MEMO

To:	Water Resources Association of Yolo County (Yolo WRA) Mercury Subcommittee	**Stephen McCord, Ph.D., P.E.** 759 Bianco Court Davis, CA 95616 (530) 220-3165 sam@mccenv.com
Date:	August 2, 2013 WORKING DRAFT	
Subject:	Summary of mercury-related activities relevant to the Yolo WRA	

Overview

Mercury-related activities relevant to the Yolo WRA are described in this memo, as shown in **Table 1**. This memo is a "working draft" updated as relevant information is received. Needs for near-term effort by the Yolo WRA are highlighted. All of the activities are shown collectively on a regional map in **Figure 1**.

Regulatory Context

Several water quality regulations promulgated by the Central Valley Regional Water Quality Control Board (Regional Board) currently drive mercury controls in Yolo County and its Cache Creek and Putah Creek watersheds:

- USEPA approved the Basin Plan Amendment to control mercury in Clear Lake on September 26, 2003.
- A Total Maximum Daily Load (TMDL) for mercury in the Cache Creek watershed (including Clear Lake, Harley Gulch, Bear Creek and Sulphur Creek upstream of Yolo County) approved on October 21, 2005.
- A TMDL for Methylmercury (MeHg) and Total Mercury in the Sacramento – San Joaquin Delta and Yolo Bypass approved by the US Environmental Protection Agency on October 20, 2011.

Several additional water bodies within the County and its watersheds are listed as mercury-impaired on the state's 2010 303(d) list. These regulations, plus other general water quality interests, are driving activities to address mercury contamination in the region.

Contributors

This work was done under contract with the Yolo WRA in collaboration with its Mercury Subcommittee. Primary contacts are Tim O'Halloran (Yolo County Flood Control and Water Conservation District) and Cindy Tuttle (County of Yolo). Other Subcommittee members include Bob Schneider (Tuleyome) and Ann Brice (Yolo Basin Foundation).

Table 1. Mercury-related Activities Described in this Memo.

#	Title	Notes	Level	Suggested Engagement and Action Items	Page
1	Sulphur Bank Mercury Mine Feasibility Assessment		Low	Track USEPA's planning process in early 2014.	4
2	Bear Creek Riparian Restoration Project	a	Low	Support project proponents in proposals for funding.	5
3	Harley Gulch Biota Monitoring Study	a	Low	Contact USEPA Region IX staff for update in early 2014.	6
4	Cache Creek Site Discovery Report	c	Low	Track the CERCLA status of mine sites identified in the report in early 2014.	8
5	BLM Mercury Mines Site Cleanup Activities	a	Mid	Check on status of EE/CA reports in early 2014 Track clean up action and associated monitoring of effectiveness.	9
6	Corona and Twin Peaks Mines Cleanup		Mid	Track project progress in Subcommittee meetings. Encourage similar cleanups and pilot treatments of discharges on other private lands.	11
7	Cache Creek, Bear Creek, Sulphur Creek and Harley Gulch Hg TMDL	a	High	Contact Janis Cooke in early 2014 to inquire about the program review process.	13
8	Statewide Mercury Control Program for Reservoirs		Mid	Participate in NALMS conference roll-out of reservoirs TMDL to lake managers. Evaluate potential effects of the regulations on reservoir operations in the Cache and Putah Creeks watersheds. Coordinate with US Bureau of Reclamation staff if they intend to monitor and/or model Lakes Berryessa and Solano. Obtain and review mercury control study for Davis Creek Reservoir drafted by UCD's Geoff Schladow.	15
9	Cache Creek Resources Management Plan	a	Mid	Share fish monitoring report with Regional Board as information for the 2015 Cache Creek Hg TMDL fish survey (#7) and to suggest future cost sharing.	17
10	Cache Creek Mapping and Sampling Project	c	N/A	None – the project is closed.	18
11	Cache Creek Setting Basin Mercury Studies	b	Mid	Review watershed model dataset information provided by Dr. Kavvas. Respond to DWR and contractor (UC Davis and USGS) questions as they arise. Support Eric Larson's efforts to develop a sediment transport model for the CCRMP reach.	19
12	Local Flood Management Plans	b	Mid	Identify and evaluate feasible options for sediment excavation of the CCSB to maintain settling capacity, compare alternatives, discuss potential mercury effects with scientists, and quantify potential change from baseline.	21
13	Yolo Bypass Fisheries Enhancement Projects	b	Mid	Coordinate with Doug Brown to sSupport Yolo County interests in evaluating mercury effects of BiOps, BDCP, Central Valley Flood Protection Plan Conservation Strategy and Yolo County's Habitat Conservation Plan. Request local participation in simulation modeling and adaptive management process for proposed projects.	22
14	Lower Putah Creek Restoration	b	Mid	Review CEQA documents and other project descriptions (when available) for County interests.	24
15	Yolo Bypass Wetland MeHg Control Studies	b	Mid	Provide technical and logistics review of draft reports and technical papers in late 2013.	25
16	Delta MeHg TMDL's Mercury Exposure Reduction Program	b	Mid	Track development of the MERP Workplan due in October 2013, and comment as warranted.	27
17	Clear Lake Mercury TMDL		Low	Track updates and projects driven or constrained by the regulation quarterly.	29

NOTES:

a The activity is driven in part by the Delta MeHg TMDL.

b The activity is driven in part by the Cache Creek, Bear Creek, Sulphur Creek and Harley Gulch Hg TMDL.

c Project is closed.

