

**CONSIDERATION OF A RESOLUTION AUTHORIZING THE DIRECTOR, OR
DESIGNEE, TO SIGN AN INTERAGENCY AGREEMENT WITH THE
CALIFORNIA DEPARTMENT OF FISH AND GAME FOR PROGRAMMATIC
OVERSIGHT OF QUALITY CONTROL AND QUALITY ASSURANCE OF
MERCURY RESEARCH AND MONITORING**

Agenda Item: 10

Meeting Date: 8-14-03

Summary: This resolution would authorize the Director, or designee, to sign an interagency agreement with the California Department of Fish and Game (CDFG) to provide programmatic oversight of a quality control and quality assurance program for Authority-funded mercury research and monitoring projects. CDFG will ensure that data generated from mercury projects are accurate, precise, and comparable between projects.

Recommended Action: Adopt Resolution 03-08-10.

Staff Recommendation: Staff recommends that the Authority adopt the attached resolution, authorizing an interagency agreement with CDFG for oversight of a quality assurance/quality control (QA/QC) program to ensure accurate and comparable data from Authority-funded mercury research and monitoring projects.

Background

Mercury contamination from inactive or abandoned mine sites is causing widespread contamination of fish in the Bay-Delta watershed that may be affecting populations of fish and wildlife and creating a human health hazard for people that eat large amounts of some local fish. The Ecosystem Restoration Program has funded multiple projects to determine the source, transport, and cycling of bioavailable mercury in the watershed. A QA/QC program is needed to provide quantitative documentation of the precision, accuracy, and comparability of the data collected. Quality assurance is particularly important in a mercury program, because of the overall difficulty in accurately quantifying relevant species of mercury, especially methylmercury, in dilute media at very low concentrations. Programmatic oversight of quality assurance for mercury projects is needed to address two quality-assurance challenges:

- to establish confidence that the data produced by multiple laboratories are comparable,
- to demonstrate the validity of data for future use and interpretation.

The QA/QC program includes overall communication and coordination, development of a Quality Assurance Management Plan, inter-laboratory comparisons, evaluation of methods, and analysis of 5% duplicate samples from the mercury projects.

An objective of the Ecosystem Restoration Program is to reduce the loadings and concentrations of toxic contaminants in all aquatic environments in the Bay-Delta estuary and watershed to levels that do not adversely affect aquatic organisms, wildlife, and human health. In the MSCS Milestones, the Implementation Plan, and other planning documents, specific priority actions listed for mercury include:

- Determine, inventory, and quantify sources of high levels of bioavailable mercury and determine its potential to result in methylation, bioavailability, and bioaccumulation.
- Determine potential impact of ecosystem restoration work on methyl mercury levels in fish and wildlife.

This proposed project was developed as a directed action for funding for CDFG for the following reasons:

- Programmatic QA/QC of the mercury project was recommended in the draft “Mercury Science Strategy” developed by mercury experts, under contract from the CBDA Science Program.
- A QA/QC program is needed immediately to support Authority-funded mercury projects that will begin in summer 2003.
- CDFG personnel have extensive experience in laboratory and field methods and QA/QC programs, and have successfully conducted a similar quality assurance oversight program for a previous large mercury study.
- CDFG is an implementing agency for the Ecosystem Restoration Program.

Fiscal Information

Funding Source: Proposition 204

Term: 3 years

Total Amount: \$657,391.00

List of Attachments

Proposed Scope of Work

Contact

Name: Dan Castleberry

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CALIFORNIA BAY-DELTA AUTHORITY
RESOLUTION NO. 03-08-10

CONSIDERATION OF A RESOLUTION AUTHORIZING THE DIRECTOR, OR DESIGNEE, TO SIGN AN INTERAGENCY AGREEMENT WITH THE CALIFORNIA DEPARTMENT OF FISH AND GAME FOR PROGRAMMATIC OVERSIGHT OF QUALITY CONTROL AND QUALITY ASSURANCE OF MERCURY RESEARCH AND MONITORING

WHEREAS, an objective of the Ecosystem Restoration Program (ERP) is to reduce the loadings and concentrations of toxic contaminants in all aquatic environments in the Bay-Delta estuary and watershed to levels that do not adversely affect aquatic organisms, wildlife, or human health; and

