RMP
REGIONAL MONITORING PROGRAM FOR WATER QUALITY IN SAN FRANCISCO BAY

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Regional Monitoring Program for Water Quality in San Francisco Bay

2018 Detailed Workplan and Budget

For Steering Committee Review, 10/25/17 Draft

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Summary

In 2018 the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) is entering its 26th year of collecting data and communicating information to support water quality management decisions. This Detailed Workplan and Budget describes the activities that will be completed in 2018, the proposed funding levels, and the deliverables for each task.

The total revenue and expense for 2018 is $3,837k as shown in Table 1 and Figures 1-2. The majority of the expenses in 2018 (71%) will be for Status and Trends monitoring and special studies (Tasks 6-7) which is $43k higher than in 2017. Conversely, the cost for programmatic tasks (Tasks 1-5) is $139k lower than in 2017. In addition, a total of $107k will be contributed to Undesignated Funds. These contributions are related to two studies that were conducted in 2017 using reserve funds that need to be repaid.

The planned expenses for 2018 are higher than the sum of fees, Alternative Monitoring Requirement (AMR) contributions, and interest. Therefore, $70k from Undesignated Funds will be used to balance the budget. Normally, we avoid having contributions and withdrawals from Undesignated Funds in the same year because they cancel each other out. However, in this case, it is important to formally repay the money advanced for the 2017 monitoring in order to have clear accounting.

Table 1: Bay RMP 2018 Budget by Task.

	Direct Cost	Labor	Subcontract	Grand Total
1. Program Management	$5,000	$365,000		$370,000
2. Governance	$66,200	$203,000		$269,200
3. QA and Data Services		$175,000		$175,000
4. Annual Reporting	$35,000	$80,000		$115,000
5. Communications	$25,000	$137,000		$162,000
6. S&T Monitoring	$40,000	$210,000	$1,012,000	$1,262,000
7. Special Studies	$41,681	$796,077	$537,302	$1,375,060
8. Unallocated		$2,442		$2,442
Total Actual Expenses	$212,881	$1,968,519	$1,549,302	$3,730,702
Contributions to Reserve Funds				$106,500
Grand Total for Expense				**$3,837,202**
Revenue from Fees				$3,435,433
Revenue from AMR Contributions				$296,769
Interest				$35,000
Undesignated Funds Used				$70,000
Grand Total for Revenue				**$3,837,202**

This budget cuts or just maintains funding for most of the programmatic tasks. These cuts were enacted to maximize effort on monitoring and special studies. Staff will strive for efficiency but, mid-year, it may be necessary to request additional funds from Undesignated Funds to complete these programmatic tasks.

Figure 1: Bay RMP 2018 Revenue and Expenses.

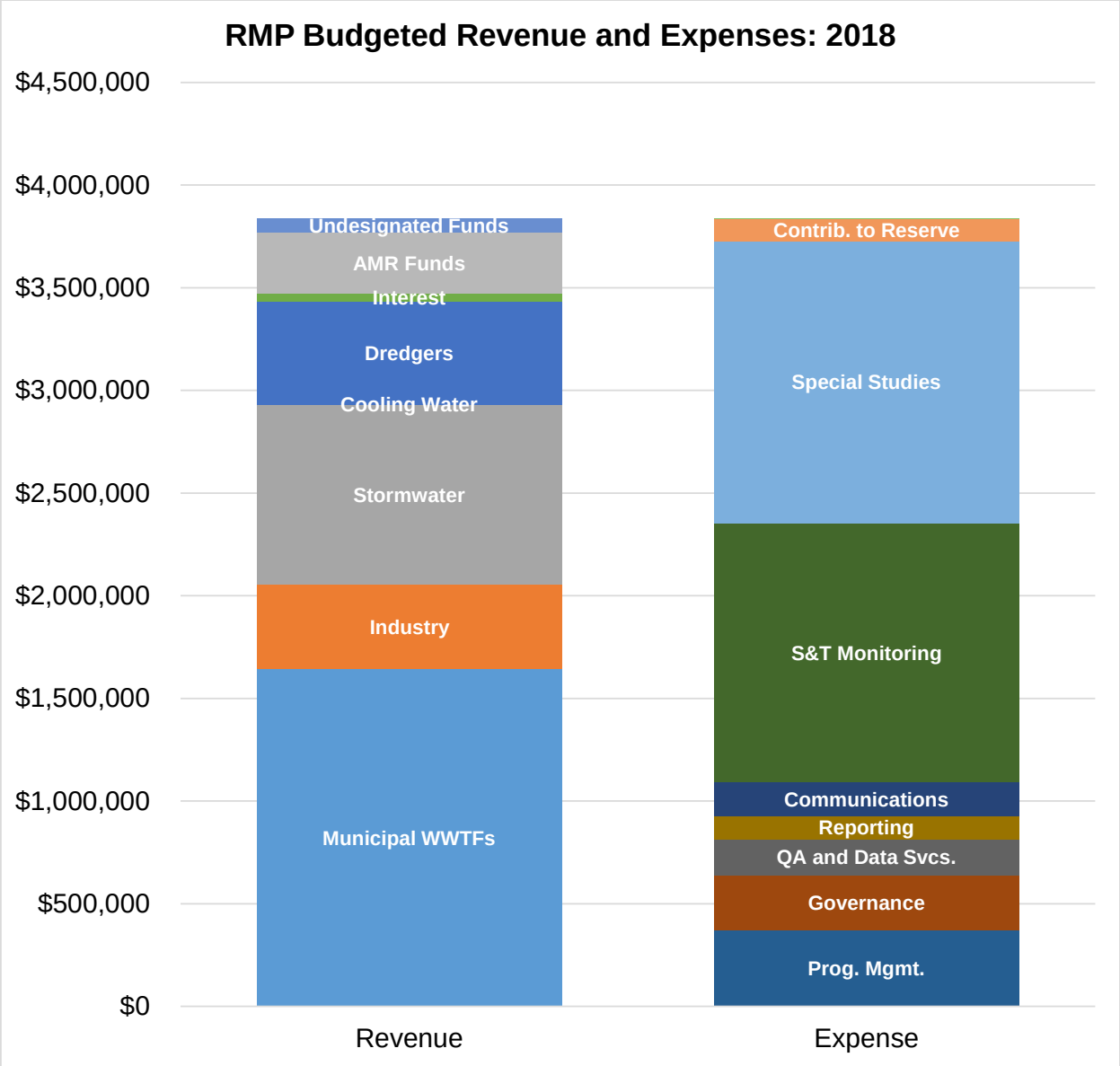
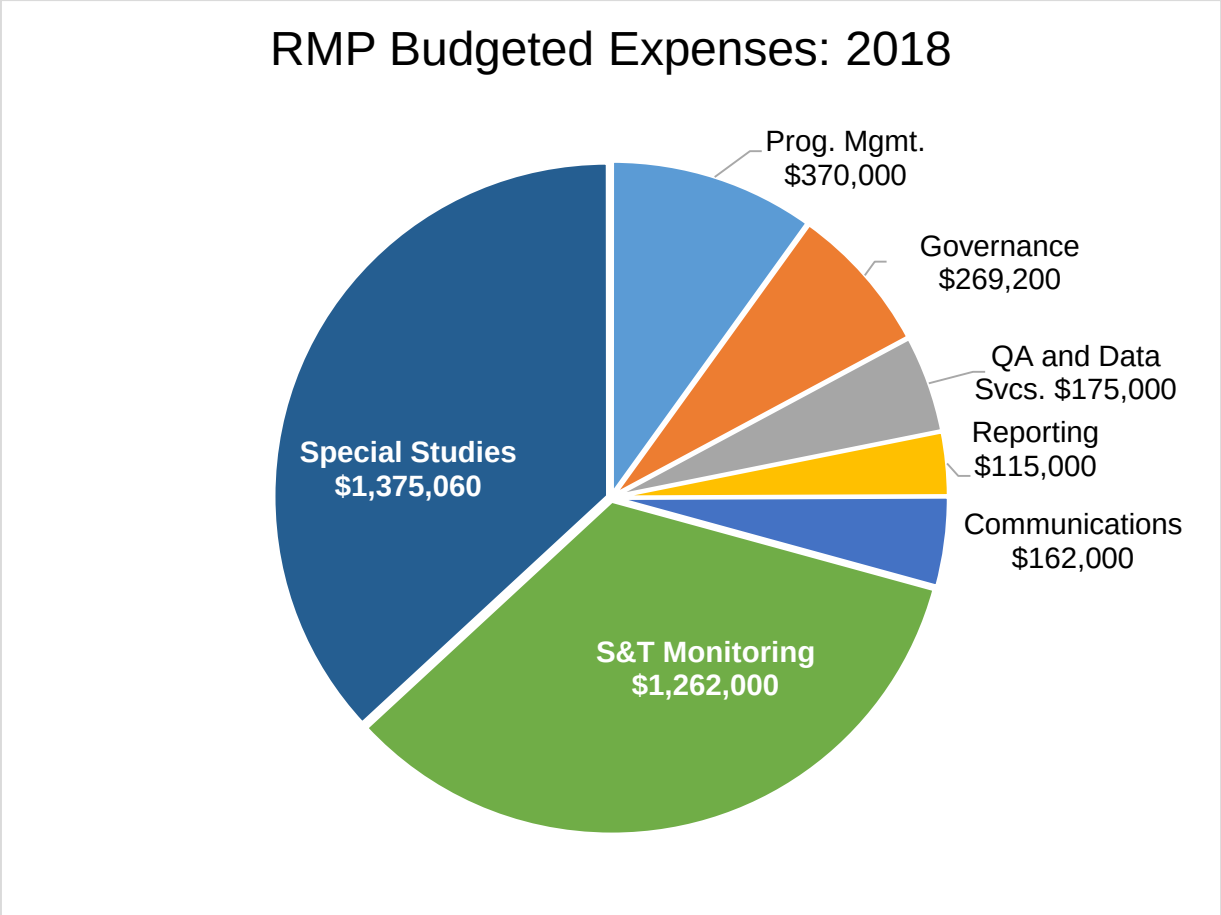


Figure 2: Bay RMP 2018 Budget by Task.



