



FINAL
Technical Workplan and Budget
of the 2021-2022 Fiscal Year

For consideration by the Delta RMP Steering Committee on July 29, 2021

Approved by the Delta RMP Board of Directors on July 29, 2021

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Introduction

The purpose of this document is to provide the Delta Regional Monitoring Program (Delta RMP or Program) Steering Committee (SC) with a Technical Workplan and budget for the 2021-2022 fiscal year (FY21-22). The fiscal year covers the period from July 1, 2021 to June 30, 2022 and matches the fiscal year of the State of California and State agencies with whom the Program works closely.

The Delta RMP is undergoing a major transition. The Aquatic Science Center (ASC), based in Richmond, California, helped establish the Delta RMP and has served as the “Implementing Entity” since the Program began in 2015, performing all Program support tasks related to governance, financial management, and administration. In the fourth quarter of the FY20-21, the Program began a transition to a non-profit, with the goal of having the new non-profit implementing the Program as early as July 2021. The Delta RMP is in the process of being incorporated as a 501(c)(3) and has an established Board of Directors and Executive Committee. Traditionally, the detailed fiscal year workplan includes budgets for finances, governance, program management and monitoring plan implementation. However, due to recent governance changes, it was agreed that this document should focus on the technical aspects of the Program including monitoring plans and budgets for the following monitoring sectors:

1. Current Use Pesticides (CUP)
2. Mercury
3. Constituents of Emerging Concern (CEC)
4. Nutrients

In December 2020, the SC brought on Melissa Turner from MLJ Environmental to serve as interim Program Manager. Ms. Turner will continue during the FY21-22 to be the Technical Program Manager.

FY21-22 will include a continuation of the monitoring plans already approved for CUP and CECs and an extension of the same monitoring plan implemented in FY20-21 for the mercury monitoring. The nutrients monitoring that was funded in FY20-21 included contributing funds to the US Geological Survey (USGS) and California Department of Water Resources (DWR) monitoring for cyanotoxins which will continue until March 2022. In addition, the Delta RMP is implementing a project using Supplemental Environmental Project (SEP) funds to study cyanobacteria blooms in the Sacramento-San Joaquin Delta, which will continue into FY21-22. It is anticipated that the Delta RMP will revisit this Technical Workplan in October of 2021 to determine what additional funds should be allocated to nutrient-focused studies for the remainder of the FY21-22.

The Technical Program Manager will continue to report on monitoring and studies that were planned and funded in previous annual workplans. The Program is currently designing a new Delta RMP website where all current and past workplans will be accessible (<https://deltarmp.org>). ASC has agreed to keep the current website available until the new website is live.

This workplan provides a critically important foundation for tracking Delta RMP expenditures and deliverables. The Technical Program Manager will follow existing and proposed protocols for communications such that all RMP participants are kept abreast of decisions at all levels of the RMP process.

Revenue Forecast

Traditionally, the Detailed Workplan includes an assessment of the revenue expected including an assessment of existing cash reserves. This Technical Workplan for FY21-22 does not include this information due to the current transition of funds and governance from ASC to the Delta RMP.

Technical Program Management Expenses

MLJ Environmental

This section details the technical program management expenses for FY21-22.

Technical Program Management

The program management budget includes the following categories of tasks for MLJ Environmental as part of tasks associated with the Technical Program Manager:

- Planning / scope including working with the Delta RMP committees to determine annual monitoring objectives and long-term objectives.
- Communication between the various Delta RMP committees, documentation of communication procedures to ensure transparency and consistency, and update file storage and sharing system to ensure documents are available to stakeholders.
- Individual project tracking including tracking of monitoring budgets and spending, communication of issues/problems, tracking of deliverables and oversight of individual monitoring projects.
- Attend and participate in various Delta RMP committees including the Board of Directors, Executive, Steering Committee and Technical Committee meetings.
- Oversee and draft documentation pertaining to the fiscal year's Workplan and QAPP.
- Budget tracking and review including approval invoices and tracking monitoring project expenditures relative to the overall Delta RMP budget.

The total budget for the MLJ Environmental tasks is \$230,470. A detailed scope and budget for MLJ Environmental activities is provided in **Appendix 1**. The cost estimate is based off a best estimate for the work to be performed by the Technical Program Manager. Many of the new governance items are still being determined, which may affect the amount of time budgeted. MLJ Environmental will respond to additional tasks and requests with a revised budget and scope.

Project Specific Quality Assurance Project Plans and Process

The Delta RMP currently has a QAPP that is updated every fiscal year to reflect the upcoming monitoring for mercury, pesticides, and nutrients. Since the QAPP only reflects a single year of monitoring, there are significant updates that must occur annually. It has been suggested that it

would be more efficient to have project-specific QAPPs which could span the length of the project and only be updated when amendments are necessary. Time has been estimated to create a project specific template that is ADA compliant and can be used to develop future QAPPs in an efficient manner. There will need to be updates made to the existing QAPP (QAPP, v6) in the short term to reflect changes to the CUP and mercury monitoring and data management. Updates to the data management will include reference to expected timelines for data review, processing, and loading. Additional time will be spent between October and December creating the project-specific template and transferring the CUP and mercury monitoring information into their own QAPPs. Currently the nutrient monitoring projects do not require a QAPP. Updates to the QAPPs (including any changes to measurement quality objectives or MQOs) will be communicated with the appropriate technical committees and may include additional discussions with Regional and State Water Board staff including the State QA Officer. The technical committees will include representatives from the Delta RMP stakeholder groups including Regional and State Water Board staff. These communications are intended to ensure consistency with SWAMP guidelines and agree on updates prior to formal submittal of approval.

In addition, many of the QAPP policies need to be revisited in perspective of the new governance structure and to address outstanding concerns/issues for addressing conflicting comments from stakeholders. Starting with the FY22-23 projects, the new QAPP template can be used for future monitoring projects.

Aquatic Science Center

In addition, ASC will assist with transitioning projects, financials and governance to the Delta RMP and have time assigned to the following categories:

- Responding to communications with Delta RMP stakeholders on technical issues, attending meetings as needed, and completing the management of remaining projects.
- Managing remaining contracts including communication with subcontractors, managing subcontractor invoices and developing/tracking internal budgets for already funded SEP projects, reporting to the Delta RMP and communication with the Delta RMP on financial items; attending meetings as needed to discuss financials.
- Transfer of documents and information to the Delta RMP stakeholders as needed.
- Attendance at four Mercury Committee meetings.

The total budget for ASC tasks is \$64,677.23. A detailed breakdown of the ASC labor budget for these tasks is provided in **Appendix 2**. This proposed budget reflects ASC's best estimate of the expected time and expense of the assigned work tasks. If additional tasks are requested, ASC will request additional funds. If tasks are completed in less time than estimated, ASC will bill for only the hours needed for task completion.

Monitoring Plan Implementation Expenses

The Delta RMP is conducting multi-year study programs for CUPs and CECs. Mercury monitoring has been performed over multiple years of the Program with slight variations in locations and

monitoring frequency. Nutrients monitoring outlined in this Technical Workplan documents the monitoring previously funded in FY20-21 that will continue into part of FY21-22.

Current Use Pesticides

The CUP monitoring is a continuation of a multi-year study led by James Orlando of the U.S. Geological Survey (USGS). 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 (36 per year), selected using a Generalized Random Tesselation Stratified (GRTS) approach. For logistical reasons, this revised design divides the Delta up into 6 sub-regions based on water source, and only two adjacent sub-regions are sampled in one water year. For the two sub-regions sampled, one sub-region is sampled completely (24 GRTS sites) and the other sub-region is partially sampled (12 GRTS sites). The remaining 12 GRTS sites within the partially sampled sub-region are sampled in the following water year.

In addition to the GRTS sites, two Delta input sites sampled during the 2015-2017 DRMP monitoring (Ulati Creek at Brown Rd and San Joaquin River at Buckley Cove) continue to be sampled under the revised program. It was decided to continue sampling at the two fixed sites to provide long term monitoring data. 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 collected during 6 targeted events (2 fall/winter storms, spring runoff, and spring, summer, and fall irrigation period events). Samples are collected once per event at each of the 2 fixed sites and at 6 GRTS sites. A total of 48 environmental water samples are collected per year (24 in one completely sampled sub-region, 12 in the partially sampled sub-region, and 12 samples collected at the fixed sites).

USGS will collect the water samples for analysis of current-use pesticides by the USGS Organic Chemistry Research Laboratory and copper, dissolved organic carbon, and particulate organic carbon by the USGS National Water Quality Laboratory. Samples will be analyzed for toxicity by Pacific EcoRisk (PER). **Appendix 3** includes details regarding the budget estimates for both USGS (sampling and analytical) and PER (toxicity analysis).

Data management will be conducted by the Central Valley Regional Data Center (CVRDC) and Moss Landing Marine Laboratories Regional Data Center (MLML RDC). The Delta RMP BOD has approved the budget included in **Appendix 4** for managing CUP data collected for the 20-21 Water Year (WY) and the 21-22 WY. Since the CUP monitoring project is implemented on a water year, the budgets included in **Appendix 3** and **Appendix 4** have been divided into fiscal years to estimate the cost to be incurred during the 21-22 FY.

The Delta RMP budget for CUP monitoring, chemistry analysis, toxicity testing and data management is \$296,074.98 for the 21-22FY. If the Delta RMP is unable to contract with USGS using a public entity, this cost will increase by \$23,543.

Mercury

The methylmercury monitoring will be led by Dr. Wes Heim of Moss Landing Marine Laboratory (MLML) and Dr. Jay Davis of ASC. The funds for ASC time are detailed in **Appendix 2** under the ASC transition scope. The sampling and analysis will be performed by MLML. The mercury monitoring design is a continuation of the monitoring that was implemented in FY20-21 (minus prey fishing) and is summarized with budget details in **Appendix 5**. Surface Water Ambient Monitoring Program (SWAMP) funds from the Central Valley Regional Water Quality Control Board (Regional Board) will cover MLML costs for mercury monitoring as an in-kind contribution to the Delta RMP up to \$205,600. The MLML estimate for the mercury monitoring in FY21-22 is \$199,080.00; therefore, the costs for mercury monitoring will be covered by the in-kind Regional Board SWAMP funds.

The in-kind contribution from the Regional Board SWAMP funding began in FY20-21 and will continue through FY22-23 (total of three years). For FY21-22, the State Board will contract with the Marine Pollution Studies Laboratory (MPSL) at Moss Landing to fund the Delta RMP's program of mercury monitoring. As additional in-kind support, State Board staff will assume all responsibility for the data produced under the contract with MPSL, including all data management, quality assurance, and public release via the California Environmental Data Exchange Network (CEDEN).

These in-kind SWAMP funds from the Regional Board are not "fungible." In other words, they cannot be used for any purpose other than field work and lab work by MPSL, nor can they be used with a different vendor.

Constituents of Emerging Concern (CECs)

The CEC Pilot Study Work Plan includes water column, sediment, and tissue sample collection at Delta and immediate tributary locations over a three-year sample collection period. Following a planning and mobilization year, the first two years of sample collection include ambient surface water, tissue, and sediment sample collection. The second and third years include "source" water sample collection—wastewater treatment plant effluent and stormwater runoff. Finally, the Pilot Study Work Plan includes a gradient study in the third year. The three-year Pilot Study Work Plan has been approved by the Regional Water Board and State Board staff.

The Stakeholders presented the Pilot Study Work Plan approach to the Delta RMP SC on multiple occasions dating back to the October 24, 2017, Joint TAC-Steering Committee meeting. At that time specific funding guidance was provide to the TAC for other study components (methylmercury, nutrients, and pesticides) and CEC work was acknowledged as a special study for consideration with available funds.

Monitoring of CECs by the Delta RMP began in September 2020 with a budget that was approved in the FY19-20 Workplan. Part of Year 1 monitoring, analysis and data management were funded using SEP funds as well as in-kind monitoring by DWR and Granite Canyon through the SPoT program. For the Year 2 monitoring design, SEP funds are not available and DWR is unable to commit their services for collecting samples. Therefore, the costs for Year 2 have increased due to additional cost that will be paid for directly by the Delta RMP. **Appendix 6** includes a brief description of the Year 2 monitoring design. The cost associated with the CEC Year 2 monitoring is \$335,015.22.

