Delta Regional Monitoring Program

FY16/17 Detailed Workplan and Budget

Steering Committee Approved

May 6, 2016

INTRODUCTION

The purpose of this memorandum is to provide the Steering Committee (SC) with a Detailed Workplan for FY16/17 Delta RMP budget. On April 25, 2016, the SC voted for a zero percent fee increase for FY16/17 revenue; the planned budget for FY16/17 is $1,056,053 (including $211,320 of in-kind support from SWAMP). This budget is less than the budget of FY15/16 of $1,073,733 (which included $267,000 of in-kind support from SWAMP).

Based on the multi-year plan presented at the December 2015 SC meeting, the subcommittees (i.e., mercury, pesticides, nutrients, and pathogens subcommittees) developed study proposals consistent with the planning budgets and the monitoring design. The FY16/17 study proposals were vetted by the respective subcommittees and brought to the TAC on March 30, 2016. The TAC reviewed and prioritized the scientific studies based on the planning budget for monitoring and special studies. ASC then prepared this detailed workplan for the recommended studies and core functions of the program.

This report summarizes the:

- Expected revenue for FY16/17;
- A detailed budget and workplan for the core functions of the program;
- A detailed budget and workplan for monitoring and special studies; and
- The overall FY16/17 Delta RMP budget.

This Detailed Workplan was approved by the SC on April 25th, 2016.

FY16/17 REVENUE

The total expected revenue for FY16/17 is $1,056,053..

Some of the Delta RMP funds are in-kind, such as a State Board contract with UC-Davis for toxicity testing (the "SWAMP Contract"). These in-kind funds are treated as revenue but are not fungible. They cannot be used for more than one purpose. For example, the SWAMP contract funds can only be used for toxicity analytical costs. The base SWAMP funding is $200,000. Water Board staff has indicated that unspent SWAMP funds from FY15/16 will be carried over into FY16/17. Water toxicity using *Hyalella azteca* was not conducted in FY15/16. As a result, Water Board staff estimate to date that at least $11,300 of FY15/16 SWAMP funds will be available for FY16/17; this additional revenue is included in the estimation of total expected revenue of $1,056,053.

Lastly, some revenue will likely be made available later in FY16/17 (e.g., funds from SFCWA are likely to be approved by the SFCWA Executive Board in the spring of 2017, with the revenue available to the Delta RMP in April/May). On April 25, 2016, the Steering Committee agreed on the following process to address this issue:

- SFCWA funding for FY15/16 ($100,000) will be initially credited to the FY15/16 budget, which will create a surplus of $100,000 for the FY. Then the surplus $100,000 will be transferred to the Undesignated Funds Reserve. Finally, the $100,000 will be re-allocated from Reserve to the FY16/17 budget. The next contribution from SFCWA (scheduled for April 2017) will be allocated to the FY17/18 budget.

Table 1 summarizes the expected revenue for FY16/17.

Table 1: Delta RMP FY16/17 Cost Allocation Schedule

Participant	FY15/16	FY16/17	Comment
Regional Board	$200,000	$211,320	$200K in FY16/17 and $11,300 in expected carryover from FY15/16
Irrigated Lands	$148,780	$148,780	
Stormwater (MS4 Phase 1)	$158,200	$196,200	Assumes additional participants –Modesto and Port of Stockton
Stormwater (MS4 Phase 2)	$189,999	$189,999	
Wastewater	$209,754	$209,754	
Water suppliers (SFCWA)	$100,000	$100,000	See text on page 3
Total	$1,073,733	$1,056,053	FY15/16 total includes $67,000 of additional SWAMP funds

FY16/17 PROGRAM CORE FUNCTION EXPENSES

Delta RMP expenses fall into two categories: core function expenses associated with administering a multi-faceted, stakeholder-driven, monitoring program; and special studies and monitoring addressing the approved Delta RMP Monitoring Design Summary. This section details the core function expenses for FY16/17.

The core function budget includes the following categories of tasks:

- Preparation of Program Planning Documents (e.g., Workplan, Monitoring Design)
- Contracts and Financial Management
- Governance
- Quality Assurance and
- Communications

The estimated cost to implement these tasks is $294,100 (Table 2). For each of the budget numbers, a detailed description, budget justification, and list of deliverables has been provided in Table 3.

There is strong interest in reducing core function costs associated with administering a stakeholder driven program in order to maximize funds available for technical studies and reports. However, managing a stakeholder process such as the Delta RMP, in which stakeholders are engaged at every step of the process to develop, implement and interpret data, requires a higher level of governance process, effort, and cost.

The benefit from this additional effort is:

- a more cost-efficient and effective use of monitoring funds,
- a more focused monitoring effort on the questions that need to be answered,
- better coordination among disparate groups to avoid duplication of efforts,
- advantageous use of existing infrastructures (e.g., stations, vessels, equipment, etc.),
- longer-term planning that allows for strategic leveraging of external funds/opportunities, and
- lastly, a more informed stakeholder group that is able to provide sound scientific stewardship of the Delta.

The estimated costs for the core function expenses in FY16/17 do not fully cover the level of effort that has been requested of, and delivered by, ASC during the past fiscal year. Therefore, the budget for these tasks cannot be reduced without also reducing the scope of work.

Table 2: Delta RMP FY16/17 Core Function Budget.

		Labor	Subcontract	Direct Cost	Grand Total
1. Program Management	A. Program Planning	$76,000			$76,000
	B. Contract and Financial Management	$51,000		$1,000	$52,000
2. Governance	A. SC meetings	$42,000	$8,800	$500	$51,300
	B. TAC meetings	$47,000	$17,300	$500	$64,800
3. Quality Assurance	A. Quality Assurance System	$15,000			$15,000
	B. Technical Oversight and Coordination	$15,000			$15,000
4. Communications	A. Factsheet	$5,000			$5,000
	B. Workshop on Technical Issues	$15,000			$15,000
Grand Total		$266,000	$26,100	$2,000	$294,100

Table 3: Delta RMP FY16/17 Programmatic Task Descriptions, Budget Justifications, and Deliverables. The funding levels proposed are conservative based on the level of effort requested and delivered in FY15/16.

