

MEMORANDUM

June 14, 2005

To: RMP Technical Review Committee
From: Meg Sedlak and Jay Davis
Re: **2003 Review Panel Recommendations regarding Enhance Linkages with Universities and Interactions with similar California Monitoring Programs**

Background

In 2003, an external review panel evaluated the Regional Monitoring Program for Trace Substance (RMP) as part of the periodic five-year review of the Program. Based on the review, the panel recommended that the RMP enhance:

- Linkages with Universities.
“The SFEI/RMP should enhance its linkages with universities. The RMP is presently focused primarily on status and trends with a lesser emphasis on describing the processes that led to past conditions, or will lead to future ones. The RMP monitoring provides a wonderful platform on which to build additional studies that could address these processes through funding from other organizations such as NSF. The RMP should foster cooperative interactions that would lead to those Program enhancements with funding from other sources. Senior members of SFEI and RMP scientific staff should seek to have adjunct appointments at the region’s leading academic institutions.”
- Interaction with Similar Monitoring Programs and Activities Occurring in Other Parts of California.
“The RMP should enhance its interaction with similar monitoring programs and activities occurring in other parts of the California. This should include intercalibration with other regions to ensure data comparability and involvement in data collection/interpretation that affects state policies. In particular, the state is preparing to develop sediment quality objectives that will affect 303(d) listings and cleanup levels. The SFEI should be actively involved in such efforts. The greatest impact of the RMP for its participating organizations could be in how it influences decisions made at the state level, but that will only happen if its interactions outside of San Francisco Bay increase.”

The RMP staff and oversight committee agree with the spirit of these recommendations. In the last two years, the RMP and SFEI have pursued a number of activities to address these recommendations. The TRC recommended that the RMP document efforts that it

has taken to address these two specific recommendations (see September 21, 2004 TRC Minutes for more detail). This memorandum summarizes these efforts.

Linkages with Universities

The RMP is actively collaborating with several universities as described below.

Course Instructors and Guest Lectures at Universities

Two RMP staff members, Dr. Oros and Dr. Hoenicke, teach extension courses at UC-Berkeley and UC-Davis, respectively. In addition, Dr. Mike Connor, Dr. Jay Davis and Dr. Lester McKee have been asked to present RMP research at universities including: UC-Berkeley, UC-Davis, UC-Santa Cruz, and Stanford.

Special Issue of Environmental Research

RMP staff and the University of California—Santa Cruz (UCSC) are preparing a series of synthesis articles that will be published in a special issue of the *Journal of Environmental Research*. Ten years of monitoring and research data will be synthesized in overview articles that are being written by RMP staff and leading researchers at USGS and UCSC. Explicit in the synthesis of the data is a discussion of past and current processes that affect contaminant trends.

RMP Workgroups

Three RMP workgroups assist in developing research priorities for the Program. The workgroups are: Sources, Pathways, and Loading; Exposure and Effects; and Contaminant Fate. Each workgroup meets two to three times a year to address issues concerning the planning and implementation of pilot and special studies. The RMP has several invited academics that serve on the workgroups. At present, the invited workgroup members include:

Dr. Thomas McKone, UC-Berkeley,

Dr. Joel Baker, University of Maryland, Center for Environmental Studies, Chesapeake Biological Laboratories

Dr. Keith Stolzenbach, UC-Los Angeles

Dr. Frank Gobas, Simon Fraser University

Dr. Daniel Schlenk, UC-Riverside

Dr. Don Weston UC-Berkeley

Collaborations with Universities on Analyses of RMP Samples

Several universities analyze RMP samples for the Status and Trends program. UC-Davis and UC-Santa Cruz bring their expertise in sediment toxicity and trace metal analyses to the RMP through the analyses of samples.

The Multi-box Model

The RMP is developing a multi-box model to forecast contaminant transport in the Bay. This is collaborative effort among the Clean Estuary Partnership (CEP), the US Geological Survey (USGS) and Tetra Tech. RMP Staff has met frequently with Dr.

David Schoellhammer of the USGS, who also holds an adjunct position at University of California – Davis. Much of the model development was conducted by one of Dr. Schoellhammer's students for her master's thesis.

RMP Exposure and Effects Pilot Studies (EEPS) - Fish Effects Study

Under EEPS, the RMP has funded a two-year study beginning in 2005 to examine shiner surfperch in the Bay. This pilot project will determine if shiner surfperch (*Cymatogaster aggregata*; Embiotocidae) show effects of contamination on some aspect of their fitness, growth or reproduction. A secondary objective is to synthesize available information to develop the framework for understanding the relative contribution of contamination in the well-documented decline of the population in the San Francisco Estuary. This work is a collaborative effort conducted by Applied Marine Sciences and UC-Davis. Researchers from UC-Davis include: Dr. Kathryn Springman, Dr. William Bennett, and Dr. Gary Cherr.