Nutrients

At their meeting on 9/22/20 the SC approved a new funding allocation in FY20-21 for a study of cyanotoxins under the nutrient focus area. A description of the rationale, scope, and budget details for this study were included as Appendix 4 in the FY20-21 Workplan. The funding allocation for this study is \$163,814. The work will be led by scientists at the USGS and the California Department of Water Resources and will be funded through subcontracts with USGS (\$86,312) and BSA Environmental (\$89,716). This project began in March 2021 due to delays as a result of shelter-in-place orders implemented as a result of COVID-19. The Delta RMP committed funds for 12 months and therefore funding will continue through February 2022.

At their meeting on 8/27/20 the SC approved a study to be supported using Supplemental Environmental Project funds (\$59,808) for a project titled “Source Tracking of the Cyanobacteria Blooms in the Sacramento- San Joaquin Delta.” A description of the scope and budget for this study was provided as Appendix 5 in the FY20-21 Workplan. The study will be led by Ellen Preece of Robertson-Bryan, Dr. Tim Otten of Bend Genetics, and Dr. Janis Cooke of the Central Valley Regional Water Quality Control Board. ASC will continue to manage the SEP funds and subcontractors in the FY21-22.

Since the time of the project approval on 8/27/20, the project has received additional funds from the State Water Board Freshwater Harmful Algal Blooms (HAB) program of \$20,000 and additional in-kind contribution of Regional Board staff time.

Delta RMP Technical Program FY21-22 Budget

The technical program and monitoring budgets for the Delta RMP for the fiscal year are provided in **Table 1**.

Table 1. Delta RMP Technical Workplan budget for FY21-22.

Monitoring Sector	FY 21-22 Budget
Technical Program Management	
MLJ - Technical Program Manager	\$230,470.00
ASC - Transition Budget	\$64,677.23
Subtotal	\$295,147.23
Current Use Pesticides (CUP)	
PER - Toxicity (FY22)	\$127,565.48
MLJ - Data Management (FY22)	\$59,692.50
USGS - Sampling/Analytical (FY22)	\$169,693.00
USACE (In Kind)	(\$37,333.00)
USGS (In Kind)	(\$23,543.00)
Subtotal	\$296,074.98
Mercury	
MLML - Sampling/Analytical	\$199,080.00
Regional Board – SWAMP (In Kind)	(\$205,600.00)
Subtotal	(\$6,520.00)¹
Constituents of Emerging Concern (CEC)	

Monitoring Sector	FY 21-22 Budget
MLJ - Sampling, Data Management, Analytical	\$335,015.22
Subtotal	\$335,015.22
Total	\$926,237.43

¹Unused in-kind funds not subtracted from total budget.

Multi-Year Budget Summary

Funding guidelines from the SC developed in the 2019 Multi-year Planning Workshop are shown in **Table 2**, along with updated information on actual expenditures. The SC guidance was to develop proposals within 25% of the guidelines. This table has been kept in the Technical Workplan for reference and has not been updated to reflect actuals from FY20-21 nor a comparison of planned for FY21-22.

Table 2. Historical (from 2019 Multi-year Planning Workshop) funding allocations and guidance from the Delta RMP Steering Committee by focus area.

Expense	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY19-20 (10/19 Work- shop)	FY19-20 (approved 5/29/19)	FY19-20 (actual)	FY20-21 (10/19 Workshop)	FY20-21 (planned as of 1/11/21)	FY21-22 (10/19 Workshop)	FY22-23 (10/19 Workshop)
Core, Gov, QA	57	234	312	342	300	309	275	320	318	454	328	338
Pathogens	72	112	-	-	-	-	-	-	-	-	-	-
Pesticides	112	225	248	88	212	223	118	118 ^a	234	144	280	250
Nutrients	35	50	120	230	228	250	259	344	250	164	250	250
Mercury	-	-	113	234	277	291	282	239 ^b	180	35 ^c	180	180
CECs	-	-	-	-	45	220	34	122	220	0	220	-
Total Expense	276	621	793	894	1,062	1,452	968	1,143	1,202	762	1,258	1,018
Forecast Revenue	303	769	862	1,021	1,205	1,226	1,226	1,226	1,226	1,226	1,226	1,263
Surplus/Deficit					128	(66)	258	83	24	464	(32)	245

a – SC only approved first half of Water Year 2019 pesticide and toxicity monitoring.

b – \$360K was allocated overall; \$78K of prey fish restoration monitoring approved in September 2019 could not occur; water scope was reduced by \$43K in anticipation of reduced budget and design in 20-21 and beyond.

c – for ASC work; Moss Landing work covered by SWAMP funds.

Appendix 1. Technical Program Manager

Delta RMP – Technical Program Manager

Revised July 15,, 2021

Roles and Responsibilities

The Delta Regional Monitoring Program (RMP) Technical Program Manager will be responsible for planning and overseeing Delta RMP projects to ensure that they are completed within a timely manner and within budget. It is the Technical Program Manager's responsibility to plan projects, prepare budgets, monitor progress, and keep stakeholders informed. In order to monitor progress towards the Delta RMPs objectives, the Technical Program Manager will need to have an in depth understanding of schedules, budgets, deliverables, and resources including people, tools and materials used in each project. The following is a list of specific responsibilities of the Technical Program Manager.

1. Planning / Scope
 - a. Work with the Delta RMP committees to determine annual monitoring objectives
 - b. Work with the Delta RMP committees to determine long term objectives
 - c. Shepherd proposals through the review process
 - d. Regulate workload for TAC and SC participants
 - e. Develop yearly schedules for proposal evaluation, report review
2. Communication
 - a. Coordinate communication between the various Delta RMP committees
 - b. Document procedures to ensure transparency and consistency
 - c. Ensure that documents are available to stakeholders
3. Individual Project Tracking
 - a. Oversee and coordinate individual monitoring elements
 - b. Track progress of the following deliverables and ensure they are completed on time
 - i. Scheduled monitoring
 - ii. Data delivery, review, and storage
 - iii. All interim and final reports
 - c. Track monitoring element budgets and spending
 - d. Communicate issues/problems to the appropriate Delta RMP committees and propose solutions
 - e. Track status of deliverables
4. Meetings
 - a. Attend, prepare for, and track various meetings including the Board of Directors, Executive Committee, Steering Committee, and Technical Advisory Committee meetings.
 - b. Assist with other Committee meetings as needed
 - c. Schedule meetings as needed

5. Documentation
 - a. Develop the next fiscal year's Workplan in coordination with the various Delta RMP committees; prepare a draft, respond to comments and finalize.
 - b. Ensure that QAPPs are completed prior
6. Budgeting
 - a. Track expenditures of the various technical monitoring projects relative to the overall Delta RMP budget.
 - b. Review and approve technical monitoring project invoices.

Table 1 and Table 2 include the Technical Program Manager's budget for the 2021-2022 fiscal year (FY21-22); where applicable supportive staff time is included.

Table 1. FY21-22 Technical Program Manager’s budget, including supportive staff. Reference to “TAC” meetings is a place holder until the name of the technical committees are determined pending creation by the Board of Directors.

Task	Subtask	Total	FY21-22 Details
1. Planning / Scope	Monitoring Proposals	\$15,360.00	Based on direction from the BOD, facilitate proposals for the FY22-23 monitoring year; coordinate proposal format and submittals; shepherd proposals through the TAC, SC and BOD.
	Yearly Planning	\$11,840.00	Schedule for meetings and meeting goals including list of deliverables to review and approve for the fiscal year. Work with Delta RMP committees on determining annual monitoring objective and long-term objectives.
1. Planning / Scope Total		\$27,200.00	
2. Communication	Communication	\$14,080.00	Communication between committees and ensure documents are available to stakeholders. Includes time for website updates.
	Delta RMP Summaries	\$2,560.00	Summarize status of project for website and stakeholder needs to ensure the public is aware of Delta RMP progress. Estimated to be 4 hours quarterly plus additional time in July and August to develop up to date Fact Sheets for the Delta RMP.
2. Communication Total		\$21,760.00	
3. Individual Project Tracking	Constituents of Emerging Concern	\$3,520.00	Review and track reports including facilitation of comments/responses; tracking of monitoring status, issues, and completeness.
	Current Use Pesticides	\$3,520.00	Track monitoring activities across monitoring sectors, create tools for project leads to provide updates, tracking of outstanding deliverables and reports.
	Mercury	\$3,520.00	
	Other	\$3,520.00	
	SEP - Cyanobacteria Source Study	\$3,520.00	
	USGS/DWR Cyanotoxin Monitoring	\$3,520.00	
3. Individual Project Tracking Total		\$21,120.00	
4. Meetings	Board of Directors	\$9,600.00	Board of Directors meetings (5 meetings, 4 hours to attend, 8 hours preparation/planning/follow-ups)
	Executive Committee	\$24,480.00	Executive Committee (12 meetings, 3 hours, 6 hours prep/planning/follow up). Additional meetings expected with the Executive Committee and Regional Board staff to coordinate transition efforts between July and December.
	Steering Committee	\$11,520.00	Steering Committee (4 meetings, 10 hours prep/planning/follow up, 8 hours attendance)

Task	Subtask	Total	FY21-22 Details
	TAC - Constituents of Emerging Concern	\$7,680.00	TAC Meetings (4 meetings, 6 hours prep, 4 hours attendance, 2 hours follow up)
	TAC - Current Use Pesticides	\$7,680.00	TAC Meetings (4 meetings, 6 hours prep, 4 hours attendance, 2 hours follow up)
	TAC - Mercury	\$7,680.00	TAC Meetings (4 meetings, 6 hours prep, 4 hours attendance, 2 hours follow up)
	TAC - Nutrients	\$7,680.00	TAC Meetings (4 meetings, 6 hours prep, 4 hours attendance, 2 hours follow up)
	Toxicity Identification Evaluation (TIE) Committee	\$1,920.00	TIE Subcommittee - review of toxicity parameters and provide guidance regarding TIE procedures, coordinate TIE subcommittee communication. Estimates 2 hours per CUP event.
4. Meetings Total		\$78,240.00	
5. Documentation	Delta RMP QAPP Template	\$6,870.00	Develop a QAPP framework which will include instructions/directions of what should be included in each section following the Delta RMP brand, general text that can be edited for project specific QAPPs, an Excel spreadsheet of standard tables formatted for the Delta RMP,
	FY21-22 QAPP	\$10,560.00	Revisions to the FY20-21 QAPP for CUP and Mercury to reflect changes for the FY21-22; respond to comments; facilitation of review and signatures. Track deviations and prepare deviation forms/amendments as needed.
	FY22-23 QAPP per project	\$44,160.00	Using the Delta RMP QAPP template, create project specific QAPP to reflect monitoring to be done in FY22-23
	FY22-23 Workplan	\$9,600.00	Development of the FY 22-23 Workplan including compilation of technical budgets; includes time for a draft Workplan, response to comments and a final Workplan.
5. Documentation Total		\$71,190.00	
6. Budgeting	Financials	\$3,520.00	Tracking of amount spent to date for various technical aspects of the program. Communication regarding changes to budgets to the EC.
	Invoice Approval	\$7,040.00	Review and approval of invoices (4 hours each month)
6. Budgeting Total		\$10,560.00	
7. Other Direct Costs	Mileage	\$300.00	
	Printing	\$100.00	
7. Other Direct Costs Total		\$400.00	
TOTAL		\$230,470.00	

Table 2. Monthly estimates of hours and costs for FY21-22 Technical Program Manager's budget.

