Count Time: Count Signoff: YK Feed: BR
100%	20.8		7.34		7.3		78.6		10	10	10	10	
Meter ID	128A		PH29		RD14		EC15				Old WQ: SJ		
Lab Control	20.1	7.96	7.93	7.9	7.1	312	342		10	10	10	10	Date: 5/4/23 Sol. Prep: TK Maint. Time: 1406 Maint. Signoff: SJ Sample ID: 68058 Feed: SJ
100%	20.4	7.81	7.18	9.7	6.6	87	87		10	10	10	10	
Meter ID	1079	PH24	PH30	RD17	RD15	EC15	EC13		New WQ: MM		Old WQ: MM		
Lab Control	20.4	7.90	7.47		6.8		701		10	10	10	10	Date: 5/5/23 Count Time: 1220 Count Signoff: MM Feed: MM
100%	20.4	7.81	7.32		6.5		115		10	10	9	10	
Meter ID	136A		PH29		RD10		RD15				Old WQ: MM		
Lab Control	20.4	7.90	7.29	8.5	4.6	316	326		10	10	10	10	Date: 5/6/23 Sol. Prep: MM Maint. Time: 1312 Maint. Signoff: MM Sample ID: 68059 Feed: MM
100%	20.4	7.49	7.09	9.8	4.5	EC	90		10	10	9	10	
Meter ID	136A	PH30	PH30	RD14	RD14	EC16	EC16		New WQ: MM		Old WQ: DS		
Lab Control	20.7		7.03		5.9		319		10	10	10	10	Date: 5/7/23 Count Time: Count Signoff: Feed:
100%	20.4		7.15		6.4		82.7		10	10	9	10	
Meter ID	145A		PH29		RD10		EC15				Old WQ: CL		
Lab Control	19.9		7.40		5.6		364	2.05	10	10	10	10	Date: 5/8/23 Term Time: 1100 Term Signoff: MM
100%	20.1		7.25		5.4		92	1.40	10	10	9	10	
Meter ID	135A		PH29		RD10		EC11	DR3800			Old WQ: MM		

2022-09. Event 3 DOC Field Blank Contamination and Field Filtering Update

Deviation Report / Corrective Action Form

Title:	**CUP Event 3 DOC Field Blank Contamination and Field Filtering Update**
Deviation Number:	2022-09_CUPv1.3_Dev_Event3_USGS_FieldBlanksContam.doc
Prepared By:	Cassandra Lamerdin

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	05/26/2023	Allie Guerra (Babcock Project Manager) emailed USGS, MLJ Environmental and CVRWQCB to inform them of possible Dissolved Organic Carbon (DOC) contamination in blank samples.
Date DRMP Program Manager was notified:	05/26/2023	
Date CVRWQCB QA Representative Notified:	05/26/2023	
Deviation Form sent for Review:	08/30/2023	Will Hagan (DRMP QA Officer)
Deviation Form Sent for Signatures:	10/25/2023	

Description of Deviation/Change:

On April 26-27, 2023 samples were collected by USGS for the Event 3 Current Use Pesticide (CUP) water quality monitoring collection. On May 26, Babcock notified USGS, MLJ and the CVRWQCB staff that there was a detection in the field blank for Dissolved Organic Carbon

(DOC) (6.9 mg/L); this concentration is greater than the DOC Reporting Limit (RL) of 0.3 mg/L. In comparison, the Total Organic Carbon (TOC) result field blank was non-detect and the environmental sample for DOC was 3.3 mg/L. The Event 3 field blank results were reconfirmed by Babcock for both TOC and DOC. On May 31, USGS shipped a new dissolved (filtered) blank for DOC analysis and a total (unfiltered) blank for TOC analysis to determine if there was an issue with the source water used by USGS for the blank samples. It was confirmed with USGS that filtration for field blank samples always occur in the USGS laboratory. On July 10, Babcock sent a lab report for the results of the extra blank where the DOC result was non-detect and TOC result was 0.20 mg/L (below the RL).

Reason for Deviation/Change

On June 6, 2023, Babcock, MLJ, USGS, MLML, and the State Board Quality Assurance Officer (QAO) met to confirm how the data would be flagged (Babcock data are managed by the State Board) and determine if corrective actions were needed to avoid future contamination. It was agreed that based on DOC and TOC results for this project to date and the results of the extra blank analysis, this incident was likely an isolated event. USGS agreed to review sample preparation protocols included in the USGS National Field Manual (NFM) to ensure that adequate language is included regarding potential sources of contamination during the filtration process; it was agreed that if language was missing, the sampling procedures manual would be updated and the QAPP amended to include the updated protocol. USGS has since confirmed that Section 3.2.2 includes appropriate language which is copied and pasted below:

Omit the methanol rinse when cleaning the equipment used to collect and process samples for total particulate carbon, particulate organic carbon, and dissolved and suspended organic carbon (TPC, POC, DOC). If equipment (such as a submersible pump) has been in contact with methanol or other organic solvent and must be used for TPC, POC, or DOC sampling, then flush the equipment with copious quantities of sample water before collecting the sample; collection of a blank sample for DOC quality control is recommended.

Do not use methanol or other organic solvents on the equipment used to filter samples for organic-carbon analyses.

During the phone call on June 6, 2023, it was also discovered that the required filtering for the DOC and other dissolved fractions occurred in the USGS laboratory and not in the field; therefore, the PrepPreservationCode associated with these data will be updated to LabFiltered (Table 1).

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

Field blank results for DOC and TOC reported by Babcock will continue to be flagged according to the SWAMP business rules. PrepPreservationCodes will be updated according to Table 1. There are no required updates to the CUP QAPP (v1.3) since the PrepPreservationCodes are not specifically detailed within the QAPP and the sample preparation is consistent with referenced sampling procedures.

Table 1. Guidelines for CUP Babcock PrepPreservation Codes.

StationCode	MethodName	AnalyteName	FractionName	Original_PrepPreservationName	UpdateTO_PrepPreservationName	Comments
000NONPJ	EPA 351.2	Nitrogen, Total Kjeldahl	Dissolved	FieldFiltered, FieldAcidified	No Change	Non projects would not change
000NONPJ	EPA 353.2	Nitrate + Nitrite as N	Total	Not Recorded	No Change	Non projects would not change
CUP Station	Calculated	Nitrogen, Total	Total	FieldAcidified	No Change	No change for project and non project samples.
CUP Station	Calculated	Nitrogen, Total	Dissolved	FieldFiltered	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	EPA 351.2	Nitrogen, Total Kjeldahl	Total	FieldAcidified	No Change	
CUP Station	EPA 351.2	Nitrogen, Total Kjeldahl	Dissolved	FieldFiltered, FieldAcidified	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	EPA 353.2	Nitrate + Nitrite as N	Total	FieldAcidified	No Change	No change for project specific samples.
CUP Station	SM 2340 B	Hardness as CaCO3	Dissolved	FieldFiltered, FieldAcidified	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	EPA 200.7	Magnesium	Dissolved	FieldFiltered, FieldAcidified	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	EPA 200.7	Calcium	Dissolved	FieldFiltered, FieldAcidified	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	EPA 200.8	Copper	Dissolved	FieldFiltered, FieldAcidified	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	SM 5310 B	Dissolved Organic Carbon	Dissolved	FieldFiltered, FieldAcidified	LabFiltered, LabAcidified	Project specific results will be updated based on this change.
CUP Station	SM 5310 B	Total Organic Carbon	Total	FieldAcidified	No Change	No change for project specific samples.

Corrective Action	By Date	By Whom
A second set of DOC and TOC blanks were taken at USGS and sent for analysis to determine if contamination was consistent.	05/30/2023	Jim Orlando, USGS Project Manager
Review of USGS NFM sampling protocols to determine if the issue of organic solvent contamination is discussed including steps to be taken to avoid contamination. Determine if SOPs need to be revised.	06/30/2023 (prior to next sampling date in July)	Jim Orlando, USGS Project Manager
USGS will review filtration SOPs with staff doing filtration specifically addressing concerns about organic carbon contamination.	06/30/2023 (prior to next sampling date in July)	Jim Orlando, USGS Project Manager
USGS to revise Chain of Custody (COC) forms to indicate lab filtered.	06/30/2023 (prior to next sampling date in July)	Jim Orlando, USGS Project Manager
Revise CUP Babcock data received to date according to Table 1.	9/30/2023	Tessa Fojut, SWAMP Program Manager in coordination with Cass Lamerdin, DRMP Data Manager

ACKNOWLEDGED BY:

USGS Project Manager:	DocuSigned by: Jim Orlando B4DDF22E261F427...	Date:	10/30/2023
	Jim Orlando		

SWAMP Program Manager:	DocuSigned by: Tessa Fojut 7A8885219 7AE41E...	Date:	10/30/2023
	Tessa Fojut		

CVRWQCB QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	10/30/2023
	Selina Cole		

DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	10/31/2023
	Melissa Turner		

DRMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E50040F...	Date:	10/30/2023
	Will Hagan		

2022-010. Event 5 Sample Receipt at Elevated Temperature

Deviation Report / Corrective Action Form

Title:	**CUP Event 5 Sample Receipt at Elevated Temperature**
Deviation Number:	2022-10_CUPv1.3_Dev_Event5_PER_SampleReceiptElevatedTemp
Prepared By:	Cassandra Lamerdin
Included	DeltaRMP_NonConformingData_SampleTemperature_080123.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	8/1/2023	Pacific EcoRisk (PER) determined on 8/1/2023 that the login temperatures were above the acceptable limit of ≤ 6°C for three of the four samples collected on 7/31/23.
Date DRMP Program Manager was notified:	8/1/2023	Notification from Stephen Clark, PER Technical Program Director
Date CVRWQCB QA Representative Notified:	8/1/2023	Notification from M. Turner, DRMP Technical Program Director to Regional Board QA Representative and TIE Advisory Committee.
Deviation Form sent for Review:	8/29/2023	Will Hagan (DRMP QA Officer)
Deviation Form Sent for Signatures:	10/25/2023	

Description of Deviation/Change:

On July 31 and August 1, 2023, samples were collected by USGS for the Event 5 Current Use Pesticide (CUP) water quality monitoring collection. When the July 31 samples were logged in by PER on the morning of August 1, 2023, it was discovered that three of the four samples had temperatures above the acceptable range of ≤6°C.

