



State of California – Natural Resources Agency
 DEPARTMENT OF FISH AND WILDLIFE
 Northern Region
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GAVIN NEWSOM, Governor
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October 5, 2020

David Brick
 Bureau of Reclamation
 CGB-152
 2800 Cottage Way
 Sacramento, CA 95825

Subject: Review of the Supplemental Draft Environmental Impact Statement for the Shasta Lake Water Resources Investigation EIS and Feasibility Report Project, Shasta County

Dear David Brick:

The California Department of Fish and Wildlife (Department) has reviewed the Supplemental Draft Environmental Impact Statement (SDEIS) dated July 2020, for the above-referenced project (Project).

As a trustee for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, botanical resources, and their habitat. (Fish & G. Code, §§ 711.7, 1802.) The Department also offers the following comments and recommendations on this Project in our role as a trustee agency pursuant to the California Environmental Quality Act, Public Resources Code section 21000 et seq.

The Department has been involved in this Project since 2000 and has commented on previous iterations of this Project via several letters to the U.S. Bureau of Reclamation (Reclamation) and others as required as the State's trustee for natural resources and consistent with Public Resources Code section 5093.542.

January 31, 2007	Subject: Comments on Request for Review and Comment of the Draft Plan Formulation Report
November 7, 2008	Subject: Comments on the Administrative Draft of the Environmental Impact Statement and Environmental Impact Report, Feasibility Report, and Appendices
January 21, 2010	Subject: Comments on Request for Review and Comment of the Draft Interim Report, December 2009
August 16, 2010	Subject: Comments on Request for Review and Comment of the Reservoir Tributary Fishery Characterization Draft Work Plan, July 2010
April 12, 2011	Subject: Comments on the Second Administrative Draft of the Environmental Impact Statement, Feasibility Report and Fisheries and Geology Appendices for the Shasta Lake Water Resources Investigation
September 9, 2011	Subject: Comments on Request for Review and Comment of the Reservoir Tributary Fishery Characterization Second Draft Work Plan, July 2011
February 8, 2013	Subject: Comments on the Public Draft of the Feasibility

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	Report and Selected Attachments for the Shasta Lake Water Resources Investigation
April 8, 2013	Subject: Comments on the 2013 Administrative Draft of the Environmental Impact Statement and selected Technical Reports
September 30, 2013	Subject: Comments of the Draft Environmental Impact Statement and Proposed Shasta Dam Enlargement Project/Shasta Lake Water Resources Investigation
February 13, 2015	Subject: California Department of Fish and Wildlife Comments on the U.S. Department of Interior, U.S. Fish and Wildlife Service, Fish and Wildlife Coordination Act Report for the Proposed Shasta Dam Enlargement Project/Shasta Lake Water Resources Investigation
January 14, 2019	Subject: Review of the Initial Study and Notice of Preparation for the Shasta Dam Raise Project, State Clearinghouse Number 2018111058, Shasta and Tehama Counties

Many of the comments and issues made in these letters are still relevant and should be reviewed as part of the SDEIS.

Project Description

As summarized by the Bureau of Reclamation, "*The Shasta Lake Water Resources Investigation evaluates the potential of raising Shasta Dam to increase anadromous fish survival and water supply reliability while additionally increasing flood damage reduction, water quality, hydropower generation, and recreation opportunities. Reclamation previously completed a Final Environmental Impact Statement in July 2015 and a Draft Environmental Impact Statement in July 2013, each of which investigated the potential effects of enlarging Shasta Dam by 6.5 ft, 12.5 ft, and 18.5 ft. Reclamation has prepared a Draft Supplemental Environmental Impact Statement to address new and updated information that has come available since the publication of the Final and Draft Environmental Impact Statements. The draft supplemental includes updated information on the potential impacts of the project to waters of the U.S., a revision of the wild and scenic river considerations for the McCloud River that refocuses on federal requirements, and updated modeling to reflect the operational changes to Shasta Dam in the 2019 Biological Opinions issued by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.*"

Comments and Recommendations

The Department has the following recommendations and comments as they pertain to biological resources.

