

Delta RMP Steering Committee Meeting

Tuesday June 16, 2015

Central Valley Regional Board, 11020 Sun Center Drive #200, Rancho Cordova, CA

Board Room

Call-in toll-free number: [1-866-770-5018](tel:1-866-770-5018)

Attendee access code: 493 415 8

<https://waterboards.webex.com/waterboards/j.php?MTID=m5be45988d1aff6762dac1b087047fa5d>

DRAFT Agenda

1.	Introductions and Review Agenda Establish quorum		9:30 Brock Bernstein
2.	Decision: Approve Meeting Summaries from January 22, 2015 and March 27, 2015.	1/22/15 Mtg Summary 3/27/15 Mtg Summary RMP Decision Record (Excel Spreadsheet)	9:35 Brock Bernstein
3.	Information: Delta RMP Financial Update	Financial Update Memo	9:45 Philip Trowbridge
4.	<p>Decision: TAC Meeting Summary The TAC co-Chairs will</p> <ul style="list-style-type: none"> Summarize the outcomes of the last two TAC meetings. Present the TAC recommendations regarding the Monitoring Design, QAPP and TIE subcommittee nominees from a 6/15/15 conference call. Present a memo summarizing information on the <i>Hyaella</i> toxicity test to inform Steering Committee decisions regarding monitoring. <p>Desired Outcome:</p> <ul style="list-style-type: none"> Informed committee regarding TAC activities and recommendations 	<p>4/22/15 Mtg Summary 5/27/15 Mtg Summary</p> <p>6/8/15 Memo re Summary of <i>Hyaella</i> toxicity testing issues</p>	10:00 Stephen McCord Joe Domagalski

	<ul style="list-style-type: none"> • Approve TIE subcommittee nominees • Decision: Should the RMP should continue to wait for the SCCWRP-led study's results before initiating monitoring of toxicity using Hyalella as a fourth test organism? 		
<p>5.</p>	<p>Decision: Approve Delta RMP Monitoring Design and QAPP</p> <ul style="list-style-type: none"> • Monitoring Design represents the full monitoring plan to address management questions that has been developed by the workgroups and the TAC. At the 3/27/15 SC meeting, the SC requested time to review the assessment questions that had been edited by the TAC. • The Quality Assurance Project Plan is a highly-technical and detailed document outlining the procedures the Delta RMP will use to ensure the data it collects and analyzes meet program requirements. <p><u>Desired outcome:</u></p> <ul style="list-style-type: none"> • To approve the edited assessment questions in the Monitoring Design • To approve the Monitoring Design • To approve the Quality Assurance Project Plan 	<p>Draft Final Monitoring Design (sent on 6/7/15 under separate cover, click here to download it again)</p> <p>Draft Final Quality Assurance Project Plan (sent on 6/7/15 under separate cover, click here to download it again)</p>	<p>11:00 Thomas Jabusch</p>
<p>6.</p>	<p>Lunch break</p>		<p>11:30</p>

7.	<p>Decision: Approve a FY15/16 Budget and Preliminary Workplan Based on Available Funding</p> <p>The annual Workplan contains the budget for the next fiscal year and the tasks to be completed. The workplan also contains the schedule and deliverables for products. For FY15/16, the workplan is still preliminary because the SC must decide on budget allocations between competing priorities. After the allocations have been set, a detailed workplan will be prepared for SC approval.</p> <p><u>Desired outcome:</u> To approve a FY15/16 budget and preliminary workplan</p>	Draft FY15/16 Workplan and Budget	12:00 Philip Trowbridge
8.	<p>Discussion: Adequate Participation</p> <p>Review and refine proposed draft criteria structure as needed. Discuss expected contributions for FY15/16.</p> <p><u>Desired outcome:</u></p> <ul style="list-style-type: none"> - Agree on criteria and process for determining adequate participation - Review planned FY15/16 contributions 	Draft criteria	1:30 Adam Laputz Linda Dorn
9.	<p>Discussion: Framework for interpreting Delta RMP monitoring data</p> <p>The purpose of the discussion is to develop initial recommendations for data interpretation as part of the Communications Plan.</p> <p><u>Desired outcome:</u></p> <ul style="list-style-type: none"> • Provide initial feedback and guidance on Communications Plan outline • Discuss process for interaction between RMP and Regional Water Board in data evaluation and follow-up 	Communications Plan Outline Draft decision flow chart	2:30 Philip Trowbridge Adam Laputz Linda Dorn

10.	Discussion: Status of Deliverables, Action Items and Upcoming Meetings <u>Desired outcome:</u> To inform the committee about Delta RMP deliverables (especially the Pulse), and upcoming meetings.	Delta RMP Stoplight Reports	3:15 Philip Trowbridge
11.	Plus/Delta, set dates and agenda topics for upcoming meetings		3:25 Brock Bernstein
12.	Adjourn		3:30

Record of Decision for the Delta RMP Steering Committee

Number	Date	Decision	Meeting Summary Link	Type	Yes	No	Abstain
2015-1	01/22/15	The Steering Committee provisionally approved the Monitoring Design, for purposes of proceeding to implement the workplan for the remainder of fiscal year 14/15.	DRAFT	Consensus			
2015-2	01/22/15	The Steering Committee accepted the recommendation from the TAC to use <i>Hyalella</i> for water toxicity testing but asked the TAC to provide additional technical information about evaluating and interpreting the data.	DRAFT	Consensus			
2015-3	01/22/15	The Steering Committee approved the fiscal year 14-15 workplan for nutrients, specifically the allocation of \$35,000 to the startup of the high frequency data analysis, with the understanding that this work element will be completed in fiscal year 15/16. The Steering Committee requested that a sole-source justification for the USGS contract be prepared and added to the workplan. The Steering Committee generally agreed that there was sufficient justification to contract with USGS on a sole source basis due to the USGS' unique expertise, specialized experience, and access to unpublished sensor data.	DRAFT	Consensus			
2015-4	01/22/15	The Steering Committee approved the FY14–15 workplan for pathogens, with the understanding that this work element will be completed in FY15–16. The Steering Committee requested a more formal sole-source justification for the pathogen labs in the workplan.	DRAFT	Consensus			
2015-5	01/22/15	The Steering Committee approved the FY14–15 workplan for pesticides and toxicity, with the understanding that this work element will be completed in the subsequent fiscal year and with the budget will be reduced by \$4,500 since a RFP process for field sample collection will not be needed. The Steering Committee requested that sole-source justifications for the USGS lab contract and ATL toxicity contract be prepared and added to the workplan. The Steering Committee generally agreed that there was sufficient justification to contract with USGS on a sole source basis due to the USGS' unique technical capability to monitor a large list of pesticides. The Steering Committee generally agreed that there was sufficient justification to contract with ATL on a sole source basis due to the existing SWAMP contract with ATL for these services, which will allow the Delta RMP to access \$200,000 in SWAMP funds.	DRAFT	Consensus			
2015-6	01/22/15	The Steering Committee agreed that toxicity testing continue to be conducted by ATL at least through the FY15-16, because of the negative impacts of switching laboratories in the middle of a sampling season.	DRAFT	Consensus			
2015-7	01/22/15	The Steering Committee agreed that the full design for pesticide/toxicity monitoring should be implemented for 3 months in fiscal year 14/15 even though funding to implement that design in fiscal year 15/16 may not be authorized.	DRAFT	Consensus			

Record of Decision for the Delta RMP Steering Committee

Number	Date	Decision	Meeting Summary Link	Type	Yes	No	Abstain
2015-8	01/22/15	The Steering Committee agreed that ASC may contract the field sampling element of the pesticide/toxicity workplan without an RFP process because of the small size of the contract.	DRAFT	Consensus			
2015-9	01/22/15	The Steering Committee agreed that the relative allocation of effort among program elements (e.g., nutrients, pesticides, mercury, and pathogens) and all program costs will be revisited as part of discussion of the FY 15-16 workplan.	DRAFT	Consensus			
2015-10	01/22/15	The Steering Committee approved the FY 14-15 budget for administration, governance, and communications.	DRAFT	Consensus			
2015-11	01/22/15	ASC shall implement appropriate funding mechanisms (e.g., invoice, contract) as needed to meet the needs of different Delta RMP members.	DRAFT	Consensus			
2015-12	03/27/15	An update on the status of agenda items should be part of the agenda for future meetings.	In preparation	Consensus			
2015-13	03/27/15	Reports from the TAC to the SC should clearly specify which recommendations were made by consensus and lay out issues and pros/cons that were discussed.	In preparation	Consensus			
2015-14	03/27/15	Toxicity testing using Hyalella will not be included in the FY14/15 monitoring. The funding that would have been used for FY14/15 monitoring will be diverted to the SCCWRP interlaboratory comparability study if ATL needs funding to participate. The Delta RMP will collect field samples for the interlaboratory comparability study if needed.	In preparation	VOTE	10	0	0
2015-15	03/27/15	Any additional comments on the Monitoring Design should be submitted by adding them to the Response to Comments matrix prepared by ASC.	In preparation	Consensus			
2015-16	03/27/15	The date, time, and agenda for all SC and TAC meetings should be publicly noticed when these meetings are scheduled.	In preparation	Consensus			
2015-17	03/27/15	The FY14/15 Workplan, as amended during the meeting, was approved.	In preparation	VOTE	9	0	1
2015-18	03/27/15	The Delta RMP "Financial Management Plan", as amended by the SC, was approved.	In preparation	VOTE	8	0	2
2015-19	03/27/15	Stephen McCord and Joe Domagalski should continue as TAC Co-Chairs until June 30, 2015. Stephen McCord will be paid by Regional San.	In preparation	VOTE	10	0	0
2015-20	03/27/15	The Delta RMP "Committee Roles" document as presented at the 3/27/15 meeting was approved.	In preparation	VOTE	9	0	1



DATE: June 9, 2015
TO: RMP Steering Committee
FROM: Philip Trowbridge
RE: Summary of Delta RMP Financials – period ending 5/30/15

The purpose of this memorandum is to provide an update of budgets and expenses for FY14/15. The FY14/15 budget covers only 6 months and runs from 1/1/15 to 6/30/15. All of the values presented are current through 6/5/15.

Delta RMP FY14/15 BUDGET

Revenue

Most of the expected contributions for the FY14/15 Delta RMP budget have been received (\$229,474 out of \$302,903, 76%). However, contributions received to date have not yet reached the revenue assumed for the FY14/15 budget (\$251,000). See Table 1 for a breakdown of contributions.

The outstanding contributions are \$70,000 from the County of Sacramento and \$3,429 from Rio Vista (for the POTW discharge). The County of Sacramento funds were held up by the contracting process. A contract is now in place. The first payment of \$30,000 has been invoiced and is expected to arrive in June. Additional payments will be made, per the contract, as deliverables are produced. Therefore, because the County of Sacramento funds are obligated by a contract, these funds can be considered secure enough to continue operations despite the revenue shortfall. It is unclear when or whether the revenue from Rio Vista will be received.

Another source of revenue for FY14/15 was in-kind contribution of SWAMP funds for laboratory toxicity testing. The SWAMP contract has not been approved. Therefore, these funds have not been available. Pesticide/toxicity monitoring that was planned for FY14/15 is on hold until the SWAMP contract is approved.