WHEREAS, priority actions described in the MSCS Milestones, the Implementation Plan, and other planning documents include determining sources and bioavailability of mercury in the watershed, and determining potential impacts of restoration work on mercury levels in fish and wildlife; and

WHEREAS, the California Department of Fish and Game is an ERP Implementing Agency with extensive experience in laboratory and field methods for mercury and has successfully conducted a similar quality assurance program; and

WHEREAS, the proposed action will provide support for the California Department of Fish and Game to provide oversight and coordination of a quality assurance and quality control program for Authority-funded mercury research and monitoring projects; and

WHEREAS, the proposed action will provide support to establish confidence that the data produced by multiple laboratories is comparable and to demonstrate the validity of the data for future use and interpretation;

NOW, THEREFORE, BE IT RESOLVED that the Authority authorizes the Director, or designee, to sign an interagency agreement with the California Department of Fish and Game for programmatic oversight of quality control and quality assurance of mercury research and monitoring projects, as generally described in the attached proposed scope of work for an amount not to exceed \$657,391, subject to appropriation of adequate funds.

Agenda Item: 10
Meeting Date: 8-14-03
Page 4

CERTIFICATION

The undersigned Assistant to the California Bay-Delta Authority does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the California Bay-Delta Authority held on August 14, 2003.

Dated:

Heidi Rooks
Assistant to the California Bay-Delta Authority

Attachment 1
California Department of Fish and Game
Mercury Research and Monitoring Projects
Proposed Scope of Work

I. PROJECT OFFICIALS

The Project Representatives during the term of this agreement shall be:

Ecosystem Restoration Program
Name: Donna Podger, Contract Manager
Address: 650 Capitol Mall, 5 th floor Sacramento, CA 95814
Phone: (916) 445-5269
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II. PURPOSE OF PROJECT

A. Background Information

Programmatic oversight of quality assurance is critical for CBDA-funded mercury research and monitoring projects to define the comparability of data from the participating research groups and to aid responsible use of the information by managers and stakeholders. An effective, quality-assurance program enhances the confidence of participating research teams and provides quantitative documentation of the precision, accuracy, comparability, and representativeness of the data collected. Quality assurance is particularly important in a mercury program, because of the overall difficulty in accurately quantifying relevant species of mercury, especially methylmercury, in dilute media with concentrations at the part-per-trillion level (sub-nanograms per liter). Programmatic oversight of quality assurance for mercury projects is needed to address two quality-assurance challenges:

- (1) to establish confidence that the data produced by multiple laboratories are comparable,
- (2) to demonstrate the validity of data for future use and interpretation.

The importance of a programmatic quality assurance program is described in the draft “Mercury Strategy for the Bay-Delta Ecosystem: A Unifying Framework for Science, Adaptive Management, and Ecological Restoration” (Wiener, Gilmour, & Krabbenhoft, 2003). The programmatic QA/QC that is recommended in the draft Mercury Strategy is:

There are many potential components to a robust quality control and quality assurance program, including inter-laboratory comparison (blind, round-robin exchange of samples), analyses of split samples

from the field, on-site laboratory assessments, estimation of method detection limits, validation of data by third parties, and technical review of methods for handling, preparation, and analyses of samples. Inter-laboratory comparisons, which are particularly useful for documenting inter-laboratory precision and accuracy (bias). About 5 to 10 percent of the annual analytical workload in a project should be devoted to quality assurance at the programmatic level. (p33 Wiener et al, 2003)

B. Project Objectives

- 1. Primary Project Goal.** The primary project goal is to provide oversight and coordination of quality assurance for multiple mercury research and monitoring projects.

