

## 17. Joint Letter Regarding the Proposed Exposure Reduction Program

Letter Date: 1 April 2010

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Big Valley Rancheria

Meyo Marrufo  
Robinson Rancheria of Pomo Indians

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Saroeum Yim  
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Chris Simon  
Middletown Rancheria

Fraser Shilling  
University of California, Davis

Michael DeSpain  
Mechoopda Indian Tribe

### **Comments:**

Dear Chairwoman Hart and Members of the Central Valley Regional Water Quality Control Board,

After careful consideration of the process and expedited timeline to create the Exposure Reduction Program text in the Basin Plan Amendment (BPA), we recognized a need to refine the program goals and intent within this document.

We, therefore, respectfully submit the following text to replace the Exposure Reduction Program section of the Basin Plan amendment text contained within the February 2010 staff report<sup>1</sup>:

<sup>1</sup>

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/delta\\_hg/april\\_2010\\_hg\\_tmdl\\_hearing/apr2010\\_propbpa\\_exec\\_summ.pdf](http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/april_2010_hg_tmdl_hearing/apr2010_propbpa_exec_summ.pdf)

### **Exposure Reduction Program**

*While methylmercury and mercury source reductions are occurring, the Regional Water Board recognizes that activities need to be undertaken with people who eat Delta fish to reduce their methylmercury exposure and potential health risks. The Exposure Reduction Program is not intended to replace timely reduction of mercury and methylmercury in Delta waters.*

*The goal of the Exposure Reduction Program is to:*

*Meet the State Water Board's mandate and goal to protect the most sensitive of beneficial uses, that of subsistence fishing in quantities defined by individual choice, dietary needs, culture, and traditions. Actions developed through this Exposure Reduction program are intended to reduce individual exposure until methylmercury levels in the watershed are reduced to levels where people can eat fish freely.*

*The Central Valley Water Board will investigate ways, consistent with its regulatory authority, to address public health impacts of mercury in Delta fish, including activities that demonstrably reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families.*

*By [one year after Effective Date], Board staff shall work with dischargers, State and local public health agencies, tribes, and other stakeholders, including community-based organizations and Delta fish consumers, to complete an Exposure Reduction Strategy. The purposes of the strategy will be to recommend to the Executive Officer how dischargers and agencies will be responsible for participating in an Exposure Reduction Program and propose a process for developing, funding, and implementing the program in a collaborative manner. The dischargers, individually or collectively, or based on the Exposure Reduction Strategy, shall submit an exposure reduction workplan for Executive Officer approval by [one year after Effective Date]. The Executive Officer will have four months to review submitted workplans. The workplans shall address the Exposure Reduction Program objectives and dischargers' coordination with other stakeholders. Dischargers shall integrate or, at a minimum, provide good-faith opportunities for integration of community-based organizations and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. In the absence of participation recommendations provided through the Exposure Reduction Strategy, methylmercury dischargers shall be individually responsible for implementing Exposure Reduction Program requirements that are first approved by the Executive Officer. The Exposure Reduction Program shall continue beyond 2030, if needed, until fish tissue objectives are attained.*

*The objectives of the Exposure Reduction Program are to demonstrably reduce actual and potential mercury exposure of Delta fish consumers most likely affected by mercury; through strategies that include but are not limited to outreach and education. These will include activities that reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families.*

*The Exposure Reduction strategies must include elements that:*

- *develop and implement community-driven activities to reduce mercury exposure;*
- *raise awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families;*
- *integrate community-based organizations that serve Delta fish consumers, Delta fish consumers, and public health agencies in the design and implementation of an exposure reduction program; and*
- *identify resources, as needed, for community-based organizations to participate in the Program.*

*The dischargers are encouraged to implement their workplans as quickly as possible but shall fully implement them no later than one year after Executive Officer approval. Every three years after workplan implementation begins, the dischargers, individually or collectively, shall provide a progress report to the Executive Officer. The results of these exposure reduction activities shall be assessed and included in the report.*

*The State Water Board should develop a statewide policy that defines the authority and provides guidance for exposure reduction programs, including guidance on addressing public health impacts of mercury, activities that reduce actual and potential exposure of, and mitigating health impacts to those people and communities most likely to be affected by mercury.*

We thank you for your consideration of our revised text and look forward to working with the Board in future to ensure that the Exposure Reduction Strategies required in this BPA will be developed and implemented in a culturally appropriate and truly effective manner to protect our fishing communities.

**Response:** Staff carefully considered these recommendations for revising the Exposure Reduction Program (ERP) section of the Delta methylmercury Basin Plan amendments as well as text change suggestions from other stakeholders. Staff agrees with the idea that program work toward improvements that can be demonstrated. Staff added “measures for program effectiveness” as a “program element” and as an item to be addressed in the Exposure Reduction Strategy. The signatories recommend that “dischargers implement plans as quickly as possible but no later than one year after plans are approved”. The Basin Plan amendments contain a deadline for plan implementation of six months after approval.

Staff did not use the recommended second paragraph starting with “...program objective is to meet the State Water Board’s mandate and goal to protect the most sensitive of beneficial uses...”. Staff agrees that the goal of the entire Delta mercury control program is to protect the most sensitive beneficial uses, which are safe consumption of Delta fish by people and wildlife. Meeting this goal will involve broad efforts of methylmercury and mercury source reductions as well the Exposure Reduction Program. Staff is unclear about the “State Water Board’s mandate” referred to in this paragraph. The signatories may be referring to the resolution that the State Water Board adopted with an action on the San Francisco Bay Water Board’s mercury TMDL that directed the San Francisco Bay and Central Valley Water Boards to address mercury exposure to fish consumers. The entire text of that portion of the Resolution No. 2005-0060 is provided in the ERP section of the Basin Plan amendments.

Staff agrees that the ERP should continue until water quality objectives are attained which may be after 2030. The draft Basin Plan amendment makes it clear that in this case the Department of Health Services should continue the program. Staff believes that if dischargers have met their methylmercury allocations they have done their part toward meeting water quality objectives. Meeting the water quality objectives will also require source controls by dischargers upstream of the Delta which will be assigned allocations in the upstream TMDLS. During the Delta methylmercury program review at the end of Phase 1 there is time to reassign responsibility for the ERP if necessary.

In the sixth paragraph the signatories suggest expanding the objective of the ERP using text from the State Water Board resolution. Phrases from that resolution of “actual and potential exposure” and “mitigate health impacts” were discussed several times during the stakeholder process. Staff omitted these phrases from the objective and elements of the ERP because Regional Board and Department of Public Health staff members remain unclear about what these phrases actually mean and how health mitigation could be accomplished within a program focused on mercury in fish. Some dischargers also are concerned about possibly being required to mitigate health impacts and reduce potential exposure without knowing how to do so. The ERP text in the Basin Plan amendments allows for activities that go beyond public education such as health screenings that are requested by Delta fish consumers and

community-based organizations. The text also states that community-based organizations shall be fully involved in development and implementation of ERP actions.

## 18. Fraser Shilling, Ph.D.

University of California, Davis Department of Environmental Science and Policy  
Letter Date: 31 March 2010

### **Shilling Comment #1.**

Thank-you for this opportunity to comment on the Draft TMDL and Basin Plan Amendment for Methylmercury in the Delta. I have been involved in this issue for the last 10 years. I conducted the longest-running and most extensive survey of anglers in the Delta. I am a researcher at UC Davis specializing in aquatic ecology and policy. These comments are my own and do not represent the University, its staff & faculty, or the Regents.

I include here for reference 3 documents that are relevant to the development of the TMDL, but which are not obviously used in the current draft. The first is an article that was recently published in the scientific journal "Environmental Research" describing the results of a 2 & ½ year fish consumption study in the Delta of over 500 anglers and family members (Attachment A). Although Regional Board staff has known about this study since its inception, was informed of its findings last year, and was given the accepted manuscript prior to publication, the findings are noticeably absent from consideration in the TMDL and BPA. The second is a study commissioned by the Regional Board determining how many people are at risk from consuming mercury-contaminated fish in the Delta (Attachment B). This study should be useful in determining the urgency for immediate action in the Delta to reduce methylmercury, rather than waiting for 9 years to take significant action. The third is a stakeholder survey commissioned by the Regional Board and the California Department of Public Health to determine the appropriate role for community organizations in planning and implementing actions to reduce exposure of fish-consumers to mercury (Attachment C). This survey found that 30 stakeholders unanimously placed community organizations at the center of decision-making and implementation, but the recent TMDL "stakeholder process" made no serious efforts or provisions to include community groups.

**Response:** Staff had previously received and reviewed the documents provided here by Dr. Shilling. Staff used information from his fish consumption survey and other consumption survey information in developing the four water quality objective alternatives, particularly the alternative that would allow people to eat 4-5 meals per day of Delta fish. Staff did not change its recommendation for water quality objective because scientific evaluation did not support attainment of the more protective water quality objective. Staff agrees that the water quality objectives should be as protective as possible. However, USEPA requires that staff show that the TMDL has a "reasonable assurance" of being achieved.

Staff agrees that the current impairment and continuing, potentially harmful exposure of Delta fish consumers to mercury require an urgent response. Staff's proposed program addresses sources of methylmercury as well as inorganic mercury for just this reason, because addressing both will lower methylmercury levels in fish more quickly than focusing only on inorganic mercury. However, staff also recognizes that 1) time is needed to develop effective measures to manage methylmercury and 2) when source controls are implemented, it will take time to significantly change fish tissue concentrations. The Delta mercury control program includes an exposure reduction program of activities to be conducted with fish consumers while methylmercury levels in fish are lowered.

Staff used the "Community-Based Strategies to Reduce Mercury Exposure in Delta Fishing Communities" (Dr. Shilling's Attachment C) in development of the proposed Basin Plan

amendment text. In particular, elements of the Program include, “integrate community-based organizations that serve Delta fish consumers, Delta fish consumers, and public health agencies in the design and implementation of an exposure reduction program”. Staff has begun discussions with some community-based organizations that want to participate in the Exposure Reduction Program. Staff recognizes that community-based organizations’ participation in the general stakeholder process was limited. Staff and the facilitator made several efforts to increase involvement, including phone calls and emails to solicit opinions separate from the general stakeholder meetings.

### **Shilling Comment #2.**

I have several conclusive remarks to make regarding the TMDL as currently crafted:

1) The fish consumption rates used to set recommended fish tissue targets are too low for two reasons: a) the mean values and 95<sup>th</sup> percentile rates are drawn from studies outside the Delta and are much lower than the rates found in the attached study (Attachment A, Shilling et al., 2010); b) using mean or average values of fish consumption, rather than 95<sup>th</sup> percentile rates from local studies to set targets results in the higher consuming 50% of the population NOT being protected by the fish tissue target.

**Response:** Staff agrees that the water quality objectives should be as protective as possible. However, staff must also show that the TMDL, with the objectives, has a reasonable assurance of being achieved. Staff believes that the recommended water quality objective based on the USEPA 32 g/day of trophic level 3 and 4 fish will be met but that more stringent objectives may not be reached. In a survey of mercury concentrations in fish from 626 sites in 12 western states, a fish tissue concentration of 0.05 mg/kg (which corresponds to 4-5 fish meals per week) is not observed even in pristine streams (Environmental Science and Technology 2007, vol 41 pg 58-65). Note that the most recent Delta fish advisories identify some fish and shellfish that may safely be eaten at three servings per week by the most sensitive groups (pregnant and nursing women and children). A goal of the TMDL is to reduce methylmercury levels so that the fish that are now highest in mercury may be safely eaten once per week.

### **Shilling Comment #3.**

2) The State Water Resources Control Board has clearly set the policy of protecting the most sensitive of beneficial uses within TMDLs. This is reflected in TMDL examples, such as the one for pathogenic bacterial contamination of Southern California beaches. The current TMDL and BPA does not use this standard. It uses a standard of protecting the lower 50% of sensitivity of uses, based on the use of average fish consumption rates, assuming the rates were correct.

**Response:** The commenter is correct that when establishing water quality objectives, the most sensitive beneficial use should be protected. For example, the beneficial use of contact recreation is more sensitive to the level of pathogens than non-contact recreation, so the San Diego Water Board established its pathogen objectives to protect contact recreation. Protection of the beneficial use, however, is different than eliminating all contaminant-related risk in the water quality use. The pathogen objectives allow a low level of bacteria, which could conceivably cause harm to an individual swimmer. Water quality objectives for carcinogens are commonly based on reducing cancer incidence to 1 in a million persons using the water, which

retains some level of risk. A TMDL is one tool that the Regional Boards use to protect beneficial uses.

When setting water quality objectives, the State and Regional Water Boards must follow the Porter Cologne Water Quality Control Act. Porter Cologne Section 13241 states: "Each regional board shall establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance. Factors to be considered ...shall include... water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area". In the case of water quality objectives based on fish consumption, the USEPA has set a precedent for protectiveness in assuming fish consumption rates even lower than the basis of the Delta's proposed objectives. USEPA used 18.7 g fish/day in the California Toxics Rule mercury criteria and 17.5 g/day in USEPA's default methylmercury fish tissue criterion. In comparison, the proposed Delta objectives are based on people eating 32 g/day (one meal/week) of large, trophic level 3 and 4 fish.

#### **Shilling Comment #4.**

3) Approximately 50,000 anglers and their family members, including women and children, are affected right now by mercury contamination of Delta fish (attached study). Waiting 8 or 9 years to implement actions under the TMDL will result in continued harm and no diminishment in this harm to this population.

**Response:** The proposed Phase 1 implementation activities focus on methylmercury control studies and inorganic mercury reduction actions. Staff agrees that implementation should not be delayed, but believes that the methylmercury control studies are needed for an effective program. Previous methylmercury studies (such as under the CALFED Program) allowed staff to identify source categories and estimate methylmercury and total mercury loads. We learned that some wetlands produce large amounts of methylmercury while others do not. Also, some wastewater treatment plants discharge high concentrations of methylmercury and others discharge very low concentrations. More studies are needed to identify the particular characteristics of low-methylmercury wetlands, treatment facilities and other discharges and determine whether these design or management features can be applied elsewhere to control methylmercury. Based on comments from stakeholders who would be required to complete the studies, staff proposed an eight-year period for obtaining funding, designing studies (including scientific review of designs), completion of studies, and review of results.

Staff's intent is to allow adequate time for effective studies, but not to allow studies to unnecessarily delay improvements if management practices become obvious. The proposed Basin Plan amendments state that during Phase 1, all dischargers should implement methylmercury management measures that are reasonable and feasible.

Staff proposes interim total mercury mass limits and requirements for mercury minimization actions for NPDES facilities that must be implemented during Phase 1. Urban storm water systems must also control mercury discharges in Phase 1 by implementing best management practices and the MS4s' Board-approved pollution prevention plans. NPDES facilities must report to the Board annually all mercury monitoring results, a summary of actions taken during the previous year pursuant to the minimization plan, and actions planned for the following year.

Staff agrees that the Delta methylmercury control program should incorporate adaptive management. As the first step in adaptive management, staff and the Board will review the entire program at the end of Phase 1, in about 8 years. Other mercury TMDLs have a 5-year review cycle. Because the Phase 1 studies will provide significant, new information about useful methylmercury controls and possible revisions to the methylmercury allocations, a slightly longer time before the first full review of the program is reasonable.

**Shilling Comment #5.**

3) The “stakeholder process” was well-funded, but mis-managed. It included excessive representation by the regulated parties and virtually no representation of impacted communities. This essentially set up a partnership between the regulated and regulator parties, to the exclusion of the communities and their representatives actually impacted by mercury in Delta fish. This is almost the opposite of what one would expect from a stakeholder process where those with a health and well-being stake would be front and center and those with only a management interest would be included as a minority party. Based on stakeholder process sign-in sheets, dischargers and agencies represented >90% of participants. This process was dysfunctional and distracting. It should not be looked to for any guidance about how the TMDL should be implemented, though it does provide a good summary of how regulated parties feel about the TMDL.

**Response:** Staff agrees that participation by Delta fish consumers and community-based organizations in the stakeholder process was limited. In conversations with staff and the professional facilitator, representatives of community-based organizations gave various reasons for their inability to participate, including lack of time and resources to participate in long, day-time meetings. Staff does not believe that limited involvement by Delta fish consumers equates to a “partnership” between dischargers and Board staff in developing the Delta mercury control program. Between the April 2008 and April 2010 Board hearings and through the stakeholder process, requirements for non-agency dischargers actually changed very little. As a result of stakeholder discussions, staff added requirements for agencies to address methylmercury from open water, which increased the number of reduction actions staff expects will be taken. As evidenced by letters submitted for the April 2010 hearing, some dischargers still have significant concerns about cost, potential adverse effects and other aspects of the proposed Basin Plan amendments.

**Shilling Comment #6.**

Adoption of the TMDL and BPA as recommended by staff will be a decision against protecting the most sensitive of beneficial uses – the subsistence fishing person feeding their family.

**Response:** It will take many years to reduce levels of methylmercury and mercury entering the Delta sufficiently to allow subsistence fishers and their families to safely consume Delta fish species that now have high mercury levels. Staff believes it is important to start a program now that will make progress toward reductions.

