BUREAU OF RECLAMATION

Final Supplemental Environmental Impact Statement

Shasta Lake Water Resources Investigation

Prepared by:

U.S. Department of the Interior
Interior Region 10 · California-Great Basin
Bureau of Reclamation

Estimated Lead Agency Total Costs Associated with Developing and Producing This EIS

$1,118,000

Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Table of Contents

Chapter 1. Introduction

Chapter 1.1 Project Background

In August 2015, the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), published a Notice of Availability for the Final Environmental Impact Statement (FEIS) for the Shasta Lake Water Resources Investigation (SLWRI) consistent with the requirements of the National Environmental Policy Act (NEPA). Cooperating agencies pursuant to NEPA for the SLWRI FEIS included the U.S. Forest Service (USFS), Bureau of Indian Affairs, Colusa Indian Community Council of the Cachil Dehe Band of Wintun Indians, and U.S. Army Corps of Engineers (USACE).

The SLWRI is a feasibility study that is one of five studies for potential surface water storage projects included in the 2000 California Bay-Delta Program (CALFED) Programmatic Record of Decision (ROD) and is being conducted under the general authority of Public Law 96-375, which was reaffirmed under Public Law 108-361, also known as the CALFED Bay-Delta Authorization Act.

The CALFED Programmatic Environmental Impact Statement/Report (PEIS/R), completed in July of 2000, considered more than 50 surface water storage sites throughout California and recommended more detailed study of the five sites identified in the CALFED Programmatic ROD. These studies included Shasta Lake Enlargement, Los Vaqueros Reservoir Enlargement, Sites Reservoir, in Sacramento-San Joaquin Delta (In-Delta) storage, and development of storage in the upper San Joaquin River Basin. The SLWRI FEIS relied on evaluations, alternatives development, and screening included in the CALFED PEIS/R, focusing on the subsequent action of evaluating the enlargement of Shasta Dam and Lake. Accordingly, Reclamation tiered its analysis of the SLWRI FEIS to the CALFED PEIS/R.

The SLWRI FEIS evaluated the potential physical, biological, cultural, and socioeconomic effects of implementing alternatives to modify the existing Shasta Dam and Lake, including taking no action. The alternatives evaluated in the SWLRI FEIS, in addition to the No Action Alternative, were potential dam raises of 6.5 feet, 12.5 feet, or 18.5 feet and related reservoir enlargements ranging from 256,000 to 634,000 acre feet. The SLWRI FEIS evaluated the potential environmental effects of alternative plans to enlarge Shasta Dam and Lake to (1) increase anadromous fish survival in the upper Sacramento River, (2) increase water supplies and water supply reliability for agricultural, municipal, industrial, and environmental purposes, and (3) address related water resource problems, needs, and opportunities.

Reclamation prepared the SLWRI Feasibility Report in July 2015 as a companion document to the SLWRI FEIS. The SLWRI Feasibility Report presented the results of planning, engineering, environmental, social, economic, and financial studies and potential benefits and effects of alternatives plans for the SLWRI project. Both the SLWRI Feasibility Report and SLWRI FEIS were submitted to U.S. Congress.

In March of 2018 Congress appropriated $20,000,000 for preconstruction and design phase for SLWRI pursuant to the Water Infrastructure Improvements for the Nation (WIIN) Act. During preconstruction and design Reclamation identified the need to supplement the SLWRI FEIS with additional information. Congress has not authorized construction or appropriated funds for construction. There has been no discharge of dredged or fill material in connection with construction.

Chapter 1.2 Scope of the Supplemental Environmental Impact Statement

Reclamation prepared a Draft SEIS for the SLWRI consistent with the requirements of NEPA. Cooperating agencies pursuant to NEPA for the SLWRI Draft SEIS include the Environmental Protection Agency (EPA) and the USACE.

Pursuant to NEPA, an agency must prepare a supplemental environmental impact statement if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. An agency may also prepare a supplemental analysis if it determines that the purposes of NEPA will be furthered by doing so. 40 C.F.R. § 1502.9(c).

The purpose of the SLWRI SEIS is to provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns.

CWA 404(r) states:

> *The discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress, whether prior to or on or after the date of enactment of his subsection, is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 301(a) or 402 of the Act (except for effluent standards or prohibitions under section 307), if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(l) of this section, is included in an*

> *environmental impact statement for such project pursuant to the National Environmental Policy Act of 1969 and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for each construction.*

The SLWRI FEIS was developed with consideration of the CWA 404(b)(1) guidelines. In order to apply CWA 404(r), Reclamation has prepared this supplement to provide: (1) an updated and adequate description of the discharges to wetlands and other Waters of the U.S. (WOTUS) resulting from the relocations of infrastructure and recreation structures: (2) a programmatic approach to conducting alternatives analyses and determination of the Least Environmentally Damaging Practicable Alternative for relocation activities with significant impacts to wetlands and other WOTUS: and (3) a compensatory wetland mitigation plan for all significant and unavoidable impacts to wetlands and other WOTUS.

Reclamation developed the 2015 SLWRI FEIS with consideration to the current operational requirements for Shasta Dam at the time the EIS was written, including the 2008/2009 Biological Opinions (BOs) from the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) for the coordinated operations of the Central Valley Project (CVP) and State Water Project (SWP) and the 1986 Coordinated Operation Agreement (1986 COA). Reclamation reinitiated consultation with USFWS and NMFS and received new BOs in 2019. The 1986 COA was amended in 2018. Reclamation has updated Shasta Dam's operations and modelling using the requirements set forth in the new BOs and the amended COA.

Reclamation has also revised the SLWRI FEIS Chapter 25 on Wild and Scenic River Considerations for the McCloud River and included the revised chapter within this Draft SEIS. The appendices provide documentation on CWA 404(b)(1) requirements (See Appendix A), the calculations for impacts to wetlands and other WOTUS (See Appendix B), and examples of how environmental impacts associated with project relocations will be avoided, minimized, and analyzed for alternatives (See Appendices C and D).

Chapter 2. Supplemental Information on Impacts to Wetlands and other Waters of the U.S.

Chapter 2.1 Background

The USACE Sacramento District administers CWA Section 404 within the project area. Under CWA 404, a permit is required for the discharge of dredged or fill materials into WOTUS unless otherwise exempt. EPA and USACE previously updated the definition of WOTUS in 2015. This definition was repealed on October 22, 2019. The repeal re-codified the regulatory text that existed prior to the 2015 rule, which became effective on December 23, 2019.

Actions typically subject to CWA 404 requirements are those that would take place in wetlands or stream channels, including intermittent streams, even if they have been realigned. For actions occurring within stream channels, the USACE has jurisdiction for any discharge activity below the ordinary high-water mark (OHWM). The OHWM is the line on the shore established by the fluctuations of water. It is indicated by the physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the characters of soil; destruction of terrestrial vegetation; or the presence of litter or debris.

Reclamation determined the potential impact to WOTUS in the SLWRI FEIS by determining the presence of WOTUS within the project area and evaluating the project's impacts to those areas. The SLWRI Draft SEIS provides additional information on impacts to WOTUS by providing a Preliminary Jurisdictional Determination on wetlands present within the project area and by analyzing potential relocations in greater detail in order to provide a more accurate estimate of the volumes and types of fill being placed into WOTUS. Because there were no impacts to WOTUS associated with dam construction, the SLWRI Draft SEIS focuses solely on impacts resulting from infrastructure and recreation relocations.

The SLWRI Draft SEIS presents a framework, with examples, of how all relocations impacting wetlands will be assessed to avoid and minimize impacts to wetlands. Where impacts cannot be avoided, Reclamation will minimize impacts to wetlands and other WOTUS to the extent practicable and implement appropriate mitigation.

Chapter 2.2 Preliminary Jurisdictional Determination

Reclamation conducted a delineation of wetlands and other WOTUS under federal jurisdiction (jurisdictional waters) in the SLWRI study area to support project related environmental planning and permitting. Reclamation performed the delineation of jurisdictional waters in the impoundment area between 2004 and 2010 and in the relocation areas between 2010 and 2013, using the WOTUS rule that existed prior to 2015 and which was reinstated in 2019. For wetlands, the impoundment area is defined as the area between 1,070 and 1,090 mean sea level elevation (msl) surrounding Shasta Lake. For other waters, the impoundment area includes the lacustrine waters associated with Shasta Lake below 1,070 msl.

Jurisdictional waters occur in the relocation areas as wetlands and other waters. Wetlands include fresh emergent wetlands, fresh emergent wetlands / riparian wetlands, intermittent swales, riparian wetlands, seasonal wetlands, seep / spring wetlands, and vegetated ditches. Other waters include ephemeral streams, intermittent streams, non-vegetated ditches, perennial streams, and seep / spring other waters.

Approximately 46 acres of wetlands and 30,092 acres of other waters occur in the impoundment and relocation areas. Total jurisdictional waters in the impoundment and relocation areas, excluding Shasta Lake at full pool, include approximately 51 acres of wetlands and 103 acres of other waters.

Reclamation compiled the results of this study into a SLWRI report, Delineation of Waters of the United States (Wetland Delineation Report) in May of 2015. The purpose of the Wetland Delineation Report was to document and describe WOTUS in support of a Preliminary Jurisdictional Determination from the USACE, Sacramento Regulatory Office.

Reclamation submitted the Wetland Delineation Report to the USACE, Sacramento Regulatory Office on December 3, 2019 and requested a Preliminary Jurisdictional Determination on the delineated wetlands. Reclamation provided supplemental application information on December 31, 2019 and March 4, 2020.

Reclamation received a Preliminary Jurisdictional Determination dated April 8, 2020 from the USACE Sacramento District. The Preliminary Jurisdictional Determination covers the approximately 5,638.1-acre project area around Shasta Lake and its related project relocations.

Chapter 2.3 Avoidance and Minimization Procedure

Considering the CWA 404(b)(1) guidelines, consistent with the requirements of CWA 404(r), Reclamation will avoid and minimize impacts for each project relocation that has the potential to impact wetlands and other WOTUS. The amount and detail of information that will be included in the consideration of alternatives for each relocation will be commensurate with the magnitude of the environmental impact and the scope of the project relocation.

All identified wetland impacts associated with project relocations are less than 2 acres (See Appendix B), with the exception of the Lakeshore Fire Guard Station. Lakeshore Fire Guard Station's original design plan would have impacted 7 acres of wetlands. After undergoing the avoidance and minimization procedures outlined within this section, Reclamation reduced the impact to 0.14 acres. For full details of the analysis see Appendix C.

Reclamation will not consider off-site alternatives for project relocations with projected impacts to wetlands and other WOTUS of less than 1 acre. Only 3 project relocations have projected impacts to wetlands and WOTUS of greater than 1 acre. These are the Lakeshore Fire Guard Station (See Appendix C), the Doney Creek Bridge, and the Sacramento River 2nd Crossing (See Appendix D). For these relocations, Reclamation will include the evaluation of both off-site and on-site alternatives. For those activities with minimal individual and cumulative effects, which are all relocations except for the three listed above, Reclamation will only evaluate on-site avoidance and minimization, and the extent of information developed will be commensurate with the effects.

The purpose of each project relocation is to develop a relocation for each feature that mitigates for the loss of the existing recreation, infrastructure, or utility feature due to implementation of the SLWRI project and resultant increase in inundation elevation from 1070 to 1090 msl. This increase in lake elevation will inundate several facilities (campgrounds, marinas, etc.) and infrastructure (roads, bridges, railroad tracks, etc.) that currently exist in and around the lake. Project relocations may be on-site (protecting features from inundation by modifying existing facilities to protect affected areas), or off-site (abandonment of existing features with subsequent replacement at another suitable location). A list of the impacted facilities and infrastructures have been provided in Appendix B.

The existing design plan for each relocation feature has been described in the SLWRI FEIS Engineering Summary Appendix. Reclamation provided thorough details including the location of the alternative, engineering plates, and analyses on the environmental, cultural, and aesthetic impacts of the relocations within the SLWRI FEIS.

Under the CWA 404(b)(1) Guidelines, an alternative is considered "practicable" if it is "capable of being done after taking into consideration cost, existing

technology, and logistics in light of overall project purposes" [40 CFR 230.10(a)(2)]. The SLWRI FEIS evaluated the "No Action" alternative, which included "No Action" for project relocations. Reclamation is not providing any further details regarding the "No Action" Alternative for the CWA 404(b)(1) alternatives analysis.

Reclamation will follow a procedure for identifying project relocation alternatives that prioritize avoidance. Any impacts that cannot be completely avoided will be minimized to the extent practicable. All impacts to wetlands and other WOTUS will be mitigated (See Chapter 2.5 for a description of the mitigation plan).

Avoidance

Reclamation will use the following criteria in the development of project relocation alternatives that completely avoid impacts to wetlands and other WOTUS:

1. Does the alternative effectively serve the same purpose as the feature it is replacing and provide undisturbed service throughout its design period to the public?

2. Does the alternative contain sufficient acreage of developable area in appropriate configurations to both support its role to protect such facilities/capacity from inundation by modifying existing facilities to protect affected areas (i.e., relocate facilities onsite) or abandon existing facilities and replace them at other suitable sites (i.e., relocate facilities offsite)?

3. If the relocation is a recreational facility, does the alternative conform to the land use plan indicated in the SLWRI FEIS and the USFS Master Implementation Plan?

4. Does the alternative have sufficient available land in close proximity to be used temporarily during construction for easy and safe access for construction traffic and personnel?

5. Is the alternative located in an area able to obtain electric power as required for the entire period of construction for the relocated feature?

6. Does the alternative cause minimal or no disruption to local residents or commercial establishments during the relocation process and the service life of the relocated feature?

7. Are there any other logistical constraints that would preclude the alternative from being implemented?

8. Does the alternative have a development cost per net developable acre that is optimal to the implementation of the SLWRI Project and to the public's federal funds for the project?

9. Does the alternative cause or contribute to new significant impacts to cultural and historic places or to species listed as threatened or endangered under the Endangered Species Act?

10. Are the costs to avoid impacts to wetlands or other WOTUS reasonable?

If a project relocation avoidance alternative is deemed practicable, Reclamation will implement that alternative over any alternative that impacts wetlands or other WOTUS. If no avoidance relocation can be identified as practicable, Reclamation will proceed to minimize the impacts of the relocation.

Minimization

Minimization alternatives will be subject to the same practicable criteria listed in Chapter 2.3:

1. Does the alternative effectively serve the same purpose as the feature it is replacing, and provide undisturbed service throughout its design period to the public?

2. Does the alternative contain sufficient acreage of developable area in appropriate configurations to both support its role to protect such facilities/capacity from inundation by modifying existing facilities to protect affected areas (i.e., relocate facilities onsite) or abandon existing facilities and replace them at other suitable sites (i.e., relocate facilities offsite)?

3. If the relocation is a recreational facility, does the alternatives conform to the land use plan indicated in the SLWRI FEIS and the USFS Master Implementation Plan?

4. Does the alternative have sufficient available land in close proximity to be used temporarily during construction for easy and safe access for construction traffic and personnel?

5. Is the alternative located in an area able to obtain electric power as required for the entire period of construction for the relocated feature?

6. Does the alternative cause minimal or no disruption to local residents or commercial establishments during the relocation process and the service life of the relocated feature?

7. Are there any other logistical constraints that would preclude the alternative from being implemented?

8. Does the alternative have a development cost per net developable acre that is optimal to the implementation of the SLWRI Project and to the public's federal funds for the project?

9. Does the alternative cause or contribute to new significant impacts to cultural and historic places or to species listed as threatened or endangered under the Endangered Species Act?

10. Are the costs to minimize impacts to wetlands or other WOTUS reasonable?

Annual Report

Annually each fiscal year during implementation of the SLWRI Project, Reclamation will compile a report that documents Reclamation's avoidance and minimization efforts as described above. The report will contain a quantification of the impacts to wetlands and other WOTUS prior to avoidance and minimization, a brief outline of each project relocation's avoidance and minimization considerations as described above, and a quantification of the new impacts to wetlands and other WOTUS. This information will be used annually to develop Reclamation's wetland mitigation efforts. In addition, the annual report will include a summary of the wetland mitigation implemented to-date.

In anticipation of the relocation of the Lakeshore Fire Guard Station, Reclamation performed an avoidance and minimization analysis on the Lakeshore Fire Guard Station relocation. This analysis is presented in Appendix C.

Chapter 2.4 Impacts to Wetlands and Other Waters of the United States

The SLWRI FEIS previously identified 31 acres of wetlands and 49 acres of other WOTUS to be converted into lacustrine habitat with the raising of Shasta Dam, resulting in a net loss of approximately 31 acres of wetlands and 49 acres of riverine waters into lacustrine habitat. These waters are located within the inundation zone around the perimeter of Shasta Lake. Because the construction process to raise Shasta Dam will require no placement of dredge or fill material into wetlands or other WOTUS, that process and the resultant conversion of some habitats into lacustrine habitat does not require consideration of the CWA 404(b)(1) guidelines.

The SLWRI FEIS previously identified a loss of approximately 2.3 acres of wetlands and 1.6 acres of other WOTUS in total due to all project relocations. In order to adequately describe the proposed discharges to WOTUS, Reclamation recalculated the projected impacts to wetlands and other WOTUS from project

relocations using updated information. By overlaying wetlands identified within the Wetland Delineation Report and projected project relocations in ArcGIS, Reclamation identified the impacts to wetlands and other WOTUS. The summary of these calculations is listed in Table 2-1. A full breakdown by individual relocation feature is available in Appendix B.

Table 2-1. Summary of Discharges

Feature Type	Impacts to Wetlands and other Waters of the U.S.	Fill volume (cubic yards)
Roads	0.39 acres	12430
Dikes	<0.75 acres	4362
Bridges	2.27 acres	12270
Recreation Facilities without Lakeshore Fire Guard Station Avoidance & Minimization	7.57 acres	57662
Recreation Facilities with Lakeshore Fire Guard Station Avoidance & Minimization	0.71 acres	2324

The updated impacts to wetlands and other WOTUS from roads, bridges, and recreation facilities with the Fire Guard Station avoidance implemented is, in total, 3.37 acres, with an estimated impact of <0.75 acres from dikes. This level and type of impact is comparable to the 3.9 acres of impacted wetlands and other WOTUS identified in SLWRI FEIS. The SLWRI FEIS included an analysis of whether the proposed discharges would result in significant degradation of WOTUS, based on factual determinations of the effects to the physical, chemical, biological, and human use characteristics of the aquatic environment. The additional information provided within this supplement has no effect on the determinations made within the SLWRI FEIS, as the fill volumes and wetland delineations were derived directly from the SLWRI FEIS. The supplement provides additional information on the details of the discharges but has no effect on the level of impact from the proposed discharges. Any potential changes would be reductions from the implementation of avoidance and minimization procedures as described in Chapter 2.3 of this supplement.

The majority of impacts are to the various tributaries to Shasta Lake resulting from the relocation of major bridges. Roads and recreation features impact approximately 2 miles total of ephemeral, perennial, and intermittent streams located within the relocation areas. Impacts to wetland features such as vegetated ditches, non-vegetated ditches, seep/spring wetlands, riparian wetlands, and fresh emergent wetlands are all less than 0.1 acres for each wetland type.

Roads & Dikes

The relocation details (feature name, total relocation length, and approximate gross quantity of fill) were taken from the Final Engineering Summary Appendix of the SLWRI FEIS. The total quantity of fill to be placed for these relocations is

130,500 cubic yards. In order to calculate the portion of this volume that would be placed into wetlands, Reclamation overlaid the proposed relocation site for each feature where available over known delineated wetlands and other WOTUS. Wetlands were delineated following USACE Procedures (See Chapter 2.2). When an impact was noted, Reclamation calculated the area of impact using the ArcGIS measuring/calculation tool. All areas and calculated quantities of fill are approximate.

The area of impact for all proposed roads and dikes was found to be minimal (approximately 1.4 acres total). However, in the absence of final design for relocated features, a conservative estimate of 10% of the gross total fill quantity was used to calculate the volume of fill to be discharged into wetlands.

Bridges

In order to calculate the impact to WOTUS, Reclamation used the proposed new approximate alignment of Second Sacramento River Crossing and Doney Creek railroad bridges and Doney Creek and Charlie Creek vehicular bridges as available in SLWRI FEIS. Relocated alignments of McCloud and Dadillas Creek bridges were assumed to be in close proximity of the existing bridges.

Reclamation determined the volume of wetland fill by calculating the total cross-sectional area of the piers/shafts for each relocated bridge below 1070 ft elevation, the current OHWM of Shasta Lake.

Recreation Areas

The recreation relocation areas include locations surrounding existing developments and other sites proposed for development that are subject to physical disturbance as an indirect result of the proposed project (e.g., areas proposed as relocation sites for campgrounds, boat-in campgrounds, boat ramps, marinas, resorts, trail/trail heads, and USFS facilities).

Reclamation calculated the impacts to wetlands and WOTUS by estimating the volume and type of fill associated with each of recreation feature relocations. In order to calculate this data, Reclamation identified relocation sites by cross referencing the scope of work in the Final Engineering Summary Appendix of the SLWRI FEIS and the SLWRI Wetland Delineation Report Appendix G.1 and Table 11; Reclamation overlaid the location of each recreation relocation feature where available over known delineated wetlands and other WOTUS. Wetlands were delineated following USACE Procedures (See Chapter 2.2). When an impact was noted, the estimated area of impact was calculated using the ArcGIS measuring/calculation tool. All areas and calculated quantities of fill are approximate. Reclamation estimated the volume of fill to be placed within that area using the approximate depth of the feature based on the feature's and current site's characteristics (elevation, length, with, and depth). See Appendix C, Table C-4 for full calculations of each feature.

Based on this methodology Reclamation estimates the potential impacts to wetlands and other waters is approximately 57,662 cubic yards of imported fill before avoidance and minimization. The outlier recreation relocation is the Lakeshore Fire Guard Station's proposed relocation in the North Parcel potentially disturbing approximately 7 acres of seasonal wetland with placement of 56,467 cubic yards of imported fill. After avoidance and minimization for the Lakeshore Fire Guard Station (See Appendix C), Reclamation estimates the potential impacts to wetlands and other waters is approximately 2,324 cubic yards of imported fill.

Based on the present construction of recreation features being soil, the new and or modified construction assumed imported fill as the construction material.

Chapter 2.5 Wetland Mitigation Plan

Compensatory mitigation is typically accomplished through permittee-responsible mitigation, mitigation banks, or in-lieu fee programs. The SLWRI FEIS Mitigation Measure Bot-4: Mitigate Loss of Jurisdictional Waters commits Reclamation to preparing a conceptual mitigation plan following current USACE guidance and requirements. The mitigation plan will incorporate wetland habitats within lands acquired under Bot-3: Acquire and Preserve Mitigation Lands; Avoid Populations; Relocate USFS Sensitive, Bureau of Land Management (BLM) Sensitive, and California Rare Plants; and Revegetate Affected Areas. Under Bot-3, Reclamation has committed to a minimum 3:1 replacement ratio of acquired lands to impacted lands as described in the SLWRI FEIS. Reclamation will also calculate the recommended mitigation ratios from the USACE South Pacific District Mitigation Ratio Setting Checklist and compare this to the minimum 3:1 replacement ratio described within the SLWRI FEIS. If the mitigation ratio from the Mitigation Ratio Setting Checklist is greater than 3:1, Reclamation will implement the larger ratio. The wetland mitigation plan will include measures for habitat creation, restoration, or enhancement.

In addition to replacement of acquired lands to impacted lands, Reclamation will evaluate the potential to use a mitigation bank for compensatory mitigation. A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or preserved for the purposes of providing compensation for unavoidable impacts to WOTUS. EPA and USACE consider mitigation banks to be the preferred alternative because the mitigation has already been completed.

There is one mitigation bank available near the project area located within Shasta County, California. The Stillwater Plains Mitigation Bank – Phase II & III, Permit No. SPK-1996-00064 has federal available credits for constructed channels, seasonal wetlands, emergent marsh creation, vernal pool/swales, vernal pool/swale creation, and emergent marsh. Participation in this mitigation bank

program would be Reclamation's first choice when developing a compensatory mitigation plan.

An in-lieu fee program would allow Reclamation to make payments to a program that would conduct wetland and WOTUS restoration, creation, enhancement, or preservation. In-lieu fee programs are generally administered by government agencies or other non-profit organizations that have established agreements with EPA or USACE to use in-lieu fee payments collected by other agencies. The SLWRI project is located within the project area for the Sacramento District California In-Lieu Fee Program.

The Sacramento District In-Lieu Fee Program is administered by the National Fish and Wildlife Foundation's Impact-Directed Environmental Accounts program, which receives, manages, and disburses funds designated for specified conservation, mitigation, or restoration purposes arising from judicial and regulatory proceedings. The program provides vernal pool credits for impacts to vernal pool wetlands and aquatic resource credits for impacts to wetlands (excluding vernal pools) and other WOTUS. The SLWRI Project area is located outside of the vernal pool wetlands area for the in-lieu fee program. However, aquatic resource credits for impacts to wetlands (excluding vernal pools) and other WOTUS could be available.