2018 Revenue

The total revenue for the RMP in 2018 is $3,837k. The breakdown of this revenue between participant fees, interest income, designated reserve funds, and Undesignated Funds is shown in Table 2.

a. Participant Fee Revenue

The target fee revenue for the RMP in 2018 is $3,604k. The manner in which the fees are supposed to be divided up between Program Participants is shown in Figure 3. Fees were increased by 3% relative to the 2017 budget as approved by the Steering Committee on November 13, 2014. The actual fees collected in 2018 will be $168k below the target fees. This variance is because of the loss of $18k in the fees to be paid by cooling water dischargers (due to bankruptcy) and a $150k expected shortfall in the fees paid by U.S. Army Corps of Engineers.

b. Alternative Monitoring Requirement Funds

In FY18, the RMP received $270k of supplemental funding from municipal wastewater agencies for FY18 under the Alternative Monitoring Requirement (AMR) order. There are also, $27k of FY17 AMR Funds were not allocated to projects last year. The intended use of these funds is for emerging contaminants studies. All of the available funds from both FY17 and FY18 ($297k) will be allocated to emerging contaminant projects in the 2018 budget.

c. Interest Revenue

RMP funds earn interest from the Local Agency Investment Fund. For the 2018 budget, $35k in interest revenue was assumed, which is consistent with performance in 2017.

d. Designated Reserve Funds

i. Dredger Reserve Fund

Dredging activity in the Bay is variable over the years. In years where there is lots of activity, any fees paid by dredgers that are greater than the target fees are stored in the Dredger Reserve Fund. These funds are held in reserve and can only be used to pay for shortfalls in dredger fees in future years. The balance of the Dredger Reserve Fund is zero.

ii. Set-Aside Funds

The RMP uses designated funds (called “Set-Asides”) to smooth out the year-to-year expenses of the Status and Trends program. Rather than having a spike in expenses in one year, the Steering Committee designates some funds to be set aside in light years and withdrawn in years with lots of monitoring. In 2018, the Status and Trends monitoring costs are average so no funds will be contributed or withdrawn.

e. Undesignated Funds

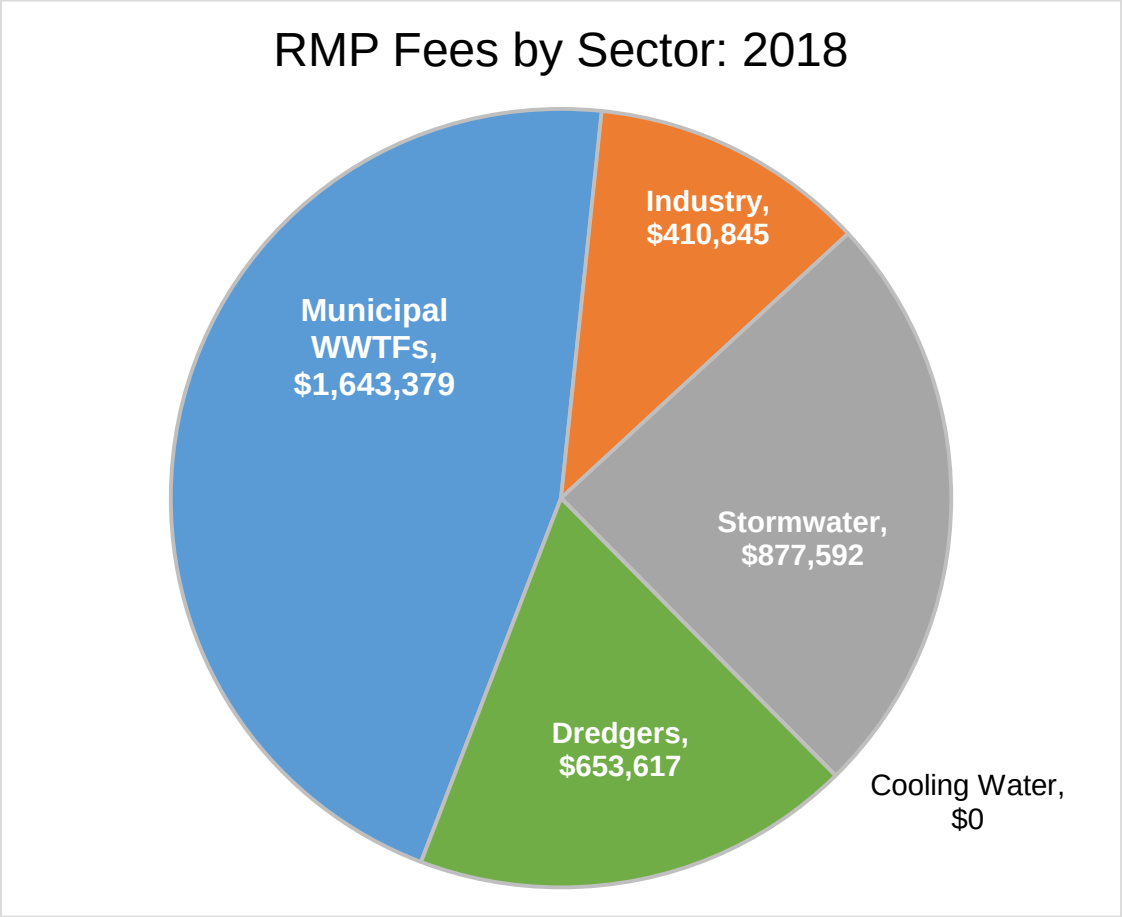
The RMP maintains a balance of Undesignated Funds for contingencies. Higher than anticipated revenues and elimination or reduction of lower priority elements sometimes lead to accumulation of funds that can be used for high priority topics at the discretion of the Steering Committee. The current balance of Undesignated Funds is $802k. It is the policy of the RMP to maintain a minimum balance of $200k in Undesignated Funds as a reserve for unanticipated urgent priorities.

A total of $70k of Undesignated Funds are proposed to be used for the 2018 budget. The purpose of this request is to fill the budget gap between revenue and expenses.

Table 2: 2018 RMP Revenue.

Revenue Category	**Subcategory**	**Amount**
Participant Fees	Municipal	$1,643,379
Participant Fees	Industrial	$410,845
Participant Fees	Stormwater	$877,592
Participant Fees	Cooling Water	$0
Participant Fees	Dredgers	$653,617
Participant Fees	Local Dredgers - expected surplus (deficit)	$0
Participant Fees	USACE Dredgers - expected surplus (deficit)	-$150,000
Supplemental POTW Payments for AMR Order Coverage (FY17)		$27,194
Supplemental POTW Payments for AMR Order Coverage (FY18)		$269,575
Interest Income	Interest Income	$35,000
Designated Reserve Funds	Set-Aside Funds for S&T Monitoring	$0
Designated Reserve Funds	Dredger Reserve Funds	$0
Undesignated Funds		$70,000
TOTAL REVENUE		$3,837,202

Figure 3: Bay RMP 2018 Fee Allocations for Program Participants.



2018 Programmatic Tasks

RMP expenses fall into three broad categories: programmatic expenses, Status and Trends monitoring, and special studies. This section details the budgets for programmatic expenses for 2018.

The programmatic budget covers the following tasks:

- Program management
- Governance
- Quality Assurance (QA) and Data Services
- Annual Reporting
- Communications

The total cost to implement these tasks in 2018 is $1,091k. This budget is $139k less than the 2017 budget. The reasons for the cost reductions are summarized in Table 3. Most of the year-over-year difference is because a Pulse of the Bay report will not be produced in 2018 and the budget of the 2018 Annual Meeting is lower than for 2017. However, there are also nominal cuts (-2.5%) to programmatic budgets which will be a challenge to stay within while maintaining the same level of productivity. In the middle of the year, it may be necessary to request additional funds from reserves to complete these programmatic tasks.

More details about each of these tasks are provided in the following sections, on Table 4, and in Appendix A. Appendix A contains descriptions for each subtask or expense, budget justifications, and the expected deliverables.

Table 3: RMP 2018 Programmatic Budget Compared to 2017 Budget.

	2017 Budget	2018 Budget	Difference	Comments
1. Program Management	$394,000	$370,000	-$24,000	Cut costs for External Coordination and Financial Management.
2. Governance	$270,000	$269,200	-$800	No change from 2017.
3. QA and Data Services	$185,000	$175,000	-$10,000	Moved funds for lab subcontracts for IC studies to new S&T budget line.
4. Annual Reporting	$216,500	$115,000	-$101,500	RMP Update (in 2018) is $80k less than the Pulse (in 2017). $20k less budgeted for 2018 Annual Meeting because not an anniversary year.
5. Communications	$165,000	$162,000	-$3,000	Trimmed back some tasks and increased budget for graphic design work.
Total	$1,230,500	$1,091,200	-$139,300	Excluding $110k to account for Pulse, Annual Meeting, and IC studies, cumulative reduction of 2.5% in PM costs.

1. Program Management

Program management subtasks include program planning, contract and financial management, technical oversight, internal and external coordination, and administration. The total expense for these tasks is $370k, which is $24k lower than the 2017 budget. Approximately half of the cost for this category is fiduciary oversight of program expenses and contractors. These financial management funds also support staff time to manage funds and contracts for Supplemental Environmental Projects (SEPs) that are performed by the RMP.

The major deliverables that will be completed with these funds are: the Multi-Year Plan, the Detailed Workplan, quarterly financial updates to the Steering Committee, and quarterly tracking of deliverables and action items. Funds for technical oversight allow for internal review by senior staff of the many reports, presentations, posters, workplans, memos, and other communications coming out of the RMP. The funds for external coordination cover participation in meetings with external partners to coordinate programs and leverage RMP funds (e.g., coordinating work on the Pulse Report and other reports, coordination with SCCWRP, and serving as liaison to the Delta RMP and other RMPs).

2. Governance

Governance subtasks include convening, coordinating, and facilitating Steering Committee, Technical Review Committee, and Workgroup meetings. Tasks include preparing agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing minutes from past meetings, coordination with committee chairs, and honoraria and travel for external advisors. The total budget for these tasks is $269k which is approximately the same as the 2017 budget.

The major deliverables that will be completed with these funds are: quarterly Steering Committee meetings, quarterly Technical Review Committee meetings, and six Scientific Workgroup meetings with external science advisors in the spring.

