

Attachment D – Scope of Work, Schedule, and Budget

K. Scope of Work

Purpose of Funding Request

The CV-RWQCB lists the Sacramento-San Joaquin Delta as impaired by mercury. The Delta Methylmercury (MeHg) Total Maximum Daily Load (TMDL) requires load reductions in five Delta subareas (Marsh Creek, Mokelumne River, Sacramento River, San Joaquin River, and Yolo Bypass) and load caps in the remaining two subareas (Central Delta and West Delta). Wetlands and irrigated agriculture are two nonpoint source (NPS) types that are estimated to contribute 21 percent of the MeHg load to Delta waters. The TMDL implementation plan, called the Delta Mercury Control Program, incorporates a phased adaptive management approach. This funding request will provide these NPS dischargers with the necessary planning and coordination during the startup of Phase 1 control studies required by the Delta Mercury Control Program. The Control Studies will develop and evaluate management practices (MPs) to control MeHg. Funding is requested to support the NPS Workgroup as its Members study the prioritized MPs and study sites, and provide outreach and communication throughout the process.

Tasks

Task 1. Coordinate Stakeholder-Specific Control Studies

Based on the NPS Workgroup's collaborative Control Study Workplan, this project will coordinate implementation of a prioritized set of control studies. The NPS Workgroup will provide the communication and coordination mechanisms (web site, listserv, quarterly meetings) both among NPS Workgroup members and between the NPS Workgroup and the broader mercury TMDL community.

The NPS Workgroup Facilitator, with support from the Steering Committee, will manage and coordinate NPS Workgroup members to get the Phase 1 control studies implemented. In particular, because grant funding is the primary means to implement control studies, the NPS Workgroup Facilitator will support additional proposals developed for implementation projects.

The NPS Workgroup Facilitator will also provide regular updates on NPS Workgroup activities to the broader mercury TMDL community in the Delta and upstream watershed through quarterly Delta Tributaries Mercury Council meetings.

Deliverables: (1) NPS Workgroup web site and listserv; and (2) NPS Workgroup meeting summaries.

Task 2. Compile and Analyze Available Metadata

The NPS Workgroup Mercury Researchers will post-process MeHg concentration data into relative loads where possible for existing MeHg datasets from Delta wetlands and irrigated agriculture. They will compile MeHg data and associated water quality data from site-specific studies and regional long-term datasets (e.g., SWAMP, RMP, USGS, NWIS) to evaluate spatial and inter-annual variability. They will synthesize the historical data as a guide for future control study planning and submit a report for the NPS Workgroup as a component of Task 3.

The goal of a metadata analysis approach is to consolidate and statistically analyze previously-collected field data (not necessarily available in the regional datasets) for inter-comparison and new calculations of MeHg loads, at a variety of spatial scales and among a variety of MPs (e.g., grazing prior to flood vs routing seasonal wetland discharge through permanent ponds). This approach maximizes the use of past monitoring and experimental datasets to generate estimates of historic loads and determine the drivers behind patterns associated with MPs and natural variability.

Federal and state agencies have funded more than 17 studies of MeHg dynamics within the Delta ecosystem since 1997. As reviewed in the Workgroup's recent product "Synthesis of Mercury Science to Support Methylmercury Control Studies for Delta Wetlands and Irrigated Agriculture," the breadth and depth of datasets are informative to MP development, but a numerical metadata analysis of these studies is an important next step. More than \$7 million has been spent on these MeHg studies, yet the data have not been compiled and analyzed holistically or comparatively. These studies were designed primarily for monitoring MeHg concentrations in key matrices (water, sediment, fish, or wildlife) among regions, sub-habitats, and seasons. As such, they have helped to characterize annual loads by region, but few studies explicitly incorporated rate measurements into their monitoring plan. Although it may not be possible to generate definitive rates of MeHg dynamics (production, bioaccumulation, and export), constrained estimates of these MeHg dynamics may be generated from the high density of MeHg concentration data coupled with ancillary water quality and flow measurements where available. Additionally, metadata analyses often provide the necessary data to assess watershed- or landscape-level patterns in MeHg production, bioaccumulation, and export, which otherwise go undetected at the local scale.