## 19. Joint Letter Supporting Guiding Principles & Key Provisions

Letter Date: 1 April 2010

Marty Hanneman  
City of Sacramento

Jeff Willet  
City of Stockton

Michael L. Peterson  
County of Sacramento

Paul Buttner  
California Rice Commission

Debbie Webster  
Central Valley Clean Water Association

Terrie Mitchell  
Sacramento Regional County Sanitation District

Leo Winternitz  
The Nature Conservancy

Erich Delmas  
City of Tracy

Rudolph Rosen  
Ducks Unlimited, Western Regional Office

Greg Yarris  
California Waterfowl Association

Art O'Brien  
City of Roseville

David Tompkins  
City of Vacaville

### **Comments:**

We, the undersigned, are writing this letter to express our appreciation for the efforts made by the Regional Water Board and its staff to improve the process that has been used in the development of the Sacramento-San Joaquin Delta Mercury TMDL and associated Basin Plan Amendment (BPA).

The undersigned organizations have been involved in the development of the BPA for many years and have advocated for a robust stakeholder process and a BPA that recognizes the need for sound science and an equitable, feasible approach in regulating mercury loadings to the Delta.

In April 2008, the Regional Water Board directed staff to work through a stakeholder process to address numerous concerns related to the BPA. Since that time, a diverse group of stakeholders—representatives of wastewater and stormwater agencies, non-profit organizations, wetland managers, agricultural representatives, the Regional Water Board's Executive Officer and staff, and USEPA staff—have worked diligently to develop the current version of the BPA and supporting documents that recognizes the need for sound science and an equitable, feasible approach in regulating mercury loadings in the Delta.

In April 2008, a group of stakeholders sent a letter to the Regional Water Board expressing various concerns regarding the overall process and development of the draft BPA, inattention to those concerns, and a number of significant technical and implementation issues. The stakeholders signatory to that letter requested that a modified approach be used in the BPA that included six key elements:

1. Establish the means to fund methylmercury characterization and control studies.
2. Establish an appropriate fish tissue objective to protect beneficial uses now and in the future.

3. Recognize the current limitations in our ability to control methylmercury from various identified sources.
4. Create early incentives for the removal and control of total mercury from the Delta and upstream watersheds.
5. Eliminate the water concentration “goal” and develop methylmercury allocations at the end of Phase 1 based on the outcome of characterization and control studies.
6. Require the development and implementation of remedial actions by the State of California to reduce the contribution of legacy mercury in the watershed by at least half, as part of a comprehensive effort to achieve the TMDL.

The stakeholder process has been rigorous, with 14 facilitated Stakeholder meetings and numerous additional workgroup meetings over the course of the past year and half, to work through numerous complex issues. As a result of this process, changes have been made to the BPA addressing many--although not all--of the previous concerns. Three critical accomplishments of the Stakeholder group that will help to implement the BPA include:

- Establishment of a clear set of fundamental principles to guide the specific language that was developed for the BPA and related documents;
- Recognition that the BPA required a flexible, phased approach with an adaptive management framework that encourages reasonable future requirements and actions; and
- Development of near-term actions including Pollutant Minimization Programs, Control Studies, an Exposure Reduction Program, and requirements to perform reasonable, feasible actions as soon as possible.

We believe these elements will help with successful early implementation efforts of the TMDL and future implementation of the Delta Mercury Control Program.

As participants in the Stakeholder group, we would like to express our appreciation of the Regional Water Board’s commitment to the stakeholder process, and of the individual efforts of their management and staff who have worked diligently with us for the past two years. Although each of the undersigned organizations may have remaining concerns with certain aspects of the proposed BPA, we are in general agreement with the principles and the key provisions that are included in the current version of the BPA and related documents, and we are committed to working collaboratively with your staff and other stakeholders in the coming years.

We urge the Regional Water Board to support your staff in continuing to work with the Stakeholder group during Phase 1 of the Delta Mercury Control Program, and to base your conclusions, recommendations, and decisions on sound scientific evidence and the reasonable protection of beneficial uses, as required under the Water Code. Additionally, we urge you to help seek funding that will assist the Stakeholder group to work together in the future. We look forward to improving upon this collaborative stakeholder model for developing future TMDLs in the region.

**Response:** Staff appreciates this support letter and will continue to work with all stakeholders with the development, implementation, and review of the methylmercury studies. Staff will continue to inform stakeholders of potential funding opportunities as they arise.

## 20. Mechoopda Indian Tribe and California Indian Environmental Alliance

Letter Date: 7 April 2010

Michael DeSpain  
Director, OEPP  
Mechoopda Indian Tribe

Sherri Norris  
Executive Director  
California Indian Environmental Alliance

Thank you for the opportunity to submit the following comments on the proposed Sacramento-San Joaquin Delta Estuary Basin Plan Amendment (BPA)/ Methylmercury Total Maximum Daily Load (TMDL).

We wish to first to thank the CVRWB Staff for their dedication to developing this plan to address methylmercury in this watershed, for their attempts to combine stakeholder comments into their Staff Report, and for their assistance in providing information and answering our questions.

In light of the description of the stakeholder process in the resolution to adopt this Delta Methylmercury Control Program, we do however wish to reiterate that the proposed BPA is not a consensus document. Of note, the following two circumstances prohibited participation by impacted communities and Tribes in the creation of the BPA and in the stakeholder meetings and workgroups:

1. Outreach to California Native American Nations (Tribes) by the Waterboard and EPA staff, including the one day informational meeting in November, was too late for tribal environmental offices and tribal council members to review materials, commit and prepare staff, seek funding for participation, and as necessary, obtain legal consultation in order to truly participate in the development of the BPA/TMDL.
2. The Public Stakeholder process was not fully inclusive of Tribes or community based groups; in fact, their participation was restricted by the process and inequitable. Community-based organizations and Tribes did not have the resources to attend the large number of meetings required to follow and participate in the stakeholder and workgroup meetings. The limited comments and suggestions made by impacted community representatives were eclipsed by the large number of dischargers, agencies and their representative lawyers present and commenting. The dates and times chosen for these meetings disallowed community members to participate since most were participating on a volunteer basis. Additionally, the technical nature of many discussions was prohibitory for many community members and tribal representatives who were not given the time to conduct the appropriate research or receive training as noted above. The low tribal and impacted community participation rates evident in the minutes of these meetings posted on the Regional Board web site do not reflect a lack of caring on the part of these entities, but is instead reflective of the exclusive nature of the "stakeholder process".

Therefore, we respectfully submit the following comments and recommendations to the CVRWB in hopes of addressing our concerns that are not included in current staff recommendations:

### **Comment #1.**

- 1) **The fish tissue target is not acceptable for the protection of Tribes and many communities for subsistence, traditional or ceremonial use.**

The BPA's objective of 32 grams/day (one meal a week) of trophic level 3 and 4 Delta fish, plus some commercial fish, will not protect the beneficial uses of tribal members who fish for subsistence, ceremonial, and cultural purposes. Currently, tribal community members fear for their health when eating fish at traditional levels. Their stated preferred beneficial uses of Delta waters are subsistence fishing, shellfish gathering, materials gathering (including but not limited to plants used for food, healing and regalia), navigation, and ceremonial uses. Eating fish and traditional fishing are not only desired to maintain community health, but the connection to fish effectively maintains the cultural, spiritual, and physical connection of tribal Peoples to this watershed. The current and future existence of Tribes relies on their ability to re-establish these uses.

- We recommend that the BPA establish a fish tissue target that will enable people to safely eat four to five meals per week (128-160g/day) of trophic level 3 and 4 Delta fish. This more closely meets the needs of tribal members, the EPA recommendation of a rate of 142.4 grams/day and is in line with the intent of the Clean Water Act to protect the beneficial uses of all people within the watershed. This recommended rate will also incidentally protect the immigrant and other subsistence fishing people consuming fish at this rate, as reflected in the recent study of fish consumers in the Delta (Shilling et al., 2010).<sup>1</sup>

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<sup>1</sup> Shilling, F. White, A. Lippert, L. Lubell, M. 2010. Contaminated fish consumption in California's Central Valley Delta. Environmental Research. Doi:10.1016/j.envres.2010.02.002

**Response: Staff agrees that the water quality objectives should be as protective as possible. However, staff must also show that the TMDL, with the objectives, has a reasonable assurance of being achieved. Staff believes that the recommended water quality objective based on the USEPA 32 g/day of trophic level 3 and 4 fish will be met but that more stringent objectives may not be reached. In a survey of mercury concentrations in fish from 626 sites in 12 western states, a fish tissue concentration of 0.05 mg/kg (which corresponds to 4-5 fish meals per week) is not observed even in pristine streams (Environmental Science and Technology 2007, vol 41 pg 58-65). Note that the most recent Delta fish advisories identify some fish and shellfish that may safely be eaten at three servings per week by the most sensitive groups (pregnant and nursing women and children). A goal of the TMDL is to reduce methylmercury levels so that the fish that are now highest in mercury may be safely eaten once per week.**

The Basin Plan amendment directs the Regional Board review the Delta methylmercury control program after the Phase 1 Control Studies to determine whether more protective water quality objectives can be attained. Note that the language describing a long-term goal for consumers to eat 4-5 meals/week of Delta fish has been changed. Because of the difficulty of fully removing Gold Rush-era mercury that spread downstream of mined areas and continuing atmospheric deposition, staff is unable to confirm at this time that mercury concentrations to support eating 4-5 meals/week are attainable in large trophic level 3 and 4 fish (e.g., bass, catfish, bluegill, and crappie). As a result, Central Valley Water Board legal counsel removed the long-term goal language. The language now states, "The Regional Water Board recognizes that some consumers eat four to five meals per week (128-160 g/day) of a variety of Delta fish species."

## **Comment #2.**

- We Recommend the CVRWB follows the lead of the North Coast Regional Water Board (NCRWB) and include **The Native American Cultural (CUL) use and Subsistence Fishing (FISH) use** in this BPA. We recommend these designations over the COMM recreational fishing designation suggested by Staff. Inclusion of the CUL and FISH designations would identify the traditional and cultural uses of waters within the Region and protect tribal communities as well as non-native communities that utilize this waterbody for subsistence fishing.
- We recommend the CVRWB adopt the NCRWB Beneficial Use designation of Native American Culture (CUL) of water with the addition of plants used for food and medicine. This will identify waters that *“support the cultural and/or traditional rights of indigenous people such as subsistence fishing and shellfish gathering, plants for food and medicine gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses.”*<sup>2</sup>
- We also recommend the CVRWB adopt the NCRWB Beneficial Use Designation of Subsistence Fishing (FISH) Uses of water identifies waters that *“support subsistence fishing.”*<sup>3</sup>
- Further, We Recommend that as part of Phase I of the TMDL the Board consult with tribal council members and tribal environmental officers and subsequently coordinate with tribal representatives to discuss and study historical, current and future intake rates.

**Response: The Basin Plan of the North Coast Regional Water Board contains definitions of beneficial uses for Native American Culture (CUL) and Subsistence Fishing (FISH). However, the North Coast Regional Water Board has not identified any particular water bodies that support these beneficial uses. Note that the FISH beneficial use definition does not define consumption rate or species of fish consumed.**

**Staff expects to coordinate with tribal council members and environmental officers to determine how these beneficial use designations, with the suggested additions for CUL, could be applied to the Delta and other Central Valley waterways. Species of fish commonly available now in the Delta are likely different than fish species that tribes traditionally consumed.**

## **Comment #3.**

- 2) **Tribal Consultation is absent from the proposed BPA and TMDL in almost all cases**

Tribes have a legal status and obligatory responsibility as governments and therefore do not fall under the heading of community-based groups or community-based organizations. Tribal consultation is required under presidential Executive Order 13175, “Consultation and Coordination with Indian Tribal Governments” and it is the responsibility of agencies receiving federal funds to adhere to principles of consultation.<sup>4</sup> Additionally, SB 18 is regionally and locally applicable in both the BPA and TMDL. SB 18 was created to preserve and protect cultural places of California Native Americans and is unique as it requires local governments to involve California Native Americans in early stages of land use planning, before individual site-specific, project-level decisions are made by a local government. It extends to both public and private lands, and includes both federally recognized and non-federally recognized Tribes.<sup>5</sup>

SB 18 refers to Public Resources Code §5097.9 and 5097.995 to define cultural places as a Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine (Public Resources Code §5097.9). These definitions are inclusive not only of archaeological or historic sites but also religious or ceremonial sites and collection or gathering sites. This of course includes specific places where California Native Americans access certain plants for food, medicine, clothing, ceremonial objects, basket making, and other crafts and uses important to on-going cultural traditions and identities. Collection and gathering sites may also qualify as religious or ceremonial sites.<sup>6</sup>

- Therefore, we recommend that the BPA explicitly include government-to-government consultation with Native American tribal governments, whether federally recognized or unfederally recognized immediately, throughout Phase I and in all future endeavors.
- As it is the intent of SB 18 is to provide California Native American Tribes an opportunity to participate in decisions at an early planning stage, we extend this recommendation to include Tribes in all advisory, decision-making, and review groups created in relation to this BPA/TMDL.
- We further recommend guiding principles and practices of meaningful consultation, communication and coordination with Native American tribal governments be integrated into the BPA/TMDL so that consultation, communication and coordination proceeds with tribal leaders on all levels from direct communication with the CVRWB and locally.<sup>7</sup>
- We recommend that consultation must always occur early in the project planning process, and allow time for both sides to plan ahead, be informed of the project scope before consultation.
- We further recommend, according to consultation principles; an agency head must be present in order for the process to be a true government-to-government event. If agencies wish to assign the role to other staff, a Tribal Liaison, contractor, or discharger the Tribe shall approve this representative substitution.

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<sup>2</sup> [http://www.waterboards.ca.gov/northcoast/water\\_issues/programs/basin\\_plan/083105-bp/03\\_bu.pdf](http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/03_bu.pdf)

<sup>3</sup> [http://www.waterboards.ca.gov/northcoast/water\\_issues/programs/basin\\_plan/083105-bp/03\\_bu.pdf](http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/03_bu.pdf)

<sup>4</sup> <http://www.epa.gov/fedreg/eo/eo13175.htm>

<sup>5</sup> <http://www.waterplan.water.ca.gov/docs/cwpu2005/vol4/vol4-tribal-tribalconsultationguidelines.pdf>

<sup>6</sup> [http://www.csac.counties.org/images/public/Advocacy/hlt/Tribal%20Consult%20Guidelines\\_03-01-05.pdf](http://www.csac.counties.org/images/public/Advocacy/hlt/Tribal%20Consult%20Guidelines_03-01-05.pdf)

<sup>7</sup> [http://www.csac.counties.org/images/public/Advocacy/hlt/Tribal%20Consult%20Guidelines\\_03-01-05.pdf](http://www.csac.counties.org/images/public/Advocacy/hlt/Tribal%20Consult%20Guidelines_03-01-05.pdf)

**Response:** Regional Water Board staff and the Executive Officer regret that tribes were not contacted earlier in the development of the Delta methylmercury TMDL. Staff will collaborate with tribes throughout implementation of the Delta methylmercury TMDL. It is the intent of the Regional Board to collaborate with California Indian Tribes much earlier in development of our projects, including other TMDLs. Staff will follow guidance provided in the California Environmental Protection Agency's Policy for Working with California Indian Tribes (October 2009)<sup>1</sup>. This policy provides principles and actions to establish respectful communication and consideration of concerns.

Staff appreciates the involvement of some tribes that began in October 2009. Staff also appreciates the opportunities to work with CIEA that occurred prior to 2009.

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<sup>1</sup> <http://www.calepa.ca.gov/tribal/Documents/CIT01Policy.pdf>

**Staff received CIEA’s recommendations for Chapter 7 of the Basin Plan Amendment Staff Report (CEQA evaluation) in a separate letter. In response staff revised Chapter 7 to include a reference to Senate Bill 18.**

**Comment #4.**

- 3) As proposed the methylmercury reduction program oversight is likely to be overly influenced by dischargers, with marginal input by tribal and community representatives.

For example, the proposed BPA includes the formation of a Technical Advisory Committee (TAC) (BPA, page 7). The TAC is to be an independent body formed with recommendations from stakeholders, including dischargers, and we are in support of such an advisory committee. We are however, concerned that results will be reminiscent of the recent stakeholder process and appointees will be disproportionately chosen and influenced by dischargers, while the opinions of experts designated by Tribes and communities are either non-existent or overshadowed.

The BPA also includes the formation of Stakeholder Group(s) to assist in Control Study Workplan(s) review. Again, we are in support of such an oversight group however, since this group is charged with evaluating discharger workplans and results, it would be wrong for the dischargers to have influence over their own review.

- We recommend a more equitable system to choose members of the TAC. The BPA should explicitly include mechanisms to insure an equal number of nominees or appointees by Tribes and community-based groups as those recommended by dischargers (i.e., one-third representation each), and that for each participating jurisdiction that the appropriate Tribe is also seated.
- We also recommend any Stakeholder Group(s) charged with the review and oversight of discharger plans, requirements and outcomes be created by without discharger nominations and be created with a strict non-conflict of interest policy.
- Dischargers should not be involved, directly or indirectly through their appointees, in the approval of their workplans or the assessment of whether or not they are meeting their requirements.
- We further recommend that the BPA include mechanisms that will insure Tribes and community groups are equitable participants in these review, oversight and advisory bodies, and represent a majority in these groups.
- According to federal principles of “Consultation” tribal leaders must be contacted in all cases where decisions are being made that may affect tribal members or resources (including water), and whenever actions or workplans are proposed, implemented or reviewed. This consultative process his must be explicitly included into the TMDL and BPA to insure it is properly carried out. *Please see issue 2, Tribal Consultation above.*

**Response: Staff revised the Basin Plan amendment to add the underlined text:**

**“The TAC shall be comprised of independent experts who would convene as needed to provide scientific and technical peer review of the Control Study Workplan(s) and results, advise the Board on scientific and technical issues, and provide recommendations for additional studies and implementation alternatives developed by the dischargers. The Board shall form and manage the TAC with recommendations from the dischargers and other stakeholders, including tribes and community organizations.”**

The Basin Plan amendment text states that tribes, dischargers, and other stakeholders, may provide recommendations but that the Regional Board shall form and manage the TAC. Dischargers will not select members of the TAC. Dischargers are responsible for submitting workplans and other reports as required in the Basin Plan amendment schedule for the Phase 1 Control Studies. The Executive Officer has final approval over the Control Study Workplans and all other reports.