Reason for Deviation/Change

Samples arrived on the evening of July 31, 2023, by a PER employee who was performing the courier service. Once at PER, the courier added blocks of blue ice instead of wet ice as stated in the PER SOP and left the coolers in a locked vehicle overnight. This is a practice for other couriers delivering after hours samples at PER since PER is not permitted by the property owners association to have a sample lock box on the premises. It was confirmed that when the samples were picked up from USGS, the coolers were filled with fresh ice to ensure temperatures; however, USGS noted later that the bottles had different material used for packing (bubble wrap vs foam that is usually used) which created less space for wet ice to chill the samples and may have contributed to the increased temperature measured on August 1.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

Resampling for all the samples out of hold temperature occurred on August 10, 2023.

Table 1 includes a summary of sample collection and analyses by station for Events 5 (July 31 and August 1, 2023) and 5R (August 10, 2023). Event 5R refers to the resampling that occurred for Event 5.

Table 1 Summary of Analysis for Events 5 and 5R (5R references the resample event). Records associated with this deviation are shaded in gray. X indicates that the sample was analyzed for the specific constituent.

EventID	Site Code	Date Sampled	USGS	Babcock	PER					Notes
			Pesticides	Nutrients / Organic Carbon / Copper	*Chironomus*	*Ceriodaphnia*	*Selenastrum*	*Pimephales*	*Hyalella*	
5	511ULCABR	7/31/2023	x	x	Failed TAC	X	X	X	X	
5	CENT-009	7/31/2023	x	Did not send sample for analysis	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Resampled on 8/10 due to hold temperature violation.
5	CENT-010	7/31/2023	x	Did not send sample for analysis	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Resampled on 8/10 due to hold temperature violation.
5	544LSAC13	7/31/2023	x	Did not send sample for analysis	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Resampled on 8/10 due to hold temperature violation.
5	SOUT-019	8/1/2023	x	x	x	x	x	x	x	Tox replicate collected here
5	SOUT-026	8/1/2023	x	x	x	x	x	x	x	Oversample site replaces SOUT-018 which could not be accessed due to flow barrier.
5	SOUT-017	8/1/2023	x	x	x	x	x	x	x	
5	SOUT-020	8/1/2023	x	x	x	x	x	x	x	
5R	511ULCABR	8/10/2023	x	x	x					Resampled for *Chironomus* (associated with Deviation 2022-11_CUPv1.3_Dev_Event5_PER_Chironomus_FailedTAC)
5R	CENT-009	8/10/2023	X	X	X	X	X	X	X	Resample event.
5R	CENT-010	8/10/2023	X	X	X	X	X	X	X	Resample event.
5R	544LSAC13	8/10/2023	X	X	X	X	X	X	X	Resample event.

Corrective Action	By Date	By Whom
Resampling and testing was initiated for CENT-009, CENT-010, and 544LSAC13.	08/10/2023	Jim Orlando USGS Project Manager
Foam inserts and wet ice will be used instead of bubble wrap and blue ice packs. PER couriers are instructed to not leave samples in vehicles overnight and ensure that coolers are packed appropriately with wet ice for the night.	08/14/2023	Stephen Clark, PER Technical Director

ACKNOWLEDGED BY:

USGS Project Manager:	DocuSigned by: Jim Orlando B4DDF22E261F427...	Date:	10/30/2023
	Jim Orlando		
Pacific EcoRisk Technical Director:	DocuSigned by: STEPHEN CLARK C4D43551B2BC478...	Date:	10/30/2023
	Stephen Clark		
CVRWQCB QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	10/30/2023
	Selina Cole		
DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD9915C44446...	Date:	10/31/2023
	Melissa Turner		
DRMP QA Officer:	DocuSigned by: Will Hagan A1D771E8E50040F...	Date:	10/30/2023
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	8/1/23	Technical Mistake by PER Staff	X
Client & Test Date:	Delta RMP; 8/1/23	Organism Quality	
Species:	*Chironomus dilutus*	Water Quality	
Test:	10d Chronic Toxicity	Solution Preparation	
Test ID:	Multiple	Feeding/Food Quality	
Project Number:	35355	Organism Handling	
Manager on Duty:	SVV	Technical Experience	
Individuals Involved:	JTD	Undetermined	

2.0 Evaluation and Cause Analysis

When the Delta RMP samples were logged in on the morning of 8/1/23, it was discovered that three of the samples had temperatures above the acceptable range of ≤6°C. An investigation was performed to determine the cause of the high temperatures.

Technical Mistake by PER Staff

The samples for Delta RMP arrived on the evening of 7/31/23, and were transported by JTD, a PER employee performing the courier service. The samples were packed tightly with bubble wrap to prevent the bottles from breaking. When JTD picked up the samples, ice was present due to being added by the sampling team from USGS. JTD did add more ice, but instead of using wet ice as stated in the PER SOP, he added several blocks of blue ice. Due to the bubble wrap that was used to keep the bottles intact, the wet ice could not surround the bottles and less wet ice could be placed in the coolers as well. Given the weight of the coolers and the evening arrival time back at the lab, the coolers were left in a locked vehicle overnight, as is a standard practice for couriers that drop off after hours samples at PER (i.e., they have a key to our vehicle and use them like a drop box that labs will have outside of their buildings). As the coolers were left in a vehicle overnight without sufficient ice, the temperatures that were then recorded the next morning for three samples were >6 °C. These circumstances were the contributing factors to the samples failing to be within the required temperature range of ≤6 °C.

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?

The temperature deviation was reported to the client and resampling and retesting was scheduled. The Delta RMP sample pickup instruction sheet has been updated to remind staff to bring 10

bags of *wet ice* during pickups and to add ice to keep sample temperatures in the acceptable range of ≤6 °C.

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

More foam inserts will be purchased to prevent the need for bubble wrap to protect the amber bottles from breaking. This will allow more wet ice to be placed in coolers, and for the ice to be more in contact with the bottles. All blue ice packs have been removed from PER premises so only wet ice will be used in the future. Bringing 10 bags of ice now be standard procedure for this project from now on to prevent future reoccurrences. All Delta RMP coolers will be removed from the vehicle upon arrival at the lab and placed in cold storage (≤6°C) with the lids open.

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There were no additional incidents within thirty days following this incident.

Incident Open Date: 8/1/23 Incident Close Date: 9/1/23

Prepared By: Kevin Lung Quality Manager's Signature: [signature]

Technical Director: Stephen Clark Technical Director's Signature: [signature] 12-Sep-2023

Ambient Sample Log-In: Initial Water Quality Characteristics

Client: Delta RMP Project #: 35355

Sample Description: Ambient Water

Ambient Water Sample Log-In	
Sample ID #	**68700**
Client Sample ID:	CENT-009
Date and Time of Sample Collection:	7/31/23 1240
Sample Collected By:	Delta RMP
Date and Time of Sample Receipt:	8/1/23 0900
Sample Received By:	JN
Chain of Custody present:	Y
Chain of Custody Seal Present / Intact:	Y
Sample Logged in By:	JN
Temperature Blank (°C):	-
If No Temp Blank, Cooler Temp (°C):	~~5.2~~ 11.3
Sample Temp (°C):	12.7
Thermometer ID:	183
Sample Shipped on Ice (Y/N):	Y
Ice Present (Y/N):	N
Type of Container:	amber
Sample Volume:	1gal X10
Sample Compromised? (Circle One):	Yes (No)
TCR # and Temperature on COC	(Yes) No

Initial Water Quality				
Parameter	**Acceptable Range***		**Measured Value**	**Meter ID**
pH	Freshwater: 6.0 - 9.0 Saltwater: 7.5 - 8.5		7.77	PH27
Dissolved Oxygen (mg/L)	Coldwater: > 6.0 mg/L Warmwater: > 4.0 mg/L		7.0	RD12
Dissolved Oxygen (%Sat)	≤110%		74.5	RD12
Conductivity (µS/cm or mS/cm)	Freshwater: < 3,000 µS/cm Saltwater: N/A		133	EC13
Salinity (psu or ppt)	--		0.115	EC13
Ammonia (mg/L)	< 5.0 mg/L		<1.00	DR3800
Alkalinity**	Sample collected and logged in book.	Y N	JN 8/1/23 ~~29.6~~ 34.8	DR3900
Hardness**		Y N	48.8	DR3800

* If a value is outside of the acceptable range, recheck the measurement and, if the problem persists, notify a manager.