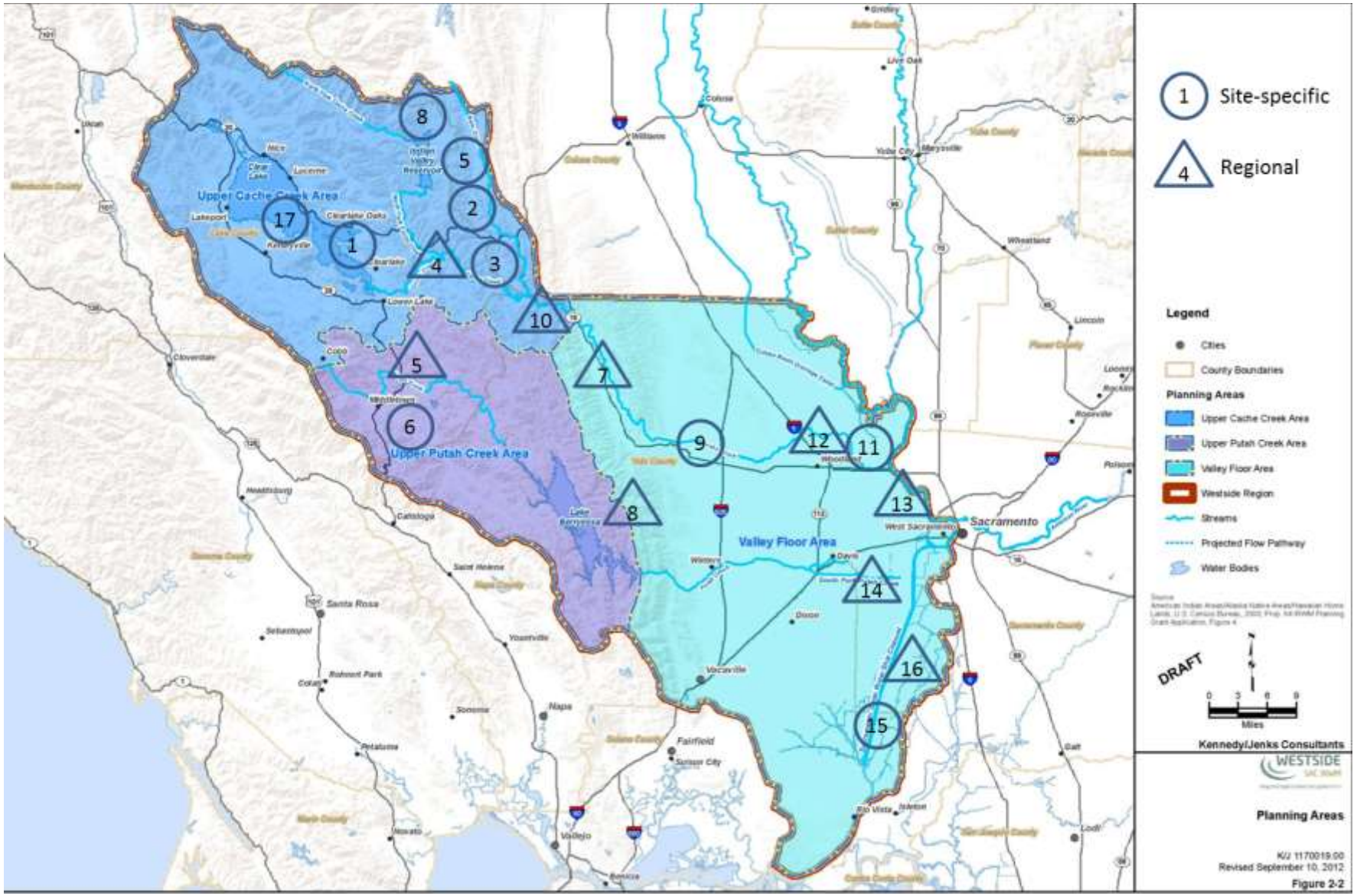

Figure 1. Locator map for mercury-related projects in the Westside Region.

1. Sulphur Bank Mercury Mine Feasibility Assessment

The current Feasibility Assessment continues decades of study by USEPA to evaluate feasible options for long-term remediation of the mine site (a Superfund site). The purpose of the assessment is to develop a clear characterization of cleanup options, to support making a decision to implement a long-term cleanup solution.

Description / Scope

The mine/pit and lake sediments are being addressed separately. First, USEPA is currently working to develop a Proposed Plan for cleanup of the terrestrial mine site and the Herman Impoundment at the Sulphur Bank Mine. The Plan, due by late 2013, would include USEPA's preferred alternative to conduct a cleanup protective of human health and the environment. It will also summarize all of the options considered.

Second, USEPA will construct two test "caps" placing gravel and sand over mercury-contaminated sediments in Clear Lake near the mine in October 2012. These caps will be monitored for through 2015 to assess how well they could perform as a long-term cleanup solution to address mercury in sediments.

Contacts

- Greg Reller, Burleson Consulting
- Gary Riley, USEPA, 415-972-3003

Relevance to Yolo WRA

Millions have been spent studying this site and planning and undertaking remediation actions. This extensive body of research and experience could be useful for other sites. If any candidate mine sites identified in the Cache Creek Site Discovery Report (Activity #4) are pursued, one potential template for action is the Sulphur Bank Mercury Mine.

Status

8/27/12: A formal public comment period and public hearing to receive comment on the Proposed Plan will take place around late 2013. Results from the test caps will be available after 2015.

6/27/13: Gary Riley replied that USEPA has installed and is monitoring two pilot soil caps for the next two years. They continue to discuss remediation options for acidic water seeping through the waste rock pile into the lake.

Suggested Engagement and Action Items

Track USEPA’s planning process in early 2014.

2. Bear Creek Riparian Restoration Project

The purpose of the overall project is to restore Bear Creek's riparian condition for bank stability and habitat enhancement. Colusa County Resource Conservation District (RCD) and U.S. Bureau of Land Management received a 319(h) planning grant to prepare for stabilization and restoration of mercury-laden streambank material that is eroding into Bear Creek. Shovel-ready design plans and environmental documentation were to be completed by 2013. However, the work stalled when regulators required characterization of the material before stabilization.

Description / Scope

This project will build on the work of the Colusa RCD and Pacific Watershed Associates that designed a project to improve water quality in Sulphur Creek and downstream. That grant-funded project did not include funds required later for Hg characterization. This project will: 1) characterize mercury as required to enable erosion control work, 2) hydrologically disconnect up to 23 miles of road networks that are currently contributing runoff and contaminated sediment to downstream waters, 3) stabilize 2000 feet of eroding stream banks that are over-steepened and delivering methylmercury contaminated sediment into the stream system, 4) treat 115 road-related erosion and sediment delivery sites, and 5) stabilize three major valley bottom headcuts that are resulting in serious valley fill erosion along the main stem Sulphur Creek, desiccating alkali wet-meadows and lowering the water table. By implementing this project a total of 23,800 cubic yards of contaminated sediment containing 7.0 kg of mercury will be prevented from being eroded and delivered to the stream system and to downstream water bodies.

Contacts

- Craig Thomsen, UC Davis
- Bob Schneider, Tuleyome

Relevance to Yolo WRA

Although the project site is in Colusa County, Bear Creek drains into Cache Creek. If grant funding is not available for addressing mercury concerns at this site, similar beneficial projects in the county could also get stalled.

Status

8/24/12: A proposal was submitted in August 2012 to the Westside IRWM Group.

12/12/12: Tuleyome submitted a $900,000 proposal to the Westside IRWMP for the entire scope.

5/13/13: The Westside IRWMP did not keep this project in the final list of proposed projects.

Suggested Engagement and Action Items

Support project proponents in proposals for funding.

3. Harley Gulch Biota Monitoring Study

USGS researchers monitored mercury in water and biota in the gulch downstream of the Abbott-Turkey Run Mine site. The purpose of the study was to monitor before and after the site cleanup in 2007 to evaluate the benefits of that action.

Description / Scope

USGS sampled Harley Gulch four times between 2007 and 2011, at 6-18 sites from the Hwy 20 wetlands to Cache Creek, to evaluate impact of mine and natural sources of mercury on water, sediment, and biota in Harley Gulch downstream of a cleanup action at the Abbott and Turkey Run Mines. Compared to the baseline data in 2007 (while mine site remediation was underway), most sites showed marked decreases in concentrations in invertebrates and amphibians. Highest levels continued to be found at the first site downstream of the wetlands and downstream of a natural saline spring. Mercury concentrations remained substantially elevated in 2008 compared to the reference site and other sites in Northern California unaffected by historical Hg mining.

Suggested citation:

Rytuba, J.J., Hothem, R.L., Brussee, B.E., and Goldstein, D.N., 2011, Impact of mine and natural sources of mercury on water, sediment, and biota in Harley Gulch adjacent to the Abbott-Turkey Run mine, Lake County, California: U.S. Geological Survey Open File Report 2011-1265, 105 pp. http://pubs.usgs.gov/of/2011/1265/.

Contacts

- Jim Rytuba, Daniel Goldstein, and Roger Hothem, USGS
- Janis Cooke, Regional Water Quality Control Board
- Wilson Yee, USEPA Region IX Superfund program

Relevance to Yolo WRA

The fact that mercury concentrations in biota decreased after remediation is certainly promising, but the fact that those levels remain elevated is troubling. These findings encourage project success elsewhere to be weighed against performance of actions (e.g., cleaned up mine site) rather than against desired effects (e.g., mercury body burden in biota below some threshold).