Finally, the FY14/15 budget contained \$84,440 of funds from the existing contract between ASC and the State Board. All of these funds can be considered “received” since there was already a contract between ASC and the State Board for Delta RMP implementation. Besides the funds budgeted for FY14/15, there is another \$30,518 available in this contract. At least \$20,000 of these funds are being held in reserve for a Communications Plan and product in FY15/16.

Expenses

Overall, expenses are tracking high relative to budget. After 5 months of the 6-month FY14/15 budget, 37% of the funds have been spent (\$124,136 out of \$335,440). Most of the expenditures to date have been for labor. Figure 1 shows a comparison of expenses to budget by category. For more detailed information on budgets and expenses by line item, please refer to Table 2. The expenses by labor/direct costs and subcontractors are:

- Labor/Direct Costs: Expended 81% of the budget (i.e., \$124,136 of \$152,440)
- Subcontractors: Expended 0% of the budget (i.e., \$0 out of \$183,000).

Key points regarding the expenses to date:

- The average labor burn rate was approximately \$25,000 per month. With a remaining labor balance of \$28,326, the program can continue to function for June, but not July unless additional funds are received.
- The Governance task is nearly out of funds. Funds from the Program Management task will be needed to support the Steering Committee meeting in June.
- The Data Management task is completely out of funds. Expenses (\$22,675) were higher than the FY14/15 budget (\$20,127). The increased costs to date have been covered by extra funds in the State Board contract, but that reserve is now exhausted. The reason for the high expenses is that, in April and May, staff spent considerable effort to produce a Quality Assurance Project Plan, which included several responses to comments. Currently, the QAPP is undergoing an additional round of reviews by the TAC. Any additional staff time to revise the QAPP will have to be charged to the budget line for pesticide/toxicity logistics and coordination. A subtask will be created under this budget line for any additional QAPP-related charges.
- The contracts with BioVir and Eurofins for the Pathogens Study (\$72,000 total) have been fully executed. However, no payments to the labs have been made yet.
- The USGS contract for pesticide field sampling and lab work (\$41,000) and nutrient synthesis (\$70,000) has been drafted and reviewed by USGS but has not yet been fully executed.

RESERVE FUNDS

The Delta RMP does not currently have any funds held in reserve. Under the best-case scenario, \$302,903 will be received in FY14/15, which is \$51,903 greater than the FY14/15 budget of \$251,000. However, there is too much uncertainty about when funds will be received and expenses in June 2015 to assume that there will be any funds from the FY14/15 budget that could be put into reserve or carried forward into the FY15/16 budget.

Figures

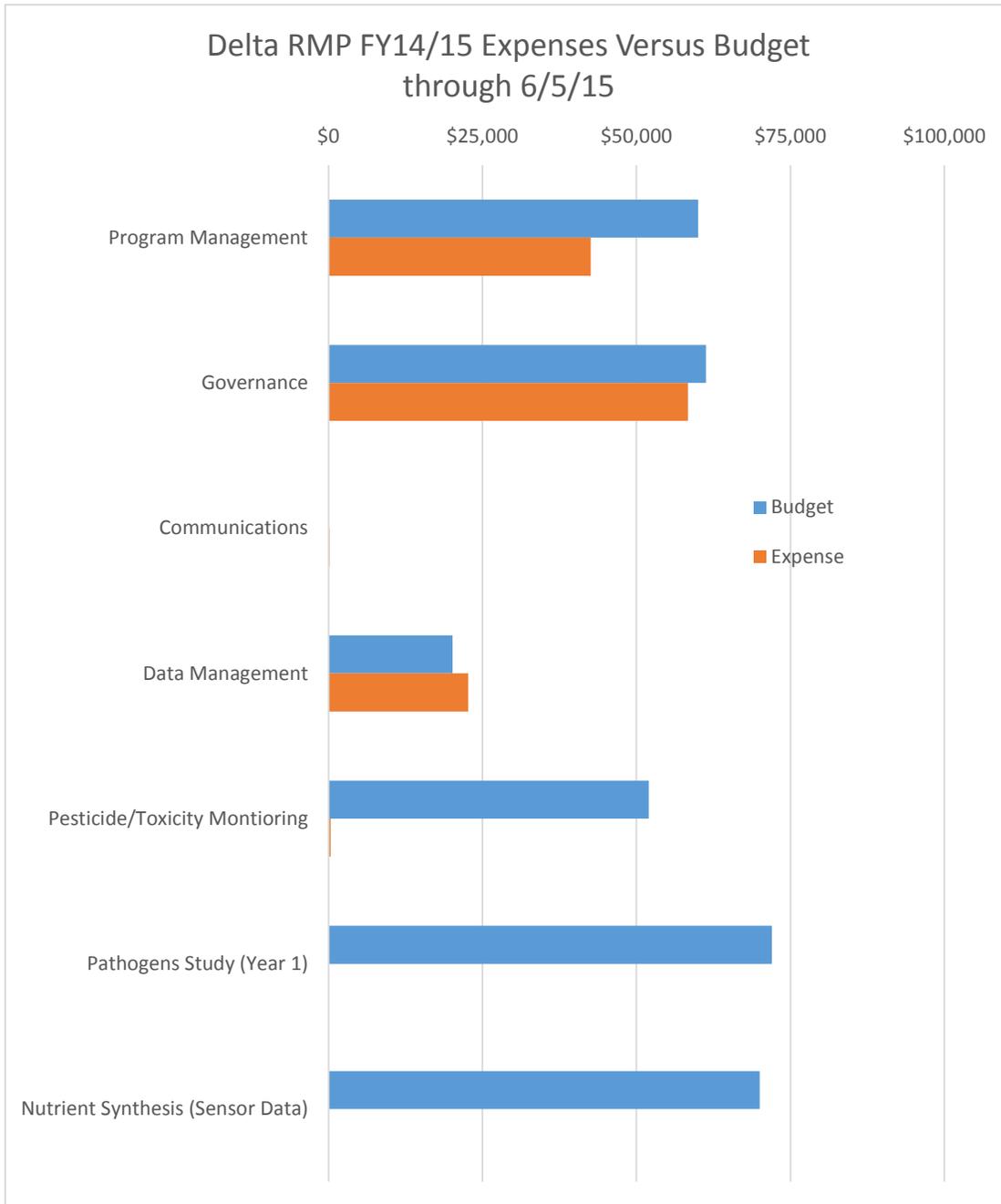


Figure 1: Delta RMP FY14/15 Budget. Budget and expenses from 1/1/15 through 6/5/15 by category.

Tables

Table 1: Delta RMP FY14/15 Revenue. Revenue either expected, invoiced or received through 6/5/15 by participant group.

	Expected	Invoiced	Received	Total
MS4 Phase 1	\$40,000	\$30,000		\$70,000
POTW		\$3,429	\$129,474	\$132,903
SFCWA			\$100,000	\$100,000
Total	\$40,000	\$33,429	\$229,474	\$302,903
Revenue Assumed in FY14/15 Budget			\$251,000	

Table 2: Delta RMP FY14/15 Budget. Budget and expenses from 1/1/15 through 6/5/15 by line item. Columns in tan are for the State Board Funds. Columns in blue are for the RMP participant funds. Columns in white shows the totals across both funds.

	SB Funds Starting Balance	SB Funds FY14/15 Budget	SB Funds Spent	SB Funds Remaining	RMP FY14/15 Funds Budget	RMP FY14/15 Funds Spent	RMP FY14/15 Funds Remaining	Total FY14/15 Budget	Total FY14/15 Spent	Total FY14/15 Remaining
Program Management	\$25,967	\$24,024	\$22,614	\$3,353	\$36,000	\$19,950	\$16,050	\$60,024	\$42,564	\$17,460
Governance	\$46,198	\$40,289	\$45,820	\$378	\$21,000	\$12,538	\$8,462	\$61,289	\$58,358	\$2,931
Communications	\$20,000	\$0	\$174	\$19,826	\$0	\$0	\$0	\$0	\$174	-\$174
Data Management	\$22,793	\$20,127	\$22,675	\$118	\$0	\$0	\$0	\$20,127	\$22,675	-\$2,548
Pesticide/Toxicity Monitoring										
<i>Logistics and Coordination</i>					\$11,000	\$343	\$10,657	\$11,000	\$343	\$10,657
<i>Field Sampling and Pesticide Lab</i>					\$41,000	\$0	\$41,000	\$41,000	\$0	\$41,000
<i>Toxicity/TIE Lab</i>					\$0	\$0	\$0	\$0	\$0	\$0
Pathogens Study (Year 1)					\$72,000	\$0	\$72,000	\$72,000	\$0	\$72,000
Nutrient Synthesis (Sensor Data)					\$70,000	\$0	\$70,000	\$70,000	\$0	\$70,000
Total	\$114,958	\$84,440	\$91,283	\$23,675	\$251,000	\$32,831	\$218,169	\$335,440	\$124,114	\$211,326

MEMO



<p>To: Delta RMP Steering Committee</p> <p>Cc: Delta RMP Technical Advisory Committee</p> <p>Date: June 8, 2015 DRAFT for SC review</p> <p>Subject: Summary of <i>Hyaella</i> toxicity testing issues</p>	<p>Stephen McCord, Ph.D., P.E. 759 Bianco Court Davis, CA 95616 (530) 220-3165 sam@mccenv.com</p> <p>Joe Domagalski, Ph.D. Placer Hall, 6000 J Street Sacramento, CA 95819-6129 (916) 278-3077 joed@usgs.gov</p>
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Overview

The *Hyaella azteca* (hereafter “*Hyaella*”) 96-hour water column acute toxicity test is a possible tool in the Delta Regional Monitoring Program (hereafter “RMP”) pesticide monitoring design. This brief memo states and addresses specific concerns raised regarding *Hyaella* toxicity testing and interpretation, and clarifies the potential outcomes of the Southern California Coastal Water Research Project’s (SCCWRP) inter-lab comparison study. The intent of this memo is to provide sufficient information for the Steering Committee (SC) to respond to these timely questions:

- Should the RMP wait for the SCCWRP-led study’s results before initiating monitoring of toxicity using *Hyaella* as a fourth test organism?
- What other questions or concerns warrant delaying (or excluding) *Hyaella* testing?
- What other special studies should be conducted to address remaining concerns, before deciding to include *Hyaella* testing?

This material was compiled based on several emails, the referenced documents, and conversations with Technical Advisory Committee (TAC) members and proposed TIE Subcommittee members. However, this memo was not peer reviewed (except by Joe Domagalski), nor reviewed and vetted by the TAC.

Recent Decisions

The following decisions in early 2015 have led to the current status.

- On January 22, the SC accepted the recommendation conveyed from the TAC co-chairs to use *Hyaella* for water column toxicity testing, but asked the TAC to provide additional technical information about evaluating and interpreting such data. In addition, the SC asked the TAC to caveat potential test results and to recommend future special studies that could help to resolve any prominent uncertainties in interpretation.
- On March 12, some TAC members suggested that *Hyaella* testing should not be a routine part of the RMP pesticide monitoring design and that special studies should be performed before deciding to include it.

