



October 28, 2016

VIA ELECTRONIC SUBMISSION

U.S. Environmental Protection Agency Region 9
Docket ID No. EPA-HQ-OW-2015-0392
75 Hawthorne Street
San Francisco, CA 94105

Subject: Water Quality Standards; Establishment of Revised Numeric Criteria for Selenium for the San Francisco Bay and Delta, State of California (Docket ID No. EPA-HQ-OW-2015-0392)

Attachment: Lower South Bay – Impact of Proposed Selenium Standards Fact Sheet, attached

Dear U.S. Environmental Protection Agency:

On behalf of the Bay Area Clean Water Agencies (BACWA), we thank you for the opportunity to comment on the Establishment of Revised Numeric Criteria for Selenium for the San Francisco Bay and Delta, State of California (Selenium Criteria). BACWA is a joint powers agency whose members own and operate publicly-owned treatment works (POTWs) and sanitary sewer systems that collectively provide sanitary services to over 6.5 million people in the nine-county San Francisco Bay (SF Bay) Area. BACWA members are public agencies, governed by elected officials and managed by professionals who protect the environment and public health. BACWA would like to thank EPA for extending the original comment period to give us the opportunity to better review the proposed Selenium Criteria.

BACWA has reviewed the proposed Selenium Criteria, which consist of fish tissue criteria, a whole body criterion of 8.5 micrograms per gram ($\mu\text{g/g}$) dry weight (dw) or a muscle criterion of 11.3 $\mu\text{g/g}$ dw, and a clam (or prey) tissue criterion of 15 $\mu\text{g/g}$ dw. The proposed chronic water column criterion is a dissolved selenium criterion of 0.2 $\mu\text{g/L}$, and the proposed particulate criterion is 1 $\mu\text{g/g}$. BACWA is concerned that equal implementation of the three criteria (fish tissue, clam and water column) will lead to significant cost and effort, and redirection of resources away from other water quality issues, without any water quality benefit. Our specific concerns are described below.

1. End of Pipe compliance by POTWs with selenium levels indicated by the water column criterion are infeasible

If the water column criterion is to be applied to the South Bay, the resultant water quality based effluent limits (WQBELs) will likely be lower than that criterion due to the formula with which the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) calculates WQBELs. There would be no assimilative capacity for selenium in the South San Francisco Bay on which to base dilution, and, per the SIP, dilution credit is not given for bioaccumulative pollutants such as selenium even where mixing zones are allowed for other pollutants.

The Supporting Document, Cost of Compliance with Selenium Criteria in San Francisco Bay and Delta (Cost of Compliance), identifies source drinking water as the main source of selenium in POTW effluent. This means that source control is not an option for reducing effluent selenium concentrations. Furthermore, much of the selenium in the South San Francisco Bay is derived from tributary flows, which have higher concentrations than POTW effluent (See Lower South Bay – Impact of Proposed Selenium Standards Fact Sheet, attached).

The Cost of Compliance document assumed that POTWs would use chemical addition to precipitate selenium to meet low WQBELs. However, concentrations of selenium from POTWs are largely in the form of selenate (SeVI), rather than selenite (SeIV), the latter of which is the more easily precipitated species of selenium. Converting selenate to selenite first requires full denitrification. Our member agencies are exploring nitrogen removal technologies as part of the special studies associated with the Nutrient Watershed Permit (NPDES No CA0038873). The preliminary costs for denitrification are measured in the hundreds of millions to billions of dollars for larger POTWs, compared to the tens of millions of dollars, or less, for POTWs shown in the Cost of Compliance document. Furthermore, as recognized in the Cost of Compliance document, no technology has been shown to reliably reduce selenium to levels below 0.2 µg/L, so it would be uncertain that POTWs could meet these limits by denitrification and precipitation, or by any other treatment technology.

2. The water column criterion was developed using a food web that is not applicable to the South San Francisco Bay

POTWs discharging to the South Bay have submitted significant water column, fish tissue, and clam data to EPA following the publication of the proposed Selenium Criteria. The water column criterion was derived based on *Potamocorbula amurensis*, an invasive clam species. However, the *macoma petalum* clams are more prevalent in the South Bay, and contain lower concentrations of selenium than *Potamocorbula amurensis*, as shown by data collected by the USGS (See attached Fact Sheet). This difference in the actual food web in the South Bay results in actual fish tissue concentrations that are generally below the fish tissue criteria, even though the South Bay often exceeds the water column criterion.