Task	Subtask	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Mar	Apr	May	Jun	Total Hours	Rate	Cost
1. Planning / Scope	Yearly Planning	4	4	10	10	10	10	10	4	4	4	4	74	\$160.00	\$11,840.00
1. Planning / Scope	Monitoring Proposals	0	0	0	32	12	12	40	0	0	0	0	96	\$160.00	\$15,360.00
2. Communication	Communication	8	8	8	8	8	8	8	8	8	8	8	88	\$160.00	\$14,080.00
2. Communication	Delta RMP Summaries	16	16	4	0	0	4	0	0	4	0	4	48	\$160.00	\$7,680.00
3. Individual Project Tracking	Mercury	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
3. Individual Project Tracking	Current Use Pesticides	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
3. Individual Project Tracking	Constituents of Emerging Concern	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
3. Individual Project Tracking	SEP - Cyanobacteria Source Study	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
3. Individual Project Tracking	USGS/DWR Cyanotoxin Monitoring	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
3. Individual Project Tracking	Other	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
4. Meetings	Board of Directors	0	12	0	12	0	0	12	0	12	0	12	60	\$160.00	\$9,600.00
4. Meetings	Steering Committee	0	0	18	0	0	18	0	0	18	0	18	72	\$160.00	\$11,520.00
4. Meetings	Executive Committee	18	18	18	18	18	18	9	9	9	9	9	153	\$160.00	\$24,480.00
4. Meetings	TAC - Current Use Pesticides	0	12	0	0	12	0	0	12	0	12	0	48	\$160.00	\$7,680.00
4. Meetings	TAC - Mercury	0	12	0	0	12	0	0	12	0	12	0	48	\$160.00	\$7,680.00
4. Meetings	TAC - Constituents of Emerging Concern	0	12	0	0	12	0	0	12	0	12	0	48	\$160.00	\$7,680.00
4. Meetings	TAC - Nutrients	0	12	0	0	12	0	0	12	0	12	0	48	\$160.00	\$7,680.00
4. Meetings	Toxicity Identification Evaluation (TIE) Committee	2	0	2	0	0	2	0	2	2	0	2	12	\$160.00	\$1,920.00
5. Documentation	FY22-23 Workplan	0	0	0	0	0	0	0	40	10	10	0	60	\$160.00	\$9,600.00
5. Documentation	FY21-22 QAPP	20	20	6	4	4	2	2	2	2	2	2	66	\$160.00	\$10,560.00
5. Documentation	Delta RMP QAPP Template	0	0	0	15	6	0	0	0	0	0	0	21	\$160.00	\$3,360.00

Task	Subtask	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Mar	Apr	May	Jun	Total Hours	Rate	Cost
5. Documentation	Delta RMP QAPP Template	0	0	0	20	6	0	0	0	0	0	0	26	\$135.00	\$3,510.00
5. Documentation	FY22-23 QAPP per project	0	0	0	0	0	0	0	0	20	20	20	60	\$160.00	\$9,600.00
5. Documentation	FY22-23 QAPP per project	0	0	0	0	0	0	0	0	112	80	64	256	\$135.00	\$34,560.00
6. Budgeting	Invoice Approval	4	4	4	4	4	4	4	4	4	4	4	44	\$160.00	\$7,040.00
6. Budgeting	Financials	2	2	2	2	2	2	2	2	2	2	2	22	\$160.00	\$3,520.00
		82	140	74	95	108	70	49	127	215	195	157	1312		\$230,470.00

Appendix 2. ASC Transition Budget

Delta RMP – Aquatic Sciences Center Transition Budget

June 10, 2021

Project Scope

The Aquatic Sciences Center (ASC) will continue to provide technical support during the 2021-2022 fiscal year (FY21-22) as described in Table 1 for the following categories:

- Responding to communications with Delta RMP stakeholders on technical issues, attending meetings as needed, completing the management of remaining projects.
- Managing remaining contracts including communication with subcontractors, managing subcontractor invoices and developing/tracking internal budgets for already funded SEP projects, reporting to the Delta RMP and communication with the Delta RMP on financial items; attending meetings as needed to discuss financials.
- Transfer of documents and information to the Delta RMP stakeholders as needed.
- Attendance at four Mercury Committee meetings.

Table 1. ASC transition budget for FY21-22.

Personnel	Task	Task Name	Subtask	Personnel	Hours	Rate	Cost	Description of Services
Task Number: 001 Core Functions								
Subtask Number: A Project Mgmt of FY22 and other open task								
Davis, Jay	001	Core Functions	A	Davis, Jay	24	\$232.34	\$5,576.19	Services under this task include responding to any communication from DRMP stakeholders on technical issues, attending any requested meetings, and managing remaining projects.
Hunt, Jennifer	001	Core Functions	A	Hunt, Jennifer	36	\$164.80	\$5,932.74	
Weaver, Michael	001	Core Functions	A	Weaver, Michael	36	\$110.89	\$3,991.92	
Yin, Jamie	001	Core Functions	A	Yin, Jamie	24	\$97.72	\$2,345.31	
Total for A					120		\$17,846.16	
Subtask Number: B DRMP & SEP Contract & Financial Management								
Hunt, Jennifer	001	Core Functions	B	Hunt, Jennifer	40	\$164.80	\$6,591.93	Services under this task includes managing all remaining contracts, communication with subcontractors, managing subcontractor invoices, developing and tracking internal invoices, tracking internal budgets and hours for all open tasks with DRMP and SEP funds, reporting to the DRMP, communication with DRMP on financial items.
Lofthouse, Meredith	001	Core Functions	B	Lofthouse, Meredith	12	\$104.25	\$1,251.00	
Lowe, Sarah	001	Core Functions	B	Lowe, Sarah	40	\$164.61	\$6,584.30	
Walsh, Patrick	001	Core Functions	B	Walsh, Patrick	12	\$145.32	\$1,743.84	
Yin, Jamie	001	Core Functions	B	Yin, Jamie	36	\$97.72	\$3,517.97	
Total for B					140		\$19,689.03	
Task Number: 002 Governance								
Subtask Number: A Finance Committee Meeting								
Hunt, Jennifer	002	Governance	A	Hunt, Jennifer	20	\$164.80	\$3,295.96	Preparation and attendance at financial subcommittee meetings if needed.
Yin, Jamie	002	Governance	A	Yin, Jamie	12	\$97.72	\$1,172.66	
Total for A					32		\$4,468.62	
Subtask Number: B Transition Work to new Non-Profit								
Chabot, Warner	002	Governance	B	Chabot, Warner	4	\$263.07	\$1,052.28	Services under this task include finalizing any transfer of documents or information not completed under

Personnel	Task	Task Name	Subtask	Personnel	Hours	Rate	Cost	Description of Services
Davis, Jay	002	Governance	B	Davis, Jay	6	\$232.34	\$1,394.05	the FY20-21 budget or any other requests from DRMP stakeholders as needed.
Hale, Anthony	002	Governance	B	Hale, Anthony	6	\$209.45	\$1,256.67	
Hunt, Jennifer	002	Governance	B	Hunt, Jennifer	10	\$164.80	\$1,647.98	
Lowe, Sarah	002	Governance	B	Lowe, Sarah	4	\$164.61	\$658.43	
Weaver, Michael	002	Governance	B	Weaver, Michael	6	\$110.89	\$665.32	
Yin, Jamie	002	Governance	B	Yin, Jamie	46	\$97.72	\$4,495.18	
Total for B					82		\$11,169.92	
Task Number: 003 Mercury Monitoring & Meetings								
Davis, Jay	003	Mercury Monitoring & Meetings		Davis, Jay	36	\$232.34	\$8,364.29	Services under this task include attendance at 4 Hg Subcommittee meetings.
Robinson, April	003	Mercury Monitoring & Meetings		Robinson, April	24	\$130.80	\$3,139.20	
Total for 003 Mercury Monitoring & Meetings							\$11,503.49	
ASC BUDGET TOTAL							\$64,677.23	

Appendix 3. Current Use Pesticides (CUP) Monitoring

Delta RMP - Current Use Pesticides Monitoring

June 10, 2021; Revised September 6, 2021

Project Scope

The US Geological Services (USGS) and Pacific EcoRisk (PER) shall provide the capability to perform all testing and related services related to the Current Use Pesticide (CUP) monitoring plan for the 2022 Water Year (21-22WY) which covers two fiscal years (FY), FY21-22 and FY22-23.

The Delta RMP pesticides monitoring design currently includes six sampling events during each water year, with eight samples collected during each event plus two field duplicates per year. For each sampling event, samples are collected over two to three days. The six sampling events are spread throughout the water year, with three wet-season events (first seasonal flush and two subsequent significant winter storms) and three dry-season events (early spring, late spring/early summer and late summer). For wet season sampling, the Delta RMP will alert the contractor seven days in advance of upcoming storms for organism preparation and two days in advance about the likelihood of adequate precipitation. For dry season sampling, the Delta RMP will coordinate the sampling schedule with the contractor in advance.

Table 1 and 2 reflect the toxicity testing costs associated with the 21-22WY CUP monitoring. Table 3 reflects the USGS sampling and analytical costs associated with the 21-22WY and 22-23WY CUP monitoring costs. The USGS costs are included for the remainder of the project to allow for a single contract to expand both water years. The USGS costs include Federal matching funds based on the assumption that USGS can contract with a public entity such as a Joint Powers Authority, city, or county. If the Delta RMP is unable to contract with the USGS in this fashion, the Federal matching funds cannot be used and the cost will increase accordingly.

The Delta RMP Board of Directors (BOD) has approved a Scope of Work submitted by MLJ Environmental for the Central Valley Regional Data Center (CVRDC) and Moss Landing Marine Laboratories Regional Data Center (MLML RDC) to manage the CUP data and QA assessment for both the 20-21WY and the 21-22WY. Table 4 includes the summary budget from this scope and splits out the costs per fiscal year.

The list of pesticides to be analyzed in the WY 21-22 are listed in Table 5.

Table 1. 2022WY PER Budget for Toxicity Laboratory Services for 6 events to occur from October through September. Costs per Fiscal Year (FY) are included as subtotals.

Costs (per test)	Unit Cost (2022 WY)	Number of Events Annually	Number of Env. Samples per Event	Number of QC Samples Annually	Cost
<i>Selenastrum</i> (chronic)	\$453.33	6	8	3	\$23,119.83
<i>Ceriodaphnia</i> (chronic)	\$517.50	6	9	3	\$29,497.50
<i>C.dubia</i> secondary control	\$258.75	6	8	3	\$13,196.25
Fathead minnow (chronic)	\$587.88	6	8	3	\$29,981.88
<i>Hyalella</i> (acute)	\$587.88	6	8	3	\$29,981.88
Midge (chronic)	\$587.88	6	8	3	\$29,981.88
Labor (quarterly TAC meeting updates)	\$232.88	6	4		\$5,589.00
Toxicity Testing Services Subtotal					\$161,348.22
TIE Services Subtotal					\$30,000.00
21-22 WY TOTAL					\$191,348.22
	<i>FY21-22 Subtotal</i>				\$127,565.48
	<i>FY22-23 Subtotal</i>				\$63,782.74

Table 2. Phase I TIE Costs per Test.

Costs (per test)	Unit Cost (2022 WY)
Phase I TIE - <i>Selenastrum</i>	\$1,783.31
Phase I TIE - <i>C. dubia</i>	\$8,371.08
Phase I TIE - Fathead Minnow	\$4,859.33
Phase I TIE - <i>Hyalella</i>	\$8,767.49
Phase I TIE - midge	\$4,380.12

Table 3. USGS sampling and analytical costs associated with the CUP monitoring for WY2022 and WY2023.

Tasks	Subtasks	WY 22 (6 events)	WY 23 (6 events)	
		SFY 22 (4 events)	SFY 23 (6 events)	SFY 24 (2 events)
Task 1: Project Oversight and Data Reporting		\$8,267.00	\$12,653.00	\$4,260.00
Task 2: Sample Collection	Labor	\$21,533.00	\$36,300.00	\$12,767.00
	Supplies	\$5,333.00	\$8,734.00	\$3,033.00
Task 3: Sample Analysis and QA/QC	Dissolved Pesticide Analyses	\$85,467.00	\$135,933.00	\$46,600.00
	Sediment Pesticide Analyses	\$34,733.00	\$55,100.00	\$18,867.00
	NWQL Analyses (Cu, DOC, POC)	\$9,333.00	\$14,467.00	\$4,900.00
Task 4: Reports	Field Sampling and Data Quality Report	\$5,027.00	\$7,700.00	\$2,593.00
Cooperator Funding		\$108,817.00	\$176,551.00	\$61,070.00
USACE Funding		\$37,333.00	\$56,000.00	\$18,667.00
USGS Matching Funds (25% of labor and travel)		\$23,543.00	\$38,336.00	\$13,283.00
Total Study Funding		\$169,693.00	\$270,887.00	\$93,020.00

Table 4. MLJ Environmental CUP data management and QA assessment costs associated with WY20-21 and WY21-22 data.