- On January 22, the SC deferred including *Hyaella* testing in fiscal year 2015-2016 monitoring plan, and instead supported an upcoming study led by SCCWRP which would resolve key questions about inter-lab variability.

SCCWRP-led Study

The inter-lab comparison study underway by SCCWRP, in which UCD's Aquatic Health Program Laboratory (AHPL) is participating, is evaluating variability among six toxicity testing labs for *Hyaella* (among other freshwater and marine organisms). The objectives of the study are to:

- Characterize and minimize inter-laboratory variability for testing stormwater [only] samples with marine and freshwater species [2 each], and
- Develop a manual to provide guidelines for testing precision and sensitivity.

Key points relative to RMP interests are summarized in **Table 1**.

Table 1. SCCWRP-led inter-lab toxicity testing study.

RMP Interest	Relevant Study Conditions
Inter-lab variability in toxic response	<ul style="list-style-type: none"> • Labs will use their current internal standard operating procedures (SOPs), not a standardized one • Results will quantify inter-lab variability • Guidance will improve SOP precision and sensitivity
Environmental Relevance and Interpretation	<ul style="list-style-type: none"> • Samples will be spiked with copper, <u>not pyrethroids</u> • "Artificial rainfall" samples (not ambient water) will be tested • All labs to use <i>Hyaella</i> from Chesapeake Cultures (Hayes, VA)^[a]

[a] Weston et al. (2013) compared sensitivity of the lab population from Chesapeake Cultures (Clade C in Fig. 2). This is the most common lab sources for *Hyaella* in CA (including UCD's Granite Canyon Lab, but not AHPL), and their animals are "naive" and therefore sensitive to pyrethroids.

In the first round of testing, each lab will use its own SOP. If results do not vary unreasonably, the study could determine that method variability is not enough of a concern to warrant standardization. Otherwise, the study could determine that standardization of method details is warranted, calling for a separate round of study to adjust each of the variable test conditions independently. Pacific EcoRisk suggested such an additional study component to the other study participants, but none of the other labs offered to do that.

Concerns and Responses

The text below is organized by the two broad types of concerns which have been raised:

- Standardized Test Method Details and Inter-lab Variability
- Ecological Relevance and Interpretation of Results

Standardized Test Method Details and Inter-lab Variability

Concerns Raised

- *Hyalella* test results are subject to greater inter-lab variability than those for other toxicity test organisms because not every element of the procedure is standardized for all labs. Relative to other test species, it is less certain whether the same degree of toxicity to *Hyalella* would be observed by different labs for the same exposure conditions.
- For *Hyalella*, there are no inter-lab comparison data such that the degree of acceptable variability in a test (e.g., the percent minimum significant difference) is not as well characterized for *Hyalella* as it is for other test species. That uncertainty will reduce the RMP's relative confidence in the resulting data from any one lab, in synoptic samples analyzed by different labs, and in trends if different labs are used over time.
- Because pyrethroids are highly hydrophobic and degrade rapidly, the toxicity test method could lead to false negatives (i.e., erroneously indicating a sample as non-toxic) because of sorption or degradation, and the analytical chemistry may be measuring different levels in water and different proportions of active ingredients versus their degradates.

Key Points

- The same testing protocols are meant to be used for the recommended species as well as for the additional (supplemental) species listed in Appendix B, which includes "*Hyalella spp*" (USEPA, 2002). The species recommended in the EPA method are based on considerations that "They are easily cultured in the laboratory, are sensitive to a variety of pollutants, and are generally available throughout the year from commercial sources." In the Delta, all of these conditions apply to *Hyalella*: it is ubiquitous throughout the Bay-Delta, it is particularly sensitive to pyrethroids (which are a class of current use pesticide of interest to the RMP), and it is available for use at several commercial labs (including AHPL). Therefore, it is an appropriate organism for testing acute water column toxicity as stated in the EPA method.
- However, there is no available method-development data that used *Hyalella* to evaluate the method and its inter-laboratory variability. Since 2002, much has been learned about this test species that suggests that test results can be highly influenced by the animal phenotype. USEPA (2002) states that "If there is any doubt as to the identity of the test organisms, representative specimens should be sent to a taxonomic expert to confirm the identification. " In this case, that would be DNA identification.
- Some of the method details have not yet been standardized because EPA doesn't require that level of comparability. Labs can differ on several details, many of which can affect the bioavailability of hydrophobic substances, such as pyrethroids:
 - Sample handling prior to subsampling from sample container;
 - Frequency of sample renewal (daily, 48 hours, etc.);
 - Use of new test chambers upon solution renewal or use the same test chambers;
 - Feeding (i.e., allow food to stay in test chambers during testing or feed for 2 hours and then transfer the organisms from the food-laden solutions to fresh solutions with no food);
 - Number of replicates;
 - Thigmotactic material (e.g., small piece of nitex mesh) in test chamber or not; and
 - Test temperature.

- The SWAMP-contracted AHPL is ELAP-certified by the State, as required for any state-funded or state-mandated testing.
- The SWAMP QAPP gives the detailed list of test parameters for the 96-hour *Hyalella* water column test (see link in References below). The SWAMP Measurement Quality Objectives file lists test acceptability criteria and required test conditions for *Hyalella*. Routine QA performance is documented with ongoing reference toxicant testing and evaluation of control performance with control charts.
- AHPL's Linda Deanovic has described for the RMP their procedures, shared the lab's SOPs, and advised the RMP that AHPL is willing and able to alter their method details. AHPL's SOP was provided for review by the TAC. The approval of SWAMP-funded program efforts such as this Delta RMP toxicity component would be the authority of the SWAMP QA program manager to approve AHPL's SOPs for this effort.

Ecological Relevance and Interpretation of Results

Concerns Raised

- *Hyalella* are found throughout the Delta. The ecological relevance of the water column test using test species that are more sensitive than the in-Delta animals is uncertain.
- *Hyalella* genotype variability in pyrethroid sensitivity (and general variability in toxicity testing) is well recognized.
- *Hyalella* is primarily a sediment-dwelling organism yet would be tested by the RMP in a water-only matrix.

Key Points

Hyalella Toxicity Interests

- A key reason for starting with status and trends monitoring was that the two most comprehensive studies to date relating to toxicity in the Delta conclude that toxic effects on Delta species remain a concern (Johnson et al. 2010, Markewicz et al. 2010).
- *Hyalella* dwell on the bottom of water bodies and scavenge plant and animal matter. They avoid light, hiding under plants, stones, and other objects during the day. They walk on the bottom or swim just above it, thus are exposed to both sediment and overlying water.
- Clark et al. (2015) *Hyalella* study found that: (1) field-collected populations in urban and agricultural settings can be >2 orders of magnitude less sensitive to the pyrethroids than laboratory reared organisms; (2) field-collected organisms varied in their sensitivity (possibly based on land-use activities), with organisms collected from undeveloped sites exhibiting sensitivities similar to laboratory reared organisms; and (3) the sensitivity of field-collected "tolerant" organisms increased in subsequent generations reared under laboratory conditions.
- *Hyalella* is a more sensitive indicator for assessing exposures to pyrethroids than the USEPA method's other recommended species. Nonetheless, there are no guarantees that *Hyalella* are the most pyrethroid-sensitive organisms present in the Delta.
- Monitoring with a less-sensitive *Hyalella* clade would reduce the RMP's ability to detect and differentiate potentially toxic conditions.

- Anderson et al. (2003) confirmed that toxicity tests "provide useful toxicologic information on the potential for pollution to impact receiving waters...demonstrating the relationship between toxicity tests results and ecosystem impacts." It then goes on to explain that additional species should be added to address site-specific issues and, "For example, amphipods (e.g., *H. azteca*), isopods, cladocera, and a variety of aquatic insect species have been shown to be among those most sensitive to pyrethroid pesticides...In addition to survival, the protocols developed with *H. azteca* and *C. tentans* include a number of sublethal endpoints, and may be conducted using both solid-phase and porewater exposures."
- The Delta RMP will only be measuring percent survival as the biological endpoint and not sub-lethal endpoints such as paralysis or growth. Consequently, sublethal endpoints could be occurring in the Delta to *Hyalella* (and other non-monitored species) but would not be observed in RMP monitoring results.
- Weston et al. (2013) demonstrated that population-level ecological effects have already occurred in some field populations of *Hyalella* with the development of genetic resistance to pyrethroids. Genetically resistant populations are known to develop when they are exposed to high levels of a chemical over multiple generations (such as in pesticide-resistant agricultural pests). The consequences of these evolutionary changes are unknown for *Hyalella* and aquatic ecosystems, but reduced genetic diversity can result in populations that do not have genetic variations to tolerate other stressors. To protect aquatic ecosystems, one goal is to keep contaminant levels low enough that field populations do not develop genetic resistance to any one contaminant group and consequently reduce the population diversity. Furthermore, the physiological mechanism that reduces toxic response in an organism comes at unknown costs in terms of bioenergetics, behavior, bioaccumulation and subsequent effects in predators, and more.

Other sources of variability

- Beyond method detail variations among labs, other potential causes of variability/uncertainty include genetic differences between lab and wild populations, representative exposure with "grab" samples in a Delta environment that changes quickly in both space and time, limited biological endpoints to indicate effects, and toxic effects from newer pesticide classes (e.g., neonicanoids, phenylpyrazoles).
- Weston et al. (2013) sampled *Hyalella* from 3 laboratories and 7 California waterbodies and found 3 clades of *Hyalella* in the various waterbodies and a different (4th) used by all 3 labs. All look alike but can differ greatly in sensitivity to pyrethroids. One wild population was as sensitive to the pyrethroids cyfluthrin and bifenthrin as the clade identified in laboratory cultures, one wild population was more sensitive to cyfluthrin, while 5 others were much less sensitive than laboratory cultures.
- Major et al. (2014) also reported that the common laboratory strain of *Hyalella* is genetically distinct from most wild strains and that "laboratories should know and standardize the strain(s) they use to confidently compare toxicity tests across laboratories and determine whether they are an appropriate surrogate for their regions."
- AHPL's Linda Deanovic noted that the *Hyalella* phenotype used since 1989 by AHPL is similarly sensitive to cyfluthrin as other lab cultures.