Please see response to Comment #3 for staff's intent to fully collaborate with tribes on implementation of the Delta methylmercury TMDL, including stakeholder groups and the Phase 1 studies.

#### **Comment #5.**

- 4) The timeline for the development of "Control Study Workplans," and implementation of pilot programs and reduction strategies are unnecessarily long, while language that recommends interim actions to reduce methylmercury or total mercury are vague and without incentives.

For example the proposed BPA establishes a 9 year study period to develop methylmercury control program, during which time the BPA has used vague language to suggest interim actions to begin reductions. The amendments to the TMDL currently states "*all dischargers should implement methylmercury management practices ASAP, but are not required until after the Regional Board has completed their review of plans and developed tributary mercury controls.*" Waiting until after the 9 year study period is entirely too long to begin implementing measures – this leaves fish eating populations vulnerable and poses an unacceptable risk.

Additionally "feasible" and "reasonable" are included in the BPA and TMDL in a number of locations although these words have not yet been defined. We remain concerned in a number of cases that that use of these terms will weaken the responsibilities of dischargers and agencies to reduce mercury or methylmercury, will result in a weakening of the regulatory teeth of the document and will hinder the success of the TMDL to reach their goals.

- We recommend that that Phase 1 Studies, including pilot programs, be implemented as they are developed to address mercury and/or methylmercury in the Delta as soon as possible, not after all are completed.
- We recommend that "Control Study Workplans" be completed within two years of the Effective Date of the BPA, well before the end of Phase I.
- We recommend that the case of "feasible" and "reasonable" the definition should state how each will be determined, by whom, and in such a way that the beneficial uses established will be protected following these decisions.

**Response:** Staff's intent is to allow adequate time for effective studies, but not to allow studies to unnecessarily delay improvements if management practices become obvious. The proposed Basin Plan amendments state that during Phase 1, all dischargers should implement methylmercury management measures that are reasonable and feasible. The Basin Plan amendment text only states that for the purposes of achieving the methylmercury allocations, nonpoint source dischargers do not have to implement methylmercury controls until after the Phase 1 studies. Methylmercury controls for various methylmercury sources need to be better identified, which is the purpose of the Phase 1 studies.

Dischargers must submit workplans for their Phase 1 control studies within 9 months of the effective date and must implement them within 4 months after submittal unless the Executive Officer (EO) provides the discharger with written notification that the EO needs more than 4 months to review and approve the workplans. Without an EO's extension of the workplan approval, the Basin Plan schedule means that dischargers must begin implementing the workplans and starting actual study work at 13 months after the effective date.

Specific definitions of reasonable and feasible are not provided in the proposed amendment. "Reasonable and feasible" will vary by discharge. For example, tailwater recovery systems limit water and mercury discharged, but are not feasible for irrigated fields in which tailwater reuse creates salt build-up. Well-defined, feasible erosion control practices, which also reduce inorganic mercury, are commonly used by farmers land managers, and to prevent stormwater runoff. Review of Phase 1 Study results by tribes, other stakeholders, the TAC, and the Regional Board will identify reasonable and feasible management practices for methylmercury.

#### **Comment #6.**

- 5) The current TMDL allows new and increased loading but it is vague about under what circumstances or how reductions of mercury or methylmercury will be maintained

Under the Clean Water Act discharge of a pollutant to a water body with no assimilative capacity is not allowable. Although there is conflicting evidence, the staff BPA allows increased loading because assimilative capacity is assumed in the form of foreseen natural export of sediment. According to Sec. 303(d)(4) (A) of the Clean Water Act, if a standard is not attained any waste load allocation established through a TMDL "may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard."

We are also concerned that without proper review by affected communities the Regional Board may modify objectives, allocations, implementation provisions, schedules, and the Final Compliance Date of the TMDL after Phase I is completed.

- Therefore to reduce methyl and total mercury in this watershed we recommend that new sources will be prohibited and increased loads from population increase be addressed by adjusting wastewater allocations to be more stringent to make up for these increased sources.
- We also recommend that any adjustments or revisions of the total maximum daily load, including waste water allocations be reviewed by affected Tribes and communities.
- We further recommend that at the end of Phase 1 and modification to objectives, allocations, implementation provisions, schedules, and the Final Compliance Date of the TMDL must take place with Public review, with tribal consultation and with the input of affected communities.

**Response:** The commenters recommend that new sources of methylmercury be prohibited. The Basin Plan amendment does address future, expected increases in methylmercury loads from wastewater treatment plants by establishing a separate methylmercury allocation for future growth (Table B). In order to establish this allocation, other allocations were more stringent than if allocations for municipal growth were not included. However, during Phase 1, the cause of the largest, anticipated increases in methylmercury loads will come from wetland restoration projects, not municipal wastewater treatment. Under the CalFed Ecosystem Restoration Program, the

Bay Delta Conservation Plan and other habitat restoration efforts, thousands of acres of wetlands may be restored in the Delta. Pressure to restore habitat is strong and benefits other beneficial uses of water. The Regional Board and others need more information in order to balance these potentially competing benefits. This information will be generated through the Phase 1 studies. Thus, there may be increases in methylmercury loads in Phase 1 that are unregulated. However, all methylmercury discharges must begin complying with methylmercury allocations starting in Phase 1. Wetlands that began discharging during Phase 1 do not have an allocation set aside for new wetland growth. Beginning in Phase 2, discharge from all wetlands within a subarea cannot exceed the subarea's allocation for managed wetlands.

In order to change the total maximum daily load, allocations, or water quality objectives, the Regional Board must amend the Basin Plan. The Basin Plan amendment process includes public and scientific review. As described above, staff intends to continue to collaborate with California Indian Tribes in implementing the Delta methylmercury TMDL, including the review process.

**Comment #7.**

- 6) Exposure Reduction section of the BPA requires clarification to insure impacted communities and Tribes are included in creation and implementation of this program.

CIEA participated in the workgroup which developed the staff recommendations for Exposure Reduction language in the BPA as directed by the State Water Quality Control Board in Resolution 2005-0060. Unfortunately, there was little time to work on this text, it was therefore rushed, participation by impacted communities and Tribes was minimal and the resulting text was not agreed upon in consensus.

CIEA therefore joined other stakeholders in recommending language that clarified the intent of communities and Tribes in the creation of this program and strengthened the program as a whole. Please refer to our group revision to the Exposure Reduction document submitted on April 1, 2010 by the Mechoopda Indian Tribe Environmental Office, CIEA the and others (*Appendix 1 attached*).

**Response:** Please see staff's responses to the joint comments Exposure Reduction Program.

**Comment #8.**

- 7) Historical Resources Section of the BPA lacking CEQA language to Insure Tribal Consultation

On April 1, 2010 CIEA, tribal environmental program directors and other stakeholders submitted a revision of Chapter 7 of the BPA, Historical Resources (*Appendix 2 attached*). Our recommendations strengthened the document by reintroducing CEQA language on the protection of cultural resources.

Please refer to this group revision submitted on April 1, 2010 and to our recommendations under #2 above on Tribal Consultation in relation to the BPA / TMDL.

**Response:** Staff appreciated the recommendations for revision of Chapter 7. Please see responses to the separate letter.

**Comment #9.**

**Other topics of concern:**

In addition to the above concerns and recommendations for this BPA/TMDL we share many of the concerns raised by our colleagues at Clean Water Action. We refer you to their comments being submitted today April 7, 2010 and express that we are in full support of their recommendations for the following issue areas:

- Lack of specific and measurable total mercury reduction requirement for all dischargers while methylmercury control studies are occurring (CWA issue area #2)
- Lack of clear measurement and enforcement strategies (CWA issue area #4)
- That all mercury sources not addressed. This includes missing active requirements for mercury controls and reductions and exceptions allowed in studying some sources (CWA issue area #5)
- That Offsets are being inappropriately allowed during Phase One (CWA issue area #7)

**Response: Staff recognizes the commenters support for Clean Water Action's comments. Please see staff's response to the Clean Water Action letter.**

Once again, thank you for this opportunity to provide comment on this BPA.

We look forward to working with all partners to implement an effective TMDL and return the Delta to health that will re-establish local traditional food and the protection of culturally sensitive areas within the Watershed.

## 21. Joint Letter from Phase 1 Stormwater Programs (MS4s)

Letter Date: 1 April 2010

Marty Hanneman  
City of Sacramento

Jeff Willet  
City of Stockton

Michael L. Peterson  
County of Sacramento

R. Mitch Avalon  
Contra Costa County Public Works Dept.

### **MS4s Comment #1.**

The Sacramento Municipal Separate Storm Sewer System (MS4) (CAS082597), Contra Costa County MS4 (CAS083313), and Stockton MS4 (CAS083470) will be required via their Phase I NPDES permits to comply with relevant requirements in the February 2010 draft Basin Plan Amendments for the control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary (BPA). In reviewing the draft BPA, we have strong concerns that the proposed "Exposure Reduction Program" language does not utilize the best and most effective approach and, as written, would impose a grossly disproportionate obligation on MS4s relative to their discharges of methylmercury. We are providing this letter to document our concerns and ask that the language be revised as we have proposed.

Our fundamental concern arises from the draft BPA language that assigns responsibility for implementing an Exposure Reduction Program to dischargers. While we agree with the need to reduce the potential for mercury exposure for people that eat fish caught in the Delta, it is erroneous to assert that MS4 dischargers are creating this risk. The risk is created by legacy pollution in the State waterways. The State is responsible through the Clean Water Act for reporting the condition of the State waterways and as such is responsible for delivering this information to users of those waterways. This role is accomplished by preparing the Impaired Water Body lists or the 305(b) reports. It is incumbent upon the State to make this information more accessible to the public, rather than deferring this responsibility to dischargers.

We urge the revision of this language to clearly provide the option for MS4s to implement their existing programs or participate in a state-led program, and delete any language assigning responsibility to the MS4s for reduction of risk. Our more specific comments follow.

**Response:** Delta dischargers, including MS4s, are being asked to participate in the Exposure Reduction Program (ERP) because methylmercury that they discharge now contributes to high levels of mercury in commonly consumed fish. The participation scheme is to be determined during development of the Exposure Reduction Strategy. Staff believes that it is logical for dischargers to expect that participation will take into account proportional responsibility (Please see Basin Plan Amendment Staff Report Chapter 4.3.1). Development of the Strategy will occur after the Basin Plan amendment is adopted and involve the Regional Board, public health agencies, dischargers and community-based organizations.

Staff agrees that the State should have a significant role in the ERP because of the expertise and leadership possible through the Department of Public Health and in recognition of the contribution of Gold Rush-era mercury to the problem. Note that legacy mercury is only a portion of inorganic mercury entering the Delta. The Basin Plan amendment states that State

public health agencies should be involved in the ERP and should continue it after dischargers have met their methylmercury allocations (i.e, taken care of their contribution to the problem).

The MS4s are concerned that the ERP as proposed will not utilize the best and most effective approach. Staff added the following to elements that the ERP must be directed toward: “Utilizing and expanding upon existing programs and materials or activities in place to reduce mercury, and as needed, create new materials or activities”. Staff also added that developing the Exposure Reduction Strategy must include setting performance measures to direct the ERP to effective actions.

The MS4s describe one purpose of State’s 303(d) Impaired Water Bodies List and the 305(b) assessment of surface water quality as providing information to the public about risk of consuming fish. The purpose of the 303(d) list is to identify impaired water bodies and to prioritize the development of TMDLs for those water bodies. The 305(b) report is a “state of the water report”. Currently, the only link between these Clean Water Act-prescribed requirements and warning the consumers of health risks is the State and Regional Water Board’s practices of considering consumption advisories when listing water bodies on the 303(d) list. The State Office of Environmental Health Hazard Assessment evaluates fish mercury data, independently of the State and Regional Boards, to issue fish consumption advisories. The Department of Fish and Game publishes the fish consumption advisories in the rule books for licensed anglers. Staff agrees that material already created by the State, such as pictorial information for fish consumption advisories, should be used in the ERP.

#### **MS4s Comment #2.**

##### **Objectives and Scope of the Exposure Reduction Program**

The draft BPA mandates that MS4s participate in an Exposure Reduction Program that has no clearly defined leadership, scope, or budget. The listed objectives in the draft BPA language are an inconsistent combination of goals and strategies that exemplify the lack of clarity and direction. We agree that “The State Water Board should develop a statewide policy that defines the authority and provides guidance for exposure reduction programs” because the Regional Water Board has developed this draft text in response to State Water Resources Control Board Resolution 2005-0060.

To be effective, an Exposure Reduction Program (ERP) should be a regional effort, ideally coordinated or integrated with the ERP required by the San Francisco Bay Mercury TMDL. The State’s Department of Public Health (DPH) should implement it, because this agency has the most relevant mission and expertise to lead a public health program for the communities affected by mercury in fish. The BPA language should indicate that development and implementation of an ERP is the responsibility of the State.

**Response:** Staff agrees that the extent of MS4’s responsibility for the ERP is not defined in the Basin Plan amendments. During stakeholder process discussions, stakeholders generally preferred having fewer details in the Basin Plan and taking more time to develop details of the program through an Exposure Reduction Strategy during Phase 1. Dischargers, Regional Board, and other stakeholders are directed to work together to develop the Strategy that will include a participation plan. Individual dischargers will not immediately be held responsible for an ERP at the start of Phase 1. The Basin Plan amendment states that if dischargers do not participate in the collaborative effort to develop the strategy, the Regional Board will take a

second step of evaluating ERP needs and the Regional Board's regulatory authority to determine dischargers' responsibility.

The text of State Water Board Resolution 2005-0060 and direction to the State Water Board to develop guidance are in the draft Basin Plan amendment. The Basin Plan amendments direct that the Exposure Reduction Strategy be collaborative, which could certainly include partnership with the ERP that was required under the San Francisco Bay's Mercury TMDL. Note that for the San Francisco Bay's ERP, the entire responsibility is assigned to point source dischargers. The Delta ERP would involve public health agencies and dischargers, including nonpoint sources, some of which are State agencies.

### **MS4s Comment #3.**

If a comprehensive regional ERP is established by the State, MS4s could participate appropriately as part of their public outreach programs required under their NPDES permits. Ideally, such participation would utilize messages and materials developed by the State. A State-led ERP could also be an appropriate recipient for funding from dischargers, which should be proportional to their mercury and methylmercury discharges. If an effective regional program is not established by DPH or another State agency such as the Office of Environmental Health Hazard Assessment or Department of Toxic Substances Control, we believe that it is inappropriate, and most likely counter-productive, for the BPA to create requirements for individual dischargers to be responsible for developing their own ERPs. MS4s and other dischargers do not have the expertise to develop public health programs, and an uncoordinated approach to such a program could lead to inefficient use of resources, and a confusing and conflicting patchwork of messages.

We do not contest the concept of *"integration of community-based organizations and consumers of Delta fish into planning, decision-making, and implementation of exposure reduction activities"*. However, this implementation strategy should be included in an ERP led by DPH or another State agency, as it is outside the expertise and scope of responsibility of MS4s and other dischargers.

**Response:** The Basin Plan amendments do not direct dischargers to develop their own ERPs. The preferred program will be collaborative, with individual responsibility to be considered only if participation in a collaborative effort does not occur. Please see response above regarding staff's expectation that participation by individual dischargers in the ERP would reflect proportional responsibility. Individual dischargers are also not expected to have the expertise to develop exposure reduction activities. The Basin Plan amendments state that the public health agencies should provide guidance for the exposure reduction activities.

Staff included the directive that community-based organizations and Delta fish consumers be integrated into the ERP because when such activities aren't planned and implemented with involvement of community members, they often fail due to lack of understanding of community needs and communication methods. Involving community members should actually make planning and implementing activities easier and more effective. Staff will help make connections between dischargers and community-based organizations, some of which have already informed Regional Board staff that they are committed to involvement in the ERP.

Staff carefully considered these recommendations below for revising the Exposure Reduction Program (ERP) section of the Delta methylmercury Basin Plan amendments, as well as text change suggestions from other stakeholders.

**MS4s Comment #4.**

**Proposed Solution #1:** Revise the bullet point list of objectives as follows:

- The goal is to “Reduce actual and potential mercury exposure of Delta fish consumers most likely affected by mercury”.
- The Strategy may include efforts to: (1) “Raise awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families”; (2) Develop and implement community-driven activities to reduce mercury exposure”; and (3) “Integrate community-based organizations that serve Delta fish consumers, Delta fish consumers, and public health agencies in the design and implementation of an Exposure Reduction Program”.

**Response:** Staff agreed that the single objective/goal of the program should be to reduce mercury exposure in Delta fish consumers most likely affected by mercury. Staff retained integration of community-based organizations as a requirement for the Strategy and workplan, instead of making it an option for the Strategy, because their involvement will improve effectiveness. Community-based organization and environmental justice stakeholders want to be involved in the ERP and in activities directed toward their communities.

**MS4s Comment #5.**

**Proposed Solution #2:** Delete the requirement for a workplan that states, “Dischargers shall integrate or, at a minimum, provide good-faith opportunities for integration of community-based organizations...” This requirement is redundant or could preclude any recommendations from the required Exposure Reduction Strategy, which does require including community-based organizations and Delta fish consumers.