Data Management Task	Budget for WY20-21 and WY 21-22	FY21-22 Estimate	FY22-23 Estimate
Data Loading	\$9,200.00	\$6,440.00	\$2,760.00
Data Management	\$12,075.00	\$6,957.50	\$5,117.50
Data Review	\$17,280.00	\$10,800.00	\$6,480.00
Project Management	\$14,380.00	\$7,190.00	\$7,190.00
QA Assessment	\$36,870.00	\$23,475.00	\$13,395.00
Server Maintenance	\$9,660.00	\$4,830.00	\$4,830.00
Total	\$99,465.00	\$59,692.50	\$39,772.50

Table 5. List of pesticides to be analyzed during the WY 21-22 by USGS for the Delta RMP CUP project.

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
135410-20-7	Acetamiprid	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
34256-82-1	Acetochlor	3	3	1	1	GC-MS/MS	LC-MS/MS
135158-54-2	Acibenzolar-S-Methyl	6	6	2	2	GC-MS/MS	GC-MS/MS
584-79-2	Allethrin	6	6	2	2	GC-MS/MS	GC-MS/MS
1912-24-9	Atrazine	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
6190-65-4	Atrazine, Desethyl	3	3	1	1	GC-MS/MS	LC-MS/MS
1007-28-9	Atrazine, Desisopropyl	3	3	1	1	GC-MS/MS	LC-MS/MS
131860-33-8	Azoxystrobin	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1861-40-1	Benefin (Benfluralin)	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
25057-89-0	Bentazon	-	3	-	1	-	LC-MS/MS
156963-66-5	Benzobicyclon	3	3	1	1	GC-MS/MS	LC-MS/MS
1072957-71-1	Benzovindiflupyr	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
82657-04-3	Bifenthrin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
188425-85-6	Boscalid	3	3	1	1	GC-MS/MS	LC-MS/MS
661463-87-2	Boscalid Metabolite - M510F01 Acetyl	-	1.5	-	0.5	-	LC-MS/MS
1207727-04-5	Broflanilide	-	1.5	-	0.5	-	LC-MS/MS
116255-48-2	Bromuconazole	3	3	1	1	GC-MS/MS	LC-MS/MS
33629-47-9	Butralin	-	3	-	1	-	LC-MS/MS
63-25-2	Carbaryl	-	1.5	-	0.5	-	LC-MS/MS
10605-21-7	Carbendazim	-	1.5	-	0.5	-	LC-MS/MS
1563-66-2	Carbofuran	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
500008-45-7	Chlorantraniliprole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
122453-73-0	Chlorfenapyr	6	6	2	2	GC-MS/MS	GC-MS/MS

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
1897-45-6	Chlorothalonil	-	15	-	5	-	GC-MS/MS
2921-88-2	Chlorpyrifos	-	3	-	1	-	LC-MS/MS
5598-15-2	Chlorpyrifos Oxon	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
81777-89-1	Clomazone	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
210880-92-5	Clothianidin	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
135018-15-4	Clothianidin Desmethyl	3	3	1	1	GC-MS/MS	LC-MS/MS
56-72-4	Coumaphos	3	3	1	1	GC-MS/MS	LC-MS/MS
736994-63-1	Cyantraniliprole	3	3	1	1	GC-MS/MS	LC-MS/MS
120116-88-3	Cyazofamid	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1031756-98-5	Cyclaniliprole	3	3	1	1	GC-MS/MS	LC-MS/MS
1134-23-2	Cycloate	-	3	-	1	-	LC-MS/MS
68359-37-5	Cyfluthrin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
122008-85-9	Cyhalofop-Butyl	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
68085-85-8	Cyhalothrin (all isomers)	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
57966-95-7	Cymoxanil	3	3	1	1	GC-MS/MS	LC-MS/MS
52315-07-8	Cypermethrin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
94361-06-5	Cyproconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
121552-61-2	Cyprodinil	-	1.5	-	0.5	-	LC-MS/MS
1861-32-1	DCPA	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
3567-62-2	DCPMU	-	3	-	1	-	LC-MS/MS
2327-02-8	DCPU	-	3	-	1	-	LC-MS/MS
52918-63-5	Deltamethrin	3	3	1	1	GC-MS/MS	GC-MS/MS
120983-64-4	Desthio-Prothioconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
333-41-5	Diazinon	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
962-58-3	Diazinon Oxon	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
95-76-1	Dichloroaniline, 3,4-	3	3	1	1	GC-MS/MS	LC-MS/MS
626-43-7	Dichloroaniline, 3,5-	6	6	2	2	GC-MS/MS	LC-MS/MS

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
62-73-7	Dichlorvos	-	3	-	1	-	LC-MS/MS
119446-68-3	Difenoconazole	3	3	1	1	GC-MS/MS	LC-MS/MS
110488-70-5	Dimethomorph	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
165252-70-0	Dinotefuran	3	3	1	1	GC-MS/MS	LC-MS/MS
97886-45-8	Dithiopyr	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
330-54-1	Diuron	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
759-94-4	EPTC	-	6	-	2	-	LC-MS/MS
66230-04-4	Esfenvalerate	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
162650-77-3	Ethaboxam	3	3	1	1	GC-MS/MS	LC-MS/MS
55283-68-6	Ethalfuralin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
80844-07-1	Etofenprox	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
153233-91-1	Etoazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
131807-57-3	Famoxadone	-	30	-	10	-	LC-MS/MS
161326-34-7	Fenamidone	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
114369-43-6	Fenbuconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
126833-17-8	Fenhexamid	30	30	10	10	GC-MS/MS	LC-MS/MS
39515-41-8	Fenpropathrin	3	3	1	1	GC-MS/MS	GC-MS/MS
134098-61-6	Fenpyroximate	-	1.5	-	0.5	-	LC-MS/MS
120068-37-3	Fipronil	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
205650-65-3	Fipronil Desulfinyl	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1115248-09-3	Fipronil Desulfinyl Amide	-	3	-	1	-	LC-MS/MS
120067-83-6	Fipronil Sulfide	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
120068-36-2	Fipronil Sulfone	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
158062-67-0	Fonicamid	3	3	1	1	GC-MS/MS	LC-MS/MS
1390661-72-9	Florpyrauxifen-Benzyl	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
79622-59-6	Fluazinam	-	1.5	-	0.5	-	LC-MS/MS
131341-86-1	Fludioxonil	3	3	1	1	GC-MS/MS	LC-MS/MS
142459-58-3	Flufenacet	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1383809-87-7	Fluindapyr	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
62924-70-3	Flumetralin	3	3	1	1	GC-MS/MS	LC-MS/MS

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
239110-15-7	Fluopicolide	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
658066-35-4	Fluopyram	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
193740-76-0	Fluoxastrobin	-	1.5	-	0.5	-	LC-MS/MS
951659-40-8	Flupyradifurone	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
59756-60-4	Fluridone	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
66332-96-5	Flutolanil	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
76674-21-0	Flutriafol	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
907204-31-3	Fluxapyroxad	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
72178-02-0	Fomesafen	-	6	-	2	-	LC-MS/MS
943831-98-9	Halauxifen-Methyl Ester	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
51235-04-2	Hexazinone	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
35554-44-0	Imazalil	-	1.5	-	0.5	-	LC-MS/MS
138261-41-3	Imidacloprid	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
127202-53-3	Imidacloprid Desnitro	-	3	-	1	-	LC-MS/MS
120868-66-8	Imidacloprid Urea	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
380912-09-4	Imidacloprid, 5-Hydroxy	3	3	1	1	GC-MS/MS	LC-MS/MS
950782-86-2	Indaziflam	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
173584-44-6	Indoxacarb	-	3	-	1	-	LC-MS/MS
125225-28-7	Ipconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
36734-19-7	Iprodione	3	3	1	1	GC-MS/MS	LC-MS/MS
875915-78-9	Isofetamid	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
143390-89-0	Kresoxim-Methyl	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
121-75-5	Malathion	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1634-78-2	Malathion Oxon	-	1.5	-	0.5	-	LC-MS/MS
173662-97-0	Mandestrobin	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
374726-62-2	Mandipropamid	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
57837-19-1	Metalaxyl	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
85933-49-9	Metalaxyl Alanine Metabolite	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
125116-23-6	Metconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
40596-69-8	Methoprene	6	6	2	2	GC-MS/MS	GC-MS/MS
161050-58-4	Methoxyfenozide	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
51218-45-2	Metolachlor	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
88671-89-0	Myclobutanil	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
300-76-5	Naled (Dibrom)	-	30	-	10	-	LC-MS/MS
15299-99-7	Napropamide	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1929-82-4	Nitrapyrin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
116714-46-6	Novaluron	-	6	-	2	-	LC-MS/MS
19044-88-3	Oryzalin	6	6	2	2	GC-MS/MS	LC-MS/MS
19666-30-9	Oxadiazon	-	3	-	1	-	LC-MS/MS
1003318-67-9	Oxathiapiprolin	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
42874-03-3	Oxyfluorfen	3	3	1	1	GC-MS/MS	LC-MS/MS
72-54-8	p,p'-DDD	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
72-55-9	p,p'-DDE	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
50-29-3	p,p-DDT	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
76738-62-0	Paclobutrazol	3	3	1	1	GC-MS/MS	LC-MS/MS
40487-42-1	Pendimethalin	3	3	1	1	GC-MS/MS	LC-MS/MS
219714-96-2	Penoxsulam	3	3	1	1	GC-MS/MS	LC-MS/MS
1825-21-4	Pentachloroanisole (PCA)	3	3	1	1	GC-MS/MS	GC-MS/MS
82-68-8	Pentachloronitrobenzene (PCNB)	3	3	1	1	GC-MS/MS	GC-MS/MS
183675-82-3	Penthiopyrad	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
52645-53-1	Permethrin	3	3	1	1	GC-MS/MS	GC-MS/MS
26002-80-2	Phenothrin	6	6	2	2	GC-MS/MS	GC-MS/MS
732-11-6	Phosmet	-	1.5	-	0.5	-	LC-MS/MS
500207-04-5	Picarbutrazox	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
117428-22-5	Picoxystrobin	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
51-03-6	Piperonyl Butoxide	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
29091-21-2	Prodiamine	-	6	-	2	-	LC-MS/MS
1610-18-0	Prometon	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
7287-19-6	Prometryn	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
709-98-8	Propanil	3	3	1	1	GC-MS/MS	LC-MS/MS
2312-35-8	Propargite	-	1.5	-	0.5	-	LC-MS/MS
60207-90-1	Propiconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
23950-58-5	Propyzamide	3	3	1	1	GC-MS/MS	LC-MS/MS
1228284-64-7	Pydiflumetofen	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
175013-18-0	Pyraclostrobin	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
96489-71-3	Pyridaben	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
53112-28-0	Pyrimethanil	-	1.5	-	0.5	-	LC-MS/MS
95737-68-1	Pyriproxyfen	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
124495-18-7	Quinoxifen	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
874967-67-6	Sedaxane	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
122-34-9	Simazine	3	3	1	1	GC-MS/MS	LC-MS/MS
946578-00-3	Sulfoxaflor	-	3	-	1	-	LC-MS/MS
107534-96-3	Tebuconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
107534-96-4	Tebuconazole	1.5	-	0.5	-	GC-MS/MS	-
212267-64-6	Tebuconazole t-Butylhydroxy	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
112410-23-8	Tebufenozide	-	1.5	-	0.5	-	LC-MS/MS
96182-53-5	Tebupirimfos	-	1.5	-	0.5	-	LC-MS/MS
1035330-36-9	Tebupirimfos Oxon	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
79538-32-2	Tefluthrin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
112281-77-3	Tetraconazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
7696-12-0	Tetramethrin	3	3	1	1	GC-MS/MS	GC-MS/MS
102851-06-9	t-Fluvalinate	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
148-79-8	Thiabendazole	-	1.5	-	0.5	-	LC-MS/MS
111988-49-9	Thiacloprid	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
153719-23-4	Thiamethoxam	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
902493-06-5	Thiamethoxam Degradate (CGA-355190)	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS

CAS Registry Number	Analyte	RL in Suspended Sediment (ng/L)	RL in Filtered Water (ng/L)	MDL in Suspended Sediment (ng/L)	MDL in Filtered Water (ng/L)	Analytical Instrumentation, Suspended Sediment	Analytical Instrumentation, Filtered Water
None	Thiamethoxam Degradate (NOA-407475)	-	3	-	1	-	LC-MS/MS
28249-77-6	Thiobencarb	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
129558-76-5	Tolfenpyrad	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
43121-43-3	Triadimefon	3	3	1	1	GC-MS/MS	LC-MS/MS
55219-65-3	Triadimenol	3	3	1	1	GC-MS/MS	LC-MS/MS
2303-17-5	Triallate	-	6	-	2	-	LC-MS/MS
78-48-8	Tribufos	-	1.5	-	0.5	-	LC-MS/MS
141517-21-7	Trifloxystrobin	-	1.5	-	0.5	-	LC-MS/MS
68694-11-1	Triflumizole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
1582-09-8	Trifluralin	1.5	1.5	0.5	0.5	GC-MS/MS	GC-MS/MS
131983-72-7	Triticonazole	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
283159-90-0	Valifenalate	1.5	1.5	0.5	0.5	GC-MS/MS	LC-MS/MS
156052-68-5	Zoxamide	3	3	1	1	GC-MS/MS	LC-MS/MS

Appendix 4. MLJ Environmental Database Management

MLJ Environmental and Moss Landing Marine Laboratories Project Scope for the Delta Regional Monitoring Program – Current Use Pesticide Data Management

MAY 14, 2021

Project Background and Description

MLJ Environmental (MLJ) has developed a cost estimate for the Delta Regional Monitoring Program (Delta RMP) to manage data collected by the program as part of their Current Use Pesticide (CUP) monitoring for the 2020 – 2021 Water Year (20/21 WY) and the 2021 – 2022 Water Year (21/22 WY). Samples will be collected by the United States Geological Survey (USGS) for pesticide, metals, physical parameters, and toxicity. As described in the Quality Assurance Project Plan ([QAPP, v6.4](#)), the samples will be sent to the US Geological Survey-Pesticide Fate Research Group Organic Chemistry Research Laboratory (USGS-PFRG-OCRL, pesticides), U.S. Geological Survey-National Water Quality Laboratory (USGS NWQL; metals, nutrients and organic carbon) and Pacific EcoRisk (PER, toxicity). The data management tasks include processing and storing the CUP data in the Central Valley Regional Data Center (CV RDC) which is housed on a shared server with Moss Landing Marine Laboratories (MLML). Data types will include field and habitat, chemistry, and toxicity data. As Regional Data Centers, both the CV RDC and MLML have extensive histories in managing large data sets that have been successfully migrated to the California Environmental Data Exchange Network (CEDEN) and publicly available for stakeholder use. MLJ Environmental will subcontract to MLML for work associated with the Quality Assurance (QA) Program Manager, QA reviews and write ups, and server maintenance.

Project Scope

This cost estimate includes tasks for managing the CUP field, chemistry, and toxicity data for the 20/21 WY and the 21/22 WY. The time frame for this project is anticipated to be **June 2021 through February 2023** to include monitoring events starting in April 2021 through September 2022; it is anticipated that the final data collected in September 2022 can be finalized and ready for approval in December 2022. It is anticipated that the QA Reports will be completed and ready for review by the Technical Advisory Committee (TAC) by February each year with the last report being completed by February 2023.

For the 20/21 WY, data for the April and June monitoring events will have been reviewed by MLJ Environmental staff with preliminary QA/QC checks performed on the data formatted in CEDEN templates under a different contract. This SOW includes time to review the remaining events for the 20/21 WY (July and September) and load data from all four (4) events into the CVRDC database, perform final QA/QC, update data codes (LookUp Values) in the CVRDC and complete the export to CEDEN once the data and associated data reports are approved by the Delta RMP.

The time associated with the 21/22 WY data set is based on six monitoring events and includes time for updating measurement quality objectives used to qualify data, provide sample details to the laboratories to ensure efficient population of CEDEN templates, review data for compliance with QAPP requirements, communicate with the laboratories, and load data into the CVRDC. The CVRDC will track completion of monitoring events and data received; this information will be used to complete the QA Report at the end of each water year.

MLML will provide additional services as the Program QA Officer, final QA assessment and write up of the data annually, and server maintenance.

It is anticipated that the Data Management Team may need to be present for TAC meetings to provide updates on data management and/or quality assurance assessments. It is not clear how many TAC meetings will occur between the start of the project and finalizing the 21/22 WY data; therefore, we have assumed that there may be 8 meetings during the project timeframe and have allocated 2 hours for three people to attend each meeting.

The current QAPP will need to be revised to include updates to the data management process and the Program QA Officer. Time is included in this SOW for both MLJ Environmental and MLML staff to provide updates necessary for the QAPP including a data management SOP and review of revised QAPP language specific to data management and the role of the Program QA Officer.

DATA REVIEW

Data received from the reporting laboratories for two (2) events from the 20/21 WY (July and September 2021) and six (6) events from the 21/22 WY (October 2021 through September 2022) will undergo a thorough data review prior to loading into the CV RDC database. MLJ Environmental staff will perform preliminary QA/QC checks and ensure the data are formatted correctly and are comparable to existing program data.

DATA LOADING

The electronic data deliverables (EDDs) from four (4) events from the 20/21 WY (April through September 2021) and six (6) events from the 21/22 WY (October 2021 through September 2022) will be loaded into the CV RDC database. MLJ Environmental staff will load a complete set of EDDs for each event including field, toxicity and chemistry results including the creation of sample purpose records to provide metadata information about the events.

DATA MANAGEMENT

Data management of the four (4) events from the 20/21 WY (April through September 2021) and six (6) events from the 21/22 WY (October 2021 through September 2022) will include the following: setting up internal tracking of the monitoring schedule, file management, updates to the electronic QAPP (eQAPP), coordination of Lab Sample Details for efficient data reporting of EDDs, lookup value updates to CV RDC, completion tracking and marking results for transfer to CEDEN.

QUALITY ASSESSMENT

20/21 QA Report

The 20/21 WY data will include four (4) events from April through September 2021. MLML staff will perform a final QA review and write up of the 20/21 WY data once the data from the September monitoring event are finalized. It is anticipated that the 20/21 QA review will occur in January of 2022 and be available for review/comments by the Technical Advisory Committee (TAC) in February 2022.

21/22 QA Report

The 21/22 WY data will include six (6) events from October 2021 through September 2022. MLML staff will perform a final QA review and write up of the 21/22 WY data once the data from the September monitoring

event are finalized. It is anticipated that the 21/22 QA review will occur in January of 2023 and be available for review/comments by the Technical Advisory Committee (TAC) in February 2023.

QA Oversight

Will Hagan will be the Delta RMP Program QA Officer. As described in the QAPP, Mr. Hagan will provide quality assurance oversight and work with the Delta RMP Program Manager to determine corrective actions and next steps when there are deviations from the QAPP.

QAPP Updates

It is anticipated that the Delta RMP will revise the QAPP associated with the CUP monitoring to reflect the new data management entity and process as well as updates to the Program QA Officer. MLJ Environmental and MLML will provide a Data Management SOP for all data types associated with the CUP monitoring, review updated QAPP language, respond to comments from Delta RMP participants, and revise the Data Management SOP as needed based on comments from the State Board QA Officer. MLML staff will review the revised QAPP language and provide edits as needed pertaining to the role of the Program QA Officer.

SERVER MAINTENANCE

The CV RDC database and Central Valley Checker System resides on two servers housed at Moss Landing Marine Laboratories in the main laboratory server room. Servers will be monitored daily with weekly software maintenance and updates performed. Hardware maintenance will occur on an as needed basis. A full back up of the CV RDC database will occur nightly and be available for quick retrieval for the most recent month of backups. The first database backup of each month will be archived to retain a historical record.

PROJECT MANAGEMENT

Laboratory Communication

MLJ Environmental staff will work with the various laboratory staff to coordinate schedules, communicate upcoming timelines, and plan for the various data management tasks. Laboratories will be notified if additional flags are added to the provided data sets, changes to format and codes to ensure CEDEN comparability, and any questions regarding completeness, accuracy, and precision of the data. Any deviations to the QAPP will be communicated to the Program Manager and Program QA Officer to complete a deviations form and determine corrective actions.

TAC Meetings

Time has been allocated for W. Hagan, S. Swenson and C. Lamerdin to attend Technical Advisory Committees (TAC) as needed. Since the TAC meetings have not yet been scheduled, time has been estimated for them to attend 8 meetings (2 hours per meeting).

Project Management

MLJ Environmental will provide monthly progress reports with a summary of work performed during the invoice period, status of amount billed to data per task and subtask, and status of percent of work complete. Ms. Turner will coordinate between data management staff at both MLJ Environmental and MLML to ensure data processing

is occurring within the expected time frames and effective communication is occurring with the laboratories. Any issues will be identified in the monthly progress reports and discussed with the Delta RMP Executive Committee.

Budget

MLJ Environmental will provide monthly invoices and progress reports by the 15th of the month for the previous month. Invoices will include MLML invoices as appropriate. Table 1 includes the cost estimate for the work described in this scope.

Table 1. MLJ Environmental and MLML budget for data management tasks (WY 20/21 and WY 21/22) to be performed for the Delta RMP. A detailed budget is provided in Table 2.

Task	CVRDC	MLML RDC	Total Cost
Data Review	\$ 17,280.00	\$ -	\$ 17,280.00
Data Loading	\$ 9,200.00	\$ -	\$ 9,200.00
Data Management	\$ 12,075.00	\$ -	\$ 12,075.00
QA Assessment	\$ 8,940.00	\$ 27,930.00	\$ 36,870.00
Server Maintenance	\$ -	\$ 9,660.00	\$ 9,660.00
Project Management	\$ 7,980.00	\$ 6,400.00	\$ 14,380.00
Total	\$ 55,475.00	\$ 43,990.00	\$ 99,465.00

Table 2. Detailed budget for MLJ Environmental and MLML to perform data management tasks associated with the Current Use Pesticide monitoring for 20/21 WY and 21/22 WY.

Task	Subtask	RDC	Events / Months	Hours Per Event	Hours	Personnel	Rate	Cost
Data Review	20/21 Chemistry Data	CV RDC	2	10	20	C. Lamerdin	\$115.00	\$2,300.00
Data Review	20/21 Field Data	CV RDC	2	4	8	C. Lamerdin	\$115.00	\$920.00
Data Review	20/21 Toxicity Data	CV RDC	2	5	10	L. Reising	\$110.00	\$1,100.00
Data Review	21/22 Chemistry Data	CV RDC	6	10	60	C. Lamerdin	\$115.00	\$6,900.00
Data Review	21/22 Field Data	CV RDC	6	4	24	C. Lamerdin	\$115.00	\$2,760.00
Data Review	21/22 Toxicity Data	CV RDC	6	5	30	L. Reising	\$110.00	\$3,300.00
Data Loading	20/21 Chemistry Data	CV RDC	4	4	16	C. Lamerdin	\$115.00	\$1,840.00
Data Loading	20/21 Field Data	CV RDC	4	2	8	C. Lamerdin	\$115.00	\$920.00
Data Loading	20/21 Toxicity Data	CV RDC	4	2	8	C. Lamerdin	\$115.00	\$920.00
Data Loading	21/22 Chemistry Data	CV RDC	6	4	24	C. Lamerdin	\$115.00	\$2,760.00
Data Loading	21/22 Field Data	CV RDC	6	2	12	C. Lamerdin	\$115.00	\$1,380.00
Data Loading	21/22 Toxicity Data	CV RDC	6	2	12	C. Lamerdin	\$115.00	\$1,380.00
Data Management	Data Exports	CV RDC	2	19	38	V. Bowles	\$135.00	\$5,130.00
Data Management	eQAPP Updates	CV RDC	2	4	8	V. Bowles	\$135.00	\$1,080.00
Data Management	File Management	CV RDC	10	0.5	5	C. Lamerdin	\$115.00	\$575.00
Data Management	Lab Sample Details	CV RDC	10	1	10	C. Lamerdin	\$115.00	\$1,150.00
Data Management	LookUp Value Updates	CV RDC	2	2	4	C. Lamerdin	\$115.00	\$460.00
Data Management	Monitoring Schedule	CV RDC	2	6	12	C. Lamerdin	\$115.00	\$1,380.00
Data Management	Monitoring Schedule Updates	CV RDC	10	2	20	C. Lamerdin	\$115.00	\$2,300.00
QA Assessment	20/21 QA Report	CV RDC	1	6	6	M. Turner	\$160.00	\$960.00
QA Assessment	20/21 QA Report	CV RDC	1	16	16	V. Bowles	\$135.00	\$2,160.00
QA Assessment	20/21 QA Report	MLML RDC	1	2	2	M. Sigala	\$150.00	\$300.00
QA Assessment	20/21 QA Report	MLML RDC	1	3	3	W. Hagan	\$135.00	\$405.00
QA Assessment	20/21 QA Report	MLML RDC	1	36	36	S. Swenson	\$115.00	\$4,140.00
QA Assessment	21/22 QA Report	CV RDC	1	6	6	M. Turner	\$160.00	\$960.00

