MERCURY OFFSET PROGRAM FOR THE SACRAMENTO RIVER WATERSHED
WORK GROUP MEETING SUMMARY
February 28, 2003
Tsakopoulos Library Galleria East Meeting Room

Major Outcomes

- The Work Group generally agreed that:
  --a successful offset program would include a suite of projects addressing 1) measurable load reduction with a high degree of scientific certainty for success, 2) research and 3) public participation,
  -- the parties should partner on projects and collaborate on solutions,
  -- the group would meet again.
- SWRCB and RWQCB agreed to meet before the next workshop to discuss potential projects and criteria that would be acceptable for measuring a successful project.
- Purpose of the next meeting would be to discuss and evaluate proposed offset program packages.

Welcome/Introductions

Eugenia Laychak, Center for Collaborative Policy (CCP), convened the meeting at 9:10 a.m. Participants introduced themselves. Ms. Laychak recapped the previous meetings sponsored by Sacramento Regional County Sanitation District (SRCSD) including meeting #1, which identified issues and concerns regarding a potential program, and meeting #2, in which participants discussed the issues in the context of three hypothetical scenarios. She then reviewed the agenda and previewed the purpose of this meeting: to find preferred options to address fungible units, possible projects, success criteria and trading ratios. The participants offered no comments or additions to the agenda.

Vicki Fry, SRCSD Program Mgr. for Mercury Offset Program, previewed the meeting format (overview of what the project team heard in meetings #1 and #2, discussion, and identification of preferred options). She encouraged participants to engage in open discussion and voice their preferred project options to assist the District in identifying appropriate projects.

The State of the Science

Dr. Khalil Abu-Saba (Applied Marine Sciences) provided handouts and presented an overview of what is known and not known about mercury contamination in watersheds. We do know that there are several kinds of watershed loads, that are not loads all created equal, and that the sum of these loads greatly exceeds the District's load. The big uncertainty is the relationship between total mercury loads (or concentrations) and methyl-mercury concentrations – it is not evident that reducing loads will reduce concentrations in fish. Our ability to detect any effects from an offset project is greatly hindered by the small magnitude of any project's effect relative to the total problem. He described two kinds of watershed load reduction projects: reducing a large sediment load that has a small mercury concentration or reducing a small sediment load that has a high mercury concentration. He recast a map which showed that the Cache Creek watershed is a

location for reducing large loads of mercury and also may be a good project location for mercury remediation and reducing risk to humans. Locations where there are low concentrations of oxygen seem to transform mercury to methyl mercury – the form of mercury which bioacumulates in the food chain. Food web effects (inconsistent feeding habits, variable algal biomass) complicate the picture. Research in the Southeast United States has shown that the air deposits mercury in the watershed and that this mercury may methylate fairly quickly. He concluded that it might be ideal to focus on pilot projects to test the hypothesis that reducing major loads would reduce concentrations in fish while researching areas of uncertainty such as methylation rates and food web effects.

Discussion
Discussion centered on certainty vs. uncertainty in choice of projects. It was pointed out that 90% of the mercury load from mercury mine sites is discharged into the Bay-Delta below the District's outfall at Freeport. Rick Humphries stated it was his guess that bed sediments, versus new incoming loads, contribute most of the mercury and questioned whether projects focused on reducing new loads would change mercury loads below the discharge. The changes may not be detected for 10-15 years, if ever.

Fungible Units & Possible Projects
Stephen McCord (Larry Walker Associates) provided handouts and presented an overview of credit unit options (a.k.a. fungible units) and possible projects. The workgroup did not agree that the list of credit unit options was acceptable or appropriately prioritized. Based on the last meeting, the potential project types could be categorized as:

- Source control
- Transport reduction
- Linkage disruption (THg ➔ MeHg ➔ Hg in Biota)

The Group suggested that research projects be added as a fourth category.

Discussion
A representative from the RWQCB expressed a preference for reducing mass load to meet the criteria of the Clean Water Act. Project ideas suggested in the presentation included the following:

Source Control	Transport Control	Linkage Disruption	Research
• Contracted collector at mines & streams • Public mercury collection program (fluorescent light bulbs, thermometers, dentists' flasks, hobby dredge miners) outside of service area • Erosion control BMPs (landscape or stream bank) • Abandoned land mine cleanup • Mineral spring treatment • Gravel / dredge mine cleanup	• Settling basin construction / enhancement • Sediment dredging (in hot spots)	• Methylation reduction (Cross-pollutant controls and Control of methylation factors) • Food web manipulation • Consumption advisories	• Pilot remediation project (non-credited) • Measure environmental Hg levels (atmospheric deposition, native soil erosion, mineral springs, and in-stream sediments) • Fate and transport research • Methylation potential / relative bioavailability (effluent vs. offset source) • Fish consumption study • Watershed planning / TMDL development

Additional project ideas brainstormed included the following:

Source Control	Transport Control	Linkage Disruption	Research
• Acid mine remediation (Matt Mitchell)	• Revegetation project/ erosion control (Doug Craig)	• Do not flood Delta islands & prevent wetland formation [flooding/wetlands methylate mercury] (Dave Tamayo)	• USGS – Camp Far West Reservoir: research on change in nutrient loading. District might partner with USGS to develop model (Rick Humphries)
	• Sediment transport modeling for Sacramento River (Rick Humphries) *(note: modeling is not a control technology)*	• Fish vouchers: certificate for every impacted fish caught and turned in (Bob Shanks)	• Research methylation of mercury in effluent from District and removing sediment in waste stream effluent to reduce mercury in effluent. *(note: this would be part of the treatability study, not the offset feasibility study)* Determine whether fish are particularly susceptible to mercury in District's discharge. Might expand to include all sources (i.e. Mine waste) (Vicki Fry)

The issue of bioavailability of "old" and "new" mercury was raised. Jim Rytuba ((USGS) stated there is a way to measure the relative bioavailability of mercury and its potential for methylation. Also, the point was raised that the District is asking for a trading ratio about a year ahead of the RWQCB TMDL study and data compilation, making the selection of projects more challenging.