**Response:** Staff retained this particular requirement for the workplan to ensure that community-based organizations are involved in implementation of activities as well as development of the Strategy. The phrase, “...at a minimum provide good-faith opportunities...” recognizes that dischargers cannot compel participation by community-based organizations and should only be required to provide opportunities to participate.

#### **MS4s Comment #6.**

**Proposed Solution #3:** Schedule the Exposure Reduction Strategy and Workplan to *follow* the State Water Board’s development of a statewide policy that defines the authority and provides guidance for exposure reduction programs. “By [six months after Effective Date and development of statewide policy that defines the authority and provides guidance for exposure reduction programs, whichever comes later], Regional Water Board staff shall work with dischargers, State and local public health agencies, and other stakeholders, including community-based organizations and Delta fish consumers, to complete an Exposure Reduction Strategy.” And “The dischargers, either individually or collectively, shall submit an exposure reduction workplan for Executive Officer approval by [~~two years after Effective Date~~ one year after completion of the Exposure Reduction Strategy].”

**Response:** Although the Regional Water Board asks that the State Water Board develop such a policy and guidance, the State Water Board has not committed to doing so and it could take several years to develop such a policy. The ERP is intended to protect fish consumers while source controls are being implemented, which means that the ERP should start as soon as possible.

#### **MS4s Comment #7.**

##### **Proportional Responsibility**

The current BPA language states that “*At a minimum, point source dischargers and the state and federal agency dischargers shall be responsible for conducting the Exposure Reduction Program.*” This qualification indicates disproportionate responsibility for the point-source dischargers including MS4s. We strongly oppose such language in the BPA.

The combined methylmercury load from all MS4s in the Delta is less than 1% of the total load. Because the TMDL load and wasteload allocations are proportional to current loadings, any responsibility for developing and implementing an ERP should be similarly proportional. The benefits of providing stormwater drainage in our urban areas are no less important than the benefits provided by activities of other source types. Non-participation by some dischargers should not require the remaining dischargers to compensate for that shortage. Moreover, as noted previously, because the risk arises primarily from the legacy pollution to State waterways, the State should remain primarily responsible for reporting on the health of the waterways and the risks associated with their use.

**Proposed Solution:** For any source type that cannot be required to participate in an ERP, provide separate funds in proportion to that load allocation. USEPA’s funding to Bay Area Stormwater Management Agencies Association in a grant entitled “Clean Watersheds for a Clean Bay” supports regional efforts to remove Mercury from watershed in part by developing a risk reduction program to be implemented throughout the San Francisco Bay region.

**Response:** Staff removed the sentence that the MS4s have highlighted. Note that the San Francisco Bay Water Board’s Basin Plan text that created the San Francisco Bay’s ERP does not address proportional responsibility or funding sources. Staff encourages dischargers to seek funding through the USEPA or other sources.

### **MS4s Comment #8.**

#### **Inter-regional Consistency**

The Exposure Reduction Program language originated from State Water Resources Control Board Resolution 2005-0060, which applied to both the San Francisco Bay and Central Valley Regional Water Boards. The two Regional Water Boards implementing the resolution have each drafted different language in their Basin Plans in response to the resolution.

Notwithstanding the good reasons for the language changes, this BPA should aim for consistency to the extent practicable for two reasons: (1) the County of Contra Costa MS4 manages one stormwater program but must comply with two regional permits, and (2) whatever risk reduction program is developed for San Francisco Bay could be expanded or replicated in the Delta if the requirements were similar.

**Proposed Solution:** Review the final draft language for the ERP for consistency with requirements in the San Francisco Bay Mercury TMDL BPA and Provision C.11 Mercury Controls of the Municipal Regional Stormwater NPDES Permit No. CAS612008.

**Response:** For consistency, staff added State Board Resolution 2005-0060 text to the draft BPA. Staff acknowledges that the Contra Costa MS4 area is in both Region 2 and 5 and there are separate MS4 permits for each region, and has reviewed the Region 2 permit (CAS612006). The Region 2 permit includes portions of the State Board Resolution text, so there is consistency with the draft BPA. The Region 2 exposure reduction requirements only apply to point sources (municipal and industrial wastewater treatment plants, and stormwater runoff) whereas the draft BPA for the Delta includes non-point sources. The Delta BPA includes objectives and elements that should be included in the exposure reduction program (similar to requirements in the Region 2 permit), and it includes an initial period where dischargers are to work with community groups to develop a strategy on how to develop and implement the program. Region 5 staff has been in contact with Region 2 staff and they intend to coordinate activities to most effectively conduct the program and share information between the two regions.

### **MS4s Comment #9.**

#### **Comment on Other BPA Language**

In addition to the ERP, we share concerns with the following items.

## **BPA Page #2 “Water Quality Objectives”**

*“The long-term goal of the mercury program is to enable people to safely eat four to five meals per week (128-160 g/day) of Delta fish.”*

This long-term goal is not associated with the TMDL allocations and exceeds consumption levels previously applied by USEPA and the Regional Boards. Further, the goal is not appropriately part of the BPA, which is to establish water quality objectives and implementation measures for the water quality objectives. Long-term goals unassociated with the water quality objectives proposed for adoption should not be included in the BPA.

**Proposed Solution:** Delete the statement “The long-term goal of the mercury program is to enable people to safely eat four to five meals per week (128-160 g/day) of Delta fish” from the BPA.

**Response:** The language for this long-term goal was developed during meetings in the Stakeholder Process. The intent was to recognize that there are people that eat Delta fish more frequently than one meal per week, which is the basis of the proposed fish tissue objectives. For current Delta fish consumption rates, please see the 1 April 2010 comment letter from Dr. Fraser Shilling. Because staff is unable at this time to definitively show that mercury concentrations to support eating 4-5 meals/week are attainable in the same fish species as those identified for the proposed water quality objectives (large trophic level 3 and 4 fish), staff omitted the highlighted phrase from the Basin Plan amendments. The Basin Plan language still states that the fish tissue objectives will be reviewed at the end of Phase 1 and at during later program reviews to see whether objectives protective of a higher consumption rate can be attained. Staff added a sentence to recognize that some people eat Delta fish more frequently than once/week.

## **MS4s Comment #10.**

### **BPA Page #4 “Requirements for NPDES Permitted Urban Runoff Discharges”**

*“The Sacramento MS4 (CAS082597), Contra Costa County MS4 (CAS083313), and Stockton MS4 (CAS083470) shall continue to conduct mercury control studies to monitor and evaluate the effectiveness of existing BMPs per existing requirements in permits and orders, and to develop and evaluate additional BMPs as needed to reduce their mercury and methylmercury discharges within and upstream of the legal Delta boundary.”*

While we will continue to improve our stormwater management programs and participate in the TMDL's Phase 1 implementation, there is no basis in this TMDL for determining "as needed" reductions upstream of the legal Delta boundary.

Agencies with jurisdictional area located in the upstream of the legal Delta boundary will benefit from developing programs to control mercury. In developing future TMDLs, agencies that have conducted studies should not be required to conduct additional studies for any future mercury TMDLs.

**Proposed Solution:** Delete "and upstream of" from the text. Existing NPDES permit requirements already address the interest in reducing mercury loadings from the MS4s into upstream waters.

**Response:** Staff concurs with removing "within and upstream of the legal Delta Boundary" and replacing it with "into the Delta and Yolo Bypass." The draft BPA does contain a statement that dischargers who participate in the Control Studies will be exempt from conducting equivalent studies that may be required by the upstream TMDLs (BPA page 5).

#### **MS4s Comment #11.**

##### **BPA Page #13 "Mercury Control Program for Morrison Creek"**

The text states that a mercury control program will be developed for Morrison Creek, in the Sacramento Area, by 2017. Morrison Creek is not listed as impaired for mercury. We are concerned if the Basin Plan Amendment is used to designate urban tributaries as impaired separate from the 305(b) reporting process.

**Proposed Solution:** Delete reference to Morrison Creek on BPA page #13.

Thank you for this opportunity to comment on the public review draft BPA. We sincerely request that the Regional Board review our comments and revise the current BPA to address these concerns.

**Response:** Staff included Morrison Creek in the schedule of mercury control programs that the Regional Board will develop because this BPA assigns Morrison Creek a methylmercury allocation, along with other tributaries to the Delta (BPA Table D). The compliance point for this allocation is where Morrison Creek enters the legal Delta boundary. In order to achieve the allocation, staff will need to develop a mercury control program that evaluates sources within the Morrison Creek watershed and determines the necessary reductions from each source. Development of a mercury control program will not result in Morrison Creek being designated as impaired. A similar situation exists in the Clear Lake mercury control program that the Central Valley Water Board adopted in 2002. Only Clear Lake itself was listed as impaired due to mercury, but the Basin Plan amendment assigned a mercury allocation and implementation requirements to creeks that enter Clear Lake. These creeks are not 303(d) listed as impaired by mercury.

## 22. Sacramento Regional County Sanitation District (SRCSD)

Terrie Mitchell (Manager, Legislative & Regulatory Affairs)

Letter date: 1 April 2010

### **SRCSD Comment #1.**

On behalf of the Sacramento Regional County Sanitation District (SRCSD), I would like to express our appreciation to the management and staff of the Central Valley Water Board for dedicating their time and resources to the Delta Methylmercury TMDL Stakeholder process. We believe this robust stakeholder process has resulted in a Basin Plan Amendment (BPA) that represents an adaptive and fair approach to managing the methylmercury impairment in the Delta and establishes a clear set of fundamental principles that not only guided the development of this current draft of the BPA, but will provide additional direction for future implementation efforts as well. The current draft BPA:

- Acknowledges the current state of the science;
- Recognizes the need for an adaptive management approach as additional research and data are obtained to guide future actions; and
- Requires early implementation of near term actions to reduce total mercury, while Phase 1 characterization and control studies are underway.

This stakeholder process has been very comprehensive with multiple meetings held and extensive resources committed by the District and others to work through a variety of complex issues. Many of our previous concerns that were raised in 2006 and 2008 have been addressed. However, there are a few significant remaining concerns that we believe could be resolved with minor changes that are provided in more detail below. SRCSD's comments are presented in four separate sections, in order of the documents that were presented for public comment.

**Response:** No response required.

### **SRCSD Comment #2.**

One element of the BPA that requires significant attention deals with the Exposure Reduction Program requirements. SRCSD supports the concept of an Exposure Reduction Program for impacted communities that consume large amounts of Delta fish. However, as currently worded, the BPA could place an unfair burden on dischargers to demonstrate exposure has been reduced and mitigated. This would be an unachievable mandate to expect dischargers to be held accountable to change the behavior of impacted communities related to consumption of Delta fish. Suggested edits are provided below and as an attachment with detailed comments. We believe that the suggested edits still achieve the overall goal to increase awareness to help reduce mercury exposure to impacted communities, without jeopardizing a discharger's ability to comply with the BPA requirements.

**Response:** Please see response to specific comments.

### **SRCS D Comment #3.**

#### **GENERAL COMMENTS REGARDING THE IMPLEMENTATION OF THE TMDL AND BPA**

- 1) SRCS D strongly recommends that the Central Valley Water Board evaluate the results from the Phase 1 Control Studies in a holistic manner. The Control Studies should be evaluated in an integrated fashion, considering the state of the Delta water quality, activities being coordinated through the Bay Delta Conservation Plan, and competing Delta interests including the need for preservation and creation of wetlands.
- 2) SRCS D supports, in general, the separate comment letter submitted by a consortium of stakeholders which we were signatory to, as well as the comment letter submitted by CVCWA related to this TMDL, Basin Plan Amendment and related Staff Report.

**Response:** The Phase 1 review will be conducted after completion of the Control Studies and will include integration of the tributary TMDLs. The Phase 1 review will include a review of the fish tissue objectives, the linkage between methylmercury in water and fish, methylmercury loading from the various sources, allocations, and the attainability of the allocations. The review will consider topic including habitat restoration, flood protection, and water supply project, and fish consumption information. The proposed BPA text specifically commits the Central Valley Water Board to “consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations” as part of the Phase 1 Program Review. The state of the Delta at the end of Phase 1 and any current or proposed projects should be part of the TMDL reevaluation.

The SRCS D letter supports the comments provided by CVCWA. Please see the staff responses to the specific comments provided by CVCWA. This letter also supports the separate letter provided by the consortium of stakeholders. Please see the staff’s response to that letter.

### **SRCS D Comment #4.**

#### **COMMENTS SPECIFIC TO THE Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary:**

- 3) Executive Summary Page ES-3: Proposed Modifications to Basin Plan Chapter IV (Implementation) states “*The review also will consider the potential public and environmental benefits and negative impacts of attaining the methylmercury allocations.*”

**SRCS D Comment:** Additional considerations should include an economic evaluation of proposed control methods and a feasibility analysis for the stated fish tissue objective.

**Response:** The Executive Summary does not list every detail of the staff report or proposed Basin Plan amendments. The draft Basin Plan amendments include the following language; the underlined text addresses SRCS D’s comment:

*“At the end of Phase 1, the Regional Water Board shall conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a Mercury Offset Program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction*

strategies and can demonstrate no disproportionate impacts on local communities as a result. The review also shall consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be reevaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program reviews, if appropriate.” [page BPA-2]

“The Regional Water Board shall assess: (a) the effectiveness, costs, potential environmental effects, and technical and economic feasibility of potential methylmercury control methods; (b) whether implementation of some control methods would have negative impacts on other project or activity benefits; (c) methods that can be employed to minimize or avoid potentially significant negative impacts to project or activity benefits that may result from control methods; (d) implementation plans and schedules proposed by the dischargers; and (e) whether methylmercury allocations can be attained. [page BPA-9]

#### **SRCSD Comment #5.**

- 4) Basin Plan Amendment page BPA-3 third paragraph states, “*Load allocations for the tributary inputs, urban areas outside of MS4 service areas, open-water habitat, and atmospheric deposition, and waste load allocations for the MS4s, are based on water years 2000 through 2003, a relatively dry period. Annual loads are expected to fluctuate with rainfall volume and other factors. As a result, attainment of these allocations shall be assessed as a five-year average annual load.*”

**SRCSD Comment:** The Basin Plan Amendment should allow similar averaging during Phases 1 and 2 for NPDES dischargers to allow for influent/effluent mercury and methylmercury load fluctuations. This consideration is important since the NPDES dischargers’ load is relatively small compared to the overall load in the receiving waters. A minor fluctuation in ounces of mercury or grams of methylmercury discharged on an annual basis could result in exceeding the assigned interim total mercury mass limits in Phase 1 or final methylmercury wasteload allocations in Phase 2. A minor increase in the discharge load is unlikely to result in a measurable impact to the Delta mercury / methylmercury concentration or load in the receiving waters.

**Response:** With only a couple exceptions observed to date, every individual point and nonpoint source discharge is small compared to the overall loading in the receiving waters. It is the sum of all discharges that results in the impairment. As the commenter quoted, the Basin Plan amendment states that individual dischargers’ loads are evaluated on a 5-year average basis for compliance with allocations in acknowledgement of the variability. Due to variable precipitation rates, frequencies, and rainfall patterns, the BPA recognizes that runoff volume is highly variable and allows for a longer averaging period for point and nonpoint source discharges substantially affected by variability in runoff. Flows from NPDES facility discharges (with a couple exceptions, such as the Sacramento Combined WWTP discharges) are less variable and more controllable. Recent revisions to the draft Basin Plan amendments that were included in the Board agenda package<sup>1</sup> state that, for intermittent NPDES facility discharges, the interim inorganic (total) mercury effluent mass limit shall consider site-specific discharge

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<sup>1</sup> The revised version of the draft Basin Plan amendments included in the April 2010 Board agenda package is available at:  
[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/tentative\\_orders/1004/tmdl\\_mercury/delta\\_mercury\\_att\\_a.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1004/tmdl_mercury/delta_mercury_att_a.pdf)

conditions. If during the Phase 1 studies dischargers make demonstrations that annual loading from POTWs is not the best metric, they can propose alternatives for the Board to consider for the Phase 2 implementation.

#### **SRCS D Comment #6.**

- 5) **SRCS D Comment:** Basin Plan Amendment page BPA 4 second paragraph should be corrected to state “*Until the NPDES permitted facility achieves compliance with its WLA during Phase-2, the discharger shall submit annual progress reports on pollution minimization activities implemented and evaluation of their effectiveness, including a summary of mercury and methylmercury monitoring results.*”

**SRCS D Comment:** Basin Plan Amendment page BPA-4 third paragraph should be revised to state, “*The limit shall be assigned in permits and reported as an annual load based on a calendar year.*”

**Response:** Staff removed “during Phase 2” since it is redundant. The currently proposed compliance date for waste load allocations is 2030, or as soon as possible-The final compliance date may change based on the Control Studies and Phase 1 review. Staff concurs with the addition of reporting the interim limit as an annual load based on the calendar year, and added “and reported” to the BPA.

#### **SRCS D Comment #7.**

##### **COMMENTS SPECIFIC TO THE Draft Exposure Reduction Program:**

SRCS D supports the concept of an Exposure Reduction Program for impacted communities that consume large amounts of Delta fish. However, as expressed in the recent meetings, it would be extremely difficult to change the behavior of impacted communities related to consumption of Delta fish. Although activities can be undertaken to help reduce mercury exposure, the ability to demonstrate the mitigation of health impacts would not be achievable.