Task	Subtask	Budget	Description	Budget Justification	Deliverables
1. Program Management	A. Program Planning	$76,000	Preparing annual workplan/budgets, updating foundational documents including Multi-Year Plan, Annual Workplan, and Monitoring Design. Coordinate activities among stakeholders via e-mail and telephone calls, tracking deliverables.	50 hours for Program Manager to produce the Annual Workplan and Budget. 180 hours (3.5 hrs/wk) for Program Manager to update Monitoring Design, Multi-Year Plan. 240 hours (4.6 hr/wk) for technical staff to contribute to workplans, follow up on items, and update program documents.	Updated Multi-Year Plan (December 2016). FY17/18 Annual Workplan and Budget (June 2017). Updated Monitoring Design (February 2017). Submit proposal for external funding (e.g. Prop 1). Quarterly reports on deliverables and action items.
	B. Contract and Financial Management	$52,000	Tracking expenditures versus budget. Providing quarterly financial updates to the Steering Committee. Developing contracts and managing subcontractors. Invoicing program participants.	5% of assets under management. 64 hours for Contracts Manager and 40 hours for accountant. 176 hours for Program Manager (3.5 hr/wk) and 160 hours (3 hr/wk) for Environmental Analyst for checking on subcontracts and finances weekly. $1,000 for legal consultation regarding MOA.	Quarterly updates on FY16/17 Budget provided in the SC agenda package. Contract management.

Task	Subtask	Budget	Description	Budget Justification	Deliverables
2. Governance	A. SC meetings	$51,300	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, following up on action items, meeting with co-chairs and stakeholders in preparation for SC meetings/follow-up.	4 meetings per year. For each meeting: 40 hours for Program Manager, 20 hours for Lead Staff, 20 hours for Environmental Analyst. Travel from Richmond to Sacramento ($125/meeting). Facilitation services by Brock Bernstein (quote: $8,800)	4 Steering Committee meetings and meeting summaries. 4 pre-calls with SC co-chairs.
	B. TAC meetings	$64,800	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, following up on action items, meeting with co-chairs and stakeholders outside of meetings. Facilitation of TAC subcommittee meetings as needed. The cost for this function assumes that MEI and USGS continue to serve as co-chairs of the TAC, with ASC serving in a coordination role. The alternative is to have volunteer TAC co-chairs from the Program Participants. The cost for this option would be $47,500.	4 meetings per year. For each meeting: 27 hours for Program Manager, 45 hours for Lead Staff, 20 hours for Environmental Analyst. Travel from Richmond to Sacramento ($125/meeting). MEI paid chair (quote: $17,300)	4 TAC meetings and meeting summaries. 4 pre-calls with the TAC Chairs.
3. Quality Assurance	A. Quality Assurance System	$15,000	Updating the Quality Assurance Project Plan to cover the FY17/18 workplan and incorporating any changes from the revised Monitoring Design, writing Quality Assurance Reports for datasets, coordinating interlaboratory comparison tests (as needed), researching analytical methods, maintaining laboratory SOP file system.	64 hours for ASC QA Officer. 40 hours for ASC senior chemist.	Revisions to QAPP (June 2017).

Task	Subtask	Budget	Description	Budget Justification	Deliverables
	B. Technical Oversight and Coordination	$15,000	Reviewing reports. Trouble-shooting technical issues associated with TIE, pesticide, and mercury monitoring. Assuring good coordination among subcommittees and stakeholders. Facilitation of technical workgroup meetings as needed.	80 hours for technical staff (20 hours per quarter). 22 hours for ASC Senior Scientists (nutrients/Hg) (4.5 hours per quarter).	
4. Communications	A. Factsheet	$5,000	Preparing a factsheet about the program to be used to for outreach and fundraising.	24 hours for ASC Senior Scientist. 8 hours for Program Manager. 8 hours for graphic design.	Preparation of a factsheet.
	B. Workshops on Technical Issues	$15,000	Plan and implement a workshop on a technical issue. Identify topic, relevant Delta assessment questions, hold workshop, prepare summary memorandum.	70 hours for ASC Senior Scientist. 24 hours for Program Manager. 16 hours for Environmental Analyst.	Workshop and short summary memorandum of findings.
	Total	$294,100			

FY16/17 EXPENSES FOR MONITORING AND SPECIAL STUDIES

The FY16/17 Workplan implements "bare minimum" designs of the priorities proposed for the initial phase of the Delta RMP (e.g., current use pesticides, nutrients, and mercury).

The FY16/17 study proposals were vetted by the respective subcommittees and brought to the TAC on March 30th. The TAC reviewed and prioritized the scientific studies based on the planning budget for monitoring and special studies. The TAC recommendations are summarized below. It is important to note that the TAC assumed a worst-case planning budget of $949K. However, at the direction of the SC co-chairs, this workplan assumes the full planning budget of $1,056,053, which addresses the TAC comments #3 and #4c about additional revenue.

1) Current Use Pesticide Monitoring totaling $511K (i.e., Year 2 pesticide/toxicity monitoring ($491K) and reporting ($20K))[1].
2) Mercury monitoring totaling $113K.
3) Nutrient synthesis at $33K. If additional revenue is made available, additional nutrient synthesis tasks may be added up to a total of $120K. The TAC requested that a more detailed scope of work for the nutrient synthesis tasks (for either funding level) be prepared and sent to the nutrient subcommittee and TAC.
4) While consensus was reached at the meeting, meaning that all TAC members present "could live with" the recommendations, Karen Ashby requested that the following qualifiers be attached to the recommendations to communicate important points from the discussion to the SC:
   a) The SC should provide direction to the TAC regarding the priorities for the upcoming FY and how funding should generally be allocated to each program area.
   b) For the 2016-2017 FY, the SC should evaluate the costs of program administration and CUPs, to ensure that the RMP is maximizing its budget for all four focus areas. If there are cost savings and/or reprioritization, the TAC will re-evaluate the recommendations as directed by the SC.
   c) The TAC recommendations assume a worst-case funding scenario. The SC should allocate full funding to the program so that priority projects can proceed for all four focus areas.

The tasks to be completed, subcontractors, and deliverables for these tasks are described in the following sections.