Status

8/27/12: This study has been completed. There is some funding under NRDA, and BLM, under Jim Weigand (CASO/CA/BLM/DOI) and perhaps US Fish & Wildlife Service, for future potential work.

12/5/12: Regional Board and El Paso have sampled in the wetland downstream of Abbot and Turkey Run. No decisions have been made as to whether the wetlands should be remediated and if so, how.

5/13/13: US Fish & Wildlife Service requested that USEPA conduct a “site assessment”, which is a basic desktop study (no monitoring) triggered by the USGS data (that is, the USEPA-led mine site cleanup was implemented, yet mercury high levels in biota remain high). USEPA’s

efforts could end there, or their findings could trigger some future monitoring, but there is nothing planned at this point.

Suggested Engagement and Action Items

Contact USEPA Region IX staff for update in early 2014.

4. Cache Creek Site Discovery Report

The Department of Toxic Substances Control conducted a 2009-2011 study of the Cache Creek watershed. The purpose of the study was to assess possible Superfund sites.

Description / Scope

This project was funded by a USEPA Preliminary Assessment / Site Discovery Grant to the Department of Toxic Substances Control, 2009-2011.

Contacts

The report was prepared by DTSC staff Tim Miles and Tom Olson (Hazardous Substances Scientists) and Kristin Prado (Student Assistant). The report summarizes available information on mercury contamination throughout the watershed to identify mine sites perceived to be contamination sources. The report can be downloaded at http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60001635.

Relevance to Yolo WRA

Mines sites identified as sources (or potential ones) will be evaluated further by DTSC as Site Screening Assessments. Those deemed significant may then fall under CERCLA for detailed evaluation and cleanup. Nine sites were selected for further evaluation, including seven mines in the Sulphur Creek watershed, Utopia Mine along Clear Lake, and the Cache Creek Settling Basin (the only site in Yolo County). Specific recommendations for addressing the mercury problem were beyond the scope of this project.

Status

8/27/12: DTSC's work has been completed. USEPA must decide to pursue clean up actions under CERCLA. CERCLA status can be tracked for the individual mine sites at http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm

5/13/13: Elgin Mine in the Sulphur Creek watershed is undergoing a Preliminary Assessment by BLM.

Suggested Engagement and Action Items

Track the CERCLA status of mine sites identified in the report in early 2014.

5. BLM Mercury Mines Site Cleanup Reports

Bureau of Land Management's (BLM) Ukiah Field Office is evaluating cleanup options for several sites on BLM lands: Rathburn and Rathburn-Petray Mines on Walker Ridge in the Sulphur Creek Mining District (Colusa Co.); and Chicago and Research Mercury Mines and Helen Mine located near Middletown (Lake Co.). BLM's purpose with the reports cited is to investigate and prioritize alternatives for future cleanup action.

Description / Scope

On abandoned mercury mines sites, mercury-bearing material is exposed in cuts, slopes, open pits, mine waste piles, brick retorts, and storm water retention ponds. Mineral springs may be ongoing sources of mercury.

For the Rathburn and Rathburn-Petray Mines (http://www.blm.gov/ca/st/en/prog/aml/project_page/rathburn_petray.html) BLM has proposed Comprehensive Environmental Response, Compliance and Liability Act (CERCLA) actions including compilation of a Potentially Responsible Party search, Removal Site Inspection and Engineering Evaluation/ Cost Analysis reports in order to conduct removal and disposal operations on approximately 15,000 cubic yards of mercury calcines and related mine wastes from the mercury retort site. This CERCLA removal action is being done piecemeal as funds are available. The east pit is being studied, North Petray pit is being designed, and nothing is occurring on private land for the South Petray pit.

BLM is developing a removal action at Clyde Mine on Walker Ridge.

The Chicago and Research mines site (http://www.blm.gov/ca/st/en/fo/ukiah/chicago_research_mercury.html) is located in the Dry Creek Mining District, a tributary of Upper Putah Creek southwest of Middletown. The Chicago and Research Hg mines produced only a small amount of mercury, less than 30 flasks. BLM publicized a draft Engineering Evaluation and Cost Analysis (EE/CA) in late 2011 for capping excavation and consolidation of mercury calcine mill waste piles. No follow-up work (to perform the cleanup action) has been publicized.

The Helen Mine (http://www.blm.gov/ca/st/en/fo/ukiah/helen_mercury_mine.html) is also located in the Dry Creek Mining District on 35 acres that is a mix of private property and land managed by BLM. The site includes five main site features: a northern tailings pile, middle tailings pile, southern disturbed area, and storage tank and retort areas. In sum there are 6,800 cubic yards of contaminated materials. BLM produced a "Draft final" Engineering Evaluation and Cost Analysis (EE/CA) in July 2010, which proposed a $1.7 million clean-up alternative. No follow-up work (to perform the cleanup action) has been publicized.

A USGS report on the Chicago/Research and Helen Mines can be downloaded at http://pubs.usgs.gov/of/2008/1382/.

Contacts

- Rich Burns and Gary Sharpe, Bureau of Land Management, Ukiah District

- Jeff Huggins and Victor Izzo, Regional Board
- Karen Jurist, USEPA Region IX

Relevance to Yolo WRA

Surface water runoff during storm events erodes waste and tailings piles, overflows retention ponds, and transports mercury-laden sediment into drainage swales and unnamed tributaries of Bear Creek. Mine waste present at the mine sites contains mercury that may pose a threat to human health due to exposure (dermal, ingestion, and inhalation) through recreation (hiking, camping, fishing, and hunting) or work at the mine sites. Mercury contamination has been found in the water, sediment and biota downstream of the sites.

Similar work may occur at Clyde Mine, which is also in the Sulphur Creek Mining District on Walker Ridge.

Status

10/5/12: Gary Sharpe (BLM – Ukiah Field Office) will present this project at the 11/13/12 DTMC meeting.

11/13/12: Gary Sharpe (BLM – Ukiah Field Office) presented at the 11/13/12 DTMC meeting. The presentation can be downloaded at http://www.sacriver.org/files/201211_1_RathburnAbandonedMercuryMine.pdf.

12/11/12: Over the past few years Regional Board staff members Jeff Huggins and Victor Izzo have reviewed characterization and closure plans for several mines in the Sulphur Creek Mining District and for Rathburn-Petray Mine. BLM has implemented a portion of the closure at Rathburn and work may begin in the near future for some of the mines in the lower portion of Sulphur Creek Mining District (around Wilbur Hot Spring) on BLM and private lands. Homestake Mining Company is anticipated to "voluntarily" undertake these cleanup actions.

5/13/13: No real progress seems to have been made recently.

Suggested Engagement and Action Items

Check on status of EE/CA reports in early 2014. Track clean up action and associated monitoring of effectiveness.

6. Corona and Twin Peaks Mines Cleanup

Tuleyome is heading up a project to cleanup three abandoned mercury mines in the James Creek watershed tributary to Lake Berryessa. This project could serve as a model for cleanup of other abandoned mercury mine sites on private property in the Inner Coast Range.

Description / Scope

Funds from the Ecosystem Restoration Program, administered by the Department of Fish and Game, are supporting a three-year project to clean up the landscape and drainage from three abandoned mercury mines in the Inner Coast Range. The project team, led by Tuleyome, includes technical and legal experts to address the multiple facets of the project. Stakeholders include federal, state and local agencies, and other interest groups. State funds are going through a non-profit to clean up private property (a Good Samaritan) for public benefits.