- 6) **SRCS D Comment:** Executive Summary Page ES-3 last bullet item, suggested rewording: “*Requirements and a schedule to plan and implement an exposure reduction program ~~to~~ protect-for humans consuming large quantities of Delta fish.*”
- 7) **SRCS D Comment:** See the attachment to this letter for markups provided to the Draft Delta Methylmercury Control Program Basin Plan Amendments, 1 March 2010 Exposure Reduction Program.

**Response:** The Basin Plan Staff Report Executive Summary is not regulatory and simply provides a summary of the proposed Delta mercury control effort. As the intent of the Exposure Reduction Program is to protect fish consumers from excessive mercury exposure while mercury source reductions are occurring, staff did not change the Executive Summary. Staff recognizes SRCS D’s concern that dischargers cannot change others’ behavior and should not be required to prove actual health improvements. Please see responses to the detailed Exposure Reduction Program comments.

**SRCSD Comment #8.**

- 8) On page 50 following the heading “Population growth”, the last sentence says “*Even so, the relative bioavailability of mercury in point source discharges and atmospheric deposition remains unknown; it is conceivable that discharges from these sources could be more bioavailable than other nonpoint sources and therefore could have a disproportionate effect on ambient methylmercury if such sources were to increase.*”

**SRCSD Comment:** We recommend deleting this sentence in its entirety since there is no conclusive scientific basis for this statement and the relative bioavailability of mercury from point sources versus other nonpoint sources. The March 2008 Localized Mercury Bioaccumulation Study performed on behalf of SRCSD indicates, to the contrary, that effluent from the Sacramento Regional Wastewater Treatment Plant does not appear to be more bioavailable than mercury from background sources.

**Response:** Staff modified the sentence in the Staff Report to incorporate comments made in CVCWA’s 31 March 2010 letter to read: “Even so, the relative bioavailability of mercury from such local sources remains unknown; it is conceivable that discharges from some sources could be more bioavailable than others, which therefore could have a disproportionate effect on ambient methylmercury if such sources were to increase.”

**SRCSD Comment #9.**

We would like to reiterate our support for the formal stakeholder process that took place and we look forward to initiating similar practices for future regulatory efforts. We are also committed to working with you during future Stakeholder meetings related to the Delta Methylmercury TMDL and its future implementation. If you have any questions or concerns regarding our comments, please contact me at 916-876-6092.

**Response:** No response required.

Attachment: SRCSD Edits 4-1-2010

Draft Delta Methylmercury Control Program Basin Plan Amendments, 1 March 2010  
Exposure Reduction Program section

The following is draft text for the Exposure Reduction Program section of the Basin Plan amendment. This text reflects discussions at the December 2009 and January 2010 Delta Methylmercury Stakeholder Group meetings, a workgroup meeting on 10 February 2010, a stakeholder meeting on 24 February 2010, and written comments. The following text replaces BPA text contained within the February 2010 staff report. For the full text of the proposed Basin Plan amendment, see the Central Valley Water Board's website:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/delta\\_hq/april\\_2010\\_hg\\_tmdl\\_hearing/apr2010\\_probpa\\_exec\\_summ.pdf](http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hq/april_2010_hg_tmdl_hearing/apr2010_probpa_exec_summ.pdf)

Exposure Reduction Program

While methylmercury and mercury source reductions are occurring, the Regional Water Board recognizes that activities need to be undertaken with people who eat Delta fish to reduce their methylmercury exposure and potential health risks. The Exposure Reduction Program is not intended to replace timely reduction of mercury and methylmercury in Delta waters.

The Central Valley Water Board will investigate ways, consistent with its regulatory authority, to address public health impacts of mercury in Delta fish, including activities that **if possible are intended to help** reduce actual and potential exposure ~~of and mitigate health impacts~~ to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families.

**Response:** The text in the second paragraph is an exact quote from State Water Board Resolution 2005-0060. Staff added the reference to the resolution for clarity but did not change the text.

By [one year after Effective Date], Board staff shall work with dischargers, State and local public health agencies, and stakeholders, including community-based organizations and Delta fish consumers to complete an Exposure Reduction Strategy. The purposes of the strategy will be to recommend to the Executive Officer which dischargers will be responsible for participating in an Exposure Reduction Program and propose a process for developing, funding and implementing the program in a collaborative manner. **The level of participation should be based on the dischargers proportional contribution to the mercury impairment. At a minimum, point source dischargers and the state and federal agency dischargers shall be responsible for conducting the Exposure Reduction Program.** In the absence of participation recommendations provided through the Exposure Reduction Strategy, methylmercury dischargers shall be individually responsible for the Exposure Reduction Program requirements.

**Response:** Staff omitted the text in strikethrough format. Staff did not add the proposed text referring to proportional contribution. The Basin Plan amendment directs Regional Board staff to work with dischargers and stakeholders in Phase 1 to develop an Exposure Reduction Strategy, including the participation scheme. Staff expects that discharger participation will reflect the discharger's contribution to the impairment (See Basin Plan amendment staff report 4.3.3).

The objectives of the Exposure Reduction Program are to:

- help reduce actual and potential mercury exposure, if possible, of Delta fish consumers most likely affected by mercury;
- develop and implement community-driven activities to reduce mercury exposure;
- raise awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families;
- integrate community-based organizations that serve Delta fish consumers, Delta fish consumers, and public health agencies in the design and implementation of an exposure reduction program; and
- identify resources, as needed, for community-based organizations to participate in the Program.

**Response:** This section now starts “The ERP must include elements directed toward:”. Staff also omitted the phrase, “actual and potential”, as potential exposure is difficult to define. With these changes, staff believes it is appropriate that the ERP be directed toward reducing mercury exposure, not helping to do so if possible.

The dischargers, individually or collectively, or based on the Exposure Reduction Strategy, shall submit an exposure reduction workplan for Executive Officer approval by [two years after Effective Date]. The workplan shall address the Exposure Reduction Program objectives and dischargers' coordination with other stakeholders. Dischargers shall integrate or, at a minimum, provide good-faith opportunities for integration of community-based organizations and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities.

The dischargers shall implement the workplan by [four years after Effective Date]. Every three years after workplan implementation begins, the dischargers, individually or collectively, shall provide a progress report to the Executive Officer. Dischargers shall participate in the exposure reduction program based on their proportional contribution to the mercury impairment and until they meet all requirements related to their individual methylmercury allocation.

**Response:** Staff agrees that a discharger should not be required to participate in the ERP after complying with the discharger’s individual allocation. Similar text was added to the Basin Plan amendment.

The California Department of Public Health, the California Office of Environmental Health Hazard Assessment, and the local county public health and/or environmental health departments should collaborate with dischargers and community members to develop and implement exposure reduction programs and provide guidance to dischargers and others that are conducting such activities. The California Department of Public Health and/or other appropriate agency should seek funds to contribute to the Exposure Reduction Program and to continue it beyond 2030, if needed, until fish tissue objectives are attained.

The State Water Board should develop a statewide policy that defines the authority and provides guidance for exposure reduction programs, including guidance on addressing public health impacts of mercury, activities that reduce actual and potential exposure ~~of, and mitigating health impacts~~ to those people and communities most likely to be affected by mercury.

**Response:** Staff did not make the proposed change because the text, including “mitigating health impacts” originated in the State Water Board resolution. Regional Board staff welcomes guidance from the State Water Board on how to accomplish this mitigation.

## 23. South Delta Water Agency

John Herrick (Counsel & Manager)

Letter date: 1 April 2010

### **SDWA Comment #1.**

On behalf of the South Delta Water Agency, I am submitting the following comments to the proposed Methylmercury ("MeHg") TMDL staff report and Basin Plan Amendment. Our agency has been involved in the process since it began and has given input when necessary.

As you recall, Regional Board staff presented an earlier draft TMDL a year and a half ago. At the public hearing on that draft, many stakeholders objected to the proposed TMDL. This resulted in the Regional Board directing staff to reconsider its recommendations through a stakeholder process. That process has played out over the last year and a half, resulting in the newly proposed TMDL. Although there are some differences between the original draft and this newest one, they are not substantive.

Although staff has been diligent (and competent) throughout the stakeholder process, and many parties participated, the process did not address the issues raised when the earlier draft was criticized over a year and an half ago. Instead, this process appeared to have two main foci, one being an attempt to get the stakeholders to work together to comply with the TMDL, and the other to convince the stakeholders that the originally proposed TMDL was indeed the best way to address the MeHg problem. From this I conclude the stakeholder process accomplished very little and would caution the Board to take pause when considering any future stakeholder process.

The problems I identified a year and a half ago remain unchanged in the currently proposed TMDL. The underlying cause of the problems stem from this Board's (and the SWRCB's) adoption of the Strategic Plan which focused on in-Delta issues.<sup>1</sup> Such an approach would only be justified or effective if in-Delta activities were indeed the cause of the particular problem being addressed. When in-Delta activities are not the cause, we end up with expensive, time consuming efforts which achieve little or nothing while the underlying problem remains.

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<sup>1</sup> This focus on in-Delta activities is a direct result of the undue influence of export interests including the SWP and CVP. Those parties have inexplicably convinced the Regional Board and the SWRCB that the current Delta problems are a result of "other factors" including in-Delta diversions, contaminants, etc., rather than the yearly violations of DWR and USBR permits, lack of necessary CESA take permits, and failure of the SWRCB require such compliance.

**Response:** The Central Valley Water Board appreciates the participation of the South Delta Water Agency in the stakeholder process to date. While the Central Valley Water Board did adopt a resolution in 2007 that Delta beneficial uses must be protected and agreed to implement certain actions, the mercury impairment of the Delta predates the Delta Strategic Plan. In 1990, the State Water Board adopted the Clean Water Act 303(d) list that identified the Delta as impaired due to mercury pollution. The Regional Water Board Toxic Hot Spots Clean-up Plan (California Water Code section 13394), adopted by the State Water Board in 1999, identified mercury in the Delta as a toxic hot spot. The mercury impairment was based on human health advisories. Note that Finding 26 in the draft resolution before the Board points

out that a “fishery with mercury-contaminated fish is an environmental justice issue and a threat to wildlife.” The Central Valley Water Board decided that the mercury impairment in the Delta is a priority due to its impact on people and wildlife that eat Delta fish and not because of the current issues in the Delta.

The Central Valley Water Board did direct staff to hold a stakeholder process to obtain and incorporate stakeholder comments into the Basin Plan Amendment to control mercury in the Delta. The Central Valley Water Board did not direct staff to put aside the control program for the mercury in the Delta and work on mercury issues elsewhere in the Central Valley region. As explained above, addressing the mercury impairment in the Delta is a priority. Staff evaluated all comments to improve the draft Basin Plan amendments and made revisions that address stakeholder concerns while maintaining the priority of developing a control program for the Delta.

### **SDWA Comment #2.**

The draft Staff Report for the MeHg TMDL (“Report”) provides the proof of this. The Report lists the inputs of MeHg to the Delta. Those inputs include: Tributaries at 8.2 g/day; Wetlands at 2.7 g/day; Urban runoff at 0.05 g/day; Municipal WWTP’s at 0.6 g/day; Open Water at 2.4 g/day; Atmospheric Deposition at 0.06 g/day; and Ag Return flows at 0.3 g/day (page iv). This makes in-Delta Ag Return flows approximately 2% of the MeHg input. Tributaries and Open Water contribute approximately 74%. As confirmed in the Report “As noted ... tributary inputs to the Delta are the largest sources of methyl mercury and total mercury.” (page 16)

To address this problem, the draft TMDL starts in the Delta, and (eventually) requires load reductions. For example, the San Joaquin River subarea (which includes generally the area of the southern Delta) has a goal of reducing its current Ag Return flow (estimated) MeHg load of 23 g/year (note this is a *yearly* contribution, whereas the above referenced amounts were *per day* contributions) down to 8.3 g/year; a reduction of approximately 64%.

The other in-Delta ag is to reduce its contribution to load in varying amounts of 0%, 0%, 45%, 65%, 80%, and 82% 18%.

**Response:** To clarify, page iv in the TMDL Report refers to the average daily methylmercury inputs to the Delta/Yolo Bypass as a whole. Later sections of the report refer to source contributions to different areas of the Delta/Yolo Bypass. The methylmercury TMDL divides the Delta into “subareas” based on the hydrologic characteristics and mixing of source waters. Each subarea has its own unique set of methylmercury and inorganic mercury sources. Staff developed a separate methylmercury allocation scheme for each hydrologic subarea of the Delta because the levels of impairment within, and the methylmercury sources that discharge to, each subarea are different. The contribution from agricultural sources varies from 1% up to 35.8% of the sum of all contributions (including from tributaries and wetlands) to each subarea. The required load reductions are based on local methylmercury concentrations in the subarea waterways. So, for subareas that do not meet the proposed fish tissue methylmercury objectives, local sources should, and therefore must, control mercury discharges. Fish methylmercury concentrations in the Central Delta and West Delta subareas already achieve or nearly achieve the proposed fish tissue objectives. As a result, sources (including agricultural contributions) in those subareas are not required by the proposed source load allocations developed specifically for those sources to make reductions.

### **SDWA Comment #3.**

These reductions would be required before there is any obligation that the tributary and open water contributions to MeHg load (74%) be reduced. Put another way, the staff recommend that we attempt to reduce some in-Delta ag by as much as 82% to address that which contributes only 2% of the total MeHg in the Delta while not trying to reduce that which contributes 74% of the total MeHg.

**Response:** Board staff worked with stakeholders during the formal stakeholder process to develop the language in the draft Basin Plan amendments that specifically commits the Board to develop mercury control programs for the major tributaries during Phase 1, which will assign source reduction requirements to upstream dischargers. Also, the draft Basin Plan amendments contain load allocations for open-water habitat in all Delta subareas that incorporate the same percent reductions required for other point and nonpoint sources that discharge to those subareas (rather than setting open water allocations equal to existing average annual methylmercury loads, as was done in the February 2008 draft amendments). The draft Basin Plan amendments contain language that requires state and federal agencies whose projects affect the transport of mercury and the production and transport of methylmercury through the Yolo Bypass and Delta, or who manage open water areas in the Yolo Bypass and Delta, to conduct methylmercury control studies during Phase 1, and to meet the open water allocations by the end of Phase 2. The draft Basin Plan amendments also include requirements for a 110 kg/yr reduction in total (inorganic) mercury loads from the tributary watersheds, with the recommendation to initially focus on watersheds that export the most mercury-contaminated sediment (e.g., the Feather, American and Cosumnes Rivers and Cache and Putah Creeks). The TMDL control programs developed for upstream watersheds will focus on how to comply with the tributary methylmercury allocations and watershed total mercury load reduction requirements included in the Delta TMDL, including requirements for control actions for individual sources within the tributary watersheds.

### **SDWA Comment #4.**

In the past I have used harsh language when commenting on this situation. However, it does not matter how colorful or bland the language is. There can be, and is no reasonable basis for approaching a problem by trying to control 2% of it and not 74% of it. No explanation can change the illogical and ineffective manner by which the MeHg problem is being addressed.

Even if the in-Delta agricultural interests can somehow find a way to reduce their alleged contribution to total load, that would result in a 1% reduction in MeHg in the Delta. Again, there can be no justification for initially trying to make a 1% reduction.<sup>2</sup>

It does not matter that “we have to start somewhere” or “we have decided to move from downstream to upstream” (itself an illogical approach to pollution), or that the TMDL begins with investigations and more studies and not immediate requirements for reductions. If one desires to address the MeHg problem, one can only start with the largest part of the problem, not the most insignificant. Surely it would be more effective, as well as more fair if the upstream contributors were required to fund the initial studies and investigations rather than burden those who contribute the smallest amount.

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<sup>2</sup> I realize that this initial TMDL effort includes wetland contributions, but there is little doubt in my mind that the Board will not restrict the ability of wetlands to function.

**Response:** As explained in the response above, the Delta was divided into subareas based on the local sources of methylmercury and inorganic mercury to each subarea. Agricultural discharge contributions vary from 1% to 35.8% of the total methylmercury loads in each subarea. Each source load calculated for the TMDL is based on methylmercury concentration and discharge volume data specific to each source. The methylmercury source analysis described in the TMDL Report indicates that reducing or eliminating any one source (or source category) is unlikely to result in achieving the proposed fish tissue objectives throughout the Delta.

As a result, an allocation strategy that assigns an equal percent reduction to sources to each of the Delta/Yolo Bypass subareas is the most equitable distribution of responsibility. With only a few exceptions (see Chapter 8 in the February 2010 TMDL Report), point and nonpoint source discharges are assigned an equal percent reduction by the proposed allocations on a subarea basis. A decision to establish allocations that incorporate reductions for some sources while allowing others to stay the same or increase would be based solely on a subjective evaluation of which dischargers are more valuable to the citizens of California, an evaluation that Board staff cannot make. In addition, without the completion of additional methylmercury control studies, and characterization of point and nonpoint sources in the tributary watersheds, it is very difficult to determine which sources are the most feasible and cost-effective to control. A phased approach that focuses on control studies and total mercury reduction activities during the first phase of the control program is a reasonable approach, given the federal requirements for TMDLs, the high number of small individual sources, and the sheer magnitude of the river flows through the Delta.

For example, the Sacramento River is the largest river in California and drains a 27,000 square-mile area – almost one fifth of the State of California and about one half of the Central Valley. It is not surprising that two of the largest individual methylmercury inputs to the Delta identified in the TMDL Report (Cache Creek Settling Basin [137 g/yr] and SRCSD Sacramento River WWTP [161 g/yr]; see Tables 6.2 and 6.5 in the February 2010 TMDL Report) are each only about 7% and 8%, respectively, of the Sacramento River's input to the Delta at Freeport (2,026 g/yr during the relatively dry WY2000-2003 TMDL period). However, as noted as early as 1997 in the Sacramento River Mercury Control Planning Project report prepared for SRCSD by Larry Walker Associates, "... mercury sources in the study area appear to be diffusely distributed without any significant "hotspots" ..." (LWA, 1997, page 31). This is expected to be true for both methylmercury and inorganic mercury sources in the Sacramento River watershed and other watersheds that drain to the Delta.

