



California Regional Water Quality Control Board

San Francisco Bay Region



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Arnold Schwarzenegger
Governor

November 5, 2009
Site No. 02-01-C1060 (XF)
CIWQS Place No. 743933

Sent via electronic mail: No hard copy to follow

San Francisco Planning Department
1650 Mission Street, Suite 400
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Attn.: Mr. Bill Wycko, Environmental Review Officer
Email: bill.wycko@sfgov.org

Subject: Comments on Draft Environmental Impact Report for the Calaveras Dam Replacement Project, SCH No. 2005102102

Dear Mr. Wycko:

San Francisco Bay Regional Water Quality Control Board (Water Board) staff has reviewed the Draft Environmental Impact Report for the Calaveras Dam Replacement Project. The project consists of two components: replacement of the existing dam at Calaveras Reservoir to meet seismic safety and delivery/drought reliability requirements, and operation of Calaveras Reservoir to release up to 6,300 acre-feet per year of water to Calaveras and Alameda Creeks for enhancement of fisheries and the other natural resources of the creeks.

Calaveras Reservoir is located on the boundary of Alameda and Santa Clara Counties, about 10 miles southeast of Fremont, California. Calaveras Dam is located at the northern end of the reservoir, about one mile upstream from the confluence of Calaveras and Alameda Creeks.

Calaveras Reservoir is the largest of San Francisco Public Utilities Commission's (SFPUC's) reservoirs in the San Francisco Bay Area. However, Calaveras Reservoir is currently operating at about 40 percent of full capacity because the California Department of Water Resources, Division of Safety of Dams (DSOD) placed operational restrictions on the reservoir in 2001. The DSOD placed operational restrictions on the reservoir because the dam is located near a seismically active fault zone and was determined to be vulnerable to strong earthquake ground motion.

The proposed project includes construction of a replacement dam immediately downstream of the existing dam to restore the reservoir's historical capacity. The replacement dam would be an earthen dam built to withstand the Maximum Credible Earthquake originating on the Calaveras Fault Zone and to withstand the Probable Maximum Flood event. The design of the new dam

California Environmental Protection Agency

could accommodate enlargement of the dam in the future although the SFPUC does not reasonably foresee the need for a larger dam on the future.

The main elements of the proposed project are:

- Construct a new earth and rockfill dam and modification of the existing dam to accommodate the construction and operation of the new replacement dam;
- Remove the existing spillway and construct an ungated spillway with a concrete-lined channel and a new stilling basin;
- Remove the existing intake tower, plug the shaft, and construct a new intake tower and shaft connecting to an existing drain and three water inlet adits;
- Extend the outlet pipe connecting to a relocated, fixed cone valve, and install new low-flow discharge valves for fishery releases;
- Install instrumentation, such as piezometers, inclinometers, settlement monuments, seepage weirs, and accelerometers to measure strong ground motions during earthquakes;
- Stabilize the right abutment landslide;
- Construct a bypass tunnel through the Alameda Creek Diversion Dam to improve habitat conditions in Alameda Creek downstream of the diversion; and
- Implement flow releases to support native fishes in Calaveras and Alameda Creeks downstream of Calaveras Dam and the Alameda Creek Diversion Dam.

Based on the information provided in the DEIR, we offer the following comments.

Comment on Designing the Dam to Accommodate Future Enlargement

We do not support designing the dam to accommodate enlargement of the dam in the future because enlargement of the dam will exacerbate existing impacts to beneficial uses and cause additional unforeseen impacts to the Alameda Creek Watershed. Moreover, if the SFPUC does not reasonably foresee the need for a larger dam in the future, there is no reason to design the new dam to accommodate potential future enlargement.

Comment on Waters of the State versus Waters of the United States

The text on page 4.4-65 of the DEIR needs to be revised to indicate that under the Porter-Cologne Water Quality Act (Porter-Cologne), all waters of the United States that are within the borders of California are waters of the state. Currently, the text incorrectly indicates that waters of the United States are often waters of the state. For additional clarification, please see Item III of the January 25, 2001, Memorandum from the Office of Chief Counsel on the Effect of SWANCC v. United States on the 401 Certification Program (available on-line at http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/stateregulation_memorandum.pdf).

