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Bill Wycko, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103
Fax: (415) 558-6409
E-mail: bill.wycko@sfgov.org; chris.kern@sfgov.org.

Robert Smith
Regulatory Division
U.S. Army Corps of Engineers
1455 Market Street
San Francisco, CA 94103
E-mail: Robert.F.Smith@usace.army.mil

Comments on the Calaveras Dam Replacement Project

The following comments are submitted in support of and in addition to those made on December 18 and 21, 2009 by the Alameda Creek Alliance (ACA) and the Center for Biological Diversity (CBD) on the Draft Environmental Impact Report (DEIR) and on the U.S. Army Corps of Engineers Project Notice for the San Francisco Public Utilities Commission (SFPUC) Calaveras Dam Replacement Project (CDRP) in the Alameda Creek watershed. My expert comments are based on my education, certifications, and 25 years of experience as a professional fisheries biologist, as well as my personal local experience with the Alameda Creek Watershed in the past, acquired as the Inland Fisheries Supervisor for Alameda County in prior service with the California Department of Fish and Game's Central Coast Region from 2001 through 2006. In the latter role I participated in the Alameda Creek Fisheries Restoration Workgroup (ACFRWG), and also participated in multiple watershed tours that included all of the water resources facilities and most of the watersheds discussed in the DEIR. I wish to formally state my concurrence with all of the technical criticisms submitted by the ACA/CBD on Chapters 4.5 - Fisheries and Aquatic Habitat, and 4.6- Hydrology of the DEIR, as well as make the following additional points.

The DEIR incorrectly states in Chapter 4.5, Section 4.5.2.3, pages 66 - 70 that the operation of the Alameda Creek Diversion Dam (ACDD) is not currently, has not in the past, and will not in the future have any effect on the abundance of the resident rainbow trout populations above or below the ACDD. The only evidence stated to substantiate this illogical conclusion is a personal communication with one ichthyologist, which does not fully elucidate the logic behind that expert's opinion, nor is the expert's opinion supported by any hydraulic modeling or technical analysis of evidentiary data collected on site. In fact the DEIR should state that the ACCD is likely having a significant effect on the resident trout population until such a time as a properly designed study can

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conclusively prove that it is not. The DEIR states that the two 40 square foot intakes to

the ACDD's diversion tunnel are capable of diverting 100% of upper Alameda creeks outflow until flows exceed 650 cubic-feet-per-second (CFS). Figure 4.5.3 and other analogous ones elsewhere in the DEIR and supporting technical reports show that this diversion capacity exceeds the natural outflow of Upper Alameda Creek above ACDD the vast majority of each year, and that no other bypass flows are ever released, except during one annual sediment sluicing event.

Clearly as a result of the operation of ACDD, a significant fraction, up to 100%, of any juvenile rainbow trout dispersing downstream will be entrained into the diversion tunnel to Calaveras Reservoir and permanently lost to the sub-population of rainbow trout existing below ACDD, thus depressing the abundance of that sub-population. In any year that the production of juvenile rainbow trout above ACDD exceeds the intrinsic carrying capacity of that habitat, some fraction of the juvenile production will attempt to disburse downstream to avoid intra-specific competition. In doing so they will come under the influence of the unscreened diversion at ACDD that diverts 100% of the creek's flow for most of the year, and be lost from their natal stream system. While juvenile trout will also attempt to move upstream to avoid competition, the DEIR describes stream slope and geomorphologic conditions which will impair juvenile upstream migration in some areas of Upper Alameda creek above the ACDD, thus most juvenile redistribution to avoid competition in years of abundant/surplus juvenile production will likely occur in a downstream direction.

Additionally, if the population above ACDD that the DEIR assumes to be solely resident rainbow trout is in fact landlocked anadromous rainbow trout, a.k.a. steelhead¹, then the operation of the unscreened diversion at ACDD is also depressing the abundance of the landlocked steelhead population above ACCD, and likely preventing its achieving the optimal population level that could be sustained by the available habitat. Since ACDD diverts 100% of Upper Alameda Creeks outflow most of the time, any juvenile pre-smolts/smolts currently produced by he landlocked population in the upper watershed that are attempting to disburse downstream towards the ocean will instead be permanently lost to diversion into Calaveras Reservoir. Even after flows reaching ACDD exceed 650 CFS a small fraction of the year, allowing some spill, there will continue to be proportional loss of out-migrant juvenile steelhead to the diversion at ACDD. Once all of the other remaining partial or near complete barriers to adult steelhead immigration below ACDD are addressed, and even if passage is provided at ACDD, the diversion at ACDD is likely to cause the loss of the majority of the smolt production above ACDD, due to the unscreened diversion of the majority of the creek's outflow into Calaveras Reservoir.