When discussing the importance of different sources, many stakeholders have focused on the amount of loading by source category and by individual discharge. However, staff recommends that additional factors be considered. Given how many individual discharges there are in each source category in the Delta, almost all of the individual discharges are small. And, although the tributary inputs are substantial, available information indicates that they also contain a similar distribution of individual discharges. It is the sum of all of the individual discharges in the Delta and its tributary watersheds that impairs the Delta. Each of the individual discharges has its own intrinsic value and financial constraints. As a result, the significance of different methylmercury and total mercury sources could be defined by: (a) their load, (b) their distance from an impaired area, (c) how big of a reduction is needed to achieve safe fish mercury levels in a given impaired area, (d) whether they can be controlled, (e) whether they can be controlled without impacting habitat function, (f) the cost to control them, and (g) the resources available to the responsible parties to implement controls. It is conceivable that the control program will

need to focus on just a few large projects in some watersheds, but many small projects in other watersheds, to achieve safe fish mercury levels throughout the Delta.

It was not staff's intent to imply that focusing only on in-Delta sources, or only on agricultural sources in the Delta, would resolve the Delta mercury impairment. As noted earlier, to address SDWA and other stakeholder concerns, staff and stakeholders developed draft BPA language that would not require implementation of methylmercury management practices identified in Phase 1 for the purposes of achieving methylmercury allocations until the Regional Water Board has completed the Phase 1 Delta Mercury Control Program Review and has developed mercury control programs for the major tributary inputs.

Staff recognizes that the cost of control studies is substantial and identified this concern in Section 7.4 (Economic Factors) in the California Environmental Quality Act (CEQA) evaluation in Chapter 7 of the February 2010 draft BPA Staff Report. Staff recognizes that additional funds will be needed to conduct the Phase 1 control studies. A variety of different funding sources was identified in Chapter 7 that could contribute towards study, monitoring and implementation costs:

- Developing a project for consideration as a Supplemental Environmental Project;
- State or federal grants or low-interest loan programs;
- Single-purpose appropriations from federal or State legislative bodies;
- Bonded indebtedness or loans from governmental institutions;
- Surcharge on water deliveries to lands contributing to a methylmercury or total mercury discharge;
- Ad Valorem tax on lands contributing to a methylmercury or total mercury discharge;
- Taxes and fees levied by a water district created for the purpose of drainage management; and
- U.S.D.A. Agricultural Stabilization and Conservation Service.

#### **SDWA Comment #5.**

The process is even more remarkable in that the assumed contributions from southern Delta ag return flows are likely incorrect, and *overstated*.

The Report cites a recent study of in-Delta ag return flows, and from that data calculates the contributions of ag. "The study results indicated ... mineral soils had a lower net methylmercury loads than . . . (Delta ag lands) dominated by organic soils." (Page 104). The southern Delta is to a very large degree dominated by those mineral soils, with little peat (organic soils). This means that calculations from the study data should result in less calculated contribution from the southern Delta than the central Delta, and the Report *may* be saying that. However, because other factors suggest the central Delta is a MeHg sump, the central Delta agricultural interests will not be required to decrease MeHg production (on their lands which produce more MeHg) while the southern Delta agriculture interests will have to reduce their MeHg production by 64%.

It should be noted that the ag return flow study cited in the Report sampled/tested drains on Empire Tract, Lower Jones Tract, Staten Island, Twitchell Island, and Upper Jones Tract. Although I am not fully aware of the specifics of each of these Delta islands, I believe they are well below sea level and largely made of peat soils. None of them are similar to the majority of lands within the southern Delta. It is doubtful that any calculation about MeHg loading based on this study would accurately reflect conditions and MeHg production in our area.

**Response:** As noted in staff's response to SDWA Comment #4, the proposed source reduction requirements entail different percent reductions for sources in different subareas based on what is needed to achieve the proposed fish tissue objectives in each subarea.

Staff made use of the only data available at the time the TMDL was developed to calculate estimates of methylmercury discharges from agricultural areas in the Delta, and acknowledged in the February 2010 draft report and earlier drafts that agricultural loading appeared to be a relatively small portion of overall loading. As stated in the February 2010 draft TMDL report, underlining added to highlight text that addresses SDWA's comments:

*"A recent study evaluated methylmercury production on and discharges from eight farmed Delta islands (Farmed Islands). In exchange for access to the properties, the study authors did not include Farmed Island names or sampling locations in the report. The study results indicated that Farmed Islands in the northern/central Delta dominated by mineral soils had lower net methylmercury loads than Farmed Islands dominated by organic soils (Heim et al., October 2009), with an overall annual loading rate (0.1 g/day x 365 = 36.5 g/yr) lower than that estimated by the above method for the WY2000-2003 period (123 g/yr). Even though there is a three-fold difference in the two methods' resulting annual loads, their similarity is encouraging given very different method approaches and concentration data sets were used. In addition, both methods indicate that agricultural runoff contributes a relatively small portion of all methylmercury loading to the Delta/Yolo Bypass (2.4% versus about 1%)."*

As further detailed in the TMDL Report (see below text from page 105 of the February 2010 draft report), neither the recent study nor previous study included upland areas. Because of this, and because the authors of the recent study did not include Farmed Island names or sampling locations in the report recent in exchange for access to the properties, staff acknowledged the need for additional studies during Phase 1.

*"During Phase 1 of the proposed implementation program outlined in Chapter 4 of the draft Basin Plan Amendment staff report, staff would need to work with the study authors and Farmed Island landowners to determine which specific areas in the Delta and Yolo Bypass are acting as a net source and which areas are acting as a net sink in order to update the TMDL methylmercury source analysis."*

*"Heim and others' October 2009 study focused exclusively on farmed islands and did not evaluate upland areas in the periphery of the Delta. A review of the upland areas mapped in DWR's Delta Atlas (DWR, 1995) indicates that upland areas may comprise about 20% or more of the Delta and Yolo Bypass. Staff recommends that a follow-up study be undertaken to characterize loads from the upland areas within and upstream of the legal Delta and, if elevated, determine the primary land uses responsible for methylmercury production. The study should be done in cooperation with agricultural interests in the Delta region."*

#### **SDWA Comment #6.**

Further, I am unaware of any process occurring during normal agricultural irrigation and drainage practices in our area which would methylize mercury. Channel water is diverted, applied to the land, that which is not taken up by the crop either enters a drainage ditch or enters the ground water, and the drainage water is pumped back into the Delta. It may be possible that subsurface processes methylize mercury, but those are not controllable by farmers.

**Response:** Also, as noted in the previous response, methylmercury studies specific to agriculture in the southern Delta have not yet been conducted. However, studies elsewhere

have indicated that frequent wetting and drying of soil can stimulate methylmercury export.<sup>1</sup> As a result, repeated irrigation of agricultural lands may lead to methylmercury discharges that would not otherwise occur during the dry season. If the Phase 1 studies indicate that agriculture in any particular subarea does not contribute methylmercury, then, during the Phase 1 review, the Central Valley Water Board can refine the load and waste load allocations and implementation provisions and schedules among other elements of the proposed Basin Plan amendments.

#### **SDWA Comment #7.**

In the southern Delta, artificially salty water enters from the San Joaquin River. This salt is a result of the CVP (in conjunction with the SWP) delivering 5-800,000 tons of salt a year to the valley, and 3-500,000 tons of this salt draining into the River and then the Delta. Because of this salt (at high concentrations) local farmers must apply a certain amount of additional water for leeching purposes in an attempt to control salt in the root zone. This problem is complicated by the shallow ground water which is directly connected to the channel water, such that the ground water rises and drops with the tides. This process makes the leeching of salts difficult, while the export projects inhibit the flushing of the channels by altering net flows.

The point of this is to explain that local farmers have few if any options regarding their irrigation practices. This means that there are likely no best management practices (“BMP’s”) which could address MeHg without precluding the needed leeching of the root zones. The approach taken by the draft TMDL is to find, test and select the BMP’s which will allow the stakeholders to meet the future load reductions. Although we may find we can do some things, it is unrealistic to base future load reductions on BMP’s unknown at this time.

**Response:** Based on similar comments in SDWA’s 2008 letter and during the 2009 stakeholder process, staff revised the staff reports to provide more information about factors known to control methylmercury production and degradation and reasonably foreseeable methods of compliance with methylmercury reduction requirements. For more information, please see the TMDL Staff Report Chapter 3 and Basin Plan Amendment staff report Chapter 4.3 implementation alternatives, Chapter 7 environmental evaluation, and Appendix C cost estimates. Staff also used information in SDWA’s 2008 and 2009 comments to revise the discussion of potential use of tailwater recovery (Basin Plan Staff Report sections 4.3.10 (in Chapter 4) and 7 II.A (in Chapter 7)), particularly for the southern Delta and potential effects on salt leaching.

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<sup>1</sup> For example, but not limited to:

- Ackerman, J.T. and C.A. Eagles-Smith. 2010. Agricultural Wetlands as Potential Hotspots for Mercury Bioaccumulation: Experimental Evidence Using Caged Fish. *Environmental Science & Technology*, 44: 1451-1457
- Gustin, M.S., P.V. Chavan, K.E. Dennett, E.A. Marchand, and S. Donaldson. 2006. Evaluation of Wetland Methyl Mercury Export as a Function of Experimental Manipulations. *Journal of Environmental Quality*, 35: 2352-2359.
- Roulet, M., J.R.D. Guimaraes, and M. Lucotte. 2001. Methylmercury production and accumulation in sediments and soils of an Amazonian floodplain - effect of seasonal inundation. *Water Air Soil Pollution*, 128: 41-60.
- Gilmour, C., D. Krabbenhoft, W. Orem and G. Aiken. 2003. 2004 Everglades Consolidated Report, Appendix 2B-1: Influence of Drying and Rewetting on Mercury and Sulfur Cycling in Everglades and STA Soils – Aquatic Cycling of Mercury in the Everglades (ACME) Group Preliminary Dry/Rewet Experiments (2/02-1/03).

While we may not be able to identify the specific agricultural management practices that will effectively reduce methylmercury loads from south Delta agricultural discharges, the proposed Basin Plan amendments provide an opportunity for the south Delta agricultural dischargers to conduct studies to assess the current situation and to identify opportunities to reduce the methylmercury in the south Delta. If no management practices are identified that would allow the local farmers to continue farming, then the stakeholders need to provide that information for the Phase 1 Program Review by the Central Valley Water Board. The Phase 1 review provides an opportunity to refine the load and waste load allocations and implementation provisions and schedules among other elements of the proposed Basin Plan amendments.

**SDWA Comment #8.**

Lastly, I note some discussion in the Report which may be incorrect. On pages 24 and 25 the Report discusses how sulfate may affect MeHg. In that discussion it references Water Rights Decision 95-1WR as the controlling authority for EC regulation. At least for the southern Delta, I believe that is incorrect; D-1641 applied the 1915 WQCP objectives to the permits of the DWR and USBR, and thus should be referenced as the controlling authority. The current EC standards in the southern Delta are not a function of year type, but are dependent on the time of year.

**Response:** To clarify, for the southern Delta, EC objectives are contained in the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Bay-Delta Plan") adopted 22 May 1995 (updated in 2006), and implemented (in part) by SWRCB Water Rights Decision 1641. Delta EC objectives are shown in Tables 2 and 3 of the 2006 Bay-Delta Plan (link below). Averaging periods varies based on location in the Delta. For the southern Delta objectives protective of agriculture, the averaging period is the maximum 30-day running average of mean daily EC (mmhos/cm) and varies by time of year. Per page 27 of the 2006 Bay-Delta Plan, sources of salinity in the southern Delta include: elevated salinity in the southern Delta is caused by various factors, including low flows; salts imported to the San Joaquin Basin in irrigation water; municipal discharges; subsurface accretions from groundwater; tidal actions; diversions of water by the SWP, CVP, and local water users; channel capacity; and discharges from land-derived salts, primarily from agricultural drainage. Note, this information does not affect the proposed methylmercury strategy for the Delta and as a result, no changes are needed for the draft Basin Plan amendments or staff reports. This information will be useful for Phase 1 studies.

Pages 79-89 of D-1641 discuss the southern Delta salinity objectives. Water Rights Decision 1641 is available at:  
[http://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/decision\\_1641/](http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/decision_1641/)

The 1995 Bay-Delta Plan is available at:  
[http://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/wq\\_control\\_plans/1995wqcp/1995\\_plan.shtml](http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plans/1995wqcp/1995_plan.shtml)

The 2006 Bay-Delta Plan is available at:  
[http://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/wq\\_control\\_plans/2006wqcp/index.shtml](http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plans/2006wqcp/index.shtml)

**SDWA Comment #9.**

In addition, EC in the southern Delta is not so much a function of freshwater outflow and seawater intrusion as stated. Although the operation of the export facilities does induce seawater intrusion, the EC in the southern Delta is largely due to the San Joaquin River inflow. As stated above, in most years, it delivers hundreds of thousands of tons of salt at high concentrations. Hence, for the southern Delta, the outflow standards do not materially affect EC, and thus sulfate. Perhaps this partially explains the calculations of southern Delta MeHg load contributions.

**Response:** As noted in previous responses, the Delta was divided into subareas based on the hydrologic characteristics and mixing of source waters. Calculation of methylmercury source loads to the southern Delta and other subareas of the Delta/Yolo Bypass are based on information available for each source type, e.g., wetlands, WWTPs, urban runoff, agricultural discharges, tributary inputs, and flux from sediment in open-water habitats, not on how the different source contributions mix once discharged to their receiving waters.

The methylmercury contribution from open-water sediment was evaluated by Gill and others (2003<sup>2</sup>), who deployed benthic flux chambers at nine locations in the Bay-Delta region during five separate field-sampling efforts between May 2000 and October 2001. This study estimated a methylmercury flux rate of approximately 10 ng/m<sup>2</sup>/day for open water habitat. Gill and others' 2003 study did not include any sites in the southern Delta. However, no other data were available for the southern Delta area. As a result, this average flux rate was used to estimate methylmercury loading from open water sediments in all Delta subareas. Staff noted in Chapter 3 (Section 3.1 of the TMDL Report) that sulfate amendment studies need to be undertaken with sediment collected throughout the year from the southern, central and western Delta to determine whether the sulfate concentration in the overlying water affect methylmercury production in sediment. Such information could be used to updated the source analysis, as well as when evaluating how to manage operable barriers in the southern Delta (or other methods to control the routing of San Joaquin River water), and when considering water right decisions to modify the location of the salinity field in the Delta.

#### **SDWA Comment #10.**

I appreciate the opportunity to comment. I'm sure you understand our position given the above. We believe the better approach would be an analysis to determine if the problem is in large part of function of the historic mercury in the system, which is slowly flowing out to the Bay and ocean. If MeHg production from that source is the main contributor to in-Delta loads, we might then conclude the problem rests with the State as a whole, rather than with a small group of stakeholders. Clearly, the problem will not be solved by trying to cut in half that which produces 2% of the MeHg.

**Response:** As explained in responses above, agricultural sources contribute from 1% up to 35.8% of the sum of the methylmercury loads in each Delta subarea and are not an insignificant

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<sup>2</sup> Gill, G.A., K.Y. Choe, R. Lehman and S. Han. 2003. Sediment-Water Exchange and Estuarine Mixing Fluxes of Mercury and Monomethyl Mercury in the San Francisco Bay Estuary and Delta. Final report submitted to the CALFED Bay-Delta Program for the project: An Assessment of the Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed (Task 4B). Laboratory for Oceanographic and Environmental Research, Texas A&M University, Galveston, TX Available at: <http://mercury.mlml.calstate.edu/reports/2003-reports/>

contributor. In addition, legacy<sup>3</sup> mercury may comprise only about 30% of total mercury entering the Delta [“Staff’s Initial Responses to Board and Stakeholder Questions and Comments at the April 2008 Hearing”<sup>4</sup> (see item A-1, pages 3 through 12)]. As a result, even if legacy mercury loads could be reduced to zero, we would still need to be concerned about activities in and around the Delta that contribute methylmercury. Also, as illustrated in Tables 7.17 and 8.6 in the TMDL Report, the San Joaquin River at Vernalis has suspended sediment mercury concentrations that are substantially lower than those in exports from other watersheds with a high density of mercury and gold mine sites, and are more comparable to exports from watersheds that do not have a high density of mine sites (e.g., Colusa Basin). This indicates that focusing only on projects to control legacy mercury in the San Joaquin River watershed likely would not to enable the reductions in fish methylmercury concentrations in the southern Delta needed to comply with the proposed fish tissue objectives.

The Basin Plan Amendment provides an opportunity for the south Delta agricultural dischargers to conduct studies to assess the current situation and to identify opportunities to reduce the methylmercury in the south Delta. These stakeholders can submit the results of these studies to the Central Valley Water Board during Phase 1; the Board will consider adjustment of load and waste load allocations and implementation provisions and schedules during the Phase 1 Program Review.

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<sup>3</sup> Board staff refers to mercury from historic mining operations in the Coast Ranges and Sierra Nevada that was released to Central Valley waterways by historic operations as well as by past and present erosion of excavated overburden and tailings as “legacy mercury”.