* *Alkalinity and Hardness measurements are recorded in the corresponding log books then later transcribed onto this datasheet.

Comments: JN 8/1/23- remeasured
Tests of this sample canceled, will be recollected at a later date - SW 8/1/23

This Sample Log-In has been reviewed for completeness, consistency with Chain-of-Custody information, and identification of any water quality measures or other issues of concern.	Sign-Off:	Date:	Time:
	SW	8/1/23	1140

Ambient Sample Log-In: Initial Water Quality Characteristics

Client: Delta RMP Project #: 35355

Sample Description: Ambient Water

Ambient Water Sample Log-In	
Sample ID #	**68701**
Client Sample ID:	CENT-010
Date and Time of Sample Collection:	7/31/23 1330
Sample Collected By:	Delta RMP
Date and Time of Sample Receipt:	8/1/23 0900
Sample Received By:	JN
Chain of Custody present:	Y
Chain of Custody Seal Present / Intact:	Y
Sample Logged in By:	JN
Temperature Blank (°C):	—
If No Temp Blank, Cooler Temp (°C):	9.3
Sample Temp (°C):	10.8
Thermometer ID:	IR3
Sample Shipped on Ice (Y/N):	Y
Ice Present (Y/N):	N
Type of Container:	amber
Sample Volume:	1 gal x10
Sample Compromised? (Circle One):	Yes (No)
TCR # and Temperature on COC	(Yes) No

Initial Water Quality					
Parameter	**Acceptable Range***			**Measured Value**	**Meter ID**
pH	Freshwater: 6.0 - 9.0 Saltwater: 7.5 - 8.5			7.60	PH27
Dissolved Oxygen (mg/L)	Coldwater: > 6.0 mg/L Warmwater: > 4.0 mg/L			7.0	RD12
Dissolved Oxygen (%Sat)	≤110%			73.8	RD12
Conductivity (µS/cm or mS/cm)	Freshwater: < 3,000 µS/cm Saltwater: N/A			147	EC13
Salinity (psu or ppt)	--			0.121	EC13
Ammonia (mg/L)	< 5.0 mg/L			<1.00	DR3800
Alkalinity**	Sample collected and logged in book.	Y	N	JN 8/1/23 28.6 34.2	DR3900
Hardness**		Y	N	48.2	DR3900

* If a value is outside of the acceptable range, recheck the measurement and, if the problem persists, notify a manager.

* *Alkalinity and Hardness measurements are recorded in the corresponding log books then later transcribed onto this datasheet.

Comments: JN 8/1/23- remeasured
Tests of this sample canceled, will be recollected at a later date - SVV 8/1/23

This Sample Log-In has been reviewed for completeness, consistency with Chain-of-Custody information, and identification of any water quality measures or other issues of concern.	Sign-Off:	Date:	Time:
	SVV	8/1/23	1140

Ambient Sample Log-In: Initial Water Quality Characteristics

Client: Delta RMP Project #: 35355

Sample Description: Ambient Water

Ambient Water Sample Log-In	
Sample ID #	**68703**
Client Sample ID:	544LSAC13
Date and Time of Sample Collection:	7/31/23 1545
Sample Collected By:	Delta RMP
Date and Time of Sample Receipt:	8/1/23 0900
Sample Received By:	JN
Chain of Custody present:	Y
Chain of Custody Seal Present / Intact:	Y
Sample Logged in By:	JN
Temperature Blank (°C):	-
If No Temp Blank, Cooler Temp (°C):	3.8
Sample Temp (°C):	10.0
Thermometer ID:	IR3
Sample Shipped on Ice (Y/N):	Y
Ice Present (Y/N):	N
Type of Container:	amber
Sample Volume:	1 gal x10
Sample Compromised? (Circle One):	Yes (No)
TCR # and Temperature on COC	(Yes) No

Initial Water Quality				
Parameter	**Acceptable Range***		**Measured Value**	**Meter ID**
pH	Freshwater: 6.0 - 9.0 Saltwater: 7.5 - 8.5		7.54 ~~7.62~~	PH27
Dissolved Oxygen (mg/L)	Coldwater: > 6.0 mg/L Warmwater: > 4.0 mg/L		7.3	RD12
Dissolved Oxygen (%Sat)	≤110%		78.3	RD12
Conductivity (µS/cm or mS/cm)	Freshwater: < 3,000 µS/cm Saltwater: N/A		200	EC13
Salinity (psu or ppt)	--		0.145	EC13
Ammonia (mg/L)	< 5.0 mg/L		<1.00	DR3800
Alkalinity**	Sample collected and logged in book.	Y N	JN 8/1/23 ~~25.4~~ 32.4	DR3900
Hardness**		Y N	53.0	DR3800

* If a value is outside of the acceptable range, recheck the measurement and, if the problem persists, notify a manager.

* *Alkalinity and Hardness measurements are recorded in the corresponding log books then later transcribed onto this datasheet.

Comments: JN 8/1/23- remeasured
Tests of this sample canceled, will be recollected at a later date - SVV 8/1/23

	Sign-Off:	Date:	Time:
This Sample Log-In has been reviewed for completeness, consistency with Chain-of-Custody information, and identification of any water quality measures or other issues of concern.	SVV	8/1/23	1140

2022-011. Event 5 Chironomus Batch Failed Test Acceptability Criteria in One Batch

Deviation Report / Corrective Action Form

Title:	**CUP Event 5 Chironomus Batch Failed Test Acceptability Criteria in One Batch**
Deviation Number:	2022-11_CUPv1.3_Dev_Event5_PER_Chironomus_FailedTAC
Prepared By:	Cassandra Lamerdin
Included	080123_DeltaRMP_NonConformingData_InvalidChironomus.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	8/4/2023	It was observed on 8/4/2023 by Pacific EcoRisk (PER) that the *Chironomus dilutus* chronic toxicity test did not meet test acceptability criteria (TAC) of ≥ 80% average survival in the control.
Date DRMP Program Manager was notified:	8/4/2023	
Date CVRWQCB QA Representative Notified:	8/4/2023	
Deviation Form sent for Review:	9/13/2023	Will Hagan (DRMP QA Officer)
Deviation Form Sent for Signatures:	10/25/2023	

Description of Deviation/Change:

On July 31 and August 1, 2023 samples were collected by USGS for the Event 5 Current Use Pesticide (CUP) water quality monitoring collection. It was observed on August 4, that the *Chironomus dilutus* (*C. dilutus*) control from samples initiated on August 1, 2023 would not meet test acceptability criteria (TAC) of ≥ 80% average survival in the control. There was 67.5% average survival in the control treatment. The invalid test was terminated on August 4, 2023 and affected the 511ULCABR environmental sample which was collected on July 31 2023 (Event 5). The other species tested for toxicity in samples collected from 511ULCABR were unaffected.

Reason for Deviation/Change

Organism quality was determined to be a major contributing factor for the test failure. Organisms were received from the primary vendor on July 22, 2023 and described as in good condition upon receipt; however, there were 14 mortalities on August 1, 2023 within one of two vendor provided cultures. This is the same day that test initiation occurred. PER noted that the organism quality on August 1, 2023 looked suboptimal. Bacteria growth was also noted in two of the four test pans.

Additional evidence for TAC failure is that the vendor experienced a culture crash several weeks before shipment of egg cases for this event. The vendor indicated that the culture had recovered but low survival in the Delta RMP control suggests that the culture may have produced poor quality egg cases.

Other potential factors like water and food quality, organism handling, and solution preparation were ruled out as causes for TAC failure.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

It was agreed to resample 511ULCABR and retest for *C. dilutus* (survival and growth) because resampling was going to occur on August 10, 2023 as a result of the sample receipt temperature of >6°C for the other samples collected on July 31, 2023 (2022-10_CUPv1.3_Dev_Event5_PER_SampleReceiptElevatedTemp).

Table 1. shows the overall summary of analyses for Events 5 (July 31 and August 1, 2023) and 5R (resampling August 10).

Table 1 Summary of Analysis for Events 5 and 5R (5R references the resample event). Records associated with this deviation are shaded in gray. X indicates that the sample was analyzed for the specific constituent.