General Comments

More than 4,000 acres of wildlife habitat would be impacted by raising the dam by 6.5 feet, and more than 5,000 acres of wildlife habitat would be impacted under the proposed alternatives for raising Shasta Dam by 18.5 feet. (USBR, *Final Environmental Impact Statement, Shasta Lake Water Resources Investigation*, Table S-3, see also p. 13-196 (December 2014).) Such an

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enormous loss of public trust resources (fish, wildlife, native plants, and natural vegetation communities) is a substantial loss to the region and to the State. This loss includes direct impacts to species and resources that are listed under state law including Shasta salamander (*Hydromantes shastae*) (State-listed as threatened) and Shasta snow-wreath (*Neviusia cliftonii*) (State candidate as endangered) as well as indirect impacts downstream of the dam to bank swallow (*Riparia riparia*) (State-listed as threatened). In light of those impacts, the Department does not believe that the asserted benefits to fish and water storage capacity discussed in the SDEIS positively impact fish, wildlife, botanical, vegetation communities, and other resource values, for what is modeled as a minimal two percent or less increase of water storage capacity.

The Department finds this project's impacts are in conflict with California Public Resources Code section 5093.542, and the California Fish and Game Commission's designation of the McCloud as a wild trout fishery and therefore recommends eliminating the enlargement of Shasta Dam as a project for potentially increasing water storage capacity.

Wetland Impacts

California lawmakers have identified a public interest in protecting and maintaining the State's wetland and riparian habitats (Fish & G. Code, §§ 1386, 2781). In 1993, Executive Order W-59-93 established a comprehensive wetlands policy for the State that sought no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values. The California Fish and Game Commission also has adopted a non-regulatory Wetlands Resources Policy, which recognizes the habitat values of wetlands and the damage to fish and wildlife resources from projects resulting from net loss of wetland acreage or habitat values (Fish and Game Commission 2020).¹

According to the SDEIS, up to 51 acres of wetlands and 103 acres of waters will be impacted with the raising of the dam. The SDEIS only proposes to mitigate for approximately four acres of impacts related to the relocation of infrastructure, resulting in a significant net loss of wetland habitat.

The SDEIS proposes to mitigate the approximately four acres of wetland impacts at a 3:1 ratio. In order to comply with California's no-net-loss of wetlands policy, the Department recommends that all 154 acres of wetlands and waters of the U.S. and State be mitigated at a minimum 3:1 ratio.

Updated Operations and Modeling Results

Chapter 4 of the SDEIS presents summarized and averaged modeling results without estimates of variance and without any description of the modeling assumptions, project operations, or methodology nor any associated biological modeling analyses. Without this information, the Supplemental Information on Shasta Dam Operations and Modeling of the SDEIS Shasta Lake Water Resources Investigation (SLWRI) cannot adequately evaluate the proposed Project's effects on the Endangered Species Act (ESA) or California Endangered Species Act (CESA) listed species. Notably, the National Marine Fisheries Service (NMFS) 2019 Biological Opinion (BO) page 203 Footnote 8, states, "*The proposed action proposes that operational criteria with the Shasta Dam Raise will be the same as operational criteria for the current dam and*

¹ California Fish and Game Code. (Bender LexisNexis 2020 ed.) California Fish and Game Commission Wetlands Resources Policy (Amended: 08/04/94; 08/18/05), pp. 825-831.

