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SANTA BARBARA • SANTA CRUZ

FAX (805) 893-4724
Telephone (805) 893-4508
Cell: (805) 574-9626
scooper@lifesci.ucsb.edu

SCOTT D. COOPER
DEPT. OF ECOLOGY, EVOLUTION, & MARINE BIOLOGY
UNIVERSITY OF CALIFORNIA
SANTA BARBARA, CALIFORNIA 93106
USA

March 10, 2010

To: Mr. Darryl Buxton, Project Manager, US Army Corps of Engineers
Mr. Jeff Pratt, Director, Ventura County Public Works Agency

Re: Comments on US Army Corps of Engineers Proposal to Permanently Sequester Fine Sediments in Matilija Canyon

My name is Scott Cooper and I have been a professor of freshwater ecology at the University of California – Santa Barbara for over 30 years; have published over 70 scientific papers, book chapters, and technical reports, primarily on the ecology of streams and rivers in California; have taught both basic and advanced courses on many aspects of aquatic biology and freshwater ecology; and have served in a variety of administrative capacities, including as Department Chair, Academic Dean, and Director of UCSB's Natural Reserve System. My graduate students, postdoctoral associates, and I have conducted a variety of research projects in the Ventura River and its tributaries, including a recent study for the Los Angeles Regional Water Quality Control Board on nutrient loading and nuisance algal blooms. Further, my research group and I have conducted many studies on steelhead/rainbow trout, invasive species (e.g., crayfish, mud snails), and native invertebrates in southern California streams.

I have followed the plans for removing the Matilija Dam with interest for many years, and applaud your efforts to bring these plans to fruition because they will help restore the Ventura River ecosystem, enhance natural sediment transport processes, replenish beach sands, and create additional recreational opportunities for California's citizens. I also viewed the preferred alternative, 4b, outlined in the FEIR/FEIS for this project as an important step forward because it met the goals of the Matilija Dam Removal Project by integrating the input of numerous experts and stakeholders over many years. It is for the same reasons that I view the new proposal for the permanent upstream storage of fine sediments trapped behind the dam with alarm, because it usurps due process for determining the best alternatives for removing the dam and dealing with trapped sediments, contradicts the goals of the project, contains insufficient detail to allow a

rigorous assessment, and undermines many years of consultative efforts among lead agencies and stakeholders. Most importantly, however, the proposed sediment disposal plan is so radically different from the alternatives considered to date, and will have significantly increased impacts and significant new impacts compared to those identified in the FEIR/FEIS, that the only rational, reasonable process, if the proposal is to move forward, is to develop and file a new additional or supplemental EIR/EIS that will describe the project in detail and provide a clear analysis of its impacts.

Instead of slurrying fine sediments from the dam area to temporary downstream, floodplain sites where they will eventually erode and be transported to the ocean, as outlined under Alternative 4b, the new plan will store fine sediments permanently at upstream sites; destroy important, pristine woodland, riparian, and stream habitats; channelize the creek; introduce hardscape to riparian areas; preclude the re-establishment of native vegetation; and have negative recreational and aesthetic impacts. To some degree, the plan uses techniques commonly applied in highly-disturbed urban areas, techniques which are totally inappropriate for the pristine storage sites upstream from the dam. As a consequence, the proposed plan would contradict most of the goals of the dam removal project and would create new and significantly increased environmental impacts compared to the alternatives considered in the FEIR/FEIS. I deal with each of these changes and impacts below.

Sediment storage and transport. Since Matilija Dam was constructed in 1947, it has blocked nearly 6 million cubic yards of sediment from reaching the ocean, sediment which would have replenished beaches. Under the FEIR/FEIS for the dam removal project, preferred Alternative 4b calls for the slurrying of 2.1 million cubic yards of fine sediment to downstream, floodplain sites, where these deposits would eventually be eroded and transported to the ocean. I favored this alternative because it mimicked, to a large degree, natural sediment erosion, transport, and deposition processes, transporting fine sediments to natural depositional areas and allowing the sediments accumulated behind the dam for over 60 years to reach the ocean. The proposed plan, however, goes in exactly the wrong direction, that is upstream, violating any known natural processes for sediment erosion, transport, and deposition. Further, because these fine sediment deposits will be maintained permanently in these upstream storage sites, accumulated sediments will not be transported to the ocean and therefore not contribute to the replenishment of beaches.