[1] This task was budgeted at $511K at the time of the 3/30/16 TAC meeting. Following the TAC meeting, the new estimate of data management costs was $5K higher. The budget approved by the Steering Committee included the additional $5K.

Current Use Pesticides (CUPs) and Toxicity Monitoring

Sampling Design

Monitoring for CUPs and toxicity will begin in FY16/17 on July 1, 2016. Monthly sampling (12 rounds) will be conducted at the 5 baseline sites: Mokelumne River at New Hope Road, Sacramento River at Hood, San Joaquin River at Buckley Cove, San Joaquin River at Vernalis, and Ulatis Creek at Brown Road (see Figure 1 for locations).

CUP Sampling Sites	Latitude	Longitude
Mokelumne R @ New Hope Rd	38.23611	-121.41889
Sacramento R @ Hood	38.36691	-121.52037
San Joaquin R @ Buckley Cove	37.97667	-121.37889
San Joaquin R @ Vernalis	37.67556	-121.26417
Ulatis C @ Brown Ulatis Creek @ Brown Rd	38.30667	-121.79472

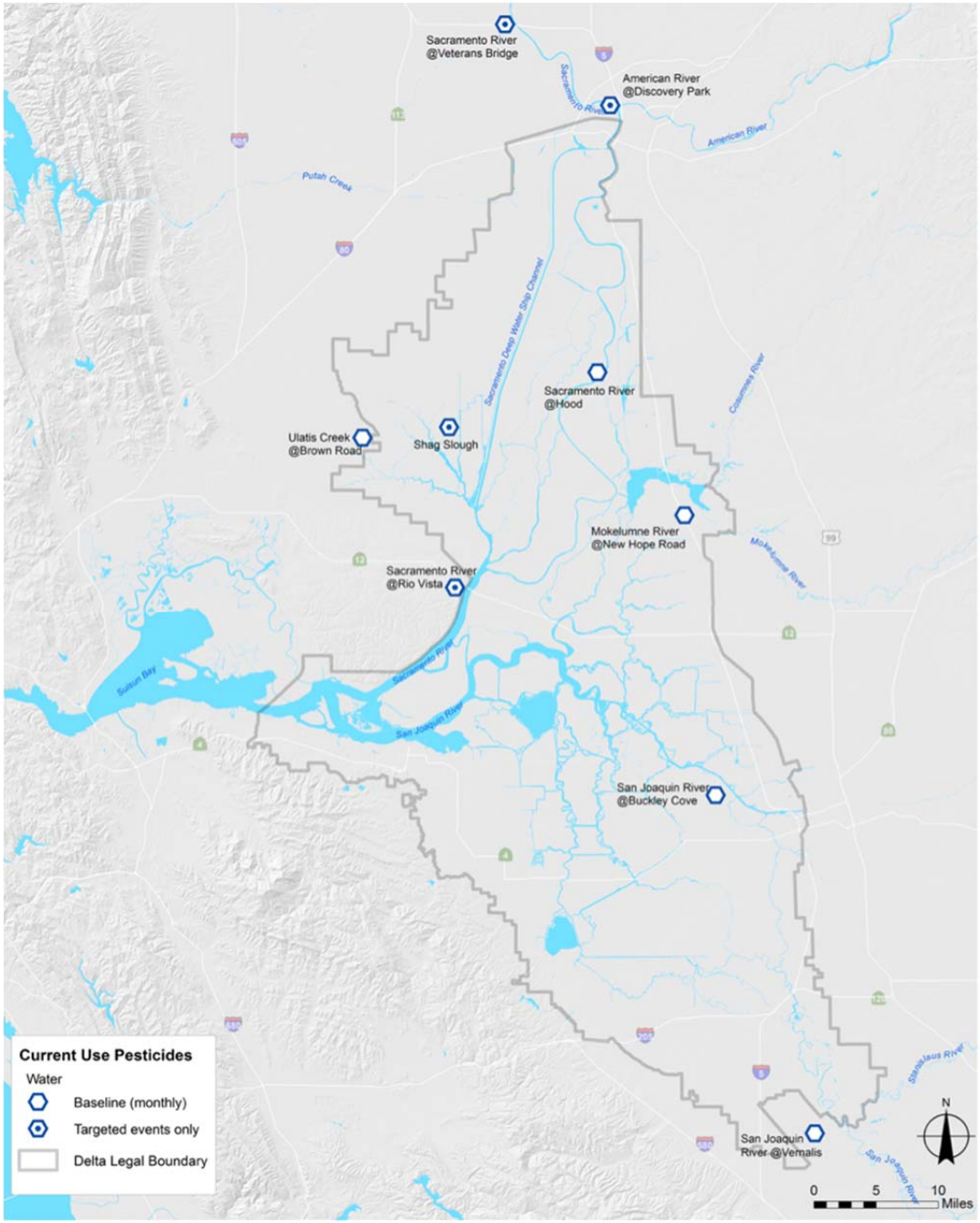


Figure 1: CUP Monitoring Sites (only "Baseline" sites will be monitored in FY16/17)

Parameters

At each site visit, the following measurements will be taken:

- Field parameters (water temperature, specific conductance, pH, dissolved oxygen, turbidity)
- Pesticides. The list of pesticides and degradates currently analyzed by USGS Pesticide Fate Research Group will be the initial list of target analytes.
- Dissolved copper, dissolved organic carbon, total organic carbon, and total suspended solids.
- Toxicity testing. The test species and endpoints to be used are *Selenastrum capricornutum* (growth), *Ceriodaphnia dubia* (survival and reproduction), and *Pimephales promelas* (larval survival and growth). Per the recommendation of SC co-chairs, the budget does not include funds for 96-hour survival test of *Hyalella azteca* in water.
- Pesticides-focused Toxicity Investigation Evaluations (TIEs) may be initiated for samples exceeding 50% response for at least one toxicity endpoint. A total of $40,000 of TIE samples may be completed. The TIE subcommittee will decide which samples should have a TIE performed following the protocols developed in FY15/16.