The cost of workgroup meetings account for more than half of this line item and the budget may not be sufficient. The budget for staff time to prepare materials and proposals is $110k and the budget for honoraria and travel costs for external science advisors is $60k. In 2017, all of the workgroup meetings lasted one day. In 2018, 1.5 day meetings are planned for the Emerging Contaminants Workgroup and the Sources, Pathways, and Loadings Workgroup due to the large amount of information to cover. The Exposure and Effects Workgroup meeting will also be coordinated with the Emerging Contaminants Workgroup. All of these changes could potentially increase costs. Staff will strive for efficiency but, mid-year, additional funds may be needed to complete all the workgroup meetings.

3. QA and Data Services

Quality assurance is a critical foundation for the scientific investigations of the RMP. The major quality assurance tasks for 2018 are keeping the Quality Assurance Project Plan up to date, preparing QA summaries for datasets. In addition to processing new data, the Program needs to maintain the millions of records generated since it began in 1993. Database maintenance includes incorporating updates and corrections to data, including re-analyzed results and updates implemented by CEDEN/SWAMP. RMP staff also maintain and enhance web-based data access and visualization tools such as CD3 and an automated system to handle data submittals from the laboratories.

In 2017, funds for laboratory intercomparison studies were budgeted in the task. For 2018, these studies will be part of the Status and Trends Monitoring budget.

The total cost for these tasks will be $175k. This budget is $10k less than it was in 2017, which reflects moving the costs for laboratory intercomparison studies to another budget line.

4. Annual Reporting

The total cost for these tasks will be $115k. This budget is $102k less than it was in 2017.

A *RMP Update* report will be produced in 2018, to be released at the Annual Meeting in October. The *RMP Update* is a less expensive product than a *Pulse of the Bay* report that was prepared in 2017 ($55k for the 2018 *RMP Update* vs $135k for the 2017 *Pulse*). The RMP Update report will contain summaries of the recent findings for each of the focus areas of the Program.

Tasks related to the Annual Meeting include developing the meeting agenda, managing logistics, advertising about the meeting, managing attendee registration, preparing presentations, and staffing the meeting. Less funding has been budgeted for 2018 versus 2017. Extra funding had been allocated in 2017 because to celebrate the 25th anniversary of the RMP. So, 2018 funding is a return to normal levels.

5. Communications

Communications tasks will implement the plans included in the RMP Communications Strategy, approved by the Steering Committee in July 2014. Tasks will include the distribution of RMP information to stakeholders, natural resource managers, and the public through multiple media channels (e.g., website, publications, email newsletters, fact sheets, social media, etc.). In 2018, the RMP will continue to provide support for *Estuary News* ($15k) plus staff time to plan and review content.

Stakeholder engagement is critically important to addressing the information needs of RMP participants. Tasks include preparing for and attending RMP stakeholder meetings (e.g., BACWA, BASMAA, BPC, LTMS, WSPA, and RB2) as well as communicating directly with stakeholder representatives.

Other communications tasks include responding to inquiries for RMP data and reports, including press calls, and producing summary information on important topics in convenient formats. The budget for this last item ("Outreach Products") has been increased relative to 2017 to allow for better formatting of final reports and executive summaries. Participation in workshops and conferences for SWAMP, SETAC, ACS, and other professional organizations allows sharing of RMP information, gathering of information from other investigators on the latest advances in monitoring and understanding, and identification of opportunities for collaboration with other organizations. Presentations at local meetings and to local audiences are also important for collaboration and information dissemination to scientific partners. Funding for this task also supports maintenance of the RMP website.

The total cost for these tasks in 2018 will be $162k. This budget is $3k less than it was in 2017.

Appendix A lists additional details for the programmatic tasks and subtasks, including budget justifications and deliverables.

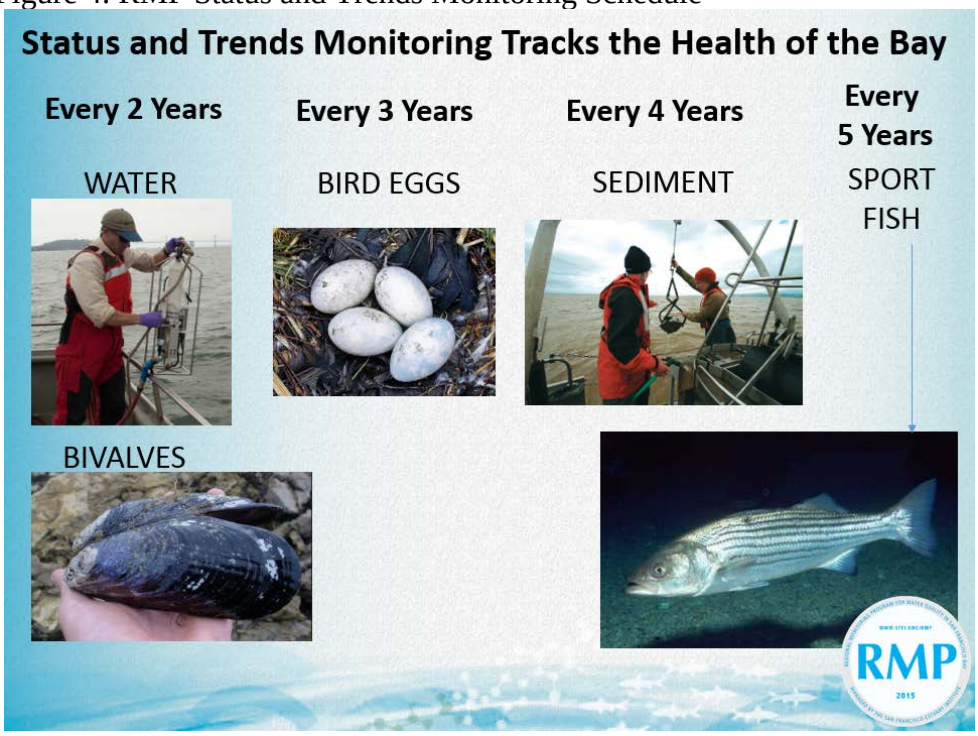
Table 4: Bay RMP 2018 Programmatic Budget by Subtask. Detailed descriptions of the tasks, budget justifications, and deliverables are provided in Appendix A.

Task	Subtask	Direct Cost	Labor	Subcontract	Grand Total
1. Program	A. Program Planning		$40,000		$40,000
Management	B. Contract and Financial Management		$160,000		$160,000
	C. Technical Oversight		$50,000		$50,000
	D. Internal Coordination		$80,000		$80,000
	E. External Coordination		$30,000		$30,000
	F. Administration	$5,000	$5,000		$10,000
2. Governance	A. SC meetings	$1,600	$48,000		$49,600
	B. TRC meetings	$1,600	$48,000		$49,600
	C. WG meetings	$3,000	$107,000		$110,000
	D. External Science Advisors	$60,000			$60,000
3. QA and Data	A. Quality Assurance System		$30,000		$30,000
Services	B. Online Data Access: CD3		$65,000		$65,000
	C. Database Maintenance		$50,000		$50,000
	D. Updates to SOPs and Templates		$30,000		$30,000
4. Annual Reporting	A. RMP Update Report	$20,000	$35,000		$55,000
	B. Annual Meeting	$15,000	$45,000		$60,000
5. Communications	A. Communications Plan Implementation	$15,000	$20,000		$35,000
	B. Stakeholder Engagement		$20,000		$20,000
	C. Responses to Information Requests		$12,000		$12,000
	D. Outreach Products		$30,000		$30,000
	E. Presentations at Conferences and Meetings	$10,000	$35,000		$45,000
	G. RMP Website Maintenance		$20,000		$20,000
Grand Total		$131,200	$960,000	$0	$1,091,200

2018 Status and Trends Monitoring and Reserve Funds

In 2014, the Steering Committee and Technical Review Committee revised the Status and Trends (S&T) sampling schedule to free up resources. The current schedule is shown in Figure 4.

Figure 4: RMP Status and Trends Monitoring Schedule



In 2018, bivalve, bird egg, and sediment sampling will occur. In addition, the RMP provides annual support to the USGS for suspended sediment and nutrient monitoring. This support will continue in 2018. We are also proposing a budget of $50k for laboratory intercomparison studies for high-profile parameters such as PCBs in sediments. The total cost for S&T monitoring in 2017 will be $1,262k.

While not part of the S&T monitoring budget, $106.5k will be contributed to reserve fund accounts to repay the reserve for extra monitoring costs in 2017.

More information about each of the S&T tasks is provided in the line item budget (Table 5), the sections below, and Appendix A.

A. USGS Sacramento Support: Continuous Monitoring of Suspended Sediment ($250k)

This work is led by Dr. David Schoellhamer of the USGS California Water Science Center. USGS maintains five suspended sediment stations in the Estuary with RMP funding (i.e., Mallard Island, Richmond Bridge, Alcatraz, Exploratorium, and Dumbarton Bridge). This funding leverages suspended sediment monitoring at 2 other stations (Benicia Bridge, Carquinez Bridge) and salinity at 8 stations that are funded by other partners. In addition, the RMP has used Special Studies funding to add dissolved oxygen sensor to 6 stations and nutrient parameter sensors to 3 stations. Discussions are underway to determine how to maintain the existing monitoring scheme in light of increasing costs and the available budget, which has been fixed at $250,000 since 1993. Funding is provided by the U.S. Army Corps of Engineers directly to USGS.

B. USGS Menlo Park Support: Monthly Basic Water Quality ($235k)

This work is led by Dr. Jim Cloern of the USGS in Menlo Park. The study performs monthly water sampling to map the spatial distributions and temporal trends of basic water quality parameters along the entire Bay-Delta system. Measurements include salinity, temperature, dissolved oxygen, suspended sediments, and phytoplankton biomass. This basic information is required to follow the seasonal changes in water quality and estuarine habitat as they influence biological communities and the distribution and reactivity of trace contaminants.

C&D. 2018 Bivalve Cruise ($132k)

The Status and Trends schedule calls for bivalve sampling every other year. Mussels (*Mytilus californianus*) will be collected from Bodega Head State Marine Reserve, an uncontaminated "background" site of known chemistry, and will be transplanted to 7 targeted locations in the Bay. After ~100 days, mussels from the transplanted sites and a sample from Bodega Head will be collected for analysis. Three of the 7 transplant sites serve as back-ups in case something goes wrong with the transplants at the 4 primary sites. At the same time, resident clams (*Corbicula fluminea*) are collected from 2 sites in the Sacramento River and San Joaquin River. Bivalve tissue samples will be analyzed for selenium and PAHs according to the S&T Monitoring Design.