Comment on California Wetlands Conservation Policy

To be consistent with Executive Order W-59-93 (i.e., California Wetlands Conservation Policy), the description of mitigation requirements on page 4.4-65 of the DEIR should be revised as follows: “Impacts on waters of the state typically require mitigation requiring no net loss of wetlands functions, acreage and values of waters of the state.”

Comment on Regulatory Framework for Fisheries and Aquatic Habitat

The discussion of State Regulations protecting fisheries and aquatic habitat on pages 4.5-49 and 4.5-50 fails to mention the Porter-Cologne and the San Francisco Water Quality Control Plan (Basin Plan). Porter-Cologne and the Basin Plan (developed under Porter-Cologne) protect water quality requirements for the following fisheries and aquatic habitat beneficial uses:

- **Cold Freshwater Habitat:** Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Fish Migration:** Uses of water that support habitats necessary for migration, acclimatization between fresh water and salt water, and protection of aquatic organisms that are temporary inhabitants of waters within the region.
- **Preservation of Rare and Endangered Species:** Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.
- **Fish Spawning:** Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.
- **Warm Freshwater Habitat:** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat:** Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

As a result, a discussion of Porter-Cologne and the Basin Plan should be added to State Regulations protecting fisheries and aquatic habitat.

Comment on Memorandum of Understanding with California Department of Fish and Game

The 1997 Memorandum of Understanding (MOU) between the SFPUC and the California Department of Fish and Game established flow schedules to support native rainbow trout with the best available science at the time. Subsequent to the 1997 MOU, there have been additional studies of flow requirements for steelhead in Alameda Creek that would also benefit other

species and enhance geomorphic and hydrologic functions in the watershed. These new studies should be used to update the flow schedule established in the 1997 MOU with the best available science in 2009. In addition, we support future studies to further refine the flow requirements needed to enhance the beneficial uses of Alameda Creek. For instance, a future flow study may evaluate using cone valve releases during naturally high flow periods to better mimic the flashy nature of the watershed.

We also support removing the recapture facility from the MOU because eliminating the recapture facility would avoid additional impacts to Alameda Creek from constructing an infiltration gallery (i.e., perforated pipes) directly beneath the streambed of Alameda Creek. In addition, the recapture facility could reduce seasonally important flows in Alameda Creek below the confluence of Arroyo de Laguna (i.e., Lower Alameda Creek). For instance, the Upper Alameda Creek Watershed contributes up to 59 percent of the flow in Lower Alameda Creek during the month of May (EDAW and Turnstone Consulting Joint Venture 2009).

Reference

EDAW and Turnstone Consulting Joint Venture. 2009. *Biological Assessment/Essential Fish Habitat Assessment for Calaveras Dam Replacement Project*. September.

Comment on Fish Screens at the Alameda Creek Diversion Dam

The DEIR fails to evaluate fish screens at the Alameda Creek Diversion Dam although on November 22, 2005, the California Department of Fish and Game provided the Planning Department and SFPUC with comments on the Notice of Preparation of an EIR that indicated that fish screens would be required at the Alameda Creek Diversion Dam per Fish and Game Code Section 6100. Instead, the DEIR indicates that there are ongoing impacts associated with fish entrainment in diversions from Alameda Creek. The lack of fish screens at the Alameda Creek Diversion Dam causes ongoing impacts to beneficial uses, and support installation of fish screens designed to minimize impacts from entrainment and impingement at the Alameda Creek Diversion Dam. Therefore, we recommend revising the DEIR to include an evaluation of the impacts and benefits of adding fish screens to the Alameda Creek Diversion Dam.

Comment on Sluicing Operations at the Alameda Creek Diversion Dam

The text on pages 4.6-33 and 4.6-46 indicates that the SFPUC discharges about 900 cubic yards per year of sediment accumulated behind the Alameda Creek Diversion Dam. While keeping the sediments in Alameda Creek helps minimize geomorphic impacts of operating the Alameda Creek Diversion Dam, releasing this sediment through sluice gates once per year has the potential to impact the water quality and beneficial uses downstream of this discharge. In addition, the SFPUC could be violating the Basin Plan if these discharges cause the following Water Quality Objectives (WQOs) to be exceeded:

- **TDS in the Alameda Creek Watershed above Niles:**

- 250 milligrams per liter (mg/l) (90 day-arithmetic mean)
- 360 mg/l (90 day-90th percentile)
- 500 mg/l (daily maximum)
- **Sediment:** The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
- **Settleable Material:** Waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses.
- **Suspended Material:** Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
- **Turbidity:** Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.