Subcontractors

ASC will subcontract with the U.S. Geological Survey (USGS) in the amount of $190,830 for collecting the samples and performing the chemical analyses (pesticide scans, dissolved copper, dissolved organic carbon, total organic carbon, and total suspended solids). USGS has committed an additional $51,580 in matching funds to this effort in FY16/17.

The total cost of toxicity testing and TIEs is expected to be $267,700. An existing SWAMP contract between the Water Board and the UC Davis Aquatic Toxicology Laboratory (AHPL) will be used to pay at least to $211,300 of these costs in FY16/17. The SWAMP contract will cover the first 9 months of toxicity testing. As discussed previously, it is possible that there will be additional SWAMP funds from FY15/16 that will be carried over into FY16/17. The exact amount of the carryover will not be known until the end of the FY15/16 (June 30th, 2016). After the SWAMP contract funds are used up, ASC will subcontract with AHPL for the costs of the remaining months of sampling (up to $56,400).

Justification for the USGS sole-source contract is provided in Appendix A. The SWAMP contract will cover the cost of toxicity testing by AHPL for at least 9 months. A sole-source contract justification will be prepared for AHPL whenever ASC needs to enter into a separate contract with AHPL for the remainder of the toxicity testing, if that the contract amount will exceed $50,000.

ASC Labor

ASC will manage the data and prepare final reports (see “deliverables” section). The data management/quality assurance task has been quoted to cost $37,400 by the ASC Data Services team. The reporting task is budgeted at $20,000 (8 hours for Program Manager, 40 hours for

Lead Staff, 60 hours for Environmental Analyst, 20 hours for Data Analyst, 8 hours for GIS staff).

Total Budget

The total cost to the RMP for twelve months of CUP/Toxicity monitoring will be $515,930. Of this total, at least $211,300 will be covered by the Water Board contract with AHPL (as discussed previously, Regional Board staff has confirmed $211,300 is available for FY16/17; it is possible that additional carryover funds may be available). The subcontract with the USGS will leverage an additional $51,580 in services for the program. A detailed breakdown of all the components of the CUP/Toxicity budget is presented in Table 4.

Deliverables

Product	Description	Frequency	Due Date	Reviewed By/ Reported To
Field Sampling Report	The Field Sampling Report will document how samples were collected, target sampling sites, actual sampling sites, how many samples were collected, measurements made using field instruments, and any deviations from the QAPP for field sampling methods.	Annual	1.5 months after the end of the field season (9/30/17)	TAC
Permit Compliance Data for ILRP	Delta RMP data for certain parameters are needed for ILRP permit compliance reports.	Annual	2/1/18	TAC
Annual Monitoring Report	The Annual Monitoring Report will present the results of the previous year of sampling. Interpretation of the results will be done at a very basic level. The main purpose of this report is to share the final data with project partners and collaborators in a timely way. The AMR will also document the quality assurance / quality control measurements performed by laboratories, the results of these tests relative to data quality objectives, any data that were deemed unusable, and any deviations from the QAPP for laboratory methods.	Annual	7 months after the end of the field season (2/28/18)	TAC, SC

Table 4: Detailed Budget for Delta RMP Pesticide-Toxicity Monitoring in FY16/17

Contractor	Parameter	Unit Cost	Number	Total Cost	RMP Funds	SWAMP Funds	USGS Matching Funds	Total Budget	Comments
USGS	Project Oversight and Reporting		1	$20,650	$15,885		$4,765	$20,650	30% USGS match on labor
USGS	Sample collection at 5 baseline sites	$1,755	12	$21,060	$18,022		$3,038	$21,060	30% USGS match on labor
USGS	Field parameters (temp, conductance, pH, DO, turbidity)	$0	60	$0	$0		$0	$0	Cost included in field sampling labor
USGS-OCRL	Pesticide Scan (plus 30% QA samples)	$2,150	78	$167,700	$129,000		$38,700	$167,700	30% USGS match on labor
USGS-OCRL	Pesticide data formatting and reporting			$22,000	$16,923		$5,077	$22,000	USGS match (30%) on labor for costs associated with project administration, formatting of pesticide analysis results for CEDEN database entry, and preparation of reports to the cooperator.
USGS-NWQL	Copper (plus 20% QA samples)	$26	72	$1,872	$1,872		$0	$1,872	
USGS-NWQL	Carbon (TOC, DOC) (plus 20% QA samples)	$127	72	$9,128	$9,128		$0	$9,128	

Table 4: Detailed Budget for Delta RMP Pesticide-Toxicity Monitoring in FY16/17 (continued)

Contractor	Parameter	Unit Cost	Number	Total Cost	RMP Funds	SWAMP Funds	USGS Matching Funds	Total Budget	Comments
UCD-AHPL	Toxicity Testing (plus 10% QA samples)	$3,450	66	$227,700	$56,400	$171,300	$0	$227,700	Balance of $211,300 SWAMP contract after TIE analyses. RMP funds to pay for later samples.
UCD-AHPL	Conventional parameters (alkalinity, NH4, hardness, TSS, DO, pH, SC, temperature) (plus 10% QA samples)	$0	66	$0	$0			$0	Cost included in toxicity testing
UCD-AHPL	TIE Analyses (pesticides-focused TIE)			$40,000	$0	$40,000	$0	$40,000	$40,000 cap on TIE analyses. To be paid from SWAMP contract.
ASC	Data Management			$37,400	$37,400			$37,400	
ASC	Reporting			$20,000	$20,000			$20,000	
	TOTAL			**$567,510**	**$304,630**	**$211,300**	**$51,580**	**$567,510**	
	TOTAL RMP COST				**$515,930**				

Nutrients Synthesis, Modeling and Statistical Analyses

Study Elements

The nutrient study consists of three distinct elements: 1) Data synthesis report; 2) Modeling and synthesis of results; and 3) Advanced statistical analyses. Each element is described in more detail below.

1. ***Synthesis report***

The goals of the synthesis report are to:

a. Summarize status and trends for nutrient-related parameters at IEP-EMP sites and other sites that may inform Delta RMP planning;
b. Evaluate the results of the data analysis relative to Delta RMP assessment questions; and
c. Inform the Delta RMP nutrient monitoring design.