The total cost for the field collection[1] and laboratory analyses will be $117k. The cost for quality assurance and data management will be $15k.

[1] In past RMP workplans, there was a stand alone budget for all field work. In the 2018 budget, the field work associated with each cruise has been budgeted in the line item for the cruise.

E&F. 2018 Bird Egg Monitoring ($237k)

The Status and Trends schedule calls for bird egg monitoring every three years. The last bird egg samples were collected in 2016 but that sampling round was one year late. Therefore, sampling bird eggs in 2018 will put the Program back on the original S&T schedule.

Two species of birds will be monitored in 2018. Double-crested Cormorants (*Phalacrocorax auritus*) will be collected at three sites: Don Edwards National Wildlife Refuge, the Richmond-San Rafael Bridge, and Wheeler Island. Forster's Tern (*Sterna forsteri*) will be collected from multiple sites in the Don Edwards National Wildlife Refuge and the Hayward Shoreline Regional Park. According to the Monitoring Design, the egg tissue will be analyzed for mercury, selenium, PCBs, PBDEs, and PFCs in cormorant eggs and mercury, selenium, and PBDEs in tern eggs.

The total cost for the field collection and laboratory analyses will be $197k. The cost for quality assurance and data management will be $40k.

G&H. 2018 Sediment Cruise ($301k)

The Status and Trends schedule calls for sediment monitoring every four years. The last sediment cruise was in 2014.

A total of 27 sites will be monitored (7 targeted sites and 20 random sites). The Technical Review Committee has decided that the 2018 and future sediment cruises will occur in the summer season. The samples will be analyzed for metals (Ag, Al, As, Cd, Cu, Fe, Hg, MeHg, Mn, Ni, Pb, Se, Zn), PAHs, PCBs, total organic carbon, nitrogen, % solids, grain size, and PBDEs. Additional parameters that may be analyzed (pending a decision by the TRC) are legacy pesticides and fipronil. Sediment toxicity and benthic macroinvertebrates will not be monitored in 2018.

The total cost for the field collection and laboratory analyses will be $265k. The cost for quality assurance and data management will be $36k.

I. Laboratory Intercomparison Studies ($50k)

Large amounts of the RMP budget are spent on Status and Trends monitoring. Laboratory intercomparisons boost confidence in methodology and results, act as an insurance policy for unforeseeable changes in analysis procedures and analytical contractors, and provide many other benefits. With sediment, bivalve, and bird eggs monitoring scheduled for 2018, there is an opportunity to conduct intercomparison studies for critical parameters. PCBs in sediment and organic contaminants tissue will be priorities for the study but the final study design will be decided by the TRC. RMP staff will seek partnerships with SCCWRP and others to leverage other efforts and funding.

J. Sample Archive ($47k)

The RMP stores archives of sediment, bivalve, bird egg, and sport fish samples, as well as other miscellaneous samples, in archives for potential future analyses. Short-term archives are stored at Schaeffer's Meat and Storage in Oakland. Long-term archives are stored at NIST in Charleston, South Carolina. Costs in 2018 will cover continued storage fees for the archives ($35k) as well as labor to manage the archives and the archive database ($12k). Staff will continue to look for ways to strategically use the archives, both within the RMP and with academic partners. Archive samples may be needed for the laboratory intercomparison studies.

K. 2018 Field Sampling Report ($10k)

At the end of the field season, RMP staff will prepare the Field Sampling Report, which will summarize the 2018 field sampling effort. The goal of the report is to document where samples were collected and any complications during field sampling. The report will not contain any data analysis or results. Clear documentation of field sampling effort is part of the overall quality assurance system for the Program.

Contributions to Reserve Funds ($106.5k)

Another $106.5k will be contributed to reserve fund accounts. This total amount has two components. First, $40k will be moved to the Designated Reserve Fund for Monitoring Contingencies. $40k from the Monitoring Contingency Fund were used in 2017 for the Guadalupe River Mercury Load Study. Returning $40k will replenish this Fund to its normal balance of $50,000. Second, $66.5k will be moved to Undesignated Funds to repay half of the $133k that was advanced for the 2017 South Bay Margins Study. The $133k will be repaid over two years, half in 2018 and half in 2019.

Appendix A lists additional details for the Status and Trends Monitoring tasks and subtasks, including budget justifications and deliverables.

Table 5: Bay RMP 2018 Status and Trends Budget by Subtask.

Task	Subtask	Direct Cost	Labor	Subcontract	Grand Total
6. S&T Monitoring	A. USGS Sacramento Support			$250,000	$250,000
	B. USGS Menlo Park Support			$235,000	$235,000
	C. 2018 Bivalve Cruise	$5,000	$25,000	$87,000	$117,000
	D. 2018 Bivalve Cruise Data Mgmt		$15,000		$15,000
	E. 2018 Bird Egg Monitoring	$2,000	$15,000	$180,000	$197,000
	F. 2018 Bird Egg Monitoring Data Mgmt		$40,000		$40,000
	G. 2018 Sediment Cruise	$8,000	$47,000	$210,000	$265,000
	H. 2018 Sediment Cruise Data Mgmt		$36,000		$36,000
	I. S&T Laboratory Intercomparison Studies		$10,000	$40,000	$50,000
	J. Sample Archive	$25,000	$12,000	$10,000	$47,000
	K. 2018 S&T Field Sampling Report		$10,000		$10,000
Grand Total		$40,000	$210,000	$1,012,000	$1,262,000
Contributions to Reserve Funds	S&T Monitoring Set Aside Contribution				$0
	Monitoring Contingency Fund Replenishment				$40,000
	Undesignated Funds*				$66,500
	Total				$106,500

*****Repayment of half the "borrowed" funds for the 2018 South Bay Margins Study. Second half will be repaid in 2019.

2018 Special Studies

The total costs for special studies in 2018 will be $1,375k. Figure 5 shows how these costs are distributed across seven focus areas. Additional details on each of the studies are provided in the line item budget (Table 6). Appendix B lists all the special studies with brief descriptions of the work to be completed, deliverables, and due dates.

All but one of the special studies were reviewed by the Technical Review Committee in June 2018 and approved by the Steering Committee in July 2018. The additional study that has been added since then is $10k for support of the new workgroup for Dredged Material and Suspended Sediment.

Figure 5: RMP Special Studies Funding for 2018 by Focus Area.

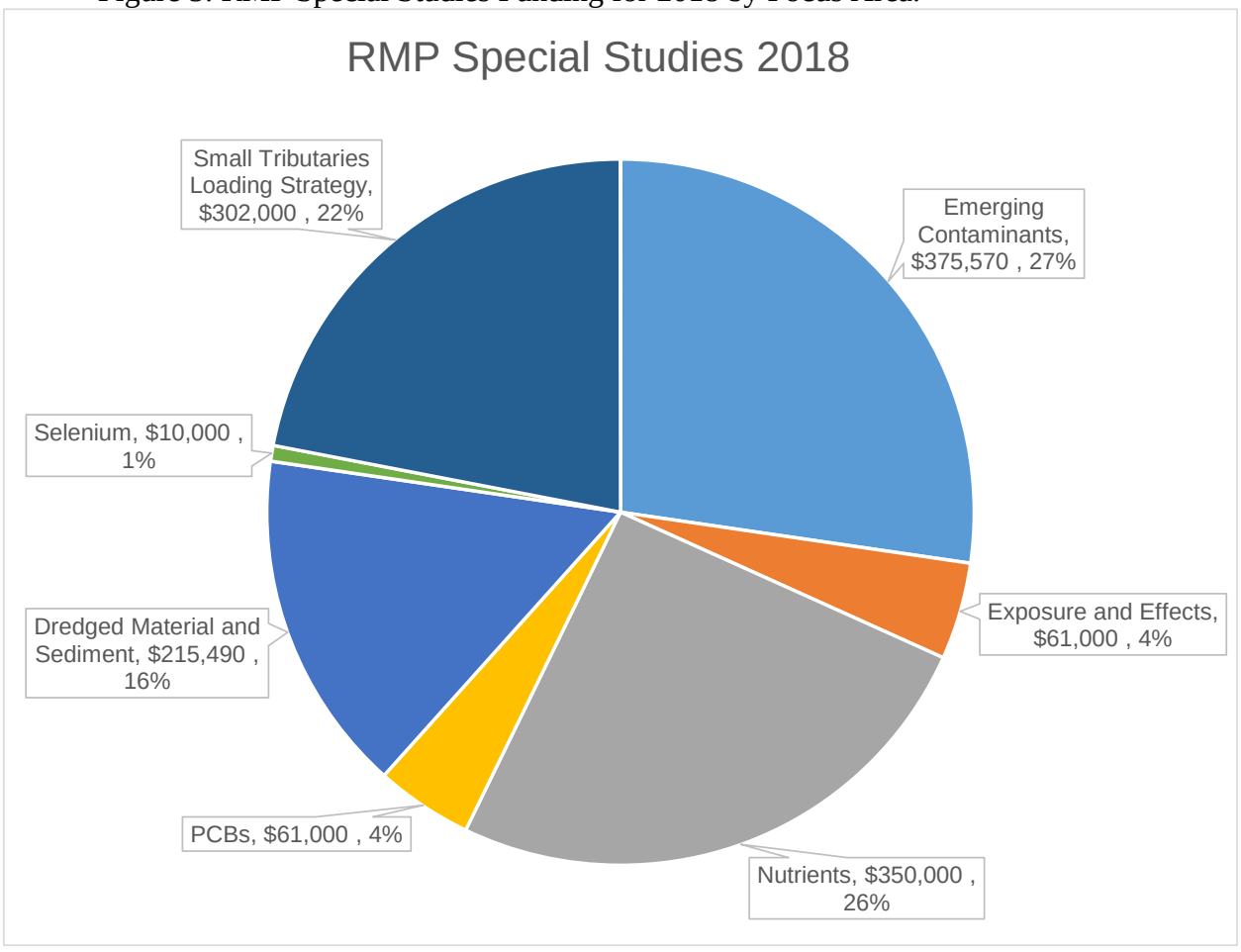


Table 6: Bay RMP 2018 Special Studies Budget by Subtask.