Adverse effects on beneficial uses could include, but are not limited to, covering spawning beds and benthic macroinvertebrate habitat with excessive sediment, irritating fish gills with increased suspended sediment, and reducing foraging opportunities for fish and wildlife by decreasing water clarity.

As a result, the SFPUC should evaluate whether current sluicing operations are impacting beneficial uses by causing WQOs to be exceeded. If beneficial uses are being impacted, the SFPUC should modify their sluicing operations to prevent further impacts. Operational modifications that may be necessary include increasing the frequency in which sediment is sluiced from behind the dam, changing the frequency and duration of water diversions, or revising the method for managing sediment behind the Alameda Creek Diversion Dam.

Comment on the Hydrology Impact Evaluation in the Primary Project Area

The hydrology impact evaluation focuses primarily on peak flows (10+ year storm events), and as a result, under values the importance of intermediate flows. According to Luna Leopold's effective work concept, particularly as modified by GeoSyntech's recent work on creeks in the South San Francisco Bay Watersheds (GeoSyntech 2002), relatively frequent moderate stream flows cumulatively transport a larger proportion of total sediment load than large peak flows, and control channel stability, or instability. In addition, peak flows are less likely to be impacted because they typically occur in extremely wet years when fewer diversions from Alameda Creek would be needed to fill Calaveras Reservoir. As a result, the DEIR should be revised to include an evaluation of impacts resulting from modification or elimination of intermediate flows below the Alameda Creek Diversion Dam (i.e., flows between 50 cfs and 700 cfs).

Reference

GeoSyntec Consultants. 2002. Hydromodification Management Plan Literature Review, Santa Clara Valley Urban Runoff Pollution Prevention Program.

Comment on the Hydrology Impact Evaluation for Alameda Creek below the Confluence with Arroyo de la Laguna

The hydrology impact evaluation for Alameda Creek below the confluence of Arroyo de la Laguna is oversimplified, and as a result, undervalues the importance of seasonal flows from the Upper Alameda Creek Watershed.

First, the text indicates the flow model used in the evaluation includes flow reductions as a result of the recapture facility although the recapture facility is not part of the Calaveras Dam Replacement Project. The rationale for this was that the effect of the recapture facility could not be separated from the model. It is unclear to us why a single parameter in the model could not be removed to provide a clear understanding of impacts from the Calaveras Dam Replacement Project, especially when the text on page 4.6-61 and 4.6-62 indicate that not only can parameters in the model be revised or added but the parameters in the model were in fact revised for the analysis of impacts associated with the Calaveras Dam Replacement Project as well as to refine the model based on new information. We recommend removing parameters that confound interpretation of the models output, and revising the hydrology impact evaluation in the DEIR based on interpretation of model results that do not include the recapture facility.

Second, the text indicates that the Calaveras Dam Replacement Project will only affect about one-third of stream flow in Alameda Creek at the Niles gage. While this is true based on average annual flow estimate, it is not true when you consider seasonal variations in contributions to flow in the reach below the confluence of Arroyo de Laguna and Alameda Creek. For instance, the flow contributions from Upper Alameda Creek Watershed to Lower Alameda Creek is 40 percent in January, 44 percent in March, 45 percent in April, 59 percent in May, and 39 percent in June (EDAW and Turnstone Consulting Joint Venture 2009). As a result, the DEIR should be revised to evaluate hydrologic impacts to Lower Alameda Creek based on seasonal variations on flow contribution from the Upper Alameda Creek Watershed.

Reference

EDAW and Turnstone Consulting Joint Venture. 2009. *Biological Assessment/Essential Fish Habitat Assessment for Calaveras Dam Replacement Project*. September.

Comment on Water Quality Objective for Asbestos

The text on pages 4.7-48 and 4.7-58 of the DEIR incorrectly states that the Basin Plan does not have a water quality objective for asbestos. [Section 3.3.22](#) and [Table 3.5](#) of the Basin Plan incorporates the maximum contaminant levels (MCLs) and secondary MCLs specified in Title 22, Section 64431 of the California Code of Regulations as water quality objectives for Municipal Supply. The text will, therefore, need to be revised to indicate that the water quality

objective for asbestos in the Basin Plan is based on the MCL for asbestos and is currently 7 million fibers per liter.