Reclamation will develop the Wetland Mitigation Plan once final details to wetlands and other WOTUS is known. Reclamation intends to prepare a Wetland Mitigation Plan, but the specific details of the plan, such as exact type and acreage of wetlands to be mitigated and the type of compensatory mitigation to be used, cannot be known until final engineering plans for project relocations have been developed. At a minimum, Reclamation has committed to a 3:1 replacement ratio of acquired lands to impacted lands and has identified a mitigation bank and in-lieu fee program within the SLWRI project area.

Chapter 3. Supplemental Information on Stormwater and Other Point-Source Discharges

Chapter 3.1 Background

All point sources that discharge into waters of the United States must obtain a National Pollutant Discharge Elimination System (NPDES) permit under provisions of Section 402 of the CWA. The NPDES permit process also provides a regulatory mechanism for controlling nonpoint-source pollution created by runoff from construction and industrial activities, and general and urban land use, including runoff from streets. Projects involving construction activities (e.g., clearing, grading, or excavation) with land disturbance greater than one acre must file a notice of intent with the appropriate Regional Water Quality Control Boards to indicate their intent to comply with the General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ, which went into effect and replaced Order 99-08-DWQ on July 1, 2010). This general permit establishes conditions to minimize sediment and pollutant loadings and requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) before construction. The SWPPP is intended to help identify the sources of sediment and other pollutants, and to establish best management practices (BMPs) for stormwater and nonstormwater source control and pollutant control. A sediment monitoring plan must be included in the SWPPP if the discharges occur directly to a water body listed on the Section 303(d) Total Maximum Daily Load list for sediment.

By following CWA 404(r) Reclamation is not subject to CWA 404(r) regulations under CWA 402 if information on the effects of the discharge, including guidelines developed under CWA 404(b)(1), are included in an EIS. Reclamation utilized existing CWA 402 permits as a guideline to describe the effects of the proposed discharges. The proposed discharges fall under two categories: first, stormwater discharges from construction disturbing greater than one acre; second, point-source low-threat discharges generally covered under NPDES General Permits.

Chapter 3.2 Stormwater Discharges

Stormwater discharges resulting from construction projects greater than 1 acre are covered under the NPDES Program outlined in Section 402 of the Clean Water Act. Such discharges are covered under CWA 404(r) if the discharges have been adequately described within the EIS with consideration of the guidelines set forth in CWA 404(b)(1).

Under CWA 402, Reclamation's construction activities would fall under the California State Water Resources Control Board Order 2009-009-DWQ Construction General Permit NPDES General Permit No. CAS000002 for construction projects greater than 1 acre. Separate application and coverage under the General Permit is not required because Reclamation will comply with CWA 404(r). However, Reclamation will follow California State water quality standards outlined within the general permit.

The Construction General Permit contains effluent monitoring and limitations based upon the type of discharge and the risk level of the discharge. Reclamation will evaluate the risk level of each discharge for each construction project disturbing greater than 1 acre and develop a monitoring plan based upon the requirements in the Construction General Permit. Monitoring plans may include bioassessment monitoring, effluent monitoring, and receiving water monitoring.

Development of a Storm Water Pollution Prevention Plan

Regardless of the risk level of the discharge, Reclamation will develop a site-specific SWPPP as required by the Construction General Permit. The SWPPP will identify BMPs to prevent or minimize erosion and the discharge of sediments and other contaminants with the potential to affect beneficial uses of or lead to violations of water quality objectives for surface waters. The SWPPP would include site-specific structural and operational BMPs to prevent and control impacts on runoff quality, and procedures to be followed before each storm event. BMPs would control short-term and long-term erosion and sedimentation effects and stabilize soils and vegetation in areas affected by construction activities. The SWPPP would contain a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, drainage patterns across the project, and general topography both before and after construction.

Additionally, the SWPPP would contain a visual monitoring program, a chemical monitoring program for "non-visible" pollutants that would be implemented if a BMP fails, and a sediment monitoring plan to be implemented if a particular site discharges directly to a water body listed on the CWA 303(d) list for sediment. BMPs for the project could include, but would not be limited to, silt fencing, straw bale barriers, fiber rolls, storm drain inlet protection, hydraulic mulch, and stabilized construction entrances.

As part of the SWPPP, Reclamation would develop and implement a spill prevention and control plan to minimize effects from spills of hazardous, toxic, or petroleum substances for project-related construction activities occurring in or near waterways. The accidental release of chemicals, fuels, lubricants, and non-storm drainage water into water bodies would be prevented to the extent feasible. Spill prevention kits would always be close by when hazardous materials would be used (e.g., crew trucks and other logical locations). Feasible efforts would be

implemented so that hazardous materials would be properly handled and the quality of aquatic resources would be protected by all reasonable means during work in or near any waterway. No fueling would be done within the ordinary high-water mark, immediate floodplain, or full pool inundation area, unless equipment stationed in these locations could not be readily relocated. Any equipment that could be readily moved out of the water body would not be fueled in the water body or immediate floodplain. For all fueling of stationary equipment done at the construction site, containments would be installed so that any spill would not enter the water, contaminate sediments that may come in contact with the water, or damage wetland or riparian vegetation. Any equipment that could be readily moved out of the water body would not be serviced within the ordinary high-water mark or immediate floodplain.

Development of an Erosion and Sediment Control Plan

Reclamation will prepare and implement an erosion and sediment control plan to control short-term and long-term erosion and sedimentation effects, and to stabilize soils and vegetation in areas affected by construction activities. The plan would include all of the necessary local jurisdiction requirements regarding erosion control, and would implement BMPs for erosion and sediment control, as required. Types of BMPs may include, but would not be limited to, earth dikes and drainage swales, stream bank stabilization, and use of silt fencing, sediment basins, fiber rolls, and sandbag barriers.

Chapter 3.3 Other Point-Source Discharges

Point source discharges are covered under the NPDES Program outlined in Section 402 of the Clean Water Act. Such discharges are covered under CWA 404(r) if the discharges have been adequately described within the EIS with consideration of the guidelines set forth in CWA 404(b)(1).

Reclamation identified several discharges that could result from the raising of Shasta Dam or as a result of the construction activities involved with implementing relocations around Shasta Dam. The identified discharges would typically be covered under the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters NPDES General Permit No. CAG995001, administered by the California Regional Water Quality Control Board – Central Valley Region. Reclamation will follow the permit conditions outlined within the NDPES General Permit No. CAG995001 in lieu of applying for permit coverage to address state water quality standards.

Reclamation will minimize all potential discharges by prioritizing the capture and proper disposal of these discharges at a wastewater treatment facility. If the discharges are unable to be captured, Reclamation will follow the testing and pollutant limits outlined by NPDES General Permit No. CAG995001.

As defined by NPDES General Permit No. CAG995001, low threat discharges are relatively pollutant-free discharges that pose little threat to water quality when treated with simple, low technology treatments and/or controlled with BMPs to eliminate or reduce pollutants and minimize volume, rate, and duration of the discharge.

Some discharges may require treatment, such as settling out sediment or dichlorination to remove specific pollutants prior to discharge and/or BMPs to assure that the discharge does not create conditions of pollution or nuisance.

Discharges to surface waters of the North Coast Region that meet the definition of "low threat," may include, but are not limited to, the following categories of discharges anticipated during construction of the SLWRI Project:

1. Discharges from construction dewatering of groundwater, captured storm water, or any non-stormwater. Potential pollutants include sediment, naturally occurring metals and salts, temperature, and pH. Such discharges are typical for construction projects and may occur from the construction in and around the dam as well as in relocation construction areas.

2. Discharges resulting from maintenance, disinfection, cleaning, or flushing of water supply wells, pipelines, tanks, and reservoirs. Potential pollutants include chlorine, chlorine byproducts, naturally occurring metals and salts, temperature, and pH. Reclamation anticipates the possibility of these discharges occurring during the decommissioning of water utility lines, water storage tanks at recreation relocations (marinas, resorts, and campgrounds) and USFS facilities (Fire Guard Station and Maintenance Building).

3. Discharges resulting from well development, test pumping, maintenance, and purging of water supply or geothermal wells. Potential pollutants include where sediment, naturally metals or salts, temperature, and pH. Such discharges may occur during well development/construction of a water supply well at recreation relocation sites (campgrounds, resorts, and cabins) and USFS facilities (Lakeshore Fire Guard Station).

4. Discharges from hydrostatic testing of newly constructed pipelines, tanks, and reservoirs used for purposes other than potable water supplies. Potential pollutants include chlorine, chlorine byproducts, naturally occurring metals, temperature, and pH. These discharges may occur during the construction of water utility lines at recreation relocation sites (campgrounds, marinas, and resorts) and new construction of USFS facilities (Fire Guard Station).

5. Discharges resulting from dewatering of uncontaminated dredge spoils. Potential pollutants include sediment, naturally occurring parameters metals or salts, temperature, and pH. These discharges could occur during cut and fill operations at recreation relocation sites (boat ramps, campgrounds, marinas, boat in campgrounds and resorts) and at USFS facilities (Fire Guard Station).

6. Discharges from fire hydrant testing or flushing air conditioning condensate. Potential pollutants include sediment, naturally occurring parameters metals or salts, temperature, and pH. Such discharges could occur during fire hydrant testing and air conditioning installation at recreation relocation sites (campgrounds, resorts, and cabins) and new construction of USFS facilities (Fire Guard Station).

The NPDES program also covers discharges resulting from Marina Operations. Current individual NPDES Permits covering marina discharges include:

- Antlers Resort and Marina Incorporated, DBA Antlers Resort and Marina, and U.S. Department of Agriculture Forest Service
    - Order No. R5-2008-0143, Waste Discharge Requirements/Monitoring & Reporting Program, Adopted on 11 September 2008

- Holiday Harbor Incorporated and U.S. Department of Agriculture Forest Service for Operation of Holiday Harbor Marina
    - Order No. R5-2008-0125, Waste Discharge Requirements/Monitoring & Reporting Program, Adopted on 31 July 2008

- Silverthorn Resort Associates Limited Partnership and U.S. Department of Agriculture Forest Service for Operation of Silverthorn Marina/Resort
    - Order No. R5-2008-0126, Waste Discharge Requirements/Monitoring & Reporting Program, Adopted on 31 July 2008

- U. S. Department of Agriculture, Forest Service and Peloria Marinas, LLC (DBA Bridge Bay Marina at Shasta Lake)
    - United States Department of Agriculture, Forest Service and Peloria Marinas, LLC, dba Digger Bay Marina
        - Order No. R5-2017-0074, Waste Discharge Requirements/Monitoring & Reporting Program, Adopted on 9 June 2017

CWA 404(r) applies only to discharges resulting from the SLWRI Project. As these discharges are existing discharges already covered under individual NPDES permits, Reclamation is not addressing them in this document.

The SLWRI Project will not impact discharges covered by individual permits to these marinas. Any changes in pollutants requiring a permit modification will need to be handled through the Central Valley Regional Water Quality Control Board.

Chapter 4. Supplemental Information on Shasta Dam Operations and Modeling

Chapter 4.1 Background

As a cornerstone of the CVP, Reclamation operates Shasta Dam in accordance to the latest BOs concerning the CVP and its coordinated operations. At the time Reclamation finalized the 2015 SLWRI FEIS, Shasta Dam operated in accordance with the following Biological Opinions issued from the USFWS and NMFS (2008/2009 BOs) and the 1986 Coordinated Operation Agreement (1986 COA):

- The U.S. Department of Interior, Fish and Wildlife Service *2008 Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the CVP and SWP* (2008 USFWS BO)

- The National Marine Fisheries Service *2009 BO and Conference Opinion on the Long-Term Operations of the CVP and SWP* (2009 NMFS BO)

- Coordinated Operations Agreement between Reclamation and DWR for the CVP and SWP, as ratified by Congress (1986 COA)

On August 2, 2016, Reclamation and the California Department of Water Resources (DWR) jointly requested the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project. USFWS accepted the reinitiation request on August 3, 2016, and NMFS accepted the reinitiation request on August 17, 2016.
Reclamation prepared and submitted the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Biological Assessment on January 31, 2019.

Starting in October 2019, Reclamation has operated Shasta Dam in accordance with the following:

- Amended Coordinated Operations Agreement between Reclamation and DWR for the CVP and SWP, as ratified by Congress (Amended 1986 COA)

- The U.S. Department of Interior, Fish and Wildlife Service *Biological Opinion for the Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and State Water Project* (2019 USFWS BO)

- The National Marine Fisheries Service *Biological Opinion for the Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and State Water Project* (2019 NMFS BO)

The 2019 BOs include operational changes for Shasta Dam and the CVP as a whole with regard to Shasta Dam's operational schedule, including timing and magnitude of releases and the amount of storage to be withheld in any given year. As the 2015 SLWRI FEIS modeled its alternatives based upon the 2008/2009 BOs, Reclamation has prepared this supplemental chapter in order to describe the effects of the alternatives operating under the 2019 BOs. In both the 2015 SLWRI FEIS and this Draft SEIS, Reclamation conducted its modeling using the CalSim-II model.

The alternatives in the 2015 SLWRI FEIS included the No Action Alternative, and three dam raise height alternatives for a 6.5-ft, 12.5-ft, and 18.5-ft dam raise. Additional alternatives were included for the 18.5-ft dam raise with changes in the amount of water withheld for cold-water pool storage and varying uses for the additional water deliveries.

Reclamation focused its modeling updates on the 18.5-ft dam raise in order to model the largest change in potential impacts to the environment and the largest potential changes from the 2015 SLWRI FEIS.

Chapter 4.2 Updated Operations and Modeling Results

Reclamation compared two scenarios for Shasta Dam operations. The 2015 scenario is identical to the information presented in the 2015 SLWRI FEIS and includes the No Action Alternative and the 18.5-ft raise, modeled using CalSim-II under the 2008/2009 BOs and 1986 COA. The 2019 scenario models the No Action Alternative and the 18.5-ft raise using the 2019 BOs and the Amended 1986 COA.

Shasta Lake Storage

Reclamation modeled scenarios for Shasta Lake storage and used end of April storage from model results as a proxy for May 1 storage. May 1 storage is used in determining the temperature tier for the upcoming temperature management season for the Sacramento River.

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. 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.

Keswick Dam Releases

Reclamation modeled releases from Keswick Dam for all months in all water year types. The months and water years with the largest magnitude of differences included:

- Critical Years in September. The 2019 scenario would increase flows by 1.2%, compared to an increase of flows of 7.5% under the 2015 scenario.
- Dry Years in March. The 2019 scenario would decrease flows by 5.7%, compared to an increase of flows of 0.1% under the 2015 scenario.
- Wet Years in November. The 2019 scenario would decrease flows by 5.7%, compared to an increase of flows of 0.1% under the 2015 scenario.
- Critical Years in January. The 2019 scenario would increase flows by 0.3%, compared to an increase of flows of 5.4% under the 2015 scenario.

Sacramento River Flows below Keswick Dam

Reclamation modeled maximum Sacramento River flows below Keswick Dam for all months. Maximum flows are not dependent on water year type. The months with the largest magnitude of differences included:

- February. The 2015 scenario would decrease flows by 0.01%, compared to a decrease of flows of 7.49% under the 2019 scenario.
- August. The 2015 scenario would increase flows by 8.4%, compared to a decrease of flows of 0.2% under the 2019 scenario.
- October. The 2015 scenario would increase flows by 6.9%, compared to a decrease of 0.1% under the 2019 scenario.

The differences in all other months were less than 5%.

Reclamation also modeled minimum Sacramento River flows below Keswick Dam for all months. Minimum flows are not dependent on water year type. The months with the largest magnitude of differences included:

- June. The 2015 scenario would decrease flows by 38.9%, compared to a decrease of flows of 0.4% under the 2019 scenario.
- July. The 2015 scenario would decrease flows by 5.4%, compared to a decrease of flows of 0.5% under the 2019 scenario.
- August. The 2015 scenario would decrease flows by 15.1%, compared to a decrease of flows of 0.6% under the 2019 scenario.

- October. The 2015 scenario would decrease flows by 0.03%, compared to an increase of flows of 4.1% under the 2019 scenario.

The differences in all other months were less than 5%.

Sacramento River Flows at Red Bluff Diversion Dam

Reclamation modeled average Sacramento River flow below the Red Bluff Diversion Dam for all months in all water year types. The months and water years with differences larger than 5% were:

- Dry Years in August. The 2019 scenario would increase flows by 1.1%, compared to an increase of flows of 6.3% under the 2015 scenario.

- Critical Years in September. The 2019 scenario would increase flows by 1.0%, compared to an increase of flows of 6.9% under the 2015 scenario.

The differences in all other months in all other water year types were less than 5%.

Sacramento River Flows at Bend Bridge

Reclamation modeled flows in the Sacramento River at Bend Bridge for the months of concern for Yellow-billed cuckoo (March through August). The largest differences included:

- Dry years in August. The 2019 scenario would increase flows by 2.6%, compared to an increase of flows of 6.5% under the 2015 scenario.

- Dry years in March. The 2019 scenario would decrease flows by 2.7%, compared to an increase of flows of 0.1% under the 2015 scenario.

Differences for all other months for all water year types were less than 2%.

Sacramento River Flows at Rio Vista

Reclamation modeled Sacramento River flow at Rio Vista for all months in all water year types. The months and water years with the largest magnitude of differences included:

- Dry Years in August. The 2019 scenario would increase flows by 1%, compared to an increase of flows of 9% under the 2015 scenario.

- Dry Years in September. The 2019 scenario would decrease flows by 0.6%, compared to an increase of flows of 4% under the 2015 scenario.

All other results for all months and water year types were generally within 2% of one another.

Delta Outflow

Reclamation modeled Delta outflow for all months in all water year types. In all months for all water year types, Delta outflow results for the 2019 scenario and 2015 scenario were within 2% of one another.

Temperature

Reclamation previously used the HEC-5Q 2015 model to model temperature changes within the Sacramento River as a result of implementing the alternatives presented in the 2015 SLWRI FEIS. This model was recently updated in 2019 to update the modeling of operating the upper shutters of the Shasta Temperature Control Device. The resulting effect of this model update is a more realistic use of available cold water in model simulation. Reclamation re-ran the model for the 2015 scenario with the updated model and found no significant differences in predicted temperatures under the HEC-5Q 2015 model versus the updated HEC-5Q 2019 model using the same inputs. Those differences that do exist are favorable for temperature management.

Under the 2019 BOs reflected within the 2019 scenario operations have shifted so that the cold-water pool is retained earlier in the temperature management season (May through October) in order to have additional cold-water storage available for releases later in the season. This results in slightly higher temperatures earlier in the season as releases are withheld and lower river temperatures later in the season as additional cold-water storage is available for release. This results in more total time in which Reclamation is meeting the 53.5° F temperature threshold at the below Clear Creek compliance location for salmonid egg incubation.

Reclamation modeled temperature in the Sacramento River under the 2019 scenario for the 18.5-ft raise using the updated HEC-5Q 2019 model. Compared to the temperatures modeled for the 18.5-ft raise under the 2015 scenario, the model predictably reflects the operations as described in the 2019 BOs. In critical years temperatures are higher earlier in the temperature management season and lower later in the season. In other years (wet, above normal, below normal, and dry) results show consistent decreases in temperature across most months.

For example, for the 18.5-ft raise in critical water years the 2015 scenario predicts an average water temperature in the Sacramento River below Keswick Dam of 52.4° F in May and 54.8° F in August. For critical water years in the same location for the 18.5-ft raise under the 2019 scenario, the updated model predicts an average water temperature of 52.9° F in May and 51.6° F in August. All other water year types show consistent decreases in temperature for every month within the temperature management season.

Further downstream, the 18.5-ft raise under the 2019 scenario predicts lower water temperatures in all months and water year types within the temperature

management season compared to the 18.5-ft raise under the 2015 scenario, except in June of critical years and September of wet and above normal years.

Chapter 4.3 Environmental Impacts

Reclamation evaluated which resources had the greatest potential to be impacted by the change in flows under the 2019 scenario. For most environmental resources, the magnitude and severity would not change under the 2019 scenario. Reclamation identified three species, Winter-run Chinook Salmon, Central Valley steelhead, and the Western Yellow-billed Cuckoo that are most likely to respond to small changes in flow and temperature.

Winter-run Chinook Salmon and Central Valley steelhead

Reclamation evaluated potential changes for spawning/egg incubation, rearing to outmigrating juveniles, adult holding, and adult migration for Winter-run Chinook Salmon and Central Valley steelhead in the Upper Sacramento River.

Storage

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.

Flows

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.

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 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.

Maximum flows below Keswick Dam decrease slightly under the 2019 scenario in comparison to the 2015 scenario. A decrease in maximum flows has the potential to adversely affect adult Winter-run Chinook Salmon migrating from the ocean to the upper Sacramento River.

Temperature
The SLWRI Project provides benefits to salmonid spawning and egg mortality by increasing the number of years that can be managed to a more stringent standard. The effect is particularly notable in the number of years that change from Tier 2 to Tier 1, but several other years move up a Tier as well (See Table 4-1).

Table 4-1. Temperature Tier Changes between Scenarios

Tier Classification	2015 Scenario (# of years)	2019 Scenario (# of years)
Tier 1	55	68
Tier 2	15	4
Tier 3	6	6
Tier 4	6	4

The improvement in Tiers reflects the greater availability of cold water, which is also reflected in the temperatures to which the river below can be cooled. Below Keswick Dam, with the exception of June in Critical Dry years and August in Wet years, there is a uniform improvement upon the No Action alternative in all water year types in the temperature management period of May through October.

These temperature improvements have the effect of reducing mortality measured by the Martin and Anderson mortality models, distinguished by their calculation of mortality across, respectively, the entire incubation period from deposition to emergence and the critical period just before hatching. While the tiny amount of mortality experienced in Above Normal years does not improve, all other water year types see mortalities decrease according to both models, with the most significant high mortality numbers in Critical Dry years seeing particularly large reductions.

Summary
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 2019 scenario offers improvements with temperature management scenarios which reflects the greater availability of cold water throughout the season, providing a benefit to the species and reducing mortality. The overall assessment remains beneficial to the species with an increase in cold-water storage and better temperature management within the Sacramento River.

Western Yellow-billed Cuckoo
Reclamation evaluated potential changes in impacts to the Western Yellow-billed Cuckoo in the project area. Western Yellow-billed Cuckoo has designated Critical Habitat within the project area that was not designated until after the publication of the 2015 SLWRI FEIS.

In order to determine potential changes in the Sacramento River flow near the designated Critical Habitat, Reclamation compared flows under the 2019 and 2015 scenarios from March through August in all water years. Spring flows are important for vegetation recruitment and growth within the Critical Habitat.

The 2019 scenario results in a decrease in flows during dry water years in March. A decrease in flows could result in less riparian vegetation recruitment and growth necessary for Western Yellow-billed Cuckoo Critical Habitat. Flows are within 2% (roughly equivalent) to the 2015 scenario for critical years in March, wet years in April and May, and above normal and below normal years in April. In all other spring months in other water years, the 2019 scenario provides an increase in flows. An increase in flows would provide additional vegetation recruitment and growth necessary for Western Yellow-billed Cuckoo Critical Habitat.

The 2019 scenario results in an increase in flows in most summer months and year types except for dry years in August, above normal years in July, below normal years in July, critical years in July, and wet years in August. In all other summer months in other water years, the 2019 scenario provides an insignificant (less than 5%) increase in flows.

Due to the small magnitude of the differences between the 2019 scenario and the 2015 scenario, Reclamation does not expect to see significantly different impacts to Western Yellow-billed Cuckoo than what was presented in the 2015 SLWRI FEIS.

Chapter 5. Wild and Scenic River Considerations for McCloud River

This chapter describes the effects of the dam and reservoir modifications proposed under SLWRI action alternatives on the wild and scenic river values of the lower McCloud River, one of the major tributaries to Shasta Lake.

This chapter differs from the other chapters in this Draft SEIS in that it concerns only the McCloud River and does not discuss other portions of the primary study area nor the extended study area. The study area for this chapter consists of the lower McCloud River from the McCloud River Bridge to the confluence with Little Bollibokka Creek (Figure 5-1).