Task	Subtask	RDC	Events / Months	Hours Per Event	Hours	Personnel	Rate	Cost
QA Assessment	21/22 QA Report	CV RDC	1	16	16	V. Bowles	\$135.00	\$2,160.00
QA Assessment	21/22 QA Report	MLML RDC	1	2	2	M. Sigala	\$150.00	\$300.00
QA Assessment	21/22 QA Report	MLML RDC	1	3	3	W. Hagan	\$135.00	\$405.00
QA Assessment	21/22 QA Report	MLML RDC	1	28	28	S. Swenson	\$115.00	\$3,220.00
QA Assessment	QA Oversight	MLML RDC	10	6	60	W. Hagan	\$135.00	\$8,100.00
QA Assessment	QA Oversight	MLML RDC	10	4	40	S. Swenson	\$115.00	\$4,600.00
QA Assessment	QAPP Updates	CV RDC	1	20	20	V. Bowles	\$135.00	\$2,700.00
QA Assessment	QAPP Updates	MLML RDC	1	2	2	M. Sigala	\$150.00	\$300.00
QA Assessment	QAPP Updates	MLML RDC	1	32	32	W. Hagan	\$135.00	\$4,320.00
QA Assessment	QAPP Updates	MLML RDC	1	16	16	S. Swenson	\$115.00	\$1,840.00
Server Maintenance	Server Maintenance	MLML RDC	21	4	84	G. Radojevic	\$115.00	\$9,660.00
Project Management	Laboratory Communication	CV RDC	10	2	20	C. Lamerdin	\$115.00	\$2,300.00
Project Management	Project Management	CV RDC	12	2	24	M. Turner	\$160.00	\$3,840.00
Project Management	Project Management	MLML RDC	8	2	16	M. Sigala	\$150.00	\$2,400.00
Project Management	TAC Meetings	MLML RDC	8	2	16	W. Hagan	\$135.00	\$2,160.00
Project Management	TAC Meetings	MLML RDC	8	2	16	S. Swenson	\$115.00	\$1,840.00
Project Management	TAC Meetings	CV RDC	8	2	16	C. Lamerdin	\$115.00	\$1,840.00
Total								\$99,465.00

Appendix 5. Mercury Monitoring

Delta RMP - Mercury Monitoring

Revised on July 15, 2021

Project Scope

The following mercury monitoring plan is a continued monitoring design from FY20/21 which will address the highest priority information needs related to implementation of the Delta Methylmercury TMDL. Re-opening of the TMDL is currently underway; the window for inclusion of new data in the TMDL revision closed in December 2019. Monitoring with the design established in FY17/18 continued through October 2019. During the second half of FY19/20 (January-June 2020) a transition to a new phase of monitoring began. The new phase will address the critical need for continued monitoring of subregional trends in fish and water and has added a monitoring element focused on assessing the local and subregional impact of habitat restoration projects on methylmercury impairment.

There are three main elements of the FY 19/20 mercury monitoring design.

- 1. Subregional trends in bass** - Continued annual monitoring of methylmercury in black bass (“black bass” includes largemouth, smallmouth, and spotted bass) at seven stations (distributed among the TMDL subregions) will firmly establish baseline concentrations and interannual variation in support of monitoring of long-term trends as a critical performance measure for the TMDL. The design from the initial phase will continue unchanged in the next phase. This design will be re-evaluated after completion of a 10-year period (2016-2025).
- 2. Subregional trends in water** – Monitoring of methylmercury in water at seven stations in three sampling events (August 2021, and March and April 2022) will extend the time series, with a low-cost approach, for time periods that are representative of conditions in high-flow (March and April) and low-flow (August) regimes and that link to concentrations in prey fish and black bass. These data may also be valuable in verifying trends and patterns predicted by numerical models of methylmercury transport and cycling being developed for the Delta and Yolo Bypass by the California Department of Water Resources (DWR). These models may allow testing of various land and water management scenarios.
- 3. Restoration monitoring** – In a new element added in FY19/20, annual monitoring of methylmercury in black bass and prey fish at new stations (five for black bass and eight for prey fish) located near habitat restoration projects will continue to assess the subregional impact of the projects on impairment. The details of the design for the restoration monitoring (station locations, mix of black bass and prey fish stations) have been determined with input from restoration managers and Delta RMP Mercury Subcommittee members.

The FY 19/20 mercury monitoring design will be implemented in the FY 21/22 except for prey fish monitoring. Due to issues with collecting prey fish in Delta smelt sensitive habitat areas, and recent communications with the Interagency Ecological Program (IEP) and California Department of Fish and Wildlife (CDFW), prey fish monitoring was removed from the monitoring design for FY 21/22. The budget for prey fish monitoring has been removed.

Monitoring will be conducted by Moss Landing Marine Laboratories (MLML) for \$199,080.00. See the following pages for specific cost quotes for monitoring bass at trend locations, water at trend locations, bass at restoration locations, prey fish at restoration locations (zero events for FY 21/22), and various documents including reports, permits and providing technical support.

Total Project Costs for FY21/22

<i>Study Name</i>	<i>Cost</i>
Trends Bass	\$ 71,750.00
Trends Water	\$ 68,580.00
Restoration Bass	\$ 51,250.00
Reports/Permits/Support	\$ 7,500.00
Total	\$ 199,080.00

QUOTE FOR SERVICES

Project Name:	Delta RMP Collection and Analysis
Anticipated Project Date(s):	July 2021 - June 2022

Analysis or Collections to be completed for:	Location of Analysis or Collections:
Melissa Turner Vice President MLJ Environmental 1480 Drew Ave, ste 130 Davis, Ca 95618 mturner@mljenvironmental.com	Moss Landing Marine Laboratories Marine Pollution Studies Lab 7544 Sandholdt Road Moss Landing, CA 95039

Project Manager	Contract #	PI	Account #
Wes Heim	TBD	Wes Heim	TBD

Qty	Description	Rate FY21/22	Per Event	Events Per Year	Project Total
7	Collection of up to sixteen Largemouth Bass by electrofishing boat and/or other fishing techniques. - includes field collection device decontamination for invasive species, pre- and post- field logistics, unique ID tag on each fish, completion of BOG style field datasheet including measurement of total length, fork length, weight and gender for each individual fish, field datasheet entry into SWAMP database shell.	\$ 7,530.00	\$ 52,710.00	1	\$ 52,710.00
112	Analysis of individual fish filets	\$ 95.00	\$ 10,640.00	1	\$ 10,640.00
112	Aging - black bass scales	\$ 75.00	\$ 8,400.00	1	\$ 8,400.00
Total					\$ 71,750.00

All costs per sample includes the offcampus 26% overhead rate.

Per sample costs include QA/QC analyses (1 Blank, 1 MS/MSD, and 1 SRM per batch of 20)

QUOTE FOR SERVICES

Project Name:	Delta RMP Collection and Analysis
Anticipated Project Date(s):	July 2021 - June 2022

Analysis or Collections to be completed for: Melissa Turner Vice President MLJ Environmental 1480 Drew Ave, ste 130 Davis, Ca 95618 mturner@mljenvironmental.com	Location of Analysis or Collections: Moss Landing Marine Laboratories Marine Pollution Studies Lab 7544 Sandholdt Road Moss Landing, CA 95039
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Project Manager	Contract #	PI	Account #
Wes Heim	TBD	Wes Heim	TBD

Qty	Description	Rate FY2122	Per Event	Events Per Year	Project Total
7	Collect depth integrated water samples via 4-L bottle from a boat - includes field collection device decontamination for invasive species, pre- and post- field logistics, completion of SWAMP style field datasheets including multiparameter probe measurements, physical habitat description, field datasheet entry into SWAMP database shell, appropriate sample handling requirements, and all necessary sample shipment.	\$ 1,890.00	\$ 13,230.00	3	\$ 39,690.00
9	Analysis of filtered Methylmercury	\$ 230.00	\$ 2,070.00	3	\$ 6,210.00
9	Analysis of unfiltered Methylmercury	\$ 200.00	\$ 1,800.00	3	\$ 5,400.00
9	Analysis of filtered Total Mercury	\$ 165.00	\$ 1,485.00	3	\$ 4,455.00
9	Analysis of unfiltered Total Mercury	\$ 135.00	\$ 1,215.00	3	\$ 3,645.00
9	Analysis of Suspended Solids Concentration	\$ 80.00	\$ 720.00	3	\$ 2,160.00
9	Analysis of Chlorophyll a	\$ 110.00	\$ 990.00	3	\$ 2,970.00
9	Analysis of Dissolved Organic Carbon (field filtered)	\$ 75.00	\$ 675.00	3	\$ 2,025.00
9	Analysis of Volatile Suspended Solids	\$ 75.00	\$ 675.00	3	\$ 2,025.00
Total					\$ 68,580.00

All costs per sample includes the offcampus 26% overhead rate.

Per sample costs include QA/QC analyses (1 Blank, 1 MS/MSD, and 1 SRM per batch of 20)

QUOTE FOR SERVICES

Project Name:	Delta RMP Collection and Analysis
Anticipated Project Date(s):	July 2021 - June 2022

Analysis or Collections to be completed for:	Location of Analysis or Collections:
Melissa Turner Vice President MLJ Environmental 1480 Drew Ave, ste 130 Davis, Ca 95618 mturner@mljenvironmental.com	Moss Landing Marine Laboratories Marine Pollution Studies Lab 7544 Sandholdt Road Moss Landing, CA 95039

Project Manager	Contract #	PI	Account #
Wes Heim	TBD	Wes Heim	TBD

Qty	Description	Rate FY21/22	Per Event	Events Per Year	Project Total
5	Collection of up to sixteen Largemouth Bass by electrofishing boat and/or other fishing techniques. - includes field collection device decontamination for invasive species, pre- and post- field logistics, unique ID tag on each fish, completion of BOG style field datasheet including measurement of total length, fork length, weight and gender for each individual fish, field datasheet entry into SWAMP database shell.	\$ 7,530.00	\$ 37,650.00	1	\$ 37,650.00
80	Analysis of individual fish filets	\$ 95.00	\$ 7,600.00	1	\$ 7,600.00
80	Aging - black bass scales	\$ 75.00	\$ 6,000.00	1	\$ 6,000.00
Total					\$ 51,250.00

All costs per sample includes the offcampus 26% overhead rate.

Per sample costs include QA/QC analyses (1 Blank, 1 MS/MSD, and 1 SRM per batch of 20)

QUOTE FOR SERVICES

Project Name:	Delta RMP Collection and Analysis
Anticipated Project Date(s):	July 2020 - June 2021

Analysis or Collections to be completed for:	Location of Analysis or Collections:
Melissa Turner Vice President MLJ Environmental 1480 Drew Ave, ste 130 Davis, Ca 95618 mturner@mljenvironmental.com	Moss Landing Marine Laboratories Marine Pollution Studies Lab @ Norte 7544 Sandholdt Road Moss Landing, CA 95039

Project Manager	Contract #	PI	Account #
Wes Heim	TBD	Wes Heim	TBD

Qty	Description	Rate FY20/21	Per Event	Events Per Year	Project Total
1	Tissue Cruise Report (Trends Bass)	\$ 1,000.00	\$ 1,000.00	1	\$ 1,000.00
1	Tissue Cruise Report (Restoration Bass)	\$ 1,000.00	\$ 1,000.00	1	\$ 1,000.00
1	Tissue Cruise Report (Trends Water)	\$ 1,000.00	\$ 1,000.00	1	\$ 1,000.00
1	Permit and Access (Trends and Restoration Bass)	\$ 2,000.00	\$ 2,000.00	1	\$ 2,000.00
1	Project Logistical Support and Admin(Trends Bass)	\$ 500.00	\$ 500.00	1	\$ 500.00
3	Project Logistical Support and Admin (Trends Water)	\$ 500.00	\$ 1,500.00	1	\$ 1,500.00
1	Project Logistical Support and Admin (Restoration Bass)	\$ 500.00	\$ 500.00	1	\$ 500.00
Total					\$ 7,500.00

Analytical cost per sample includes the offcampus 26% overhead rate.