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integrated CVP/SWP operations. Reclamation has advised NMFS that therefore the BA analyses suffice for purposes of consultation. There are no operational scenarios in the BA to evaluate to confirm beneficial or adverse effects of a raised Shasta Dam and NMFS therefore cannot further evaluate the Shasta Dam raise in this opinion.” The Department must make a similar conclusion that there are no clearly defined operations scenarios or documented analyses within the Reclamation 2019 Biological Assessment (BA) or this SDEIS, and the Department therefore cannot further evaluate the Shasta Dam Raise at this time. While the operating criteria for Shasta Dam Raise may remain the same as for the current dam configuration, the actual operations associated with an 18.5-foot dam raise will differ significantly from current operations. Operational criteria and operational scenarios are not synonymous, because the Project may operate to the same criteria while having substantially different impacts to flow, temperature, and other parameters affecting aquatic resources below the dam. It is this difference, between the proposed Project (2019 dam raise scenario) versus no action (2019 baseline scenario), that needs to be analyzed for the Department to evaluate Project effects on aquatic resources below Shasta Dam.

Without detailed operations scenarios it is not clear what was evaluated in the SDEIS. For example, on page 4-6 the SDEIS states, “*The 2019 scenario results in an increase in minimum flows below Keswick Dam throughout the year, with the largest differences seen in June through August. During the winter season at Red Bluff Diversion Dam, total minimum water flows are up to 500 [cubic feet per second (cfs)] greater under the 2019 scenario than under the 2015 scenario. An increase in minimum flows and in the cold-water storage capacity increases water quality within the Sacramento River, providing a benefit for migrating adult Winter-run Chinook Salmon.*” Yet the SDEIS also states on page 4-6 “*Both the 2015 and 2019 scenarios resulted in an increase of Shasta Lake storage on May 1, which would remain beneficial for the temperature management season of May through October in the Sacramento River. Increased storage allows for a larger cold-water storage pool, providing additional cold-water for Winter-run Chinook Salmon spawning and egg incubation and for Central Valley steelhead. Minimum flows below Keswick Dam remain at 3,250 cfs to protect against redd dewatering.*” The Department has concerns with these conflicting statements as well as other incongruous conclusions presented in Chapter 4. Flow cannot be increased throughout the year while simultaneously increasing reservoir storage on May 1. Without any documentation of modeling assumptions, project operations, or methodology, the Department cannot assess how these conclusions were reached. The Department cannot further evaluate beneficial or adverse effects of the Project on ESA (or CESA) listed species below Shasta Dam based on the analysis of only abiotic information provided in the SDEIS without additional biological modeling.

The following observations and recommendations are provided to improve the SDEIS:

- The SDEIS should include a comprehensive description of current and proposed Project operations and a comprehensive list of CalSim II modeling inputs and assumptions, including a thorough description of climate change scenario inputs to CalSim II.
- The SDEIS should document the methodology used to calculate and summarize modeling results for abiotic variables such as temperature. Modeling results that include averages should also include estimates of variance to better evaluate the effect on fisheries resources. Fisheries resources respond to the immediate effects experienced rather than averaged effects over long periods of time. The use of long-term

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summarized averages without variance estimation or documentation of methodology obfuscates the proposed Project's true impacts on fisheries resources.

- The 2015 scenario analyses utilize the USFWS 2008 BO and NMFS 2009 BO operating criteria and these criteria are not appropriate for evaluating Project effects. The Chapter 4 Summary on page 4-7 of the SDEIS states, "*Due to the small magnitude of the differences between the 2019 and the 2015 scenario, Reclamation does not expect to see significantly different impacts to Winter Run Chinook Salmon and Central Valley steelhead than what was presented in the 2015 SLWRI FEIS.*" However, the 2015 biological conclusions are predicated on baseline conditions from 2005 and future conditions in 2030. As previously stated, it is the difference between the proposed Project (2019 dam raise scenario) versus no action (2019 baseline scenario), that needs to be analyzed for the Department to evaluate Project effects on aquatic resources below Shasta Dam. The Department requests that new biological effects modeling be conducted to directly analyze Project effects rather than relying on indirect comparisons of previous biological effects analyses.
- The Department does not consider the 2015 SLWRI analysis to be the best available science or sufficient to analyze the full potential of downstream impacts that could result from the proposed Project. The analysis relies on a single quasi-life cycle model that considers egg-to-juvenile life stages only and does not consider year-over-year impacts supplemented with a qualitative analysis. In particular, while there may be potential to increase reservoir storage that may be beneficial in critical and dry water years, this comes at the expense of reduced flows below Shasta/Keswick dams during normal, above normal, and wet water years. These wetter water years are essential for providing conditions that enhance resilience and recovery of all fish species, particularly listed species and species of special concern that are severely impacted during critical and dry years compounded with extended periods of drought. These potential impacts were not evaluated in the 2015 SLWRI.
- The Department recommends a tiered analyses of biotic and abiotic impacts based on the CalSim II modeling. The most pertinent analyses relating to the potential effects of the Project on downstream aquatic resources include, but are not limited to:

Winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley Spring-run Chinook Salmon (*Oncorhynchus tshawytscha*), Delta Smelt (*Hypomesus transpacificus*), Longfin Smelt (*Spirinchus thaleichthys*):

- Channel Velocity (DSM2-HYDRO)
- Entry into Interior Delta
- Flow Routing into Channel Junctions

Winter-run Chinook salmon and Central Valley Spring-run Chinook Salmon:

- Current Sacramento River Temperature Model
- Martin 2017 Temperature Model
- Through-Delta Survival
- Delta Passage Model

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- Newman 2003 (spring-run only)²
- Perry 2010³
- Perry Survival Model 2017⁴
- Life Cycle Models (CHNWR only)
- Interactive Object-oriented Salmon Simulation (IOS)
- Oncorhynchus Bayesian Analysis (OBAN)
- NMFS Winter Run Life Cycle Model (NMFS WRLCM)

Longfin Smelt:

- Mount 2013⁵ (outflow)

Delta Smelt and Longfin Smelt (habitat related, quantitative/qualitative analyses):

- Migration impedance and lost reproductive opportunity
- Changes in larval transport
- South Delta facilities-entrainment
- Microcystis
- Reduction in transport of food web materials
- Sediment removal and changes in turbidity
- Changes in abiotic habitat (X2)

Expected Cold Water Benefits

The SDEIS states, “Compared to the 2015 scenario with an 18.5-ft raise, the 2019 scenario with an 18.5-ft raise would increase Shasta Lake storage by 2% or less in all water year types for [sic]. Reclamation found the same to be true for a comparison between the 2015 scenario with No Action and the 2019 scenario with No Action. For example, for May 1 storage in dry and critically dry years under the 2015 scenario, the 18.5-ft raise would store 3,689,000 acre-feet of water. Under the 2019 scenario, the 18.5-ft raise would store 3,913,000 acre-feet of water.”

Based on the relationship between temperature compliance, total storage in Shasta Reservoir, and cold water pool volume in the Shasta Reservoir, the 18.5-foot raise would not significantly improve cold-water pool volume or downstream temperature management for salmonid egg and embryo incubation in the Sacramento River downstream of Keswick Dam. Historical relationships suggest that a storage volume of four million acre feet on May 1st generally

² Newman, K. B. Modelling paired release-recovery data in the presence of survival and capture heterogeneity with application to marked juvenile salmon. *Statistical Modelling* 3:157–177 (2003).

³ Perry, R. W., J. R. Skalski, P. L. Brandes, P. T. Sandstrom, A. P. Klimley, A. Ammann, and B. MacFarlane. Estimating survival and migration route probabilities of juvenile Chinook salmon in the Sacramento-San Joaquin River Delta. *North American Journal of Fisheries Management* 30(1):142-156 (2010).