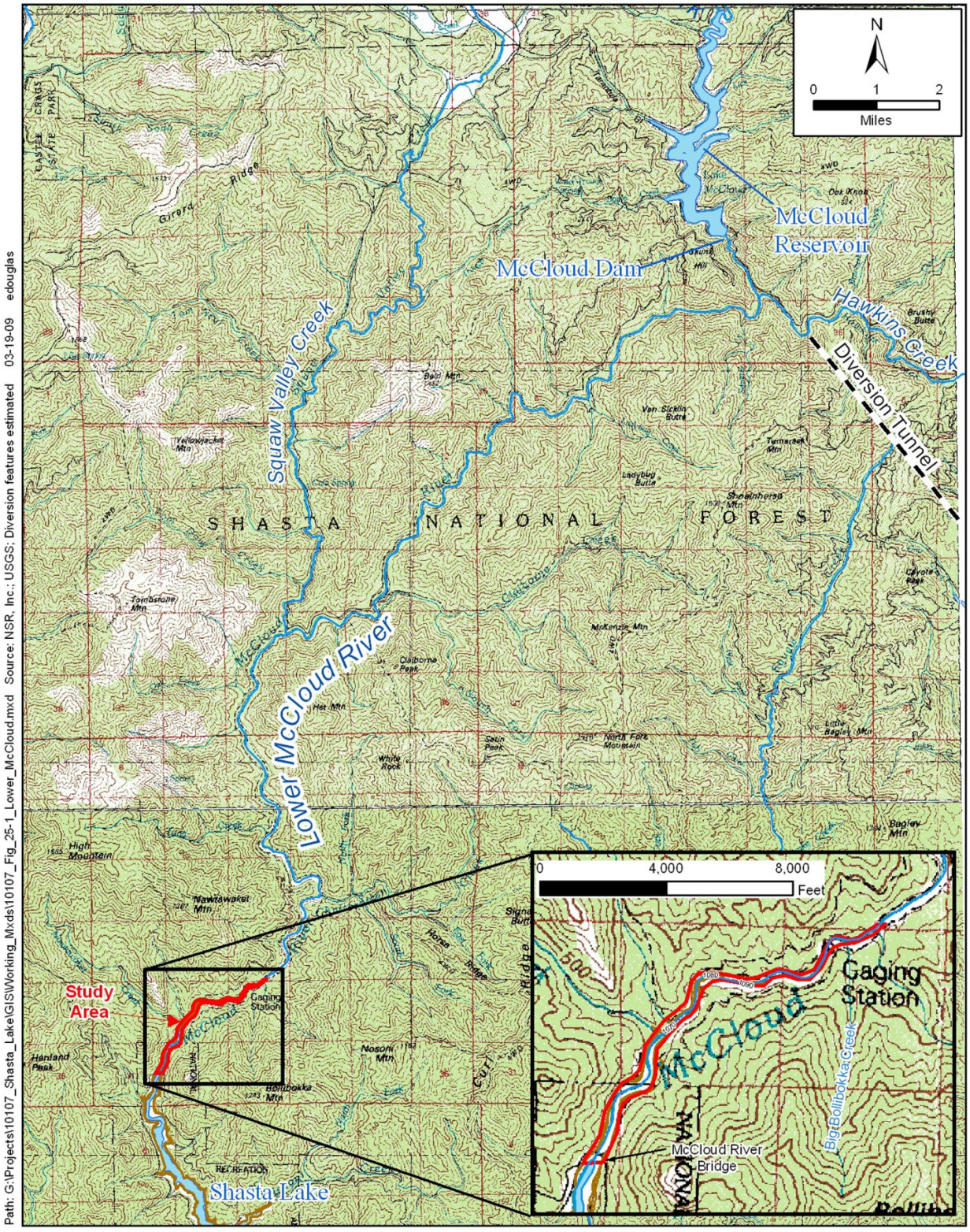

Figure 5-1. Lower McCloud River Study Area

The primary focus of this chapter is the wild and scenic river values of the lower McCloud River, particularly the reach that could periodically be inundated if Shasta Dam and Shasta Lake were enlarged. The discussion and analysis concentrate on the values for which the McCloud River has been determined eligible for listing under the Federal Wild and Scenic Rivers Act ((Federal WSRA); Public Law 90-542, as amended; 16 U.S. Code 1271-1287).

The State of California also did not identify the McCloud River as Wild and Scenic under the State Wild and Scenic Rivers Act. Instead, portions of the river were designated in the California Public Resources Code (PRC) Section 5093.542 as supporting a wild trout fishery.

This chapter also differs from the other chapters in this Draft SEIS; it first provides background information and then discusses the regulatory framework to provide context for the affected environment section. Portions of the 2015 SLWRI FEIS were originally written to support use of the document by the State or state entities under the California Environmental Quality Act. Reclamation has no obligation to analyze state law requirements under the California Wild and Scenic Rivers Act, and this section is therefore being revised to reflect and re-focus the analysis on the federal requirements.

Although the McCloud River is eligible for listing under the Federal Wild and Scenic Rivers Act, Congress has not identified the McCloud River as a federal wild and scenic river. In its Land and Resource Management Plan (LRMP) for Shasta and Trinity Forests, the USFS determined that it would not recommend the McCloud River for such a designation, and that it would instead work with local landowners to develop a Coordinated Resource Management Plan (CRMP) for the river corridor with a product of that plan being retaining the characteristics of the river that made it eligible for listing. This analysis evaluates potential impacts on the characteristics.

Chapter 5.1 Background

Segments of the McCloud River have been determined eligible for listing under the Federal WSRA but the river has not been formally listed as wild and scenic under the Federal WSRA and is not part of the national river system. The USFS evaluated the eligibility of the McCloud River for listing as wild and scenic under the Federal WSRA during preparation of the Shasta-Trinity National Forest (STNF) LRMP in 1994 (USFS 1994). Although the LRMP found the McCloud River eligible for listing, the LRMP direction was to not formally designate any reach of the river as wild and scenic. Instead of proposing listing under the Federal WSRA, the direction was to manage the lower McCloud River under a CRMP (USFS 1995a). The CRMP is a coordinated effort between landowners and stakeholders with a vested interest in the river. The CRMP requires its signatories to protect the outstandingly remarkable values (ORVs) on lands they own or manage to ensure that the river remains eligible for Federal designation as wild and scenic. The CRMP contains a provision stating that the USFS reserves the right to pursue designation if the CRMP is terminated or fails to protect these

values.

California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. However, as discussed above, this SEIS focuses on federal NEPA requirements. Because Reclamation previously addressed PRC 5093.542 in the 2015 SLWRI FEIS, it is addressed here as background information.

The California Natural Resources Agency (Resources Agency) evaluated the McCloud River in the late 1980s (Jones & Stokes Associates 1988) to determine whether it was eligible for listing under the PRC. The Resources Agency study found it eligible, but the California legislature declined to add the river to the California wild and scenic river system. The legislature instead passed an amendment to the California Wild and Scenic Rivers Act to protect the river's wild trout fishery below McCloud Dam, PRC Section 5093.542. The PRC was a compromise between the landowners and the State and served to prevent an energy company from constructing three small dams along the river. These structures were planned in the upper watershed of the McCloud and specifically cited in 5093.542(b). However, the legislature separately addressed DWR's participation in the feasibility of enlarging Shasta Dam, authorizing DWR to participate in technical and economic feasibility studies while directing that the agency could not assist or cooperate with planning of any other projects involving construction of a 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 (PRC Section 5093.542(c)). 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). Emphasizing the point, the legislature referred to the Shasta Dam project as an "enlargement," and separately referenced other projects as construction of "any dam, reservoir, diversion, or other water impoundment facility" [PRC Section 5093.542(b),(c)].

The Federal WSRA establishes a wild and scenic river corridor— typically at least 0.25 mile on each side of the river and requires Federal agencies to manage the public lands in the corridor to protect the river's free-flowing character and ORVs. In addition, the Federal agency managing rivers that are Federally designated as wild and scenic is required to develop and implement a management plan that will ensure the river's protection.

The USFS defined the lower McCloud River as the portion of the river that is currently periodically inundated by Shasta Lake – referred to in this chapter as the *transition reach* – as part of the lake rather than part of the river. The USFS defined the lower river as extending from McCloud Dam downstream to an elevation of 1,070 feet mean sea level (msl) (approximately 22 total river miles), which corresponds to the current full-pool elevation of Shasta Lake. The USFS determined that this portion of the river does not meet the definition of natural or free-flowing because it is downstream of McCloud Dam and some portions of the river offer public access.

In its evaluation, the USFS divided the McCloud River into 10 segments encompassing 46 total river miles: three segments along the upper McCloud River (24 river miles above McCloud Reservoir) and seven segments along the lower McCloud River (22 river miles below McCloud Dam). Numbering of the upper McCloud River segments began at the headwaters and counted downstream, but numbering of the lower McCloud River segments began at the downstream extent and counted upstream. The USFS concluded that all 10 segments of the McCloud River were eligible for listing as a Federal wild and scenic river because they are free-flowing, possess good water quality, and exhibit ORVs in the areas of cultural and historical resources, fisheries, geology, and scenic resources. Part of the lowermost segment – Segment 4 – would be periodically inundated if Shasta Lake is expanded. Segment 4 extends from about 5,400 feet upstream from the McCloud River Bridge, beginning at an elevation of 1,070 feet msl, to about Little Bollibokka Creek. The lower extent of this segment corresponds with the current full-pool elevation of Shasta Lake based on Reclamation geographic information system data. Figure 5-2 shows the downstream extent of Segment 4.

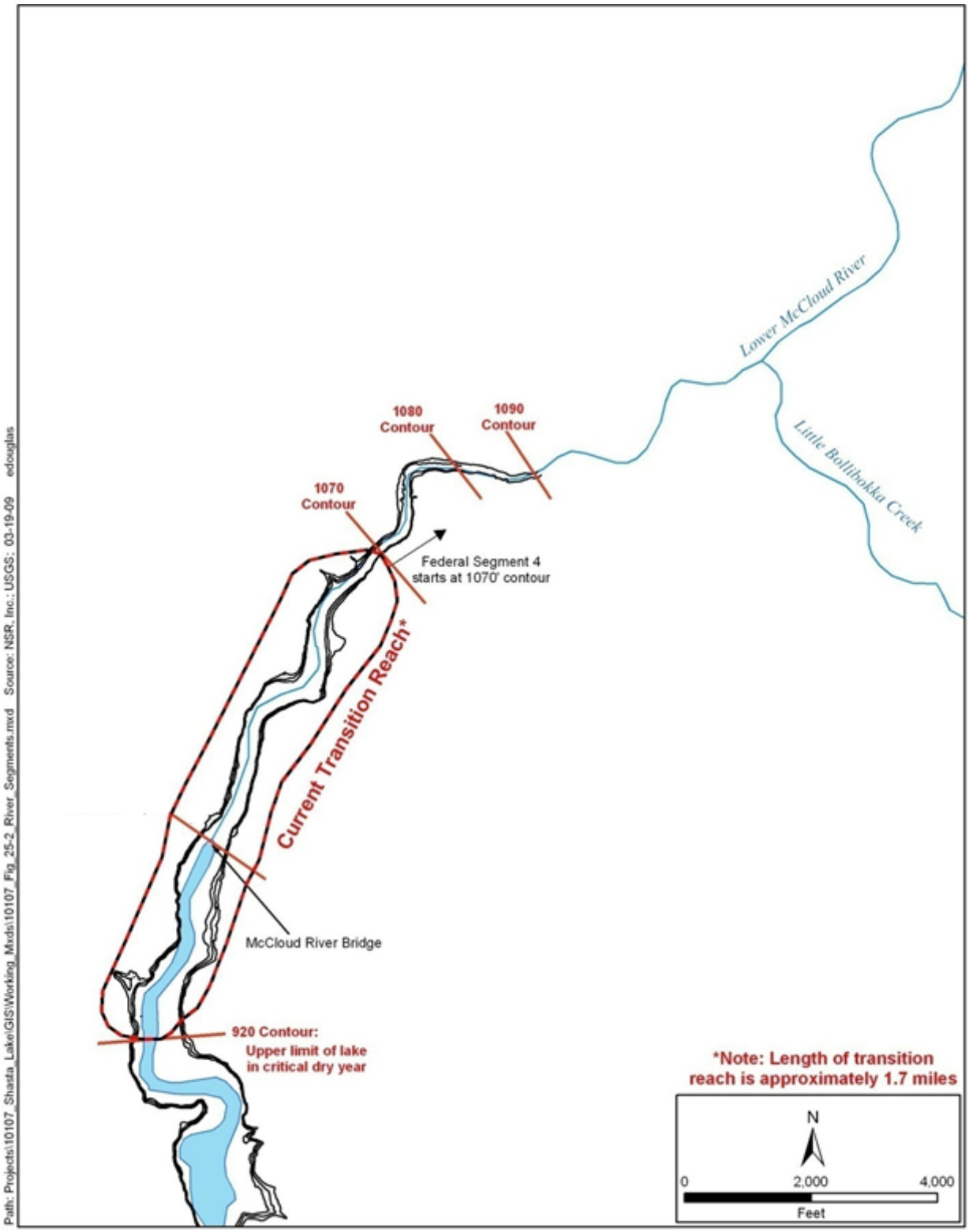

Figure 5-2. Federal Segments of the Transition Reach

Chapter 5.2 Regulatory Framework

5.2.1 Federal

Federal Wild and Scenic Rivers Act

The Federal WSRA, enacted in 1968, established the National Wild and Scenic Rivers System "to preserve rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations." To be eligible for inclusion in the system, a river must be free-flowing and exhibit ORVs. Free-flowing means "existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway" (16 United States Code (USC) Section 1286). ORVs are scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values (16 USC Section 1271). Depending on the specific conditions of a river, it may be designated as "wild," "scenic," or "recreation." Different segments of a single river can receive different designations; in other words, some segments can be designated wild, some scenic, and some recreation or combinations of these designations.

The Federal WSRA does not prohibit water developments that may affect portions of rivers that are eligible for inclusion in the National Wild and Scenic Rivers System. Section 5(d)(1) of the act does, however, require that in all planning for the use and development of water and related land resources, consideration be given to potential national wild, scenic, and recreational river areas by all Federal agencies involved.

Through the development and approval of the STNF LRMP, the USFS determined that segments of the McCloud River are eligible for inclusion in the national system; however, the river has not been formally designated and thus is not afforded protections under the Federal WSRA. Instead, the McCloud River CRMP was developed "to protect the [river's] unique and outstandingly remarkable features," thereby maintaining its eligibility.

The USFS evaluation concluded that the lower McCloud River, from McCloud Dam downstream about 22 miles to the river's transition to Shasta Lake at about 1,070 feet msl, provides outstanding cultural, fisheries, and geologic values, and its corridor has been classified as a highly sensitive visual area by the USFS (USFS 1994 and 1995b). The entire river corridor contains prehistoric and historic sites from past use by Indian tribes, late 1800 and early 1900 resorts, and evidence of historic logging. The lower river provides habitat for several salmonid species: bull trout/Dolly Varden (*Salvelinus confluentus*), which is believed to have been extirpated from the McCloud River; rainbow trout (*O. mykiss*), which has been transplanted all over the world; and brown trout (*Salmo trutta*), a non-native species.
Collectively, the rainbow and brown trout in the lower McCloud River are considered to be a "blue ribbon trout fishery" (USFS 1994). Outstanding geologic values include rock outcrops, cascades, and pools. Based on the ORVs,

the STNF determined that the lower McCloud River meets the eligibility requirements for designation under the Federal WSRA.

Shasta-Trinity National Forest Land and Resources Management Plan The STNF LRMP is a forest-wide land use plan developed to guide resource management within the forest (USFS 1995b). For planning purposes, the STNF is divided into six land allocations for which specific management prescriptions are identified. The land allocations include Congressionally Reserved Areas, Late-Successional Reserves, Administratively Withdrawn Areas, Riparian Reserves and Key Watersheds, Matrix Lands, and Adaptive Management Areas. Management areas were identified within the STNF to establish management direction in response to the issues and resources of each distinct area. The Management Area defined for the McCloud River provides resource direction for recreational use, specifically fishing (i.e., fishery) and viewing waterfalls, and management of old-growth habitat. Management of the wild and scenic river ORVs of the McCloud River is deferred to the CRMP.

Coordinated Resource Management Plan

In 1990, certain public agencies and private parties with interests in the management of lands adjacent to the McCloud River executed a memorandum of understanding to pursue preparation of a CRMP. The memorandum was signed by representatives of the USFS, California Department of Fish and Wildlife (CDFW), The Nature Conservancy, Pacific Gas and Electric Company (PG&E), the Bollibokka Land Company, Crane Mills, McCloud River Co-Tenants, Sierra Pacific Industries, and the Hearst Corporation. In 1991, the same signatories, along with California Trout Inc., signed another memorandum of understanding to establish the framework for and approve the CRMP. The CRMP was adopted in July 1991. In 2007, the property owned by the Bollibokka Land Company was sold to Westlands Water District, which is not a party to the CRMP.

The purpose of the CRMP is to protect the ORVs through coordinating the actions of signatory members on their individual properties. The CRMP has no authority, responsibility, or jurisdiction for protection of the ORVs beyond the actions of the signatory members on their properties. The CRMP provides a framework for coordinating management activities among the participants to ensure that the characteristics of the river that make it eligible for Federal wild and scenic river designation are protected.

Under the terms of the CRMP, the USFS “reserves the right to pursue [Federal wild and scenic river] designation” if the CRMP is terminated or significantly impaired or if it fails to protect the values that make the river suitable for such designation. This would occur if, for any reason, the actions of a signatory member of the CRMP on the signatory member’s land failed to protect the ORVs, as described in the CRMP Memorandum of Understanding.

Chapter 5.3 Affected Environment

This section defines "affected environment" as the wild and scenic characteristics of the lower McCloud River that could be affected by the proposed modifications to Shasta Dam and Shasta Lake. It briefly describes the McCloud River from its headwaters to the McCloud Arm of Shasta Lake. It then describes the various elements including the wild and scenic values of Segment 4 identified in the USFS evaluation.

Descriptions of the river and its characteristics were derived primarily from the following sources:

- Wild and Scenic Rivers Evaluation, Appendix E to the 2015 SLWRI FEIS for the Shasta-Trinity National Forest Land and Resources Management Plan (USFS 1994)
- Lower McCloud River and McCloud Arm Watershed Analyses (USFS 1998a and 1998b)
- McCloud River Wild and Scenic River Report (Jones & Stokes Associates 1988)
- Lower McCloud River Wild Trout Area Fishery Management Plan, 2004 through 2009 (Rode and Dean 2004)
- Lower McCloud River Habitat Typing Report (USFS 2001)

Chapter 5.4 The McCloud River

McCloud River Basin

The McCloud River basin drains an area of approximately 800 square miles (USFS 1998a) in northern Shasta County and southern Siskiyou County, southeast of Mount Shasta. The river originates in an area of the STNF near Colby Meadows at approximately 4,250 feet above msl (Rode and Dean 2004). From its headwaters to Shasta Lake, the river is approximately 59 miles long. McCloud Reservoir, part of PG&E's McCloud-Pit Hydroelectric Project, separates the upper river from the lower river. The lower McCloud River transitions into the McCloud Arm of Shasta Lake upstream from the McCloud River Bridge (Figure 5-3).

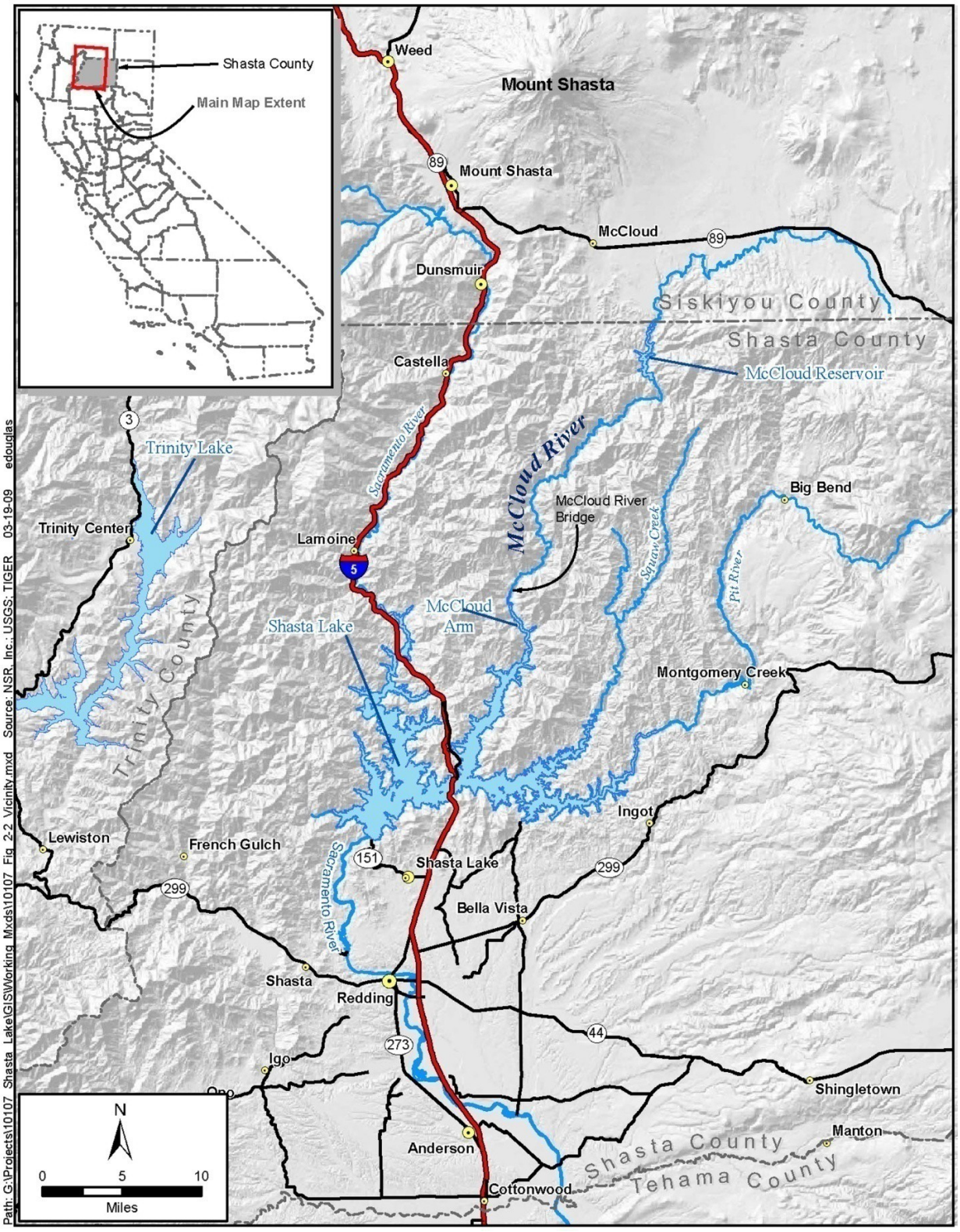

Figure 5-3. Regional Location

Upper McCloud River

The upper McCloud River is an approximately 36-mile reach from the river's origins at Colby Meadows downstream to the transition with McCloud Reservoir. The river basin above the reservoir drains an area of approximately 403 square miles. Mean monthly flows in the upper McCloud River range from 766 cfs in October to over 1,000 cfs in March, April, and May (PG&E 2006).

McCloud Reservoir

The McCloud Reservoir is a major component of PG&E's McCloud-Pit Hydroelectric Project, which was constructed in 1965 and operates under license from the Federal Energy Regulatory Commission (FERC). The McCloud Reservoir is approximately 5 miles long and has a storage capacity of approximately 35,200 acre-feet of water. The McCloud-Pit Hydroelectric Project diverts approximately 75 percent of the upper McCloud River's flow through a pipeline to Iron Canyon Reservoir, then conveys it downslope and discharges it into the Pit River at the Pit 6 powerhouse, upstream from the Pit River Arm of Shasta Lake (PG&E 2006). The remaining 25 percent of flows provide base flow for the lower McCloud River, a considerable reduction from historic flow volumes (Jones & Stokes Associates 1988).

Lower McCloud River

The lower McCloud River flows southwesterly through a deep canyon with steep slopes approximately 22 miles from McCloud Dam downstream to the transition with Shasta Lake. Vegetation along the lower river is predominately mixed-conifer and Douglas-fir forest. This stretch of river receives runoff from a 404-square-mile area of the lower McCloud River basin and the 95-square- mile Squaw Valley Creek basin. It provides exceptional fishing opportunities and includes two long-established fishing clubs, the Bollibokka Club and the McCloud River Club. The Nature Conservancy's McCloud River Preserve also encompasses a portion of the lower McCloud River.

Flows in the lower McCloud River have been controlled by releases from McCloud Dam since 1965 (PG&E 2006). Under its current FERC license,[1] PG&E's McCloud-Pit Hydroelectric Project maintains a minimum flow of 50 cfs from May through November and 40 cfs from December through April through controlled releases. At McCloud dam, required minimum flows are 50 cfs from May 1 through November 30, and 40 cfs from December 1 through April 30; actual flow releases are usually much higher in order to meet downstream requirements at the Ah-Di-Na gage. For the Lower McCloud River at Ah-Di-Na (gage MC-1), there are dual minimum flow requirements for dry and normal years: dry year minimum instream flow requirements range from 160 to 180 cfs, depending on the month. During normal years, the minimum instream flow requirement at Ah-Di-Na ranges from 160 to 210 cfs, depending on the month. Accordingly, flows in the lower McCloud River are highly regulated, and annual flows in the river below McCloud Dam do not follow a pattern typical of an

[1] PG&E is currently undergoing FERC relicensing and minimum flows in the McCloud River may increase.

unimpaired mountain river in northern California. Before dam construction, flows in the lower river were considerably higher, estimated to be in the range of 924 to 1,245 cfs (mean monthly flows) from June to October (Jones & Stokes Associates 1988, citing U.S. Geological Survey (USGS) for the period of 1967 to 1985).