Per sample costs include QA/QC analyses (1 Blank, 1 MS/MSD, and 1 SRM per batch of 20).

Appendix 6. Constituents of Emerging Concern (CECs)

Delta RMP Scope of Work: Constituents of Emerging Concern Year 2 (Fiscal Year 21/22)

REVISED SEPTEMBER 6, 2021

Project Background and Description

MLJ Environmental (MLJ) has developed a cost estimate for the Delta Regional Monitoring Program (Delta RMP) to perform sample collection, analysis, and data management for Year 2 of the Constituents of Emerging Concern (CEC) monitoring which will be performed during the Fiscal Year 2021/2022 (FY 21/22). The CEC monitoring is conducted under a conditionally approved CEC Quality Assurance Project Plan (QAPP) which will require modifications based on outcomes from the Year 1 monitoring. The Aquatic Science Center (ASC) as the implementing entity and primary field coordinator, along with oversight from the Delta RMP Interim Program Manager, developed a number of corrective action plans and identified related QAPP modifications. In addition to technical revisions to the QAPP, the QAPP will require updates to specify changes to the water column and sediment sample collection teams for all ambient and source locations.

In Year 1, the California Department of Water Resources (DWR) collected water samples by boat from five locations as in-kind services. ASC collected samples from the remaining three locations which could be accessed by a vehicle. ASC has informed the Delta RMP that they will not be conducting the water sampling or managing the project after Year 1. Furthermore, DWR has indicated that they cannot commit to water sample collection for this project during the next fiscal year. The following SOW includes Melissa Turner (Technical Program Manager, MLJ Environmental) as the new project lead and includes cost estimates from AMS and ICF for sampling that was previously done by DWR and ASC.

The laboratories performing the analysis will remain the same as Year 1 (consistent with the current) QAPP.

The data management tasks include processing and storing the CEC data in the Central Valley Regional Data Center (CV RDC) which is managed on a shared server with Moss Landing Marine Laboratories (MLML). Data types will include field, habitat, chemistry, and tissue data. As Regional Data Centers, both the CV RDC and MLML RDC have extensive histories in managing large data sets that have been successfully migrated to the California Environmental Data Exchange Network (CEDEN) and publicly available for stakeholder use.

MLJ Environmental will subcontract to AMS and ICF for sampling, MLML for work associated with the Quality Assurance (QA) Program Manager, QA reviews and write ups and the various laboratories for analysis. MLJ Environmental staff are also available for sampling during storm events if there are schedule conflicts with AMS and ICF staff and additional help is needed. All three companies will have appropriate staff trained together to ensure consistency in sampling protocols.

Project Scope

The Year 2 technical elements are specified in the Stakeholder Work Plan and there are no significant changes recommended. The QAPP will require other modifications as discussed later in this SOW based on the addition of the source monitoring locations, corrective actions, and updates to staffing and contracting. Samples will be collected from the same ambient, tissue, and sediment locations as Year 1 plus two publicly owned treatment works (POTW), and two municipal separate storm sewer system (MS4 or urban runoff) locations (water column only) as shown in **Table 1**.

The time associated with the Year 2 CEC monitoring is based on four (4) monitoring events and includes time for updating measurement quality objectives used to qualify data, provide sample details to the laboratories to ensure efficient population of CEDEN templates, review data for compliance with QAPP requirements, communicate with the laboratories, and load data into the CVRDC. The CVRDC will track completion of monitoring events and data received; this information will be used to complete the QA Report at the end of Year 2. The first monitoring event will include the collection and analysis of fish tissue, clam/bivalve tissue, sediment and water; the remaining three events will include the collection and analysis of water only (**Table 1**).

This cost estimate includes tasks for sampling, QAPP, project management, data management and other direct costs (ODCs) associated with the Year 2 sampling. The time frame for this project is anticipated to be **July 2021 through December 2022** to include monitoring events starting in August 2021 through June 2022; it is anticipated that the final data collected in June 2022 can be finalized and ready for approval in October 2022. It is anticipated that the QA Reports will be completed and ready for review by the Technical Advisory Committee (TAC) by December 2022.

Table 1. CEC monitoring locations for Year 2 including agency performing sampling for each matrix type and number of events.

CEDEN Station Code	Station Name	Latitude	Longitude	Number of sampling events per year, for each target matrix:				Take Water Sample from	Agency doing sampling for each matrix:				Notes
				Water	Sediment	Fish	Bivalves		Water	Sediment	Fish	Bivalves	
519SUT1081	Sacramento River at Elkhorn Boat Launch Facility	38.67245	-121.625	4	-	1	1	Boat Launch Dock	AMS	-	MPSL-DFW	AMS	Sample from the pier at the Elkhorn Boat Launch Facility
510ST13012	Sacramento River at Freeport	38.45555	-121.50194	4	-	1	1	Midchannel	AMS	-	MPSL-DFW	AMS	
510SACC3A	Sacramento River at Hood Monitoring Station Platform	38.36771	-121.5205	4	-	-	1	Midchannel	AMS	-		AMS	Sample midchannel via boat.
519AMNDVY	American River at Discovery Park	38.60094	-121.5055	4	1	-	1	Midchannel	AMS	UCD-GC (SPoT)		AMS	
541SJC501	San Joaquin River at Airport Way near Vernalis	37.67556	-121.26417	4	-	1	1	Bank	AMS	-	MPSL-DFW	AMS	Year 1 DWR sampled from the platform at River Club; Year 2 may be at bridge.
544LSAC13	San Joaquin River at Buckley Cove	37.971833	-121.373619	4	-	1	1	Bank	AMS	-	MPSL-DFW	AMS	Year 1 sampled from bank access via boat or shore.
519DRYCRK	Dry Creek at Roseville WWTP	38.734098	-121.31444	4	1	-	-	Midchannel	AMS	AMS	-	-	Walk-in site sampled

CEDEN Station Code	Station Name	Latitude	Longitude	Number of sampling events per year, for each target matrix:				Take Water Sample from	Agency doing sampling for each matrix:				Notes
				Water	Sediment	Fish	Bivalves		Water	Sediment	Fish	Bivalves	
													midchannel. Use pole sampler. Access from Roseville WWTP.
511SOL011	Old Alamo Creek at Lewis Road	38.34643	-121.89684	4	1	-	-	Bridge	AMS	AMS	-	-	Walk-in site sampled midchannel. Use pole sampler.
TBD	POTW Source No. 1	38.733899	-121.315051	4	-	-	-	Bank	AMS	-	-	-	
TBD	POTW Source No. 2	38.346617	-121.901601	4	-	-	-	Bank	AMS	-	-	-	
TBD	Sacramento Urban Runoff	38.601271	-121.492956	4	-	-	-	Bank	AMS	-	-	-	
TBD	Roseville Urban Runoff	38.80477	-121.32733	4	-	-	-	Bank	AMS	-	-	-	
	Roseville Urban Runoff (option 2)	38.802707	-121.338524										Three Roseville locations are identified in the Pilot Study Workplan as potential locations.
	Roseville Urban Runoff (option 3)	38.802599	-121.338787										

SAMPLE COLLECTION (MLJ ENVIRONMENTAL, AMS, AND ICF)

Sample collection costs include time for sample coordination including site scouting (new locations for Year 2), training of staff to ensure consistent sampling and handling procedures across sampling teams, field sheet and Chain of Custody (COC) preparation, bottle/cooler preparation, field staff coordination, laboratory notifications, post sampling checks of bottles and field paperwork, packing samples for shipping, and dropping off samples at local laboratories.

Additional time is included for both MLJ Environmental staff and AMS staff to monitor and track storms. Both agencies will communicate regarding storm precipitation predictions to determine if there will be enough precipitation to trigger a sampling event.

To ensure that all sites can be sampled within a close timeframe (especially in instances where a storm event is triggered across the monitoring region on the same day), it is anticipated that up to four teams will be mobilized. The Delta RMP Technical Program Manager will work with MLJ, AMS and ICF staff to determine staff availability, appropriate sampling team configurations, and the most efficient routes for each event. Sample locations accessible by boat will be done by sampling teams made up of AMS and ICF staff; ICF staff will include the boat captain/driver. Sample locations that can be accessed by land will be ICF and MLJ; the exact makeup of the teams will be determined based on staff availability.

Below is a breakdown of the anticipated teams for dry and wet season events.

Dry Season Events

- Event 1: Water, Clams, Sediment
 - Team 1 (2 AMS, 2 ICF): Boat (water, clams) at Ambient sites (2 days, 5 sites)
 - Team 2 (2 ICF/MLJ): Land (water, sediment) at Source locations (1 day, 3 sites)
 - Team 3 (2 ICF/MLJ): Land (water, sediment) at Source locations (1 day, 4 sites)
 - Team 4 (MLML): Boat (fish)
 - Team 5 (SPoT): Land (sediment)

Wet Season Events

- Events 2 & 3: Water (stormwater)
 - Team 1 (2 AMS, 2 ICF): Boat (water) at Ambient sites (1 day, 4 sites)
 - Team 2 (1-2 AMS, 2 ICF): Boat (water) at Ambient sites (1 day, 2 sites)
 - Team 3 (2 ICF/MLJ): Land (water) at Source locations (1 day, 3 sites)
 - Team 4 (2 ICF/MLJ): Land (water) at Source locations (1 day, 3 sites)

Dry Season Events

- Event 4: Water
 - Team 1 (2 AMS, 1 ICF): Boat (water) at Ambient sites (2 days, 5 sites)
 - Team 2 (2 ICF/MLJ): Land (water, sediment) at Source locations (1 day, 3 sites)
 - Team 3 (2 ICF/MLJ): Land (water, sediment) at Source locations (1 day, 4 sites)

Moss Landing Marine Laboratories will collect and composite fish tissue for analysis; samples will be shipped directly from MLML to SGS-AXYS. Moss Landing's costs include obtaining permits and producing a cruise report. Granite Canyon, as part of the SPoT program, will collect the sediment sample from American River @ Discovery Park; samples will either be dropped off at the MLJ Environmental office for shipping or shipped directly from Granite Canyon to SGS-AXYS.

During the wet season, there is the potential for the weather forecast to indicate that the samplers should prepare for a storm event only to find that within 24 hours of monitoring the predictions change and the storm event is called off; this is called a “Stormwater False Start”. The CEC Year 2 budget factors in the cost for a single Stormwater False Start. This includes time for samplers to prepare and coordinate in anticipation of a storm event that does not actually happen; this is estimated at half of the costs of a single water monitoring event.

QAPP

There are a series of technical and logistical issues that were detailed with corrective actions during Year 1. These amendments will be incorporated in the CEC QAPP revision. In addition, the QAPP will be updated to reflect the new entities who will perform the field sampling and data management, and the addition of new monitoring locations. Time has been included for QAPP review, response to comments and finalizing the QAPP with signatures.

LABORATORY ANALYTICAL (SGS-AXYS, WECK, AND VISTA)

Analytical costs are included for the following laboratories: SGS-AXYS, Weck, Vista, and Physis. These are the same laboratories from Year 1. During Year 1, additional analytes were received that are not listed in the Pilot Study; these analytes are listed in **Table 3**. These additional analytes were received at no additional charge in Year 1. If possible, the Delta RMP will continue to receive results for these additional analytes as long as the laboratory does not charge extra to include these results in the laboratory reports and electronic data deliverables.

Table 2. Analytical methods and analytes by laboratory and matrix for CEC Year 2 monitoring.