A second problem with the new sediment storage plan is that the upstream storage sites are located in a narrow, steep canyon and that Matilija Creek, like many other southern California streams, is extremely dynamic, showing huge fluctuations in discharge over the years. During the initial phases of this project, the drying, transport, and placement of sediments will undoubtedly result in the introduction of fine sediments into the stream. After the storage sites are filled and stabilized, the storage sites will impinge on the stream's bankfull contours and will undoubtedly be impacted by stream flows during high discharge events. Although coarse sediments will be placed on top of fine sediments at the storage sites, and storage site slopes will be protected by soil cement, there is no guarantee that this configuration will withstand large, violent floods

in this steep terrain, potentially leading to mass failure of the storage sites and the introduction of massive amounts of sediment into the stream which, in extreme cases, could lead to channel blockage and to severe impacts on downstream structures, such as the Robles Diversion Dam and its Casitas intake. Even if large floods do not undermine the storage sites, they will undoubtedly erode some of the sediments from such sites and sediments could be introduced into the stream from storage sites themselves via direct erosion. Finally, by constricting the river's floodplain, the storage sites will increase stream flows through the narrowed stream channel, causing increased downcutting and possibly leading to stream incision, depending on the depth of the bedrock, further exacerbating the disconnections between the stream and its floodplain. In short, the numerous effects of the proposed sediment storage plan will violate many of the overall dam removal project goals by preventing the re-establishment of natural geomorphological and sediment transport processes, creating new and significantly increased impacts compared to those identified in the FEIR/FEIS.

The introduction of large amounts of sediment into the stream, whether through storage site failure or more moderate erosion, will have numerous impacts on the riparian and aquatic biota through the smothering of streamside and bottom substrata with attendant effects on oxygen penetration into these substrata. The basal food resources for streams, such as organic matter and algae, will be covered by sediments, preventing their use by consumers, such as aquatic invertebrates, which form a major component of the food base for fish. The lack of oxygen penetration in deposited fine sediments and abrasion by sediments during high flow events will increase the mortality rates and decrease the densities of aquatic invertebrates and fish, including steelhead eggs, fry, and juveniles. Suspended sediment also will clog the gills of fish and aquatic invertebrates, and decrease visibility for visual predators, such as steelhead. Further, by filling in pools and coating bottom substrata, excessive sediment loading will decrease the diversity and heterogeneity of habitats, including critical habitats such as pools for steelhead resting and feeding, engendering a more uniform stream bottom and geomorphology. By increasing current velocities and increasing downcutting, channelization of Matilija Creek will also decrease habitat diversity, making a more homogeneous habitat with lower diversities and densities of invertebrates and fish, as well as abrade, dislodge, and wash out organisms during high flow events.

Loss of habitat. The proposed sediment storage plan will have numerous negative effects on upland, riparian, and stream habitats with many attendant effects on the organisms which use these habitats. Because streams and riparian zones are greatly affected by any processes in their watersheds, the additional loss of upland habitats, such as oak woodlands, at sediment storage sites can have many effects on native plants and wildlife, and can inhibit wildlife migration. These effects will be quite severe as sediment storage sites are filled, because construction, noise, and dust will inhibit wildlife use of these areas as habitat or as migration corridors and the sediment storage sites will likely have large long-term impacts on native plants and wildlife because storage sites will cover or replace native vegetation and be maintained in perpetuity. The maintenance of these sediment spoils will also have many of the same impacts as

storage site construction, including the permanent loss of native vegetation and barriers to wildlife migration.

Of particular concern, however, is the impacts of the construction and maintenance of these storage sites on riparian and stream habitats. The proposed plan will destroy additional areas of rare, sensitive riparian habitat, such as mixed riparian tributaries, with repercussions for the rich communities that they support, including listed species, such as the California red-legged frog and least Bell's vireo, and species of concern, such as the two-striped garter snake and southwestern pond turtle. Further, the destruction of upland and riparian vegetation at the storage sites will cause increased erosion and increased sediment inputs to streams, with many repercussions for the stream biota, as outlined above. Although soil cement will be placed on storage site slopes, the soil cement is placed there to prevent erosion and undermining by Matilija Creek, but will not prevent the overland transport of water and sediment from disturbed upland and riparian sites to the creek. Not only will the construction of the sediment storage sites destroy native vegetation and habitat, they will cover areas that could have become important riparian and stream habitat for native biodiversity and sensitive species.