EventID	Site Code	Date Sampled	USGS	Babcock	PER					Notes
			Pesticides	Nutrients / Organic Carbon / Copper	*Chironomus*	*Ceriodaphnia*	*Selenastrum*	*Pimephales*	*Hyalella*	
5	511ULCABR	7/31/2023	x	x	Failed TAC	X	X	X	X	
5	CENT-009	7/31/2023	x	Did not send sample for analysis	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Resampled on 8/10 due to hold temperature violation.
5	CENT-010	7/31/2023	x	Did not send sample for analysis	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Resampled on 8/10 due to hold temperature violation.
5	544LSAC13	7/31/2023	x	Did not send sample for analysis	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Out of hold temp	Resampled on 8/10 due to hold temperature violation.
5	SOUT-019	8/1/2023	x	x	x	x	x	x	x	Tox replicate collected here
5	SOUT-026	8/1/2023	x	x	x	x	x	x	x	Oversample site replaces SOUT-018 which could not be accessed due to flow barrier.
5	SOUT-017	8/1/2023	x	x	x	x	x	x	x	
5	SOUT-020	8/1/2023	x	x	x	x	x	x	x	
5R	511ULCABR	8/10/2023	x	x	x					Resampled for *Chironomus* (associated with Deviation 2022-11_CUPv1.3_Dev_Event5_PER_Chironomus_FailedTAC)
5R	CENT-009	8/10/2023	X	X	X	X	X	X	X	Resample event.
5R	CENT-010	8/10/2023	X	X	X	X	X	X	X	Resample event.
5R	544LSAC13	8/10/2023	X	X	X	X	X	X	X	Resample event.

Corrective Action	By Date	By Whom
Resampling on August 10, 2023 and retesting was initiated for Ulatis Creek *C. dilutus*	08/10/2023	Jim Orlando USGS Project Manager
PER non-conforming data form created.	08/15/2023	Stephen Clark PER Technical Director

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: STEPHEN CLARK C4D43551B2BC478...	Date:	12/5/2023
	Stephen Clark		
CVRWQCB QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	12/5/2023
	Selina Cole		
DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	12/7/2023
	Melissa Turner		
DRMP QA Officer:	DocuSigned by: Will Hagan A4691C48F968433...	Date:	12/5/2023
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	8/4/23	Technical Mistake by PER Staff	
Client & Test Date:	Delta RMP 8/1/23	Organism Quality	X
Species:	*Chironomus dilutus*	Water Quality	
Test:	Chronic Toxicity	Solution Preparation	
Test ID:	101988	Feeding/Food Quality	
Project Number:	35355	Resident Organism Interference	
Manager on Duty:	SVV	Undetermined	
Individuals Involved:	TF, KL	Technical Experience	
		Organism Handling	

2.0 Evaluation and Cause Analysis

It was determined during test maintenance on 8/4 that the Lab Control associated with the Delta RMP chronic *Chironomus dilutus* test would not meet the test acceptability criteria (TAC) of ≥ 80% survival. The Control was terminated on 8/4 with 67.5% survival. An investigation was performed to determine why the control did not meet TAC.

Organism Quality

The test was initiated on 8/1 using organism batch #13870 obtained from ABS, our primary *Chironomus dilutus* provider. Egg cases were received on 7/22/23 with acceptable water quality parameters. The organisms were deposited on 7/21/23 according to the organism history and hatched on 7/23/23. The organism quality was described as "good" leading up to test initiation, but had 14 mortalities on 8/1, the day of test initiation. Both the initiating scientist, TF, and the analyst performing confirmation counts, KL, noted that the culture looked suboptimal at best. TF also noted bacterial growth in two of the four pans, including the pans used to initiate the test.

Culture #13870 was also used for a second set of tests for Delta RMP the next day. The organisms used for this testing came from pans that did not have the same bacterial growth that the pans used to initiate the first test did. These pans were saved for the testing initiating 8/2 due to the higher number of sites being loaded, leading to needing the higher number of organisms present in these pans. As testing initiated on 8/2 terminated with 80% survival, just meeting TAC, organism quality is likely a contributing factor to the control initiated on 8/1 not meeting TAC.

Final evidence for organism quality as being the likely cause of not meeting TAC is that ABS experienced a culture crash several weeks before the shipment of the egg cases for the Delta RMP. Although ABS indicated that their culture had recovered, the low survival in both Delta

RMP controls suggests that the adults from their culture produced poor quality egg cases that then produced poor quality larvae.

Other Factors
An investigation was performed on other factors that could have impacted testing including: organism handling, and water qualities, and solution preparation. The investigation determined that there were no additional likely contributing factors to the control not meeting TAC.

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?
The client decided to a new sample collected on 8/11 to address the invalid testing from 8/1. No changes to our quality system have been made at this time. Therefore, no further corrective actions are necessary.

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

No changes to our quality system have been made at this time. Therefore, no further corrective actions are necessary

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There have been no other related issues in the thirty days following this incident.

Incident Open Date: 8/4/23 Incident Close Date: 9/4/23

Prepared By: Kevin Lung Quality Manager's Signature: Kevin Lung

Technical Director: Stephen Clark Technical Director's Signature: Stephen Clark

Study Guidance Form

Client:	Delta RMP 1	Test Date:	8/1/23
Sample Description:	Ambient Water	Test ID #:	-
Species and Test Description:	C. Chironomus	Project #:	35355

Special Instructions:

COLLECT T0 WEIGHTS AND T10 WEIGHTS!!!

Measure and record ammonia at initiation and termination - CONTROL TOO!!
INITIATION AMMONIA CAN BE TRANSCRIBED FROM LOG-INS

WQ Analysts: Please make sure ALL old WQ fields are complete prior to dumping aliquots. Double check any anomalous values with another meter and record on observation sheet as appropriate.

Be sure to feed according to attached feeding sheet

**Aerate any test treatments that measure ≤2.5 mg/L; see SVV if low, but >2.5 mg/L

**At initiation, please have second analyst confirm all test replicates have been loaded with 10 orgs each
Confirmation signoff: BC

Please be very thorough with observations regarding extra organisms found ("hitchhikers"), dead organisms, missing organisms, pupated organisms - the more info the better!

TIE Trigger: ≥50% reduction in survival or growth

Test run at 23°C

General Guidance:

10 Day Chronic *Chironomus dilutus* Toxicity Test Data

Client: Delta RMP
Test Material: 511ULCABR
Test ID#: 101988 Project #: 35355
Test Date: 8/1/23

Organism Log#: 13870 Age: 9 days
Organism Supplier: ABS
Control/Diluent: Reformulated EPAMH
Control Water Batch: 336

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Cond. (µS/cm) New	Cond. (µS/cm) Old	Ammonia (mg/L)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	23.1	7.87		7.4		329		[illegible]	10	10	10	10	Date: 8/1/23 Sol. Prep: [illegible]
100%	23.5	7.76		5.5		709		<1.00	10	10	10	10	Initi. Time: [illegible] Initi. Sign-off: [illegible]
													Sample ID: [illegible]
Meter ID	[illegible]	PH24		RD12		EC11		[illegible]	New WQ: [illegible]				Feed: [illegible]
Lab Control	23.9		7.64		7.1		331		10	10	10	9	Date: 8/2/23 Count Time: [illegible]
100%	23.7		8.02		6.0		680		10	10	10	10	Count Signoff: [illegible] Feed: [illegible]
Meter ID	15[illegible]		PH24		RD15		EC11				Old WQ: [illegible]		
Lab Control	23.0	7.87	7.61	8.0	6.8	336	412		9	9	10	9	Date: 8/3/23 Sol. Prep: MCM
100%	23.1	7.77	7.85	8.2	7.3	697	698		10	10	10	10	Maint. Time: [illegible] Maint. Signoff: [illegible]
													Sample ID: [illegible]
Meter ID	15[illegible]	PH30	PH24	RD12	RD15	EC13	EC11		New WQ: [illegible]		Old WQ: DC		Feed: [illegible]
Lab Control	23.1		7.85		8.5		334		6	6	9	6	Date: 8/4/23 Count Time: 0918
100%	23.2		8.26		8.2		741		10	10	10	10	Count Signoff: [illegible] Feed: [illegible]
Meter ID	[illegible]4A		PH24		RD12		EC12				Old WQ: [illegible]		
Lab Control													Date: Sol. Prep
100%													Maint. Time: Maint. Signoff:
													Sample ID:
Meter ID									New WQ:		Old WQ:		Feed:
Lab Control													Date: Count Time:
100%													Count Signoff: Feed:
Meter ID											Old WQ:		
Lab Control													Date: Sol. Prep
100%													Maint. Time: Maint. Signoff:
													Sample ID:
Meter ID									New WQ:		Old WQ:		Feed:
Lab Control													Date: Count Time:
100%													Count Signoff: Feed:
Meter ID											Old WQ:		
Lab Control													Date: Sol. Prep
100%													Maint. Time: Maint. Signoff:
													Sample ID:
Meter ID									New WQ:		Old WQ:		Feed:
Lab Control													Date: Count Time:
100%													Count Signoff: Feed:
Meter ID											Old WQ:		
Lab Control													Date: Term Time:
100%													Term Signoff:
Meter ID											Old WQ:		

Pacific EcoRisk

10 Day Acute *Chironomus dilutus* Toxicity Test Data

Client: **Delta RMP** Project#: **35355** Batch #:

Small Flake Food Daily Preparation				
Day	Date	Tetramin (g)	Deionized Water (mL)	Sign-off
0	8/1/23	0.1500	25 mL	TF
1	8/2/23	0.150	25 mL	SR
2	8/3/23	0.150	25mL	AR
3	8/4/23	0.150	25 ml	RG
4				
5				
6				
7				
8				
9				

Mix 150 mg small flakes (powder, #50 sieved) in 25 mL Type I water daily to make a 6 mg/mL slurry.