Corroborating Evidence

- SPoT will conduct acute sediment toxicity testing using *Hyaella*, as it has been doing for the past five years. Although not co-located because sediment deposition areas do not coincide with readily accessible water column sampling sites, SPoT sites are nearby and considered to be sampling the same overlying water. Thus, SPoT results at co-located sites could be used to corroborate RMP monitoring results.
- The inclusion of *Hyaella* testing would help address the presence of pyrethroids singly or in combination at concentrations exceeding toxicity thresholds (which are near or below analytical detection limits) rather than demonstrating impacts to water bodies (Lydy et al., 2004). *Hyaella* is a useful indicator for ecological risk associated with pyrethroid pesticides, adjuvants, degradates, and synergic effects in the Delta.
- USGS analytical methods for individual pyrethroids can detect them below toxic concentrations. Collectively, those results can represent their likely toxic effects through the acute additive criteria-normalized concentration calculation in the draft Central Valley Pyrethroids TMDL.
- The weight-of-evidence approach for identifying pyrethroid toxicity in Delta water column samples will consider toxic responses by *Hyaella*, analytical chemistry data compared to known thresholds (particularly those in the forthcoming Central Valley Pyrethroids TMDL), and Toxicity Identification Evaluations (TIEs). Caveats to those results would be derived from laboratory quality assurance results; spatial extent, degree of toxic response and duration; and any other indications of uncertainty such as inter-lab comparisons (at least for toxicity, but potentially also for chemistry).
- AHPL, UC Davis Granite Canyon Laboratory, Pacific Ecorisk, and others have used *Hyaella* for years for the statewide SWAMP program. In addition, the *Hyaella* water-only test was used by the Interagency Ecological Program to investigate the Pelagic Organism Decline in the Delta. The recent SWAMP report (http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reports/2014_swamp_review_rpt.pdf) mentions those efforts, and there are ~3500 records of water column acute toxicity test results for *Hyaella* since 2004 in CEDEN.

Regulatory Significance

- The Delta is already listed as impaired for toxicity and pyrethroids. With the Central Valley Pyrethroids TMDL in development, the RMP has an opportunity to monitor trends, address forthcoming monitoring requirements, conduct site-specific evaluations, track beneficial use attainment, and answer management questions by conducting *Hyaella* testing—as long as those tests are reliable.
- Concerns with regulatory impacts of “false” positives apply to all ambient monitoring. Although the Delta RMP is not a regulatory program, all monitoring data collected by the RMP may be used by managers and regulators to make decisions. If *Hyaella* toxicity is found, the Regional Board would have to conduct follow-up testing to see if it could be directly attributable to a discharger to establish any regulatory impact.

Optional Paths Forward

The SC could choose to include *Hyaella* as a toxicity test organism now, and qualify the results with the information presented above. Alternatively (or concurrently), the SC could strive to address remaining concerns, weighing the value of greater certainty (and expense to get it) against the lack of monitoring activity (or greater confidence) in the interim. Potential special studies to address those concerns, roughly in order of highest priority first, are described in **Table 2**.

References

- Anderson, B (2003). "Overview of Freshwater and Marine Toxicity Tests." Report prepared for OEHHA. Sept. 150 pp.
- Clark SL, RS Ogle, A Gantner, LW Hall, G Mitchell, J Giddings, M McCoole, M Dobbs, K Henry, and T Valenti (2015). "Comparative sensitivity of field and laboratory populations of *Hyaella azteca* to the pyrethroid insecticides bifenthrin and cypermethrin." *Environ Toxicol Chem*, 9999:1-13.
- Lydy, MJ, JB Belden, CE Wheelock, BD Hammock, DL Denton, (2004). Challenges in regulating pesticide mixtures. *Ecology and Society*. 9(6):1.
- Major, K, DJ Soucek, Giordano, MJ Wetzel, F Soto-Adames (2013). The common ecotoxicology laboratory strain of *Hyaella azteca* is genetically distinct from most wild strains sampled in eastern North America. *Environmental Toxicology and Chemistry*. 32(11): 2637–2647.
- SWAMP QAPP specifies Measurement Quality Objectives
(http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/mqo/15_acute_toxicity.pdf).
- USEPA (2002). Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fifth Edition. Office of Water, Washington, DC. EPA/821/R602/012.
(http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_disk2_atx.pdf).
- Weston, DP, HC Poynton, GA Wellborn, MJ Lydy, BJ Blalock, MS Sepulveda, JK Colbourne (2013). "Multiple origins of pyrethroid insecticide resistance across the species complex of a nontarget aquatic crustacean, *Hyaella azteca*." *PNAS*, 110 (41): 16532–16537.
www.pnas.org/cgi/doi/10.1073/pnas.1302023110.

Table 2. *Hyalella* special study options and relevant considerations for the RMP.

Special Study	Costs[‡]	Benefits	Comments
SCCWRP inter-lab study	<ul style="list-style-type: none"> No direct costs to RMP Delay of 6-12 months 	<ul style="list-style-type: none"> Indication of historical inter-lab variability in <i>Hyalella</i> testing Improved testing precision and sensitivity 	<ul style="list-style-type: none"> Potential change in SOP if recommend standardization
Inter-lab pyrethroids comparison add-on to evaluate effects of SOP variability	<ul style="list-style-type: none"> ~\$300K(?) depending on rigor and number of labs Delay of 6-12 months 	<ul style="list-style-type: none"> Improved testing precision and sensitivity 	<ul style="list-style-type: none"> Potential change in SOP if recommend standardization
Inter-lab comparison add-on to test Delta samples	<ul style="list-style-type: none"> ~\$300K(?) depending on rigor and number of labs Delay of 6-12 months 	<ul style="list-style-type: none"> Indication of historical inter-lab variability in <i>Hyalella</i> testing Improved testing precision and sensitivity 	<ul style="list-style-type: none"> Build on recent paper by Clark et al. (2015)
Perform genetic analyses to determine and standardize which clade ambient and test organisms are from and their relative sensitivity to pyrethroids.	<ul style="list-style-type: none"> ~\$20K for DNA testing of various lab cultures, coordinating, analyzing data Delay of 3-6 months 	<ul style="list-style-type: none"> Confirmation that AHPL clade is similarly sensitive to pyrethroids as other toxicity testing labs in CA 	<ul style="list-style-type: none"> Most labs are sourced from same lab in VA and have exhibited similarly low pyrethroid sensitivities
Monitor non-lethal toxicity endpoints using biomarkers	<ul style="list-style-type: none"> ~20% increase in toxicity testing costs for coordinating, contracting, testing, and analyzing data 	<ul style="list-style-type: none"> Increased sensitivity for detecting toxic effects 	<ul style="list-style-type: none"> Implications of non-lethal effects are uncertain
Add toxicity test species that are sensitive to newer pesticide classes	<ul style="list-style-type: none"> ~25% increase in toxicity testing costs per species 	<ul style="list-style-type: none"> Characterization of toxic effects from newer classes of pesticides (e.g., Chironomus midges are more susceptible to fipronil) 	<ul style="list-style-type: none"> Similar concerns as for <i>Hyalella</i> may be raised regarding non-standardized methods and uncertainty in results
Conduct routine inter-lab testing, providing certified standards, confirmation chemistry and data analysis for <i>Hyalella</i>	<ul style="list-style-type: none"> ~20% increase in toxicity testing costs for coordinating, contracting, testing, and analyzing data 	<ul style="list-style-type: none"> Characterization of inter-lab variability Confirmation of toxicity test results 	<ul style="list-style-type: none"> Random sampling of one site per sampling event (10-20% splits) is most likely to show that a second lab is also not detecting toxic responses because so little toxicity is present. Toxicity at individual sites will already be assessed by both the tox tests and corroborating

Special Study	Costs [‡]	Benefits	Comments
			evidence from the analytical chemistry (and possibly a TIE).
Evaluate site-specific factors (e.g., DOC, alkalinity, sediment partitioning) that might mitigate or enhance toxicity.	<ul style="list-style-type: none"> ~\$300K for additional sampling and analysis, and data analyses 	<ul style="list-style-type: none"> Characterization of effects of sample water conditions on toxicity 	<ul style="list-style-type: none"> The CV Pyrethroids TMDL proposes an objective calculation method and allows calculation of site-specific partition coefficients.
Evaluate sampling methods (e.g., shoreline vs. centerline grab, cross-section composite, pumped) on sample representativeness	<ul style="list-style-type: none"> ~\$300K for additional sampling and analysis, and data analyses 	<ul style="list-style-type: none"> Characterization of sampling method bias Improved sampling SOPs 	<ul style="list-style-type: none"> At such low concentrations many factors could significantly bias data.
Conduct <i>ex situ</i> , flow-through testing at indicator sites	<ul style="list-style-type: none"> 50%(?) increase in cost per sampling site to operate field site and monitor biomarkers 	<ul style="list-style-type: none"> Reduce variability and uncertainty associated with time-varying exposures and pyrethroid degradation rates 	<ul style="list-style-type: none"> Neonicotinoids such as imidacloprid demonstrate greater toxicity in longer-term chronic toxicity tests, which can't be monitored by acute tests or grab samples
Conduct benthic community surveys	<ul style="list-style-type: none"> ~\$30K for one synoptic sampling event per year 	<ul style="list-style-type: none"> Additional data to confirm environmental impacts of pesticides 	<ul style="list-style-type: none"> Uncertain ability to find reference site
Support the international Hyalella Advisory Group	<ul style="list-style-type: none"> No direct costs to RMP 	<ul style="list-style-type: none"> Potential source of information and verification, and external review 	<ul style="list-style-type: none"> Experts from across the US and Canada addressing issues associated with <u>chronic sediment toxicity testing</u> Some TAC members participate

‡ Cost estimates are very approximate, provided only for general scaling and comparison.

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DRAFT

Delta Regional Monitoring Program

**FY15-16 Budget and
Preliminary Workplan**

June 9, 2015



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INTRODUCTION

The purpose of this memorandum is to present the Steering Committee with the information needed to set the FY15/16 Delta RMP budget and workplan. The revenue for FY15/16 is insufficient to manage the program and fully implement the Monitoring Design. Therefore, the Steering Committee will need to set priorities and budget allocations to partially implement the program.

This report summarizes the:

- Expected revenue for FY15/16,
- A detailed programmatic budget and workplan, and
- Options for partial implementation of the Monitoring Design with the remaining funding.

The budgets presented have been divided into two halves of the year: July 1, 2015 to December 31, 2015 and January 1, 2016 to June 30, 2016. The reason for the two half-year budgets is because work to be completed in the second half of the year (including programmatic tasks) is contingent on funding that is expected in the fall and winter.

Approval of the FY15/16 Budget and Workplan will be a multi-step process:

- First, at the June 16, 2016 meeting, the Steering Committee will be asked to set budget allocations for programmatic and monitoring activities in FY15/16 based on the available revenue.
- Second, ASC will prepare the detailed workplan to implement the budget, including subcontractor selection. The workplan will be distributed to the Steering Committee for approval. The workplan will include a process for verifying that sufficient revenue is secure before implementing the workplan for the second half of the year.
- Third, in the fall, the Steering Committee will be presented with information about revenue received or expected for the second half of the year. If revenues are lower than expected, the Steering Committee will decide whether to cancel implementation of some budgeted tasks for the second half of the year.

FY15/16 will start on July 1, 2015. There is not likely to be any unallocated funds in the FY14/15 budget for program operations and the program does not have any cash reserves. Therefore, approval of at least the programmatic budget for the first half of FY15/16 is necessary to continue program operations uninterrupted.

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FY15/16 REVENUE

The total expected revenue for FY15/16 is \$855k. However, this total includes funds that will be received during different months with different levels of certainty. Some of the funds are also 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.

In terms of timing, Delta RMP funds are scheduled to arrive in three waves. By July 31, 2015, \$545k is expected. By September 30, 2015, another \$210k should arrive. Finally, another \$100,000 should be received by March 31, 2016. The funds arriving in the September and May are considered revenue for the second half of the year.