⁴California WaterFix Biological Opinion. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Service Center (NMFS), Long Beach, California. Appendix E. Analysis of UPP using Perry survival model. In California WaterFix Biological Opinion. National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Southwest Fisheries Service Center (NMFS), Long Beach, California (2017). Available at: http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/CAWaterFix/WaterFix%20Biological%20Opinion/cwf_appendix_e.pdf

⁵ Mount, J., W. Fleenor, B. Gray, B. Herbold, and W. Kimmerer. Panel Review of the draft Bay-Delta Conservation Plan. Prepared for the Nature Conservancy and American Rivers. September. Saracino & Mount, LLC, Sacramento, CA (2013).

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provides enough storage to continue operating through the upper gates and develop a sufficient cold-water pool to meet 53.5°F on the Sacramento River above Clear Creek (at the CCR gaging station) for Winter-run Chinook salmon spawning and egg incubation with minimal risks of higher temperatures in the late summer and fall. As a result of an expected increase in storage of only 2 percent or less annually, there is little-to-no evidence that an 18.5-foot raise will allow Reclamation to operate Shasta and water releases to the Sacramento River at the more protective Tier 1-3 levels outlined in the 2019 BO during temperature management season (onset of Winter-run Chinook spawning through October 31) to protect ESA-listed species.

Keswick Dam Releases

The modeled releases from Keswick Dam for all months states that in March of dry years, the 2019 scenario would decrease flows by 5.7 percent (SDEIS, page 4-3). March is a critical time for winter-run and spring-run juvenile rearing and outmigration in the Sacramento River below Keswick Dam. These anticipated reductions would reduce rearing habitat and reduce survival for outmigrating smolts. The relationship between flow and smolt survival in the Sacramento River is well supported by acoustic tagging studies.

The same scenario would decrease flows by 5.7 percent in wet years in November. Reduced flows in November would reduce spawning habitat for fall-run Chinook in the main-stem Sacramento River, a biologically, recreationally, and economically important species for California. Reduced flows in November would also reduce rearing habitat for juvenile Winter-run Chinook salmon and reduce survival for out-migrating yearling Central Valley Spring-run Chinook salmon smolts.

Reclamation modeled maximum Sacramento River flows below Keswick Dam for all months. Maximum flows are not dependent on water year type. The 2019 modeling scenario result from this analysis showed February flows below Keswick Dam decreasing by 7.49 percent. This decrease in flows would reduce rearing habitat and survival of out migrating smolts in the Sacramento River for all runs of Chinook salmon and Central Valley steelhead (*Oncorhynchus mykiss*).

Storage and Minimum Keswick Dam Flows

The SDEIS states, “*Minimum flows below Keswick Dam remain at 3,250 cfs to protect against redd dewatering.*” This statement ignores the fact that redd de-watering can occur anytime salmonids construct redds during a certain flow and then the flow is reduced significantly for any reason. Flows at 3,250 cfs would be protective against redd de-watering only if the redd was constructed at 3,250 cfs and flows were not subsequently decreased prior to complete egg development. The Department recommends revising this sentence.

Chapter 4.3 Environmental Impacts

Flows for Winter-run Chinook salmon and Central Valley steelhead

On page 4-6, the SDEIS states, “*Sacramento River flows during the summer and fall of dry and critical years have the greatest potential to impact juvenile Winter-run Chinook Salmon.*” The discussion goes on to state, “*The 2019 scenario results in an increase in minimum flows below Keswick Dam throughout the year, with the largest differences seen in June through August.*” These statements fail to explain that the maintenance of cold-water for incubating Winter-run

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Chinook salmon eggs and embryos, and maintenance of sufficient flow over winter-run redds through egg incubation and emergence, are critical elements for Winter-run Chinook salmon survival, and those elements are not enhanced by increases in minimum flows in June through August. The Department believes that maintaining suitable water temperatures and maintaining flows so that redds are not de-watered are more important considerations than minimum flows.