<sup>4</sup> Available at: [http://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/delta\\_hg/stakeholder\\_meetings/25nov08\\_hearing\\_rtc.pdf](http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/stakeholder_meetings/25nov08_hearing_rtc.pdf)

## 24. State Water Contractors, Inc. (SWC)

Terry L. Erlewine (General Manager)

Letter Date: 7 April 2010

### **SWC Comment #1.**

The State Water Contractors, Inc. (“SWC”) are submitting this letter on behalf of itself and the 27 member SWC that comprise the SWC.<sup>1</sup> Future participation in these proceedings may be on behalf of the SWC or any of the members listed below. The SWC is submitting these comments on the proposed Basin Plan Amendment (BPA) and associated February 2010 Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary (Delta) (Staff Report).

The SWC appreciates the opportunity to review and comment on these documents which set forth the proposed Delta Mercury Control Program and regulations for implementing a Total Maximum Daily Load (TMDL). In brief, the SWC join in and support the general and specific comments and attachments submitted by the Department of Water Resources and the Central Valley Flood Protection Board (collectively “Agencies”). For purposes of your initial consideration, the SWC will not repeat those comments here, but rather incorporates them by reference as though fully set forth. We also support the “redline” edit of the proposed BPA which is Attachment 2 to the letter from the Agencies. Attachment 2 sets forth possible changes that may address several of the concerns expressed in the Agencies’ comments. By submitting these comments, the SWC is not waiving its right to provide additional comments at the Central Valley Regional Water Quality Control Board hearing on April 22.

Generally, the SWC supports the efforts of the Central Valley Regional Water Quality Control Board (Regional Board) to take the necessary steps to identify methods to control methylmercury in the Delta. The newly proposed designated beneficial uses of commercial and sport fishing in the Delta are important uses that need to be addressed in order to protect human health and fish and wildlife. We also support certain portions of the Regional Board’s proposed BPA and TMDL for controlling both methyl and total mercury to reduce fish tissue values to levels that are safe for both fish and wildlife and Delta anglers. For example, the SWC agree with the Agencies that studies to identify actions to reduce production of methylmercury from dredging and habitat restoration activities should be undertaken.

**Response:** Please see staff responses to the DWR letter.

### **SWC Comment #2.**

Despite our general support, the SWC have significant concerns with certain aspects of the proposed BPA and TMDL as well as its implications for future water management in the State. Among our concerns are that implementation of the TMDL not interfere with or cause to become infeasible (including financially infeasible) the development of large scale habitat programs to benefit the Delta system. The development of large scale habitat is a central component of the Bay Delta Conservation Plan (“BDCP”). We are also concerned that the Regional Board clarify that the legal standard for protection of beneficial uses is one of reasonableness. The draft is inconsistent in its expression of this important legal principle.

**Response:** Central Valley Water Board staff shares SWC’s concerns that elevated mercury levels could result in delays or otherwise jeopardize restoration work that is a central component of the BDCP. It is unfortunate that some types of restoration activities have the potential to increase mercury concentrations in fish in the area, which poses a risk to people and wildlife that eat the fish. SWC mentioned in a later comment a concern about transferring responsibility for controlling mercury from one set of water users to another. Board staff has the same kind of concern about improving one type of beneficial use at the expense of another beneficial use. The federal Clean Water Act requires that States list water bodies that do not meet water quality standards (i.e., are impaired) and develop programs to correct the impairment. Federal law does not give the State license to allow the methylmercury impairment to remain or worsen in trade for other environmental improvements. This is a daunting effort and is the reason staff recommended a phased approach to TMDL implementation in the February 2008 and 2010 draft BPA and staff reports. During the proposed Phase 1 period, Board staff would work with you and those implementing and planning to implement restoration projects to assure that restoration efforts move forward while at the same time doing studies to determine how to effectively reduce methylmercury and inorganic mercury sources in a way that does not negatively affect other beneficial uses. The draft Basin Plan amendments (BPA) describe a collaborative framework for developing and implementing characterization and control studies. The draft BPA commits the Central Valley Water Board to an extensive review process at the end of Phase 1 that includes consideration of the potential public and environmental benefits and potential negative impacts of methylmercury controls on projects such as habitat restoration, water supply, flood protection, and fish consumption. It is Board staff’s intent to try to coordinate the Phase 1 studies with ongoing and proposed restoration efforts.

The staff report occasionally refers to fully protecting beneficial uses. When adopting water quality objectives, there are a range of potential values that can protect the beneficial uses. The fish tissue methylmercury objective that is adopted needs to fall in the range of values that protects the use (i.e., fully protects the use). The reasonableness factor is applied to determine what value in the range of fully protective values should be selected.

Staff conducted an analysis of whether the fish tissue objectives representing the full protection of the COMM beneficial use can reasonably be achieved. In the analysis, staff looked at global mercury cycling, background concentrations of mercury, current and projected sources of mercury, activities that could be implemented to reduce mercury loads and interrupt the methylmercury cycle, fish consumption statistics, health risks to consumers, fish tissue targets developed in for San Francisco Bay and other areas and many other factors. Staff concluded that the proposed fish tissue objectives could reasonably be achieved, were consistent with targets developed for San Francisco Bay, and offered protection for a majority of the people. Staff developed alternative fish tissue objectives that would fully protect the beneficial use and are proposing fish tissue objectives that are consistent with Section 13241 of the Water Code

with regards to providing reasonable protection of beneficial uses. The most stringent alternative represents the highest consumption rates reported for some consumers. However, Board staff does not recommend the most stringent alternative for adoption because staff was unable to show that fish tissue objectives that protect for the highest consumption rate was reasonably attainable.

**SWC Comment #3.**

We understand the desire of some stakeholders to have the control of methylmercury assumed by the State. In some respects this may be necessary, however it should not be undertaken without first considering whether there are entities that today or in the past (where such responsible entities or their insurance policies still exist) are responsible for contributing to or exacerbating the historical existence of mercury. When allocating responsibilities, the Regional Board must do so in a way that does not simply transfer this responsibility from one set of water users to another. Neither the State Water Project nor the Central Valley Project are responsible for the mercury that exists in the system. In fact, it may well be that the retention times for water stored by the projects actually reduces methylation. Nevertheless, any program of implementation that seeks to impose this obligation on the State must do so in a manner that does not redirect this obligation to either the SWP or CVP.

If you have any questions regarding the SWC comments, please contact Terry Erlewine, General Manager, State Water Contractors, at (916) 447-7357, ext. 203.

**Response:** Staff agrees that the methylmercury that is generated in the open waters of the Delta is in general the result of inorganic mercury in the sediment of the Delta channels and that a substantial portion of that mercury likely comes from historic mining activities. However, water management activities can influence how much methylmercury is generated at a particular site. Staff has provided additional clarification that this requirement applies only to activities that can influence how much methylmercury is generated in the open channels in the Delta (not upstream). Also, the BPA includes an adaptive management framework (lasting seven years) that describes how Board staff intends to work with federal and state agencies to prioritize and implement studies to determine how land and water management activities affect methylmercury. If, during the adaptive management phase, it turns out there are no activities that seem likely to be significantly influencing methylmercury production in the open channels, then no control actions will need to be implemented. The adaptive framework purposely does not include many details because, after numerous discussions, stakeholders agreed that flexibility was desirable. The draft BPA assigns joint responsibility for working on the open water allocation to the three state agencies that have responsibility for water management activities in and around the Delta. Other agencies that are identified in Phase 1 that implement actions and activities that have the potential to contribute to methylmercury production in open water will be required to take part in the studies. In the Phase 1 Program Review, the Board will add, as appropriate, other entities to the current list of entities that are responsible for meeting the open water allocation. The Central Valley Water Board will assign responsibility for the open water loads to other parties if and when they are identified during the adaptive management process (Phase 1, seven years). Other parties that are identified do not have to be State agencies.

## 25. The Nature Conservancy (TNC)

Leo Winternitz (Delta Project Director)

Letter Dated: 1 April 2010

### **Comments:**

The Nature Conservancy (Conservancy) is pleased to support the BPA for the Control of Methyl and Total Mercury in the Sacramento-San Joaquin Delta Estuary.

The Conservancy has been actively protecting and restoring wetland habitat in the Sacramento-San Joaquin River Delta region for over two decades. Our objectives are to ensure that restoration of the Delta is unimpeded while addressing the potential methylmercury production on restored lands, and to ensure that mercury control measures that are implemented in Phase II are cost-effective and lead to meaningful reductions of methylmercury.

As a collaborative, science-based organization, the Conservancy relies on the best available science and collaborative partnership efforts to achieve its conservation goals. We have been involved in the development of the Methylmercury TMDL and BPA for many years and supported the stakeholder process that led to the February 2010 public review documents.

We appreciate the collaborative effort put forward by the Board to ensure that the stakeholders understand and support development of the BPA, which we as stakeholders will ultimately have to implement. As such, we are pleased that the draft Resolution indicates continued support of collaborative efforts between stakeholders and Board staff in the development of an adaptive management plan.

We believe the following are important elements of the BPA that have benefited from the rigorous discussion and vetting that has resulted from the stakeholder process:

- The “Phase 1 Delta Mercury Control Program Review” (BPA, p. 9) is an important component of the BPA to ensure that control studies are the right track and are not having unintended consequences to other natural processes and their associated benefits:
  - “The Regional Water Board shall assess: (a) the effectiveness, costs, potential environmental effects, and technical and economic feasibility of potential methylmercury control methods; (b) whether implementation of some control methods would have negative impacts on other project or activity benefits; (c) methods that can be employed to minimize or avoid potentially significant negative impacts to project or activity benefits that may result from control methods; (d) implementation plans and schedules proposed by the dischargers; and (e) whether methylmercury allocations can be attained.”
- Consideration of scheduling constraints: The Phase 1 schedule allows for flexibility in Mercury Control Studies Schedule requirements with Executive Officer approval, if more time is needed for collaborative stakeholder-driven studies to be developed, funded, and completed. This flexibility is appreciated, such that these collaborative, integrated approaches can be developed and implemented, and, therefore, provide valuable study results useful to all nonpoint source discharges.

- Recognition that mercury contamination is a legacy issue and will require significant funding to address: “The State of California should establish the means to fund a portion of the mercury control projects in the Delta and upstream watersheds.” (BPA, p.15)
- Reducing levels of methylmercury will take time, but in the meantime efforts must be made to address the significant public health threat that it poses. For this reason, the Conservancy believes the draft Exposure Reduction Plan (March 1, 2010) is a good start and we look forward to participating in its development.

As participants in the Stakeholder group, the Conservancy commits to working collaboratively in the coming years. We urge the Board to support your staff in continuing to work with the Stakeholder group during Phase 1 of the Delta Mercury Control Program, and to base your conclusions, recommendations, and decisions on scientific evidence and social/environmental costs and benefits. Additionally, we urge you to seek funding that will assist the Stakeholder group to work together to understand and resolve the impacts caused by the methylmercury impairment.

**Response:** No response required. Staff will continue to work with all stakeholders with the development, implementation, and review of the methylmercury studies. Staff will continue to inform stakeholders of potential funding opportunities as they arise.

## 26. Tuleyome

Bob Schneider (Senior Policy Director)

Letter Date: 7 April 2010

### **Tuleyome Comment #1.**

Thank you for the opportunity to comment on the Delta Methylmercury TMDL/Basin Plan Amendment (BPA). Tuleyome has participated on the working group over the past year in efforts to develop an effective TMDL/BPA and implementation process.

Tuleyome is a non-profit conservation organization based in Woodland, with a regional focus that includes the Northern Inner Coast Range and Western Sacramento Valley. We work in the Cache Creek and Putah Creek watersheds and, as you are aware, we know that the Cache Creek basin contributes one-half of the mercury introduced into the Sacramento River system. We also work in the Yolo Bypass and are tracking issues related to the Cache Creek settling basin.

In its participation, Tuleyome has relied on three key principles:

- We support environmental justice causes, and therefore we generally support the comments of Clean Water Action (CWA) and the California Indian Environmental Alliance (CIEA).
- We support environmentally positive projects, like restoring wetlands and fish habitat in the Delta and the Bypass, and we don't support state programs that make it more difficult to accomplish those results.
- We support mercury reduction offset programs, including reducing mercury contamination from old mines and other sources in Delta tributaries, and in fact believe that these should have a priority in implementing the TMDL/BPA.

**Response:** No response necessary.

### **Tuleyome Comment #2.**

#### **Environmental Justice:**

Tuleyome generally supports the comments of Clear Water Action and the California Indian Environmental Alliance. CWA has done a thorough job of analysis and advocacy for the protection of the public and the interests of disadvantaged communities.

In particular, we want to emphasize our concurrence with the CWA comment that “the proposed BPA does not represent a consensus of all stakeholders, especially those most impacted by methylmercury in the Delta and in Delta fish.”

We complement Water Board staff for their efforts to be inclusive in this process. They really made a tremendous effort. We also want to state that we felt that everyone who was in the room was receptive to a range of concerns and supportive of an inclusive effort, and we complement them. They care.

Nonetheless, we concur with CWA and the CIEA that adequate resources and time were not available to implement a valid stakeholder process. To be clear, the “stakeholder group” process did not fully represent tribes, community groups, and other actual stakeholders so much as it was a platform for a group of dischargers with vested interests in the outcome.

**Response:** The commenter supports the comments provided in a separate letter from CWA and CIEA. Please see the separate Board staff responses to the CWA and CIEA comment letters.

The draft Basin Plan amendment (BPA) is not a consensus document. Throughout the stakeholder process, there were varying opinions on how the regulations should read. Staff agrees that participation by Delta fish consumers and community-based organizations in the stakeholder process was limited. Staff kept this in mind as edits were made to the draft BPA. The addition of the Exposure Reduction Program is to address some of the concerns of the environmental justice and local communities and Tribes. As evidenced by letters submitted for the April 2010 hearing, some dischargers still have significant concerns about cost, potential adverse effects and other aspects of the draft BPA, including being responsible for funding and implementing an exposure reduction program.

### **Tuleyome Comment #3.**

#### **Wetlands and Fisheries:**

Wetlands and fisheries are vital elements in the web of life in the Delta. We strongly support monitoring and the adoption of best management practices to minimize methylation of mercury in these habitats. However, potential tradeoffs between incremental methylation and enhanced wetland and fisheries habitat have not been fully characterized in the TMDL/BPA process, and thus represent a need for additional scientific study and policy formulation. In addition, the potential effects of the Bay Delta Conservation Plan’s development and adoption are likely to affect the TMDL/BPA in ways that cannot be fully foreseen at this time. We recommend that the TMDL/BPA adopt clear goals statements regarding the protection of these resources while remaining flexible with respect to implementation.

**Response:** The draft BPA requires methylmercury studies to develop and evaluate methylmercury management practices. Phase 1 of the BPA does not require implementation of methylmercury controls. It does recommend that reasonable and feasible methylmercury controls should be implemented during Phase 1. The adaptive approach allows for studies and reevaluation of the program at the end of Phase 1. The review will consider modification of the allocations and implementation requirements and schedules. The review will consider the effectiveness, cost, and potential environmental effects of methylmercury controls (see BPA pages 8 and 9). Information about methylmercury and wetland and fisheries habitat can be studied in Phase 1 and will be evaluated during Phase 1 review.

**Tuleyome Comment #4.**

**Mercury Offsets Program:**

We concur with CWA that mercury and methylmercury “hotspots” must be addressed to the fullest extent feasible. However, we also recognize that efforts to attain incrementally small reductions may not be feasible or the most cost-effective approach to reducing total mercury and methylmercury loading in the Delta. As a result, we support offset programs that can provide large gains in mercury and methylmercury reductions that benefit everyone throughout the watershed. In particular, the benefits that result from source-reduction and clean-up programs at “hot spots” throughout the Cache Creek basin should be recognized as a cost-effective approach throughout the TMDL/BPA.

It may be difficult to establish uniform guidelines for these offset programs. Offset programs must be beneficial to all parties, but they cannot be an excuse for dischargers to evade responsibility. In the end, the dischargers (and their rate payers), the environment, and public must all benefit. While addressing mercury releases from existing sources, we nonetheless urge that the Water Board expand its efforts to develop and implement regional offset programs as a cost-effective approach to mercury reduction in the Delta.

**Response:** The draft BPA does not contain a full offset program, but it does contain some key principles to guide evaluation of pilot offset projects and the development of an offset program, and a schedule for developing an offset program. The Adaptive Management Plan being developed by the stakeholders has a section for the offsets program, including additional principles that could be in the final program. Stakeholders are encouraged to work with Board staff during Phase 1 to develop an offset program that is protective of the environment and fish consumers while removing more mercury from the environment. The Cache Creek Settling Basin may be one of many projects that could be evaluated for its offset potential.

**Tuleyome Comment #5.**

**Conclusion:**

Developing this TMDL/BPA has been a long and difficult process. It is time to move forward. We encourage you in particular to address the CWA comments; environmental justice issues generally, which are particularly poignant with this TMDL program; and Tuleyome’s concerns with respect to wetlands, fisheries, and mercury offset programs.

Tuleyome looks forward to participating in the implementation of the Delta Methylmercury TMDL/Basin Plan Amendment. Please maintain us on your list of interested parties during future Water Board TMDL/BPA considerations.

**Response:** The adaptive management approach, review of the program at the end of Phase 1, inclusion of an Exposure Reduction Program, and guiding principles for offsets are expected to result in a comprehensive mercury control program.