Feeding Regime (recommended):
Days 0 - 3: 2mg Fish Food Flakes (0.4 mL of 6 mg/mL slurry)
Days 4 - 6: 4mg Fish Food Flakes (0.7 mL of 6 mg/mL slurry)
Days 7 - 9: 6mg Fish Food Flakes (1 mL of 6 mg/mL slurry)

Pacific EcoRisk Environmental Consulting and Testing

Comments and Observations

Client: D-RMD C1 Test Date: 8/1/23

Sample Description: — Test ID #: —

Species and Test Description: 10-D Chron Project #: 35355

Date	Initials	Description of Observation:
8/1/23	TF	• Organisms of poor quality, bacterial growth in all pans. Pans cleaned, test organisms withheld for next days test as it has a majority of organisms,
8/1/23	KL	Confirmed counts, 2 pans w/ heavy bacterial growth. Gave TF permission to use due to higher site volume arriving 8/2. Pans are not dense w/ organisms

General Guidance:

1) All observations are to be recorded on this sheet and transcibed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical obversations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08	AB	New chem of 100% effluent > 10% different than previous day. Confirmed on second meter and confirmed conductivity of sample. New sample had >10% difference in conductivity than previous sample.

Pacific EcoRisk Environmental Consulting and Testing

Test Organism Log-in

Organism Log #: **13870**

Date Received: 7/22/23

Species: Chiron

Source: ABS

Total # of Orgs: 4 Cases

Age/Hatch Date: / /

Initial Mortality: —

Culture Water: Ref. EPAmH

Initial Observations upon Reciept:

Temp. (°C)	D.O. (mg/L)	Salinity (ppt) or Cond. (µS/cm)	Observation of Organism Health	Sign-off
21.7	7.4	350	good	SC
Meter ID: 105A	Meter ID: RDO3	Meter ID: EC11		

Shipped Dry? Yes (No)

Husbandry Log Established? (Yes) No

Inform Lab Manager if organisms recieved are *Chironomus dilutus* Egg Cases, *Pimephales promelas* (FHM) Embryos, *Atherinops affinis* (Topsmelt), or Abalone Were they informed? (Yes) No N/A

If organisms split into multiple husbandry bins, how many? 4

Supplier information sheet must be attached to this sheet!

General Comments:

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE:	7/21/2023
SPECIES:	*Chironomus dilutus (formerly C. tentans)*
AGE:	Deposited on 7/21/2023
LIFE STAGE:	Second Instar 7/30/2023
HATCH DATE:	Emergent date 8/11/2023
BEGAN FEEDING:	Immediately
FOOD:	*Raphidocelis subcapitata.**, Flake slurry

Water Chemistry Record:	**Current**	**Range**
TEMPERATURE:	25°C	22-25°C
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	194 mg/l	100-220 mg/l
TOTAL ALKALINITY (as $CaCO_3$):	110 mg/l	70-110 mg/l
pH:	8.13	7.70-8.30

Comments: * Formerly known as *Psuedokirschneriella subcapitata* and *Selenastrum capricornutum*

Facility Supervisor

AQUATIC BIOSYSTEMS INC
1300 Blue Spruce Dr Ste. C
Fort Collins, CO 80524 US
(970) 484-5091
info@aquaticbiosystems.com

Invoice

COPY

BILL TO
Pacific EcoRisk Laboratories
Attn: Accounts Payable
2250 Cordelia Road
Fairfield, CA 94534

SHIP TO
Pacific EcoRisk Laboratories
2250 Cordelia Road
Fairfield, CA 94534

INVOICE #	DATE	TOTAL DUE	TERMS	ENCLOSED
148531	07/21/2023	$225.00	Net 30	

SHIP DATE	SHIP VIA	P.O. NUMBER
07/21/2023	UPS	35355

ACTIVITY	QTY	RATE	AMOUNT
CHE Chironomus Egg Cases	4	40.00	160.00
Freight Shipping Charges	1	48.50	48.50
Sat.Delivery Extra Saturday Delivery Charge	1	16.50	16.50

Thank you for your business!

Price Increase - Starting July 1st, 2023.
Due to the cost increases in the last few years, we will be increasing some of our products and organisms.
Please contact us for the new pricing list and if you have any questions.

SUBTOTAL	225.00
TAX	0.00
TOTAL	225.00
BALANCE DUE	**$225.00**

Test Organism Husbandry Log

Organism Log #: 13870 Total # of Orgs: 4 Cases Initial Mortality: —

Date Received: 7/22/23 Age/Hatch Date: 7/23/23

Species: Chiron Culture Water: Ref EPAMH

Source: ABS Test Type: A C Temp Adj?: Y (N)

Client Name: Delta RMP Term Date:

COPY

Instructions/Comments:

[illegible] 7/29/23 - [illegible] very small Chiron!

Temp Adj		
Init.	Date	Temp

Date	Time	Temp (°C)	D.O. (mg/L)	Sal (ppt) or Cond (µS/cm)	Feeding AM	Feeding Noon	Feeding PM	Mort.	Observations of Organism Health	Water Δ?	Sign-off
7/22/23	1445	21.7 Meter ID: 165A	7.4 Meter ID: RD13	350 Meter ID: EC11	—	—	—	—	good	N	JR
7/23/23	1540	22.6 Meter ID: 138A	7.8 Meter ID: RD12	275 Meter ID: EC16	—	—	TK	—	hatching - sand added	added N	TK
7/24/23	1100	22.9 Meter ID: 138A	7.8 Meter ID: RD13	357 Meter ID: EC16	TK	—	TK	—	hatching more sand added	added N	TK
7/25/23	1645	22.8 Meter ID: 155A	6.9 Meter ID: RD12	393 Meter ID: EC10	TF	—	TF	0	Not visible	N Added	TF
7/26/23	1550	22.8 Meter ID: 162A	6.5 Meter ID: RD14	396 Meter ID: EC12	CA	-	ESS	0	Not visible	N Added	ESS
7/27/23	1645	22.6 Meter ID: 161A	6.4 Meter ID:	397 Meter ID: EC10	MH	-	ESS	0	Not visible	N Added	ESS
7/28/23	1555	23.0 Meter ID: 154A	6.9 Meter ID: RD14	400 Meter ID: EC12	MH	—	TK	0	Not visible	N Added	TK
7/29/23	1222	22.5 Meter ID: 156A	7.4 Meter ID: RD17	450 Meter ID: EC13	NN	—	—	0	~~Not visible~~ small [illegible]	N added	NC
7/30/23	1331	23.2 Meter ID: 156A	8.8 Meter ID: RD12	343 Meter ID: EC16	TK	-	TK	Ø	very small	Y	MCM
7/31/23	1200	23.1 Meter ID: 162A	8.5 Meter ID: RD14	379 Meter ID: EC10	MCM	—	[illegible]	0	good visible	N	CD
8/1/23	837	23.0 Meter ID: 66A	8.0 Meter ID: RD15	360 Meter ID: EC16	AR	—	[illegible]	14	good	Y	MCM
8/2/23	1230	22.9 Meter ID: 114A	6.4 Meter ID: RD12	377 Meter ID: EC16	AR	—	TK	0	Good	N	HD
8/3/23	1335	22.7 Meter ID: 159A	8.3 Meter ID: RD13	330 Meter ID: EC10	KL	—	[illegible]	0	Good	Y	HD
8/4/23	1630	22.5 Meter ID: 159A	6.6 Meter ID: RD17	345 Meter ID: EC9	AR	—	TC	0	good	[illegible]	JL

7-0 10d

Test Organism Husbandry Log

Organism Log #: 13870
Total # of Orgs: ~10,305
Initial Mortality: —
Date Received: 7/22/23
Age/Hatch Date: 7/23/23
Species: Chiron
Culture Water: Ref EPAMH
Source: ABS
Test Type: A C
Temp Adj?: Y N
Client Name: Delta RMP
Term Date:

Instructions/Comments:
Log cont. 8/5/23 - TF

COPY

Temp Adj		
Init.	Date	Temp

Date	Time	Temp (°C)	D.O. (mg/L)	Sal (ppt) or Cond (µS/cm)	Feeding AM	Feeding Noon	Feeding PM	Mort.	Observations of Organism Health	Water Δ?	Sign-off
8/5/23	1050	22.5 Meter ID: 169A	6.9 Meter ID: RD14	328 Meter ID: EC12	—	—	TF	35	Fed 10:45am ~ OK	Y	TF
		Meter ID:	Meter ID:	Meter ID:	HD	—					
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							
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		Meter ID:	Meter ID:	Meter ID:							
		Meter ID:	Meter ID:	Meter ID:							

2022-012. Event 5R Hyalella Incorrect Number Org Per Rep

Deviation Report / Corrective Action Form

Title:	**CUP Event 5R *Hyalella* Incorrect Number OrgPerRep**
Deviation Number:	2022-12_CUPv1.3_Dev_Event5R_PER_Hyalella_Incorrect_NumOrgPerRep
Prepared By:	Cassandra Lamerdin
Included	081123_DeltaRMP_NonConformingData_AHyalella.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	8/11/2023	Pacific EcoRisk (PER) determined there was an insufficient number of organisms available at test initiation
Date DRMP Program Manager was Notified:	8/12/2023	Notification from Stephen Clark, PER Technical Program Director
Date CVRWQCB QA Representative Notified:	8/14/2023	Notification from Stephen Clark, PER Technical Program Director to Regional Board QA Representative and TIE Advisory Committee.
Deviation Form sent for Review:	9/20/2023	Will Hagan (DRMP QA Officer)
Deviation Form Sent for Signatures:	10/25/2023; 12/11/2023	Corrected version with updates made to Table 1 resent 12/11/2023.