Task	Subtask	Direct Cost	Labor	Subcontract	Grand Total
7. Special Studies	*Special Study: EC Archive Collection for NPE in Margin Sediment	$500	$2,000		$2,500
	*Special Study: EC Archive Collection for PFAS in Margin Sediment	$500	$2,000		$2,500
	*Special Study: EC CUP in Margin Sediment and Water	$1,400	$36,840	$90,730	$128,970
	*Special Study: EC Microplastic in Bivalves	$800	$26,600	$18,200	$45,600
	*Special Study: EC Non-Targeted Analysis of Sediment and Water	$2,650	$33,350	$65,000	$101,000
	*Special Study: EC Pharmaceuticals in Wastewater		$30,000		$30,000
	Special Study: EC Strategy Support		$65,000		$65,000
	Special Study: EE Benthic Community Synthesis			$21,000	$21,000
	Special Study: EE Sediment Bioaccumulation Guidance		$30,000		$30,000
	Special Study: EE Strategy Support		$10,000		$10,000
	Special Study: Nutrient Moored Sensor Monitoring	$30,181	$160,048	$40,000	$230,229
	Special Study: Nutrient Ship-Based Monitoring	$0	$19,889	$99,882	$119,771
	Special Study: PCB Richmond Harbor Conceptual Model		$30,000		$30,000
	Special Study: PCB San Leandro Bay Fish Diet Analysis			$21,000	$21,000
	Special Study: PCB Strategy Support		$10,000		$10,000
	Special Study: Sediment DMMO Database Support		$55,000		$55,000
	Special Study: Sediment Dumbarton Bridge Flux Monitoring			$120,000	$120,000
	Special Study: Sediment Mallard Island Flux Monitoring			$30,490	$30,490
	Special Study: Sediment Workgroup Support		$10,000		$10,000
	Special Study: Selenium Strategy Support		$10,000		$10,000
	Special Study: STLS AFR conceptual model		$13,000		$13,000

Task	Subtask	Direct Cost	Labor	Subcontract	Grand Total
	development				
	Special Study: STLS Data Analysis		$100,000		$100,000
	Special Study: STLS Management Support		$32,000		$32,000
	Special Study: STLS Regional Watershed Model		$7,000		$7,000
	Special Study: STLS Trends Road Map		$0		$0
	Special Study: STLS Unallocated		$25,000		$25,000
	Special Study: STLS Wet Weather Characterization	$5,650	$88,350	$31,000	$125,000
Grand Total		$41,681	$796,077	$537,302	$1,375,060

*These studies will be supported with Alternative Monitoring Requirement funds.

Appendix A: Bay RMP 2018 Programmatic and Status and Trends Task Descriptions, Budget Justifications, and Deliverables.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
1. Program Management	A. Program Planning	Labor	$40,000	Preparing annual workplans and budgets (Detailed Workplan, Multi-Year Plan) plus other program planning activities.	Same amount as 2017 budget.	2019 Multi-Year Plan (draft in October '18, final in January '19), 2019 Detailed Workplan (draft in October '18, final in January '19)
	B. Contract and Financial Management	Labor	$160,000	Tracking expenditures versus budget, accounting, updating planned hours, working with auditors, preparing financial updates to RMP SC, developing contracts, overseeing contracts, invoicing stakeholders, updating the MOU between SFEI-ASC and the Water Board as needed.	$10,000 less than 2017 budget	Executed contracts. Monthly invoicing. Quarterly financial updates to SC. Quarterly updates to planned budget in accounting software.
	C. Technical Oversight	Labor	$50,000	Review of work products by Lead Scientist, Program Manager, and Senior Scientists to ensure the quality of RMP deliverables.	Same amount as 2017 budget.	Improved quality work products
	D. Internal Coordination	Labor	$80,000	Workflow planning, tracking deliverables, and holding staff meetings.	Same amount as 2017 budget.	RMP Deliverables Tracking System and Stoplight Reports (quarterly at SC meetings)

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	E. External Coordination	Labor	$30,000	Participation in meetings with external partners to coordinate programs (e.g., linking RMP monitoring with SWAMP, meeting with SCCWRP, serving as liaison to the Delta RMP and other RMPs)	$10,000 less than 2017 budget	Program efficiencies through coordination with partners.
	F. Administration	Direct Cost	$5,000	Direct costs of chemicals, hazardous waste disposal, supplies, postage, journal articles, and software.	Same amount as 2017 budget.	
		Labor	$5,000	Office management assistance (e.g., RMP mailings, arranging travel, purchasing).	$4,000 less than 2017 budget	Program efficiencies through support for science staff.
2. Governance	A. SC meetings	Direct Cost	$1,600	Catering for meetings at SFEI.	$400 less than 2017 budget. Typical catering cost is $400 per meeting. 4 meetings per year.	
		Labor	$48,000	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing minutes from past meetings. Pre-meeting with Chair and Co-Chair.	Same amount as 2017 budget.	4 SC meetings
	B. TRC meetings	Direct Cost	$1,600	Catering for meetings at SFEI.	$400 less than 2017 budget. Typical catering cost is $400 per meeting. 4 meetings per year.	

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Labor	$48,000	Preparing agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing minutes from past meetings.	$5,000 more than 2017 budget. Increased cost needed to have RMP technical staff engaged with TRC meetings.	4 TRC meetings
	C. WG meetings	Direct Cost	$3,000	Catering for meetings at SFEI.	Typical catering cost is $400 per meeting. 7 meetings per year.	
		Labor	$107,000	Preparing proposals for special studies, agendas, agenda packages, participating in meetings, writing meeting summaries, action item follow-up, reviewing past meeting minutes.	$5,000 less than 2017 budget. Cost of WG meetings range from $10k to $38k depending on duration and number of proposals. $5k of the Strategy Support funds for EEWG, PCB, Selenium, and Sediment/Dredged Materials will also be used to support the meetings and proposal writing.	7 Workgroup meetings - ECWG (2-days), Microplastics, SPLWG, EEWG, PCB, Selenium, Sediment/Dredged Material
	D. External Science Advisors	Direct Cost	$60,000	Honoraria and travel for external science advisors. Includes funding for statistical advice.	Same amount as 2017 budget. Honoraria for external advisors to RMP Workgroups. Assumes $2k honoraria for 25 advisors plus travel costs for spring WG meetings.	Program efficiencies through ongoing peer-review and expert advice.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
3. QA and Data Services	A. Quality Assurance System	Labor	$30,000	Updating the Quality Assurance Project Plan, writing a summary QA report for all S&T activities for the year, and researching analytical methods. Maintaining the SFEI laboratory SOP file system.	Same amount as 2017 budget.	(1) Annual QAPP update, (2) Annual QA Summary Report for S&T activities, (3) Participate in Annual Data Services/QA Meeting with TRC in December, (4) Respond to QA Officer requests
	B. Online Data Access: CD3	Labor	$65,000	Adding enhancements and updates to RMP's web-based data access tool CD3.	Same amount as 2017 budget.	Specific tasks planned: (1) Automate generation of TEQs; (2) Expand functionality of data download tool; (3) Implement display of toxicity summary data; (4) Tool maintenance and performance upgrades.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	C. Database Maintenance	Labor	$50,000	Incorporating updates and corrections to data as needed, including re-analyzed results and updates implemented by CEDEN/SWAMP.	Same amount as 2017 budget.	Specific tasks: (1) Add 2002 and 2003 CTR data to CD3 (2) Add basic water quality data from YSI for RMP water cruises in 2010, 11, 12, 15 to CD3 (3) Check that all records in the legacy RMP database are also in the RDC database (4) Make sure all RMP data has associated Lat/Longs so data can be exchanged with WQX (5) Move RDC database to Data 2 (6) Update database to implement changes made by CEDEN for standard vocabulary codes, business rules and database structure (7) Update records and address issues as identified by internal staff (8) Perform scheduled database maintenance.
	D. Updates to SOPs and Templates	Labor	$30,000	Developing and enhancing software tools and processes such as EDD templates and writing and maintaining internal SOPs to increase efficiency of data management tasks	Same amount as 2017 budget.	Specific tasks: (1) Modify and design data reporting templates. (2) Update queries for bird and bivalve tissue data (3) Maintain data management standard operating procedures and work flow documentation (4) Continue discussion on how to manage sums (5) Continue to work with CEDEN to provide input of updating the CEDEN data checker with SWRCB staff.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
4. Annual Reporting	A. RMP Update Report	Direct Cost	$20,000	Printing and mailing for RMP Update Report	Estimate for 1000 print run and mailing. Cost in 2016 was $17,800.	
		Labor	$35,000	Preparing technical content (text, analyses, graphics) and web presence. Managing contractors for design, editorial content, and printing/mailing.	Estimated labor cost for RMP Update Report. Overall cost of $55k is based on 2016 RMP Update actuals ($48k, $30k for labor and $18k for printing/mailing)	RMP Update Report (September)
	B. Annual Meeting	Direct Cost	$15,000	Direct costs for venue and catering for Annual Meeting.	Estimated direct costs: $5k for venue, $9k for catering, $1k for travel/misc.	
		Labor	$45,000	Developing the meeting agenda, managing logistics, advertising about the meeting, managing attendee registration, preparing presentations, staffing the meeting.	Estimated labor costs for Annual Meeting. Overall cost ($60k) based on 2016 Annual Meeting actuals ($56k). The total amount includes direct costs for venue and catering.	Annual Meeting (October)
5. Communications	A. Communications Plan Implementation	Direct Cost	$15,000	Contribution to SFEP to Estuary News.	Based on 2017 contribution ($13k).	