## 27 United Cambodian Families

Saroeum Yim (Health Case Manager) and  
Eighty one signatories from Stockton, Tracy, Sacramento  
Letter Date: 7 April 2010

### **Comment 1:**

Re: Proposed Basin Plan Amendment for Control of Methyl and Total Mercury in the Sacramento-San Joaquin Delta Estuary

Dear Members of the Board,

This letter is to inform the Board that the materials submitted to the Board in this fax transmittal are intended by United Cambodian Families to constitute a written response which we desire to be part of the final administrative record for any board action to be taken on the Proposed Basin Plan Amendment for Control of Methyl and Total Mercury in the Sacramento-San Joaquin Delta Estuary.

These materials are a written response to the section of the amendments to the TMDL which states *all dischargers should implement methylmercury management practices ASAP, but are not required until after the Regional Board has completed their review of plans and developed tributary mercury controls.* This is entirely too long to begin implementing measures – this leaves fish eating populations vulnerable and poses an unacceptable risk.

The materials include letters indicating the current fish consumption levels of community members served by United Cambodian Families. Please consider these letters in any actions on the TMDL you might take. Thank you for your consideration.

**Response:** Note that the full letter submitted by United Cambodian Families containing signatures and fish consumption rates of eighty-one individuals is available on the Central Valley Water Board's website:  
[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/tentative\\_orders/1004/index.shtml](http://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1004/index.shtml)

Signatories listed their ethnicities as Cambodian, Laotian, or Hispanic

The signatories state their concern that fish consumers will continue to be at risk from mercury exposure during the Phase 1 study and review period, when methylmercury controls are not required to be implemented. The Basin Plan Amendment contains requirements for total mercury controls to be implemented at the beginning of Phase 1. Staff believes that addressing sources of methylmercury as well as inorganic mercury will lower methylmercury levels in fish more quickly than focusing only on inorganic mercury. However, more information is needed to know how all methylmercury sources, such as different types of wetlands and wastewater treatment systems, can best control methylmercury. Thus, Phase 1 also contains a study period to develop better methods for controlling methylmercury.

**Staff's intent is to allow adequate time for effective studies, but not to allow studies to unnecessarily delay improvements if methylmercury management practices become obvious. The proposed Basin Plan amendments state that during Phase 1, all dischargers should implement methylmercury management measures that are reasonable and feasible. The Basin Plan amendment text only states that for the purposes of achieving the methylmercury allocations, nonpoint source dischargers do not have to implement methylmercury controls until after the Phase 1 studies. Methylmercury controls for various methylmercury sources need to be better identified, which is the purpose of the Phase 1 studies.**

**Staff agrees that fish consumers are still at risk while methylmercury and mercury source controls are being implemented. The Exposure Reduction Program is intended to reduce fish consumers' mercury exposure during this time. The Exposure Reduction Program is not a replacement for source controls and actual reductions in fish tissue mercury levels. Staff intends that Delta fish consumers and community-based organizations will be involved in development of the Exposure Reduction Program**

**Staff appreciates the efforts of the United Cambodian Families Health Case Manager to contact community members regarding their levels of fish consumption and requests for the Central Valley Water Board to consider.**

*(Continued on next page.)*

**Comment 2:**

Re: Expectation of Adequate, Fair and Equal Protection under the Law

Dear Members of the Board,

I consider myself to be a member of a community, or subpopulation, of individuals sharing common cultural beliefs and practices and residing in Stockton, California.

As such, I wish to inform the Board of my expectations for any future action which may be taken by the Board in regard to the proposed Basin Plan Amendment for the Control of Methyl and Total Mercury in the Sacramento-San Joaquin Delta Estuary, for which a public hearing was opened in April 2008; and on which the Board has indicated the possibility of Board action as early as April 2010.

It is my expectation that any action or decision by the Board as regards the extent or magnitude of mercury remediation to be required by this amendment, and regarding the rapidity of implementation of any remediation-related step(s) to be required, shall take into consideration, among other factors, evidence as to the weekly quantity of Delta fish typically caught and consumed by various subpopulations having access to the waterways of the Sacramento-San Joaquin Delta Estuary by virtue of their place of residence.

It is my further expectation that any version of this amendment recommended by the Board for promulgation shall contain provisions adequate to protect, equally, any and all ethnically, culturally and/or geographically-defined subpopulations against mercury exposure above levels deemed safe according to existing regulations and guidelines.

Given this expectation, I believe it necessary to inform the Board of the weekly quantity of Delta fish I have consumed on average over the last ten years, and which I have every intention and right to continue consuming, so that the board may take into consideration my weekly Delta fish consumption level in any action or decision it might make. I have thus indicated, in the underlined space to the right of my printed name, signature, ethnicity and city of residence on this document, the number of 4-oz servings of Delta fish which I have consumed per week on average over the last ten years according to my recollection; and which I have every right to continue consuming.

**Response:** Staff has heard from many stakeholders that the proposed water quality objectives are based on fish consumption rates that do not protect many people that eat Delta fish. Indeed, the fish consumption rate that staff used (one eight-ounce meal per week of a mix of catfish, bass, sunfish, and salmon) is lower than consumption rates reported by most people who signed the letters in this packet.

Staff agrees that the Delta mercury control program and the water quality objectives should be as protective as possible. However, staff must be able to show that the control program and the objectives have a reasonable assurance of being achieved. Staff believes that the recommended water quality objective based on the USEPA 32 g/day of trophic level 3 and 4 fish will be met but that more stringent objectives may not be reached. In a survey of mercury concentrations in fish from 626 sites in 12 western states, a fish tissue concentration of 0.05 mg/kg (which corresponds to 4-5 fish meals per week) is not observed even in pristine streams (Environmental Science and Technology 2007, vol 41 pg 58-65).

**Note that the most recent Delta fish advisories identify some fish and shellfish that may safely be eaten at three servings per week by the most sensitive groups (pregnant and nursing women and children). A goal of the TMDL is to reduce methylmercury levels so that the fish that are now highest in mercury may be safely eaten once per week.**

**Without more understanding for what activities, management practices, and treatment technologies are available to reduce concentrations of methylmercury, there is no sound scientific rationale at this time for the Central Valley Water Board to require the more stringent fish tissue objectives. The Central Valley Water Board is not unsympathetic to the concerns of the Commenter since the Central Valley Water Board recognizes that some consumers of Delta fish consume higher quantities of fish. The Basin Plan amendment directs the Central Valley Water Board to review and consider adopting more protective fish tissue objectives after Phase 1. The proposed Basin Plan amendments include the requirement that the Board conduct a Program Review at the end of Phase 1, during which the Board will evaluate new information that becomes available during Phase 1 to determine whether lower fish tissue mercury objectives can be achieved.**

## 28. Bud Hoekstra

San Andreas, California  
Letter Date: 14 April 2010

### **Hoekstra Comment #1.**

My 1906 Squibb's *Materia Medica* lists hundreds of formulations for the treatment of disease, and page after page makes reference to mercury. Page 316 lists tablets of mercury tannate, tablets of mercury with chalk, tablets of mercury iodide red, and tablets of mercury iodide yellow. On page 294, tablets of calomel compound number 2, tablets of calomel, ipecac and soda, and a page of calomel tablets plain, pink or flavored with wintergreen. The most stunning old-tyme medicine was the children's tonic on page 334, pink-coated, with a contents of Bland's Mass (lead), Quinine Sulphate, Acid Arsenous, Strychnine Sulphate and Corrosive Sublimate (mercury) for the ferocious treatment of anemia and debilitating conditions. The truth being told medicine poisoned in this day and age, and mercury compounds were widely and freely used to prevent and cure disease. One or two recommended tablets of children's tonic, bearing the Squibb brand, was normal medicine, and it wasn't till 1948 that Warkany and Hubbard made the connection between mercury and acrodynia. Whole books were written about infantile acrodynia, and acrodynia accounted for 3.6% of all admissions to a children's hospital in England. ELLENHORN'S MEDICAL TOXICOLOGY: Diagnosis and Treatment of Human Poisoning (page 1591) notes with some incredulity that before calomel's removal from teething powders, "thousands of adults are exposed to mercury compounds that cause acrodynia in children, but they are not affected."

Paul DeKruif wrote about the Microbe Hunters in the 1930's, a lasting history of the use of mercury and other compounds to eliminate infections, just as germ theory was emerging in a world of superstition and venerated herbal practice. As more and more doctors realized that the mercury dose safe for adults was unsafe for children, more and more medicine came under scrutiny. *Neurotoxicology* in 2001 printed an submission by Redwood, Bernard and Brown, "Predicted Mercury Concentrations in Hair From Infant Immunizations: Cause for Concern," which in brief concluded, that the impact of Thimerosal (vaccinal mercury) "has had on American children warrants further investigation." The same issue in another peer-reviewed article documented the "Uncertainties in the Reference Dose of Methylmercury." [Methyl mercury is abbreviated MeHg here on out in this letter.]

It seems odd that diaries in state library record the symptoms of the New Almadin Mine poisonings, even in horses drawing wagons at the mines, at the turn of the century, but it is as if gold fever had sanitized the silver metal's evil complexion so that nobody knew it. Medicine went on treating diseases with it, industry went on using it without a tear of compunction, for a half century before an awakening began, an awakening that's lasted half a century. A 100 years have all passed away and we forget the chilling legacies of mercury past and the horrors of the children fed on mercury medicines.

Mercury may not have forgotten us, because the sins of the past are unlike sins of the present – methylmercury, MeHg, is nothing like its progenitor metal. Metal mercury, silver-white quicksilver metal mercury and its array of colorful inorganic compounds, is relatively tame compared to MeHg. Methylmercury is fetotoxic. In doses too small to affect a mother, it poisons the unborn child. John Hopkins University Press, London and Baltimore, in a book edited by Christine Eccles and Zoltan Annau, *The Toxicity of Methylmercury*, Dr. Magos concludes, "Methylmercury, like other organomercurials and unlike inorganic mercuric salts, is nearly completely absorbed from the gastrointestinal tract. If you eat it, it resides in you. If you're pregnant, umbilical cord blood may have 50% more MeHg. (Suzuki et al 1971). We call this bioconcentration and bioaccumulation. MeHg is a food chain poison that builds up in the tissues of animals and the body burdens of every one who eats food and drinks water gets bigger and bigger.

This isn't rocket science. If you eat garlic, you excrete garlic. If you eat leek, you exhale leek in your breath. If you eat MeHg, you absorb it, you excrete it and you build it up inside you. The first organ MeHg attacks is the fetus. (Prenatal exposure to methylmercury" by Christine E Eccles and Zoltan Annau). Your body burden of mercury differs from your grandparents' burdens. Their exposure was to inorganic mercury; your body burden is shaped by MeHg. The food chain accounts for most of that burden. You are being poisoned, each and every one of us are being poisoned, by the subterfuge of methylmercury in the food chain.

The Arsenic and Old Lace of modern agriculture is something to take seriously. It's not by design, not by conspiracy. It is happenstance by our tinkering with the environment, and we still lack a full grasp of the consequences. Food chain poisons are rare in history. The Romans had a fondness for leaded utensils. Abundances of white snakeroot (Eupatorium) took its toll, sometimes whole communities in America, by poisoning people through milk. Food chain poisons seem more prevalent than ever as seen in the outbreaks of fecal E. coli and the prion disease called Mad Cow. Modern agriculture "biomagnified" the impacts by the way we grow, process and distribute food. MeHg finds its way into the food chain through ecological processes, a spin-off of the industrializations around us.

Two things seem to occur that give cause for the rise of MeHg. First, the human footprint seems to shifted decay away from aerobic decay to anaerobic decay in soils and in reservoir sediments. Mercury locked in soils and sediments – inorganic mercury, metal mercury though relatively stable – is methylated by microbial processes. The sulfhydryl enzymes that energize anaerobic decay, decay without oxygen, seem to shunt mercury around and methylate it, consequently dams and reservoirs seem to function ecologically as big methylation vats where MeHg is made. In soils, where carbon is sequestered, aerobic decay is more common. In impoverished soils, soils in need of restoration, occasional rains seem to lead to methylation events. Studies of prairie soils indicate that 20% organic matter was common when the buffalo roamed the Great Plains. Farmed soils steadily and intensively cropped range in soil organic carbon in measures as low as 3-4%. These soils are drier in the sun and wetter in the rain, predisposing methylation.

The New Scientist of April 18, 2009, reported "Arctic food is poisoned" in one headline. "Seal meat contains more mercury in low-ice years," which may be due to Arctic cod that flourish more in low-ice years," because Arctic cod are higher up on the food chain than the seals' other food" and they have greater body burdens of mercury – MeHg.

The natural cycle of mercury has run for thousands of years, with mercury entering the sky from natural source on the ground and precipitating out again. The engine of human activities, industry, has quadrupled, by some estimates, the load of atmospheric mercury, and no one has estimated the increase in methylation that transforms this natural cycle into unnatural MeHg. MeHg is a manmade spin-off of the natural cycle. Mother Nature, if left to her own designs, would not give rise to it in the quantities that plague us today or threaten us tomorrow. To some extent, nature makes MeHg and nature breaks down MeHg in a balanced biogeochemical cycle. The cycle has been altered, and the food chain has been poisoned. The knowledge of how mercury is mobilized, methylated and biomagnified still eludes us like a hidden work of science.

We know from ENVIRONMENTAL SCIENCE AND TECHNOLOGY, 2002, 36, 1245-1256, that "this mercury accumulates in the snowpack during the Polar spring at an accelerated rate in a form that is bioavailable to bacteria and is released in snowmelt during the summer." We know from THE SCIENCE OF THE TOTAL ENVIRONMENT 2002, 287, 61-69, "Mercury speciation in the French seasonal snow cover," that "the pH of the snow was found to be an important parameter for Hg speciation." But knowledge is scant. Science has not characterized well the cycles that govern our body burdens of MeHg.

**Response:** Board staff appreciates the information provided by Mr. Hoekstra. No staff response is necessary to the previous text.

## **Hoekstra Comment #2.**

To sum it up, MeHg poisons the next generation through the food chain. It poisons the unborn through the umbilical line of transmission. Every child is born with a body burden that no grandparent had. Mercury cycles the planet in a very natural way, but we have overloaded the cycle and we have tilted the natural cycle in favor of methylation. As the Central Valley Regional Water Quality Control Board takes action, and I am pleased that it is, and I praise its key elements of action, I realize that the toolbox of best practices will aim at stabilizing legacy mercury, that is, derail its mobilization, but the inherent problem is likely to be source mercury in the air and the loading of the atmosphere beyond the control of the Central Valley Region and methylation of mobile mercury between snowpack and estuary, between air-borne mercury and fork.

In short, translocation and methylation are the problems; the Delta makes mercury look like a water quality problem. It's the food chain, not water, at issue. We have unbalanced a geochemical cycle of mercury where water plays a role. Because MeHg is a fetal poison, because future generations are exposed in the womb, it is unlike any other poison we've encountered. Because it is a fetotoxin, it must be characterized as more than just another ordinary contaminant of water-quality concern.

Thank you for listening,

**Response:** Board staff appreciates Mr. Hoekstra's concern about methylmercury as a neurotoxicant and his concern about atmospheric deposition. To clarify, Board staff is proposing a control program that focuses on both methylmercury and total mercury sources for the purpose of increasing the number of control options in the proverbial toolbox of water quality management practices and to enable more rapid improvements. Staff estimated that about 30% of total mercury entering the Delta comes from legacy<sup>1</sup> mercury, about 5% from modern point sources (e.g., NPDES urban and facility discharges) in the Central Valley, and about 65% from naturally mercury-enriched soils, atmospheric deposition, and geothermal springs [please see "Staff's Initial Responses to Board and Stakeholder Questions and Comments at the April 2008 Hearing",<sup>2</sup> item A-1, pages 3 through 12]. As a result, even if legacy mercury loads could be reduced to zero, we would still need to be concerned about activities in and around the Delta that contribute methylmercury. While the Central Valley Water Board, California Air Resources Board, and USEPA have authority to require the control of discharges to surface water and emissions to the atmosphere from sources in California, they do not have the authority to control emission sources in other countries such as China. Reducing local mercury emissions is expected to help compensate for increases in global sources; however, it likely will be impossible to achieve substantial reductions in current methylmercury and total mercury loads contributed by atmospheric deposition given likely increases in global emissions. [Board staff provided a review of global mercury emissions in Section 8.4.3.6 in the February 2010 TMDL Report.]

None-the-less, Board staff expects that rigorous implementation of a control program that focuses on both methylmercury and inorganic mercury sources within the Delta and its tributary watersheds will enable Delta fish methylmercury concentrations to be reduced so that they

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<sup>1</sup> Board staff refers to mercury from historic mining operations in the Coast Ranges and Sierra Nevada that was released to Central Valley waterways by historic operations as well as by past and present erosion of excavated overburden and tailings as "legacy mercury".

<sup>2</sup> Available at: [http://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/delta\\_hg/stakeholder\\_meetings/25nov08\\_hearing\\_rtc.pdf](http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/stakeholder_meetings/25nov08_hearing_rtc.pdf)

achieve the proposed fish tissue objectives, which would protect fish-eating wildlife in the Delta as well as allow people to consume one a meal a week of a mixture of Delta fish types along with some store-bought fish, and more if people focus their consumption on lower trophic level species like salmon and bluegill.

Given available information about wetland restoration goals for the Delta,<sup>3</sup> and the potential of new wetlands to increase methylmercury loading to the Delta, we need to have a control program that is more comprehensive and protective of the environment and subsistence fishers who cannot wait for centuries for improvements.

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<sup>3</sup> For example, the Record of Decision for the California Bay-Delta Authority commits it to restore 75,000 to 90,000 acres of additional seasonal and permanent wetlands in the Delta, which represents about a three to four times increase in wetland acreage from current conditions (about 21,000 acres).