McCloud Arm of Shasta Lake

The construction of Shasta Dam between 1938 and 1945 converted part of the lower McCloud River into the McCloud Arm of Shasta Lake. The McCloud Arm is more than 16 miles long, with approximately 70 miles of shoreline. It drains an area of approximately 41,000 acres (USFS 1998b). Water levels in the arm fluctuate with the lake's water levels, and during periods of lower water levels, a water line, known as the "bathtub ring," is evident along the banks; this bathtub ring extends about 1 mile upstream from the McCloud River Bridge. During extended periods of lower water levels, vegetation may become established on the exposed banks.

The upper extent of the lake encompasses the transition reach, which varies between about 920 and 1,070 feet msl. Because of the effects of Shasta Lake on the McCloud Arm, the STNF determined that the transition reach did not meet the eligibility requirements of a wild and scenic river (USFS 1994). The USFS defined the upper limit of the McCloud Arm as an elevation of 1,070 feet, or approximately 5,400 feet above the McCloud River Bridge. This elevation corresponds to the lower limit of Segment 4 as defined in the STNF LRMP.

The transition reach provides a corridor for fish migrating between Shasta Lake and the lower McCloud River and contributes to the unique fishery of the river. Common fish in the McCloud Arm include native species such as rainbow trout, riffle sculpin, and speckled dace, as well as non-native species (e.g., brown trout, spotted bass) (North State Resources, Inc. 2008).

Water temperatures in the McCloud Arm become warmer as the river transitions to Shasta Lake. The warmer temperatures associated with Shasta Lake support warmwater fish, but the cooler temperatures of the transition reach may prevent some fish from migrating upstream into the lower river. Water temperatures in the transition reach may be suitable for warmwater species.

5.4.1 The McCloud River's Wild and Scenic Values

This section focuses on the wild and scenic river characteristics and ORVs of the lower McCloud River identified by the USFS in the wild and scenic river evaluation performed for the STNF LRMP (USFS 1994) and the wild and scenic river characteristics and extraordinary value protected under the PRC.

The McCloud River's fishery and its free-flowing condition are identified in the USFS evaluation. These characteristics are discussed first, followed by a discussion of the wild and scenic characteristics and values – water quality, geology, cultural/historical resources, and visual quality/scenery – that are identified only in the USFS evaluation.

Throughout the development of the 2015 SLWRI FEIS, Reclamation worked closely with private landowners to collect information, perform technical investigations, and incorporate the best available science to support the 2015 SLWRI FEIS.

Reclamation worked closely with private land owners, including the signatories to the CRMP, to incorporate available information on the McCloud River into the 2015 SWLRI FEIS. The following section includes a brief description of the current transition reach (see Figure 5-1) because the reach of the river that would be newly inundated would likely take on the characteristics of the existing transition reach.

Fishery

The fishery of the lower McCloud River is unique; the river is considered a premier trout fishery and is managed according to CDFW's wild trout policy for the reach from Algoma Campground downstream to the lower end of the Nature Conservancy property, despite the ongoing effects of McCloud Dam and Shasta Lake on the river's flows and water quality, and the more recent impacts of the 2012 Bagley Fire and the 2019 Mountain Fire on the lower McCloud River watershed. To characterize the fishery, this section includes descriptions of the aquatic habitat in USFS Segment 4, and the transition reach as well as the fish species that inhabit the study area.

Aquatic Habitat The lower McCloud River is characterized as a series of alternating riffles, pools, and cascading pocket water occurring along a broad, boulder-studded river channel within a confined, heavily timbered valley. A narrow band of montane riparian vegetation (typically less than 25 feet wide) dominated by willows, white alders, and Oregon ash occurs along the river banks adjacent to steep hill slopes with mixed conifer-Douglas-fir forest (USFS 2001).

In 2001, the USFS prepared a Habitat Typing Report to characterize aquatic habitats in the lower McCloud River from the McCloud River Bridge to McCloud Dam. The report divided the lower river into four reaches: McCloud

Dam to Ladybug Creek, Ladybug Creek to Clairborne Creek, Clairborne Creek to Tuna Creek, and Tuna Creek to McCloud River Bridge. The reach from Tuna Creek to McCloud River Bridge includes all of Segment 4 and nearly all of Segment 10, including the portion of the transition reach that is part of Segment 10. Data are not available for the transition reach below the McCloud River Bridge downstream to Shasta Lake.

The dominant aquatic habitat in the reach of the lower river from Tuna Creek to McCloud River Bridge includes runs (20 percent), mid-channel pools (18 percent), low-gradient riffles (18 percent), lateral scour pools from bedrock (11 percent), and pocket water (10 percent) (USFS 2001). This reach provides most of the corner pool (100 percent), glide (89 percent), and cascade (50 percent) habitats in the lower McCloud River.

The portion of the transition reach upstream from McCloud River Bridge is dominated by low-gradient riffles and mid-channel pools, with some pocket water, glides, runs, and lateral scour pools. Glide habitat is the dominant aquatic habitat between the 1,070-foot and 1,080-foot elevations, and pocket water is the dominant aquatic habitat between the 1,080-foot and 1,090-foot elevations. The habitat within the current transition reach represents a fraction (only 3%) of the total available aquatic habitat within the lower McCloud River and provides a small portion of the habitats within the reach from the McCloud River Bridge to Tuna Creek.

The diversity of riffles, flatwater habitat, and pools is influenced by the presence of boulders and cobble substrate and variations in flow conditions. The lower river is dominated by boulders with pockets of gravel present at pool tailouts and in velocity breaks behind large boulders. The riffles are generally higher gradient channel sections with turbulent surface flow and uniform cobble and boulder substrates. While swift pocket water in the lower McCloud River often appears more like a riffle than a run, the habitable eddies, or pockets, created behind the boulders that characterize this habitat type make it functionally more similar to the other flatwater habitats (USFS 2001).
Typically, flatwater and pools are the principal habitats used by the trout in the McCloud River for rearing and feeding (Wales 1939, Rode and Dean 2004, USFS 2001).

When Shasta Lake is drawn down, large, wide, low-gradient riffles with channel braiding dominate in this reach. When the lake is at full pool and at intermediate levels of drawdown, the transition reach becomes inundated, but a unidirectional current created by the lower McCloud River’s inflow is detectable throughout the inundation zone, slowing as it approaches the flat water of Shasta Lake. To varying degrees, this fluctuating backwater effect converts this reach to a deep,

wide, slow-moving riverine habitat transitioning to lacustrine habitat near the bottom of the transition reach.

Fish Species The current composition and distribution of fish species inhabiting the lower McCloud River and Shasta Lake reflect the historic fishery, the operational effects of Shasta Dam and McCloud Dam, and the introduction of nonnative fish species into the river and Shasta Lake. The completion of Shasta Dam in 1945 eliminated all runs of anadromous fish in the river (Rode and Dean 2004). The historic fishery included Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*O. mykiss irideus*), rainbow trout, and the only known California occurrence of the bull trout. The bull trout is believed to have been extirpated from the lower McCloud River and is possibly extinct in California. Today, the fishery is dominated by rainbow trout and brown trout, an introduced species that migrates between Shasta Lake and the lower McCloud River. Other nonnative species also migrate up the lower McCloud River, including spotted bass (*Micropterus punctulatus*), but bass have not been confirmed upstream from Tuna Falls, a high-gradient rapid at the confluence with Tuna Creek.
Despite the change in fish species in this 22-mile reach, the lower McCloud River is still considered one of California's premier trout streams.

Fish observed in the river downstream from the Tuna Creek confluence during a survey conducted in summer 2007 included rainbow trout, spotted bass, speckled dace (*Rhinichthys osculus*), sculpin spp. (*Cottus* spp.), Sacramento sucker (*Catostomus occidentalis*), and Sacramento pikeminnow (*Ptychocheilus grandis*) (North State Resources, Inc. 2008). Other fish that occur in this reach include brown trout, brook trout (*Salvelinus fontinalis*), hardhead (*Mylopharodon conocephalus*), and smallmouth bass (*Micropterus dolomieui*). The status of the riverine fish species of the lower McCloud River is identified in Table 5-1.

Rainbow Trout Fluvial and adfluvial populations of rainbow trout use the habitat available throughout the lower McCloud River. The McCloud River rainbow trout became known as "the rainbow of the fish culturist" because eggs from that population accounted for transplants of rainbow trout in the 1880s to the eastern states and several other countries.

The rainbow trout that inhabit the McCloud River are a vigorous, active fish that primarily inhabit swifter portions of pool and pocket water habitats. Adults migrate into the lower McCloud River from Shasta Lake in the spring and fall months, presumably to spawn. Suitable spawning habitat in the study area is limited, and the trout likely migrate further upstream to spawn (North State Resources, Inc. 2008).

Although the genetic origin of these fish has not been evaluated, the numerous strains of rainbow trout planted in Shasta Lake over the years have likely resulted in some introgression among migratory rainbow trout in the lower McCloud River. The degree to which this migratory population of rainbow trout

contributes to the native trout fishery of the river is not specifically known; however, available data do not indicate that it is substantial.

Table 5-1. Riverine Fish Species of the Lower McCloud River

Species	Current Status	Comments
Sacramento sucker (*Catostomus occidentalis*)	Common	Native, non-game species, observed during 2007 surveys
Riffle sculpin (*Cottus gulosus*)	Common	Native, non-game species, observed during 2007 surveys
Smallmouth bass (*Micropterus dolomieui*)	Uncommon	Introduced sport species in Shasta Lake, moves into lower river from lake, warmwater species
Spotted bass (*Micropterus punctulatus*)	Uncommon	Introduced sport species in Shasta Lake, moves into lower river from lake, observed during 2007 surveys, warmwater species
Hardhead (*Mylopharodon conocephalus*)	Uncommon	Native, non-game species
Rainbow trout (*Oncorhynchus mykiss*)	Abundant	Native trout species, subject to special angling regulations, coldwater species, observed during 2007 surveys
Sacramento squawfish (=pikeminnow) (*Ptychocheilus grandis*)	Common	Native, non-game species, observed during 2007 surveys
Speckled dace (*Rhinichthys osculus*)	Common	Observed during 2007 surveys
Brown trout (*Salmo trutta*)	Common	Introduced sport species found throughout the river, migrates from Shasta Lake to spawn in lower river, subject to special angling regulations, coldwater species
Bull trout (*Salvelinus confluentus*)	CE; Extinct	Native, believed extirpated from entire river by mid-1970s, a few restoration experiments performed in upper river tributaries, coldwater species
Brook trout (*Salvelinus fontinalis*)	Rare	Introduced sport species, stocking in upper river and tributaries discontinued, very rarely observed in lower river, coldwater species

Sources: Wales 1939, Tippets and Moyle 1978, Rode and Dean 2004, Moyle 2002, CDFW, unpublished data, North State Resources, Inc. 2008
Key:
CE = California Endangered
CDFW = California Department of Fish and Wildlife

Rainbow trout typically mature in their second to third year and move upstream to spawn in the lower McCloud River and its tributaries from February to June. The eggs typically hatch in 3 to 4 weeks, depending on water temperature, and fry emerge 2 to 3 weeks later. The fry remain in quiet waters close to shore, among cobbles, or under overhanging vegetation for several weeks. As the fish grow, they move into swifter water habitats.

In the river, this species forms feeding station hierarchies, which they aggressively defend, and prey on aquatic and terrestrial insects drifting in the current. They also eat active bottom invertebrates. It has been reported that

McCloud River rainbow trout tend to be more bottom-oriented when feeding than rainbow trout elsewhere.

In reservoirs, rainbow trout form loose schools and feed on both invertebrates and other fish, although fish dominate their diet as they grow larger. Preferred prey in Shasta Lake is the threadfin shad. Trout growth in Shasta Lake is more rapid than for fluvial trout. The optimum temperature range for growth and for completion of most life stages of rainbow trout is between 50 and 70 degrees Fahrenheit (°F), though they seem to prefer and thrive at temperatures in the lower two-thirds of this range. Rainbow trout in lakes and streams seldom live for more than 6 years.

Brown Trout Like the rainbow trout, fluvial and adfluvial populations of non-native brown trout use habitat throughout the lower McCloud River, but this species migrates more between the lake and river. It is not as abundant as the rainbow trout. CDFW biologists suggest that this species occupies an ecological niche previously occupied by bull trout in the lower McCloud River (Rode and Dean 2004).

Only some of the brown trout migrating from Shasta Lake that passed a lower river counting weir were observed upstream in the CDFW Wild Trout Management Area (Segments 7, 8, 9, and 10), so the actual extent of the spawning grounds of migratory brown trout is not fully known.

Brown trout mature in their second or third year. Some fish may mature in the river while others may migrate to Shasta Lake to feed, returning to spawn on a recurring basis. The stimulus for upstream migration is often a rise in stream flow or changing lake temperatures. Spawning takes place from November through December when water temperatures fall below 50°F. Eggs typically hatch within 7 to 8 weeks, depending on water temperature. Fry emerge from the gravel 3 to 6 weeks later. The habitats used by juvenile brown trout are similar to those used by rainbow trout; however, as brown trout grow, they tend to select habitats with slower water and more cover. In the riverine environment, brown trout prefer slow, deep pools with abundant boulder and bedrock ledge cover. The timing of emigration of juvenile brown trout to Shasta Lake is not known.

Fluvial brown trout have diets similar to those of rainbow trout, but appear to feed more on the stream bottom for benthic prey than rainbows. As brown trout grow, their diet expands to include larger invertebrate prey and fish. Larger brown trout are voracious predators, especially on fish, including young salmonids. In Shasta Lake, adult brown trout prefer threadfin shad as a staple prey.

Brown trout growth in the lower McCloud River appears to increase after age 3, which has been attributed to their migration to Shasta Lake to exploit the forage fish populations. Brown trout growth is best at temperatures ranging from 45 to

69°F, though they seem to prefer and dominate other trout species near the upper half of this range.

Spotted Bass and Smallmouth Bass Black basses and other sunfishes dominate in the littoral zones of Shasta Lake. Spotted bass and smallmouth bass are now the most common species of black bass in Shasta Lake, with spotted bass having become most frequent over the past 20 years. Both spotted and smallmouth bass occupy shallow, low-gradient habitat offered by Shasta Lake and its tributaries. They can be found throughout Shasta Lake and in the lower ends of the main tributary streams, including the lower McCloud River.
However, the extent to which black bass have colonized the lower McCloud River is not currently known.

Smallmouth bass and spotted bass share similar life histories, and these similarities may account for their persistence in Shasta Lake compared to that of largemouth bass, which have declined in numbers. Both smallmouth and spotted bass mature in their second or third year and spawn in the late spring.
Smallmouth will spawn at cooler temperatures (55 to 61°F) than spotted bass (greater than or equal to 65°F). Both species seek quiet shallow areas over mud, sand, gravel, and rocky, debris-littered bottoms to spawn in both lakes and streams. This type of spawning habitat is available in the transition reach of the lower McCloud River, especially when lake levels are high.

Juvenile bass feed on small invertebrates until they are large enough to prey on small fish and large invertebrates. Temperature preferences and optimal growth for both species of black basses is attained in the range from 68 to 81°F. Because of the year-round cool temperatures (less than or equal to 68°F) of the lower McCloud River, temperatures preferred by bass only occur during the late summer and early fall months upstream from the transition reach. Therefore, the temperature regime of the lower McCloud River may limit intrusions of bass from the lake. However, spotted bass were observed in the lower river below the confluence of Tuna Creek during summer fish surveys (North State Resources, Inc. 2008).

Free-Flowing Condition

The Federal WSRA defines *free-flowing* as “existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway” (16 USC Section 1286).

Base flows in the lower McCloud River are predominantly controlled by releases from McCloud Reservoir in accordance with PG&E’s FERC license and include precipitation and inflow from tributaries. The lower McCloud River experiences seasonal fluctuations and large variations in base flows from storm events only (USFS 1998a). Releases from McCloud Reservoir into the lower river are heavily regulated, with a minimum release requirement of 50 cfs from May through November and 40 cfs from December through April; the releases are typically well above these minimum requirements and tend to stay above 100 cfs due to tributary flows (USFS 1998a). Tributary contributions are the most noticeable flows during storm events, but are substantially reduced during low-flow conditions. Because of

the minimum release requirements from McCloud Reservoir, spring and summer flows are considerably more stable than they would be under unregulated conditions. The "free-flowing" nature of the flows below McCloud Reservoir are regulated in a large part due to the minimum release requirement imposed on PG&E. The 1988 Natural Resources Agency Report specified that the lower reach was not eligible for designation as "free-flowing" because its flows are controlled by the McCloud River Dam and affected by the existing Shasta reservoir.

PG&E monitors lower McCloud River flows in accordance with its FERC license at a gaging station in Segment 4 upstream from Shasta Lake (0.2 mile downstream from Big Bollibokka Creek); the most recent available water data record covers the water year October 2018–September 2019 (USGS 2019). For this period, measured mean monthly flows ranged from 280 cfs in November to a high of 11,800 cfs in February.

Over the course of the year, the transition from lake to river expands and contracts over a distance of about 1.7 miles (only 5400 feet above the McCloud River bridge due to changing water levels in Shasta Lake (Figure 5-2)). During April and May of wet years, the transition reach extends about 1 mile (5,400 feet) upstream from the McCloud River Bridge to the full pool elevation of 1,070 feet msl, the downstream boundary of Segment 4. As described in Chapter 6 of the 2015 SLWRI FEIS, "Hydrology, Hydraulics, and Water Management" Shasta Lake reaches full-pool elevation about one year in three.

Water Quality

The water quality of the lower McCloud River is influenced by natural processes and land use activities, including PG&E's McCloud-Pit Hydroelectric Project, timber management activities, and roads. Overall, the water quality of the river is rated as good (USFS 1998). Glacial silt gives the river "a beautiful turquoise color typical of rivers draining glacial valleys in British Columbia and Alaska" (Jones & Stokes Associates 1998).

Turbidity and water temperature are two important factors that influence the water quality of the river and affect aquatic habitat. Turbidity is caused by suspended sediment transported from upstream waters and in surface runoff, particularly from disturbed landscapes, such as areas burned by fire, timber harvest areas or roads. Water temperature is affected by a variety of conditions, such as river flows, solar radiation, and density of vegetation along the river, but is closely tied to the temperature of the flows released from the McCloud Reservoir.

The turbidity of the lower McCloud River is influenced by the water quality and water levels of the McCloud Reservoir and runoff from upland areas throughout the basin. Turbidity levels are generally low during most of the year, ranging from 5–10 nephelometric turbidity units, but can spike to more than 900 units during periods of intense rainfall and flood flows (PG&E 2006).

Sediment becomes trapped at McCloud Dam and is released into the lower river during large storm events, temporarily increasing turbidity levels, especially in the

upper segments of the lower river. Testing of the McCloud Dam bypass valve can cause high turbidity for a short period when sediment is discharged from the reservoir into the lower McCloud River. Surface runoff, especially after the first storms of the wet season, can contribute large amounts of turbid runoff from upland areas.

The length of the transition reach depends on the water year type. As the transition reach moves upstream, sediment within the reach is remobilized and turbidity levels respond accordingly. Periodic fluctuations in water levels can result in erosion along the banks and localized increases in turbidity levels in the transition reach and the McCloud Arm.

The year-round cool water temperature regime of the lower McCloud River inhibits the productivity of its fishery, but provides high-quality holding habitat for salmonids, contributing to the river's unique value as a tributary to Shasta Lake. The controlled releases from McCloud Dam appear to have a direct bearing on the water temperatures downstream. Water temperatures tend to be higher in Segment 4 than immediately below McCloud Dam. Data recorded at PG&E's monitoring station on the river just upstream from Shasta Lake (0.2 mile downstream from Big Bollibokka Creek) indicate that water temperature ranges from the high 30s to the upper 60s (°F), with lower temperatures in the winter and higher temperatures in the summer (PG&E 2006).

The infusion of cooler water from the lower McCloud River influences water temperatures in the transition reach throughout the year. The degree of influence depends on the amount of discharge from the river and Shasta Lake levels. The temperatures throughout the lower McCloud River also control to some degree the distribution of the warmwater fishery known to occupy the river below Tuna Falls.

Outstandingly Remarkable Values Identified in USFS Evaluation

Cultural/Historical Resources Cultural resources include archaeological sites, historical structures and sites, and areas of religious or cultural significance to Native Americans. Significant resources that provide important information on the prehistory and history of an area or that are considered sacred to Native Americans can contribute to wild and scenic river values.

The McCloud River basin was part of a major center of occupation by the Wintu people, who occupied the McCloud River area at the time of Euro-American contact in the 1800s. Although much of the Wintu territory was overrun with miners and other opportunistic Euro-Americans, the lower McCloud River was left largely untouched due in part to a lack of easily mined materials and the ruggedness of the terrain (Yoshiyama and Fisher 2001), but also because of the resistance of the Wintu to incursions into their territory.

Because of its generally undisturbed nature, the significance of the lower McCloud River to prehistoric and ethnographic records of this area of California's history is considered to be great (Jones & Stokes Associates 1988).

Within the 0.25-mile corridor deemed eligible by the USFS, three formally

recorded sites and other known sites contribute to the lower river's ORVs because they provide important information on the use of the area from before the Late Archaic Period (1300 to 150 before present, calibrated using radiocarbon dating) to the Historic Era (1840 to present). Three Wintu villages, called Tsekerenwaitsogi, Klolwakut, and Boloibaki, are thought to have been located in the general area of the present-day Bollibokka Club headquarters (Guilford-Kardell 1980), which is part of the former Wintu territory. These villages likely represent the typical lifestyle of the Wintu at the time of Euro- American contact, when they lived in permanent villages near rivers and streams and were semi-sedentary, foraging people (DuBois 1935). As part of the Wintu occupation of this area, prehistoric, historic, and modern Traditional Cultural Properties, sacred locations, and important use areas are located throughout the lower McCloud River basin (outside of the 0.25 mile corridor), including features such as mountains, unique landforms, caves, distinctive rock outcrops, waterfalls, pools, springs, and resource gathering areas.

Point McCloud Bridge (known as McCloud River Bridge in this chapter) is a historical resource that was constructed in 1940 and altered in 1986; the bridge would be subject to relocation in conjunction with SLWRI activities. The Bollibokka Club is a historical resource located on the north bank of the river between the confluence of Big Bollibokka Creek on the east and Wittawaket Creek on the west. Buildings associated with the club were built between the 1860s and 1920s by Austin and Rueben Hills, the founders of Hill's Brothers Coffee, and previous owners (Lucas and Stienstra 2007). A log cabin dates from the 1860s, and other structures date from the ownership of the Hills Family, including the clubhouse built in 1924 and a structure built of river cobble in 1915 (Whitney 2004). Although these resources could be eligible for listing on the National Register of Historic Places, they have not been formally evaluated.

The fishery of the lower McCloud River was also very important to prehistoric and historic uses of the area. The Native Americans in the lower McCloud River basin conducted communal fish drives of salmon or steelhead at night, which brought together many communities and provided opportunities for trade and social networking, including the parsing out of the catch among the people and villages involved (DuBois 1935). Fish, including salmon, steelhead, Sacramento sucker, freshwater shellfish, and lamprey, were an important part of the Native American diet in this area. When the northern mines opened in the 1800s, settlers moved into the area, and the McCloud River and other rivers' fisheries provided important sources of food. In the early years of settlement, fish and game in the area were used for subsistence; however, this changed with the formation of the State of California and increased fishery management and recreational fishing.

Geology The lower McCloud River flows through a number of geologic formations, including the McCloud Limestone formation. This formation contains fossilized remains of invertebrate and vertebrate fauna that provide important scientific information on the history of California, and it has a high potential for research. According to the USFS (1998b), the limestone features exposed at a number of locations around Shasta Lake are unique and contribute to worldwide paleontological knowledge. The McCloud Limestone contains 36 species of

corals, some of which may form the basis of a new taxonomic group.

Because of its very diverse fossil faunas, the mountainous terrain between the McCloud and Pit arms of Shasta Lake is perhaps California's single most important area for paleontological research (Munthe and Hirschfield 1978, cited in USFS 1998b). The limestone outcrops on the ridge immediately northwest of McCloud River Bridge (several hundred vertical feet above Shasta Lake) have produced several large Mississippian and Pennsylvanian invertebrate faunas. Because this period is poorly represented on the West Coast, this fossiliferous limestone is important to understanding the late Paleozoic evolution in this part of the country (USFS 1998b). Limestone outcrops adjacent to the McCloud Arm also provide habitat for several special-status species, such as Shasta salamander, Shasta eupatorium, Howell's cliff-maids, and Shasta snow-wreath (Reclamation 2003).