Description of Deviation/Change:

On July 31 and August 1, 2023, samples were collected by USGS for the Event 5 Current Use Pesticide (CUP) water quality monitoring collection. A resample event occurred on August 10, 2023 for 3 sites (Cent-009, Cent-010, 544LSAC13) which included retesting for *Hyalella azteca* (2022-10_CUPv1.3_Dev_Event5_PER_SampleReceiptElevatedTemp).

On August 11, 2023, PER determined at test initiation that the water test for *H. azteca* was initiated with five organisms per replicate instead of the 10 organisms per replicate required by the DRMP to achieve comparability with SWAMP measurement quality objectives (MQOs).

Reason for Deviation/Change

PER ordered organisms based on standard protocols to initiate testing with five organisms per test. The DRMP requires 10 organisms per test which follows the SWAMP MQOs. Therefore, the water test for *H. azteca* (three sites plus one control) was performed with five organisms versus the 10 since there were not enough organisms.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

Stephen Clark, the PER Technical Lab Director, directed the analyst to perform the test with five organisms per replicate and informed the DRMP Program Manager of the error. Five organisms per test meets the EPA requirements for *H. azteca* water column toxicity testing. The reduction of organisms could have an impact on statistical robustness. Based on the statistical analysis of the samples, this does not appear to be an issue. All three samples were not statistically significant with percent survivals of 90%, 90%, and 95% compared to the control (control was 100% survival; Table 1).

The results will still be reported and a QA Code of TOQ (number of organisms in a toxicity test do not meet the minimum quantity per replicate at test initiation or an unequal quantity of organisms per replicate is used) will be applied.

Table 1 Summary of test results for samples associated with this deviation.

Station Code	Sample Date	Species	Mean % Survival	QA Code
544LSAC13	8/10/2023	*Hyalella azteca*	90%	TOQ
CENT-010	8/10/2023	*Hyalella azteca*	90%	TOQ
CENT-009	8/10/2023	*Hyalella azteca*	95%	TOQ
Lab Water Control-03	8/11/2023	*Hyalella azteca*	100%	TOQ

Corrective Action	By Date	By Whom
Additional notes were added to the Organism Order log indicating that the DRMP requires 10 organisms per replicate.	08/11/2023	Stephen Clark, PER Technical Director
The lab report associated with these results notes the deviation in Section 4.1	9/11/2023	Alison Bridon, PER Project Manager
Flag Summary Results with the following QA Code TOQ	Prior to EDD submission for Event 5R	Alison Bridon, PER Project Manager

ACKNOWLEDGED BY:

Pacific EcoRisk Technical Director:	DocuSigned by: Stephen Clark C4D43551B2BC478...	Date:	12/18/2023
	Stephen Clark		
CVRWQCB QA Representative:	DocuSigned by: Selina Cole F3102A0E248746B...	Date:	12/14/2023
	Selina Cole		
DRMP Program Manager:	DocuSigned by: Melissa Turner 9796DD915C44446...	Date:	12/14/2023
	Melissa Turner		
DRMP QA Officer:	DocuSigned by: Will Hagan A4691C48F968433...	Date:	12/14/2023
	Will Hagan		

2022-013. Event 6 Ceriodaphnia Batch No Final Ammonia in One Batch

Deviation Report / Corrective Action Form

Title:	**CUP Event *6 Ceriodaphnia* No Final Ammonia in One Batch**
Deviation Number:	2022-13_CUPv1.3_Dev_Event6_PER_Cerio_NoFinalAmmonia
Prepared By:	Cassandra Lamerdin
Included	091323_DeltaRMP_NonConformingData_AmmoniaSamples_.pdf

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	9/13/2023	*Ceriodaphnia dubia* batch PER_DRMP_CUP_0923CD_C2_W_TOX test termination date
Date DRMP Program Manager was notified:	9/15/2023	Email from Stephen Clark, Pacific EcoRisk (PER) Technical Director
Date CVRWQCB QA Representative Notified:	9/15/2023	Email sent from Melissa Turner, DRMP Technical Program Manager to Selina Cole, Regional Board QA Representative
Date Non - Conformance Report sent:	09/28/2023	Email including the non-conforming report was sent by PER to DRMP Technical Program Manager, Regional Board QA Representative, and the Program QAO
Deviation Form sent for Review:	12/01/2023	Stephen Clark, PER Technical Director
Deviation Form sent for Review:	12/18/2023	Will Hagan, DRMP QA Officer

	Date	Notes/Description (optional)
Deviation Form Sent for Signatures:	12/21/2023	--

Description of Deviation/Change:

While performing final quality assurance steps on September 13, 2023, for two samples collected during CUP Event 6 on September 6, 2023, PER observed the lack of final ammonia results for *Ceriodaphnia dubia* at the conclusion of the test.

Reason for Deviation/Change

Upon investigation, it was found that the deviation resulted from an analyst error. The staff at PER who terminated the *Ceriodaphnia dubia* batch inadvertently overlooked collecting the ammonia measurement, despite the presence of a guidance sheet and a designated box on the datasheet for recording the necessary ammonia result.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

The final ammonia result will be missing for one *Ceriodaphnia dubia* batch which had environmental samples collected from sites 511ULCABR and SOUT-021. No toxicity occurred in either of these samples for the percent survival or reproduction endpoints.

Corrective Action	By Date	By Whom
Future DRMP toxicity tests will be restricted to a select subset of staff who have multiple years of experience with the DRMP testing procedures.	WY 2024 sample events	Stephen Clark, PER Technical Director
A Tox Test Level QA Code of TWN (i.e., required water quality parameters not measured) will be applied to the samples in the test batch.	Prior to Electronic Data Deliverable Submission	Alison Briden PER Data Manager

ACKNOWLEDGED BY:

PER Technical Director:		Date:	
	Stephen Clark		

CVRWQCB QA Representative:		Date:	
	Selina Cole		

DRMP Program Manager:		Date:	
	Melissa Turner		

DRMP QA Officer:		Date:	
	Will Hagan		

Evaluation of Non-Conforming Data

1.0 Incident Summary

Date of Incident:	9/13/23	Technical Mistake by PER Staff	X
Client & Test Date:	Delta RMP; 9/7/23	Organism Quality	
Species:	*Ceriodaphnia dubia*	Water Quality	
Test:	Chronic Toxicity	Solution Preparation	
Test ID:	Multiple	Feeding/Food Quality	
Project Number:	35355	Organism Handling	
Manager on Duty:	SVV	Technical Experience	
Individuals Involved:	AEL	Undetermined	

2.0 Evaluation and Cause Analysis

When the Delta RMP chronic *Ceriodaphnia dubia* samples were terminated on 9/13/23, it was discovered during the QA review that the termination ammonia samples had not been collected. An investigation was performed to determine the cause of the mistake.

Technical Mistake by PER Staff

When investigated, it was discovered that the analyst who had terminated the chronic *Ceriodaphnia dubia* had forgotten to collect the required ammonia samples. The test had a Study Guidance sheet that clearly stated that ammonia analysis needed to be performed at test termination, and the datasheet also had a box for the necessary ammonia analysis to be recorded. When interviewed, the terminating analyst, AEL, stated that he had forgotten to collect the necessary samples and had not read the Study Guidance Sheet.

3.0 Corrective Action / Preventative Action

Corrective Action: How will the situation/data be treated if it is encountered again? Who will implement?

AEL was issued a Performance Evaluation and reminded of the importance of reading the Study Guidance Sheet.

Preventative Action: Identify preventative measures that will be implemented. Who will implement?

Due to errors for the Delta RMP, it has been decided by the Quality Manager and the Project Manager to restrict the performance of the Delta RMP tests to a selected set of analysts, who

have both been read in to the specific necessities of the project and have participated in the project for several years to prevent this type of mistake.

4.0 Monitoring of Corrective Action Effectiveness

30 Days later: There were no additional incidents within thirty days following this incident.

Incident Open Date: 9/13/23 Incident Close Date: 10/13/23

Prepared By: Kevin Lung Quality Manager's Signature: Kevin Lung

Technical Director: Stephen Clark Technical Director's Signature:

Study Guidance Form

Client: Delta RMP 2
Sample Description: Ambient Water
Species and Test Description: C. Cerio

Test Date: 9/7/23
Test ID #: -
Project #: 35355

Special Instructions:

SWAMP MQO conductivity range: 100-1900 uS/cm (Program requirement 130-1900 uS/cm)

Measure and record ammonia at initiation and termination - CONTROL TOO!!
INITIATION AMMONIA CAN BE TRANSCRIBED FROM LOG-INS
If test **does not** meet TAC on Day 5, record "N/A" in the field for Ammonia

WQ Analysts: Please make sure ALL old WQ fields are complete prior to dumping aliquots. Double check any anomalous values with another meter and record on observation sheet as appropriate.