The 2012-2015 project will treat adit drainages, address physical hazards, and stabilize erosive mine waste piles in tributaries to James Creek, which is tributary to Pope Creek, which is a major tributary to Lake Berryessa.

Contacts

- Stephen McCord, MEI
- Bob Schneider and Sara Husby-Good, Tuleyome

Relevance to Yolo WRA

The project site is in the Putah Creek watershed, upstream of mercury or nickel impairments in James Creek, Pope Creek, Lake Berryessa, lower Putah Creek, and the Yolo Bypass. Success at this site could lead to subsequent replication elsewhere in the region.

Regulatory issues are an important consideration for this project. The question is whether it is possible to effectively address risks and water quality issues at abandoned mine sites without incurring perpetual liability as an owner/operator. While state law protects Good Samaritans, the Clean Water Act does not. CERCLA liability can be addressed by following a project plan that will characterize mine wastes, characterize mine drainage, monitor surface water and aquatic biota, obtain US EPA 'Good Samaritan' waiver, and implement a remediation plan.

Status

8/24/12: Planning, design, and environmental review in 2012. Construction will occur in 2013. Follow-up monitoring and reporting will occur in 2014.

12/12/12: CEQA document will be publicly available in January 2013. Studies and permitting activities are ongoing through winter 2013. CEQA document scheduled for approval by Napa Co. on 2/11/13.

4/8/13: Napa did not approve CEQA document because of threat of lawsuit by downstream landowner. Project is requesting Regional Board to be Lead Agency. Project is also scaling back any physical control of the Corona Drain Tunnel Portal's discharges.

5/13/13: Submitted admin draft CEQA document and Remediation Plan to Regional Board staff. Anticipate approval in late July.

5/31/13: Still have legal hurdles with site and downstream landowners. Contract put on hold.

7/29/13: Regional Board is submitting CEQA IS/MND to State Clearinghouse. Land trust executor is working with Napa County to reach agreement on future land ownership and access.

Suggested Engagement and Action Items

Track project progress in Subcommittee meetings. Encourage similar cleanups and pilot treatments of discharges on other private lands.

7. Cache Creek, Bear Creek, Sulphur Creek and Harley Gulch Mercury TMDLs

This 2005 regulatory action sets standards for mercury in sediment, water and fish tissue; allocates load reductions to tributaries and contaminated sites; and requires studies, regulatory review, and site cleanup activities. The purpose of the TMDL is to regulate action that leads to attainment of the TMDL's fish tissue target, which is intended to be protective of fish-eating humans and wildlife. The TMDL area includes all of Cache Creek from Clear Lake Dam outlet to the Cache Creek Settling Basin inlet, and all of the tributary creeks downstream of reservoirs (thus excluding Davis Creek and Indian Valley reservoirs).

Description / Scope

The TMDL was approved in 2005. Table IV-9 Implementation Summary includes many actions scheduled to be started (or completed) by 2011. The TMDL requires mine owners to submit cleanup plans and requires land managers, landowners, and Caltrans and other road managers to control and reduce erosion of mercury-contaminated soil. Entities that operate or construct impoundments and wetlands must minimize methylmercury discharges to the creeks and set erosion control requirements for work within floodplains. Chapter V (Surveillance and Monitoring) calls for fish to be collected and analyzed every ten years (thus in 2015).

The state Office of Environmental Health Hazard Assessment (OEHHA) has separately developed fish consumption guidelines for Cache Creek (http://www.oehha.ca.gov/fish/so_cal/fclearlake.html). The current fish consumption signs that are posted sporadically along Cache Creek are from the 2005-2008 Fish Mercury Project funded by the California Bay Delta Authority with OEHHA advice. They are exceptionally "wordy", outdated, and appear to be used more for target practice than for consumption advice.

Contacts

- Janis Cooke, Regional Water Board

Relevance to Yolo WRA

The TMDL imposes considerable constraints on projects in the watershed. Yolo County commented extensively on the regulation, with some success.

Yolo County may replace the existing signage but it is not high on their priority list. New signs should be consistent with current OEHHA advisories. It is important that signs posted in the region have a common baseline because 1) it is less confusing for anglers who fish in multiple locations, and 2) it is more compelling for the State to continue postings if the methodology is consistent.

Status

8/24/12: The Regional Water Board has not scheduled a program review. Actions driven by the TMDL are not being tracked.

9/7/12: EPA's Bay Delta Action Plan notes that "Water quality monitoring is done for special studies and associated with individual actions. Monitoring data is not easily available and a periodic monitoring program has not been established."

9/24/12: The Cache Creek Watershed Mercury Program required an assessment of mercury-contaminated sediments in the upper Cache Creek watershed. Water Board staff has completed the survey links to these reports are available at http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/cache_sulphur_creek/index.shtml.

- Mercury Inventory in the Cache Creek Canyon (February 2008)—This report evaluates the distribution of mercury in sediment in Cache Creek and identifies tributary sources of mercury to the creek, from North Fork Cache Creek to Bear Creek.
- Bear Creek Mercury Inventory (June 2009)—This report evaluates the spatial distribution of mercury in sediment and identifies tributary sources of mercury to Bear Creek, from upper Bear Creek to Cache Creek.
- Mercury Inventory in the Cache Creek Canyon, Bear Creek Confluence to Rumsey (March 2011)—This report evaluates the distribution of mercury in sediment in Cache Creek and identifies tributary sources of mercury to the creek, from the confluence of Bear Creek to Rumsey.

12/5/12: Regional Board inventoried sediment for mercury in depositional areas in the Cache and Bear Creek canyons and at the mouths of tributaries to identify areas with elevated concentrations of mercury (>0.4 ppm dry wt, which is 2x average "background" in the watershed). The survey identified three "hot spot" areas: Harley Gulch and directly downstream; Davis Creek and directly downstream; and the Bear Creek canyon. If the survey had revealed other tributaries contributing sediment with elevated concentrations of mercury, we would have followed up to look for anthropogenic sources of erosion (e.g., roads) and asked for implementation of BMPs to control erosion. The sub-watersheds that we did identify already have some work to plan for and/or actually control input of sediment with elevated levels of mercury. More needs to be done. For example, they have not evaluated maintenance of roads that pass through mined or serpentine areas even though likely there is some erosion that should be controlled.

5/13/13: Emailed Janis Cooke but received no response, implying nothing has been done.

Suggested Engagement and Action Items

Contact Janis Cooke in early 2014 to inquire about the program review process.

8. Statewide Mercury Control Program for Reservoirs

The State and Regional Water Boards are developing a mercury TMDL to address the nearly 80 reservoirs statewide listed as impaired by mercury. The purpose of the TMDL is to regulate action that leads to attainment of the TMDL's fish tissue target (based on a forthcoming statewide mercury fish tissue objective), which is intended to be protective of fish-eating humans and wildlife.

Description / Scope

The Water Boards are in the early stages of developing a Statewide Mercury Policy to control mercury in California's waters. The Policy would define an overall structure for adopting water quality objectives; general implementation requirements; and control plans for mercury impaired water bodies. The first phases of program development will include:

- Development of water quality standards to protect people and wildlife that eat fish. These could include water quality objectives expressed as concentrations of mercury in the water column or in the tissues of fish; beneficial use designations; and antidegradation provisions
- Establishment of a control program designed to attain the new water quality objectives in our state's mercury-impaired reservoirs. An associated implementation plan will likely include:
    - Control actions for a variety of point and nonpoint sources, such as runoff from mine sites, atmospheric deposition, and discharges from wastewater treatment plants and urban stormwater
    - Changes in approaches to reservoir management that will modify water chemistry to reduce creation of the most biologically available form of mercury
    - Changes in fisheries management practices to limit populations of the types of stocked fish that often have high levels of mercury in their tissues

Future phases may include development of control plans specific to other mercury-impaired water bodies such as creeks, rivers, bays, and estuaries.