On page 4-6, the SDEIS states, "*The 2019 scenario results in an increase in minimum flows below Keswick Dam throughout the year, with the largest differences seen in June through August. During the winter season at Red Bluff Diversion Dam, total minimum water flows are up to 500 cfs greater under the 2019 scenario.*" Higher flows in June through August, in and of themselves, could be detrimental to spawning Winter-run Chinook salmon because fish are afforded access to spawning habitat located in river margins and their redds can be de-watered when flows are reduced for refill in the fall. Winter-run Chinook salmon spawning at high flows June through August requires more water to be released in the fall while eggs are incubating to prevent redd de-watering

On page 4-6, the SDEIS states, "*Sacramento River flows during the summer and fall of dry and critical years have the greatest potential to impact juvenile Winter-run Chinook Salmon. During these times, the current reservoir may contain insufficient cold-water storage to provide suitable flows and water temperatures conducive to spawning and rearing. Increased storage allows for a larger cold-water storage pool, providing additional cold-water for Winter-run Chinook Salmon egg incubation and juvenile rearing.*" Cold-water pool volume at the beginning of temperature management season is greatly influenced by end of September storage going into a new water year or Shasta refill season. As stated in the document, an 18.5-foot raise would only increase storage by two percent or less annually. The lack of refill of Shasta Reservoir in a critical year will not be ameliorated by a higher dam. **The SDEIS must describe and/or model how the Project will improve end of September storage so that the asserted benefits of dam raise can be better evaluated.**

On page 4-7, the SDEIS states, "*Due to the small magnitude of the differences between the 2019 and the 2015 scenario, Reclamation does not expect to see significantly different impacts to Winter Run Chinook Salmon and Central Valley steelhead than what was presented in the 2015 SLWRI FEIS. The largest changes in flow can be seen during minimum flows in June, where the new 2019 scenario offers an increase in Sacramento River minimum flows below Keswick Dam, a benefit to the species.*" The previous statement(s) overstate any benefit, while ignoring potential impacts. First, there are impacts to Winter-run and Central Valley Spring-run Chinook salmon as described in comments above. Second, higher minimum flows in June may benefit late-migrating Winter-run Chinook salmon adults (peak Winter-run Chinook salmon migration past Red Bluff Diversion Dam is before June), but without increased fall releases, shallow Winter-run Chinook salmon redds would be subject to dewatering through the end of egg and embryo incubation.

Wild and Scenic River Considerations for McCloud River

The SDEIS states that "Reclamation has no obligations to analyze state law requirements under the California Wild and Scenic Rivers Act" and the analysis of impacts to the McCloud River are therefore being revised to reflect and re-focus the analysis on the federal requirements.

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Initially, the Department notes that National Environmental Policy Act (NEPA) regulations require that an environmental impact statement's discussion of environmental consequences shall include discussions of "Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned." (40 C.F.R. 1502.16, subd. (c).) In addition, NEPA's implementing regulations state that, "To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law." (40 C.F.R. 1506.2, subd. (d).) Public Resources Code section 5093.542, and the California Fish and Game Commission's designation of the McCloud as a wild trout fishery, articulate State law and objectives, and the inconsistency of the action Alternatives with that law and objectives must be disclosed in the SEIS.

The SDEIS' interpretation of section 5093.542, reflected on page 5-4, is a fundamental misreading of the statute. (See SDEIS, p. 5-4, stating "In other words, the legislature specifically excepted enlargement of Shasta Dam from the prohibition on assisting or cooperating in projects such as the facilities identified in PRC Section 5093.542(b).") Section 5093.542 clearly prohibits departments or agencies of the state from assisting or cooperating in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery, with the narrow exception that DWR may participate in studies involving the technical and economic feasibility of enlargement of Shasta dam. This specific exception for DWR demonstrates that the general prohibition in subdivision (c) otherwise bars state department or agency participation in any enlargement of Shasta dam.