**At initiation, please have second analyst confirm all test replicates have been loaded.
Confirmation signoff:

TIE Trigger: ≥50% reduction in survival or reproduction

Test run in shell vials

SAMPLES in TCR 13

General Guidance:

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Delta RMP | Material: 511ULCABR | Test Date: 9/7/23
Project #: 35355 | Test ID: 102347 | Randomization: | Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.71		7.7		371	<1.00	24.5	0	0	0	0	0	0	0	0	0	0
1	8.00	7.72	8.6	7.4	338		25.6	0	0	0	0	0	0	0	0	0	0
2	8.03	8.05	8.9	7.4	335		25.2	0	0	0	0	0	0	0	0	0	0
3	8.00	8.14	8.1	7.9	335		25.1	7	8	8	7	7	7	8	7	8	8
4	8.03	8.04	8.4	8.3	457	~~<1.00~~	25.8	0	0	0	0	10	0	0	9	2	9
5	7.92	8.08	8.2	8.1	326	~~<1.00~~	25.3	9	13	3	4	0	X/2	8	0	X/1	6
6	—	7.96	—	8.1	367	NM	25.5	19	20	18	23	21	—	20	22	—	23
7													—			—	
8													—			—	
							Total=	35	41	39	34	38	X/9	36	38	X/11	40

Mean Neonates/Female = 28.9

SIGN-OFF

Date: 9/7/23	New WQ:	Test Init.: JR	
Sol'n Prep: JR	JR	Time: 1235	
Date: 9/8	New WQ: SN	Counts: JT	
Sol'n Prep: AGL	Old WQ: AP	Time: 1130	
Date: 9/11/23	New WQ: SN	Counts: MJ	
Sol'n Prep: JT	Old WQ: NC	Time: 1258	
Date: 9/6/23	New WQ: JN	Counts: TK	
Sol'n Prep: KL	Old WQ: CA	Time: 1445	
Date: 9/11/23	New WQ: CA	Counts: TK	
Sol'n Prep: CO	Old WQ: YR	Time: 1445	
Date: 9/12/23	New WQ: JN	Counts: 1504	
Sol'n Prep: TK	Old WQ: SN	Time: CA	
Date: 9/13/23	New WQ: —	Counts: AEL	
Sol'n Prep: —	Old WQ: AN	Time: 1400	
Date:	New WQ:	Counts:	
Sol'n Prep:	Old WQ:	Time:	
Date:	Old WQ:	Counts:	
		Time:	

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.66		7.4		701	<1.00	25.8	0	0	0	0	0	0	0	0	0	0
1	7.81	~~7.76~~ 8.31	8.4	7.3	666		25.8	0	0	0	0	0	0	0	0	0	0
2	8.02	8.43	8.1	7.8	664		25.4	0	0	0	0	0	0	0	0	0	0
3	7.80	8.45	6.5	7.9	659		25.2	9	9	7	8	8	9	8	7	8	9
4	7.92	8.54	8.2	8.2	670	~~<1.00~~	25.9	13	0	14	14	13	13	14	12	13	11
5	8.09	8.48	8.0	8.0	652	~~<1.00~~	25.4	0	18	0	0	0	0	0	0	4	0
6	—	8.40	—	8.2	687	NM	25.6	27	27	24	25	25	22	24	22	21	21
7																	
8																	
							Total=	49	54	45	47	46	44	46	41	46	41

Mean Neonates/Female = 45.9

Sample ID

68993
68993
68993
68993
68993
68993
—

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Delta RMP** Material: **SOUT-021** Test Date: 9/7/23

Project #: 35355 Test ID: 102351 Randomization: Control Water: Mod EPAMH

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.71		7.7		371	<1.00	24.5	0	0	0	0	0	0	0	0	0	0
1	8.00	7.72	8.6	7.4	338		25.6	0	0	0	0	0	0	0	0	0	0
2	8.03	8.05	8.9	7.4	335		25.2	0	0	0	0	0	0	0	0	0	0
3	8.00	8.14	8.1	7.9	335		25.1	7	8	8	7	7	7	8	7	8	8
4	8.03	8.04	8.4	8.3	457		25.8	0	0	0	0	10	0	0	9	2	9
5	7.92	8.08	8.2	8.1	326	<1.00	25.3	9	13	3	4	0	X/2	8	0	X/1	0
6	~~7.94~~	7.96	—	8.1	367	NM	25.5	19	20	18	23	21	—	20	22	—	23
7	missing												—			—	
8													—			—	
							Total=	35	41	39	34	38	X/9	36	38	X/11	46

Mean Neonates/Female = 28.9

Day	Sign-off
0	Date: 9/7/23 New WQ: Test Init: JR Sol'n Prep: JR Time: 1235
1	Date: 9/8/23 New WQ: Counts: TF Sol'n Prep: AG Old WQ: Time: 1130
2	Date: 9/9/23 New WQ: Counts: AM Sol'n Prep: TF Old WQ: Time: 1254
3	Date: 9/10/23 New WQ: Counts: TR Sol'n Prep: JC Old WQ: Time: 1445
4	Date: 9/11/23 New WQ: Counts: TR Sol'n Prep: Old WQ: Time: 1445
5	Date: 9/12/23 New WQ: Counts: CA Sol'n Prep: TR Old WQ: Time: 1504
6	Date: 9/13/23 New WQ: — Counts: AEL Sol'n Prep: — Old WQ: A.N Time: 1400
7	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
8	Date: Old WQ: Counts: Time:

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
0	7.68		8.1		329	<1.00	25.5	0	0	0	0	0	0	0	0	0	0
1	7.76	7.87	9.1	7.9	309		25.9	0	0	0	0	0	0	0	0	0	0
2	7.87	8.05	8.9	7.9	301		25.7	0	0	0	0	0	0	0	0	0	0
3	7.75	7.99	9.1	6.0	297		25.3	8	7	8	8	7	7	8	7	6	8
4	7.79	8.55	9.2	8.2	295	missing	25.8	8	0	14	15	16	14	16	12	9	W13
5	7.83	8.00	8.4	8.0	291	<1.00	25.7	9	15	0	0	0	0	0	0	8	0
6	—	7.96	—	8.3	318	NM	25.6	22	28	17	17	15	21	24	19	23	8
7																	
8																	
							Total=	39	~~40~~ 50	39	40	38	42	48	38	46	29

Mean Neonates/Female = 40.9

Day	Sample ID
0	68994
1	68994
2	68994
3	68994
4	68994
5	68994
6	—
7	
8	

ATW 9/20/23

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Delta RMP** Material: **Meter ID's** Test Date: 9/7/23

Project #: 35355 Test ID: - Randomization: _____ Control Water: Mod EPAMH

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Ammonia (mg/L)	Temp (°C)	SIGNOFF
Meter ID's	0	PH27		RD14		EC16	DR3000	163A	Date: 9/7/23 New WQ: JR
	1	PH26	PH24	RD13	RD14	EC11		163A	Date: 9/8/23 New WQ: SN Old WQ: JR
	2	PH24	PH24	RD15	RD13	EC16		150A	Date: 9/9/23 New WQ: SN Old WQ: NC
	3	PH24	PH29	RD12	RD13	EC10		158A	Date: 9/10/23 New WQ: JN Old WQ: JN 9/11/23 JN CS
	4	PH29	PH29	RD15	RD15	EC11		114A	Date: 9/11/23 New WQ: CS Old WQ: JR
	5	PH24	PH24	RD12	RD12	EC12	—	114A	Date: 9/12/23 New WQ: SN Old WQ: SN
	6	—	PH24	—	RD12	EC12	—	160A	Date: 9/13/23 New WQ: — Old WQ: AW
	7								Date: New WQ: Old WQ:
	8								Date: New WQ: Old WQ:
								Total=	

Comments and Observations

Client: Delta RMP Test Date: 9/7/23

Sample Description: Ambient Water Test ID #: -

Species and Test Description: C. Cerio Project #: 35355

Date	Initials	Description of Observation:
9/7/23	SR	Board # 5791/5792
		Row Board cup
		A 5792-2I
		B 5792-3C
		C 5792-3D
		D 5792-4J
		E 5792-5A
		F 5792-6C
		G 5792-5I
		H 5792-6J
		I 5791-3A
		J 5791-6A
9/8/23	MP	Transcript error
9/8/23	MD	day 2 ferroes cart by SJ
9/10/23	KL	Wrong date corrected
9/10/23	JV	Wrong placement, corrected
9/11/23	TK	Ctrl-I neonates small not split from 1st. Wrote #'s from 1st treatment on 2nd page. Transcribed and then corrected & counts put on 2nd page. transcript error fixed.
9/		
9/12/23	RG	Wrote NH_3 values on wrong test

Neonates	
2200	X
0600	
Other	

General Guidance:

1) All observations are to be recorded on this sheet and transcribed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

Typical observations that should be recorded: Conductivity verification, presence or absence of PRM when mortalities are observed, etc.

Example: 8/26/08	AB	New chem of 100% effluent > 10% different than previous day.
		Measured on second meter and confirmed conductivity of sample.
		New sample had >10% difference in conductivity than previous sample.