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Labor	$20,000	Coordinating the distribution of RMP information to stakeholders, natural resource managers, and the public through multiple media channels (e.g., Estuary News, website, publications, email newsletters, fact sheets, social media, etc.). Coordinating and reviewing content for the newsletter.	$14,500 less than 2017 budget. Scaled back on labor by $12k, the rest on subcontracts. Maintained support for Estuary News.	4 issues of Estuary News with RMP content (quarterly). 4 RMP eUpdate Newsletters (quarterly).
	B. Stakeholder Engagement	Labor	$20,000	Preparing for and attending RMP stakeholder meetings (e.g., BACWA, BASMAA, LTMS, WSPA, RB2) as well as communicating directly with stakeholder representatives.	$8,000 less than 2017 budget.	RMP presentations at BACWA, BASMAA, LTMS, BPC, WSPA, and RB2 Meetings.
	C. Responses to Information Requests	Labor	$12,000	Responding to inquiries for RMP data and reports, including press calls.	Same amount as 2017 budget.	Timing delivery of RMP information to stakeholders. Timely responses to press calls.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	D. Outreach Products	Labor	$30,000	Producing technical content and design for fact sheets on high profile RMP topics	Assuming 80 hours of design staff time and 126 hours of technical staff time. The budget for this task is $20k more than the 2017 budget, but most of this increase is from merging in $15k from a S&T task ("Analysis of S&T Data"). Extra design labor added to assist with important reports.	TBD. The types of products to be produced are visually compelling final reports, short summaries of key reports, and manuscripts for high impact findings.
	E. Presentations at Conferences and Meetings	Direct Cost	$10,000	Travel and registration costs for RMP staff to attend conferences, workshops, and local meetings.	Assuming 4 conferences at $2,000 per conference plus $2,000 for travel costs for local meetings.	
		Labor	$35,000	Preparation for and participation in workshops and conferences for SWAMP, NorCal SETAC, ACS, and other professional organizations; as well as presentations at local meetings.	Same amount as 2017 budget. Assumes partial coverage for RMP posters or presentations at up to 6 conferences or local meetings (a total of 202 hours of technical staff time and 40 hours of design staff time).	Presentation of RMP data at up to 6 conferences or local meetings (December).
	G. RMP Website Maintenance	Labor	$20,000	Updating the RMP website with new reports and items. Funds for online data access tools (e.g., CD3) are in the Data Services/QA budget.	Same amount as 2017 budget. Assuming 60 hours for IT staff, 40 hours for design staff, 40 hours for Environmental Analyst, 8 hours for EI Director.	Updates to website with new reports and content (at least quarterly).

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
6. S&T Monitoring	A. USGS Sacramento Support	Subcontract	$250,000	Support for USGS-Sacramento to conduct in-situ sensor monitoring. The program is supported by USACE pass-through funding ($250,000).	USGS receives $250,000 directly from USACE. This support is included in the revenue from dredgers.	Continuous suspended sediment monitoring at 5 stations
	B. USGS Menlo Park Support	Subcontract	$235,000	Support for USGS-Menlo Park to conduct nutrient monitoring.	Subcontract with USGS.	Monthly measurements of basic water quality at 38 stations
	C. 2018 Bivalve Cruise	Direct Cost	$5,000	Field supplies and shipping for bivalve samples.	Estimated direct costs from S&T 10-year plan.	
		Labor	$25,000	Developing a cruise plan, managing subcontractors for field and laboratory work, staffing the cruise, and follow-up on samples sent to the labs.	Estimated labor costs from S&T 10-year plan.	Bivalve Cruise Plan and subcontracts. Successful collection of samples.
		Subcontract	$87,000	Laboratory costs for bivalve samples	Estimated subcontractor costs from S&T 10-year plan.	
	D. 2018 Bivalve Cruise Data Mgmt	Labor	$15,000	Formatting, performing QA/QC review, and uploading RMP field and analytical results from laboratories to SFEI's RDC database and replicating to CEDEN.	Estimated cost from Data Services.	Processing and upload 2018 S&T Bivalve data.
	E. 2018 Bird Egg Monitoring	Direct Cost	$2,000	Field supplies and shipping for bird egg samples.	Estimated direct costs from S&T 10-year plan.	

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Labor	$15,000	Developing a cruise plan, managing subcontractors for field and laboratory work, staffing the cruise, and follow-up on samples sent to the labs.	Estimated labor costs from S&T 10-year plan, scaled back by $45k by cutting a summary report on bird egg data. These data will be reported in the 2019 Pulse instead.	Bird Egg Cruise Plan and subcontracts. Successful collection of samples.
		Subcontract	$180,000	Laboratory costs for bird egg samples	Estimated subcontractor costs from S&T 10-year plan.	
	F. 2018 Bird Egg Monitoring Data Mgmt	Labor	$40,000	Formatting, performing QA/QC review, and uploading RMP field and analytical results from laboratories to SFEI's RDC database and replicating to CEDEN.	Estimated cost from Data Services.	Processing and upload 2018 S&T Bird Egg data.
	G. 2018 Sediment Cruise	Direct Cost	$8,000	Field supplies and shipping for sediment samples.	Estimated direct costs from S&T 10-year plan.	
		Labor	$47,000	Developing a cruise plan, managing subcontractors for field and laboratory work, staffing the cruise, and follow-up on samples sent to the labs.	Estimated labor costs from S&T 10-year plan.	Sediment Cruise Plan and subcontracts. Successful collection of samples.
		Subcontract	$210,000	Laboratory costs for samples	Estimated subcontractor costs from S&T 10-year plan.	
	H. 2018 Sediment Cruise Data Mgmt	Labor	$36,000	Formatting, performing QA/QC review, and uploading RMP field and analytical results from laboratories to SFEI's RDC database and replicating to CEDEN.	Estimated cost from Data Services.	Processing and upload 2018 S&T Sediment data.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
	I. S&T Laboratory Intercomparison Studies	Labor	$10,000	Design and execution of laboratory intercomparison studies for key parameters in sediment, bivalve tissue, and bird egg tissue.	56 hours for QA Officer to design, manage, and report on results to the TRC. The original budget estimate was $100k to perform IC studies for sediment, bird eggs, and bivalves. This amount was scaled back to $50k to conserve funds.	Presentation to the TRC on findings from IC studies. The types of studies will be determined by the TRC in advance.
		Subcontract	$40,000	Subcontracts for RMP laboratories to participate in IC studies.	Subcontract costs for laboratory participation in IC studies.	
	J. Sample Archive	Direct Cost	$25,000	Storage costs for archives of sediment, bivalve, bird egg, and sport fish samples. Short-term archives are stored a Schaeffers in Oakland. Long-term archives are stored at NIST. Payments to NIST are made in odd numbered years.	Subcontract with Schaeffers Storage (paid monthly)	Short-term RMP sample archive.

Task	Subtask	Expense Type	Budget	Description	Budget Estimate Notes	Deliverables
		Labor	$12,000	Maintain and enhance the Archive Data Sample tool and respond to archive sample requests	$1,000 increase from 2017 budget. (1) Documentation and upload template (20 hours) (2) General upkeep and maintenance for tool and data (30 hours) (3) Setting up user accounts, help desk (10 hours) (4) Respond to archive sample requests includes funds for managing up to 5 data requests at 10 hours per data request	(1) Update documentation and template (2) General upkeep and maintenance for tools and data (3) Set up User Accounts and Help Desk (4) Manage internal and external data requests
		Subcontract	$10,000	Storage costs for archives of sediment, bivalve, bird egg, and sport fish samples. Short-term archives are stored a Schaeffers in Oakland. Long-term archives are stored at NIST. Payments to NIST are made in odd numbered years.	Subcontract with NIST - paid every other year (odd years)	Long-term RMP sample archive

Appendix B: Bay RMP 2018 Special Study Descriptions and Deliverables.

Study Name	Budget	Summary	Deliverables
EC Special Study Emerging Contaminants Strategy	$65,000	Increasing interest in emerging contaminants issues by the San Francisco Bay Regional Water Board, RMP stakeholders, and the general public is reflected in headline news as well as policy actions at local, state, and federal levels. The amount of effort needed to manage the RMP Emerging Contaminants Strategy has increased significantly in recent years. Core deliverables have been tracking new information regarding contaminant occurrence and toxicity and updating the RMP's Tiered Risk and Management Action Framework. New requests for information include assisting the Water Board with emerging contaminants action plans. Coordination of pro bono analyses by partners, such as BACWA and universities, is another rapidly expanding component of strategy implementation. A recently improved Bay-specific contaminant transport model will also be tested to assess its utility in improving understanding of the role of pathways, in response to a need for improved modeling capabilities identified by stakeholders and experts. For these reasons, this proposal requests a $15,000 (30%) increase in funding for managing the RMP Emerging Contaminants Strategy. This represents less than 20% of the overall RMP CECs planning budget ($350,000).	1. Information gathering, including presentations at scientific conferences 2. Assist Water Board and other RMP stakeholders with science summaries relating to policy including emerging contaminants action plans and comment letters regarding proposed actions of other agencies. 3. Coordinate pro bono studies conducted in collaboration with RMP Status and Trends monitoring activities 4. Present an update of the RMP CEC Strategy, ongoing or completed special study and pro bono studies, and new studies to the SC 5. Reviewed RMP tiered monitoring and management risk framework 6. Updated the RMP CEC Strategy document

Study Name	Budget	Summary	Deliverables
EC Special Study Current Use Pesticides and Wastewater Contaminants in Margin Sediment and Water	$128,970	To leverage an existing RMP effort to collect samples of margin sediment in the South and Lower South Bays this summer, monitoring of two sets of analytes in margin water and sediment is proposed. First, a screening study to assess concentrations of current use pesticides is recommended. Current use pesticides are currently listed as Possible Concerns (Tier I) for the Bay; many pesticides widely used in urban settings have not been the subject of Bay monitoring studies. Current use pesticides may also be responsible for some of the unexplained sediment toxicity in the Bay. By employing analytical methods developed by USGS California Water Science Center (CAWSC; Sacramento, CA), over 150 pesticides can be monitored, including several pesticides that the California Department of Pesticide Regulation has identified via recent prioritization modeling and marketplace surveys as high priorities for the southern Bay region, and for which limited to no Bay data are available. A second screening analysis performed by USGS National Water Quality Laboratory (NWQL; Denver, CO) scientists can measure the polycyclic musk fragrance ingredient galaxolide (or HHCB) and a number of other fragrance ingredients. The State Water Board has recently prioritized monitoring for galaxolide in water as part of a pilot study design for CECs because laboratory studies indicate aquatic toxicity at low levels; previous monitoring the RMP has conducted on this contaminant was in bivalves and bird eggs collected in 2002-2004. Analysis of Bay samples would complement an upcoming USGS National Water Quality Assessment Program study of northern and central California, part of a series of studies taking place in regions across the nation, which will monitor both pesticides and wastewater contaminants in freshwater streams, but not the Bay. Monitoring water and sediment samples in southern portions of the Bay for these wastewater contaminants will also provide concentrations that may be compared conservatively to available aquatic toxicity thresholds, as this portion of the Bay experiences longer hydraulic residence times relative to other embayments.	Technical Report (Draft: Summer 2018; Final: Fall 2018) Data uploaded to CEDEN