Exposed outcrops of the limestone formation are visible from the lower McCloud River in and upslope of the transition reach and contribute to its scenic values.

Visual Quality/Scenery The visual setting of the lower McCloud River upstream from Shasta Lake includes views of the river, limestone rock outcrops, adjacent coniferous and oak forests, and infrastructure associated with the Bollibokka and McCloud River clubs. A USGS stream gage has also been in place for a number of years. The pristine nature of the lower river provides for high-quality scenic views. However, the scenic views of the lower McCloud River are enjoyed by only a limited number of viewers, consisting primarily of private landowners, club members, and their guests.

Views of the river include "picturesque cascading whitewater, and deep, long, green- or turquoise-colored pools," with Douglas-fir and black and canyon oaks dominating the steep slopes and hillsides along the river (Jones & Stokes Associates 1988). Several buildings are present at the Bollibokka Club headquarters, but these structures blend in with the visual setting. The transition reach exhibits some evidence of fluctuating surface water elevations associated with changes in water levels of Shasta Lake. Areas that are noticeably affected by the reservoir levels exhibit "a bathtub ring of steep, treeless slopes with occasional deposits of alluvium."

The Forest Service previously concluded scenic views make most of the lower McCloud River, including Segment 4, eligible as a scenic river under the Federal WSRA (USFS 1994). To be classified as a scenic river, the river must be free of impoundments, be accessible in places by roads, and have a river basin/shoreline that is largely undeveloped. Segment 4 does not contain any human-made or other impoundments that affect its free-flowing conditions. Roads to the Bollibokka Club provide access to portions of Segment 4 for members of the club and their guests. Currently, public access is limited to pedestrians on USFS lands along the shoreline of Shasta Lake. For these reasons, the USFS has determined that this segment meets the eligibility requirements of a scenic river under the Federal WSRA.

Chapter 5.5 Environmental Consequences and Mitigation Measures

This section identifies how the characteristics of the lower McCloud River that make it eligible for listing under the Federal WSRA could be affected by each alternative and whether the alternatives would conflict with the provisions of the STNF LRMP and the CRMP.

5.5.1 Methods and Assumptions

This analysis of environmental consequences focuses on the effects of proposed modifications to Shasta Dam and Shasta Lake on the McCloud River's free-flowing conditions, its water quality, and the ORVs (cultural resources, fisheries, geology, and scenery) that make it eligible for listing as a wild and scenic river under the Federal WSRA. In large part, the environmental effects are based on computer modeling of water levels, known elevations of the existing bathtub ring that is observable in the transition reach, and the anticipated changes in the environment due to fluctuations in water levels and expansion of the transition reach. Physical effects to the free-flowing conditions, water quality, and ORVs are analyzed in terms of their effects on the eligibility of the river for wild and scenic river designation. While aquatic habitat data are used to quantify the relative impact to the fishery values, a qualitative analysis is provided for most resources because of a lack of quantitative data and the subjective nature of the values. Information to support the analysis was generated from available literature and planning documents and technical studies prepared as part of the 2015 SLWRI FEIS as well as other chapters within the 2015 SLWRI FEIS.

CalSim Modeling

The CalSim-II computer model was used to assist in the evaluation of the potential impacts of the project alternatives on water-related resources. The model used historical data on California hydrology to represent the variety of weather and hydrologic patterns, including wet periods and droughts, under which water storage and conveyance facilities would be operated. Two scenarios (base cases) of demands for, and storage and conveyance of, water were used in model runs: 2005 facilities and demands ("existing conditions") and forecasted 2030 demands and reasonably foreseeable projects and facilities ("future conditions"). A model run was conducted for each of these base cases combined with each alternative so that the effects of the No-Action Alternative and the action alternatives could be evaluated for both existing and future conditions.

The analysis focuses on the environmental effects in the portion of Segment 4 that would periodically be inundated. These effects are discussed in the following section.

Gage Data

PG&E, in coordination with USGS, monitors lower McCloud River flows in accordance with its FERC license for the McCloud-Pit Hydroelectric Project at a gaging station just upstream from the McCloud River Bridge, approximately 0.2 mile downstream from Big Bollibokka Creek (USGS 11368000 McCloud River above Shasta Lake, California). The station measures mean, minimum, and maximum monthly flows in the lower McCloud River. The most recent available water data record covers the water year of October 2018 to September 2019 (USGS 2019). This data was used to describe flow conditions in the lower McCloud River.

Water Quality Monitoring

Current and historical water quality monitoring data for the McCloud River have been collected by Federal and state agencies as well as PG&E and The Nature Conservancy. The California Department of Water Resources maintains water quality information on the McCloud River in the California Data Exchange Center database. The Nature Conservancy monitors water quality at the McCloud River Preserve. Water quality monitoring of the lower McCloud River includes measures of water temperature, dissolved oxygen, pH, specific conductance, and turbidity, as well as correlated data on weather, air temperature, and debris movement. PG&E monitors water quality in compliance with its FERC license. Available information on water quality was used to describe the setting of the lower river and assess changes in water quality that would occur as a result of the Shasta Dam modification alternatives.

Habitat Typing

The USFS stream habitat typing performed in 1999 and 2000 (STNF, December 2001 unpublished data report, as found in USFS 2001) was used to describe aquatic habitat in the lower McCloud River and to assess the changes in aquatic habitat from implementation of the Shasta Dam modification alternatives. The habitat typing data were used in conjunction with the CalSim-II modeling results, digitized orthophotographs, and high-resolution topographic data to provide habitat maps and graphic depictions of the distribution of aquatic habitat in the lower river below Little Bollibokka Creek. A longitudinal profile, using water surface elevations, was generated to illustrate habitats; it does not provide an accurate representation of channel geometry.

A quantitative evaluation of the aquatic habitats was performed using digital images and the USFS habitat typing data in an integrated geographic information systems environment. Longitudinal habitat delineation was determined from the habitat typing data, with minor adjustments to match photo-interpreted habitat, and incorporated into the geographic information systems in conjunction with water surface elevations generated through the CalSim-II modeling results. Estimates of aquatic habitat areas were generated from digitized wetted stream perimeters. These measurements were based on orthophotographs taken April 25, 2001. While the absolute amount of riverine habitat can vary with flow, the relative proportions of different types of habitat remain relatively constant. Therefore, Reclamation used the relative proportions of aquatic habitat types to compare impacts to the transition reach with the entire lower river.

5.5.2 Criteria for Determining Significance of Effects

The following significance criteria were developed based on guidance provided by the Federal Guidance and consider the context and intensity of the environmental effects as required under NEPA. (Please see the 2015 SLWRI FEIS Chapter 3, "Considerations for Describing the Affected Environment and Environmental Consequences) for an explanation of the distinction under NEPA.) Impacts of an alternative on the wild and scenic river values of the lower McCloud River would be significant if project implementation would:

- Affect the eligibility for Federal listing as a wild and scenic river of any portion of the lower McCloud River above the 1,070-foot elevation

- Conflict with the STNF LRMP or with management of the McCloud River under the CRMP

5.5.3 Direct and Indirect Effects

No-Action Alternative

Under the No-Action Alternative, Reclamation would not pursue an action to enlarge Shasta Dam to help increase anadromous fish survival in the upper Sacramento River and address the growing water supply reliability issues in California. Water levels in Shasta Lake and the transition reach would continue to fluctuate similar to current conditions. USFS Segment 4 would not be affected by this alternative.

Impact WASR-1 (No-Action): Effect on McCloud River's Eligibility for Listing as a Federal Wild and Scenic River Under the No-Action Alternative, the current maximum elevation of water levels in the transition reach would not be increased, and Segment 4 would not be affected. Fluctuations in water levels would continue to be similar to current conditions, with water levels reaching the maximum elevation of 1,070 feet msl – the downstream boundary of Segment 4 – in the transition reach for a brief period (typically a few days in May) during wet years.

The average monthly water surface of Shasta Lake would continue to fluctuate based on the water year, with a maximum elevation of 1,053 feet msl in April of an average water year and 1,070 feet msl in April and May of a wet year. These fluctuations would not affect the free-flowing conditions and water quality of Segment 4. The ORVs that make the river eligible for designation as a Federal wild and scenic river would continue to be affected only by ongoing natural processes and land use activities, and all of Segment 4 would remain eligible for listing under the Federal WSRA.

Impact WASR-2 (No-Action): Conflict with Shasta-Trinity National Forest Land and Resource Management Plan Under the No-Action Alternative, the STNF LRMP would continue to be implemented as it has in the past, with no

changes in the management of the McCloud River's free-flowing condition, water quality, and ORVs.

CP1 – 6.5-Foot Dam Raise, Anadromous Fish Survival and Water Supply Reliability

CP1 would involve a 6.5-foot raise of Shasta Dam, which would increase the lake's gross pool by 8.5 feet and enlarge the total storage space in the lake by 256,000 acre-feet. This increase would equate to an increase of about 1,100 acres of surface area occupied by Shasta Lake when the lake is full. CP1 includes measures to increase water supply reliability while contributing to increased survival of anadromous fish. Shasta Dam operational guidelines would continue essentially unchanged, except during dry years and critical years, when 70,000 acre-feet and 35,000 acre-feet, respectively, of the increased storage capacity in Shasta Lake would be reserved to specifically focus on increasing municipal and industrial (M&I) deliveries.

Impact WASR-1 (CP1): Effect on McCloud River's Eligibility for Listing as a Federal Wild and Scenic River Under CP1, the increased gross pool of Shasta Lake would expand the current transition reach up to the 1,078-foot elevation, resulting in adverse effects on the characteristics of approximately 1,470 feet of Segment 4. The rest of the McCloud River would remain eligible for designation as a Federal wild and scenic river. This impact would be significant.

Under CP1, approximately 1,470 feet, or 11 percent, of Segment 4 would be periodically inundated. This increase in the transition reach to a maximum elevation of 1,078 feet msl would equate to a 16 percent increase over the current transition reach. The length of time during the year when the transition reach is inundated and the maximum elevation of the inundation area would vary by the type of water year (wet, above normal, below normal, average, dry, or critical).

Within the expanded transition reach, defined as the existing transition reach in addition to the additional impacted reach from 1070 msl to 1090 msl under the 18.5 ft dam raise, flow conditions and fisheries would periodically be affected, with the timing and duration of the effects similar to those that occur in the current transition reach. Over time, the expansion of the bathtub ring would affect water quality, geology, and visual quality/scenery in the affected portion of Segment 4. Erosion of soils along the river could expose buried cultural resources, and periodic inundation could permanently alter cultural resource values and features in the transition reach important to Native Americans. These effects could reduce the total length of the lower McCloud River that is eligible for wild and scenic river designation by about 1,470 feet (approximately 1.2 percent of the total length of the lower river).

Free-Flowing Conditions Under CP1, the currently free-flowing section of the lower McCloud River would be reduced by about 1,470 feet or about 1.2 percent. The flow characteristics of the affected portion of Segment 4 would periodically be modified, resulting in slower moving waters and a wider river channel. When inundated, the affected portion would retain some current, but flow velocities would decrease with distance downstream. This modification would not meet the

definition of a free-flowing river under the Federal WSRA.

Because free-flowing conditions are a fundamental requirement for wild and scenic river eligibility, the 1,470-foot reach of Segment 4 that would be affected by CP1 would become ineligible for listing under the Federal WSRA. *Water Quality* As Shasta Lake's water levels rise, vegetation and soils along the banks of the affected portion of Segment 4 would become inundated. Most or all of the vegetation that is inundated would eventually die and be washed or fall into the river, bringing with it sediment and other materials that could affect water quality. Soils in the affected portion of Segment 4 would erode as water levels rise and fall, causing an increase in turbidity. These effects would likely be most noticeable during the initial inundation periods, since the river corridor is likely to eventually stabilize as the soil is eroded to bedrock.

Within the approximately 1,470-foot reach of Segment 4 that would be affected under CP1, water temperatures would fluctuate relative to temperatures immediately upstream. Similar to flow, these changes would vary by water year type. Increased turbidity and warmer water temperatures would be most noticeable along the affected portion of Segment 4 because this area has not been previously exposed to periodic inundations.

Adverse effects on water quality would be associated with the periodic fluctuations in the water levels of Shasta Lake. Because water quality is a fundamental requirement for wild and scenic river eligibility, the 1,470-foot reach of Segment 4 that would be affected by CP1 would become ineligible for listing under the Federal WSRA.

Outstandingly Remarkable Values As described above under Affected Environment, the ORVs that make Segment 4 of the McCloud River eligible for listing as a wild and scenic river are cultural/historical resources, fisheries, geology, and visual quality/scenery.

Cultural/Historical Resources Under CP1, erosion of rock outcrops and expansion of the bathtub ring in an approximately 1,470-foot reach of Segment 4 could expose buried or previously undiscovered prehistoric cultural resources associated with Wintu occupation of the area and historic recreational uses of the area. As this reach becomes inundated, any exposed resources would be susceptible to the effects of water, which could damage or otherwise alter their values, affecting their eligibility for listing on the National Register of Historic Places and reducing their importance for providing information on past use within the corridor. As the water recedes, exposed resources would be susceptible to wind and rain and could be visible, potentially exposing them to theft or vandalism. These adverse effects would be localized along the corridor of the affected portion of Segment 4 and would likely only affect a small portion of the cultural resources that may be associated with the lower McCloud River basin.

The historic structures associated with the Bollibokka Club occur outside of the area that would be affected by the expanded transition reach and would not be affected. However, unrecorded resources associated with the Wintu village

locations may occur within the corridor along the river and could be subjected to periodic inundation, deposition, and scour within the upper portions of the expanded transition reach. Portions of three other recorded sites could also be subject to similar impacts within the expanded transition reach, which could result in damage to resources within the sites. Although these sites may provide information on the area's history or prehistory, none of these sites has been evaluated for listing on the National Register of Historic Places.

Sacred sites important to Native Americans have not been specifically identified, and access to lands adjacent to the reach that would be periodically inundated under CP1 is limited because all of these lands are privately owned.

The cultural resources located along the 1,470-foot reach of Segment 4 that would be affected under CP1 would be subject to the effects of periodic inundation.

Fisheries Aquatic habitat in the 1,470-foot extension of the transition reach would be affected during periodic inundations, resulting in potential adverse effects on the fish that occur in the river. Potential adverse effects on fish could include a reduction in spawning habitat for trout in the expanded transition reach and an increase in the range of warmwater fish in the lower McCloud River. Fishing opportunities would not be affected more than they are now with the periodic fluctuations in river levels.

Under CP1, the transition reach would be extended by about 1,470 feet to the 1,078-foot elevation, resulting in a larger inundation area when Shasta Lake water levels are the highest. Aquatic habitat in the affected portion of Segment 4 consists primarily of flatwater habitat (52 percent glide, 19 percent mid-channel pool, and 13 percent run), with pocket water (11 percent) and a small, low- gradient riffle (5 percent) in the lower portion of the segment. With the periodic inundations, sediment deposition could cause flatwater habitat to convert to riffle habitat, resulting in a reduction in flatwater habitat of less than 3 percent of the total lower McCloud River's flatwater habitat. During the inundation period, riffle and pool habitat (approximately 1.2 percent of the total lower McCloud River) would be converted to flatwater habitat. Also, riparian vegetation along the newly inundated banks of the affected portion of Segment 4 would be expected to die, which could affect water temperatures and reduce cover for fish in this reach. The extent of these effects would depend on the frequency, duration, and surface elevation of the inundation, which would vary depending on the type of water year and water levels of Shasta Lake.

The migration of fish, especially trout, between the lower McCloud River and Shasta Lake is an important attribute of the unique trout fishery. Many of the rainbow and brown trout that occupy the lower McCloud River spend part of their lives rearing in Shasta Lake, feeding on the abundant prey in the lake and attaining large sizes that would not be possible if they reared only in the river. Upon returning to the river to spawn, these lake-reared fish provide the trophy-sized trout, particularly brown trout, for which the lower McCloud River is renowned (Rode and Dean 2004). Based on a survey that extended up to Tuna Falls (North State Resources, Inc. 2008), the reach of Segment 4 that would

periodically be inundated does not contain any barriers or impediments to fish movement or migration, and CP1 would not create any. Consequently, trout migration through the transition reach to upstream spawning areas would not be impaired.

Conversely, warmwater fish movement between the lake and river is not likely to be facilitated by the expanded transition reach. Warmwater fish from Shasta Lake, such as spotted bass, have been observed throughout the lower McCloud River, at least up to the confluence with Tuna Creek (North State Resources, Inc. 2008). Nonnative warmwater species inhabiting Shasta Lake (e.g., smallmouth bass and spotted bass) are known to exploit riverine and transitional habitats and are effective predators of juvenile trout. No barriers have been observed in the transition reach that could prevent warmwater fish from moving upstream, and no barriers would be created by the expansion of the transition reach. Warmwater fish would continue to be able to move between the lake, the transition reach, and lower McCloud River (Segment 4).

Aquatic habitat changes could affect how fluvial resident trout use habitat within the affected portion of Segment 4. General effects may range from temporary displacement of trout to upstream habitats at high water levels to degraded riverine habitat suitability within the transition reach.

Suitable spawning habitat for rainbow and brown trout in the expanded transition reach is limited because of the few pools and riffles available during the spring and fall when these species spawn. Based on the USFS habitat data and more recent reconnaissance surveys, the amount of spawning gravels in the expanded transition reach represents only a small percentage of the suitable spawning habitat in the lower McCloud River. However, any effect on spawning habitat would be considered adverse.

Geology During periods of maximum inundation in the 1,470-foot portion of Segment 4 that would be affected under CP1, some rock outcrops may become inundated and could erode, but the overall geologic value of the McCloud Limestone features would not be adversely affected.

Visual Quality/Scenery The visual quality of the affected portion of Segment 4 would decrease as the vegetation along the banks becomes inundated and eventually dies, the bathtub ring expands, and evidence of flow is reduced. These conditions would be similar to those in the current transition reach. The affected portion of Segment 4 would no longer have the qualities that contributed to its classification by the USFS as “scenic.”

CP1 would result in making approximately 1,470 feet of the lower McCloud River ineligible for listing as wild and scenic.

Impact WASR-2 (CP1): Conflict with Shasta-Trinity National Forest Land and Resource Management Plan The inundation of approximately 1,470 feet of Segment 4 would not conflict with the provisions in the STNF LRMP to protect the ORVs that make the McCloud River eligible for listing under the Federal WSRA. Although raising Shasta Dam would result in inundation of part of Segment 4, the

McCloud River and the adjoining lands in this part of the segment are not National Forest System lands and therefore not subject to the LRMP. Management of the river's ORVs under the STNF LRMP and the CRMP would not be affected. No land use changes would occur along the river, and the USFS and signatories to the CRMP would be able to continue implementing provisions of their plans that apply to the river.

CP2 – 12.5-Foot Dam Raise, Anadromous Fish Survival and Water Supply Reliability

CP2 would involve a 12.5-foot raise of Shasta Dam, which would increase the lake's gross pool by 14.5 feet and enlarge the total storage space in the lake by 443,000 acre-feet. This increase would equate to an increase of about 1,850 acres of surface area when the lake is full. CP2 also includes measures to increase water supply reliability while contributing to increased survival of anadromous fish. Shasta Dam operational guidelines would continue essentially unchanged, except during dry years and critical years, when 120,000 acre-feet and 60,000 acre-feet, respectively, of the increased storage capacity in Shasta Lake would be reserved to specifically focus on increasing M&I deliveries. CP2 would help reduce future water shortages through increasing drought year and average year water supply reliability for agricultural and M&I deliveries. In addition, the increased depth and volume of the cold-water pool in Shasta Lake would contribute to improving seasonal water temperatures for anadromous fish in the upper Sacramento River.

Impact WASR-1 (CP2): Effect on McCloud River's Eligibility for Listing as a Federal Wild and Scenic River Impact WASR-1 (CP2) would be similar to Impact WASR-1 but would affect 1,270 feet more of Segment 4 than CP1. Implementation of CP2 would reduce the total length of the McCloud River that is eligible for wild and scenic river designation by about 2,740 feet (approximately 2.3 percent of the total length of the lower river). The rest of the lower McCloud River would remain eligible for listing.

Under CP2, approximately 2,740 feet, or 21 percent, of Segment 4 would be periodically inundated. The transition reach would increase to a maximum elevation of 1,084 feet msl, which would extend it by about 2,740 feet (a 30 percent increase over the current transition reach), inundating a larger portion of the lower McCloud River within the study area and Segment 4. The inundated area would increase to approximately 51 total acres (an increase of 18 acres over existing conditions and 9 acres more than CP1 conditions), with a maximum width of approximately 530 feet (an increase of 60 feet over existing conditions) and a total length of approximately 11,740 linear feet (2.22 miles). The extension of the transition reach by approximately 2,740 feet would affect approximately 21 percent of Segment 4. Additional impacts under CP2 compared with CP1 would be minimal and would be limited to the additional 440-foot extension of the transition reach and about 15 additional feet on both sides of the river.

During a wet year, the maximum average water surface elevation of Shasta Lake would be 1,080 feet msl, with a peak elevation of 1,084 feet msl during May. This is an increase of 15 feet above the existing maximum average. During an average water year, the maximum average water surface elevation

would increase to 1,051 feet msl, an increase of 11 feet above existing conditions. During dry and critical water years, the change would be on the order of 5 to 9 feet in elevation.

The increased gross pool of Shasta Lake would expand the current transition reach up to the 1,084-foot elevation, a 30 percent increase. Flow conditions and fisheries in the 2,740-foot reach of Segment 4 would periodically be affected, with the timing and duration of the effects similar to those in the current transition reach. Over time, the expansion of the bathtub ring would adversely affect water quality, geology, and visual quality/scenery. Erosion of soils along the river could expose buried cultural resources, and periodic inundation could permanently alter cultural resource values and features in the transition reach important to Native Americans.

Free-Flowing Conditions As discussed under Impact WASR-1 (CP1), the flow characteristics of the extended transition reach under CP2 would be periodically modified, resulting in slower moving waters and a wider river channel. This modification would not meet the definition of a free-flowing river under the Federal WSRA. The width of the transition reach would be increased by approximately 30 feet on both sides of the river. Flow conditions and the river's free-flowing nature upstream from the expanded transition reach would remain similar to current conditions. Because free-flowing conditions are a fundamental requirement for wild and scenic river eligibility, the 2,740-foot reach of Segment 4 that would be affected by CP2 would become ineligible for listing under the Federal WSRA.

Water Quality Under CP2, increased turbidity and warmer water temperatures would be most noticeable along the expanded 2,740 feet of the transition reach and in the 30-foot corridor on either side of the transition reach because these areas have not been previously exposed to periodic inundations. As discussed under Impact WASR-1 (CP1), effects on water quality would be associated with the periodic increases in water levels of Shasta Lake.

Because water quality is a fundamental requirement for wild and scenic river eligibility, the 2,740-foot reach of Segment 4 that would be affected by CP2 would become ineligible for listing under the Federal WSRA.

Outstandingly Remarkable Values As described above under Affected Environment, the ORVs that make Segment 4 of the McCloud River eligible for listing as a wild and scenic river are cultural/historical resources, fisheries, geology, and visual quality/scenery.

Cultural/Historical Resources Impacts would be the same as discussed under Impact WASR-1 (CP1); however, a slightly larger portion of the three recorded sites and possible resources associated with the known Wintu villages would be inundated.

The cultural resources located along the 2,740-foot reach of Segment 4 that would be affected under CP2 would be subject to the effects of periodic inundation.

Fisheries Aquatic habitat in the affected 2,740-foot segment consists of pocket

water and a lateral scour pool. The potential conversion of flatwater habitat to riffle habitat in the 2,740-foot segment would be similar to but greater than under WASR-1 (CP1), and overall impacts to aquatic habitat and fish would be similar to those discussed under Impact WASR-1 (CP1).

Geology Impacts would be the same as discussed under Impact WASR-1 (CP1); the geologic values of the lower McCloud River would not be adversely affected.

Visual Quality/Scenery Impacts would be the same as discussed under Impact WASR-1 (CP1). The affected portion of Segment 4 would no longer have the qualities that contributed to its classification by the USFS as "scenic." CP2 would result in making approximately 2,740 feet of the lower McCloud River ineligible for listing as wild and scenic.

Impact WASR-2 (CP2): Conflict with Shasta-Trinity National Forest Land and Resource Management Plan The inundation of approximately 2,740 feet of Segment 4 would not conflict with the provisions in the STNF LRMP to protect the ORVs that make the McCloud River eligible for listing under the Federal WSRA.