- 2. Study Objectives.**
 - Management of mercury quality assurance program
 - Prepare Quality Assurance Program Plan that integrates multiple mercury projects
 - Review laboratory methods and perform on-site assessments of laboratories involved in mercury research projects
 - Evaluate and validate method detection limit studies for different media at different labs
 - Perform inter-laboratory comparison studies for laboratories involved in mercury research projects
 - Perform annual data set evaluation
 - Analyze field duplicates of 5% of samples to evaluate confidence in the data collected and to detect any potential changes in data accuracy over time.
 - Establish external QA oversight website

III. PROJECT FUNDING SOURCE – PROPOSITIONS 204 AND 13

This project is a directed action project based on the necessity of quickly implementing a programmatic quality assurance program for several mercury projects that will begin in summer 2003. The Department of Fish and Game was selected to provide the management of the mercury quality assurance program for the following reasons:

- Department of Fish and Game is an implementing agency for the California Bay-Delta Authority Ecosystem Restoration Program. Department of Fish and Game successfully conducted a similar quality assurance oversight program for the large multi-Institution CALFED mercury study ERP-99-B06.

- Department of Fish and Game operates several laboratories that perform mercury analyses in several media and have extensive experience in laboratory and field methods and quality assurance and quality control.

Ecosystem Restoration Program will fund this project with funds from Proposition 204. The task description and funds are identified in Year 4 (2003-2004) Annotated Budget and Work Plan for the Ecosystem Restoration Program. Proposition 204 will fund this project for a total amount of Six Hundred Fifty Seven Thousand, Three Hundred Ninety-One Dollars and No Cents (\$657,391), including all applicable overhead.

IV. WORK TO BE PERFORMED

A. Scope of Work

This study has been broken down into 9 tasks, some with subtasks.

Task 1 Project Management and Administration

The Contractor shall provide all technical and administrative services associated with performing and completing the work for this project.

The Contractor shall be responsible for the performance of the work as set forth in this agreement as well as for the preparation of products and a final report as specified in this Exhibit A. The Project Director shall promptly notify the Contract Manager of events or proposed changes that could affect the scope, budget, or schedule of work performed under this agreement.

The Contractor shall provide all quarterly progress reports, invoices, and scheduled deliverables as indicated in Section A Attachment # 1 – List of deliverables.

Subtask 1.1 Project Management

The Contractor shall provide all technical and administrative services associated with performing and completing the work for this project. Technical and administrative tasks shall include: project management, budgeting, scheduling, coordination, crew supervision, report preparation, contract management, invoicing, data collection, storage and analysis, subcontract management, and all other tasks that may be necessary to complete the scope of work specified in this agreement.

The work performed in this subtask also includes the preparation and submission of Quarterly Progress Reports to CBDA's contract manager; the planning and conducting of quarterly status meetings with all project investigators to review progress and issues from the previous quarter; the preparation and submission of the project Final Report; and the preparation and submission of deliverable products as specified.

Subtask 1.2 Quarterly Progress Reports

Prepare and submit written quarterly progress reports to CBDA's Contract Manager. The progress reports shall detail work accomplished, discuss any problems encountered, and recommend potential solutions to those problems; detail costs incurred during the subject quarter, and document delivery of any intermediate work products. A brief outline of upcoming work scheduled for the subsequent quarter should also be provided. Progress reports must be submitted by the 10th day of the month following each calendar quarter (April, July, October, January) throughout the duration of the project.

The description of activities and accomplishments of each task during the quarter shall be in sufficient detail to provide a basis for payment of invoices and shall be translated into percent of task completed for the purposes of calculating invoice amounts.

Subtask 1.3 Subcontractor Selection and Subcontract Management

Award subcontracts, as necessary, to qualified consultants or other agencies. The subcontractors shall be selected by a process that complies with applicable State and Federal regulations, including Invitations for Bid, and/or Requests for Proposals, if applicable. Prepare a legally enforceable agreement between the contractor and the selected subcontractors. The agreement shall describe the scope of work and the products expected from the subcontractors. Submit draft contract documents to the Contract Manager for review and approval prior to execution. Document steps taken in soliciting and awarding the subcontract and submit to Contract Manager for review. In the quarterly progress report, document all subcontractor activities, deliverables completed, invoices submitted, progress, issues, and proposed resolutions.

Subtask 1.4 Data Management

Prepare and submit all appropriate and pertinent Quality Assurance data generated by the project to the Contract Manager for input into CBDA's data system. Data formats and report guidance for CBDA's data system shall be provided by the Contract Manager. Data shall be submitted to the Contract Manager on computer diskettes or on forms provided by the Contract Manager. The Contractor shall be responsible for verifying the quality of the data.