Comments on Copper Applications in Calaveras Reservoir

The text on page 4.7-6 of the DEIR indicates that from 1987 through 2005, the SFPUC applied 174,050 pounds (or 87 tons) of copper sulfate to Calaveras Reservoir to control algal blooms. However, copper has not been needed to control algae since implementation of alternative control measures (e.g., the hypolimnetic oxygenation system) in 2005. Aqueous copper is known to be highly toxic causing mortality, avoidance behavior, condensed growth, decreased sensory perception, and altered metabolism in to aquatic organisms, including juvenile salmonids (Eisler 1998; Baldwin and others 2003). In addition, most of the copper in herbicide applications is deposited in sediments in the reservoir, where it has the potential to degrade benthic communities (Siemering and others 2008). Despite the recent success of alternative methods to control copper in Calaveras Reservoir and the potential to discharge copper in flow releases meant to support fish downstream of the reservoir, the text indicates that the SFPUC may continue to use copper-based herbicides to control algal blooms in the future. We acknowledge and appreciate that the SFPUC plans to continue use of the hypolimnetic oxygenation system to reduce nutrient levels and prevent algal blooms, thereby reducing the use of copper-based herbicides. However, we encourage the SFPUC to seek other less toxic algae control alternatives that compliment the hypolimnetic oxygenation system, so copper-based herbicide applications can be avoided in the future.

The text in the DEIR also indicates that dredging for the barge option may impact water quality by increasing turbidity in the reservoir, but fails to evaluate potential impacts associated with remobilizing copper from sediment into the water column as a result of dredging. The EIR should include an evaluation of potential impacts associated with disturbance of reservoir sediments containing potentially toxic copper concentrations. If significant impacts are identified, the EIR should then identify mitigation measures to reduce impacts to less-than-significant, such as screening and to determine whether sediments need to be disposed of off-site.

References

- Baldwin, D.H., J.F. Sandahl, J.S. Labenia, and N.L. Scholz. 2003. Sublethal Effects of Copper on Coho Salmon: Impacts on Nonoverlapping Receptor Pathways in the Peripheral Olfactory Nervous System. *Environmental Toxicology and Chemistry*, Vol. 22:10.
- Eisler, R. 1998. *Copper Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review*. U.S. Geological Survey, Biological Resources Division, Biological Science Report USGS/BRD/BSR—1997-0002, Contaminant Hazards Reviews Report No. 33.
- Siemering, G.S., J.D. Hayworth, and B.K. Greenfield. 2008. Assessment of Potential Aquatic Herbicide Impacts to California Aquatic Ecosystems. *Archives of Environmental Contamination and Toxicology*, Vol. 55:3.

Comments on Vegetation and Wildlife Mitigation Measures

We acknowledge and appreciate mitigation measures specified in Section 5.4 of the DEIR and would like to emphasize that these measures need to be implemented throughout the project to protect water quality.

Comment on Pre-Construction Workers Education Program

The text on page 5-2 indicates that workers will be educated on the importance of avoiding harm to special-status species and sensitive natural communities. Topics of discussion will include the importance of maintaining speed limits and respecting exclusion zones. We recommend adding a discussion of the importance of proper waste management to the education program, especially during construction of temporary stream crossings and removal of vegetation. This will help ensure that trees, shrubs, debris, soils, or construction materials will not be inadvertently placed below the ordinary high-water mark of any streams, drainages, ponds, wetlands, riparian areas, and Calaveras Reservoir (i.e., any waterway).

Comment on Construction Measures for Streams and Drainages

We also recommend that the text describing bank stabilization measures on page 5-8 be revised to indicate that all erosion control materials shall be free of plastic monofilament and nylon wire because erosion control blankets and mats backed with plastic and nylon netting are known to entrap and injure amphibians and snakes (Barton and Kinkead 2005).

References

Barton, C., and K. Kinkead. 2005. Do Erosion Control and Snakes Mesh?. *Journal of Soil and Water Conservation*, Vol. 60:2.