In terms of certainty, funds for which there is a contractual or permit obligation should be treated as being more certain. The different funding sources are listed below in order of decreasing certainty:

- ASC-State Board Contract Funds
- SWAMP Contract Funds for toxicity analyses
- Contributions from Program Participants for an approved exchange of permit monitoring
- Contributions from Program Participants without an approved exchange

Table 1 summarizes the expected revenue for FY15/16 both in terms of timing and certainty. The table shows that \$545k of revenue is expected for the first half of FY15/16, most of which is in the high certainty category. For the second half of the year, another \$310k of revenue is expected, but with a lower level of certainty.

Table 1: Delta RMP FY15/16 Revenue. Revenue is organized by expected arrival date and source of funds. Funds from the ASC-State Board Contract, the SWAMP Contract, and from contributions for approved exchange of permit monitoring are considered to have a higher level of certainty.

Source	For the 7/1/15 – 12/31/15 Period	For the 1/1/16 – 6/30/16 Period
ASC-State Board Contract Funds	\$19,826 (Earmarked for Communications Plan)	\$0
SWAMP Contract Funds	\$200,000	\$0
Participant Contributions	\$325,000 (of which \$243,048 from approved exchanges of permit monitoring)	\$310,000 (\$0 higher certainty)
Total for the 6-month Period	\$544,826 (\$462,874 higher certainty)	\$310,000 (\$0 higher certainty)
Grand Total for the Year		\$854,826 (\$462,874 higher certainty)

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FY15/16 PROGRAMMATIC EXPENSES

Delta RMP expenses fall into two categories: programmatic expenses and expenses for monitoring and special studies. This section details the expected programmatic expenses for FY15/16, divided into two half-year budgets.

The programmatic budget covers the following categories of tasks:

- Program Management
- Governance
- Quality Assurance
- Communications
- Data Management

The estimated cost to implement these tasks is \$143k in the first half of the year and \$134k in the second half of the year (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 program management and governance costs in order to maximize funds available for technical studies and reports. However, managing a stakeholder process, such as the Delta RMP, requires a high level of governance process, effort and cost. The estimated costs for program management and governance in FY15/16 reflect the level of effort that has been requested of and delivered by ASC during the past fiscal year. It may be possible to reduce this level of effort as the program matures but probably not significantly due to the high level of stakeholder engagement with this program.

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Table 2: Proposed Delta RMP FY15/16 Programmatic Budget. The funding levels proposed are conservative based on the level of effort requested and delivered in FY14/15.

		Labor	Subcontract	Direct Cost	Grand Total	Planned For 7/1/15-12/31/15 Period	Planned For 1/1/16-6/30/16 Period
1. Program Management	A. Program Planning	\$45,000			\$45,000	\$22,500	\$22,500
	B. Contract and Financial Management	\$42,000		\$5,000	\$47,000	\$23,500	\$23,500
2. Governance	A. SC meetings	\$40,000	\$5,400	\$500	\$45,900	\$22,950	\$22,950
	B. TAC meetings	\$40,000	\$32,000	\$500	\$72,500	\$36,250	\$36,250
3. Quality Assurance	A. Quality Assurance System	\$10,000			\$10,000		\$10,000
	B. Technical Oversight and Coordination	\$11,000			\$11,000	\$5,500	\$5,500
4. Communications	A. Communications Plan	\$16,000			\$16,000	\$16,000	
	B. Communications Product	\$4,000			\$4,000	\$4,000	\$2,000
	C. RMP Website Maintenance	\$4,000			\$4,000	\$2,000	\$2,000
	D. Stakeholder Meetings	\$9,000		\$500	\$9,500		\$9,500
5. Data Management	A. Pathogen Study (Year 1)	\$10,000			\$10,000	\$10,000	
Grand Total		\$231,000	\$37,400	\$6,500	\$274,900	\$142,700	\$134,200

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Table 3: Delta RMP FY15/16 Programmatic Task Descriptions, Budget Justifications, and Deliverables. The funding levels proposed are conservative based on the level of effort requested and delivered in FY14/15.

Task	Subtask	Budget	Description	Budget Justification	Deliverables
1. Program Management	A. Program Planning	\$45,000	Preparing annual workplans and budgets. Tracking deliverables and action items. Updating foundational documents including Multi-Year Plan and Monitoring Design (as needed).	40 hours for Program Manager to produce the Annual Workplan and Budget. 100 hours (2 hrs/wk) for Program Manager to track and execute deliverables/ action items. 180 hours (3.6 hr/wk) for technical staff to complete PM tasks, contribute to workplan and update program documents.	FY16/17 Annual Workplan and Budget (June 2016). Quarterly reports on deliverables and action items provided in the SC agenda package. Updates to foundational documents.
	B. Contract and Financial Management	\$47,000	Tracking expenditures versus budget. Providing quarterly financial updates to the Steering Committee. Developing contracts and managing subcontractors. Invoicing program participants. Preparing a MOU based on the Financial Management Plan.	130 hours for Contracts Manager and 40 hours for accountant (1 hr/\$5000 budget). 40 hours for Program Manager and 40 hours for technical staff to draft and negotiate MOU and compile legal advice. \$5,000 for legal consultations regarding the MOU. 50 hours for Program Manager (1 hr/wk) and 50 hours (1 hr/wk) for Environmental Analyst for monitoring program subcontracts and finances weekly.	MOU for financial management and invoicing (March 2016). Quarterly updates on FY15/16 Budget provided in the SC agenda package. Contract management.

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Task	Subtask	Budget	Description	Budget Justification	Deliverables
2. Governance	A. SC meetings	\$45,900	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, following up on action items, meeting with Co-Chairs and stakeholders outside of meetings.	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: \$5,400)	4 Steering Committee meetings and meeting summaries
	B. TAC meetings	\$72,500	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, following up on action items, meeting with Co-Chairs and stakeholders outside of meetings. (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 with ASC providing leadership and support. The cost for this option would be \$50,500.)	4 meetings per year. For each meeting: 20 hours for Program Manager, 40 hours for Lead Staff, 20 hours for Environmental Analyst. Travel from Richmond to Sacramento (\$125/meeting). TAC Co-Chair services provided by MEI (quote: \$32,000) and USGS. The USGS Co-Chair provides \$36,000 in in-kind support in this role.	4 TRC meetings and meeting summaries
3. Quality Assurance	A. Quality Assurance System	\$10,000	Updating the Quality Assurance Project Plan, coordinating interlaboratory comparison tests (as needed), researching analytical methods, maintaining laboratory SOP file system.	16 hours for ASC QA Officer. 16 hours for ASC senior chemist. 40 hours for RMP technical staff. For reference, the QAPP development cost ~\$20,000.	Revisions to QAPP (June 2016).

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Task	Subtask	Budget	Description	Budget Justification	Deliverables
	B. Technical Oversight and Coordination	\$11,000	Reviewing reports. Participating/coordinating the TIE subcommittee and other technical committees.	64 hours for technical staff (16 hours per quarter). 16 hours for ASC Senior Scientists (4 hours per quarter).	
4. Communications	A. Communications Plan	\$16,000	Preparing a Communications Plan that will describe how Delta RMP data will be interpreted, reported to internal and external stakeholders, and used or adaptive management.	16 hours for Program Manager. 100 hours for Lead Staff. These costs will be covered by the State Board Contract Funds.	Communications Plan (September 2015).
	B. Communications Product	\$4,000	Preparing a communications product as required under the SWRCB contract by 2/1/16. The type of product will be defined by the SC. The working proposal is a summary of Delta RMP accomplishments to date and a charter document (compiled from existing foundational documents). These two documents could be used to recruit additional RMP participants.	10 hours for Program Manager. 20 hours for Lead Staff. These costs will be covered by the State Board Contract Funds.	Communications Product (February 2016).
	C. RMP Website Maintenance	\$4,000	Updating the RMP website with new reports and making RMP content on the website easier to find. Maintenance of ASC online data access tools (e.g., CD3) are provided at no cost to the Delta RMP. The tools are funded by the Bay RMP and other ASC projects.	Assuming 16 hours for IT staff. 16 hours for Environmental Analyst. 6 hours for Lead Staff.	Updated Delta RMP content on new ASC website (quarterly)

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Task	Subtask	Budget	Description	Budget Justification	Deliverables
	D. Stakeholder Meetings	\$9,500	Preparing for and attending RMP stakeholder meetings (e.g., CVCWA, IEP, ILRP, etc.) as well as communicating directly with stakeholder representatives.	32 hours for Program Manager (1 day per quarter). 32 hours for Lead Staff. Travel from Richmond to Sacramento (\$125/meeting).	RMP attendance and presentations at 4 participant board meetings. The purpose of these meetings is to identify participants' information needs and regulatory drivers. Knowing this information is critical for the Delta RMP to be relevant to stakeholders and to develop a multi-year plan and budget for research.
5. Data Management	A. Pathogen Study (Year 1)	\$10,000	Data management costs for Year 1 of the Pathogens Study. This study is already underway and the data must be managed. Formatting, transcribing field collection information, performing QA/QC review, and uploading field and analytical results to SFEI's RDC database and replicating to CEDEN. Coordinating team, collection agencies, and laboratories. Tracking data deliverables and pending issues.	Quote from SFEI Data Management Team.	Quality Assurance Report on Year 1 Pathogens Study data (September 2016).

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FY15/16 EXPENSES FOR MONITORING AND SPECIAL STUDIES

The Monitoring Design outlines a range of activities to study the four program focus areas: current use pesticides, mercury, nutrients, and pathogens.

The costs to implement the minimum design for each of these focus areas are shown on Table 4. This table shows the costs for data generation from the Monitoring Design plus data management and reporting costs. In order to clearly show the funding need for FY15/16, another column was added to Table 4 that contains the funds that have already been allocated to the task in the FY14/15 budget or in-kind support.

After accounting for in-kind or previously allocated funds, the total funding needed to implement the minimum elements of the Monitoring Design is \$774k, compared to \$380k available (see bottom of Table 4). Therefore, the Steering Committee will need to set priorities and budget allocations to partially implement the program.

To assist the Steering Committee with this prioritization exercise, ASC analyzed how many different ways the funds could be allocated using the costs from Table 4 and staying with budget. The process for identifying each possible funding option was to:

- Assume one focus area is the top priority. (Note: The exercise assumed that each one of the focus areas was the top priority to generate different options. It was not a value judgment on the priority of the focus area for the Delta RMP.)
- Allocate cash and in-kind resources to fully fund the studies for that focus area using funds from the first half of the year first.
- If there are funds left over, assume a different focus area as the next priority and fully fund those studies using funds from the first half of the year first.
- If there are still funds left over, assume a third focus area as the priority and allocate funding up to available amount.
- Identify and eliminate options that are identical (e.g., options that started with a different highest priority focus area but ended with the same mix of studies that could be funded).