Task Deliverable(s): Quarterly progress reports, invoices, and subcontract documentation if subcontractors are used, draft and final synthesis report for project. Additional list of deliverables are specified in Exhibit A – Attachment 1. Hard copies and electronic file copies to CDBA, posting of applicable information on website.

Task 2 Prepare Quality Assurance Program Plan

The quality assurance program plan (QAPP) that was used for the previous CALFED-funded mercury project (ERP-99-B06) will be reviewed by the contractor or subcontractor, and existing QAPP information utilized to the extent possible in the preparation of a new QAPP. Significant new information will be necessary to incorporate from both the SJSUF mercury project and the USGS mercury project. The draft new QAPP will be circulated to all mercury research project principal investigators involved in the two projects, and they will be given an opportunity to comment. The QAPP will be finalized based on consensus from the principal investigators of the various projects. If consensus cannot be reached, the QAPP will be finalized based on independent external technical review. The QAPP will include descriptions of all the quality assurance elements listed in this contract.

Deliverables: Draft Quality Assurance Program Plan, Final Quality Assurance Program Plan. Hard copies and electronic file copies to each participating lab and CBDA, posting of document on website.

Task 3 Written Evaluations of Analytical Methods

The contractor or subcontractor will perform a review and prepare a brief written evaluation of each method used to analyze mercury and methyl mercury in tissue, water, and sediment, in each laboratory. A maximum of up to six methods is possible for each of four labs. The methods (laboratory Standard Operating Procedures) will be evaluated as per the QAPP and a written report will be generated and sent to the laboratory being reviewed and to CBDA. Methods will be evaluated when the project initially begins or whenever there is a significant change in methods or standard operating procedures.

Deliverable: One written summary evaluation report for each pertinent laboratory standard operating procedure. Hard copies and electronic files will be provided to respective labs and to CBDA.

Task 4 Evaluation of method detection limits

Method Detection Limits for each analyte (mercury, methyl mercury) in each applicable matrix (tissue, water, sediment) used by each of the four respective labs will be reviewed and evaluated twice per project by the contractor or subcontractor. The first evaluation will occur soon after the project begins, and the second evaluation will occur approximately mid-term in the project. Each participating research group will submit data supporting their current method detection limits for review and validation. Data will be submitted for each applicable matrix/analyte combination from each participating lab. The contractor will provide a total of two written summary reports (each report will contain summary findings for all four participating labs combined) and include

the findings of the review and evaluation of method detection limits of each type of analysis performed in each matrix for each laboratory.

Deliverable: Two summary reports of conclusions from review and evaluation of method detection limits of the four participating laboratories (each report will contain the summary findings/recommendations for all four labs combined). Hard copy reports and e-files will be provided to all participating laboratories, and posted on the website.

Task 5 Inter-laboratory comparison studies

An independent laboratory will be subcontracted to coordinate and conduct intercomparison studies between the four participating research group laboratories. The intercomparison studies will be performed for both total mercury and methyl mercury in each matrix (water, tissue, and sediment). Blind certified reference materials will be used in the inter-laboratory comparisons to document and quantify both precision and accuracy (bias). A total of 16 matrix/analyte studies will be done during the 3-year life of the project, as shown below. The inter-laboratory comparisons will be conducted on the following basis, for up to the four participating labs:

Every 6 months: total mercury in water (six times total)
 methyl mercury in sediment (six times total).

Every 12 months: Total mercury in sediment (3 times total)
 Total mercury in tissue (3 times total)
 Methyl mercury in water (3 times total)
 Methyl mercury in tissue (3 times total).

The results from the inter-laboratory comparisons will be made available within 60 days to participating laboratories via email or website, with a summary annual written report (total of 3 summary reports, inclusive of all labs and all six analyte/matrix combinations in each report) to follow in hard copy and electronic file, and posted on the website.

Deliverables: Results from inter-laboratory comparisons made available within 60 days via email or website, summary report provided annually in hard copy and posted on the website.