Contacts

- Patrick Morris, Regional Water Board
- Updates are available at http://www.waterboards.ca.gov/water_issues/programs/mercury/

Relevance to Yolo WRA

Davis Creek Reservoir, Indian Valley Reservoir, Lake Berryessa and Lake Solano may be regulated by this TMDL. All water bodies in the Westside Region could be subject to the new fish tissue objective. Any review and/or updates to the Clear Lake and Cache Creek Mercury TMDLs should address inconsistencies with this broader regulation.

Status

8/27/12, 10/17/12: Staff is working on the TMDL technical analysis (conceptual model, source analysis, linkage between sources and fish tissue concentrations, and implementation ideas) and drafting a regulatory program. Public meetings to present and discuss details of the project will be scheduled for fall 2012 – winter 2013.

11/13/12: Both the fish tissue objective and the reservoirs TMDL are progressing slower than planned. Staff now project mid-2013 for public drafts and stakeholder meetings.

1/4/13: Obtained 2007 report by DWR on mercury in northern CA reservoirs.

3/4/13: Stephen McCord will chair a session at the North American Lake Management Society's annual symposium in late October 2013 on mercury management in lakes. Regional Board staff working on the statewide reservoirs mercury TMDL may present in this session.

4/23/13: The State Board heard an informational item about this program from staff Janis Cooke (CV Region), Carrie Austin (SF Bay Region), and Amanda Palombo (State Bd.). The presentation is available at: http://www.waterboards.ca.gov/water_issues/programs/mercury/reservoirs/docs/mercuryupdate0423.pdf. Key points:

- Existing TMDLs (e.g., Clear Lake) would not be superseded by these statewide efforts.
- The TMDL will address 75 reservoirs currently listed as impaired, could soon address another 75 [if the objective gets lowered], and several hundred more could get addressed [if monitored they'd likely show impairment].
- The current statewide effort is focused on reservoirs (to be distinguished from natural lakes) and their managers. Staff do not appear to be engaging upstream landowners (e.g., BLM) or addressing downstream concerns (i.e., reservoir releases and downstream impairments).
- The TMDL will likely have a phased approach: (1) run some pilot studies, (2) scale up pilot studies, and (3) broad application of effective control methods. It's possible that they ask all reservoir managers to start monitoring mercury in water and fish early.
- Schedule: start public outreach in fall 2013, public workshops in summer 2014, and State Board hearing in 2015.

Suggested Engagement and Action Items

Participate in NALMS conference roll-out of reservoirs TMDL to lake managers. Evaluate potential effects of the regulations on reservoir operations in the Cache and Putah Creeks watersheds. Coordinate with US Bureau of Reclamation staff if they intend to monitor and/or model Lakes Berryessa and Solano. Obtain and review mercury control study for Davis Creek Reservoir drafted by UCD's Geoff Schladow.

9. Cache Creek Resources Management Plan Mercury Monitoring

The County's Reclamation Ordinance (sec 10-5.517) requires that the County monitor ambient mercury level every 10 years for comparison to levels in wet pits that will be reclaimed to lakes. The County contracted with Dr. Darrel Slotton (UC Davis) to study ambient mercury levels in fish and invertebrates in both Cache Creek and several mining pits. This study may provide useful data related to overall creek health and in support of one of the 2011 recommendations related to methylmercury monitoring and analysis.

Darell Slotton (UC Davis) is conducted an ambient mercury monitoring study of the CCAP planning area in 2012, following baseline work conducted in 1996. The purpose of the monitoring is to characterize any changes in conditions after implementation of the CCRMP.

Description / Scope

Several (~80) adult fish were sampled within lower Cache Creek within the stretch adjacent to current gravel mining operations at three locations: (1) below Capay Dam, (2) below Hwy 505 at CEMEX, and (3) below Road 94B at Teichert. In May 2012, Dr. Slotton collected large fish for muscle mercury (~80 total, green sunfish, bass, pikeminnow; whole body, wet weight). He also sampled small fish and aquatic insects at the same sites in November 2011 and May 2012. Results indicate higher mercury concentrations below Capay Diversion Dam than two sites downstream (along and downstream of the gravel mining reach). Levels have not changed significantly since the 1997 sampling event, and so remain elevated relative to the TMDL targets (see project #7 above). There were more fish in the creek than expected.

Contacts

- Cindy Tuttle, Yolo County
- Darell Slotton, UC Davis

Relevance to Yolo WRA

Results will provide two points of comparison: (1) changes over time from 1996 to the present, and (2) levels in sport fish relative to fish consumption guidelines.

Status

9/4/12: Dr. Slotton is currently sampling macroinvertebrates (fall 2012). The results of this study will be available in 2013 and will be reported by the Cache Creek Technical Advisory Committee in next year's Cache Creek Annual Status Report.

6/3/13: Slotton is still addressing internal comments and finalizing the report.

8/1/13: Slotton finalized report on 6/30/13. Tuttle provided a summary of the fish mercury data. Slotton will present findings to Cache Creek Conservancy board on Oct. 10, 5:30 at the preserve. Slotton will develop a monitoring protocol for biota in the gravel pit ponds.

Suggested Engagement and Action Items

Share fish monitoring report with Regional Board as information for the 2015 Cache Creek Hg TMDL fish survey (#7) and suggest future cost sharing.

10. Cache Creek Mapping and Sampling Project

The Department of Toxic Substances Control (DTSC) assessed mercury exposure from tribal practices in the Cache Creek watershed. The purpose of the project was to characterize mercury exposure and associated health risks associated with reed-making practices along mercury-contaminated waterways.

Description / Scope

In cooperation with the Big Valley Rancheria, Elem Indian Colony, Middletown Rancheria of Pomo Indians, Robinson Rancheria and California Indian Environmental Alliance, DTSC issued a letter of intent for the Cache Creek Mapping and Sampling Project with the goal of investigating and mapping mine waste contamination in areas important to tribes in the Cache Creek Watershed.

Contacts

- Sherri Norris, CA Indian Environmental Alliance
- Randy Adams, DTCS

Relevance to Yolo WRA

Results could identify sites that would require additional assessment or enhanced erosion control for any projects.

Status

8/27/12: DTSC found no significant levels of mercury at the location sampled, but there is more sampling needed in other gathering locations. No report appears to have been published.

Suggested Engagement and Action Items

None – the project is closed.

11. Cache Creek Settling Basin Mercury Studies

The Department of Water Resources (DWR) is conducting three related studies of mercury transport to and through the Cache Creek Settling Basin (CCSB). The purposes for the studies are to characterize current mercury transport, transformation, and loadings through the CCSB, to comply with a requirement in the Delta Methylmercury TMDL for DWR, Central Valley Flood Protection Board, and US Army Corps of Engineers (USACOE), in conjunction with any landowners and other interested stakeholders, and to implement a plan for management of mercury contaminated sediment that has entered and continues to enter the CCSB from the upstream Cache Creek watershed.