National Science Foundation Seal Proposal

The RMP is collaborating with several Bay area researchers to develop a multi-investigator National Science Foundation (NSF) proposal. Other collaborators include San Francisco State, Moss Landing Marine Laboratories, University of California-Davis, the Marine Mammal Center, and Point Reyes National Seashore. The study will address anthropogenic and environmental influences on habitat use patterns and population dynamics of pacific harbor seals in the San Francisco Bay. The proposal will be submitted in Fall 2005.

Regional Scientific Conferences

RMP staff members regularly present RMP data at regional symposia including: NorCal SETAC, CAERS, CALFED Science Conference, State of the Estuary, and other regional meetings. In addition, the RMP provides funding for Nicole David to serve as the vice-president of NorCal SETAC. These meetings provide opportunities for communication with faculty and students of local universities and agencies.

Interactions with Related California Monitoring Programs

The RMP has been actively involved with similar monitoring programs around the State. In addition, the RMP has initiated several collaborations to enhance these opportunities. The specific programs and collaborations with the RMP are described below.

Clean Estuary Partnership (CEP)

The CEP was established in September 2001 as a result of a memorandum of understanding between the Regional Water Quality Control Board (RWQCB), the Bay Area Stormwater Management Agencies Association (BASMAA), and the Bay Area Clean Water Agencies (BACWA). The purpose of the CEP is to produce consensus among a wide range of stakeholders on the technical foundation for regulatory action. CEP reviews data and develops conceptual models of contaminants in the San Francisco Bay. This information is used to development management actions such as the Total Maximum Daily Loads (TMDLs). The RMP and CEP work closely to coordinate research activities. Andy Gunther, Program Manager of the CEP, regularly attends RMP

Technical Review Committee meetings to keep the RMP informed on issue relating to the CEP. Similarly, Jay Davis, Program Manager of the RMP, routinely attends CEP meetings. The CEP and RMP have embarked on several joint projects including a multi-year project to develop a multi-box model of polychlorinated biphenyls (PCBs) in the Bay. Most recently, the CEP/RMP held a joint meeting of their technical committees on May 31, 2005 to prioritize and synchronize research agendas.

Statewide Sediment Quality Objectives Development

As recommended by the Review Panel, SFEI is very involved with the development of the sediment contaminant thresholds for the State. SFEI staff is evaluating and enhancing the California SQO database as well as developing effect thresholds that can be used to establish SQOs. Active participants include Regional Water Quality Control Board members, Office of Environmental Health Hazards Assessment (OEHHA) members, and the Southern California Coastal Water Research Project (SCCWRP).

Surface Water Ambient Monitoring Program (SWAMP)

Assembly Bill 982 required the State Regional Water Quality Control Board to assess and report on State water quality monitoring programs and to propose a comprehensive surface water quality monitoring program. Regional monitoring of San Francisco Bay watersheds has been coordinated by Karen Taberski of the SFBRWQCB who also is a TRC member. Dr. Rainer Hoinecke is working with SWAMP at a State level, assisting the SWAMP Director and RWQCB liaisons to re-tool the program to reflect budget constraints.

California Bay-Delta Authority (CBDA)

RMP staff is involved with several CBDA projects including:

- Fish Mercury Project. CBDA approved a \$4.5 million proposal to examine mercury and other chemicals in fish in the Bay-Delta watershed, to increase public awareness of fish contamination issues and to monitor potential changes in mercury concentrations from marsh restoration projects in the Delta. Jay Davis, the RMP Program Manager, will coordinate this multi-investigator project and assure that RMP is informed of relevant scientific issues and important policy decisions. Project partners include the San Francisco Estuary Institute, UC Davis, the California Department of Fish and Game, Moss Landing Marine Lab, the California Department of Health Services, and the California Office of Environmental Health Hazard Assessment.
- Petaluma River Project. CBDA approved a \$1.6 million proposal to examine methyl mercury process in wetlands and their impact on the foodweb. Dr. Don Yee will oversee this project and is a key player in the RMP.
- In addition, CBDA staff have been included in RMP publications such as the 2005 Pulse (see article by Donna Podger et. al.) and RMP events such as the San Francisco Bay Mercury News Conference (Dr. Beverly van Buuren presented information on CBDA QA/QC protocols at the February 2005

conference). Similarly, Drs. Yee and Davis have been involved in CBDA activities such as QA/QC protocols for CBDA data.

South Bay Salt Pond Restoration Project (SBSPRP)

The South Bay Salt Pond Restoration Project is one of the most ambitious restoration projects on the west coast of North America. Approximately 16,500 acres of salt pond will be converted into tidal marsh. The objectives of this project are to restore and enhance a mix of wetland habitats to support wildlife, to provide for flood management, to protect or improve water and sediment quality, and to provide public access and recreational opportunities in the San Francisco Bay. Several RMP staff members have been involved in this project. Jay Davis, the RMP Project Manager, coauthored a Science Synthesis on Pollutants for the SBSPRP. RMP staff are developing a mercury monitoring plan for the Project.