Impact WASR-3 (CP2): Effects to McCloud River Wild Trout Fishery, as Identified in the California Public Resources Code, Section 5093.542 The impact would be similar to WASR-3 (CP1) but the magnitude of the impact would be greater under CP2 because of the longer transition reach. Under CP2, the proposed modifications to Shasta Dam and Shasta Lake would result in temporary and periodic fluctuations in water levels within the expanded transition reach, affecting about 2.3 percent of the lower McCloud River. Under CP2, the reach affected by Shasta Lake water levels would be extended by about 2,740 feet, a 30 percent increase over the current transition reach; this entire area would be inundated only during peak water levels in the spring of wet years. An impact of the expansion of the transition reach would be conversion of aquatic habitat in a manner similar to the habitat conversion that can be observed in the current transition reach downstream. The overall impacts to the wild trout fishery, including public access and management opportunities in conjunction with fish habitat and populations, are small in the context of the entire lower McCloud River.

CP3, CP4, CP4A, and CP5 – 18.5-Foot Dam Raise, with Variations

CP3, CP4, CP4A, and CP5 would involve an 18.5-foot raise of Shasta Dam, which would increase the lake's gross pool by 20.5 feet and enlarge the total storage space in the lake by 634,000 acre-feet. This increase would equate to an increase of about 2,500 acres of surface area when the lake is full. CP3 focuses on increasing agricultural water supply reliability and increasing anadromous fish survival. CP4, CP4A, and CP5 increase water supply reliability and include enhancements in the upper Sacramento River for anadromous fish survival including gravel augmentation and the restoration of riparian, floodplain, and side channel habitat.

CP3 would increase the ability of Shasta Dam to make cold-water releases and regulate water temperatures for fish in the upper Sacramento River, primarily in

dry and critical water years. CP3 would help reduce estimated future water shortages by increasing the reliability of dry and critical year water supplies for agricultural deliveries by at least 63,000 acre-feet per year and average annual deliveries by about 62,000 acre-feet per year. Under CP3, operations for water supply, hydropower, and environmental and other regulatory requirements would be similar to existing operations, with the additional storage retained for water supply reliability and to expand the cold-water pool for downstream anadromous fisheries.

CP4 would be used to improve the ability to meet temperature objectives and habitat requirements for anadromous fish during drought years and increase water supply reliability. Of the increased reservoir storage space under CP4, about 378,000 acre-feet would be dedicated to increasing the supply of cold water for anadromous fish survival purposes. For CP4, operations for the remaining portion of increased storage (approximately 256,000 acre-feet) would be the same as in CP1, with 70,000 acre-feet and 35,000 acre-feet reserved to specifically focus on increasing M&I deliveries during dry and critical years, respectively. CP4 includes augmenting spawning gravel and restoring riparian, floodplain, and side channel habitat in the upper Sacramento River.

CP4A reserves a portion of the increased storage in Shasta Lake for maintaining cold-water volume or augmenting flows in the Sacramento River as part of an adaptive management plan for anadromous fish survival. Of the increased reservoir storage space under CP4A, about 191,000 acre-feet would be dedicated to increasing the supply of cold water for anadromous fish survival purposes. For CP4A, operations for the remaining portion of increased storage (approximately 443,000 acre-feet) would be the same as in CP2, with 120,000 acre-feet reserved in dry years and 60,000 acre-feet reserved in critical years for water deliveries. CP4A includes augmenting spawning gravel and restoring riparian, floodplain, and side channel habitat in the upper Sacramento River.
CP5 would help reduce future water shortages through increasing drought year and average year water supply reliability for agricultural and M&I deliveries. Shasta Dam operational guidelines would continue essentially unchanged, except during dry years and critical years, when 150,000 acre-feet and 75,000 acre-feet, respectively, of the increased storage capacity in Shasta Lake would be reserved to specifically focus on increasing M&I deliveries. CP5 also includes constructing additional fish habitat in and along the shoreline of Shasta Lake and along the lower reaches of its tributaries; augmenting spawning gravel and restoring riparian, floodplain, and side channel habitat in the upper Sacramento River; and increasing recreation opportunities at Shasta Lake.

Impacts associated with CP3, CP4, CP4A, and CP5 would be very similar to those described for CP1 and CP2, but the increased water levels of Shasta Lake would affect a longer reach of the lower McCloud River. Because of their similarities, and in an effort to reduce redundancy, only the differences between the plans are described below.

Impact WASR-1 (CP3, CP4, CP4A, and CP5): Effect on McCloud River's Eligibility for Listing as a Federal Wild and Scenic River Implementation of

CP3, CP4, CP4A, and CP5 would reduce the total length of the McCloud River that is eligible for wild and scenic river designation by about 3,550 feet (less than 3 percent of the total length of the lower river). The property along the 3,550 feet river corridor is owned by Westlands Water District and no public access is available. The rest of the lower McCloud River would remain eligible for listing.

Under CP3, CP4, CP4A, and CP5, the extent of the transition reach would increase to a maximum elevation of 1,090 feet msl, which would extend the current transition reach by about 3,550 feet (a 39 percent increase over the current transition reach), inundating a larger portion of the lower McCloud River within the study area and Segment 4. The inundated area would increase to approximately 60 total acres (an increase of 27 acres over existing conditions, and 9 acres more than CP2 conditions), with a maximum width of approximately 610 feet (an increase of 140 feet over existing conditions) and a total length of approximately 12,550 linear feet (2.38 miles). The extension of the transition reach by approximately 3,550 feet would affect approximately 26 percent of Segment 4. Additional impacts under CP3, CP4, CP4A, and CP5 compared with CP1 and CP2 would be minimal and would be limited to the additional 810-foot extension of the transition reach and about 20 additional feet on either side of the river.

During a wet year, the maximum average water surface elevation of Shasta Lake would be 1,086 feet msl, with a peak elevation of 1,090 feet msl during May. This is an increase of 20.5 feet above the existing maximum average. During an average water year, the maximum average water surface elevation would increase to 1,054 feet msl, an increase of 14 feet above existing conditions. During dry and critical water years, the change would be on the order of 6 to 13 feet in elevation. The increased gross pool of Shasta Lake would expand the current transition reach by approximately 3,550 feet (810 feet beyond CP2's effects) up to the 1,090-foot elevation, resulting in a 39 percent increase in the transition reach. Within the expanded transition reach, flow conditions and fisheries would periodically be affected, with the timing and duration of the effects similar to those in the current transition reach. Over time, the expansion of the bathtub ring would affect water quality, geology, and visual quality/scenery. Erosion of soils along the river could expose buried cultural resources, and periodic inundation could permanently alter cultural resource values and features in the transition reach important to Native Americans.

Free-Flowing Conditions The flow characteristics of the extended transition reach under CP3, CP4, CP4A, and CP5 would be temporarily modified, resulting in slower moving waters and a wider river channel. This modification would not meet the definition of a free-flowing river under the Federal WSRA. The width of the transition reach would be increased by approximately 70 feet on either side of the river. Flow conditions and the river's free-flowing nature upstream from the expanded transition reach would remain similar to current conditions.

Because free-flowing conditions are a fundamental requirement for wild and scenic river eligibility, the 3,550-foot reach of Segment 4 that would be affected by CP3, CP4, CP4A, and CP5 would become ineligible for listing under the Federal WSRA.

Water Quality Under CP3, CP4, CP4A, and CP5, increased turbidity and warmer water temperatures would be most noticeable along the expanded 3,550-foot reach of the transition reach and in the 70-foot corridor on either side of the transition reach because these areas have not been previously exposed to periodic inundations. Under these plans, the wider affected river corridor could result in greater temporary effects on water quality because more vegetation would be temporarily inundated and more soils would be exposed. As discussed under Impact WASR-1 (CP1), effects on water quality would be associated with the periodic increases in water levels of Shasta Lake.

Because water quality is a fundamental requirement for wild and scenic river eligibility, the 3,550-foot reach of Segment 4 that would be affected by CP3, CP4, CP4A, and CP5 would become ineligible for listing under the Federal WSRA.

Outstandingly Remarkable Values As described above under Affected Environment, the ORVs that make Segment 4 of the McCloud River eligible for listing as a wild and scenic river are cultural/historical resources, fisheries, geology, and visual quality/scenery.

Cultural/Historical Resources Impacts would be similar to those discussed under Impact WASR-1 (CP1). Under CP3, CP4, CP4A, and CP5, the wider affected river corridor could result in greater effects on cultural resources because of the wider inundated area and increased erosion. Larger portions of the three recorded sites and known Wintu villages would become inundated.

The cultural resources located along the 3,550-foot reach of Segment 4 that would be affected under CP3, CP4, CP4A, and CP5 would be subject to the effects of periodic inundation.

Fisheries Aquatic habitat in the additional 810-foot segment under CP3, CP4, CP4A, and CP5 consists of a mid-channel pool and a lateral scour pool. The potential conversion of flatwater habitat to riffle habitat in the 3,550-foot reach of Segment 4 that would be affected under these plans would be similar to but greater than under WASR-1 (CP1), and overall impacts to aquatic habitat and fish would be similar to those discussed under Impact WASR-1 (CP1).

Geology Impacts would be the same as discussed under Impact WASR-1 (CP1), except additional rock outcrops could become inundated because of the wider affected corridor.

Visual Quality/Scenery Impacts would be similar to those discussed under Impact WASR-1 (CP1). Under these plans, the wider affected river corridor could result in greater effects on the visual setting because of the wider inundated area and increased impacts on vegetation. The water line would also be visible at a higher elevation and could be more noticeable. The affected portion of Segment 4 would no longer have the qualities that contributed to its classification by the USFS as “scenic.”

CP3, CP4, CP4A, and CP5 would result in making approximately 3,550 feet of the lower McCloud River ineligible for listing as wild and scenic.

Impact WASR-2 (CP3, CP4, CP4A, and CP5): Conflict with Shasta-Trinity National Forest Land and Resource Management Plan The inundation of approximately 3,550 feet of Segment 4 would not conflict with the provisions in the STNF LRMP to protect the ORVs that make the McCloud River eligible for listing under the Federal WSRA.

5.5.4 Mitigation Measures

The mitigation measures described in the following section were developed partly in response to comments received on the 2013 SLWRI Draft EIS. While these measures are considered to be potentially feasible and effective in their ability to reduce impacts, this EIS acknowledges that there is uncertainty with respect to reducing impacts to less-than-significant levels

No-Action Alternative

Under the No-Action Alternative, no action would be taken, including implementation of mitigation measures; rather, existing conditions would continue to change in response to natural processes and human activities. No mitigation measures are required for the No-Action Alternative.

Mitigation Measure WASR-3 (CP1-CP5): Develop and Implement a Comprehensive Multi-scale Wild Trout Fishery Protection, Restoration and Improvement Program Within the Lower McCloud River Watershed The inundation of a portion of the lower McCloud River will affect the habitat available to wild trout and other aquatic organisms. The impacts are similar to, but more specific to the lower McCloud River watershed than those described under Impact Geo-2 in Chapter 4 of the 2015 SLWRI FEIS, “Geology, Geomorphology, Minerals and Soils”; Impact WQ-1 in Chapter 7 of the 2015 SLWRI FEIS, “Water Quality”; and Impacts Aqua-4 and Aqua-7 in Chapter 11 of the 2015 SLWRI FEIS, “Fisheries and Aquatic Ecosystems.” This mitigation measure incorporates Mitigation Measures Geo-2, WQ-1, and Aqua-4.

Watershed analysis and assessments prepared for the lower McCloud River watershed document that roads and modified fire regimes have increased sediment contributions to receiving waters, particularly in those watersheds that have been subjected to mining, forest management, and other types of large-scale developments and disturbances (CVWRCB 2011). Reclamation will apply this element of this mitigation measure to protect, restore, and improve the wild trout fishery in the lower McCloud River watershed.

The STNF, through the efforts of the interagency mitigation working group described in Chapter 2 of the 2015 SLWRI FEIS, “Action Alternatives,” identified that acquisition of lands along the lower McCloud River is a priority and is consistent with the LRMP to meet a number of resource goals and objectives (e.g., cultural resources, recreation, biological resources).

This mitigation measure requires that Reclamation work with the watershed stakeholders (e.g., CRMP members) to develop a basin plan that identifies deficient areas where riparian and watershed improvements can be made and work with landowners to improve those areas. Reclamation will commit to funding the planning effort, which will be completed within 10 years after construction has been initiated. This plan is intended to reduce the impacts of inundation on the wild trout fishery in the McCloud River and its tributaries. This program would be performed in conjunction with the efforts of the interagency work group described in Mitigation Measure Geo-2 of the 2015 SLWRI FEIS.

5.5.5 Cumulative Effects

Chapter 3 of the 2015 SLWRI FEIS, "Considerations for Describing the Affected Environment and Environmental Consequences," gives an overview of the cumulative effects analysis, including significance criteria, Table 3-1 of the 2015 SLWRI FEIS, "Present and Reasonably Foreseeable Future Actions Included in the Analysis of Cumulative Impacts, by Resource Area," in Chapter 3 of the 2015 SLWRI FEIS, lists the projects considered quantitatively and qualitatively within the cumulative impacts analysis. This cumulative impacts analysis accounts for potential project impacts combined with the impacts of existing facilities, conditions, land uses, and reasonably foreseeable actions expected to occur in the study area on a qualitative and quantitative level. None of the projects listed in Table 3-1 of the 2015 SLWRI FEIS under Quantitative Analysis would have impacts on the McCloud River in the primary study area and the SLWRI would not have adverse impacts in the extended study area; therefore, the following analysis is based on programs and projects listed in Table 3-1 of the 2015 SLWRI FEIS under Qualitative Analysis that would have potential effects in the primary study area as explained below.

FERC has issued the Final EIS for the relicensing of the McCloud-Pit Project. However, the relicensing process for the McCloud-Pit Project is ongoing, and the conditions that may be required under a new FERC license are uncertain. The potential effects of the relicensing on the lower McCloud River are therefore unknown.

The 2012 Bagley Fire, the 2019 Mountain Fire, and subsequent winter flood events resulted in significant changes to vegetation conditions, erosional processes, and water quality in the lower McCloud River watershed. The impacts of this combination of natural disturbances are ongoing and there is considerable uncertainty on how they are affecting the physical processes and biological resources of the lower McCloud River watershed. Subsequent management activities (e.g., road reconstruction, silviculture) are ongoing throughout the Bagley Fire area.

Appendix A. Clean Water Act 404(b)(1) Analysis

Reclamation prepared the SLWRI Feasibility Report in July 2015 as a comparison document to the SLWRI FEIS. The SLWRI Feasibility Report presented the results of planning, engineering, environmental, social, economic, and financial studies and potential benefits and effects of alternatives plans for the SLWRI project. Both the SLWRI Feasibility Report and SLWRI FEIS were submitted to U.S. Congress.

The SLWRI Feasibility Report determined the least environmentally damaging practicable alternative for the dam raise construction. For project relocations, Reclamation states within the report and within the SLWRI FEIS that additional detailed analyses and documentation prior to any related permit applications and regulatory decision making by the USACE would be required. These additional analyses are presented here within the SLWRI Draft SEIS. Along with the SLWRI FEIS, this document demonstrates compliance with CWA 404(r) and consistency with the CWA 404(b)(1) Guidelines.

Reclamation stated with in the SLWRI FEIS that relevant permits anticipated to be obtained for the proposed action included a CWA Section 401 certification. Reclamation will comply with CWA 404(r) and will not separately obtain permits under CWA Sections 401, 402, and 404 because Reclamation will not be seeking nor receiving CWA 404 permits from USACE. Reclamation will apply CWA 404(r) to the project, the requirements of which have been met through the SLWRI FEIS, SLWRI Feasibility Report, and the SLWRI SEIS.

Reclamation will follow California state water quality standards by following the permit requirements outlined within the general permit, as described in the SLWRI Draft SEIS Chapter 3.

Other potential CWA 402 discharges resulting from the SLWRI Project would fall under the California Stater Water Resources Control Board General Permit Order R5-2013-0074 Dewatering and Other Low Threat Discharges to Surface Waters, NPDES General Permit No. CAG995001. A separate permit is not required pursuant to CWA § 404(r). Application and coverage under the General Permit is not required. However, Reclamation will address California state water quality standards by following the permit requirements outlined within the general permit, as described in the SLWRI Draft SEIS Chapter 3.

Appendix B. Impacts to Waters of the U.S. Calculations

Table B-1. Impacts to Waters of the U.S. from Roads

FEATURE	Identified Features			Details of Conflict with Wetlands		
	Name	Proposed Relocation Details		Conflict (yes/no)	Area of Impacted Waters of the U.S. (acres)[4]	Approximate wetland fill qty(cy) considering average 20 ft wide road
		Segments (#)	Length (lf)			
Roads	Lakeshore Drive	8	13,700	No	N/A	N/A
	Turntable Bay Area	3	6,200	Yes	0.01	275
	Gillman Road	3	1,200	Yes	0.03	1230
	Jones Valley & Silverthorne Areas	3	1600	Yes	0.01	208
	Salt Creek Road	5	5,100	Yes	0.10	1637
	Remaining Roads	8	5,200	Yes	0.24 (estimated)	9080 (estimated)
APPROXIMATE TOTAL FOR ROADS					**0.39**	**12430**

Table B-2. Impacts to Waters of the U.S. from Dikes & Embankments

FEATURE	Identified Features			Details of Conflict with Wetlands		
	Name	Proposed Fill Quantities (cy)		Conflict (yes/no)	Area of Impacted Waters of the U.S. (acres)[4]	Approximate wetland fill qty(cy) (Assumed to be 10% of total fill qty)
		Core, drain, filters	Riprap			
Dikes & Embankments	**Lakeshore Dikes**					
	(i) Doney Creek Dike	75,000	5,900	Maybe	N/A	(750+59)=759
	(ii) Antlers Dike	4,900	400	Maybe	< 0.25	(490+40)=550
	(iii) North Railroad Embankment	17,100	400	Maybe	N/A	(170+40)=210
	(iv) Middle Railroad Embankment	13,400	300	Maybe	N/A	(134+30)=174
	(v) South Railroad Embankment	101,900	2,500	Maybe	N/A	(1019+250)=1269
	Bridge Bay Dikes					
	(i) West Dike	69,000	23,600	Maybe	< 0.25	(690+236)=926
	(ii) East Dike	40,100	7,400	Maybe	< 0.25	(400+74)=474
APPROXIMATE TOTAL FOR DIKES					**TBD**	**4362**

Table B-3. Impacts to Waters of the U.S. from Bridges

FEATURE	Identified Features			Details of Conflict with Wetlands		
	Name	Proposed Fill Quantities (cy)		Conflict (yes/no)	Area of Impacted Waters of the U.S. (acres)4	Approximate wetland fill qty(cy) (Assumed to be total fill qty below 1070 msl)
		Earthwork	Volume of concrete			
Relocated Bridges	**Railroad Bridges**					
	(i) Doney Creek Bridge	0	7,080	Yes	0.87	4000
	(ii) Sacramento River 2nd Crossing	0	11,700	Yes	1.4	8270
	Vehicular Bridges			Yes		
	(i) Charlie Creek Bridge	0	Cast-in-steel-shell piles	Yes	0.002	N/A
	(ii) Doney Creek Bridge	0	Cast-in-steel-shell piles	Yes	0.002	N/A
	(iii) McCloud River Bridge	0	Cast-in-steel-shell piles	Yes	0.002	N/A
	(iv) Didallas Creek Bridge	0	0		0	N/A
Modified Bridges	**Railroad Bridge**					
	(i) Pit River Bridge	0	0	No	N/A	N/A
	Vehicular Bridge					
	(i) Fenders Ferry Bridge	0	0	No	N/A	N/A
APPROXIMATE TOTAL FOR BRIDGES			18,780		**2.27**	**12,270**

Table B-4. Impacts to Waters of the U.S. from Recreation Facilities

No.	Recreation Feature Location[1]	River Arm	Recreation Feature	Impacts to Waters of the U.S.[2]	Area of Impacted Waters of the U.S. (acres)[4]	Relocation Feature				Volume of Fill to Waters of the U.S. (cubic yards)[5]
						Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	
1	**Arbuckle**	Pit	Boat In Campground	No						
2	**Antlers**	Sacramento	Boat Ramp	No						
			Resort/Marina	Yes	0,12			1	5401	200
			Campground	No						
3	**Bailey Cove**	McCloud	Boat Ramp Extend	No						
			Campground and Day Use	Yes	0.025			1	1089	40
			Trails/Trail Head	No						
4	**Bridge Bay**	Pit River	Marina	No						
5	**Campbell Creek**	McCloud	Resident Tract	No						
6	**Didalis**	Squaw Creek	Resident Tract	No						
7	**Dry Fork Creek Trail**	Sacramento	Trail	No						
8	**Ellery Creek Campground**	McCloud	Campground	No						
9	**Gooseneck**	Sacramento	Boat In Camp	No						
10	**Greens Creek**	McCloud	Boat In Camp	No						
11	**Gregory**	Sacramento	Campground	No						
12	**Holiday Harbor**	McCloud	Boat Ramp	No						
			Marina	No						
			Campground	No						
13	**Hirz Bay**	McCloud	Boat Ramp	No						
	Dekkas Rock		Campground	Yes	0.02			2	958	71
14	**Jones Valley**	Pit	Boat Ramp	No						
			Marina	No						
			Campground Lower	No						
15	**Kamloops**	McCloud	Camp	No						

No.	Recreation Feature Location[1]	River Arm	Recreation Feature	Impacts to Waters of the U.S.[2]	Area of Impacted Waters of the U.S. (acres)[4]	Relocation Feature				Volume of Fill to Waters of the U.S. (cubic yards)[5]
						Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	
16	**Lakeshore**	Sacramento	Fire Station South	Yes	0.14			5	6098	1129
	Fire Guard Station		Lakeshore East Campground	No						
17	**Lakeview**	McCloud	Marina	No						
18	**McCloud Bridge**	McCloud	Campground and Day Use	Yes	0.09			2	4095	303
19	**Monday Flat**	Squaw Creek	Boat In Camp	No						
20	**Moore Creek**	McCloud	Campground	No						
21	**Nelson Point**	Sacramento	Campground	Yes	0.058			2	2526	187
22	**Pine Point**	McCloud	Campground	No						
23	**Oak Grove**	Sacramento	Campground	Yes	0.244			1	10629	394
24	**Packers Bay**	Pit & Main Body	Trail and Trail Head Boat Ramp Marina	No No No						
	Pine Point	McCloud	Campground	No						
25	**Salt Creek**	Sacramento	Resident Tract Cabins	No						
26	**Upper Salt Creek** **Lower Salt Creek**	Sacramento	Day Use Area Decommissioned Service Campground / access road	No						
27	**Samwell**	McCloud	Nature Trail	No						
28	**Shasta Lake Marina**	Sacramento	Marina	No						
29	**Shasta Lake RV Resort**		RV Resort and Campground	No						
30	**Shasta Caverns East** **Shasta Caverns West**	McCloud	Landing East Landing West	No No						
31	**Sugar Loaf** **Sugarloaf Cove**	Sacramento Sacramento	Boat Ramp Marina Campgrounds	No No No						
32	**Turntable**	McCloud	Marina	No						

No.	Recreation Feature Location[1]	River Arm	Recreation Feature	Impacts to Waters of the U.S.[2]	Area of Impacted Waters of the U.S. (acres)[4]	Relocation Feature				Volume of Fill to Waters of the U.S. (cubic yards)[5]
						Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	
		McCloud	Campground	No						
33	**Digger Bay**	Sacramento	Boat Ramp	No						
34	**Centimudi**	Sacramento	Boat Ramp	No						
35	**Fishermans Point**	Sacramento	Camp Picnic Sites	No						
			Trail	No						
36	**Ski Island**	Pit	Boat In Campground	No						
37	**Silverthorn**	Pit	Boat Ramp	No						
38	**Tsasdi Resort**	Sacramento	Marina	No						
			Resorts	No						
APPROXIMATE TOTALS FOR RELOCATION AREAS					**0.577**					**2324**

Notes

1. Recreation Relocation Areas were determined from The Engineering Summary Appendix of SLWRI FEIS, and cross referenced with the SLWRI Delineation of Waters of the U.S.
2. Impacts to Waters of the U.S. were determined by comparing delineated wetlands and other waters of the U.S. with proposed recreation relocation features in ArcMap. Imagery covers the area in and around Lake Shasta acquired by Digital Globe 5/5/2017 and 11/10/2018. The spatial resolution varies from .31 to .05 meters.
3. Fill material is imported fill per the SLWRI FEIS Engineering Summary Appendix.
4. Impacted Waters of the U.S. (acres) = Wetlands (acres) + Other Waters (acres). Impacts are defined as the area permanently affected by the placement of fill within Waters of the U.S.
5. Volume of Fill to Waters of the U.S. (cubic yards) = Wetlands (cubic yards) + Other Waters (cubic yards)

Table B-5. Impacts to Types of Waters of the U.S. from Relocations

Type of Feature		Major Rivers (Acres)[1]	Intermittent Stream (ft)	Perennial Stream (ft)	Ephemeral Stream (ft)	Vegetated Ditch (ft)	Non-Vegetated Ditch (ft)	Seep/Spring Wetland (Acres)	Riparian Wetland (Acres)	Fresh Emergent Water (Acres)	Seasonal Wetland (Acres)
Bridges	Doney Creek Bridge	0.87	0	0	0	0	0	0	0	0	0
	Sacramento River 2nd Crossing	1.4	0	0	0	0	0	0	0	0	0
	Charlie Creek Bridge	0.002	0	0	0	0	0	0	0	0	0
	Doney Creek Bridge	0.002	0	0	0	0	0	0	0	0	0
	McCloud River Bridge	0.002	0	0	0	0	0	0	0	0	0
Roads	Lakeshore Drive		736	788	753	0	0	0.002	0.007	0	0
	Turn Table Bay		0	0	132	0	0	0	0	0.001	0
	Gillman Road		294	280	310	115	115	0	0.018	0	0
	Jones Valley & Silverthorn Areas		201	0	0	0	0	0	0	0	0
	Salt Creek Road		597	0	0	0	0	0.002	0	0	0
Dikes	Doney Creek Dike		0	0	0	0	0	0	0	0	0
	Antlers Dike		79	0	0	0	0	0	0	0	0
	East Bridge Bay Dike		0	0	86	0	0	0	0	0	0
	West Bridge Bay Dike		0	0	0	0	0	0	0	0	0
	North, Middle, & South RR Embankments		0	0	0	0	0	0	0	0	0
Recreation	Antlers RV Park and Campground		1097	0	0	0	0	0	0	0	0
	Bailey Cove Campgrounds and Day Use		289	0	0	0	0	0	0	0	0
	Dekkas Rock		205	0	93	0	0	0	0	0	0
	Lakeshore Fire Guard Station South Parcel		0	0	3212	0	0	0	0	0	0
	McCloud Bridge Campground		0	0	728	0	0	0	0	0	0

Type of Feature		Major Rivers (Acres)[1]	Intermittent Stream (ft)	Perennial Stream (ft)	Ephemeral Stream (ft)	Vegetated Ditch (ft)	Non-Vegetated Ditch (ft)	Seep/Spring Wetland (Acres)	Riparian Wetland (Acres)	Fresh Emergent Water (Acres)	Seasonal Wetland (Acres)
	Oak Grove Campground		627	0	255	0	0	0	0	0	0.008
	Nelson Point		0	0	0	0	0	0.006	0	0	0.046
	Total:	**2.28**	**4125**	**1068**	**5569**	**115**	**115**	**0.010**	**0.025**	**0.001**	**0.054**

Notes

1. Impacts from bridges are wholly to the waterbody they span as described in Table B-3.

Appendix C. Lakeshore Fire Guard Station Avoidance & Minimization

C.1 Introduction

Reclamation conducted an alternatives analysis for the relocation of the Lakeshore Fire Guard Station Project (Project) in consideration of the guidelines established under CWA 404(b)(1). The purpose of the Project is to relocate a new Fire Guard Station and demolish the existing Lakeshore Fire Guard Station, as the existing station, is in the vicinity of the Shasta Lake shoreline that will be impacted by the high reservoir pool by raising Shasta Dam.