Although MeHg concentrations alone are valuable monitoring data, they are only half of the equation to estimate loads. Although hydrology was not specifically measured during 15 of the 17 aforementioned studies, post-processing of the MeHg concentration data into relative loads may be possible where (1) hydrologic tracer data (e.g., conductivity, chloride, temperature) are available, or (2) the hydrology management data are similar among years and are available from management agencies. Data mining, both within the study's specific dataset and among larger regional and historical datasets, can provide the supporting information for bracketing estimated MeHg export. Further, data mining can help in the design of future studies by shedding light on the required data quality and density for inter-comparison and post-processing results (for example, for conducting a power analysis). Initial data mining suggests that new calculations and inter-comparisons may be productive in such diverse settings as the Cache Creek Settling Basin, Twitchell Island rice fields, Twitchell Island permanent wetlands, Browns Island tidal marsh, Grizzly Island seasonal wetlands, Petaluma River tidal marshes and multiple wetlands of the Yolo Bypass and Cosumnes River Preserve. Some suggested regional data repositories include:

- Surface Water Ambient Monitoring Program (2006-12, available through CEDEN)
<http://www.ceden.us/AdvancedQueryTool>
- Regional Monitoring Program of San Francisco Estuary Institute (1993-2012 available through CD3) <http://www.sfei.org/rmp/wqt>
- National Water Information System of U.S. Geological Survey (1950-20120)
<http://waterdata.usgs.gov/nwis>
- Water Quality of San Francisco Bay (1969-2012)
<http://sfbay.wr.usgs.gov/access/wqdata/query/index.html>

The public will have full access to the MeHg data compiled by this project. Some data are already in CEDEN and all new data from projects funded through the State Board are required to be uploaded there. Any new data assembled for this task will be compiled in a CEDEN-compatible format for uploading.

Because re-analysis is an exploration of available data, the minimal requirements for a metadata analysis are to generate a standardized dataset for inter-comparison and to have parity of scale for calculating MeHg loads (equivalent scales of area and time period). A further value to this re-analysis will be greater data density of load estimates from wetlands within the Delta, as used in the Delta box model MeHg budget.

Deliverable: Memorandum summarizing metadata analysis.

Task 3. Synthesize NPS Control Studies Interim Results in Draft and Final Reports

Compile location and local land use information for current study sites. Update the status maps of the past, current, planned and potential study sites. Evaluate the representativeness of control study sites for

the first half of Phase I and aid in recommending new land uses or subregions of the Delta for future control studies.

Synthesize recent and current NPS MeHg control study results to provide a consistent, coherent message on the Phase 1 midterm conclusions and prioritized next steps. Facilitate a review process with NPS Workgroup members to evaluate how and under what circumstances each promising MP could be implemented and then calculate the potential area in which such MPs could be applied.

The midterm review will allow the Delta Mercury Control Program an opportunity to assess whether the MPs being tested are feasible and effective or additional studies (or alternative MPs) should be implemented. This report is due to the Technical Advisory Committee on October 20, 2015. This report will also represent the final project deliverable for this project, which will characterize and prioritize MPs for application and/or additional study. The project team, with NPS Workgroup members' support, will report to the TAC in November 2015. The NPS Workgroup Facilitator will draft the final report for stakeholder and grant administrator review, address comments, and then submit the final report.

Deliverable: Draft and Final Reports synthesizing NPS Control Study interim results.

Task 4. Manage and Administer Project

Provide all technical and administrative services needed for project completion; monitor, supervise, and review all work performed; and coordinate budgeting and scheduling to ensure that the project is completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations.

Deliverable: Quarterly invoices and project reports.