Additionally, the Secretary of the Interior, in a memorandum dated September 10, 2018 reaffirmed "the authority of the States to exercise their broad trustee and police powers as stewards of the Nation's fish and wildlife species on public lands and waters under the jurisdiction of the Department. Each of us must recognize the fundamental role of the States in fish and wildlife management, especially where States have primary authority and responsibility, foster improved conservation of fish and wildlife, and encourage a good neighbor policy with the States."

In comments to the Westlands Water District's *Notice of Preparation for the Shasta Dam Raise Project*, in a letter dated January 14, 2019, the Department stated:

Raising the water level behind Shasta Dam will convert part of the McCloud River into reservoir habitat, changing the free-flowing condition of the McCloud River. The Wild and Scenic Rivers Act specifically identifies the extraordinary resources of the McCloud River in that it supports one of the finest wild trout fisheries in the State, and affords specific protection through language prohibiting construction of water impoundment facilities on eligible river segments (Public Res. Code, § 5093.542). The Wild and Scenic Rivers Act prohibits State agencies or departments from assisting or cooperating in any way "in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery." (Public Res. Code, § 5093.542, subd. (c).)

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This segment of the McCloud River is also designated as a Wild Trout Water, and pursuant to Fish and Game Commission's Wild Trout Policy "All necessary actions, consistent with State law, shall be taken to prevent adverse impact by land or water development projects affecting designated Wild Trout Waters." The California Natural Resources Agency sent a letter, dated March 13, 2018, to members of Congress asking that they "not pursue the Shasta Dam enlargement project, which disregards California law." The Department's participation relative to Project impacts has been, and continues to be, to protect and enhance fishery resources. Inundation of the McCloud River would result in a significant loss of this river ecosystem to a reservoir ecosystem, resulting in direct and indirect adverse impacts to the current trout fishery in conflict with State law and policy. Likely changes to the trout fishery would include a shift from riverine trout habitat to habitat that supports non-native lake dwelling fish species.

Notably, in the 2015 SLWRI Final Environmental Impact Statement (FEIS), Reclamation concluded that all alternatives involving enlarging the dam and reservoir would have potentially significant impacts to the McCloud River's wild trout fishery even with implementation of an identified mitigation measure, and would have significant and unavoidable impacts to the free-flowing condition of the river. (See Department of the Interior, *Final Shasta Lake Water Resources Investigation, Environmental Impact Statement* (December 2014), p. 25-41.) Based on the analysis in the SDEIS, the Department is not aware of any basis for changes to those impact conclusions.

The Department recommends the SDEIS include alternatives that do not include raising the dam and affecting the McCloud River. Further, the SDEIS states that impacts to fisheries due to aquatic impacts resulting from CP3, CP4A, and CP5 would be, "similar to but greater than under WASR-1 (CPI-1)." (SDEIS, p. 5-38.) It then states that for these alternatives "overall impacts to aquatic habitat and fish would be similar to those discussed under WASR-1 (CP1)." This statement is not accurate. The impacts to fisheries from CP3, CP4, CP4A, and CP5 are greater than those compared to CPI-1 due to a greater area of inundation, and, moreover, all of the evaluated action alternatives would have significant impacts on the fisheries resources and those impacts should have been thoroughly discussed and evaluated in the SDEIS.

The raise of Shasta Dam of 18.5 feet would inundate approximately 3,550 feet of the lower McCloud River and alter riverine habitat to warm-water lacustrine habitat. Water temperatures in the McCloud Arm of Shasta Reservoir become warmer as the river transitions to Shasta Lake. Under the proposed Project, the transition reach may inhibit utilization of existing habitat by cold-water dependent and re-introduced cold-water species (as discussed further below). The warmer water temperatures associated with Shasta Lake support warm-water fish, but under current conditions the cooler temperatures of the transition reach may prevent some fish from migrating upstream into the lower river. Non-native warm-water aquatic species may be able to migrate further up the McCloud River as a direct result of enlarging the reservoir. The consequence of this upstream migration for native cold-water species would be increased predation on native, cold-water species.