This synthesis report will build upon recent data analysis projects that have used IEP-EMP data. Data analysis and observations from those reports will be extended to include new data (2012-2016) and additional nutrient-related parameters. The synthesis report will distill and integrate data and results from the following, recently completed projects:

- ASC project funded by DWR, synthesizing IEP-EMP data (2000 – 2011); "Characterizing and quantifying nutrient sources, sinks and transformations in the Delta: synthesis, modeling, and recommendations for monitoring"; URL: http://sfbaynutrients.sfei.org/books/dwr-contract-deliverable;
- USGS report funded by the Delta RMP, synthesizing high-frequency sensor data; "Planning and operating a high frequency nutrient and biogeochemistry monitoring network: the Sacramento-San Joaquin Delta"; URL: https://goo.gl/VcDnmw;
- ASC project funded by DSP (completion by June 2016), analyzing IEP-EMP data (1975-2011) with a focus on spatial variability, potential subregions for nutrient modeling, and assessment, and limited characterization of long-term trends.

The synthesis report will also include the following additional new materials, analyses, and findings:

- An update of the analyses for nitrogen species performed for the DWR report. The additional analyses will include the most recent data available (2011 onwards including drought years through 2016) and additional parameters (e.g., phosphate, total phosphorus, chlorophyll, and dissolved oxygen).
- To the extent possible, adapt and incorporate results from a USEPA-ASC collaborative project, which uses advanced statistical data analysis approaches to evaluate long-term trends (e.g., weighted regression for removing flow effects) in N species.

2. Modeling and synthesis of modeling results

The goals of this task are to

a. Apply existing hydrodynamic/hydrologic models to evaluate if the current monitoring network adequately covers different regions and habitat types (e.g., deep-water channels, shallow areas, back sloughs), and identify those that are currently under sampled.
b. Analyze model output to identify cost-effective monitoring options for areas or habitat types that are currently under sampled.

Developing a monitoring design for nutrients is one of the three recommended steps in the nutrients section of the approved Delta RMP Monitoring Design. Assessing the utility of a design with empirical data would require intensive field sampling - and actually oversampling - to thoroughly characterize variability and identify the network needed to capture necessary information. That density of data does not exist, and collecting it would be cost-prohibitive given current funding levels. However, well-designed numerical modeling experiments can be used to simulate the system's dynamics, and the model outputs can be analyzed to identify the necessary sampling network to answer management questions.

The proposed work will augment DMS2-based modeling (used in the recent DWR report) with simulated particle tracking and tracer studies. The proposed scope of work will include the following:

- Convening a subcommittee for a conference call to develop metrics for evaluating assessment questions;
- Select appropriate model and design model experiments, including the identification of
    - Simulated particle release locations;
    - Specific years and seasons to be simulated; and
    - Required data output;
- Run simulations; and
- Analyze model output data to assess the suitability of the current network for answering the assessment questions, and options for efficiently augmenting the network to address insufficient density or current "blind spots."

3. Advanced Statistical Analyses

Goals of the advanced statistical modeling task are to:

1. Improve the description of long-term changes in water quality;
2. Characterize the relative importance of contributing factors (flow routing, residence time, and temperature); and
3. Further resolve the responses of nutrient and nutrient-associated parameters (nitrogen species, phosphorus species, and chlorophyll) to natural (climate variability) and anthropogenic drivers (e.g., loadings, land use).

This task will build on work being performed through a recent collaboration between the USEPA Office of Research and Development (ORD) and ASC. Many traditional approaches to analyzing trends over time (e.g., Seasonal Kendall Test) are not able to resolve complex variations, test for causal factors, or account for factors such as interannual differences in flow (e.g., prolonged drought, wet vs. dry years). This task will apply advanced statistical approaches, such as weighted regression on time, discharge, and season (WRTDS) or generalized additive models (GAMs), to evaluate long-term trends in nutrients in the Bay-Delta, and apply the results of these analyses toward addressing Delta RMP assessment questions and informing nutrient monitoring design.

Subcontractors

The particle tracking modeling described in Task 2 will be conducted by Marianne Guerin at RMA Consultants, who has extensive experience with Delta modeling using the DSM2 and RMA models. The specific scope of work for the contract will be developed; however, it will be less than $50,000 so it will not be necessary to seek approval for a sole source vendor.

ASC Labor

ASC staff will prepare the data synthesis document, oversee the particle tracking modeling and summarize the findings in a technical report, and assist in the statistical evaluation and write the technical report.

Total Budget

The total budget for the nutrients element is $120,000. The cost to complete the data synthesis is $33,000; the modeling $50,000, and the statistical analyses $37,000.

Deliverables

The deliverable for Task 1 will be a technical report that synthesizes information from recent studies. Similarly, for Task 2 and 3, technical reports summarizing the findings will be prepared. All technical reports will be completed as drafts by March 31, 2017, and finalized by June 30, 2017.

Mercury

Study Design

Based on forthcoming regulatory needs for mercury characterization in the Delta (e.g., the State Mercury Water Quality Objectives (spring/summer 2017) and the Phase II Methylmercury Delta TMDL (2020)), a strong recommendation was made by the TAC to begin monitoring mercury in water and fish in FY16/17.

The goal is of this monitoring is to begin to characterize ambient concentrations of total mercury and methylmercury in fish and water, particularly in subareas likely to be affected by major existing or new sources (e.g., large-scale restoration projects). An important element of this work is the colocation of the fish and water sampling sites to better understand the uptake of mercury into the food web. In addition, to the greatest extent possible, the sites will be located in the vicinity of other monitoring sites so ancillary parameters such as dissolved oxygen, ammonia, total suspended sediments, etc. can be used to interpret the results.

Largemouth bass (or similar predator species) will be collected annually at six fixed locations in the Delta (see Figure 1). It is likely that the collection will occur late summer/ early fall. At each of the locations, 11 individual bass or predator fish will be collected and submitted to the laboratory for mercury analysis (total). At five of these sites, quarterly monitoring of ambient water will be conducted. Water samples will be analyzed for unfiltered/filtered total mercury, unfiltered/filtered methylmercury, suspended solids, chlorophyll a, dissolved organic carbon, and volatile suspended solids.