Description / Scope

Although the Cache Creek Settling Basin is currently trapping ~50% of its incoming sediment load, the Delta MeHg TMDL requires DWR to evaluate the feasibility of trapping at least 75% of the incoming sediment and total Hg load. An ongoing management challenge for the basin is balancing THg load reduction with possible increases in MeHg production in and export from the basin. To address these constraints, DWR's Flood Maintenance Office is currently conducting three related studies.

- **CCSB Trap Efficiency Study:** Evaluate (via a 2-D numerical sediment transport model) efficiency and sedimentation rate in the CCSB and sediment load into the Yolo Bypass to support the requirements of the USACOE O&M Manual.
- **CCSB Mercury Study:** Develop a conceptual model describing transport of THg and MeHg in and out of the CCSB and transformation of THg to MeHg within the CCSB. Determine which factors and/or hydrogeochemical processes are most strongly associated with the transport of higher concentrations or loads of MeHg and THg from the CCSB.
- **Cache Creek Watershed Study:** Investigate water, sediment, and Hg inflows to CCSB based on Cache Creek watershed hydrology and future climate conditions. Study will provide concurrent flow, sediment, and mercury information in the Cache Creek watershed and will provide better sediment and mercury loading estimates. Sediment and mercury trap efficiency under different climate change projections will be investigated. The sampling and monitoring stations will be located to isolate sub-basins within the watershed.

Results from these studies will help to address the requirements of the Delta MeHg TMDL, as well as USACOE operations and maintenance requirements.

Contacts

- Fred Gius and John Nosacka, DWR Div. of Flood Management
- Charlie Alpers, USGS mercury scientist

Relevance to Yolo WRA

The Cache Creek Settling Basin needs to be excavated occasionally to maintain its design sediment removal efficiency. Partners interested in disposing of soil from the settling basin are

needed. Such a project could be a win-win situation that supports maintenance of the settling basin by removing accumulated sediments and fill material needed elsewhere. Results of these studies would strongly influence future options for operation and maintenance of the basin.

Status

5/30/12: Completion of these studies is dependent on the availability of funding sources. DWR has committed funds through 2014 for the CCSB-focused studies (but not the watershed study).

11/13/12: Charlie Alpers (USGS) presented at the DTMC meeting. Phase I monitoring was conducted Dec. 2009 – April 2012. "Baseline" sampling for mercury and several ancillary parameters was conducted at 3-week intervals during the wet season; storm event sampling included 8-10 samples per year (rising, peak, and falling limbs of the hydrograph). Phase II work planned for 2012-2014 will continue to monitor inflows and outflows, sample in-basin water and sediment (~40 sampling sites in 4 zones along flow path), conduct sediment methylation potential experiments, and conduct more biological sampling (birds eggs from nests in bird boxes and blood from birds trapped temporarily in mist nets; caged mosquitofish). The publicly-available presentation is at:
http://www.sacriver.org/files/201211_5_CacheCreekSettlingBasinMercuryStudies.pdf.

1/15/13: Hg Subcommittee members met with DWR staff Fred Gius and John Nosacka to get overview and update on study progress, and to find opportunities for collaboration and support.

2/5/13 (Fred): DWR is working with Alpers to develop a map showing the sample locations and a table listing the sample analysis requirements by end of Feb 2013. DWR is working with Lev Kavvas (UCD) to compile a list of references and a metadata table, yet it may not be available until after he completes his research and modeling tasks, stating that he just doesn't have it in a format that he can easily provide to interested parties.

2/5/13 (John): DWR provided a scanned copy of the CCSB draft O&M Manual (with mark-ups). DWR is working with Fran and Mark Cocke (City of Woodland) regarding DWR's Safety of Dams emergency response plan (or lack thereof) for the weir. Nothing has been provided, implying that no plan exists. Tim may introduce Fred to David Purkey of SEI, so that Fred can get the WEAP report and contact David about it.

4/19/13: USGS has recently planted caged fish in the CCSB, which may be compromised by irrigation diversion.

5/22/13: Fred Gius provided file "Reference_List_and_Metadata_Table_for_Cache_Creek_Watershed_Study.pdf", which Stephen distributed to the Hg Subcommittee for review and comment. No one responded.

7/5/13: Eric Larsen (UCD) is aware of Kavvas' study, but does not think that those results would be useful for his sediment transport study.

7/29/13: Both USGS and UCD results have been delayed because of the second consecutive anomalously dry year. DWR continues to work with USGS on modifying their scope of work, including the number of samples and their locations, based on preliminary results.

Suggested Engagement and Action Items

Review watershed model dataset information provided by Dr. Kavvas. Respond to DWR and contractor (UC Davis and USGS) questions as they arise. Support Eric Larson's efforts to develop a sediment transport model for the CCRMP reach.

12. Local Flood Management Plans

Three inter-related efforts are aimed at improved flood management in the lower areas of Yolo County:

- floodSAFE Yolo Pilot Program – Lower Cache Creek Feasibility Study
- Central Valley Flood Protection Plan (CVFPP) – Basin Wide Feasibility Studies
- CVFPP – Regional Flood Management Plans (floodprotectplan.com) is for lower Sac / Delta North, led by SAFCA

The floodSAFE Yolo Pilot Program is integrated with, and shares the goals of both the Yolo County IRWMP and floodSAFE California, which are regional and state efforts to provide effective flood management. This joint local-regional effort will develop and evaluate various flood control alternatives for the Woodland area. The program will likely need to address concerns that altered flood management could exacerbate mercury methylation.

Description / Scope

This flood management program takes a holistic approach, broadly considering policies regarding land use and habitat enhancement as well as building and maintaining physical structures such as levees and bypasses. The program's main objective is to minimize the threat of damage to property from flooding and to improve preparedness and response in the event of a flood. For more information visit http://www.ycfcwcd.org/floodsafeyolo.html.

Contacts

- Fran Borcalli, Program Manager
- Mark Cocke, City of Woodland

Relevance to Yolo WRA

The Cache Creek Settling Basin, which is an integral component of the current flood control system, is being studies by DWR (with technical assistance from USGS and UC Davis) to comply with the Delta MeHg TMDL (#11). Results from that study could provide inferences to effect of flood management alternatives on mercury cycling.

CVFPP – Regional Flood Management Plans (floodprotectplan.com) may lead to changes in local hydrology that increase methylation rates in the Yolo Bypass. Alternatives would also be closely scrutinized by the Regional Water Board.

Status

8/27/12, 10/18/12: “Treading water” until US Army Corps of Engineers provides federal cost share.

2/7/13: Stephen will be evaluating feasible options for sediment excavation. A local agency review team stated that the County must comply with SMARA obligations, but it would be odd that the County would regulate DWR (a state agency); Sacramento-San Joaquin Drainage District owns some land.

Suggested Engagement and Action Items

Identify and evaluate feasible options for sediment excavation of the CCSB to maintain settling capacity, compare alternatives, discuss potential mercury effects with scientists, and quantify potential change from baseline.

13. Yolo Bypass Fisheries Enhancement Projects

Several projects have been proposed for the Yolo Bypass to enhance fisheries habitat, including (a) adjusting Fremont Weir to flood the Bypass more frequently, (b) widening the Sacramento Weir and Yolo Bypass levees and (c) providing fish passage through the Cache Creek Settling Basin. Any such feasibility studies will need to consider the effects of any water management changes on mercury loadings, and the effect of current mercury conditions on the altered fish habitat.