The destruction of oak woodland and riparian habitat also will preclude inputs of upland and riparian material, such as leaf litter, into the creek. This may become important because riparian inputs of organic matter form an important basal food resource for the creek's food web. Further, riparian vegetation stabilizes banks, provides food resources, produces woody debris that can be an important source of cover for fish, increases habitat heterogeneity, and shades streams, thereby lowering temperatures and increasing oxygen levels, all of which may be critical for the survival of some aquatic invertebrates and vertebrates, such as the steelhead.

Although the proposed plan includes an analysis of the impacts of the proposed plan and Alternative 4b on the amount of area covered by different habitats, it does not consider habitat quality considerations in these assessments. Under Alternative 4b, fine sediments will be deposited temporarily in downstream floodplain areas which have intermittent flows and which, in many cases, have already been degraded by human activity. On the other hand, the proposed plan will destroy relatively pristine habitat and resources in upstream areas with perennial stream flows, areas which have far higher aesthetic, ecological, and natural resource values. As a consequence, the proposed plan has new, significantly increased impacts on environmental resources, over and above those identified in the FEIR/FEIS.

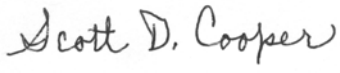
Channelization and the introduction of hardscape. By covering parts of the existing river bottom with sediment spoils and permanently stabilizing sediment storage site slopes with soil cement, the proposed plan, in effect, will narrow the Matilija Creek channel and preclude the re-establishment of native vegetation on sediment spoil slopes, depriving stream communities of riparian shading, inputs, stabilization, and cover. This channelization of Matilija Creek will prevent the re-establishment of natural stream geomorphology, such as stream pools and meanders, and sediment transport

processes, and will decrease habitat heterogeneity, decreasing faunal diversity and reducing the densities of sensitive species, such as steelhead. The maintenance of hardscape, such as soil cement, will prevent the re-establishment of native vegetation with attendant effects on the organisms which use this habitat, as well as preclude the natural pools, routing, and transport or migration of organisms, sediment, and organic matter. Rip-rap, which may be used to stabilize stream banks next to Matilija Canyon Road, will have many of the same effects as soil cement in introducing hardscape, reducing habitat heterogeneity, and effecting stream channelization. In essence, then, stream channelization and the introduction and maintenance of hardscape will have numerous negative impacts on riparian and stream habitats and their organisms. Although such stream channelization and hardscape may be appropriate in urban streams, they are certainly not appropriate in pristine, wildland areas and will greatly degrade the environmental quality of these areas.

As a scientist, I also am concerned with the lack of quantitative analyses in the proposed plan, including the exact dimensions of spoils, possible revegetation plans, and forecasted effects on stream and floodplain sediment and flow dynamics, stream geomorphology, and native biodiversity, all based on appropriate modeling efforts. Following the old adages that “you should look before you leap” or “an ounce of prevention is worth a pound of cure” (the Matilija Dam being a case in point), it would seem that much more precise and concrete information and predictions are needed before any plans can proceed.

In summary, the goals of the overall Matilija Dam removal project are to re-establish natural sediment transport processes, facilitate beach sand replenishment, restore natural migration corridors for steelhead and wildlife, re-establish and protect native habitats and species, including sensitive species, enhance aesthetic values, and create recreational opportunities. The proposed sediment storage plan contradicts nearly every one of these goals and represents an alternative that has the potential for great environmental harm. Further, as commercial vendors are fond of saying, “Location, location, location” is all important and the proposed plan will have much greater impacts on pristine, wilderness areas than any of the alternatives proposed in the FEIR/FEIS. Because the proposed plan is radically different from the alternatives considered to date and will result in significantly new and increased impacts on the environment, this plan must be subjected to additional environmental impact analysis if it is to move forward.

Sincerely,



Dr. Scott D. Cooper, Professor
Dept. of Ecology, Evolution, and Marine Biology
University of California - Santa Barbara
FAX: 805-893-4724; Phone:805-574-9626
Email: scooper@lifesci.ucsb.edu