Subcontractors

ASC will subcontract with Moss Landing Marine Laboratories (MLML) in the amount of $110,654 for collecting the fish and water samples and performing the chemical analyses and ancillary parameters as specified above. MLML will provide an in-kind match of $20,654. Justification for the MLML sole-source contract is provided in Appendix A.

ASC Labor

ASC will manage the data and prepare a short year one summary report. The data management/quality assurance task has been quoted to cost $15,000 by the ASC Data Services team. The reporting and oversight task is budgeted at $8,000 (25 hours for Program Manager, 32 hours for Lead Staff).

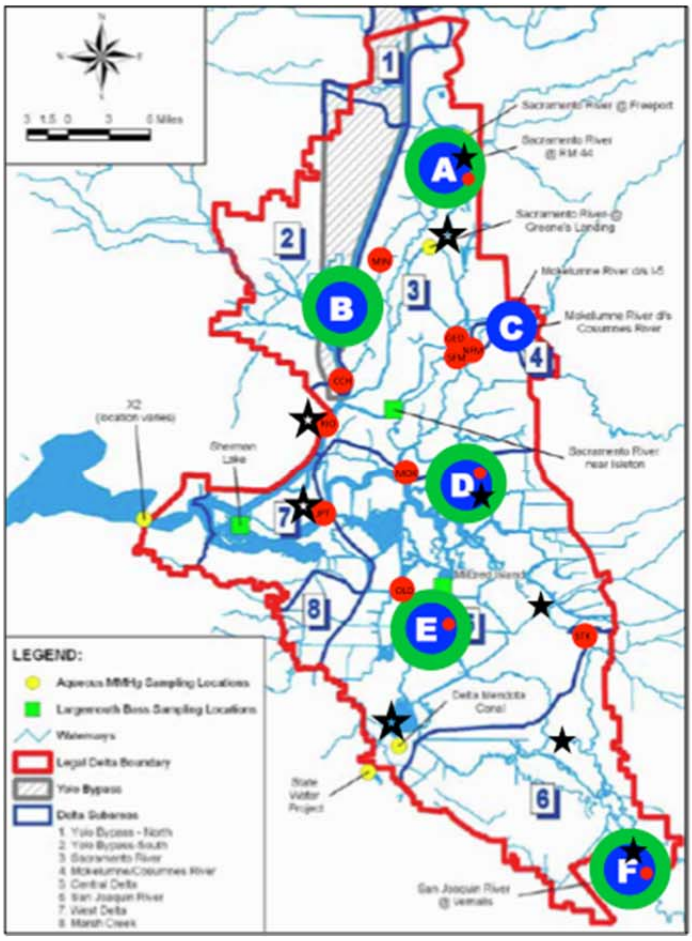
Total Budget

The total budget for the task is $133,654; MLML will provide matching funds totaling $20,654. The total budget for the Delta RMP is $113,000.

Deliverables

A brief summary report will be prepared upon review and approval of the fish and mercury data. Because ASC is currently working with MLML to determine when the fieldwork can be conducted, an exact date for the deliverable of the report is not possible. The field work must occur in the summer of 2016 or 2017. ASC staff are currently working with MLML to see whether it is logistically feasible to be sampling in August 2016. If this is possible and the data is reported to ASC mid-2017, then a report summarizing these results would be available in 2018.

Figure 2. Locations of sites for fish and water mercury sampling



Proposed Sites for Mercury Sampling

Proposed Fish Sites J

Proposed Water Sites

DWR/USGS Flux Sites

Permittee Proposed Sites

A	Sacramento R @ RM44 (resolve RM44 vs Freeport vs Hood)
B	Liberty Island
C	Mokelumne R ds Cosumnes R
D	Little Potato Slough
E	MID flux station (close to Middle R at Hwy 4 fish station)
F	San Joaquin R @ Vernalis

Pathogens Study

At this time, no studies are being proposed for pathogens. It is possible that during the second year of pathogen sampling (April 2016 through July 2017), a follow-up trigger study will be needed; however, the scope of work and the need for the work will be determined once there are trigger value exceedances.

Background

The Central Valley Regional Water Quality Control Board adopted a Basin Plan Amendment to establish a Drinking Water Policy (Policy) to protect source water quality on July 26, 2013. The Policy includes a narrative water quality objective for two pathogens, *Cryptosporidium* and *Giardia*, with associated implementation and monitoring provisions, as well as language addressing other constituents of potential concern to drinking water. The Pathogen Study is intended to satisfy the data needs and monitoring for any follow-up required if Basin Plan trigger values are exceeded. A two-year study was undertaken by the RMP and several other agencies. The RMP provided partial funding for these studies in FY14/15 (Year One) and FY15/16 (Year Two).

Although the second year of the study is being funded from FY15/16, sample collection will occur in part of FY16/17 (i.e. the study commences in April 2016 and will continue through July 2017). The study focuses on characterizing pathogen (*Cryptosporidium* and *Giardia*) levels throughout the Delta. The study includes monitoring at drinking water intakes and at ambient sites throughout the Delta. Sampling at drinking water intake location will be conducted and analyses of samples paid for by the water agencies. Sampling at ambient sites will be conducted by Department of Water Resources' Municipal Water Quality Investigations (MWQI) program at no cost to the RMP.

Based on a review of the Year One data (April 2015 through January 2016), the pathogen subcommittee confirmed that Basin Plan trigger values for *Cryptosporidium* have not been exceeded at the drinking water intakes during the first part of the study. If trigger values are exceeded, it is possible that the subcommittee will recommend conducting a follow up study to assess the causes for the exceedances. The pathogen subcommittee will meet to determine whether additional follow up studies are needed. The SC has approved $20,000 from the Undesignated Funds Reserve to be included in FY15/16 budget, if needed. No funds have been allocated in the FY16/17 budget for pathogen studies.

OVERALL DELTA RMP FY16/17 BUDGET

The programmatic and scientific budgets for the Delta RMP are shown together in Table 5. The total planned expenses for the program in FY16/17 are $1,043,030. The total expenses are less than the expected revenue ($1,056,053).