This analysis showed that there are only four independent combinations of studies that could be implemented in FY15/16 without exceeding the available revenue. The four funding options are shown in Table 5. Key points from the exercise are:

- Pesticide monitoring maximizes the use of available funds because no other focus area can benefit from the SWAMP contract funds (Option A).
- If the Steering Committee decides to fund pesticide monitoring as a top priority, the only other study that can be implemented at the same time is nutrient synthesis work (Option A).
- The option that implements work on the greatest number of focus areas is a combination of pathogens, mercury, and nutrients (Option C)
- The exercise assumes that programmatic costs and study costs cannot be changed. In reality, the Steering Committee may decide to reduce the allocations for certain tasks to afford more flexibility.

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The point of this exercise was not to set priorities for the Steering Committee but rather to distill the complicated budget and revenue information into options the Steering Committee can decide between. The Steering Committee is urged to choose one of the options listed in Table 5. After the Steering Committee has made this choice, thereby allocating funding to specific studies from the Monitoring Design, ASC will prepare the detailed workplan to implement the budget, including subcontractor selection.

In addition to funding the studies from the Monitoring Design, the Steering Committee should also consider if it is a priority to conduct a program review by external advisers to determine whether the management questions have been articulated appropriately and whether the monitoring design is capable of answering the questions. The expected cost to convene an expert panel is \$43k. There may be a way for the Delta Science Program to facilitate the review but (a) the Delta RMP would still need to budget some funds for it and (b) the review would most likely consider the Delta RMP within the broader context of all Delta monitoring programs.

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Table 4: Preliminary budget estimates for the implementation of the initial Delta RMP monitoring design. Data management and reporting costs have been added to the data generation costs from the Monitoring Design.

Item	Program Element	Cost for Data Generation (from Monitoring Design)	Cost for Data Management and Reporting	Cost for Data Generation, Data Mgmt. and Reporting	In-Kind or Previously Allocated Funds for Task	Funding Need	Comments
Current Use Pesticides							
1A	Pesticide/Toxicity Monitoring (Minimum Design)	\$477,000	\$36,000	\$513,000	\$200,000	\$313,000	Available funding is SWAMP contract
Mercury							
2A	Sport Fish and Water Monitoring (Minimum Design)	\$142,000	\$35,000	\$177,000	\$0	\$177,000	
Nutrients							
3A	Synthesis of sensor data	\$70,000	\$0	\$70,000	\$70,000	\$0	Available funding is what was already approved in the FY14/15 budget
3B	Compilation and synthesis of other nutrient datasets from the Delta	\$235,000	\$0	\$235,000	\$195,000	\$40,000	Available funding is from other ASC contracts to study nutrients in the Delta.
3C	Identify critical data gaps and develop initial recommendations for monitoring design	\$50,000	\$0	\$50,000	\$0	\$50,000	
3D	Develop Nutrient Monitoring Design	\$65,000	\$0	\$65,000	\$0	\$65,000	
Pathogens							
4A	Year 1 Ambient Monitoring (Medium Design)	\$72,000	\$10,000	\$82,000	\$82,000	\$0	Available funding is what was already approved in the FY14/15 budget (\$72,000) plus \$10,000 in the FY15/16 Programmatic Budget for data management.
4B	Year 2 Ambient Monitoring (Medium Design)	\$72,000	\$10,000	\$82,000	\$0	\$82,000	Price could be reduced to \$41,000 potentially.
4C	MST/Infectivity Studies	\$47,500	\$0	\$47,500	\$0	\$47,500	
Total Funding Need						\$774,500	
Total FY15/16 Revenue						\$855,000	
Minus Programmatic Budget						\$274,900	
Minus SWAMP Contract						\$200,000	Accounted for as in-kind on Line 1A
Revenue Available to Implement Monitoring Design						\$380,100	

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Table 5: Potential funding options for allocating the FY15/16 revenue to partially implement the Monitoring Design. The options are labeled according the focus areas could be addressed by each option.

Option A: Pesticides-Nutrients

Time Period	7/1/15-12/31/15		1/1/16-6/30/16	
Revenue Type	Cash	SWAMP	Cash	SWAMP
Revenue (\$,000)	\$345	\$200	\$310	\$0
Expense (\$,000)				
Programmatic Budget	\$143	\$0	\$134	\$0
Pesticide/Toxicity Monitoring (1A)	\$202	\$200	\$111	\$0
Identify critical nutrient data gaps (3C)			\$50	
Unused Funds (\$,000)	\$0	\$0	\$15	\$0

Option B: Nutrients-Mercury

Time Period	7/1/15-12/31/15		1/1/16-6/30/16	
Revenue Type	Cash	SWAMP	Cash	SWAMP
Revenue (\$,000)	\$345	\$200	\$310	\$0
Expense (\$,000)				
Programmatic Budget	\$143	\$0	\$134	\$0
Compilation of nutrient datasets (3B)	\$40	\$0	\$0	\$0
Identify critical nutrient data gaps (3C)	\$50	\$0	\$0	\$0
Nutrient monitoring design (3D)	\$65	\$0	\$0	\$0
Mercury sport fish and water monitoring (2A)	\$47	\$0	\$130	\$0
Unused Funds (\$,000)	\$0	\$200	\$46	\$0

**FY15/16 Delta RMP Budget and Preliminary Workplan
Draft For SC Review – 06/09/2015**

Table 5 (cont.)

Option C: Pathogens-Mercury-Nutrients

Time Period	7/1/15-12/31/15		1/1/16-6/30/16	
Revenue Type	Cash	SWAMP	Cash	SWAMP
Revenue (\$,000)	\$345	\$200	\$310	\$0
Expense (\$,000)				
Programmatic Budget	\$143	\$0	\$134	\$0
Pathogens Year 2 Ambient Monitoring (4A)	\$82	\$0	\$0	\$0
Pathogens MST/Infectivity Studies (4B)	\$48	\$0	\$0	\$0
Mercury sport fish and water monitoring (2A)	\$73	\$0	\$104	\$0
Identify critical nutrient data gaps (3C)	\$0	\$0	\$50	\$0
Unused Funds (\$,000)	\$0	\$200	\$22	\$0

Option D: Pathogens-Nutrients

Time Period	7/1/15-12/31/15		1/1/16-6/30/16	
Revenue Type	Cash	SWAMP	Cash	SWAMP
Revenue (\$,000)	\$345	\$200	\$310	\$0
Expense (\$,000)				
Programmatic Budget	\$143	\$0	\$134	\$0
Pathogens Year 2 Ambient Monitoring (4A)	\$82	\$0	\$0	\$0
Pathogens MST/Infectivity Studies (4B)	\$48	\$0	\$0	\$0
Compilation of nutrient datasets (3B)	\$40	\$0	\$0	\$0
Identify critical nutrient data gaps (3C)	\$33	\$0	\$17	\$0
Nutrient monitoring design (3D)			\$65	\$0
Unused Funds (\$,000)	\$0	\$200	\$94	\$0

DRAFT-Adequate Participation in the Delta RMP

The Regional Board allows, through permit provisions, permitted dischargers in the Sacramento/San Joaquin watershed to demonstrate “adequate participation” in the Delta RMP *in lieu* of performing specified monitoring tasks that are otherwise required by their permits. Permitted dischargers are entities subject to NPDES or WDR permit requirements for monitoring. The Regional Board relies on the Delta RMP Steering Committee to define what “adequate participation” is, and whether or not dischargers and other members of the Steering Committee are adequately participating in the Delta RMP. The Steering Committee expects and depends on the Regional Board to be sufficiently flexible in its approval of proposed monitoring requirement exchanges, so as to encourage permitted dischargers to participate.

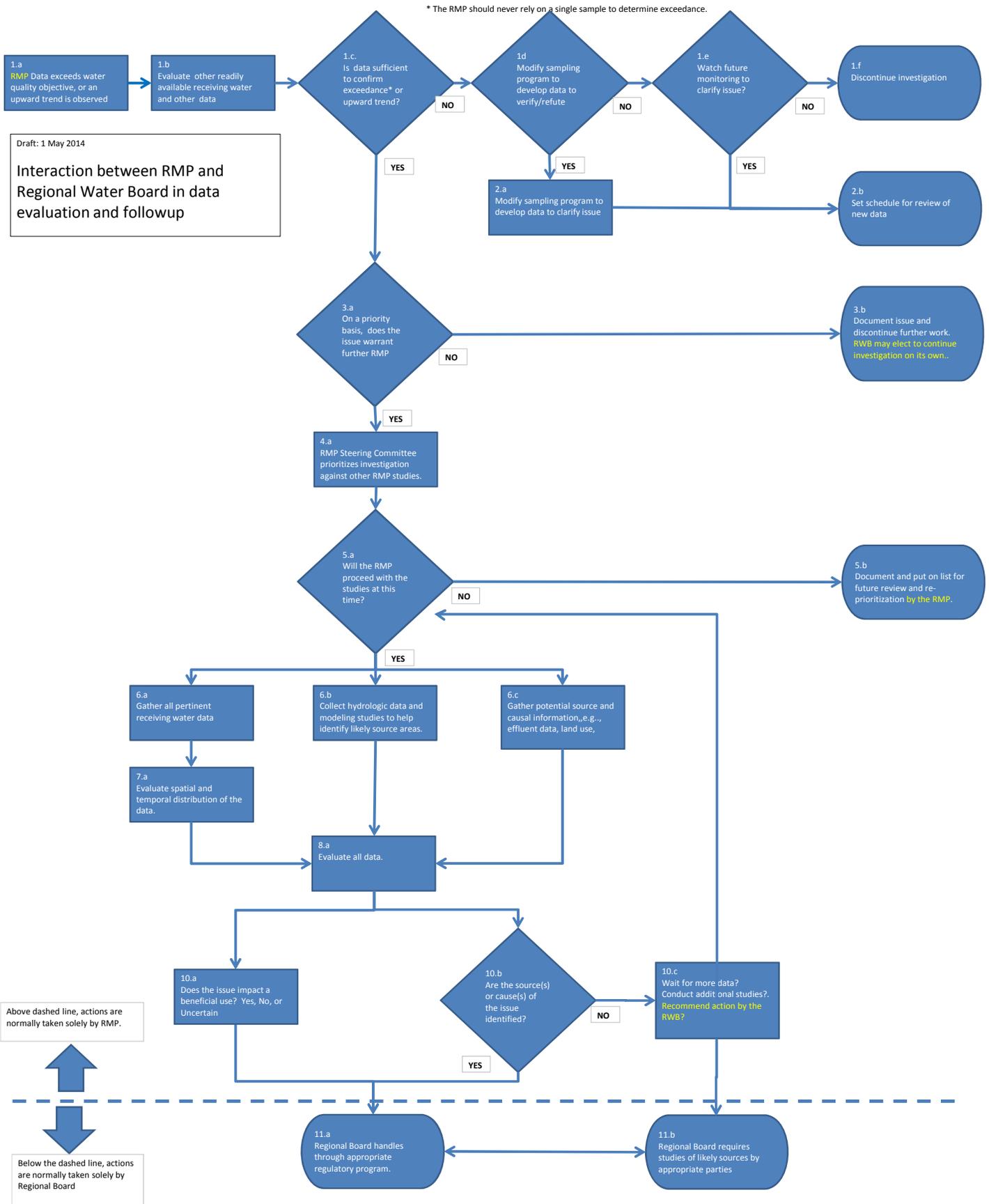
The Steering Committee is comprised of two regulatory members (USEPA and the Central Valley Water Board), one water supply (State and Federal Water Contractors Agency), one coordinated monitoring program (Interagency Ecological Program), three publically owned treatment works (POTWs-one each representing small, medium, and large POTWs), two stormwater (one representing large cities, and one representing smaller cities), one irrigated agriculture, and one seat for the Resources Agency that has not been filled. The Steering Committee defines “adequate participation” in the Delta RMP, with respect to obtaining relief from permit monitoring requirements, as contributing financially, or in kind, to the RMP at the level established on a yearly basis by the Steering Committee, as described below:

