



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street  
San Francisco, CA 94105-3901

April 11, 2017

Anne Littlejohn  
Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670-6114

Dear Ms. Littlejohn:

Thank you for the opportunity to review and comment on the draft amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (the "Basin Plan") To Establish Water Quality Objectives in the Lower San Joaquin River (Mouth of Merced River to Vernalis). We appreciate all of the efforts from the Regional Board staff to keep us informed during the development of the Basin Plan amendments.

The Staff Report at p. 28 describes the effort of the Lower San Joaquin River committee to identify the most salt sensitive uses:

"Aquatic life uses are typically identified as the most sensitive uses when considering beneficial uses designations for surface waters. However, a literature review commissioned by CV-SALTS in 2010 examined salinity and nutrient water quality criteria assigned to beneficial uses at the state, national, and international levels and concluded that irrigation and municipal water supply beneficial uses generally have the lowest limits (Kennedy/Jenks Consultants, 2010)."

While we appreciate that water quality limits protecting irrigation and municipal water supplies are generally protective of other uses, we recommend that the Regional Board provide further support for the conclusion that the proposed water quality objectives in Reach 83 for electrical conductivity are protective of other uses, particularly aquatic life and migration uses. This may address our concerns that 1) freshwater aquatic life<sup>1</sup> may, at times, require optimal salinity ranges that are lower than the proposed objectives which include salinities that exceed conventional definitions of freshwater<sup>2</sup> and that 2) salinity levels at the proposed objectives may contribute to a confusing migration signal to adult and juvenile salmon that use chemical cues to navigate to natal spawning areas and the ocean. Salinity levels at the proposed objectives would allow the continuation of a reverse salinity gradient in which water becomes saltier upstream rather than remaining fresh until it reaches the estuarine portion of the system.

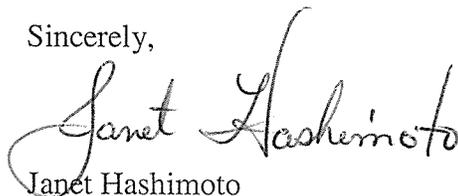
We also reviewed, as you suggested, the *Aquatic Life Study Final Report* (January 6, 2014) which analyzed potential water quality criteria for salts which could be used as the basis of establishing water quality objectives in Central Valley surface waters to protect aquatic life. While the report does identify toxicity effects concentrations for several individual mineral salts, it does not identify such values for Total Dissolved Solids (TDS) or electrical conductivity (i.e., the unit of measure for the salinity

objective) and acknowledges that the toxicity of TDS is more variable and less predictable than the toxicity of individual salts. Additionally, the report evaluates only toxicity endpoints of salinity for aquatic life which does not necessarily evaluate optimal salinity conditions as a freshwater habitat element important for growth and survival for aquatic life. Overall, the report concludes that there is currently a lot of uncertainty to establish the maximum concentration of salts that would be protective of aquatic life. This suggests that there is uncertainty regarding the conclusion that municipal and agricultural beneficial uses are more sensitive to salinity as a toxicity threshold than the aquatic life beneficial use.

In addition to providing any additional information to support the proposed current action, we recommend that the Board continue to study this issue further in the future and, when re-evaluating water quality objectives, remain open to the possibility that other uses may be more sensitive than municipal and agricultural uses.

We appreciate the opportunity to provide input on the draft amendments. If you have any questions, please contact me at (415) 972-3452 or [hashimoto.janet@epa.gov](mailto:hashimoto.janet@epa.gov); or Matt Mitchell at (415) 972-3508 or [mitchell.matthew@epa.gov](mailto:mitchell.matthew@epa.gov).

Sincerely,



Janet Hashimoto

Manager, Water Quality Assessment Section

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<sup>1</sup> Water Quality Control Plan for Sacramento and San Joaquin River Basins include aquatic life protection for warm and cold freshwater habitat but do not define freshwater quantitatively. The San Francisco and Los Angeles Regional Boards define freshwater quantitatively as having salinities equal to or less than 1 part per thousand at least 95 percent of the time in a normal water year, see [Water Quality Control Plan for the San Francisco Bay Basin](#) (section 4.6.2) and [Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Ammonia Objectives for Inland Surface Waters Not Characteristic of Freshwater \(including enclosed bays, estuaries and wetlands\) with Beneficial Use designations for protection of "Aquatic Life."](#) Item 10.

<sup>2</sup> [NOAA Ocean Service Education](#): In fresh water the concentration of salts, or salinity, is nearly zero. The salinity of water in the ocean averages about 35 parts per thousand (ppt). The mixture of seawater and fresh water in estuaries is called brackish water and its salinity can range from 0.5 to 35 ppt; [USGS Water Science School – The Water Cycle](#): The definition of freshwater is water containing less than 1,000 milligrams per liter of dissolved solids, most often salt; [American Meteorology Society](#): Water that contains less than 1000 mg l<sup>-1</sup> of dissolved solids;