Analytical Laboratory	CEDEN Analyte Name	Matrix	Analysis Method
SGS-AXYS	PBDE 047	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 099	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	Moisture	Bivalve	SGS-AXYS MLA-015
SGS-AXYS	Lipid	Bivalve	SGS-AXYS MLA-020
Physis	Galaxolide	Freshwater	EPA 625.1M
Physis	Triclocarban	Freshwater	EPA 625.1M
Weck	Estrone	Freshwater	Hormones by LCMSMS-APCI+ by EPA 1694M-APCI
Weck	Estradiol, 17beta-	Freshwater	Hormones by LCMSMS-APCI+ by EPA 1694M-APCI
Weck	Ibuprofen	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Diclofenac	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Triclosan	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Bisphenol A	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Suspended Sediment	Freshwater	SM2540D by SM 2540D
Vista	Perfluorooctanesulfonic acid	Freshwater	PFAS Analysis with Isotope Dilution
Vista	Perfluorooctanoic acid	Freshwater	PFAS Analysis with Isotope Dilution
SGS-AXYS	PBDE 047	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 099	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	Perfluorooctanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorooctanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Moisture	Fish	SGS-AXYS SLA-015

Analytical Laboratory	CEDEN Analyte Name	Matrix	Analysis Method
SGS-AXYS	Lipid	Fish	SGS-AXYS SLA-020
SGS-AXYS	PBDE 047	Sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 099	Sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	Perfluorooctanesulfonate	Sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorooctanoate	Sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Moisture	Sediment	SGS-AXYS SLA-015
Weck	Total Organic Carbon	Sediment	SM 5310

Table 3. Additional analytes obtained in Year 1 monitoring for no additional cost; these additional analytes may be received with Year 2 results if there are no additional fees associated with receiving the results from the laboratory.

Analytical Laboratory	CEDEN Analyte Name	Matrix	Analysis Method
Weck	Ethinylestradiol, 17alpha-	Freshwater	Hormones by LCMSMS-APCI+ by EPA 1694M-APCI
Weck	Progesterone	Freshwater	Hormones by LCMSMS-APCI+ by EPA 1694M-APCI
Weck	Testosterone	Freshwater	Hormones by LCMSMS-APCI+ by EPA 1694M-APCI
Weck	Gemfibrozil	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Iopromide	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Naproxen	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
Weck	Salicylic Acid	Freshwater	Pharmaceuticals by LCMSMS-ESI- by EPA 1694M-ESI-
SGS-AXYS	PBDE 028/33	sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 100	sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 153	sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 154	sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 183	sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 209	sediment	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	Perfluorobutanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoropentanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorohexanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoroheptanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorononanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorodecanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoroundecanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorododecanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorotridecanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorotetradecanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorobutanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoropentanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorohexanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoroheptanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorononanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2

Analytical Laboratory	CEDEN Analyte Name	Matrix	Analysis Method
SGS-AXYS	Perfluorodecanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorododecanesulfonate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Sulfonate, 4:2-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Sulfonate, 6:2-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Sulfonate, 8:2-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Carboxylic Acid, 3:3-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Carboxylic Acid, 5:3-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Carboxylic Acid, 7:3-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorooctanesulfonamide	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Methyl-perfluorooctanesulfonamide, N-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Ethyl-perfluorooctanesulfonamide, N-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Methyl Perfluorooctane Sulfonamido Acetic Acid, N-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Ethyl Perfluorooctane Sulfonamido Acetic Acid, N-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Methyl-perfluorooctanesulfonamidoethanol, N-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Ethyl-perfluorooctanesulfonamidoethanol, N-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-2-Propoxypropanoic Acid	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-3,6-dioxaheptanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-4-methoxybutanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-3-methoxypropanoate	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid, 11-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid, 9-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Dioxa-3H-Perfluorononanoate Acid, 4,8-	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro(2-ethoxyethane)sulfonic acid	sediment	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	PBDE 028/33	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 100	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 153	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 154	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 183	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 209	Bivalve	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 028/33	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 100	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 153	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 154	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 183	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	PBDE 209	Fish	SGS-AXYS MLA-033 Rev 6
SGS-AXYS	Perfluorobutanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoropentanoate	Fish	SGS-AXYS MLA-110 Rev 2

Analytical Laboratory	CEDEN Analyte Name	Matrix	Analysis Method
SGS-AXYS	Perfluorohexanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoroheptanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorononanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorodecanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoroundecanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorododecanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorotridecanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorotetradecanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorobutanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoropentanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorohexanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoroheptanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorononanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorodecanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorododecanesulfonate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Sulfonate, 4:2-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Sulfonate, 6:2-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Sulfonate, 8:2-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Carboxylic Acid, 3:3-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Carboxylic Acid, 5:3-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Fluorotelomer Carboxylic Acid, 7:3-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluorooctanesulfonamide	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Methyl-perfluorooctanesulfonamide, N-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Ethyl-perfluorooctanesulfonamide, N-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Methyl Perfluorooctane Sulfonamido Acetic Acid, N-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Ethyl Perfluorooctane Sulfonamido Acetic Acid, N-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Methyl-perfluorooctanesulfonamidoethanol, N-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Ethyl-perfluorooctanesulfonamidoethanol, N-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-2-Propoxypropanoic Acid	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-3,6-dioxaheptanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-4-methoxybutanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro-3-methoxypropanoate	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid, 11-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid, 9-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Dioxa-3H-Perfluorononanoate Acid, 4,8-	Fish	SGS-AXYS MLA-110 Rev 2
SGS-AXYS	Perfluoro(2-ethoxyethane)sulfonic acid	Fish	SGS-AXYS MLA-110 Rev 2

DATA MANAGEMENT (MLJ ENVIRONMENTAL AND MLML)

MLJ Environmental will be responsible for coordinating with laboratories regarding CEDEN template information, field data entry, chemistry data review, data loading into the CV RDC, and general data management. Moss Landing Marine Laboratories will be responsible for QA oversight including end of year assessment of the quality of the data in a Data Report, consultation on QA issues throughout the year, and final review of data and associated flagging to ensure compliance with the QAPP prior to exporting to CEDEN.

Data Entry

Field data sheets will be entered into the CV RDC database upon receipt from the field collection agencies for five (5) sediment and water collection events from Year 2. Tissue collections for fish and clams will either be entered from field data sheets or electronic data deliverables (EDDs) provided by the compositing agency. Upon entry, data from each sampling event will undergo a thorough data review for completeness, sample comments and qualifiers. The datasheets and COC forms will be scanned and stored at MLJ Environmental.

Data Review

Data received from the four (4) reporting laboratories for seven (7) collection events from Year 2 will undergo a thorough data review prior to loading into the CV RDC database. MLJ Environmental staff will perform preliminary QA/QC checks and ensure the data are formatted correctly and are comparable to existing program data.

Laboratories will be notified if additional flags are added to the provided data sets, changes to format and codes to ensure CEDEN comparability, and any questions regarding completeness, accuracy, and precision of the data. Any deviations to the QAPP will be communicated to the Delta RMP Technical Program Manager and Program QA Officer to complete a deviations form and determine corrective actions.

Data Loading

The electronic data deliverables (EDDs) from four (4) reporting laboratories for seven (7) collection events from Year 2 21/22 FY will be loaded into the CV RDC database. MLJ Environmental staff will load a complete set of EDDs for each event including water, sediment, and tissue chemistry results. Included in these loading events will be the creation of sample purpose records to provide metadata information about the events.

Data Management

Data management from the seven (7) collection events from YR2 21/22 FY will include the following: creation of field data sheets and COCs, setting up internal tracking of the monitoring schedule, file management, creating the electronic QAPP (eQAPP), coordination of Lab Sample Details for efficient data reporting of EDDs, adding Lookup values to CV RDC, completion tracking and marking results for transfer to CEDEN. Provisional data reporting from the four (4) water events, one (1) sediment event and a combined single (1) tissue event from YR2 21/22 FY will be provided to the TAC and CEC committees once the data are loaded into the CV RDC database.

Year 2 Data Report

A Year 2 Data Report will be developed with a section capturing the sample collection information from the field and cruise reports, a quality assessment of precision, accuracy and completeness, and summary of data collected. It is anticipated that the Year 2 Data Report will be available for review/comments by the Technical Advisory Committee (TAC) in December 2022.

PROJECT MANAGEMENT

MLJ Environmental will provide monthly progress reports with a summary of work performed during the invoice period for all subcontractors. The progress report will include the status of amount billed and status of percent of work complete to date. Any issues will be identified in the monthly progress reports and discussed with the Delta RMP Executive Committee.

MLJ Environmental staff will work with the various agencies, including sampling and laboratory entities, to coordinate schedules, communicate upcoming timelines, and plan for Year 2 monitoring.

Time has been allocated for staff to attend four (4) TAC meetings and two (2) Steering Committee meetings to present on the status of the project and data collected.

Budget

MLJ Environmental will provide monthly invoices and progress reports by the 15th of the month for the previous month. Invoices will include subcontractor invoices as appropriate. Table 1 includes the cost estimate for the work described in this scope.

Table 4. Delta RMP CEC Year 2 (21/22 FY) budget. A detailed budget is provided in Table 4.

Category	Total
1. Sampling Labor Costs	\$111,848.00
2. QAPP Labor Costs	\$37,446.00
3. Data Management Labor Costs	\$52,906.50
4. Project Management Labor Costs	\$30,024.00
5. Other Direct Costs	\$102,790.72
Grand Total	\$335,015.22

Table 5. Delta RMP CEC Year 2 budget details.

Category	Task	AMS	ICF	MLJ	MLML	SGS-AXYS	Vista/ Physis	Weck	Grand Total
1. Sampling Labor Costs	Sample Coordination	\$6,048.00	\$1,600.00	\$12,380.00					\$20,028.00
	Stormwater False Start	\$7,190.00							\$7,190.00
	Water Sampling Dry	\$4,680.00	\$6,460.00		\$19,600.00				\$30,740.00
	Water Sampling Wet (Stormwater)	\$9,360.00	\$19,400.00						\$28,760.00
	Water/Bivalve Sampling Dry	\$6,770.00	\$5,500.00						\$12,270.00
	Water/Sediment Sampling Dry		\$2,960.00						\$2,960.00
1. Sampling Labor Costs Total		\$34,048.00	\$35,920.00	\$12,380.00	\$29,500.00				\$111,848.00
2. QAPP Labor Costs	QAPP	\$1,616.00	\$1,200.00	\$23,680.00	\$10,950.00				\$37,446.00
2. QAPP Labor Costs Total		\$1,616.00	\$1,200.00	\$23,680.00	\$10,950.00				\$37,446.00
3. Data Management Labor Costs	Data Entry			\$2,035.00					\$2,035.00
	Data Loading			\$4,600.00					\$4,600.00
	Data Management			\$11,642.50					\$11,642.50
	Data Review			\$23,460.00					\$23,460.00
	Year 2 Data Report	\$2,124.00		\$4,200.00	\$4,845.00				\$11,169.00
3. Data Management Labor Costs Total		\$2,124.00		\$45,937.50	\$4,845.00				\$52,906.50
4. Project Management Labor Costs	Meetings	\$6,520.00		\$7,160.00	\$2,000.00				\$15,680.00
	Project Management	\$4,264.00		\$7,680.00	\$2,400.00				\$14,344.00
4. Project Management Labor Costs Total		\$10,784.00		\$14,840.00	\$4,400.00				\$30,024.00
5. Other Direct Costs	Analytical Costs					\$21,905.20	\$20,950.00	\$38,360.00	\$81,215.20
	Boat		\$4,000.00						\$4,000.00
	Clam Dredge	\$50.00							\$50.00
	Consumables	\$400.00							\$400.00
	Handheld YSI	\$600.00							\$600.00
	Lodging	\$560.00							\$560.00
	Mileage	\$1,680.00							\$1,680.00
	Per diem	\$264.00							\$264.00
	Shipping (Bivalve Tissue)	\$300.00							\$300.00
	Shipping (Fish Tissue)					\$350.00			\$350.00
	Shipping (Sediment)				\$1,250.00				\$1,250.00
	Shipping (Water)				\$3,000.00				\$3,000.00
	Vessel false start			\$1,000.00					\$1,000.00
	Laboratory Management				\$8,121.52				
	5. Other Direct Costs Total		\$3,854.00	\$5,000.00	\$12,371.52	\$350.00	\$21,905.20	\$20,950.00	\$38,360.00
Grand Total		\$52,426.00	\$42,120.00	\$109,209.02	\$50,045.00	\$21,905.20	\$20,950.00	\$38,360.00	\$335,015.22