Description / Scope

Three separate efforts are converging on projects to increase the inundation frequency and duration in the Yolo Bypass [in order of farthest along first]:

(1) The US Bureau of Reclamation [Bay-Delta Office] has taken the lead for a study in response to the National Oceanic and Atmospheric Administration's Biological Opinion (BiOp) regarding Endangered Species Act-listed fish species. Because fish reared in the Yolo Bypass grow much faster and larger than those reared elsewhere, the keystone project to study is managing the Fremont Weir differently to allow more frequent (at lower flows) flooding of the Bypass. The NEPA alternatives analysis for the above study will take water quality considerations into account. Initial studies by either [or both] DWR and the US Army Corps of Engineers may include a significant modeling component, linking hydrologic, hydraulic, sediment transport, water quality, and ecosystem models to evaluate effects [such as enhanced mercury methylation] on the local food web.
(2) The Bay Delta Conservation Plan's (BDCP) Conservation Measure 2 proposing 20 component restoration projects with similar goals.
(3) Lower Sacramento / Delta North Regional Flood Management Plan [under the Central Valley Flood Protection Plan], which must be consistent with a new Conservation Strategy for environmental improvements, may also include a project to increase Bypass inundation [lower depths but potentially wider floodplain and increased frequencies].
(4) Yolo County Natural Communities Conservation Plan / Habitat Conservation Plan (HCP/NCCP) will conserve the natural open space and agricultural landscapes that provide habitat for many special status and at-risk species County-wide.

Contacts

- Traci Michel and Joshua Israel, US Bureau of Reclamation Bay-Delta Office
- Dave Smith, US Army Corps in Vicksburg, MS
- Tim Vendlinski, USEPA Region IX
- Carol DiGiorgio, DWR
- Petrea Marchand, Doug Brown and Phil Pogledich, Yolo County

Relevance to Yolo WRA

These studies, and any recommendations stemming from it, would influence decisions for adjusting water (including flood) and land management in the Yolo Bypass.

Status

8/28/12: Staff from DWR, USBR, and US Army Corps of Engineers are discussing and comparing options for modeling flood waters, water quality, and ecosystem effects.

12/12/12: Petrea Marchand and Phil Pogledish represent Yolo County in Delta-related activities. The County eventually needs an analysis of the MeHg impacts of flooding the Bypass more frequently for juvenile salmon. Right now the County has that study scheduled for 2014, so they would start seeking funding in summer of 2013.

4/9/13: Stephen participated in Yolo Bypass Drainage and Water Infrastructure Improvement Study Stakeholder Meeting (agenda file "April_9_2013_Bypass_Drainage&Supply_Study_ Stakeholders_Meeting_Agenda.docx") to present findings, solicit feedback on proposed improvements and survey opinions on a range of studies, projects and concepts for future work in the Bypass. Yolo County representatives will present project ideas to the Yolo Bypass Working Group on May 23, 2013.

5/13/13: The Westside IRWMP included the "Methylmercury Impacts Analyses for the Yolo Bypass" project among its High-Importance/Medium-Urgency Projects.

5/23/13: Proponents of the three efforts provided updates in the Yolo Bypass Working Group meeting. All are still in the project planning phase, not committing to specific projects or assumed effects of those projects. Proponents of each effort are aware of (and often participate in) the others'. Projects that achieve common goals will be more likely supported.

7/15/13: Donna distributed Yolo County's comments and attachments on the BDCP EIR/EIS, which reiterated interest in predicting and mitigating mercury effects of proposed projects in the Bypass.

7/24/13: The Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR Public Scoping Report, as well as additional project information, can be found on the project website: http://www.usbr.gov/mp/BayDeltaOffice/Documents/yolo.html. Yolo Co. participated in the scoping effort, so likely will not comment on this report, but rather closely follow their planning and environmental review process and will comment on the draft EIR/EIS.

Suggested Engagement and Action Items

Coordinate with Doug Brown to support Yolo County interests in evaluating mercury effects of BiOps, BDCP, Central Valley Flood Protection Plan Conservation Strategy and Yolo County's Habitat Conservation Plan. Request local participation in simulation modeling and adaptive management process for proposed projects.

14. Lower Putah Creek Restoration

This planning project by the Yolo Basin Foundation is evaluating the effects of diverting Putah Creek in the lower Bypass through wetlands for anadromous fish and bird habitat benefits. The CEQA analysis and subsequent project design will need to consider the effects of the project on mercury loadings, and the effect of current mercury conditions on the altered habitat.

Description / Scope

The $2.6 million planning project will evaluate the effects of enhancing and restoring 300-700 acres of tidal freshwater wetlands and creating 5 miles of a new creek channel on Putah Creek from the diversion dam to the toe drain, entirely within the Yolo Bypass Wildlife Area. The project will engineer an anadromous fish bypass channel that can be completely drained in the summer. Mercury data were reported in a Calfed study (http://mercury.mlml.calstate.edu/wp-content/uploads/2008/10/04_task2mmhg_final.pdf and http://mercury.mlml.calstate.edu/wp-content/uploads/2008/10/05_task2thg_final.pdf).

CEQA process separated for realignment vs programmatic

Contacts

- Robin Kulakow and Ann Brice, Yolo Basin Foundation
- Stuart Siegel, Wetlands and Water Resources, Inc.

Relevance to Yolo WRA

This project will improve anadromous fish access to 25 miles of stream (all of lower Putah Creek up to the Solano Diversion Dam. It could serve as an example for fish passage work on Cache Creek.

Status

8/22/12: The first phase of this project is underway with Ecosystem Restoration Program grant agreement signed in May 2012. During year 1, the CEQA project description will be developed in collaboration with the stakeholder group. Year 2 will be focused on preparation of CEQA compliance documents. Year 3 will entail obtainment of necessary regulatory authorizations. If the actually project is funded, site improvements could be underway by 2016.

12/12/12: Project area increased up to Solano Diversion Dam, so CEQA analysis may be expanded. Project scope needs to address mercury.

2/7/13: Separating project-specific CEQA for creek diversion from programmatic CEQA for lower Putah Creek.

5/14/13: Starting into the CEQA work by summer 2013. Working now to clarify the project description.

8/1/13: The “Lower Putah Creek Main Channel Restoration: Monticello Dam to Dry Creek” project was included in the IRWM project proposal package submitted for Prop 84 funding.

Suggested Engagement and Action Items

Review CEQA documents and other project descriptions (when available) for County interests.

15. Yolo Bypass Wetland MeHg Control Studies

The state's departments of Water Resources (DWR) and Fish & Wildlife (CDFW) are undertaking multiple ongoing and proposed studies of mercury methylation controls in and downstream of the Yolo Wildlife Area. The purposes of these related studies are to characterize current methylation rates and to evaluate the effectiveness of potential management practices on methylation rates.

Description / Scope

DFW and its Moss Landing Marine Lab are in the third year of a four-year project on CDFW's Yolo Wildlife Area to develop management practices to reduce MeHg exports from seasonal wetlands in the Yolo Wildlife Area. Study sites include a series of constructed permanent ponds and on-site mesocosms. The study objectives are: (1) Confirm MeHg is reduced in permanent open-water ponds; (2) Determine the effect of size, depth and hydraulic residence time on MeHg removal; (3) Identify the primary MeHg removal mechanisms in permanent open-water ponds; (4) Confirm that MeHg production is reduced by grazing; (5) Determine which plants minimize MeHg production; and (6) Develop a guidance document on how to use grazing and vegetation management to reduce MeHg production in the permanent ponds.

