



Mercury Pollution in Northern California  
**Delta Tributaries Mercury Council**



## **Delta Tributaries Mercury Council**

~ Meeting Minutes ~

**Tuesday, 2 December 2008**

**12:30 p.m. – 4:15 p.m.**

**Larry Walker Associates**

**707 4<sup>th</sup> Street, Suite 200**

**Davis, CA 95616**

**Facilitator:** Stephen McCord, LWA

**Meeting Minutes by:** Stephen McCord, LWA

### **Attendees**

#### In Person

Janis Cooke, CVRWQCB  
Greg Marquis, CA Dept of Conservation  
Dave Lawler, BLM – CASO  
G. Fred Lee, G. Fred Lee & Associates  
Mary Mencin, CA DFG  
Peter Travis, BLM  
John Key, BLM  
Ivan Sturman, Ad-hoc CA Hg  
Eric Ringelberg, YoloTAC – Wallace-Kuhl

Sara Martin, SRWP  
Chris Foe, CVRWQCB  
Greg Reller, Burdeson Consulting  
Rich Marovich, Lower Putah Cr Coord. Comm.  
Mark Stephenson, CA DFG  
Carrie Monohan, The Sierra Fund  
Stefan Lorenzato, YCFCWCD / DWR  
Bob Schneider, Tuleyome  
Tony Pirondini, City of Vacaville

#### Via Teleconference

Carol Perkins

## **I. Introductions and Agenda Review**

## **II. Project Updates**

- USGS studies in Bear/Yuba: No one was on hand to share.
- Calfed Hg studies in Yolo Bypass: workshop held November 12; final reports are being drafted now; contact contract manager Janis Cooke at the CV RWQCB for more information.
- BLM mine site clean ups: working on several; will present more in the next meeting.
- State Board policy (offsets, MeHg criteria): No news.
- AML Forum: No one was on hand to share.

- Delta Mercury TMDL: CSUS facilitator for a collaborative stakeholder process is interviewing stakeholders. An open stakeholder meeting is scheduled for December 19, 2008.
- CALFED Science Conference: Several sessions were devoted to mercury research. Moss Landing Marine Labs will post all CALFED mercury project reports next month at <http://mercury.mlml.calstate.edu/reports/>.

### III. Presentations

#### **“Mining’s Toxic Legacy” by Carrie Monohan (Sierra Fund)**

Dr. Monohan discussed the Sierra Fund’s recent efforts to address mining toxins in the Sierra Nevada. The ongoing work involves a broad group of stakeholders and advisors.

A key point of the report is that the gold rush and subsequent benefits impacted the entire US. Most current landowners did not benefit, and many are not even aware that there are mines on their property. For these reasons, solutions addressing the legacy of those activities should involve the federal and state governments.

Four mining methods have been practices in the Sierras: Placer, hydraulic, hard rock and suction dredging. 26 million pounds of mercury were imported to the Sierras for gold mining, and approximately half of it was “lost” to the environment. Impacts of mining today fall into three broad categories: cultural, health, and environmental. Over 47,000 mines have been identified throughout the state. 67% are on public lands, 87% present physical hazards, and 11% present environmental hazards.

In addition to mercury exposure, arsenic and asbestos contamination are also problematic. Both occur naturally, but exposure risks have been exacerbated by mining and other development activities.

Major obstacles to doing more about these environmental contamination problems include lack of appropriate health hazard screening, poor methods of community and tribal education and engagement, and underfunded and inadequate government programs. The Fund currently focuses on outreach activities to increase awareness. Solutions advocated include: fund new research, improve and fund government programs, inventory public lands, and conduct pilot projects.

For more information, contact Carrie Monohan at The Sierra Fund, [carrie.monohan@sierrafund.org](mailto:carrie.monohan@sierrafund.org), [www.sierrafund.org](http://www.sierrafund.org), 530-478-9013.

#### **“Predicting Methyl Mercury Concentrations using the RMA Particle Tracking Model” by Mark Stephenson (CDFG)**

Mr. Stephenson applied a model developed by Resource Management Associates of Suisun City to simulate methylmercury transport and degradation in the Delta. A complex hydrodynamic model is necessary for simulating methylmercury because of the complex movement of Delta water and loss mechanisms of methylmercury. The RMA model simulates photodemethylation and sedimentation of methylmercury discharged from four tributaries and leaving at three locations, during a variety of hydrologic conditions.

20-80% of incoming methylmercury is typically lost within the Delta. Summertime photodemethylation was the dominant loss mechanism in water leaving via the southern Delta

pumps. Sedimentation was the dominant loss mechanism in water leaving via Mallard Island to the Bay. Losses increased somewhat during higher Delta outflows.

The model may be useful for predicting downstream changes in methylmercury in Delta water as a result of changes in tributary discharges.

