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Central Valley Regional Water Quality Control Board

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COMMENTS ON THE SHASTA LAKE WATER RESOURCES INVESTIGATION DRAFT ENVIRONMENTAL IMPACT STATEMENT, SHASTA COUNTY

Thank you for the opportunity to review the *Shasta Lake Water Resources Investigation Draft Environmental Impact Statement (Draft EIS)*. The Central Valley Regional Water Quality Control Board (Central Valley Water Board) has regulatory authority over any projects that have the potential to discharge wastes that may impact water quality within the Sacramento River drainage, therefore our comments on the Draft EIS focus on water quality and the protection of the beneficial uses assigned to Shasta Lake and the Sacramento River below Shasta Dam.

The specific beneficial uses assigned to water bodies in the Central Valley Region are listed in the document titled *Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan). Table II-1 of the Basin Plan, *Surface Water Bodies and Beneficial Uses*, lists the beneficial uses assigned to Shasta Lake as Municipal and Domestic Supply, Agricultural and Industrial Water Supply, Contact and Non-contact Recreation, Warm and Cold Freshwater Habitat, Warm and Cold Water Spawning, and Wildlife Habitat. The beneficial uses assigned to the Sacramento River from Shasta Dam to the Colusa Basin Drain include those assigned to Shasta Lake, and also include Warm and Cold Water Migration of Aquatic Organisms and Navigation.

The Board's primary concerns about the project are related to the impacts to water quality that will be caused by the sediment that will be generated by the raised water level. The comments discussed below reference Table S-3, *Summary of Impacts and Mitigation Measures*.

- Impact WQ-4, Page ES-46:
"Long-Term Sediment Effects that Would Cause Violations of Water Quality Standards or Adversely Affect Beneficial Uses in Shasta Lake or Its Tributaries"

This impact is listed as "Long-term" and "PS" (Potentially Significant) before mitigation, and as "LTS" (Less Than Significant) after mitigation. The proposed mitigation is to "Prepare and Implement a Stormwater Pollution Prevention Plan that Minimizes the Potential Contamination of Surface Waters, and Comply with Applicable Federal Regulations Concerning Construction Activities". While the specifics of the Stormwater Pollution Prevention Plan are not provided, we believe the quantity of sediment generated by the periodic inundation of the additional lakeshore will be on the scale of hundreds of thousands of cubic yards and, despite available mitigation measures, the direct and indirect impacts to water quality will be significant and unavoidable. Further, once clay-sized soil particles are suspended in the water column, they do not readily settle out and can cause widespread impacts for an extended period of time.

Shoreline processes, including wave action and changing reservoir levels, along with storm water runoff, will provide a constant mechanism by which soil in the new area of inundation can be constantly eroded and sediment transported into the lake, resulting in elevated levels of suspended sediment and turbidity. The current area of inundation, where all residual soil has been washed away (leaving only bare rock), provides an example of the potential magnitude of the issue. Further, if existing timber and vegetation are removed from the new area of inundation, this will disturb the native soil and will remove the soil-retaining vegetation and root structures, thus exacerbating the situation. It is also unknown how often the lake elevation will rise into the new inundation zone, and how long it will take for the soil erosion and transport to be reduced to a degree of insignificance.

Increases in suspended sediment and the associated increase in turbidity will have numerous impacts on domestic water supplies, aquatic life, and wildlife habitat. Three public domestic water suppliers withdraw their water directly from Shasta Lake: Shasta Lake City, Mountain Gate, and Jones Valley. The increased sediment in the raw water supply will require additional filtration and treatment, and will result in increased costs to the rate payers.

The increase in suspended sediment and turbidity will also impact aquatic life, including benthic invertebrates, the zooplankton that provide a food source for fish, and the aquatic environment that the aquatic life rely upon for spawning and habitat. The increase in turbidity will also reduce the ability of predatory birds (i.e., Bald Eagles, Osprey, etc.) to visually spot and capture fish, which are their main food supply.