If the EPA publishes the Selenium Criteria as proposed, one option would be for the San Francisco Regional Water Quality Control Board to develop a site-specific objective for selenium in the South Bay to better reflect the local food web. This would be a costly endeavor that would divert scientific resources away from more pressing issues in our Region. No water

quality benefit would be gained from these expenditures. The resulting site-specific objective would simply maintain the status quo. Rather than engage in this fruitless effort, BACWA recommends that EPA adopt implementation guidelines that do not apply the water quality criterion where fish tissue data are available, as described below.

3. Fish tissue concentration is the most meaningful criterion for measuring selenium impacts

Under the EPA's proposal, each of the criteria in different media are equivalently protective and exceedance of any one medium would indicate an impairment of the designated use. BACWA understands that it is infeasible in many circumstances to directly test fish tissue, and in those circumstances having a water quality criterion may be necessary. However, in the San Francisco Bay Region, there exists a robust Regional Monitoring Program (RMP) which has been collecting sturgeon tissue data since 1997. Therefore, it is not necessary to implement a water quality criterion for the San Francisco Bay Region where fish tissue data is available.

This position appears to reflect EPA's thinking as stated in the recently issued draft *Technical Support for Adopting and Implementing EPA's 2016 Selenium Criterion in Water Quality Standards*. Table 1 of the draft *Frequently Asked Questions (FAQs): Implementing the 2016 Selenium Criterion in Clean Water Act Sections 303(d) and 305(b) Assessment, Listing, and Total Maximum Daily Load (TMDL) Programs*, associated with this document provides a Decision Matrix for EPA's 2016 Selenium Criterion Assessment Scenarios for Waterbodies with Steady-state Selenium Sources. This table recognizes the precedence of fish tissue criteria where fish tissue data are available.

BACWA also supports the proposed implementation approach for conducting reasonable potential analyses where there are fish data available, as described in the draft *Frequently Asked Questions (FAQs): Implementing WQS that Include Elements Similar or Identical to EPA's 2016 Selenium Criterion in Clean Water Act Section 402 NPDES Programs*:

...[T]he state or authorized tribe might be able to make the determination that there is no RP [reasonable potential] if the following conditions exist simultaneously: (1) the sources of selenium are already present in a waterbody and are not expected to increase; (2) the population of fish have been exposed to the existing levels of selenium and the system is determined to be in steady-state (based on scientifically defensible documented data); and (3) relevant and timely collection of fish tissue data, accounting for the duration of the discharge relative to collected fish tissue, demonstrate that the fish tissue levels are significantly below the criterion's fish tissue element.

This approach gives Regional Regulators the discretion to apply site-specific factors and common sense in their decision making, without the time and resources needed for establishing formal site-specific objectives.

BACWA recommends that the proposed Selenium criteria be revised such that fish tissue criteria be given precedence, and that the water column criterion only apply where fish tissue data are unavailable. Regional Regulators should have the discretion to determine reasonable potential based on fish tissue data, if available.

4. A low water column criterion will have unintended consequences

As California's drought continues, agencies in the San Francisco Bay Area are planning aggressive water recycling projects, particularly in conjunction with the Santa Clara Valley Water District. These projects will send secondary effluent as feed water for a reverse osmosis process. As part of this process, approximately fifteen percent of the feed water volume will be returned to the POTWs for discharge, or discharged via an alternative outfall. While the return flow volume is a small fraction of the effluent diverted for recycling, it will contain almost all of the pollutants in the original secondary effluent. Selenium loads will remain the same, but concentrations will increase by a factor of five or greater in the reverse osmosis concentrate compared to the secondary effluent. Dischargers with low selenium WQBELS will have even more difficulty meeting them if they receive reverse osmosis concentration, threatening the feasibility of these recycled water projects.

There are many important water quality concerns that POTWs are currently planning and building infrastructure to address. Requiring selenium removal would divert resources away from other efforts, and should be considered within the framework of these competing interests. We would be happy to discuss these concerns further with you, at your convenience.

Respectfully Submitted,

David R. Williams

David R. Williams
Executive Director
Bay Area Clean Water Agencies

cc: BACWA Board
Bruce Wolfe, San Francisco Regional Water Quality Control Board
Tom Mumley, San Francisco Regional Water Quality Control Board
Naomi Feger, San Francisco Regional Water Quality Control Board
Eric Dunlavey, City of San José
Samantha Englage, City of Palo Alto
Bhavani Yerropotu, City of Sunnyvale