### **“Mercury runoff from the LEHR national Superfund site on UC Davis campus” by G. Fred Lee (G. Fred Lee & Assoc.)**

Dr. Lee described the historical context of mining in the upper watershed and then major water management projects of Lakes Berryessa and Solano, and channelization in the lower reach around UC Davis. Laboratory for Energy-Related Health Research (LEHR) operated a low-level radiation exposure lab by former landfills from 1958-1988. The site was listed as a Superfund site in 1994 owing to extensive groundwater contamination. Remediation plans have still not been finalized even while the university spends ~\$10 million per year for interim site management.

Disparate sampling of fish in Putah Creek has found levels exceeding safe consumption thresholds, however there is insufficient data to conclude whether levels are higher downstream of the LEHR site. Trout just downstream of Lake Berryessa were over 0.8 mg Hg/kg wet weight, while largemouth bass downstream of the LEHR site were under 0.5 mg Hg/kg wet weight. Catfish in Lake Berryessa were in between these two levels. Putah Creek is on the 303(d) list as impaired for mercury, and safe fish eating guidance has been published by OEHHA.

Water column concentrations of methylmercury in Putah Creek are about half the levels found in Cache Creek, yet still exceed the Delta mercury TMDL goal of 0.06 ng/L. Runoff from the LEHR site consistently exceeds the total mercury criterion of 50 ng/L, but is no different from other waters sampled in the area. Levels in soils as deep as 2 feet below the surface appear ~5x elevated above natural levels. The contamination throughout the riparian corridor is likely the result of legacy mercury mining and associated sediment deposition prior to the construction of Lake Berryessa.

Dr. Lee indicated that stormwater runoff, irrigation tailwater, and channel erosion all likely contribute to mercury contamination. More monitoring is warranted. Greater regulation of permitted discharges should also be implemented. A settling basin in the lower reach is a potential solution to consider.

The PowerPoint slides used in Dr. Lee’s presentation are available at <http://www.gfredlee.com/SJR-Delta/PutahHgMinesli.pdf>. A summary discussion of issues covered in Dr. Lee’s PowerPoint slides is available at <http://www.gfredlee.com/SJR-Delta/PutahHgMineSummary.pdf>. For more information, contact G. Fred Lee & Associates, 530-753-9630, [gfredlee@aol.com](mailto:gfredlee@aol.com), [www.gfredlee.com](http://www.gfredlee.com)

## **IV. Discussion Item: DTMC Strategic Plan**

Stephen McCord presented an overview of the DTMC’s Strategic Plan for Mercury-Risk Reduction in the Sacramento River Watershed. The plan is organized to respond to three questions: (1) What is the nature and extent of the risk caused by mercury in the SRW and downstream? (2) How well do we understand our ability to control risk? (3) What is a prudent course of action to address the problem?

In addition to the main document, six appendices provide additional information and analyses: Conceptual Model, Targets, Control Measures, Analytical Models, Decision Support Tool, and

Draft Outreach Strategy. The complete report is available on the DTMC web site at <http://www.sacriver.org/issues/mercury/dtmc/documents.php>.

Recommendations answering the third question are divided into six categories: Pilot Projects, Modeling, Monitoring, Research, Outreach, and Adaptive Management. Two tracking tables were reviewed briefly. General consensus comments were that (1) the Plan, while still relevant, should be updated, and (2) the tracking tables should be reviewed and updated. Ongoing activities related to the plan include CALFED's mercury projects and the Delta Mercury TMDL. The plan should be reviewed for consistency with the latest scientific information and should support to the extent practicable any regulatory requirements in the TMDL.

## **V. SRWP Update**

Sara Martin presented the beta version of the SRWP's Sacramento River Watershed Information Module (SWIM). The Wiki-style resource library allows local groups to update their own information pages and upload documents and also provides an on-line mapping service that connects GIS layers supported by many entities in the watershed, and provides links to the sources. Users will be able to create custom maps and perform many GIS functions such as counting and measuring distances between map features. Contact Sara Martin at [sara@sacriver.org](mailto:sara@sacriver.org) to be a beta tester. The public release is scheduled for February 2009.

Watershed Health Indicators Program "report card" is underway. A technical advisory committee has been formed and will meet on December 3, 2008. More information will be shared in subsequent meetings.

## **VI. Other Updates**

- The San Francisco Bay RMP annual meeting was held in Oakland on October 7. The report's subtitle is "MERCURY: Water Quality Enemy Number One". The report is available on-line.
- The CALFED Science Conference was held on October 22-24. Abstracts from the several mercury presentations will be available on the Moss Landing Marine Labs web site.
- Ivan Sturman provided information on potential for Hg removal by hobby suction dredgers in Washington state.

## **VII. Meeting Wrap-Up**

Tentatively set for Tuesday, March 3, 2008 at the BLM offices in downtown Sacramento.

Agenda items could include:

- BLM mine remediation projects in the upper Putah Creek watershed
- Mercury hot spots in Sierran rivers
- Sutter Buttes project by Teichert
- Summary of CALFED-funded studies in the Yolo Bypass
- More discussion of the future of the DTMC and updating its Strategic Plan