Mitigation Measure WASR-3

Mitigation Measure WASR-3's purpose is to, "Develop and Implement a Comprehensive Multi-scale Wild Trout Fishery Protection, Restoration and Improvement Program Within the Lower

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McCloud River Watershed.” It is unclear how purchasing land in the lower McCloud River watershed and potentially doing some restoration efforts on those lands mitigates for the direct loss of the free-flowing section of the McCloud River. It is not in-kind mitigation and, at best, should be considered out-of-kind mitigation, as it does not replace the functions and values lost by the fluvial and habitat changes that would occur with the proposed inundation. In addition, the document fails to adequately discuss the land ownership in the lower McCloud, and whether there is sufficient private land that could potentially be purchased for this out-of-kind mitigation. It is also not guaranteed that such lands can be purchased and/or restored to meet the goals as they are currently laid out, which is vague at best. Further, what has been described in the discussion of this mitigation measures is the development of the plan, but there is no concrete discussion of the implementation of the plan. Such mitigation, if approved, should occur prior to, or simultaneous with, the impacts of the dam raise in order to prevent temporal loss of habitat.

Fish Above Shasta: High-head Dam Juvenile Salmon Collection System in the McCloud River

The SDEIS makes no reference to the “Fish Above Shasta (High-head Dam Juvenile Salmonid Collection System)” Project. The Fish Above Shasta project is a multi-agency project that has been underway for several years, with the goal of re-establishing Winter-run Chinook salmon in the McCloud River. NOAA Fisheries⁶ recovery plan for Winter-run Chinook Salmon calls for reintroduction of winter-run to the McCloud River above Shasta Dam. Specifically, the recovery plan proposes to develop and implement a program to reintroduce Winter-run Chinook salmon, Central Valley Spring-run Chinook salmon, and Central Valley steelhead to historic habitats upstream of Shasta Dam. The program would include feasibility studies, habitat evaluations, fish passage design studies, and a pilot reintroduction phase prior to implementation of the long-term reintroduction program. An in-river collection system has been constructed and is currently planned for deployment in 2021 at the interface of the McCloud River and Shasta Lake. The changes in the McCloud River that will potentially occur in alternatives CP3, CP4, CP4A and CP5, as outlined in the SDEIS, may significantly impact the overall function, location, and effectiveness of the juvenile salmonid collection system, which is critical to the overall success of the Fish Above Shasta project.


The Project may adversely impact the potential Winter-run Chinook salmon, Central Valley Spring-run Chinook salmon and Central Valley steelhead spawning habitat, necessary for the re-introduction program as outlined in the recovery plan, in the McCloud River reach proposed to be inundated. Most importantly though, is the potential significant loss of juvenile salmonid rearing habitat in the McCloud River reach, as that habitat would be transformed into warm-water habitat that is not suitable as juvenile salmonid rearing habitat. This would greatly impact Central Valley Spring-run Chinook salmon which have a distinct juvenile over-summering life-history component (1 year in freshwater) as well as juvenile Central Valley steelhead which rear for 1-3 years in freshwater before smolting and outmigrating to the ocean. Juvenile Winter-run Chinook salmon also exhibit extended rearing in freshwater, but this is not as well understood as it is for Central Valley Spring-run Chinook salmon. Regardless of how long the fish spend in freshwater, juvenile salmonids typically utilize all available aquatic habitat to access food resources, to evade predators, and to seek out suitable temperatures. Diverse and abundant rearing habitat contributes to greater survivability during outmigration to the ocean.

⁶ National Marine Fisheries Services. 2014. *Recovery Plan for the Evolutionary Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead*. National Marine Fisheries Service West Coast Region. Sacramento, CA.

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If you have any questions, please contact Jason Roberts, Inland Fisheries Program Manager, at (530) 526-2168, or by e-mail at Jason.Roberts@wildlife.ca.gov.

Sincerely,

DocuSigned by:

1D82ADE7303A474...
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