If the SFPUC wishes to make a substantive argument that the unscreened diversion at

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ACDD has only a partial or minimal effect on out-migrant juvenile trout or steelhead smolts under some flow conditions, then the DEIR will have to add an evaluation and discussion of the proportion of diverted flows in each water year type that occur at

¹ this is likely the case based upon Nielsen 2003, as well as observations by SFPUC staff, consultants, and others of adfluvial rainbow trout migrating into streams above Calaveras and San Antonio Reservoirs.

velocities well below the documented swimming abilities of juvenile trout and steelhead smolts. Clearly diversions of 100% of stream flow at between 400-650 CFS being entrained into an 80 square-foot intake will produce velocities of 5.0 - 8.13 feet-per second that will unavoidably entrain juvenile rainbow trout or steelhead. Since the ACDD is a passive gravity fed diversion, regulated by the size of the openings to the two, 40 square foot sluice gates, even as little as a 100 CFS diversion through a potential opening of only approximately 13 square feet (crudely estimated as a linear interpolation of 100 cfs/650 cfs capacity x 80 square feet of sluice gate), may still result in entrainment velocities of 7.69 feet per second. Thus it is likely, until conclusively proven otherwise, that the operation of the ACDD diverting 100% of upper Alameda Creeks's stream flow at almost any absolute diversion rate below 650 CFS is entraining the vast majority, if not 100% of the downstream migrant, juvenile rainbow trout or emigrant steelhead smolts/pre-smolts that reach the vicinity of the intake to the diversion tunnel.

The DEIR and its supporting technical reports need to better evaluate the flows needed for immigration passage and spawning by adult steelhead, and rearing by juvenile steelhead in the watershed between the BART Weir and ACDD, Calaveras, and San Antonio Reservoirs. The Instream Flow Incremental Methodology evaluations conducted by Hagar and Paine appear to cease at Welch Creek², thus there is inadequate information provided to determine whether all life stages of steelhead will have adequate flows for upstream passage, spawning, and rearing in the 'Extended Study Area', once instream barriers to passage are corrected in the near future. CEQA requires the DEIR to evaluate and account for the project's interaction with foreseeable events. Fish passage improvements below the project area are foreseeable, with a high probability of completion, so their consequences to the bypass flows required of the project in the near future should be included in the DEIR.

The DEIR fails to evaluate the ongoing and cumulative impacts of ACDD, Calaveras Reservoir/Dam and San Antonio Reservoir/Turner Dam degrading the habitat below each facility due to a) their impeding the natural sediment and bed-load transport necessary to maintain adequate quantity and quality of spawning gravels for rainbow trout or steelhead; and b) large woody debris necessary to form complex instream habitat and channel scouring structures forming natural pools. These cumulative negative impacts contribute to the consultants' ratings of the relative value of the habitat below the three dams, and thus those ratings do not fully represent the real unimpaired natural conditions and carrying capacity of a properly functioning watercourse. The impairment of downstream habitat by the cumulative impacts of ongoing SFPUC operations should be properly acknowledged and evaluated in the DEIR.

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The DEIR should fully elucidate in Chapter 4.6 - Hydrology the proportion of unimpaired flows that would have been historically generated in lower Alameda Creek, a.k.a. the 'Extended Study Area', from both the middle and upper Alameda Creek Watershed containing SFPUC's reservoirs and the specific Project Area, vs. the Arroyo de la Laguna/Arroyo Mocho watershed to the north, in order to define the proportional

² Welch Creek is a tributary to Alameda Creek below Calaveras Creek but upstream of San Antonio Creek.

responsibility of the SFPUC for bypass flow releases to sustain the aquatic habitat below the confluence with the Arroyo de la Laguna. The DEIR avoids these evaluations on the flawed assumption that Arroyo de la Laguna/Arroyo Mocho Watershed contributes an unspecified, yet large enough fraction of flows to lower Alameda Creek to negate in any way the responsibility of the SFPUC for sustaining minimum flows in this area. In fact the opposite may be true. The SFPUC is responsible for maintaining flows below the Arroyo de la Laguna in proportion to the natural/unimpaired flows that would have accrued from the proportion of the Alameda Creek Watershed affected by SFPUC operations. In my experience³ the portion of the Alameda Creek Watershed containing the SFPUC's facilities would contribute most of the natural unimpaired flow, except during the high flow season, and does contribute much of the existing flow in Alameda Creek below the Arroyo de la Laguna, as although it is a smaller watershed in square miles, it is a wetter one producing a greater proportion of the natural unimpaired outflow. The DEIR would have to include such discussions of the proportional contribution of the middle and upper Alameda Creek Watershed to flows in the lower watershed, versus the contributions of Arroyo de la Laguna/Arroyo Mocho Watershed, in order for the DEIR to validly quantify the responsibilities of the SFPUC for maintaining base flows in the lower Alameda Creek drainage. This is necessary to comply with Fish & Game Code 5937, to protect public trust values, and to comply with State water rights law and precedent.

Since Chapter 4.6 is a technical analysis of hydrology being presented in a legal public proceeding, according to the State Business and Professions Code either it or its substantiating technical reports must be prepared by Certified Hydrogeologist, and his/her registration number and name(s) must appear as part of any report(s). Please provide that information in the FEIR.

Sincerely,

Kevan Urquhart, M.A.
Certified Fisheries Professional - American Fisheries Society
Member of the American Institute of Fishery Research Biologists
P.O. Box 2612
Carmel-by-the-Sea, CA 93921-2612

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³ based on visits to the watershed and briefings from SFPUC staff or their consultants made to the ACFRW.