Task 6 On-site laboratory assessments

On-site laboratory assessments will be performed at the start of the project, and at one other time during the project (not later than after the project mid-point) for each of the four participating laboratories. Assessments will focus on review of recent method detection limit studies, methods evaluations and changes, results from analysis of 5% split samples, and intercomparison study

results. A written evaluation of each of the four participating laboratories (2 total for each lab) will be submitted to CBDA within 60 days of each on-site assessment.

Deliverables: Written summary laboratory evaluation reports, provided in hard copy and electronic file, and posted on the website.

Task 7 Analysis of split samples

An independent laboratory will be subcontracted to conduct external QA analytical services on samples provided by all project participants. Participating research groups will provide the independent laboratory with duplicate field samples at a minimum of 5% frequency.

Subtask 7(a) The independent laboratory will perform laboratory analysis of field duplicates sent by each of the four participating labs.

Subtask 7(b) The independent laboratory will track and report on the origination of the samples, and prepare an annual report (3 reports total, one per year, covering all four labs in the one annual report). Data must be provided to the independent laboratory in a timely manner by each of the four participating labs. An annual written summary report will be provided to each of the four participating laboratories and CBDA, and will be posted on the website.

Deliverables: Results from field duplicates made available to participating labs via email or mail in a timely manner. Annual written report (3 reports total, one per year, covering all four laboratories in the one report) summarizing the field duplicate results in comparison to participating laboratory results. Annual written summary reports to be provided in hardcopy and electronic file to each lab and to CBDA, and posted on the website.

Task 8 Data set validation

A minimum of three data sets from each of the four participating labs will be reviewed and validated every six months (six data sets per year per lab). Timely email and phone communications with lab representatives will be used to relay high priority QA issues seen in review of data sets. An annual written report will be generated and provided in hard copy to each participating laboratory and CBDA, and posted on the website.

Deliverables: Annual data set validation summary written report (one for each of the four labs per year; 3 reports total per each of the four labs).

Task 9 Communication of results

The contractor will be responsible for all communication and coordination activities related to the QA program herein for the participating research projects. Results from the programmatic quality assurance activities will be made available to the participating laboratories in a timely manner. Summary reports will be made available to all participating laboratories and posted on the program website.

Sub-task 9a: QA coordination meetings and conference calls

The contractor will conduct at least one annual QA coordination meeting each year on-site (in California), including a “Kick-off” QA coordination meeting at the start of the project, and then one during year two and one during year three (3 QA coordination meetings total). The contractor will also conduct at least quarterly conference calls (or more often if needed) to provide QA oversight information, receive feedback and promote collaboration between participating research groups involved in the QA program effort.

Sub-task 9b: Presentations at annual scientific review meetings

The contractor will prepare a written annual QA Program report and deliver a presentation summarizing the annual QA Program report at each annual mercury scientific peer review meeting (3 meetings total) to summarize the quality assurance activities and results to date. The 3rd QA program report, however, would be a final summary report covering the entire project period, as described in 9c below.

Sub-task 9c: Written reports

The contractor will provide written reports described in the tasks above in a timely manner, with hard copies and electronic files, as specified above, distributed to each participating laboratory and CBDA, and electronic versions posted on the website. The contractor will provide a final summary report (in lieu of the 3rd annual report on the QA program) that describes the quality assurance program and the results obtained during the entire project period.

Sub-task 9d: Electronic QA database

The contractor or subcontractor will create and maintain an electronic QA database that will compile and report via an interactive webpage, all QA data for analyses performed by the contractor, subcontractor or related laboratories. This will include preparation blanks, calibration verification standards and blanks, matrix duplicate samples, matrix spike samples, matrix spike duplicate samples, and certified reference materials. The database structure and format will be compatible with the Bay-Delta Tributaries database, for eventual inclusion into the on-line database.

Sub-task 9e: Website

The contractor will create a protected website, or utilize/expand an existing protected website, for the participating research groups and CBDA and agency staff to access project information related to the quality assurance oversight. The information on the webpage might include current project announcements, notes of interest, calendar of deadlines,

Agenda Item: 10
Meeting Date: 8-14-03
Page 13

and access to documents and final reports in a .pdf format for downloading. This website will also include the interactive electronic QA database described in sub-task 9d.