Comments and Observations

Client: Delta RMP 2 Test Date: 9/7/23

Sample Description: Ambient Test ID #: –

Species and Test Description: C. cerio Project #: 35355

Date	Initials	Description of Observation:
9/13/23	RB	- NH_3 was not measured @ Term - SVV was informed - crossed out erroneous "NaN", replaced w/ "–"

General Guidance:

1) All observations are to be recorded on this sheet and transcibed by a QA Officer onto the original test data sheet(s) at the completion of testing, if deemed necessary.
2) Record the Species and Test Description, Client, Sample Description, Test Date, Test ID #, and Project # of the test in the header..
3) Record the date of the observation, your initials, the treatment affected, and the test replicate affected for each entry.
4) Record observations in brief sentences. It is VERY IMPORTANT to also record any corrective actions taken.
5) Leave a blank line between entries.

2022-014. USGS Batches Missing Lab Duplicates and Lab Blank

Deviation Report / Corrective Action Form

Title:	**CUP USGS Batches Missing Lab Duplicates and a Lab Blank**
Deviation Number:	2022-14_CUPv1.3_Dev_USGS_BatchesMissingLabDuplicate_LabBlank
Prepared By:	Cassandra Lamerdin

Applicable Reference(s):

Delta Regional Monitoring Program Quality Assurance Project Plan for Current Use Pesticides in the Sacramento-San Joaquin Delta Version 1.3

Complete the following table regarding the major milestones for the relevant deviation. Add additional rows as needed.

	Date	Notes/Description (optional)
Date Deviation Occurred:	11/3/2023	EDD Event 5 review determined there was a missing lab duplicate for 6 pesticide batches and one Total Suspended Sediments (TSS) batch and one Lab Blank was missing for one TSS batch.
Date DRMP Program Manager was notified:	11/17/2023	Discussed missing QC with Program Manager to confirm that the batches would be coded according to the QAPP and Data Management SOP. Communication with USGS to determine if non-project QC could be used.
Confirmation from USGS- OCRL regarding missing QC for batches:	11/21/2023	--
Date CVRWQCB QA Representative was notified:	12/04/2023	On 11/30/23 the Data Management team confirmed with Selina Cole via email that missing QC should have a deviation form completed. Selina Cole was informed via email about the missing QC for the CUP project.

	Date	Notes/Description (optional)
Deviation Form sent for review:	12/05/2023	Will Hagan (DRMP QA Officer)
USGS Project Manager sent for review:	12/05/2023	Jim Orlando (USGS -OCRL)
Deviation Form Sent for Signatures:	12/11/2023	
Deviation Form Resent for Signatures:	3/11/2024	

Description of Deviation/Change:

The United States Geological Survey Organic Chemistry Research Laboratory (USGS-OCRL) conducted pesticide analysis of samples for Water Year 2023 (WY23) Current Use Pesticides (CUP) over the course of six events. Pesticide batches associated with Event 1 (November 9-10, 2023), 3 (April 26-27, 2023), and 5 and 5R (July 31-August 1 and Aug 10, 2023) were missing a lab duplicate. Two Total Suspended Solid (TSS) batches were analyzed during Events 5 and 5R; the TSS batch associated with samples collected on July 31-August 1 was missing a lab blank and the TSS batch associated with samples collected on August 10 was missing a laboratory duplicate. See Table 1 for a list of batches.

Table 1 Summary of batches associated with USGS data from WY2023 that were missing laboratory QC (either a lab replicate or lab blank).

Event	Lab Batch	Lab Submission Code	Batch Verification Code	Lab Batch Comment
Event1	USGS-OCRL_DRMP_CUP_1317_W_LCMSMS	QI	VAC,VQI	QAO: no lab duplicate due to laboratory oversight.
Event1	USGS-OCRL_DRMP_CUP_1320_W_GCMSMS	QI	VAC,VQI	QAO: no lab duplicate due to laboratory oversight.
Event3	USGS-OCRL_DRMP_CUP_1405_W_LCMSMS	QI	VAC,VQI	QAO: no lab duplicate due to laboratory oversight
Event3	USGS-OCRL_DRMP_CUP_1407_W_GCMSMS	QI	VAC,VQI	QAO: no lab duplicate due to laboratory oversight
Event5	USGS-OCRL_DRMP_CUP_1464_W_LCMSMS	QI	VAC,VQI	QAO: no lab duplicate due to laboratory oversight

Event	Lab Batch	Lab Submission Code	Batch Verification Code	Lab Batch Comment
Event5	USGS-OCRL_DRMP_CUP_1467_W_GCMSMS	QI	VAC,VQI	QAO: no lab duplicate due to laboratory oversight
Event5	USGS-OCRL_DRMP_CUP_906_W_TSS	QI	VAC,VQI	RPD outside of QC limit. Missing lab blank due to laboratory oversight
Event5R	USGS-OCRL_DRMP_CUP_907_W_TSS	QI	VAC,VQI	No lab duplicate due to laboratory oversight

Reason for Deviation/Change

Pesticide precision requirements are listed in the CUP QAPP Table 6 and Table 16 of CUP QAPP v1.3. Table 6 lists a lab duplicate on a per batch basis (including a footnote that a laboratory control spike duplicate, or a matrix control spike duplicate may function as a laboratory duplicate), while Table 16 indicates a matrix spike duplicate is required at a frequency of 1 per 20 samples (not required per batch). It was not clarified in the WY 2023 project kickoff meeting with USGS which occurred on September 14, 2022, that all batches require a laboratory duplicate if a matrix spike / matrix spike duplicate was not performed. Therefore, it was misinterpreted that only matrix spike duplicates were required, and the frequency was 1 per 20 samples (per Table 16).

The missing precision samples were not identified in the data management review process due to oversight by the reviewer. The same MLJ staff reviewed WY 2023 EDDs for Events 1-4. It was misinterpreted by the review staff that Events 1 and 3 did not need a laboratory duplicate due to QAPP inconsistencies and misunderstanding of the requirements. The delay in correcting for the missing QC elements occurred because Events 2 and 4 contained matrix spike duplicates which met the precision requirement. Event 5 was reviewed by a different MLJ staff who discovered the distinction in QC requirements for precision.

The reason for missed QC requirements for TSS in batches from Events 5 and 5R can be attributed to laboratory error in planning for the correct amount of duplicate and blank samples required to meet the QAPP frequency as a result of the Event 5 resample. In this case, Table 16 does require both a lab duplicate and blank with every analytical batch for TSS.

Impact on Present and Completed Work (discuss potential magnitude of impact and bias of deviation/change, if this can be anticipated, if no impact is expected please indicate this)

This deviation is associated with missing lab duplicates in 7 out of 107 chemistry batches for DRMP CUP WY 2023 and missing lab blanks in 1 out of 107 chemistry batches. Overall, the project will still meet its completeness goal of 90%.

Precision measures the agreement among repeated measurements of the same property under identical, or substantially similar, conditions. In the context of this water year, the relative percent differences (RPDs) for pesticides from the matrix spike and matrix spike duplicate pairs met the Measurement Quality Objective (MQO) in six out of 12 batches with the exception of one analyte (Fipronil Desulfinyl Amide) for Lab Batch USGS-OCRL_DRMP_CUP_1492_W_LCMSMS which did

not have an RPD ≤ 25. As reported in this deviation, six batches are missing QC for precision and therefore cannot be assessed.

There were two TSS batches with missing quality control samples – one for precision (laboratory duplicate) and one for contamination (laboratory blank); a total of seven TSS batches were run for WY 2023. The assessment of TSS precision indicates that six out of seven batches met the precision MQO in batches where laboratory duplicates were run. All TSS laboratory blanks performed were non detects (six of seven batches).

The completeness requirement of 90% or more of analytes meeting MQOs for precision will be met for the project.

Corrective Action	By Date	By Whom
Retraining with MLJ data management staff highlighting the laboratory duplicate requirement for all batches in context of the revised CUP QAPP tables.	11/3/2023	Lisa McCrink, MLJ Environmental
Communication with USGS-OCRL to clarify that a laboratory duplicate must be performed with every pesticide batch and if a matrix spike is not performed, a laboratory duplicate, or a laboratory control spike duplicate must be performed per Table 6 of the QAPP.	11/17/2023	Cassandra Lamerdin, DRMP Data Manager
All batches missing the required QC in Table 6 were flagged with a QI. A Lab Batch Comment will be added to indicate which batch QC frequency was not met and why.	12/31/2023	MLJ Environmental and Moss Landing Marine Laboratories
Amend the CUP QAPP Table 16 to be clear that a laboratory duplicate must be performed with each batch.	1/15/2024	Melissa Turner, DRMP Program Manager
Future kickoff meetings will be clear about batch QC requirements including references to QAPP tables.	Future kickoff meetings	Cassandra Lamerdin, DRMP Data Manager

ACKNOWLEDGED BY:

USGS Project Manager:		Date:	
	Jim Orlando		

CVRWQCB QA Representative:		Date:	
	Selina Cole		

DRMP Program Manager:		Date:	
	Melissa Turner		

DRMP QA Officer:		Date:	
	Will Hagan		

DRMP Data Manager:		Date:	
	Cassandra Lamerdin		