Study Name	Budget	Summary	Deliverables
EC Special Study Pharmaceuticals in Wastewater Data Analysis & Reporting	$30,000	In 2016, six Bay Area wastewater treatment agencies contributed a total of $77,500 towards a voluntary study of pharmaceutical compounds in wastewater. This RMP-coordinated study represents the most comprehensive analysis of pharmaceuticals in wastewater to date in this region. The data from this study include the first information available about pharmaceutical compounds in influent and effluent from secondary treatment plants, and includes measurements in influent, partially treated effluent (tertiary treatment facilities only), final effluent, recycled water, and reverse osmosis concentrate. Synthesis of the data would be an opportunity to evaluate the current level of concern associated with pharmaceutical compounds in the Bay following recent policy developments surrounding pharmaceutical stewardship. This proposal is for funding to perform quality assurance/quality control review, data analysis, and reporting for the pharmaceuticals dataset. Proposed work would leverage the investment made by the wastewater agencies to collect the data and would maximize the use of these data to inform regional efforts to monitor pharmaceuticals and manage contaminant treatment and source reduction.	Technical Report (Draft: Summer 2018; Final: Fall 2018) Data uploaded anonymously to the Regional Data Center; NOT uploaded to CD3 or CEDEN
EC Special Study Non-targeted Analysis of Sediment and Related Studies	$101,000	Non-targeted analysis, a key element of the RMP's CEC strategy and recent state CEC guidance, can help to provide a measure of assurance that the RMP is not missing unexpected yet potentially harmful contaminants simply because of failures to predict their occurrence based on use or exposure prioritization criteria. The RMP has recently conducted non-targeted analysis of nonpolar, fat-soluble compounds in bivalve tissue and seal blubber, and polar, more water-soluble compounds in water and effluent. This new proposed study would use non-targeted techniques from two different labs to examine both nonpolar and polar contaminants in Bay sediment, a matrix that has not yet been screened. This type of non-targeted study will lay the foundation for future targeted CEC monitoring by helping to identify new potential contaminants of concern without a priori knowledge of their occurrence. In addition to the non-targeted sediment study, an additional non-targeted study of water is proposed to leverage previous monitoring efforts. This low-cost add-on would screen extracts of passive samplers deployed in 2016 for the presence of nonpolar compounds using non-targeted analysis, a direct complement to the ongoing screening for more polar compounds.	Fact Sheet and Technical Report (Draft: Spring 2019; Final: Summer 2019) Manuscript

Study Name	Budget	Summary	Deliverables
EC Special Study Characterizing Unknown PFASs in SF Bay Sediment	$2,500	Perfluoroalkyl and polyfluoroalkyl substances (PFASs) are an important class of chemicals that are widely used in industrial, commercial and residential applications. They are of concern because they are highly persistent and many are associated with a myriad of health effects. Some of the highest concentrations in the world of perfluorooctane sulfonate (PFOS) have been observed in Bay seals and cormorants. This study will collect and archive sediments in the Lower South Bay margin areas for the purpose of analyzing a broad suite of PFASs. Chemical analyses will be conducted as additional resources become available. It is intended that these samples will be analyzed using recently developed methods to provide a more comprehensive picture of the complete suite of PFASs in sediment. The RMP routinely monitors for only about a dozen of the ~3,000 PFASs in use today. This is of critical importance as manufacturers phase out the use of PFOS and perfluorooctanoic acid (PFOA) in favor of alternative PFASs. Very little is known about these alternatives – both in terms of chemical structure and production volumes.	Sediment samples archived at Schaeffer's Cold Storage (December 2018)

Study Name	Budget	Summary	Deliverables
EC Special Study Nonylphenol Ethoxylates in Margin Sediments	$2,500	Nonylphenol ethoxylates (NPEs) and related compounds are nonionic surfactants that were once widely used in industrial and household laundry detergents; key NPEs are ubiquitously detected in Bay water, sediment, and bivalve samples. Currently, these compounds are classified as Moderate Concern (Tier III) compounds, and it has been suggested that concentrations of these compounds may be decreasing from voluntary phase-out of NPEs from laundry detergents. However, there are many other potential sources of NPEs. Moreover, preliminary results from a 2016 RMP special study suggest that Bay samples contain a broad, complex mixture of NPEs and related compounds, including more ethoxylated NPEs that have not been targeted for monitoring in the Bay. This study will collect and archive sediments in the Lower South Bay margin areas for the purpose of analyzing a broad suite of NPEs and related compounds. Chemical analyses will be conducted as additional resources become available. These margin sites receive considerable wastewater and stormwater discharges, and are more likely to reflect contamination of current uses of chemicals. Analysis of NPEs and related compounds would provide information to help determine whether NPEs should continue to be classified as Tier III contaminants, and additional information about the influence of ongoing sources of contamination, including effluent and runoff.	Sediment samples archived at Schaeffer's Cold Storage (December 2018)

Study Name	Budget	Summary	Deliverables
STLS Special Study POC Watershed Characterization Reconnaissance Monitoring	$205,000	This study contains two elements: (1) Advanced data analysis ($100k); and (2) Wet weather field monitoring ($105k plus carryover from previous year's budget). The advanced analysis will more deeply analyze the wealth of data already collected with the primary goal to develop a stepwise methodology for improved interpretation and identification of watersheds of management interest that both BASMAA and RMP staff can follow in a consistent manner.	1. A spreadsheet matrix of sites and sampling triggers for each site to support the field program. 2. A stepwise interpretive methodology (supported by a technical appendix outlining the results of the advanced data analysis) (Preliminary draft: by 2018 WG meeting to get further review; Second draft: August 2018 ; Final: November 2018) 3. Technical report on the WY 2018 reconnaissance data (March 2019)
STLS Special Study Regional Watershed Spreadsheet Model Support	$7,000	Provide any occasional support for the RWSM after it becomes publicly available to maintain a collaborative peer-review process for subsequent model refinements, and ensure public accessibility to the model.	Written reviews of new versions of the RWSM produced by BASMAA. Provision of any new versions on the RMP website.

Study Name	Budget	Summary	Deliverables
STLS Special Study Planning Support for Stormwater Alternative Flame Retardants Conceptual Model	$13,000	Review available PBDE data and conceptual models and recommend how those can inform the ECWG's planning for a 2019 study proposal of alternative flame retardants (AFRs) that are being used to replace PBDEs.	Technical Report (April 2018).
STLS Special Study Trends strategy development	$45,000	This study contains two elements: (1) Complete the Guadalupe River statistical trends model ($20k); and (2) Develop an integrated strategy of trends evaluation for the region. The first element is for the additional funding needed to use the developed statistically-based multi-factor regression trends model (e.g., Hirsch 2010) for Guadalupe to complete a power analysis that can be used to design a monitoring program sufficient for evaluating loading trends in the watershed. The second element is to develop, in close coordination with other STLS members, a complete strategy design that will serve as a robust framework for tracking regional scale loading trends over time.	Short technical report for the Guadalupe statistical model and monitoring design Summary report that outlines the trends strategy road map (Draft : April 2018; Final: July 2018)
STLS Special Study Program Management	$32,000	Support for the Small Tributaries POC stormwater concentration and loading program through monthly communication with BASMAA program and Water Board representatives. This will be completed through regular check in phone calls, planning for and development of meeting agendas and materials, preparation of meeting summaries, and monitoring the agenda of and attendance at key external meetings.	Meeting summaries and a list of action items for each meeting

Study Name	Budget	Summary	Deliverables
EE Special Study: Strategy Coordination and Technical Support	$10,000	Develop an updated multi-year plan for the Exposure and Effects Workgroup. Funds for this task would enable SFEI to continue to consult with the EEWG regarding plans for the next iteration of Exposure and Effects activities that can inform management decisions in San Francisco By. Funds would also support small-scale synthesis of information that is needed to support these discussions.	Updated EEWG Multi-Year Plan (June 2018)
EE Special Study: Support for Sediment Bioaccumulation Evaluations	$30,000	The Dredged Material Management Office (DMMO) is responsible for approving millions of cubic yards of routine dredging projects in the San Francisco Bay to maintain safe navigation. Dredged sediment as well as the remaining residual sediment surface are evaluated to ensure projects do not produce adverse environmental impacts. Bioaccumulation testing of dredged material is required if certain triggers are exceeded. However, the process for evaluating bioaccumulation test results is complicated and often site-specific, and is currently developed and agreed upon between dredgers and regulators on a case-by-case basis. This study would develop a standard list of toxicity reference values (TRVs) based on the U.S. Army Corps of Engineers' (USACE) Environmental Residue Effects Database (ERED), which can be used as a screening tool to evaluate bioassay results for the region. By developing a list of the most relevant TRV values up front, this study will save dredgers and regulators time and money by avoiding the need to conduct individual studies to develop TRVs, and also improve the efficiency and consistency of dredging project evaluations.	Technical Report (Draft: April 2018; Final: June 2018)