The current Lakeshore Guard Station (LGS) is operated by the US Forest Service (USFS) on land adjacent to Shasta Lake, Shasta County, California. The subject property includes two sites, the north site and the south site, being considered for the relocation. As presented within the Engineering Summary Appendix in the SLWRI FEIS, the project would have the greatest impact upon wetlands and other waters of the U.S. out of all the relocations necessary for implementation of the SLWRI dam raise.

The subject property is located near the unincorporated community of Lakehead in the County of Shasta, California. The property comprises portions of Assessor's Parcel Numbers (APNs) 082-130-002 and 083-350-001. The property is bounded on the north by a residential development, on the west by Interstate Highway 5, on the south by a campground and a Pacific Gas & Electric (PG&E) transmission line easement, and on the east by Union Pacific Railroad (UPRR) property. The north site comprises the northern approximately 45 acres of APN 082-130-002. The south site comprises the southern approximately 11 acres of APN 082-130-002 and the northern approximately 9 acres of APN 083-350-001. The north and south sites are separated by approximately 90 acres of vacant land on APN 082-130-002. The north site is nearly bisected from the east by UPRR property that formerly was used for a turning wye.

C.2 Avoidance

Reclamation considered the feasibility of avoiding wetlands and avoiding all discharges of fill materials to wetlands and waters of the U.S. in both potential relocation sites, the north site and the south site. Reclamation found that avoiding wetlands within both locations was technologically feasible but prohibitively expensive. The costs of the avoiding wetlands, including design, site development (cut and fill), water supply development, and construction costs would increase substantially with the reduction in the amount of developable area and would not be feasible.

C.3 Minimization

Reclamation considered minimizing its impacts to wetlands and other waters of the U.S. in the north and south sites. The north site contains substantially greater areas of wetlands than the south site (7.5 acres versus 0.28 acres). The south site provided greater opportunity to reduce potential impacts to wetlands and WOTUS by virtue of having fewer acres of wetlands and WOTUS within the project area.

Within the south site Reclamation identified opportunities for minimization through a reconfiguration of the facility layout. Roads, utilities, buildings, parking, and staging areas were able to be modified in such a way to minimize their impacts upon wetlands. After reconfiguration, the project will impact 0.14 acres of wetlands.

C.4 Results

The primary purpose of the CWA 404(b)(1) guidelines is to minimize the impacts to wetlands and other WOTUS and ensure the least impactful alternative is implanted to meet the overall project purpose. Reclamation successfully identified opportunities for minimizing its impacts to wetlands and other WOTUS for the project by selecting the parcel with fewer wetlands and reconfiguring the relocation's structures to minimize its impacts.

Table C-1. Lakeshore Fire Guard Station Alternatives Summary

	Avoidance	Minimization
North Parcel	Cost prohibitive	Greater impact to wetlands than south parcel
South Parcel	Cost prohibitive	Smallest impact to wetlands

The Lakeshore Fire Guard Station relocation as presented within the SLWRI FEIS Engineering Summary Appendix would have impacted 7.0 acres of wetlands within the north site. Through consideration of the CWA 404(b)(1) guidelines Reclamation has reduced this impact from 7.0 acres to 0.14 acres, a substantial reduction. As this relocation represented the largest impact to wetlands amongst all relocations necessary as a result of the SLWRI dam raise, it represents a substantial reduction in impacts to wetlands for the entire dam raise project.

Appendix D. Sacramento River 2nd Crossing Bridge Avoidance & Minimization

D.1 Introduction

Reclamation conducted an alternatives analysis for the relocation of the Sacramento River 2nd Crossing Bridge (SCRB) in consideration of the guidelines established under CWA 404(b)(1). The SRCB is operated by the Union Pacific Railroad Company (UPRR) on land adjacent to Shasta Lake, Shasta County, California. The SCRB is the only connection for railroad traffic over existing UPRR tracks across the Sacramento River Arm (SRA) of Shasta Lake.

The purpose of the SCRB relocation is to construct a new bridge to replace the existing bridge that is in the vicinity of the Shasta Lake and will be impacted by the increased height of the reservoir pool caused by raising Shasta Dam. The superstructure and a portion of the foundation piers supporting the existing bridge will then be dismantled.

To support this relocation, the section of the tracks currently existing along the unincorporated community of Lakehead north of the bridge will also need to be relocated. The relocation of the subject bridge, the section of tracks within the Lakehead community and the relocation of another railroad bridge (Doney Creek Railroad Bridge located north of Lakehead Community) were all planned together to ensure minimum disruption of railroad traffic during construction and smooth and safe operation after relocation while staying within the UPRR Right of Way (ROW).

The proposed new bridge relocation will be across the SRA of Shasta Lake and will therefore impact the Waters of the United States (WOTUS) permanently. This impact will be due to construction of bridge foundations (most likely concrete piers) that will be required to be supported over competent bedrock at the lake bottom and built up to the bridge deck elevation.

Preliminary analysis based on the Advance Planning Study conducted during the SLWRI FEIS indicates an approximate area of WOTUS impact due to the foundation for the relocated SRCB of 1.40 acres. There is no other WOTUS delineated within the Arc-GIS imagery that is impacted due the relocation of SRCB.

As indicated above, the impact to WOTUS caused by the relocation of the SRCB will primarily and mostly be due to construction of foundation piers to support the bridge. These piers typically will be supported by the bedrock /competent material at the bottom of the lake. The exact elevation of the competent rock suitable to support the structural and the rolling railroad loads is to be determined through

geotechnical field testing and laboratory analyses that will be conducted during the next phase of the implementing the SLWRI project. The information thus acquired will also assist in determining further foundation details like the diameter of concrete piers, number of piers, depths etc. that will be developed during the final engineering design of the bridge. For this example, to calculate the approximate fill quantity USBR has used the information available within the Engineering Summary Appendix of the SLWRI FEIS. The Advance Planning Study included in SLWRI FEIS provided an estimation of dimensions for piers for the bridge abutments and along the river. It also estimates the foundation elevations for the piers. Using this preliminary information, USBR calculated the approximate volume of fill quantity (concrete) for the SRCB relocation that will go into the river to be approximately 8,270 cubic yards. This quantity will be further refined after completion of final design.

D.2 Avoidance

In consideration of the CWA 404(b)(1) guidelines Reclamation considered the feasibility of completely avoiding all discharges of fill materials to WOTUS. Reclamation considered (1) raising the bridge using a single span bridge support by two abutments and (2) relocating the bridge to a different location that is not adjacent to the current bridge.

To relocate SRSCB as a single-span bridge would require two abutments to support a span in excess of 1000 feet. The bridge would be required to support heavy dynamic railroad loads induced by single-track freight rail traffic moving at significant speeds. A bridge span in excess of 1000 ft between two supports capable to safely withstand such loads and transmit the same to the abutments would require an extremely deep bridge deck with other members making the structure very robust. Such a robust structure cannot be used due to the impracticality of handling, fabrication, launching and other design and construction constraints. Usually, such long single spans are found in high-level bridges crossing deep canyons, where intermittent support is not possible due to the distance between the canyon floor and the bridge deck. In such situations, long single-span bridge decks need to be adequately supported by an arch structure, typically below the deck, to help transmit bridge loads to the abutments. This support is critical in allowing the robustness of the deck to be reduced to practical dimensions.

For the SRSCB to be built as a single span high-level bridge, the railroad track will need to be elevated significantly to provide adequate space between the bridge deck and the top of lake water level to accommodate the arch support structure. Elevating the railroad tracks would require increasing the track grade gradually for several miles on either side of the bridge. Adjusting miles of track would require an enormous effort at the of cost several million dollars and would not be economically feasible.

Relocating the bridge to a different location that is not adjacent to the current bridge would require large quantities of land acquisition to relocate the railroad right of way to relocate the track. The terrain in and around the Shasta Lake is generally hilly. Thus, track relocation will likely require several new tunnels which would have severe adverse effects to the environment, requiring blasting, drilling, and disturbances of large amounts of rock and soil. This would require a monumental effort to completely re-route the UPRR tracks for several miles south and north of the current bridge location involving huge amount of land acquisition, huge quantities of grading and clearing of forest that will be extremely costly and time consuming. Moreover, it is very likely that the construction involved for such relocations will cause permanent damages to the exiting sensitive environmental features of the wilderness adjacent to the Shasta Lake. The cost of this effort will be several orders higher than that of the current project options and would not be economically feasible.

D.3 Minimization

Reclamation considered the possibility of modifying the existing bridge by raising such that it continues to serve its purpose safely and continually after implementation of the SLWRI project. This will include raising the existing bridge to a suitable elevation so that it is not affected by the raised high-water levels of Shasta Lake after raising the Shasta Dam. This option significantly reduces the impact to WOTUS. Reclamation considered the following advantages and disadvantages to this minimization option:

Advantages:

1. Modification of the existing bridge by raising will likely involve strengthening the existing bridge foundation and the deck that may include strengthening the existing piers, constructing some additional piers and strengthening the existing foundation. Thus, the impact to WOTUS (discharge of fill) will likely be significantly less than building a new bridge.

2. This alternative will not require re-alignment of the existing UPRR tracks as there will be no change to the bridge alignment.

3. This alternative will be less expensive than other on-site alternatives

4. This alternative fulfills the project purpose.

Disadvantages:

1. This alternative will require the existing bridge to be raised by a minimum of approximately 20 feet. For the railroad traffic to use the modified bridge the tracks south and north of the bridge would have to be raised.

Raising the UPRR tracks for safe railroad traffic (predominantly freight in this case) would have to be done gradually over a long distance at either side of the bridge. Available land on the southside of the bridge may permit this raise. North of the bridge where the tracks pass through the Lakehead community availability of land to accommodate this raise is extremely limited. Raising the tracks will also increase the footprint of the railroad embankment which may encroach into land beyond the railroad right of way.

2. This effort will involve several restrictions on the railroad traffic that will include imposing speed restrictions and temporary stoppage of regular traffic for long periods of time. This disruption will heavy financial losses UPRR that will add to the cost burden of the project.

Due to the uncertainties involved in raising the bridge, the increased costs of elevating tracks and purchasing land north and south of the bridge, and the increase costs to UPRR, this minimization effort is not feasible.

D.4 Results

The primary purpose of the CWA 404(b)(1) guidelines is to minimize the impacts to wetlands and other WOTUS and ensure the least impactful alternative is implanted to meet the overall project purpose. Reclamation considered the possibilities of completely avoiding wetlands and minimizing its impact to wetlands for the SCRB relocation but found that neither was feasible due to increased costs, logistics, and availability of land for purchase. Reclamation will implement mitigation according to the Wetland Mitigation Plan described in Chapter 2.5 with a minimum replacement ratio of 3:1 for impacted wetlands and other WOTUS.

BUREAU OF RECLAMATION

SLWRI Supplemental EIS Modeling

California-Great Basin

U.S. Department of the Interior

November 2020

Mission Statements

The Department of the Interior (DOI) conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Contents

Page

This page intentionally left blank

Introduction

Introduction and Modeled Alternatives

The operational modeling for the "Draft Supplemental Environmental Impact Statement for the Shasta Lake Water Resources Investigation" (SLWRI Supplemental) was done to capture the incremental changes with respect to the updated baseline conditions. These updates include:

- Amended Coordinated Operations Agreement between Reclamation and the California Department of Water Resources (DWR) for the Central Valley Project (CVP) and State Water Project (SWP)
- The U.S. Department of Interior, Fish and Wildlife Service Biological Opinion for the Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and State Water Project (2019 USFWS BO)
- The National Marine Fisheries Service Biological Opinion for the Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and State Water Project (2019 NMFS BO)

These changes were incorporated by using the operational modeling that was generated for the Record of Decision and Final Environmental Impact Statement for the Reinitiation of Consultation on the Coordinated Long-term Operation of the Central Valley Project and State Water Project (ROC). The Modeling Appendix can be found at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=39181. Alternative 1 of the ROC was used as the No Action Alternative for the SLWRI Supplemental with the following changes:

- The model was simulated under current climate and sea level for consistency in comparing to the SLWRI FEIS.

The modeling for the Supplemental EIS Project Alternative is the consistent with CP4A of the Shasta Lake Water Resources Investigation Final Environmental Impact Statement (Final EIS). CP4A is 634 TAF enlargement to Shasta Reservoir as a result of an 18.5' raise of Shasta Dam. The Modeling Appendix for the Final EIS can be found at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=1915.

CalSim II

Reclamation / California Department of Water Resources (DWR) CalSim II planning model was used to simulate the coordinated operation of the CVP and SWP over a range of hydrologic conditions. CalSim II is a generalized reservoir-river basin simulation model that allows for specification and achievement of user-specified allocation targets, or goals (Draper et al. 2004). CalSim II represents the best available planning model for CVP and SWP system operations and has

been used in previous system-wide evaluations of CVP and SWP operations (U.S. Bureau of Reclamation 2015).

HEC-5Q

Reclamation previously used the HEC-5Q 2015 model to model temperature changes within the Sacramento River as a result of implementing the alternatives presented in the 2015 SLWRI FEIS. This model was recently updated in 2019 to update the modeling of operating the upper shutters of the Shasta Temperature Control Device. The resulting effect of this model update is a more realistic use of available cold water in model simulation. The updates include configuration of the Shasta temperature control device (TCD), implementation of reservoir withdrawals, and evaporation assumptions.

Attachments

- Modeling Attachment 1 - CalSim II Model Assumptions Callouts
- Modeling Attachment 2 - Compiled Table Results
    - Storage Results (CalSim II)
    - Flow Results (CalSim II)
    - Diversion Results (CalSim II)
    - Temperature Results (HEC-5Q)

References

Draper, A.J., Munévar, A., Arora, S.K., Reyes, E., Parker, N 1 .L., Chung, F.I., and Peterson, L.E. 2004. CalSim: Generalized Model for Reservoir System Analysis. American Society of Civil Engineers, Journal of Water Resources Planning and Management, Vol. 130, No. 6.

U. S. Bureau of Reclamation, 2015. Coordinated Long Term Operation of the CVP and SWP EIS, Appendix 5A CalSim II and DSM2 Modeling.

Modeling Attachment 1 – CalSim II Model Assumptions Callouts

Model Assumption Callouts

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
GENERAL		
Planning horizon[a]	Year 2030	Same as ROC PA
Period of simulation	82 years (1922-2003)	Same as ROC PA
HYDROLOGY		
Climate Condition	Historic hydrology and temperature; current sea level.	Same as ROC PA
Inflows/Supplies	Inflows based on historical hydrology climate condition.	Same as ROC PA
Level of development	Projected 2030 level[c]	Same as ROC PA
DEMANDS, WATER RIGHTS, CVP/SWP CONTRACTS		
Sacramento River Region (excluding American River)		
CVP[d]	Land-use based, full build-out of contract amounts, except for Settlement Contractors represented with historical diversions.	Same as ROC PA
SWP (FRSA)[e]	Land-use based, limited by contract amounts	Same as ROC PA
Non-project	Land use based, limited by water rights and SWRCB Decisions for Existing Facilities	Same as ROC PA
Antioch Water Works	Pre-1914 water right	Same as ROC PA
Federal refuges	Firm Level 2 water supply needs	Same as ROC PA
Sacramento River Region - American River[g]		
Water rights	Year 2025, full water rights	Same as ROC PA
CVP	Year 2025, full contracts except for Settlement Contractors at historical diversions, including Freeport Regional Water Project	Same as ROC PA
San Joaquin River Region[h]		
Friant Unit	Limited by contract amounts, based on current allocation policy	Same as ROC PA

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
Lower Basin	Land-use based, based on district level operations and constraints	Same as ROC PA
Stanislaus River	Land-use based, Stepped Release Plan (SRP)	Same as ROC PA
San Francisco Bay, Central Coast, Tulare Lake and South Coast Regions (CVP/SWP project facilities)		
CVP[d]	Demand based on contract amounts	Same as ROC PA
CCWD[j]	195 TAF/yr CVP contract supply and water rights	Same as ROC PA
SWP[e,k]	Demand based on Table A amounts	Same as ROC PA
Article 56	Based on 2001-08 contractor requests	Same as ROC PA
Article 21	MWD demand up to 200 TAF/month from December to March subject to conveyance capacity, KCWA demand up to 180 TAF/month and other contractor demands up to 34 TAF/month in all months, subject to conveyance capacity	Same as ROC PA
North Bay Aqueduct (NBA)	77 TAF/yr demand under SWP contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville and Benecia Settlement Agreement	Same as ROC PA
Federal refuges	Firm Level 2 water needs	Same as ROC PA
FACILITIES		
Systemwide		
Systemwide	Existing facilities	Same as ROC PA
Sacramento River Region		
Shasta Lake	Existing, 4,552 TAF capacity	Assumes Shasta Raised to expand capacity to 5,186 TAF. Expanded capacity simulated as 443 TAF of operational capacity and 191 TAF of capacity reserved for Cold Water Pool
Red Bluff Diversion Dam	Diversion dam gates out all year, Pumping Plant operated to deliver CVP water	Same as ROC PA
Fremont Weir	Notched Fremont Weir as represented in Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR Alternative 1 (preferred alternative)	Same as ROC PA
Colusa Basin	Existing conveyance and storage facilities	Same as ROC PA
Upper American River[g,l]	PCWA American River Pump Station	Same as ROC PA
Lower Sacramento River	Freeport Regional Water Project[n]	Same as ROC PA

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
San Joaquin River Region		
Millerton Lake (Friant Dam)	Existing, 520 TAF capacity	Same as ROC PA
Lower San Joaquin River	City of Stockton Delta Water Supply Project, 30-mgd capacity	Same as ROC PA
SWP Banks Pumping Plant (South Delta)	Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months. Pumping can be up to 10,300 cfs during Dec 15 – Mar 15 depending on Vernalis flow conditions; additional capacity of 500 cfs (up to 7,180 cfs) allowed Jul – Sep for reducing impact of OMR action on SWP exports	Same as ROC PA
CVP C.W. Bill Jones Pumping Plant (Tracy PP)	Permit capacity is 4,600 cfs in all months (allowed for by the Delta-Mendota Canal–California Aqueduct Intertie)	Same as ROC PA
Upper Delta-Mendota Canal Capacity	Existing plus 400 cfs Delta-Mendota Canal–California Aqueduct Intertie	Same as ROC PA
CCWD Intakes	Los Vaqueros Reservoir with existing storage capacity (160 TAF), and existing intakes except for Mallard Slough Intake	Same as ROC PA
San Francisco Bay Region		
South Bay Aqueduct (SBA)	SBA rehabilitation, 430 cfs capacity from junction with California Aqueduct to Alameda County FC&WSD Zone 7 diversion point	Same as ROC PA
South Coast Region		
California Aqueduct East Branch	Existing capacity	Same as ROC PA
REGULATORY STANDARDS		
North Coast Region		
Trinity River		
Minimum flow below Lewiston Dam	Trinity EIS Preferred Alternative (369-815 TAF/yr)	Same as ROC PA
Trinity River Fall Augmentation Flows	420 cfs August 1 through September 30 in all but wet years	Same as ROC PA
Trinity Reservoir end-of-September minimum storage	Trinity EIS Preferred Alternative (600 TAF as able)	Same as ROC PA
Sacramento River Region		
Clear Creek		
Minimum flow below Whiskeytown Dam	Downstream water rights, 1963 USBR Proposal to USFWS and NPS, 150 cfs	Same as ROC PA

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
	year-round and pulse flows, model representation same as NAA	
Upper Sacramento River		
Shasta Lake end-of-September minimum storage	1900 TAF in non-critically dry years (not explicitly modeled - achieved through project allocation profiles when hydrologically feasible)	Same as ROC PA
Minimum flow below Keswick Dam	SWRCB WR 90-5	Same as ROC PA
Feather River		
Minimum flow below Thermalito Diversion Dam	2006 Settlement Agreement (700 / 800 cfs)	Same as ROC PA
Minimum flow below Thermalito Afterbay outlet	1983 DWR, DFG Agreement (750-1,700 cfs)	Same as ROC PA
Yuba River		
Minimum flow below Daguerre Point Dam	D-1644 Operations (Lower Yuba River Accord)[r]	Same as ROC PA
American River		
Minimum flow below Nimbus Dam	American River Flow Management Standard, per 2017 Water Forum Agreement with a planning minimum end of September storage target of 275 TAF	Same as ROC PA
Minimum Flow at H Street Bridge	SWRCB D-893	Same as ROC PA
Lower Sacramento River		
Minimum flow near Rio Vista	SWRCB D-1641	Same as ROC PA
San Joaquin River Region		
Mokelumne River		
Minimum flow below Camanche Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (100-325 cfs)	Same as ROC PA
Minimum flow below Woodbridge Diversion Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (25-300 cfs)	Same as ROC PA
Stanislaus River		
Minimum flow below Goodwin Dam	Flows per New Melones SRP	Same as ROC PA
Minimum dissolved oxygen	Modeled representation the same as SWRCB D-1422	Same as ROC PA
Merced River		
Minimum flow below Crocker-Huffman Diversion Dam	Davis-Grunsky (180-220 cfs, Nov-Mar), and Cowell Agreement	Same as ROC PA
Minimum flow at Shaffer Bridge	FERC 2179 (25-100 cfs)	Same as ROC PA
Tuolumne River		
Minimum flow at Lagrange Bridge	FERC 2299-024, 1995 (Settlement Agreement) (94-301 TAF/yr)	Same as ROC PA