Success Criteria
Tom Grovhoug (Larry Walker Associates) provided handouts and presented a discussion of success criteria. The questions to be addressed early in the process are: 1) what are reasonable success criteria for a mercury offset project?, and 2) what happens if the success criteria are not achieved? Ideally, the project will provide a greater benefit to the environment at a lower cost to society. A technical evaluation will be necessary to ensure that a hot spot would not be created by continuing/increased discharges through the District's outfall.

Discussion
The general sense of the participants was that success has to be based on reality. Concern was expressed regarding the balance between cleaning up the environment/reducing scientific uncertainties and the District's fiduciary responsibility to their rate payers in fulfilling permit requirements. Success should be tied to solving the real problem, which should be reflected in the permit conditions. A permit is just a tool for dealing with the complicated problem that there is mercury in the watershed and people are eating contaminated fish.

There was some discussion on interpretation of the District's permit and how much of the District's load was to be mitigated. The District's permit indicates that, in the absence of a TMDL, any load (current and future) in excess of the load cap (5.1 lbs/year) must be mitigated. The load cap at present is an interim requirement.

Bob Shanks (SRCSD) asked if a scorecard approach made sense where the District could get credit for doing a project, with additional credits gained for a greater success. The concept would create financial incentives while minimizing risk for the District. The idea of a suite of projects was proposed to accommodate everyone's interests. It would reduce the uncertainty to the District and meet RWQCB standards.

General Agreement. There was general agreement to support a suite of projects. The suite should address: 1) load reduction/transport control/linkage disruption, 2) research (that may include linkage disruption projects), and 3) public outreach and education. There was also agreement that the participants could collaborate on choosing the suite of projects and that partnering would produce good results overall. There was consensus that the offset program would be part of a regulatory program or permit, as opposed to substituting for a regulatory requirement.

Participants liked that the first part of the suite responds to the need for measurable results. The second and third address concerns over scientific uncertainty and reducing risk to the public. Suggestions were made including finding a package that mitigates and reduces exposure and risk to women with unborn children.

On the topic of partnerships, David Lawler (Bureau of Land Management) discussed responsibility for orphan sites where a clean-up and abatement order has been issued. If the Water Board issues a clean-up and abatement order, the Bureau of Land Management can go to Washington and apply for funds to clean up the orphan site.

Mr. Grovhoug asked the participants to help create the package of projects, keeping in mind that the package must be beneficial, cost-effective and defendable. A question was raised about how to assess the benefit of a project. Another question concerned ongoing projects and whether those projects could contribute towards the District's offset credit if they became part of the suite. The District needs to know now what qualifies. Mike Levy indicated that the State will discuss this issue.

Trading Ratios

Lisa Bacon (CH2M Hill) provided handouts and presented an overview of trading ratios. She described ratios as a mathematical way to achieve comparability between the pounds of mercury in the District's effluent and the pounds of mercury to be removed by a project. How ratios are derived is dependent on the project undertaken. The most common ratios account for location and uncertainty. The more uncertain the project, the higher the ratio required. Sediment transport processes and methylation rates are additional/related factors that may be important for mercury. The goal is to offset with a project that would provide an equal or better benefit, when compared to removing mercury from the District's effluent. She asked the group for input on what constitutes "equal or better" in terms of a load based project. How would the District determine the ratio?

Discussion

Jim Rytuba (USGS) suggested that the offset ratio be determined using the bioavailability of the current district's discharge. The offset should remove enough mercury to reduce the bioavailability to a level equivalent to or less than the bioavailability of mercury in the District's effluent. This approach does not depend on the origin of the mercury and would be legally defensible. The issue of the effect to the food chain was also raised. One participant suggested that both bioavailability and the effects on the food chain could be looked at to address the larger problem of the effects on humans.

A suggestion was made that because there are so many unknowns, a negotiated ratio would be the best approach. It was noted that many elements of projects are not quantifiable. A suggestion was made to use a "reasonableness" test rather than a hard number to determine trading ratios. Ms. Bacon stated that at some point numbers were needed to evaluate and prioritize projects as part of a feasibility study.

Vicki Fry (SRCSD) asked what if the District proposed a research project to clear up uncertainties – and uncovered even more uncertainties? Does the District get incremental credit or are they required to clear up all the uncertainty before getting credit? Matt Mitchell (EPA)

clarified that under current rules, the District could not get credit for clearing up uncertainties with just research. Note: Research can be part of an offset package.

General Agreement. The Group agreed that the package must include a measurable load reduction project with a high degree of scientific certainty for success in terms of load reduction. There was support to use a scientific approach to determine the relative priority of projects.

The representatives from SWRCB and RWQCB agreed to meet before the next Mercury Offset meeting to develop criteria for evaluating a successful offset program. The program time schedule was reviewed. The District hopes to draft a candidate list of projects by July, 2003 – with the intent of selecting the project(s) by November, 2003.

Next Steps

- SWRCB and RWQCB will meet to discuss the projects for the package.
- The District and the consultants will also meet to develop possible options for an offset package.
- The Group agreed to schedule another meeting to review the packages 2-3 months from now.

Wrap-Up

Vicki Fry thanked everyone for their hard work. Eugenia Laychak adjourned the meeting at 12:22 pm. Everyone was invited to stay for lunch and informal presentations by Rich Bernkopf (USGS) on a decision support model being developed and by Khalil Abu-Saba (Applied Sciences) on the New Idria Mine situation.