Study Name	Budget	Summary	Deliverables
EE Special Study: Synthesis of Benthic Community Data in the Whole of San Francisco Bay using the M-AMBI Index	$21,000	Evaluation of macrobenthic community condition is an integral component of sediment quality assessment, and is a required element of the SQO assessment framework. We do not, at present, have robust and validated tools to interpret macrobenthic community health in the mesohaline, oligohaline, and tidal fresh water habitats of San Francisco Bay Estuary (i.e., 50% of the whole system). Consequently, SQO assessments showing 52% of San Francisco Bay with poor benthic condition may be inaccurate and misrepresenting the apparent extent of contaminant-impacted sediments. We propose to update the SQO assessments of San Francisco Bay by incorporating a newly revised version of the M-AMBI (Multivariate AZTI Marine Biotic Index) benthic index designed to work in multiple estuarine habitats across the United States, including the polyhaline, mesohaline, and oligohaline habitats in the San Francisco Bay Estuary. To do this we will calibrate the M-AMBI across the estuary's different habitats and integrate the M-AMBI scores into the SQO assessment framework. The successful integration of this new benthic tool will allow for the first time, a robust SQO assessment of the potential impacts of toxic, sediment-bound chemicals on the macrobenthic resources of the San Francisco Bay Estuary. 2018 RMP funding will support Task 1 of this project: Calibration of the M-AMBI for SQO Assessment in San Francisco Bay Estuary. With the goal of integrating the M-AMBI into the SQO assessment framework, we will need to develop an approach to classify the M-AMBI scores into a four category scheme like the rest of the SQO components. We will accomplish this by benchmarking M-AMBI scores in the polyhaline habitat to those of the existing SQO benthic indices (BRI, RIVPACS, RBI, and IBI) and assigning new thresholds that match the existing SQO thresholds and represent ecologically meaningful changes in benthic community composition (species loss/replacement, shifts in dominance, potential functional changes, etc). M-AMBI scores and condition category assignments will be validated against an independent data set in the polyhaline habitat that was used in the original SQO benthic index development process. The validated polyhaline thresholds will be used as a model for developing M-AMBI interpretation thresholds for the mesohaline and oligohaline habitats.	Technical memo covering the M-AMBI threshold adjustment process and the results of the validation exercise (Dec 2018)

Study Name	Budget	Summary	Deliverables
Nutrients Special Study: Ship-Based Sampling and Sample Analysis	$119,771	Ship-based samples will be collected and analyzed for a range of nutrient-related parameters. This data is essential for basic condition assessment, model calibration, and improved understanding of nutrient behavior and nutrient-related effects in the Bay. Ship-based discrete samples will be collected by USGS aboard the R/V Peterson on ~12 full-Bay cruises and an additional ~12 South Bay cruises.	Results will be reported in the FY18 NMS Annual Report (September 2018)
Nutrients Special Study Open-Bay and Slough Moored Sensors: Data Analysis, Interpretation, and Maintenance	$230,229	High-frequency moored in situ sensors at the Dumbarton Bridge have improved our understanding of dissolved oxygen in Lower South Bay. This proposal would maintain the network of moored sensors in open waters and margin areas of Lower South Bay measuring dissolved oxygen and a range of other parameters. In addition to data collection, FY18 activities would include data analysis with a major focus on quantitative mechanistic interpretation to identify factors contributing to observed DO conditions, possibly including the use of simplified reactive-transport models.	Results will be reported in the FY18 NMS Annual Report (September 2018)
Microplastic Special Study Microplastics in San Francisco Bivalves	$45,600	With external funding from the Moore Foundation and the RMP, SFEI is embarking on a significant effort to characterize microplastics in San Francisco Bay over the next two years. The project will provide information to address many of the management questions articulated in the RMP Microplastic Strategy. A key element that was not included in the Moore project was the characterization of microplastics in bivalves. Bivalves are an important food source to Bay wildlife, are integrators of contaminants in the water column, and provide a robust long-term data set to evaluate trends. In 2018, as part of RMP Status and Trends monitoring, bivalves will be deployed, collected, and analyzed for a suite of contaminants. Resident species of bivalves are also collected as part of the nutrient monitoring that is routinely conducted. This project proposes to augment the existing RMP efforts by including microplastics analyses.	TRC/SC presentation (March 2019) Results will be included in the Moore Microplastic project final report (Dec 2018) and manuscript

Study Name	Budget	Summary	Deliverables
Sediment Special Study Sediment Strategy Support	$10,000	The funds will support SFEI coordination and technical support for workgroup meetings.	1-2 Workgroup meetings Updated Dredged Material and Sediment Supply Multi-Year Plan (October 2018)
Sediment Special Study Hosting and Support for DMMO Database	$55,000	The current DMMO database is managed by the USACE and is available here: http://www.dmmosfbay.org/. The benefits of transitioning the hosting and managing of the database to SFEI include stable funding and support for the database, and the ability to integrate the DMMO data into SFEI's other data visualization tools in the future, such as the Contaminant Data Display and Download tool (cd3.sfei.org), which is the primary data access and visualization tool for the Regional Monitoring Program's 25 year dataset. DMMO data could also be integrated and visualized through CD3, and thus making it easier to synthesize the DMMO data (e.g., dioxin data or contamination hot spots in the margins). In addition, this project would establish the infrastructure for potential future enhancements to the DMMO database, such as developing a tool for compiling "Tier 1" track records for projects or project clusters using the DMMO and other relevant data.	1. Upload a copy of DMMO database to SFEI's server and backup system (Oct 2018) 2. Memo summarizing long-term database goals and objectives (Oct 2018) 3. Host and maintain DMMO database (Dec 2018) 4. Assist with data uploads (Dec 2018) 5. Develop BETA version of a web-based tool to compile "Tier 1" track records

Study Name	Budget	Summary	Deliverables
Sediment Special Study Improved Lower South Bay Suspended-Sediment Flux Measurements – Year 1 Monitoring	$120,000	The USGS will measure suspended-sediment flux measurements for Lower South Bay for WY 2018 and WY2019. Funding for this project will cover WY 2018 monitoring. To quantify the effect of flocculation on Lower South Bay sediment flux computations USGS will continue suspended-sediment (SSC) flux monitoring at the Dumbarton Bridge with a augmented sampling program that will continuously observe in-situ floc size, particle size distributions, SSC, and turbidity through entire flood-ebb cycles during spring and neap tides of each season (i.e. eight, two-day field excursions). Seasonal and spring-neap sampling are needed to independently determine the settling velocity parameter for all time periods. Sediment flux monitoring will follow previously established USGS methods (Shellenbarger et al., 2013). In-situ floc size and particle size distributions will be measured using the floc-cam (Manning and Schoellhamer 2013) and LISST-100x laser grain-size analyzer (e.g. Gartner et al., 2001), respectively. Water samples for SSC measurement throughout tidal cycles will be collected 30-minute intervals using an automatic water sampler. In addition to existing infrastructure, USGS will install two acoustic backscatter sediment sensors (LISST-ABS) to continuously measure SSC at the elevations of the present turbidity sensors. The LISST-ABS instruments are less sensitive to grain-size changes and biological fouling than optical measurements, and thus would provide a redundant surrogate of flocculation processes and a surrogate to infill lost turbidity data due to prevalent fouling at the site. The data collected during WY 2018 will be utilized to assess the added benefit of installing the fixed vertical profiler in WY 2019. Discrete vertical turbidity profiles, collected using an YSI sonde raised and lowered from a sampling boom, would be utilized to compute a settling velocity parameter derived from *n* vertical profile measurements. Comparison of the settling velocity observed directly from “floc-cam”, the settling velocity computed from the mid and near bed sensors, and the settling velocity computed from the discrete vertical profiles will allow quantification of the error reduced by adding vertical turbidity profile measurements.	Basic Data Report with sediment flux computations, detail of methods used, and data generated from the study, with no interpretation (December 2018)

Study Name	Budget	Summary	Deliverables
Sediment Special Study Mallard Island Suspended-Sediment Monitoring	$30,490	Maintain data collection, processing, and publication for turbidity and suspended-sediment concentration (SSC) at Mallard Island station (USGS 11185185).	Data collected, processed, and QA/QCed by the USGS. Data made available to the public once approved.
PCB Special Study PCB Strategy Coordination and Technical Support	$10,000	Funds for this task would enable SFEI to continue to consult with the PCB Workgroup and the Small Tributary Loadings Strategy Team regarding plans for the next iteration of the TMDL and RMP activities that can inform the TMDL. Funds would also support small-scale synthesis of information that is needed to support these discussions. The plan will include a multi-year schedule of budgets and deliverables aimed at providing a technical foundation for the next iteration of the TMDL.	Updated PCB Multi-Year Plan (June 2018)
PCB Special Study Richmond Harbor Priority Margin Unit Conceptual Model Development	$30,000	The goal of RMP PCB Strategy work over the next few years is to inform the review and possible revision of the PCB TMDL and the reissuance of the Municipal Regional Permit for Stormwater (MRP), both of which are tentatively scheduled to occur in 2020. Conceptual model development for a set of four representative priority margin units will provide a foundation for establishing an effective and efficient monitoring plan to track responses to load reductions and also help guide planning of management actions. The Emeryville Crescent was the first PMU to be studied in 2015-2016. The San Leandro Bay PMU is second (2016-2017). The third was Steinberger Slough in San Carlos, and the fourth is Richmond Harbor. A report on this fourth PMU and summarizing conclusions across all four PMUs will be completed in 2019, using funding from 2018 and 2019. Note: the funding allocated in 2018 is not sufficient to complete the project. Additional funds ($30k) from either the 2019 budget or a SEP project are needed.	Technical Report (Draft: May 2019; Final: August 2019)

Study Name	Budget	Summary	Deliverables
PCB Special Study San Leandro Bay Fish Diet Analysis	$21,000	Funding from the RMP and SEPs is supporting development of a conceptual model and an extensive field study of PCB concentrations in San Leandro Bay to address critical information needs related to conceptual model development. The objectives of the field study are to 1) implement the monitoring recommendations and test the hypotheses developed in the conceptual model for the Emeryville Crescent PMU; and 2) provide the information needed to support development of an updated PCB food web model that includes prey fish. The funding requested in this proposal would support analysis of gut contents and stable isotopes for samples of sport fish and prey fish species from San Leandro Bay. The PCB Workgroup has identified this information to be critical in understanding PCB accumulation in the San Leandro Bay food web, and in deciding on strategies for monitoring and managing PCB contamination. Completion of this work in late 2017 will allow incorporation of the information into the final conceptual model report for San Leandro Bay.	Technical Report (Draft: Oct 2017; Final: Nov 2017)
Selenium Special Study Selenium Strategy Coordination and Technical Support	$10,000	The funds would support SFEI coordination and technical support for Workgroup activities and continuing development of the Selenium Strategy.	Updated Selenium Multi-Year Plan (June 2018)