San Francisco Bay Mercury News/Conference

The San Francisco Bay Mercury News is an electronic newsletter. The purpose of the newsletter is to foster communication and collaboration among researchers, regulators, and stakeholders by providing summaries of current mercury research activities in the Bay area. For the newsletter, researchers have provided summary paragraphs regarding the purpose of their research and recently accomplished milestones. In addition to circulating a newsletter, the RMP hosts an annual meeting in February to bring researchers, regulators, and the community at large together to learn about and coordinate on-going mercury research activities.

Pesticide Research and Investigation Source Mitigation Grant Program (PRISM)

In the 2004/05 wet season, the Episodic Toxicity Program of the RMP began a study to evaluate the potential toxic effects of sediments in six tributaries around the Estuary. This project is part of a combined study that is partially funded with a state PRISM grant awarded to SFEI in September of 2004. The purpose of the study is to investigate potential sediment toxicity to both freshwater and estuarine amphipods to sediments from six tributaries around the Estuary whose land uses include varying combinations of urban and agricultural practices.

Long Term Monitoring Strategy for Dredging (LTMS)

LTMS is comprised of members from the RWQCB, Bay Conservation and Development Commission (BCDC), the US Army Corps of Engineers, US Environmental Protection Agency, and State Land Commission. Dr. Mike Connor periodically attends LTMS meetings. He and RMP staff recently completed a project to examine the impacts of dredging on the Pacific Herring.

Bay Delta Science Consortium

The Bay Delta Science Consortium is an association of 17 agencies, universities, and non-governmental organizations working on the Bay. The group collaborates on joint proposals funded by CBDA and others. Dr. Mike Connor regularly attends meetings of this group.

United States Geological Survey (USGS)

The USGS has been a collaborating agency in the RMP since the beginning of the Program and has contributed in-kind services through Department of Interior funding, IEP funding, and other sources to enhance the RMP financial contributions designed to address basic hydrographic and sediment transport processes.

The RMP provides funding to Dr. David Schoellhammer for studies of suspended sediment dynamics. Dr. James Cloern receives funding to map the spatial distributions of basic water quality parameters.

National Oceanic and Atmospheric Association (NOAA) and Environmental Monitoring and Assessment Program (EMAP)

NOAA and EMAP conducted extensive sampling of the Bay in 2000 and 2001. RMP participated in design and planning of this sampling effort. The data from this sampling event is being compiled along with RMP data to better understand spatial and temporal trends.

Sacramento River Watershed Program

Dr. Jay Davis serves as Principal Investigator for the SRWP fish sampling program. This sampling has been conducted annually since 1997. Dr. Rainer Hoenicke has also served as a reviewer and advisor to this Program.

RWQCB

RMP staff provides lunchtime seminars and training regarding RMP findings and use of RMP data. In addition, Dr. Connor has provided seminars to the Board of Directors of RWQCB. RMP data are used to develop regulatory permits, answer management questions, formulate policy and develop of TMDLs.

Laboratory Intercomparison Exercises

In 2005, the RMP has initiated several laboratory intercomparison exercises.

- Three of the RMP laboratories will be participating in the next National Institute of Standards and Technology (NIST) round robin that is scheduled to commence this summer. These laboratories are: AXYS analytical, East Bay Municipal Utility District (EBMUD) and California Department of Fish and Game (CDFG). The three laboratories will be analyzing sediment and mussel tissue for pesticides, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs) and polybrominated diphenyl ethers (PBDEs)
- California Department of Fish and Game (CDFG) will analyze egg homogenate provided by the NIST. This intercomparison exercise is an informal exercise in which will analyze a known egg homogenate for PCBs, pesticides and polybrominated diphenyl ethers (PBDEs). NIST will analyze an RMP egg homogenate and the results will be compared.

- The RMP also began meeting informally with local laboratories to facilitate the flow of information among laboratories regarding methods, instrumentation, and QA/QC. Laboratories participating in this group are: EBMUD, CDFG, City and County of San Francisco, and the California State Hazardous Materials Laboratory. The first meeting was held on June 7, 2005 at EBMUD.

Statewide Data Management

- SFEI will become a California Environmental Data Exchange Network (CEDEN) node for the distribution of RMP data to a statewide database. Other agencies that will be CEDENs include SWAMP and DWR.
- In 2005, the data management staff initiated a Data QA Workshop with the Southern California Coastal Water Research Project (SCCWRP), California Department of Water Resources, Moss Landing Marine Laboratories (SWAMP), and Central Coast Ambient Monitoring Program (CCAMP). Issues regarding standardized data transfer formats, web-based data submittal tools, queries for checking data completeness, QA/QC data verification and validation procedures, documentation/metadata, comparability of datasets, data exchange networks, and data management performance measures were discussed at the most recent meeting in June 2005. As an outcome of the workshop, the group plans on meeting quarterly to further discuss issues related to data management and QA review and to facilitate the exchange of environmental data.