1. An individual permitted discharger will be deemed to have adequate participation in the Delta RMP, for a particular funding year, if they contribute funds to the program equal to or exceeding their otherwise expected individual monitoring requirements contained in their permits.
2. The total Delta RMP program budget will be set by the Steering Committee. The budget should realistically estimate funds likely to be received, and the budget must be voted on by only those Steering Committee members that contribute funds or approved in-kind services to the Delta RMP.
3. For participants that do not have permits issued by the Regional Water Board, requiring monitoring, adequate participation consists of funding or in-kind services contributed to the RMP that are reasonably equivalent to other participants in the Delta RMP.
4. Participation by regulatory agencies will consist of providing resources directly or indirectly to the program through the Surface Water Ambient Monitoring Program (SWAMP), grants, or ????
5. For categories of permitted dischargers (e.g. agriculture, stormwater, and POTWs), the budget will attempt to incorporate a level of funding that is reasonably equivalent to the cost of monitoring that can be avoided through participation in the RMP.
6. Each permitted discharger category will be assigned by the steering committee a specified portion of the total program budget. These amounts will initially be determined by exchanging existing permit requirements for Delta RMP support, as approved by the Regional Board.

7. After the initial exchange of existing permit requirements for Delta RMP funding, each permitted discharger category is expected to negotiate within their group to develop an ongoing formula for the expected contribution for each of its members. Categories of dischargers/steering committee participants are encouraged, but not required, to use objective criteria such as the following:
 - a. total population in service area (e.g. stormwater, water supply),
 - b. permitted flow and level of treatment(e.g., POTWs),
 - c. Acres of irrigated agricultural (e.g. irrigated lands program)
8. Individual members of a permitted discharger category are responsible only for contributing their individual funding allotment. Failure of any member to contribute their expected individual funding shall not result in a raising of funding requirements for the other members.
9. If a permitted discharger category cannot reach agreement regarding a formula for allocating the category funding allotment among its members, then individual members will be deemed to have adequate participation if they continue to contribute the initial funding level that was approved for exchange by the Regional Board.
10. In-kind services do not include participation on the Steering Committee (SC), or Technical Advisory Committee (TAC), or any subcommittees formed by either the SC or TAC. In-kind contributions may count towards a participant's contribution, but only if they can be monetized and replace a cost that the program would have to pay otherwise. In-kind contributions must meet the following two criteria:
 - a. Replace an expense in the approved program budget.
 - b. Agreed upon by the SC by majority vote.

Communications Plan Outline

1. Data Interpretation
 - a. What analyses are needed to answer the management and assessment questions?
 - i. Graphical tools
 - ii. Spatial analyses
 - iii. Statistical tests
2. Data Reporting
 - a. How will results be communicated to internal and external stakeholders?
 - i. Communication Products
 - ii. Internal review process
 - iii. External review process
 - iv. Public release process
3. Adaptive Management
 - a. How will results be used to update the Monitoring Design?
 - i. Schedule and process for updating the Monitoring Design
 - ii. Schedule and process for coordination with other Delta monitoring programs



Delta RMP Deliverables Scorecard Report

Key to Status Colors:

Green indicates greater than 90 days until the deliverable is due.

Yellow indicates a deliverable due within 90 days.

Red indicates a deliverable that is overdue.

Primary	Deliverable	Assigned To	Due Date	New Due Date	Status	Comments
Pathogens Monitoring	Set up contracts with BioVir and Eurofins	Thomas Jabusch	04/06/15		Complete	
Data Management	Prepare QAPP for FY14/15	Thomas Jabusch	04/15/15	06/08/15	Complete	Draft QAPP presented at 4/22 TAC meeting. QAPP was revised again for the 5/27/15 TAC meeting. A third revision to the QAPP was shared with the TAC on 6/8/15.
Pesticide/Toxicity Monitoring	Set up contract with USGS for pesticide analyses	Thomas Jabusch	04/30/15			Contract is drafted and is with USGS business office
Pesticide/Toxicity Monitoring	Arrange for UCD/ATL to participate in SCCWRP Interlaboratory Calibration Study	Thomas Jabusch	04/30/15		Complete	APHL will participate in the study without funding from the Delta RMP.
Nutrient Synthesis	Set up contract with USGS for synthesis of high-frequency sensor data	Thomas Jabusch	05/15/15			Contract is drafted and is with USGS business office
Program Management	Revised Monitoring Design	Thomas Jabusch	05/22/15	06/08/15	Complete	The Monitoring Design has been revised and was sent to the TAC and SC on 6/8/15 for review.
Program Management	FY15-16 Annual Program Workplan	Philip Trowbridge	05/22/15	06/09/15	Complete	FY15/16 Budget and Workplan sent to SC on 6/9/15.
Program Management	Framework for Interpretation of Monitoring Results	Thomas Jabusch	05/22/15		Complete	An outline for the Communications Plan was included in the revised Monitoring Design sent on 6/8/15 and will be discussed at the 6/16/15 SC meeting.
Program Management	FY15/16 Revenue Projections and Plan for Efficiently Invoicing Participants	Philip Trowbridge	05/22/15	05/21/15	Complete	
Program Management	Quarterly financial reports	Lawrence Leung	05/31/15		Complete	
Program Management	System for tracking deliverables and action items	Philip Trowbridge	05/31/15		Complete	For June SC meeting
Data Management	Set up templates and EDD reports for the pesticide/toxicity and pathogen laboratories	Amy Franz	05/31/15			EDDs for pathogens labs have been created. EDDs for pesticide/toxicity labs will be created when that monitoring begins.
Pesticide/Toxicity Monitoring	Collect two rounds of samples and analyze the samples for pesticides and toxicity	Contractors	06/30/15			
Nutrient Synthesis	Final report on high-frequency sensor data nutrient synthesis	USGS	12/31/15			
Pathogens Monitoring	Pathogens Year 1 Final report	Contractors	06/30/16			

Delta RMP Action Items

Key to Status Colors:

Green indicates greater than 90 days until the deliverable is due.

Yellow indicates a deliverable is due within 90 days.

Red indicates a deliverable that is overdue.

Primary	Meeting Date	Deliverable	Assigned To	Due Date	Status	Comments
TAC Action Items from 5/27/15	05/27/15	Mike Johnson and Karen Ashby will provide comments on the Monitoring Design by June 1st. Debra Denton and Tessa will provide comments by June 4th.	TAC members	06/04/15	Complete	Debra Denton provided comments on June 1, 2015.
TAC Action Items from 5/27/15	05/27/15	ASC will revise the Design document and send it back out the TAC with 5 business days for review.	Thomas Jabusch	06/08/15	Complete	
TAC Action Items from 5/27/15	05/27/15	Stephen McCord will convene a conference call or online polling method before June 16th so that he can report to the SC whether the TAC recommends approval or provisional approval of the revised Monitoring Design.	Stephen McCord	06/15/15		
TAC Action Items from 5/27/15	05/27/15	Adam agreed to follow up with Rich Breuer to learn if the requirement for State Board approval of the QAPP only applied to SWAMP-funded part of the work or the full QAPP.	Adam Laputz	06/03/15	Complete	
TAC Action Items from 5/27/15	05/27/15	ASC should make sure the QAPP data management provisions are SWAMP compatible. Phil agreed to check with Cristina Grosso about this.	Philip Trowbridge	06/03/15	Complete	SFEI data management procedures are SWAMP compatible.
TAC Action Items from 5/27/15	05/27/15	After receiving comments from the laboratories by June 1st, ASC will revise the QAPP and send it back out to the TAC with 5 business days to review.	Thomas Jabusch	06/08/15	Complete	
TAC Action Items from 5/27/15	05/27/15	Stephen McCord will schedule a conference call or online polling tool before June 16th in order to determine whether the TAC recommends approval of the QAPP or provisional approval. Stephen McCord will provide a verbal report to the SC on June 16th.	Stephen McCord	06/15/15		
TAC Action Items from 5/27/15	05/27/15	Discuss with the SC co-chairs about having a joint meeting of the SC and TAC to decide about the funding allocations for FY15/16	Philip Trowbridge	06/03/15	Complete	Recommendation added the FY15/16 workplan report to the SC.
TAC Action Items from 5/27/15	05/27/15	Revise the budget for the SC to show the available funding relative to the "bare bones" Monitoring Design funding levels so the SC can make the trade-off decisions.	Philip Trowbridge	06/05/15	Complete	
TAC Action Items from 5/27/15	05/27/15	Stephen McCord will send an email to the TAC with the proposal to officially approve the TIE subcommittee members as discussed in the May 27 meeting	Stephen McCord	06/03/15	Complete	
TAC Action Items from 5/27/15	05/27/15	ASC will receive comments on the TIE process memo. When all the comments have been received, ASC will send them to the TIE subcommittee to review and incorporate into the memo, which will be shared with the whole TAC.	Thomas Jabusch	06/10/15		
TAC Action Items from 5/27/15	05/27/15	Mike Johnson agreed to send Stephen McCord his notes with questions about the Hyalella test.	Mike Johnson	06/03/15	Complete	
TAC Action Items from 5/27/15	05/27/15	Stephen Clark agreed to send Stephen McCord information about possible special studies that could be done to resolve questions about the Hyalella test.	Stephen Clark	06/03/15		