Progress Tracking and Table of Deliverables

Each quarterly report will include an estimate of percent completion for each task and associated deliverables. These percentages will be compared to the deliverable due dates to confirm that tasks are on schedule.

The following table indicates the schedule for work items with deliverable due dates. This schedule assumes that the following deadlines apply:

- Grant Agreement finalized no later than July 1, 2014
- Final Project Report no later than March 1, 2016
- Final Invoicing no later than April 30, 2016
- Project Grant End Date no later than July 1, 2016

Additional time constraints are also considered in setting this schedule:

- The NPS Workgroup's current funding expires June 30, 2013.
- Control study workplans must begin to be implemented by August 20, 2013.
- Interim Control Study Reports are due October 20, 2015, for review by the Technical Advisory Committee.
- The Cosumnes River Preserve MeHg study may not be completed until July 1, 2017.

Tasks	Deliverables	Due Dates
Task 1. Coordinate Stakeholder-Specific Control Studies		
Facilitate NPS Workgroup meetings	1. NPS Workgroup web site and listserv 2. NPS Workgroup meeting summaries	Quarterly
Coordinate NPS Workgroup Members		
Task 2. Compile and Analyze Available Metadata		
Compile key study datasets	Memorandum summarizing metadata analysis	October 20, 2015
Estimate MeHg export loads and on-site exposure for representative land uses and management practices		
Compare mercury science synthesis findings with metadata analysis results		
Task 3. Synthesize NPS Control Studies Interim Results in Draft and Final Reports		
Compile and summarize Phase 1 mercury control studies	Draft and final project reports	March 1, 2016
Synthesize study results and extrapolate Delta-wide		
Recommend new and follow-on studies		
Task 4. Manage and Administer Project		
Provide all administrative services	Quarterly invoices and project reports	Quarterly

L. Schedule

The following table shows the sequence and timing for implementation of each task in the proposed project. The entire schedule may be adjusted, consistent with the deliverables schedule and associated date assumptions listed above.

Tasks	Start Date	End Date
Task 1. Coordinate Stakeholder-Specific Control Studies	July 1, 2014	July 1, 2016
Task 2. Compile and Analyze Available Metadata	July 1, 2014	October 1, 2015
Task 3. Synthesize NPS Control Studies Interim Results in Draft and Final Reports	January 20, 2015	October 20, 2015
Task 4. Manage and Administer Project	July 1, 2014	July 1, 2016

Possible obstacles to project implementation include delays in gathering information to support the metadata analysis (Task 2) and delays by control study proponents in reporting results for synthesis (Task 3). The Basin Plan Amendment includes a deadline for interim control study progress reports of October 20, 2015, followed by a Technical Advisory Committee review meeting. Delays in that review process would delay completion of the final project report (Task 3).

If project funding begins later than expected or more time is needed to complete the deliverables, there is time flexibility already built into the regulatory schedule that this project can take advantage of.

M. Budgets

The requested 319(h) funded grant is \$124,963, with committed in-kind match funds of \$48,474 and a total project budget of \$173,437. In-kind support by participating entities and other uncommitted, impacted NPS dischargers may increase the actual match funds. These costs estimates were determined from current hourly rates multiplied by expected hours needed to complete each task. All costs are directly related to project implementation (i.e., no overhead).

The Grant Applicant has made prior investments towards the project by hosting and facilitating unfunded DTMC meetings for the past three years. Facilitation services include maintenance of the DTMC web site and an email distribution list with approximately 500 addresses.

An estimate of the cost for all work items (i.e., line item), which is almost entirely planning costs, is included as **Attachment D-1: Line Item Budget Table**.

The Task Budget (**Attachment D-2: Task Budget Table**) outlines and identifies the costs for each task consistent with the Scope of Work for the Grant Agreement. The Task Budget also provides information on which costs will be covered by CWA 319(h) grant funding and which by match funding and/or in-kind services.