Comment on Construction Measures for Vegetation Removal

The text on page 5-8 indicates that trees, shrubs, debris, soils, or construction materials inadvertently deposited below the ordinary high-water mark of any streams, drainages, ponds, wetlands, riparian areas, and Calaveras Reservoir shall be removed and placed at least 10 feet back from any waterway. Placing cleared vegetation matter, debris, soils, or construction materials 10 feet from waterways is unacceptable because this material will likely wash into the waterway during storm events. Therefore, the text should be revised as follows:

Vegetation Removal. During construction, implement measures to catch any trees, shrubs, debris, soils, or construction materials created by or used in vegetation removal before they can enter any waterway. Immediately remove trees, shrubs, debris, soils, or construction materials that are inadvertently deposited below the ordinary high-water mark of any streams, drainages, ponds, wetlands, riparian areas, and Calaveras Reservoir in a manner that minimizes disturbance of the drainage bed and bank (e.g., manually). Such materials will be set back at least 10 feet from Calaveras Reservoir and from streams, drainages, ponds, wetlands, and riparian areas

that are not otherwise directly disturbed by construction placed either in soil stock piles or an appropriately managed waste collection container until the materials can be properly disposed of.

Please also note that it may be possible to beneficially reuse tree and shrub materials for erosion control by using them to create wood mulch or brush layering.

Comment on Habitat Restoration Measures

The text on page 5-9 of the DEIR indicates that wetlands, creeks, and riparian areas that are temporarily impacted will be restored within three years of project completion. Restoring riparian areas dominated by slow growing tree species, such as oaks, will require more than three years. Therefore, oak riparian woodlands and other riparian sites dominated by slow growing species will have greater temporal losses in function and require greater compensatory mitigation than wetlands and riparian sites dominated by fast growing species, such as willows. Lastly, replanting and grading activities to restore temporarily impacted wetlands, creeks, and riparian areas should be completed within one year of project completion to avoid even greater temporal losses in function.

Comment on Compensatory Mitigation Areas and Measures

The text on pages 4.4-73 and 4.4-74 of the DEIR provide brief descriptions of the proposed mitigation areas, and the text on page 5-10 indicates that these areas will be used to compensate for the temporal, long-term, and permanent losses of wetlands, streams, and riparian areas, functions, and services. Although the compensatory mitigation areas include streams and riparian areas, they do not include perennial streams or riparian areas adjacent to perennial streams. Therefore, impacts to the acres, linear feet, functions, and services of perennial streams will be compensated with restoring and enhancing streams and riparian areas associated with streams that are intermittent and ephemeral. This will result in out-of-kind mitigation because the functions and services of intermittent and ephemeral streams are different from the functions and services provided by perennial streams. Please note that this will increase the amount of mitigation required by the Water Board.

Comment on Impacts of Implementing the Proposed Mitigation

The text on page 5-12 of the DEIR indicates that plans to control invasive plant and animal species will be prepared and included in the mitigation work plan. Based on review of past mitigation and monitoring plans, invasive plant and animal control will include use of herbicides and pesticides. However, potential adverse effects associated with the use of herbicides and pesticides are not identified as impacts resulting from implementing the proposed mitigation. The DEIR should be revised to evaluate the potential impacts from herbicides and pesticides used to control invasive plants and animals. Any significant impacts from herbicides and pesticides should then be mitigated for by requiring that integrated pest management techniques

that incorporate alternative control strategies, such as grazing management, to minimize herbicide and pesticide use to the maximum extent practicable.

Comment on Water Quality Mitigation

We appreciate inclusion of an off-site erosion control project within the Alameda Creek Watershed as a mitigation measure to offset potential impacts to water quality from a 10-year storm event causing the combined volume of stormwater and dewatered groundwater to exceed the capacity of the detention and treatment system. We also acknowledge the space limitations that preclude construction of a detention and treatment system with a larger capacity. However, the text should make it clear that all the other mitigation measures to protect water quality from stormwater impacts must be implemented before the Water Board will consider off-site mitigation.

In addition, the off-site mitigation should be identified prior the impacts occurring even though the probability of this storm event occurring is low (10 percent in any given year). The off-site mitigation project needs to be identified prior to impacts, so it can be implemented as quickly as possible after the impact occurs. The text should be revised to include identification of an off-site mitigation project for storm water impacts contingent upon a 10-year storm event resulting in the release of untreated water from runoff and dewatering activities.

Closing

Please contact Xavier Fernandez at 510-622-5685 or xafernandez@waterboards.ca.gov with any questions or comments.

Sincerely,



William B. Hurley
Senior Engineer

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