A new study may monitor 2-3 tidal wetlands in the southern Yolo Bypass. Tidal wetlands have generally been found to be MeHg neutral (neither a source nor sink to open waters).

A tidal wetland restoration project by the State and Federal Water Contractors Agency (SFCWA) on Yolo Ranch in the lower Yolo Bypass is coordinating with DWR to provide an additional study site.

Contacts

- Mark Stephenson, CDFW
- Wes Heim, Moss Landing Marine Lab
- Val Connor, SFCWA

Relevance to Yolo WRA

Results from these studies will characterize options for methylation control in the Bypass wetlands.

Status

8/27/12: Field work is ongoing in the permanent ponds and vegetated mesocosms. The tidal site proposal is being considered.

10/22/12: Field work at mesocosms and permanent ponds by Moss Landing Marine Labs staff is ongoing.

5/14/13: The CEQA document for the Yolo Ranch tidal wetland restoration project is out for public review. There are links on the SFCWA web site and hard copies available in their office.

A tidal marsh complex is an alternative, but not identified as the preferred alternative only because the document was written before the decision was finalized.

Suggested Engagement and Action Items

Provide technical and logistics review of draft reports and technical papers in late 2013.

16. Delta MeHg TMDL Mercury Exposure Reduction Program

The purpose of the Mercury Exposure Reduction Program (MERP) is to reduce, through outreach and education, mercury exposure to humans who consume contaminated fish in the Delta and Yolo Bypass.

Description / Scope

The Regional Water Board lead a stakeholder effort to develop a MERP strategy completed in November 2012. The Strategy recommends to the Executive Officer how dischargers will be responsible for participating in a MERP, identifies performance measures, and proposes a collaborative process for developing, funding, and implementing the MERP.

Dischargers are required to produce a MERP workplan for implementing the strategy by October 20, 2013. The MERP workplan(s) will cover activities for the first three-year period to coincide with the three-year TMDL review. A first step in developing a MERP workplan is to identify its funding and administrative process. The Aquatic Science Center is the preferred entity to administer the MERP. The California Department of Public Health and the Office of Environmental Health Hazard Assessment are the preferred agencies to lead MERP activities.

Dischargers are required to provide good-faith opportunities to integrate all other stakeholders (e.g., tribal representatives, community-based organizations, regulators, public health agencies, social service and health care providers, and park and marina operators) into development of the workplan and implementation of activities.

The recommended resources level for the program is 1-1.5 full-time equivalents per year. Dischargers now need to develop a "participation agreement" specifying how, and how much, they intend to contribute. The anticipated approach is based on proportion of methylmercury load. Regional Board staff will continue to seek funding for the MERP in addition to discharger contributions, and support other stakeholders seeking outside grant funding.

Contacts

- Janis Cooke, Regional Water Board
- Find updates and files at http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/stakeholder_workgroup_mtgs/index.shtml

Relevance to Yolo WRA

All dischargers identified in the Delta MeHg TMDL will be required to contribute funds to the MERP. Among Westside Region entities, the current expectations include $500/year – $1000/year each from Yolo County, Solano County, and City of West Sacramento stormwater programs, and City of Woodland and Davis wastewater facilities. Although these are not substantial costs, the strategy does not have a clear "exit strategy" based on program non-success.

Status

8/24/12: The current expectation is that the Department of Health Services will implement the ERP. Stakeholders have balked at committing funds until they get a sense of the scope options from DPH. There is considerable uncertainty in how certain state and federal agencies could fund work by another state agency. DPH has not identified mercury as a priority, thus they are unlikely to spend their own funds (beyond in-kind staff time).

10/2/12: Regional Water Board staff hosted a MERP stakeholder meeting.

11/28/12: After the 10/2/12 stakeholder meeting, staff added more details to the Strategy, including interim steps to develop the MERP work plan, example MERP costs and timeline, and adjustments to the table of proportional methylmercury loads and the example cost estimates for dischargers. The final Strategy can be found at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/stakeholder_workgroup_mtgs/index.shtml. The next major milestone for the MERP is for dischargers to submit a MERP workplan to the Regional Water Board by 20 October 2013. To meet this date, the Strategy describes interim steps for dischargers willing to participate in developing a collaborative workplan. A small stakeholder workgroup has formed to begin developing the MERP work plan.

4/3/13: The Regional Board EO wanted to sign the cover letter to the template for the letter of intent to participate in the collective MERP. The due date for returning the letter of intent will be extended, likely to June30. The most recent MERP workgroup meeting was on April 8. Basic program issues remain unresolved.

5/13/13: Regional Board staff continues to lead discharger meetings. They are asking for unique types of services and capabilities that dischargers could provide related to the MERP services. Some of the state people can make signs and post them on land that they own in the Delta where subsistence fishing occurs. Others can post highway signs near locations like Lake Orville with alerts, or create and post media (radio / TV) advertisements related to mercury / fish tissue education. Dischargers were notified to reply by 31 July 2013 with a letter describing each entity's intent to participate and the financial support that they anticipate providing to the group effort.

7/31/13: Yolo County and other "dischargers" submitted commitment letters, as required.

Suggested Engagement and Action Items

Track development of the MERP workplan due in October 2013, and comment as warranted.

17. Clear Lake Mercury TMDL

The Clear Lake Mercury TMDL, effective October 2, 2003, put forth a management strategy to reduce the concentrations of methylmercury in fish in Clear Lake by reducing the overall mercury loads to Clear Lake.

Description / Scope

This TMDL established site-specific numeric water quality objectives of 0.09 and 0.19 mg/kg mercury for fish in trophic levels 3 and 4, respectively, and assigned load allocations to land management agencies with jurisdiction in the Clear Lake Watershed and Sulphur Bank Mercury Mine. Sulphur Bank Mercury Mine has contributed the majority of mercury to the lake. Due to the geology of the area, undisturbed deposits rich in mercury may also contribute to the sediment load to Clear Lake, in terms of alluvial, geothermal and groundwater movement through such deposits.

The goal of the Clear Lake mercury management strategy is to reduce fish tissue MeHg concentrations by 60% of 2000 levels by (a) reducing the concentrations of total mercury in the surficial layer of lakebed sediment by 70% of 2000 levels and (b) reducing other mercury sources believed to have a high potential for mercury methylation. In order to accomplish the 70% reduction in concentration of total mercury in the surficial layer of lakebed sediments, mercury loads must be reduced by 70% around the watershed.

To date, implementation actions for the Clear Lake Mercury TMDL have focused on planning, developing, coordinating, and implementing best management practices to control erosion of mercury-bound sediments into the lake. Implementation actions for Sulphur Bank Mercury Mine include erosion control, reduction of mercury tainted groundwater flow into the lake and other measures that prevent or reduce evasion of mercury-bound sediments into the atmosphere.

Contacts

- Janis Cooke, Regional Water Quality Control Board

Relevance to Yolo WRA

Concentrations of MeHg in discharges from Clear Lake are relatively low, thus the lake is not considered a significant source of contamination to Cache Creek in Yolo County.

Status

8/24/12: Over the period 2010-2015, actions noted to continue implementing the objectives the Clear Lake Mercury TMDL are largely coordinating agencies responsible for monitoring water quality, implementing best management practices, complying with existing permits, and characterizing fish consumption. Find updates and files at http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/clear_lake_hg/index.shtml.

5/14/13: No updates have been posted on the TMDL web page since 2010.

Suggested Engagement and Action Items

Track updates and projects driven or constrained by the regulation quarterly.