Some of the Delta RMP tasks funding by the FY15/16 budget will continue concurrently with the FY16/17 tasks. For example, the second year of the Pathogens Study was funded from the FY15/16 budget. Sampling for the second year of the Pathogens Study will not conclude until the spring of 2017. Similarly, the draft report on nutrient recommendations for Delta RMP nutrient monitoring design will be prepared by December 31, 2016 with the final report completed March 2017.

Table 5: Delta RMP FY16/17 Overall Budget

		Labor	Sub-contract	Direct Cost	In-Kind Service	Total
1. Program Management	A. Program Planning Documents	$76,000				$76,000
	B. Contract and Financial Management	$51,000		$1,000		$52,000
2. Governance	A. SC meetings	$42,000	$8,800	$500		$51,300
	B. TAC meetings	$47,000	$17,300	$500		$64,800
3. Quality Assurance	A. Quality Assurance System	$15,000				$15,000
	B. Technical Oversight and Coordination	$15,000				$15,000
4. Communications	A. Factsheet	$5,000				$5,000
	B. Workshop on Technical Issue	$15,000				$15,000
6. CUP Monitoring	A. Pesticide Laboratory Work		$190,830			$190,830
	B. Toxicity Laboratory Work		$56,380		$211,320	$267,700
	C. Data Management	$37,400				$37,400
	D. Reporting	$20,000				$20,000
7. Nutrients	A. Synthesis Report, Statistics and Modeling	$120,000				$120,000
8. Mercury	A. Mercury Collection and Laboratory work		$90,000			$90,000
	B. Data Management	$14,500				$14,500
	C. ASC Oversight and Reporting	8,500				$8,500
Totals		$466,400	$363,310	$2,000	$211,320	$1,043,030

Appendix A

Vendor Justification Forms

SFEI AQUATIC SCIENCE CENTER

Vendor Selection Form

In order to provide open and free competition and to obtain the maximum value for each dollar expended, SFEI-ASC has a competitive bidding policy for purchasing services or goods greater than or equal to $50,000. In addition, positive efforts shall be made by SFEI-ASC to utilize small business, minority owned firms, and women business enterprises, whenever possible. Such efforts, as outlined in 45 CFR Part 74.44 will allow these sources the maximum feasible opportunity to compete for contracts. SFEI-ASC will use, but not be limited to, the State of California DBE online directory as a source for possible references: http://www.dot.ca.gov/hq/bep/find_certified.htm

Submit this form, along with original quotes, to the Program Director or Executive Director for review. Original documents go to the Contracts Manager for retention. An electronic copy will be made available on the shared drive.

Date: 4/9/2016 *Requestor*: Margaret Sedlak

Stage of funding for vendor: ☐ Proposal ☒ In negotiations ☐ Contracted

Program: Delta RMP *Project/Task # (if known)*: 8111.16

☐ I have obtained at least three (3) competitive quotes and have chosen the supplier based on price, reliability, delivery, service, or other factors (attach quotes). If chosen vendor is not lowest cost bidder, detail the reason(s) why the vendor was selected on the next page.

VENDOR	Date of Quote	Total $	Comments
USGS		$190,830	USGS will contribute $51,580 in match

Vendor Selected:

Vendor Name: U.S. Geological Survey, Pesticide Fate Research Group
Contact: James Orlando and Joe Domagalski
Address: 6000 J. Street, Sacramento, CA 95819
Phone: 916-278-3271 Fax: Email: jorlando@usgs.gov and joed@usgs.gov

Reason for Selection (explanation required below):
☐ Vendor is the lowest cost provider ☒ Vendor is sole acceptable provider
☐ Vendor provided best overall offer ☐ Emergency/Urgency

☐ Vendor is sole provider ☐ Other

Explanation (attach additional information if necessary):

The Delta Regional Monitoring Program (Delta RMP) was initiated by the Central Valley Regional Water Quality Control Board with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions.

Research on Current Use Pesticides (CUPs) in the Delta is one of four focus areas for the Delta RMP. The Delta RMP Steering Committee agreed to fund monitoring for CUPs in FY16/17. ASC staff recommend a **sole source** subcontract with the U.S. Geological Survey (USGS) for this work because of the following:

- The specialized nature of the proposed work, which is research outside the domain of typical contractors.
- The USGS' unique technical capability to monitor a large list of CUPs. The USGS has an extensive publication record on pesticide analysis (see http://ca.water.usgs.gov/projects/PFRG/Publications.html) and measures more pesticides than other laboratories. In addition to doing the pesticide analyses, USGS will collect the samples and measure field parameters. Having USGS involved in the field and lab work ensures good coordination and chain of custody for the samples. ASC obtained a second quote for the field sampling work and found that the USGS was the lower cost option.
- Matching funds offered by USGS. The USGS has agreed to provide matching funds of at least $51,580. These funds will be used to cover labor costs associated with project administration, formatting of pesticide analysis results for CEDEN database entry, and preparation of reports to the cooperator.
- Successful completion of the first year of monitoring as a joint venture with the Delta RMP.

At its meeting on January 22, 2015, the Steering Committee generally agreed that there was sufficient justification for this subcontract on a sole source basis. However, the Steering Committee asked for a sole source justification and confirmation that the subcontract would be in compliance with applicable laws or ordinances for spending public monies. There was also concern about an actual or apparent conflict of interest since USGS staff serve as one of the two co-chairs of the Delta RMP Technical Advisory Committee, which had recommended USGS for this work. Each of these concerns are addressed below:

- Sole Source Justification: The reasons why USGS is the sole acceptable provider are outlined in the paragraph above.
- Legality: The Delta RMP is not required to follow the State Contracting Manual because the Delta RMP is not funded by state monies. However, the State Contracting Manual provides a reasonable guide to follow since the alternative is attempting to comply with dozens of different municipal ordinances and individual institutional requirements. Per the Manual under Section 3.06, "Agreements for services and consultant services do not

require competitive bids or proposals if the contract is with…The Federal Government". Yet to provide further protection, ASC still must follow internal procedures to justify and receive approval from its Executive Director for any sole source contracts in the amount of $50,000 or more, which is the purpose of this memo.