Primary	Meeting Date	Deliverable	Assigned To	Due Date	Status	Comments
TAC Action Items from 5/27/15	05/27/15	Brian Laurenson agreed to send Stephen McCord his comments on the last set of slides for the SC which had information on possible special studies.	Brian Laurenson	06/03/15		
TAC Action Items from 5/27/15	05/27/15	Stephen McCord agreed to write a memo to the SC with options regarding the Hyallella test.	Stephen McCord	06/09/15		
TAC Action Items from 5/27/15	05/27/15	Provide an update on any nexus between Delta RMP and Central Valley Pyrethroids TMDL	Tessa Fojut	03/31/16		
TAC Action Items from 4/22	04/22/15	Thomas and Stephen will develop a develop a full chronology of TAC decisions, in a format similar to Delta RMP Record of Decisions (SC).	Thomas Jabusch	05/22/15	Complete	
TAC Action Items from 4/22	04/22/15	Thomas will distribute SCCWRP study objectives and protocol to the TAC, when available	Thomas Jabusch	05/22/15	Complete	On agenda for 5/27/15
TAC Action Items from 4/22	04/22/15	Thomas and Stephen will compare and contrast study objectives to Delta RMP's interests and concerns regarding Hyalella, especially regarding the issue of environmental relevance	Thomas Jabusch	05/22/15	Complete	To be completed with Stephen McCord
TAC Action Items from 4/22	04/22/15	Thomas: Consider adding phenotype testing and supplying Delta environmental samples for 2nd round of testing	Thomas Jabusch	05/22/15	Complete	Re phenotype testing: Can create a running wish list of special studies such as the phenotype testing.
TAC Action Items from 4/22	04/22/15	Coordinate the TIE subcommittee	Thomas Jabusch	05/22/15	Complete	
TAC Action Items from 4/22	04/22/15	Linda (AHPL) will generate a treatment template to clearly describe TIE treatments to be performed	Linda Deanovic	05/22/15	Complete	
TAC Action Items from 4/22	04/22/15	Stephen will articulate a question to SC asking whether TIE's should track down non-pesticide causes of toxicity, if funds allow	Stephen McCord	06/16/15		To be discussed at SC meeting on 6/16/15.
TAC Action Items from 4/22	04/22/15	Cam will draft a document to accompany the TIE decision flow chart	Cam Irvine	05/22/15	Complete	Include communications protocols and additional insight on decision process. To be completed with Thomas Jabusch
TAC Action Items from 4/22	04/22/15	Joe and Jim will clean up the USGS pesticide sampling triggers	Joe Domagalski	05/22/15	Complete	Edits were provided by Stephen McCord and discussed at the TAC meeting
TAC Action Items from 4/22	04/22/15	Jim will add "alert" levels for the USGS to use to alert AHPL of possible events	Jim Orlando	05/22/15	Complete	In QAPP.
TAC Action Items from 4/22	04/22/15	Jim and Joe will add a field to the field log to document sampling conditions	Jim Orlando	05/22/15	Complete	Part of USGS standard practice. The sampling conditions log will be used to improve event triggers based on experience.
TAC Action Items from 4/22	04/22/15	Thomas will provide a clean draft final monitoring design to the TAC for review	Thomas Jabusch	05/22/15	Complete	On agenda for 5/27/15
TAC Action Items from 4/22	04/22/15	Review the draft QAPP	TAC members	05/01/15	Complete	Notify Thomas Jabusch of any delays
TAC Action Items from 4/22	04/22/15	Identify points in data flow chart when TAC members can access data, and clarify frequency of QA review for monthly sampling e vents	Cristina Grosso	05/22/15	Complete	In QAPP.

Primary	Meeting Date	Deliverable	Assigned To	Due Date	Status	Comments
TAC Action Items from 4/22	04/22/15	Set up a password-protected space for provisional data on the CA Estuaries Workgroup portal	Stephanie Fong	05/22/15		SFEI-ASC will make provisional data files available by posting them to the TAC website, from where they can be viewed and downloaded by TAC members and transferred to the worker bee space of the Estuaries portal.
Steering Committee Action Items from 03/27/15	03/27/15	ASC will revise the minutes from the 1/22/15 SC meeting. The paragraph on Hyalella on page 7 and the second action item underneath it should show that there were concerns about the lab methodologies and interlaboratory comparability for the Hyalella test procedure in water.	Thomas Jabusch	04/30/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	Adam Laputz will share the decision-making flow chart with ASC.	Adam Laputz	04/30/15	Complete	Linda Dorn has shared the flow chart with Thomas Jabusch.
Steering Committee Action Items from 03/27/15	03/27/15	Patrick Morris will find out if the SWAMP contract with ATL can fund participation in the SCCWRP interlaboratory comparability study.	Patrick Morris	04/30/15	Complete	SWAMP contract manager confirmed that funds can be used to analyze samples for the study.
Steering Committee Action Items from 03/27/15	03/27/15	ASC and the TAC Co-Chairs will prepare a 1-hour agenda item for the next SC meeting on the interpretation and application of monitoring results, with a focus on pesticides monitoring. The TAC recommendations, the draft decision-making flow chart, and the TIE decision matrix will be included in the presentation.	Thomas Jabusch	05/31/15	Complete	On the agenda for the 6/16/15 meeting
Steering Committee Action Items from 03/27/15	03/27/15	Schedule agenda item to discuss and resolve any changes that were made by the TAC to the Management Questions on page 6 (Pesticide Table 1) of the revised Monitoring Design.	Thomas Jabusch	05/31/15	Complete	On the agenda for the 6/16/15 meeting
Steering Committee Action Items from 03/27/15	03/27/15	ASC will make sure the TAC website is up to date and ensure that the April 22 TAC meeting is publicly noticed.	Thomas Jabusch	04/08/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will contact Val Connor at SFCWA to get documentation about previous work by SFCWA, USGS, and RB5 to develop target analyte lists for pesticides.	Thomas Jabusch	04/30/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will work with the TAC, ILRP, and RB5 to come up with the recommended list of target pesticides for the FY15/16 workplan. The list will reside in the Monitoring Design.	Thomas Jabusch	05/15/15	Complete	ASC has compiled a master list that compares the target pesticides for ILRP and the different labs. RB5 and ILRP met to discuss the list.
Steering Committee Action Items from 03/27/15	03/27/15	ASC will develop a process for reviewing and updating the list of target pesticide analytes as part of the Communications Plan in FY15/16.	Thomas Jabusch	09/30/15		
Steering Committee Action Items from 03/27/15	03/27/15	Joe Domagalski will send ASC the final report from a recent USGS study of pesticides.	Joe Domagalski	04/30/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will revise the FY14/15 workplan as directed by the SC: (1) update Section 5 to be refer to the SCCWRP interlaboratory comparability study; (2) update the Vendor Selection Form for the USGS Pesticide Lab; and (3) update the Vendor Selection Form the USGS nutrient synthesis.	Philip Trowbridge	04/03/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will revise the Financial Management Plan as directed by the SC: (1) attach the process for RFPs; (2) require SC approval for sole source contracts; and (3) refer to the Implementing Entity generically.	Philip Trowbridge	04/03/15		Items 2 and 3 are complete. The RFP process has been revised but needs SC review at the next meeting before being attached as guidance to the Financial Management Plan.

Primary	Meeting Date	Deliverable	Assigned To	Due Date	Status	Comments
Steering Committee Action Items from 03/27/15	03/27/15	Linda Dorn and Patrick Morris will revise the Adequate Participation language and will bring it back to the SC at the next meeting.	Linda Dorn	05/31/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will include an option for external science advisers or a program review in the FY15/16 workplan. ASC will research whether the Delta Science Program's science panel can serve this role.	Philip Trowbridge	05/31/15	Complete	There may be a way for the DSC to facilitate the review but (a) the SC will still need to budget some funds for it and (b) the review would most likely consider the Delta RMP within the broader context of all Delta monitoring programs.
Steering Committee Action Items from 03/27/15	03/27/15	Tim Vendlinski will attend the April 22, 2015 TAC meeting.	Tim Vendlinski	04/22/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	Selina Cole will update the Delta RMP website and publicly notice the TAC meeting via the Delta Water Quality lyrics list	Selina Cole	04/10/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will work with Stephen McCord and Joe Domagalski on options for TAC Co-Chairs in FY15/16. The three options are (1) to continue with Stephen and Joe as Co-Chairs providing coordination and leadership; (2) to have ASC provide coordination and Stephen and Joe provide leadership; and (3) to have ASC provide coordination with an unpaid Chair. The value of the in-kind service by the unpaid Chair should be part of the calculation.	Philip Trowbridge	05/31/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will send out a list of Decisions and Action Items from the 3/27/15 meeting by 4/3/15.	Thomas Jabusch	04/03/15	Complete	
Steering Committee Action Items from 03/27/15	03/27/15	ASC will send a doodle poll for the next SC meeting. The meeting must be before 6/16/15 and may need to be even sooner depending the time needed for any RFPs that may be needed.	Thomas Jabusch	04/03/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will provide draft SOTER indicator write-ups when they are ready to the TAC and SC for review and comment.	Jay Davis	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will provide a pdf version of the Delta RMP poster to the SC	Thomas Jabusch	01/29/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will revise the minutes of the last two SC meetings to correct inaccuracies.	Thomas Jabusch	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will report back to the SC about whether the proposed contractors for the FY14/15 workplan would be in compliance with the State Contracting Manual and if there is any appearance of conflict of interest. In particular, ASC will check the legality of contracting USGS for the pesticide analyses, high-frequency data analysis, and potentially field sampling, with Joe Domagalski (USGS) as one of the co-chairs.	Philip Trowbridge	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will sign up members of the TIE subcommittee	Thomas Jabusch	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	The TAC will provide the SC with information about evaluating and interpreting Hyalella data, recommendations regarding the Hyalella strain to be used, and identify the scientific issues involved with interpreting and/or qualifying test results.	Stephen McCord	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will revise the Monitoring Design document based on comments received from the SC.	Thomas Jabusch	05/31/15	Complete	

Primary	Meeting Date	Deliverable	Assigned To	Due Date	Status	Comments
Steering Committee Action Items from 01/22/15	01/22/15	ASC will send the Monitoring Design document (11/3/14 draft) and the list of identified changes to the SC mailing list and ask participants to submit additional revisions by 1/30/15.	Thomas Jabusch	01/29/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC and Brock Bernstein will convene conference calls, if there are conflicting comments that get to the core of the design and are high priority to resolve.	Thomas Jabusch	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will develop a new document that defines the Delta RMP's process for data analysis and interpretation, reporting, and application of results to address the management questions. This document should also contain an annual schedule for coordinating with deadlines of different organizations.	Thomas Jabusch	12/31/15		This deliverable was deferred to FY15/16.
Steering Committee Action Items from 01/22/15	01/22/15	ASC will add sole source justifications to the FY14/15 Annual Workplan	Philip Trowbridge	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will follow up with Gregg Erickson to find out if there is an existing contract between ASC, DWR, and USGS.	Philip Trowbridge	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	Since there will not be an RFP, ASC will subtract \$4,500 from the pesticide/toxicity budget.	Philip Trowbridge	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	Patrick Morris will investigate whether FY15/16 onwards SWAMP funds can be used for other purposes, such as pesticides analyses.	Patrick Morris	03/27/15	Complete	Currently the only SWAMP contract that could be used for the Delta RMP is for toxicity analyses.
Steering Committee Action Items from 01/22/15	01/22/15	ASC will prepare a process for FY15/16 and onwards to ensure that selection of contractors complies with the public contracting code and avoids any actual or apparent conflict of interest.	Philip Trowbridge	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC shall implement appropriate funding mechanisms (e.g., invoice, contract) as needed to meet the needs of different Delta RMP members.	Philip Trowbridge	03/27/15	Complete	
Steering Committee Action Items from 01/22/15	01/22/15	ASC will assist the SC in developing a longer-term funding mechanism (e.g., MOU) that will lower administrative costs and provide a more formal basis for participation	Philip Trowbridge	03/31/16		The MOU will be used for the FY16/17 contributions.
Steering Committee Action Items from 01/22/15	01/22/15	Val Connor will review the Financial Management Plan with SFCWA's attorney.	Val Connor	03/27/15	Complete	Action item deleted.
Steering Committee Action Items						
TAC Action Items						