Shasta Lake is currently on the Federal Clean Water Act Section 303(d) list of Impaired Water Bodies for mercury, because Shasta Lake is among many lakes and reservoirs in California where fish have been found with concentrations of mercury in their tissue that may warrant limited consumption by humans. Inorganic mercury enters reservoirs and other water bodies through a variety of sources, including erosion from soils naturally enriched with mercury and from runoff from mining sites. Increased sediment loads to reservoirs can also introduce organic matter. This can contribute to the mercury impairment because methylmercury can bind to the organic matter and thus move up the food chain via phytoplankton and zooplankton, eventually bio-accumulating in game fish such as bass. The Central Valley Water Board is

concerned that additional inputs of inorganic mercury and organic matter caused by erosion and sediment delivery generated by the inundation of additional lakeshore has the potential to accelerate the process by which methylmercury is formed and makes its way up the food chain.

Based on the discussion above, we believe the Level of Significance of the long-term impact of sediment on Shasta Lake to be Significant and Unavoidable.

- Impact WQ-10, Page ES-49:
"Long-Term Sediment Effects that Would Cause Violations of Water Quality Standards or Adversely Affect Beneficial Uses in the Upper Sacramento River"

This impact is listed as "Long-term" and "LTS" (Less than significant), and therefore no mitigation is needed or proposed.

However, the increase in fine-grained suspended sediment in Shasta Lake would also increase the suspended sediment in the Sacramento River downstream of Shasta Lake. The City of Redding and the Bella Vista Water District obtain their municipal water supply from the Sacramento River approximately 8 miles downstream of Shasta Dam. As discussed above, the increase in suspended sediment will increase the costs of treating the domestic water supply.

The transport of additional suspended sediment from Shasta Lake into the Sacramento River may also elevate the ambient concentrations of priority pollutant metals (i.e., copper, zinc, etc.) in the Sacramento River. Many of these metals are already near or at the water quality objective that is designed to ensure the protection of beneficial uses. If concentrations of these metals increase, it could eliminate assimilative capacity in the river, thereby increasing regulatory compliance costs for the Cities of Redding and Anderson, as well as other downstream communities that discharge wastewater to the Sacramento River. Without assimilative capacity in the River, these communities may be required to expend their limited resources on extensive and costly treatment plant upgrades and/or enforcement actions as required by the federal Clean Water Act and the California Water Code. The potential for such an increase in metals concentrations must be thoroughly investigated and, if indicated, appropriate mitigation measures must be developed and implemented.

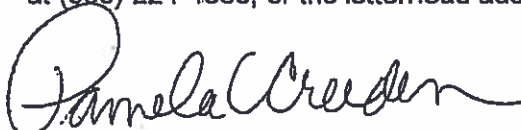
Based on the discussion above, we believe the Level of Significance of the long-term impact of sediment on the Upper Sacramento River to be Significant and Unavoidable.

The project will have a number of significant and unavoidable direct and indirect impacts on water quality and the environment that cannot be mitigated to the point where these impacts could be considered less than significant. It is therefore appropriate for the Bureau of Reclamation to investigate potential for off-site projects to enhance water quality and the environment to help offset the environmental impacts of the project.

Potential mitigation projects that may help to protect and enhance the beneficial uses of surface waters include:

- 1) Construction and operation of more advanced wastewater treatment and disposal systems for sewage generated from recreational activities on Shasta Lake;
- 2) Assistance with remedial efforts at abandoned mines within the Shasta Lake watershed, including the Mammoth, Golinsky, Bully Hill, and Rising Star mines, which discharge acid mine drainage to Shasta Lake. Such assistance could include financial aid and facilitating land exchanges between the private mine owners and the U.S. Forest Service so as to provide the mine owners with flat ground suitable for the installation of treatment systems for the mine drainage;
- 3) Assistance with remedial efforts at abandoned mines within the "Primary Study Area" including the Greenhorn Mine on Willow Creek upstream of Whiskeytown Lake and the Afterthought Mine on Little Cow Creek;
- 4) Assistance with remedial efforts at abandoned mines contributing mercury to the Sacramento River in the "Extended Study Area".
- 5) Assistance with watershed protection and enhancement projects in the Pit, McCloud, Upper Sacramento River and major tributaries to Shasta Lake that focus on reducing chronic sources of sediment (e.g., roads and historic mining features).

Thank you for your consideration of our comments regarding water quality on the Draft EIS. If you have any questions, please contact Katie Bowman at (530) 226-3458, or Philip Woodward at (530) 224-4853, or the letterhead address.



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