- Conflict of Interest: It was recognized, after the fact, that the USGS Co-Chair of the Technical Advisory Committee should have recused himself from the discussion that recommended USGS for this work. This process oversight was openly acknowledged and discussed by the Steering Committee. Going forward, the Steering Committee agreed that the Technical Advisory Committee should not recommend specific contractors to avoid the appearance of a conflict of interest.

The Delta RMP must continue to monitor water quality in the Delta in FY16/17. The Steering Committee identified the CUP monitoring task as a priority for implementation. Staff recommend a sole source contract with USGS because this agency is the sole acceptable provider for the work.

We respectfully request your approval.

To be completed by Program Director or Executive Director
☐Yes ☐No The vendor quote(s)/explanation have been reviewed and appear reasonable for the proposed work.

Margaret Sedlak
Requestor's Printed / Typed Name

_____ _____
Requestor's Signature Date

_____ _____
Program Director or Executive Director's Signature Date

_____ _____
Contracts Manager's Signature Date

SFEI | AQUATIC SCIENCE CENTER

Vendor Selection Form

In order to provide open and free competition and to obtain the maximum value for each dollar expended, SFEI-ASC has a competitive bidding policy for purchasing services or goods greater than or equal to $50,000. In addition, positive efforts shall be made by SFEI-ASC to utilize small business, minority owned firms, and women business enterprises, whenever possible. Such efforts, as outlined in 45 CFR Part 74.44 will allow these sources the maximum feasible opportunity to compete for contracts. SFEI-ASC will use, but not be limited to, the State of California DBE online directory as a source for possible references: http://www.dot.ca.gov/hq/bep/find_certified.htm

Submit this form, along with original quotes, to the Program Director or Executive Director for review. Original documents go to the Contracts Manager for retention. An electronic copy will be made available on the shared drive.

Date: 04/09/2016 *Requestor*: Margaret Sedlak

Stage of funding for vendor: ☐ Proposal ☒ In negotiations ☐ Contracted

Program: Delta RMP *Project/Task # (if known)*: 8111.16

☐ I have obtained at least three (3) competitive quotes and have chosen the supplier based on price, reliability, delivery, service, or other factors (attach quotes). If chosen vendor is not lowest cost bidder, detail the reason(s) why the vendor was selected on the next page.

VENDOR	Date of Quote	Total $	Comments
Marine Pollution Studies Laboratory at Moss Landing		$90,000	Value based on FY16/17 quote. MLML will provide a match of $20,654.

Vendor Selected:

Vendor Name: Marine Pollution Studies Laboratory at Moss Landing
Contact: Wes Heim (Director)
Address: 7544 Sandholdt Road Moss Landing, CA 95039
Phone: (831) 771-4459 Fax: Email: wheim@mlml.calstate.edu

Reason for Selection (explanation required below):

☐ Vendor is the lowest cost provider
☐ Vendor provided best overall offer
☐ Vendor is sole provider
☒ Vendor is sole acceptable provider
☐ Emergency/Urgency
☐ Other

Explanation (attach additional information if necessary):

The Delta Regional Monitoring Program (Delta RMP) was initiated by the Central Valley Regional Water Quality Control Board with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions.

Research on mercury in the Delta is one of four focus areas for the Delta RMP. On April 25th, 2016, the Delta RMP Steering Committee agreed to fund monitoring for mercury in FY16/17. ASC staff recommend a **sole source** subcontract with the Marine Pollution Studies Laboratory (MPSL) at Moss Landing for this work because of the unique, specialized, technical experience as documented by:

- Wes Heim and his colleagues are recognized as national experts on the monitoring of mercury in biological tissues and in water, having developed trace metal methods for measuring mercury speciation in these matrices. This laboratory group has been involved with the State Surface Water Ambient Monitoring Program since 2001 and has extensive experience collecting and analyzing water and fish tissues for mercury as evident by the following projects they have completed in the Delta: Assessment of ecological and human health impacts of mercury in the Bay-Delta watershed (1999-2003); Transport, cycling, and fate of mercury and monomethyl mercury in the San Francisco Delta and tributaries – An integrated mass balance assessment approach (2003-2006); and Development of best management practices to reduce methyl mercury exports and concentrations from seasonal wetlands in the Yolo Wildlife Area (2011-2016)

- Measuring mercury concentrations at low levels requires high precision and accuracy. ASC recommend a sole source laboratory that can conduct the collection and the analyses to avoid the potential cross contamination that can occur when multiple laboratories and field collection teams are involved in a project. In addition, it is more cost-effective to have one entity conducting the field sampling and chemical analyses.

- This laboratory has participated in multiple interlaboratory exercises and consistently been able to obtain high quality results. MPSL has participated in multiple interlaboratory exercises including those conducted by the CALFED Mercury Program, State of Florida Department of Environmental Protections, and Brooks Rand Labs. MPSL placements in interlaboratory studies are consistently in the top ranks. Furthermore, MPSL analytical results consistently exceed the quality assurance and quality control requirements outlined in the SWAMP Laboratory Quality Assurance Program Plan. Finally, MPSL has been audited to assess mercury analytical abilities as a requirement for participation in both the federal and California State sponsored CALFED Mercury Program and SWAMP. Audits concluded: 1) MPSL laboratory's preparation and analytical spaces are more than sufficient for the utilized methods and SOPs; 2) Instrumentation and equipment is current, and in many cases, state-of-the-art; 3) staff

expertise and retention are outstanding; and 4) QA systems implemented at MPSL have greatly benefitted SWAMP, and are certainly worthy of federal and state-level certifications.

The Delta RMP Steering Committee identified the mercury monitoring task as a priority for implementation in part due to the dearth of information on mercury concentrations in fish and water. Upcoming regulatory decisions regarding the Mercury TMDLs make it a priority for the Delta RMP to begin collecting this data this year. Staff recommend a sole source contract with the Marine Pollution Studies Laboratory because this vendor is the sole acceptable provider for the work.

We respectfully request your approval.

To be completed by Program Director or Executive Director

☐ Yes ☐ No The vendor quote(s)/explanation have been reviewed and appear reasonable for the proposed work.

Margaret Sedlak
Requestor's Printed / Typed Name

Requestor's Signature	Date
Program Director or Executive Director's Signature	Date
Contracts Manager's Signature	Date