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
San Joaquin River		
San Joaquin River below Friant Dam/ Mendota Pool	San Joaquin River Restoration-full flows, not constrained by current river capacity, model implementation does not include any recapture/recirculation	Same as ROC PA
Maximum salinity near Vernalis	Stanislaus contribution per New Melones SRP	Same as ROC PA
Minimum flow near Vernalis	Stanislaus contribution per New Melones SRP	Same as ROC PA
Sacramento River–San Joaquin Delta Region		
Delta Outflow Index (Flow, NDOI)	SWRCB D-1641	Same as ROC PA
Delta Cross Channel gate operation	Model representation as SRWCB D-1641 with additional days closed from Oct 1 – Jan 31 based on NMFS BO (Jun 2009) Action IV.1.2 (closed during flushing flows from Oct 1 – Dec 14 unless adverse water quality conditions would result)	Same as ROC PA
South Delta export limits (Jones PP and Banks PP)	SWRCB D-1641, Vernalis flow-based export limits Apr 1 – May 31, (additional 500 cfs allowed for Jul – Sep for reducing impact on SWP)	Same as ROC PA
Combined Flow in Old and Middle River (OMR)	OMR target of -5,000 cfs January through June except for 5 days of -2,000 cfs when turbidity bridge occurs and 7 days of -6,000 cfs when increased pumping due to storm is possible, followed by "first flush" action only if it occurs in December (14 days of -2,000 cfs), and OMR target of 3,500 cfs in April and May of AN and BN years	Same as ROC PA
OPERATIONS CRITERIA: RIVER-SPECIFIC		
Sacramento River Region		
Upper Sacramento River: Flow objective for navigation (Wilkins Slough)	Flow objective for Wilkins Slough based on month, CVP allocation, and Shasta storage condition to reflect CVP operations for local delivery	Same as ROC PA
American River: Folsom Dam flood control	Variable 400/600 flood control diagram (without outlet modifications)	Same as ROC PA
Feather River: Flow at Mouth of Feather River (above Verona)	Maintain DFG/DWR flow target of 2,800 cfs for Apr – Sep when flows	Same as ROC PA

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
	available dependent on Oroville inflow and FRSA allocation	
San Joaquin River Region		
Stanislaus River: Flow below Goodwin Dam[i]	Flows per New Melones SRP	Same as ROC PA
San Joaquin River: Salinity at Vernalis	Grasslands Bypass Project (full implementation)	Same as ROC PA
OPERATIONS CRITERIA: SYSTEMWIDE		
CVP Water Allocation		
Settlement / Exchange	100% (75% in Shasta critical years)	Same as ROC PA
Refuges	100% (75% in Shasta critical years)	Same as ROC PA
Agriculture Service	100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action	Same as ROC PA
Municipal & Industrial Service	100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR Action	Same as ROC PA
SWP Water Allocation		
North of Delta (FRSA)	Contract specific	Same as ROC PA
South of Delta (including North Bay Aqueduct)	Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and OMR action	Same as ROC PA
CVP-SWP Coordinated Operations		
Sharing of responsibility for in-basin-use	Revised Coordinated Operations Agreement	Same as ROC PA
Sharing of surplus flows	Revised Coordinated Operations Agreement	Same as ROC PA
Sharing of restricted export capacity for project- specific priority pumping	Revised Coordinated Operations Agreement	Same as ROC PA
Water transfers	Acquisitions by SWP contractors are wheeled at priority in Banks Pumping Plant over non-SWP users; LYRA included for SWP contractors	Same as ROC PA
Sharing of export capacity for lesser priority and wheeling-related pumping	Cross Valley Canal wheeling (max of 128 TAF/yr), CALFED ROD defined Joint Point of Diversion (JPOD)	Same as ROC PA
San Luis Reservoir	San Luis Reservoir is allowed to operate to a minimum storage of 100 TAF	Same as ROC PA

	ROC Proposed Action (ROC PA)	Shasta Dam Raise, CP4A
CVPIA 3406(b)(2)[u,v]		
Policy Decision	N/A	Same as ROC PA
Allocation	No B2 Allocation modeled	Same as ROC PA
Actions	Pre-determined upstream fish flow objectives below Whiskeytown	Same as ROC PA
Accounting[w]	No B2 Accounting modeled	Same as ROC PA
WATER MANAGEMENT ACTIONS		
Water Transfer Supplies (long term programs)		
Lower Yuba River Accord[w]	Yuba River acquisitions for reducing impact of D-1641 and OMR Action export restrictions on SWP	Same as ROC PA
Phase 8	None	None

Notes:

[a] These assumptions have been developed under the direction of the Bureau of Reclamation (Reclamation) management team for the Re-initiation of Consultation on long-term operations of the Central Valley Project (CVP) and State Water Project (SWP).

[b] Footnote not used

[c] The Sacramento Valley hydrology used in the Future Conditions CALSIM II model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by Reclamation. Development of Future-level projected land-use are being coordinated with the California Water Plan Update for future models.

[d] Refer to the 2020 ROC EIS Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[e] Refer to the 20202 ROC EIS Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[f] Footnote not used

[g] Assumptions regarding American River water rights and CVP contracts with the Sacramento River Water Reliability Project are documented in the Delivery Specifications attachments. The Sacramento Area Water Forum agreement, its dry year diversion reductions, Middle Fork Project operations and water is not included. Refer to Appendix D Attachment 2-5 CalSim II Model Delivery Specifications for contract specific details

[h] The CALSIM II representation of the San Joaquin River reflects the difficulties on-going groundwater overdraft problems. The 2030 level of development representation of the San Joaquin River Basin does not make any attempt to offer solutions to groundwater overdraft problems. In addition a dynamic groundwater simulation is not yet developed for the San Joaquin River Valley. Groundwater extraction/ recharge and stream-groundwater interaction are static assumptions and may not accurately reflect a response to simulated actions. These limitations should be considered in the analysis of results.

[i] Footnote not used

[j] The actual amount diverted is operated is conjunction with supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 160 TAF. Associated water rights to fill Los Vaqueros with Delta excess flows are included, but CCWD's water right permit and water right license on Mallard Slough are not included.

[k] It is assumed that SWP Contractors can take delivery of all Table A allocations and Article 21 supplies. Article 56 provisions are assumed and allow for SWP Contractors to manage storage and delivery conditions such that full Table A allocations can be delivered. Detailed analysis of the South Coast and Tulare regions support these assumptions. NBA Article 21 deliveries are

dependent on excess conditions only, all other Article 21 deliveries also require that San Luis Reservoir be at capacity and that Banks PP and the California Aqueduct has available capacity to divert from the Delta for direct delivery.

[l] PCWA American River pumping facility upstream of Folsom Lake is included.

[m] Footnote not used

[n] Mokelumne River flows are modified to reflect modified operations associated with EBMUD supplies from the Freeport Regional Water Project.

[o] Current ACOE permit for Banks PP allows for an average diversion rate of 6,680 cfs in all months. Diversion rate can increase up to 1/3 of the rate of San Joaquin River flow at Vernalis during Dec 15th – Mar 15th up to a maximum diversion of 10,300 cfs, if Vernalis flow exceeds 1,000 cfs.

[p] Footnote not used

[q] Delta actions, under USFWS discretionary use of CVPIA 3406(b)(2) allocations, are no longer dynamically operated and accounted for in the CALSIM II model. The Combined Old and Middle River Flow and Delta Export restrictions under the FWS BO (Dec 15th 2008) and the NMFS BO (June 4th 2009) severely limit any discretion that would have been otherwise assumed in selecting Delta actions under the CVPIA 3406(b)(2) accounting criteria. Therefore, it is anticipated that CVPIA 3406(b)(2) account availability for upstream river flows below Whiskeytown, Keswick and Nimbus Dams would be very limited. The future of these operations is uncertain. For these baseline simulations, upstream flows on the Clear Creek and Sacramento River are pre-determined based on CVPIA 3406(b)(2) based operations from the Aug 2008 BA Study 7.0 and Study 8.0 for Existing and Future Conditions respectively. The procedures for dynamic operation and accounting of CVPIA 3406(b)(2) are not included in the CALSIM II model.

[r] D-1644 and the Lower Yuba River Accord is assumed to be implemented . The Yuba River is not dynamically modeled in CALSIM II. Yuba River hydrology and availability of water acquisitions under the Lower Yuba River Accord are based on modeling performed and the Lower Yuba River Accord EIS/EIR study team.

[s] Footnote not used

[t] Footnote not used

[u] Footnote not used

Shasta Storage

SLWRI NAA

Storage (TAF)												
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,204	3,252	3,345	3,624	3,899	4,246	4,552	4,552	4,500	4,014	3,688	3,245
20%	3,111	3,005	3,317	3,551	3,771	4,142	4,537	4,552	4,403	3,811	3,549	3,077
30%	2,897	2,897	3,267	3,441	3,656	4,051	4,477	4,552	4,297	3,671	3,346	3,034
40%	2,825	2,773	3,094	3,339	3,560	3,980	4,391	4,488	4,123	3,487	3,124	2,980
50%	2,739	2,631	2,848	3,252	3,503	3,873	4,286	4,364	3,934	3,269	3,025	2,872
60%	2,627	2,521	2,706	3,092	3,398	3,756	4,094	4,223	3,820	3,200	2,919	2,733
70%	2,406	2,434	2,502	2,824	3,252	3,435	4,013	3,800	3,463	2,841	2,652	2,520
80%	1,954	2,087	2,242	2,543	2,923	3,354	3,622	3,370	3,001	2,394	2,141	2,061
90%	1,358	1,280	1,682	1,860	2,358	2,688	2,688	2,792	2,422	1,954	1,618	1,487
Long Term												
Full Simulation	2,501	2,474	2,677	2,983	3,275	3,637	3,981	3,968	3,673	3,118	2,808	2,596
Water Year Types												
Wet	2,905	2,773	2,985	3,433	3,657	3,899	4,359	4,495	4,352	3,839	3,499	3,051
Above Norm	2,834	2,686	2,936	3,153	3,474	4,025	4,495	4,493	4,171	3,542	3,199	2,949
Below Norm	2,814	2,888	2,970	2,973	3,334	3,766	4,181	4,166	3,835	3,245	2,911	2,833
Dry	2,331	2,433	2,711	2,759	3,159	3,611	3,831	3,705	3,300	2,714	2,453	2,411
Critical	1,185	1,193	1,356	2,186	2,354	2,573	2,638	2,463	2,072	1,589	1,331	1,261
Dry & Crit	1,872	1,937	2,169	2,530	2,837	3,196	3,354	3,208	2,809	2,264	2,004	1,951

SLWRI CP4A

Storage (TAF)												
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,804	3,830	3,962	4,238	4,511	4,863	5,186	5,186	5,134	4,643	4,305	3,854
20%	3,650	3,576	3,927	4,162	4,403	4,752	5,169	5,186	5,034	4,443	4,179	3,684
30%	3,484	3,406	3,886	4,002	4,288	4,667	5,092	5,172	4,922	4,278	3,923	3,624
40%	3,335	3,307	3,594	3,916	4,137	4,613	4,991	5,104	4,708	4,106	3,701	3,503
50%	3,200	3,145	3,365	3,769	4,057	4,472	4,823	4,921	4,461	3,795	3,479	3,381
60%	3,016	2,876	3,112	3,585	3,886	4,143	4,673	4,655	4,284	3,616	3,300	3,134
70%	2,734	2,691	2,755	3,179	3,758	4,050	4,311	4,254	3,819	3,295	3,050	2,902
80%	2,219	2,446	2,581	2,783	3,094	3,639	4,022	3,822	3,361	2,741	2,379	2,313
90%	1,628	1,551	1,898	1,993	2,583	2,929	2,879	3,105	2,730	2,287	1,889	1,756
Long Term												
Full Simulation	2,926	2,889	3,122	3,435	3,755	4,122	4,464	4,454	4,146	3,584	3,262	3,038
Water Year Types												
Wet	3,466	3,281	3,515	4,034	4,287	4,533	4,988	5,116	4,970	4,442	4,099	3,632
Above Norm	3,356	3,192	3,472	3,604	4,006	4,575	5,050	5,086	4,773	4,139	3,792	3,533
Below Norm	3,247	3,358	3,485	3,402	3,791	4,232	4,650	4,651	4,301	3,695	3,351	3,279
Dry	2,648	2,759	3,087	3,170	3,577	4,029	4,246	4,106	3,662	3,071	2,783	2,731
Critical	1,366	1,386	1,552	2,407	2,574	2,793	2,853	2,679	2,283	1,806	1,532	1,439
Dry & Crit	2,135	2,210	2,473	2,865	3,176	3,534	3,689	3,536	3,110	2,565	2,283	2,214

SLWRI CP4A minus SLWRI NAA

Storage (TAF)												
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	600	578	617	614	613	617	634	634	634	629	617	609
20%	539	571	610	611	632	610	632	634	631	632	629	606
30%	588	508	619	561	632	616	615	620	626	606	577	590
40%	510	534	500	578	577	633	601	616	585	619	577	522
50%	461	514	516	517	554	599	537	557	527	526	455	509
60%	388	355	406	493	488	387	579	431	465	416	381	401
70%	328	257	253	355	506	615	299	454	356	454	398	382
80%	265	359	339	240	170	284	399	452	360	347	239	252
90%	270	271	217	133	225	241	191	313	308	333	271	269
Long Term												
Full Simulation	424	415	446	452	480	485	483	486	474	466	454	442
Water Year Types												
Wet	561	507	530	601	630	634	628	621	618	604	600	581
Above Norm	522	506	536	451	531	551	555	593	602	598	594	584
Below Norm	432	469	516	428	458	466	469	484	465	450	441	446

Dry	317	326	376	411	419	418	415	401	362	358	330	321
Critical	182	193	196	220	220	220	215	217	210	217	201	178
Dry & Crit	263	273	304	335	339	339	335	327	301	301	278	264

Trinity Storage

SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,354	2,315	2,262	2,131	1,952
20%	1,824	1,801	1,818	1,900	2,000	2,100	2,270	2,282	2,222	2,135	1,984	1,871
30%	1,564	1,614	1,679	1,810	1,984	2,100	2,236	2,183	2,062	1,918	1,778	1,635
40%	1,459	1,456	1,588	1,696	1,839	2,050	2,155	2,078	1,980	1,831	1,654	1,472
50%	1,281	1,293	1,361	1,557	1,691	1,790	1,910	1,866	1,799	1,651	1,476	1,352
60%	1,191	1,207	1,291	1,313	1,528	1,684	1,814	1,744	1,673	1,531	1,354	1,243
70%	1,073	1,077	1,165	1,217	1,282	1,431	1,562	1,549	1,496	1,403	1,257	1,131
80%	879	920	968	1,009	1,079	1,246	1,419	1,382	1,293	1,153	1,010	915
90%	621	610	600	682	775	905	1,000	952	894	815	720	639
Long Term												
Full Simulation	1,273	1,281	1,345	1,424	1,548	1,671	1,815	1,792	1,728	1,607	1,456	1,326
Water Year Types												
Wet	1,713	1,704	1,726	1,774	1,949	2,072	2,246	2,267	2,207	2,096	1,965	1,808
Above Norm	1,501	1,491	1,532	1,539	1,725	1,901	2,076	2,057	1,981	1,865	1,708	1,550
Below Norm	1,161	1,204	1,301	1,283	1,371	1,478	1,650	1,614	1,553	1,432	1,287	1,167
Dry	1,010	1,034	1,165	1,289	1,381	1,515	1,643	1,575	1,490	1,342	1,167	1,055
Critical	615	613	653	915	958	1,029	1,068	1,028	997	890	734	652
Dry & Crit	852	865	960	1,140	1,212	1,321	1,413	1,356	1,293	1,161	994	894

SLWRI CP4A

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,354	2,315	2,252	2,131	1,975
20%	1,831	1,824	1,836	1,900	2,000	2,100	2,274	2,282	2,227	2,113	1,991	1,871
30%	1,532	1,591	1,747	1,842	1,993	2,100	2,248	2,183	2,062	1,918	1,763	1,619
40%	1,465	1,456	1,615	1,731	1,871	2,034	2,170	2,087	1,971	1,852	1,698	1,500
50%	1,337	1,337	1,426	1,569	1,694	1,846	1,948	1,919	1,828	1,722	1,521	1,388
60%	1,196	1,214	1,318	1,346	1,537	1,709	1,853	1,804	1,737	1,551	1,366	1,249
70%	1,138	1,109	1,168	1,237	1,295	1,506	1,560	1,579	1,538	1,425	1,261	1,112
80%	862	863	930	1,005	1,110	1,223	1,358	1,338	1,238	1,098	984	882
90%	610	599	589	658	735	890	1,000	966	925	824	690	628
Long Term												
Full Simulation	1,279	1,292	1,356	1,436	1,558	1,678	1,824	1,801	1,738	1,616	1,463	1,333
Water Year Types												
Wet	1,725	1,733	1,755	1,783	1,950	2,070	2,251	2,269	2,208	2,107	1,976	1,823
Above Norm	1,508	1,496	1,537	1,552	1,737	1,908	2,082	2,064	1,987	1,870	1,710	1,549
Below Norm	1,167	1,214	1,311	1,299	1,386	1,488	1,660	1,626	1,565	1,445	1,302	1,174
Dry	1,021	1,042	1,174	1,316	1,409	1,543	1,671	1,603	1,523	1,366	1,183	1,068
Critical	599	596	632	908	952	1,023	1,066	1,024	993	874	714	638
Dry & Crit	852	864	957	1,153	1,226	1,335	1,429	1,372	1,311	1,169	995	896

SLWRI CP4A minus SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	0	0	0	0	0	0	0	0	0	-9	0	23
0	7	23	17	0	0	0	4	0	5	-21	7	-1
0	-32	-23	68	33	9	0	12	0	0	0	-15	-15
0	6	0	27	36	32	-16	15	9	-9	22	44	28
1	57	44	65	13	3	56	38	54	30	70	44	36
1	5	7	27	33	10	25	39	59	64	20	11	7
1	65	32	3	21	13	74	-2	30	42	22	4	-18
1	-17	-56	-38	-5	31	-23	-60	-44	-55	-55	-26	-33
1	-11	-11	-11	-25	-40	-15	0	14	31	9	-29	-11
Long Term												
Full Simulation	6	11	11	12	10	7	10	9	10	10	7	7

Water Year Types												
Wet	12	29	29	9	1	-2	5	2	1	11	11	15
Above Norm	7	4	6	13	12	7	6	6	6	5	2	-1
Below Norm	6	10	10	16	15	10	10	11	13	13	16	7
Dry	11	9	9	27	28	28	28	28	33	25	16	14
Critical	-16	-17	-22	-6	-6	-6	-3	-4	-4	-16	-20	-14
Dry & Crit	0	-2	-3	13	14	14	16	16	18	9	1	2

Folsom Storage

SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	592	520	567	567	567	661	792	967	967	908	792	692
20%	540	491	567	565	565	656	792	967	967	835	734	599
30%	486	470	526	557	558	652	792	967	957	727	668	556
40%	471	437	493	540	553	646	792	967	926	660	596	525
50%	419	407	455	474	527	630	792	960	836	595	534	485
60%	335	390	417	445	499	621	786	850	765	502	436	385
70%	315	352	399	427	455	599	733	755	667	415	369	361
80%	281	302	347	370	412	535	620	605	542	379	329	307
90%	257	240	248	292	382	427	473	484	426	343	304	281
Long Term												
Full Simulation	410	397	441	462	490	589	711	818	766	590	523	457
Water Year Types												
Wet	508	451	482	523	515	631	785	951	937	797	702	576
Above Norm	435	418	473	498	532	640	786	943	884	627	568	496
Below Norm	462	451	480	477	537	622	778	907	847	599	536	497
Dry	346	377	422	424	480	585	689	736	635	450	401	381
Critical	208	223	305	332	353	410	433	428	381	302	261	230
Dry & Crit	291	315	375	387	429	515	586	613	533	391	345	321

SLWRI CP4A

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	592	567	567	567	567	661	792	967	967	918	792	693
20%	559	546	567	567	567	656	792	967	967	815	744	606
30%	527	507	557	562	560	652	792	967	957	736	673	592
40%	493	485	524	551	555	647	792	967	925	672	592	540
50%	427	425	485	505	530	630	792	960	848	603	549	485
60%	356	386	428	460	499	622	792	850	775	502	446	402
70%	314	354	399	431	458	599	733	760	674	436	380	357
80%	300	304	346	373	440	546	630	630	553	375	337	324
90%	257	256	243	292	385	455	471	492	432	333	296	290
Long Term												
Full Simulation	422	415	451	471	494	592	715	823	771	595	525	465
Water Year Types												
Wet	533	500	511	526	515	631	785	950	937	797	701	587
Above Norm	449	436	480	518	539	640	786	943	890	637	578	511
Below Norm	466	448	475	494	540	624	779	907	850	609	538	500
Dry	352	381	425	430	486	593	699	750	649	463	410	389
Critical	209	221	303	340	362	419	443	437	385	297	250	228
Dry & Crit	294	317	376	394	436	523	596	625	544	397	346	324

SLWRI CP4A minus SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	0	47	0	0	0	0	0	0	0	10	0	1
0	19	55	0	2	2	0	0	0	0	-20	9	6
0	41	38	32	5	2	0	0	0	0	8	5	36
0	23	48	31	11	2	1	0	0	-1	12	-4	14
1	9	18	29	31	3	0	0	0	12	9	15	0
1	20	-4	11	15	0	1	6	0	10	0	10	17
1	-2	2	0	4	3	0	0	6	6	21	11	-4

1	19	2	-1	3	28	11	11	25	11	-4	7	17
1	1	17	-4	0	4	29	-2	8	6	-10	-9	8
Long Term												
Full Simulation	12	18	10	9	4	3	4	4	5	5	2	8
Water Year Types												
Wet	25	49	29	3	0	0	0	0	0	0	-1	11
Above Norm	14	17	7	20	7	0	0	0	6	9	10	15
Below Norm	4	-3	-5	17	3	2	1	1	3	10	2	3
Dry	6	5	2	6	6	7	10	13	15	13	9	8
Critical	0	-2	-2	9	9	9	10	9	4	-5	-11	-2
Dry & Crit	4	2	1	7	7	8	10	12	10	6	1	4

Oroville Storage

SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2,069	2,078	2,715	2,788	2,907	3,036	3,352	3,538	3,538	3,050	2,730	2,180
20%	1,775	1,804	2,023	2,618	2,788	2,964	3,298	3,538	3,538	2,940	2,476	1,953
30%	1,611	1,648	1,778	2,275	2,788	2,918	3,272	3,480	3,361	2,772	2,319	1,862
40%	1,402	1,365	1,572	1,946	2,575	2,788	3,208	3,343	3,129	2,516	2,053	1,595
50%	1,248	1,234	1,379	1,721	2,154	2,622	2,856	2,967	2,840	2,228	1,791	1,354
60%	1,132	1,131	1,241	1,538	1,909	2,270	2,593	2,720	2,491	1,878	1,495	1,244
70%	1,092	1,026	1,134	1,280	1,695	2,017	2,212	2,269	2,024	1,430	1,242	1,193
80%	1,004	970	981	1,143	1,435	1,708	1,892	1,840	1,666	1,251	1,170	1,086
90%	916	894	892	1,026	1,237	1,470	1,626	1,501	1,295	1,140	1,005	902
Long Term												
Full Simulation	1,404	1,395	1,567	1,828	2,147	2,390	2,659	2,755	2,619	2,136	1,831	1,522
Water Year Types												
Wet	1,921	1,884	1,996	2,515	2,830	2,945	3,298	3,487	3,438	2,958	2,619	2,110
Above Norm	1,553	1,520	1,637	1,982	2,510	2,894	3,258	3,402	3,258	2,640	2,160	1,697
Below Norm	1,263	1,257	1,474	1,601	2,013	2,337	2,700	2,849	2,665	2,054	1,612	1,344
Dry	1,039	1,075	1,380	1,340	1,593	1,933	2,112	2,095	1,878	1,410	1,234	1,114
Critical	849	849	959	1,181	1,290	1,430	1,449	1,401	1,266	1,039	944	890
Dry & Crit	963	985	1,212	1,276	1,472	1,732	1,847	1,817	1,633	1,261	1,118	1,024

SLWRI CP4A

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2,066	2,155	2,711	2,788	2,907	3,036	3,352	3,538	3,538	3,050	2,730	2,180
20%	1,782	1,799	2,041	2,611	2,788	2,964	3,298	3,538	3,538	2,946	2,476	1,953
30%	1,645	1,647	1,778	2,275	2,788	2,918	3,272	3,480	3,362	2,769	2,316	1,859
40%	1,456	1,391	1,571	1,925	2,554	2,788	3,209	3,356	3,128	2,516	2,064	1,628
50%	1,266	1,251	1,377	1,719	2,161	2,659	2,866	2,967	2,840	2,225	1,786	1,352
60%	1,171	1,170	1,252	1,602	1,944	2,274	2,603	2,691	2,511	1,869	1,501	1,245
70%	1,112	1,017	1,165	1,278	1,701	2,016	2,209	2,274	2,034	1,487	1,243	1,221
80%	1,003	988	965	1,170	1,435	1,719	1,897	1,839	1,720	1,257	1,174	1,074
90%	909	891	872	1,045	1,245	1,472	1,627	1,499	1,298	1,174	1,069	964
Long Term												
Full Simulation	1,415	1,403	1,572	1,834	2,150	2,392	2,662	2,757	2,629	2,147	1,843	1,531
Water Year Types												
Wet	1,922	1,885	1,996	2,520	2,831	2,945	3,298	3,487	3,438	2,959	2,620	2,111
Above Norm	1,548	1,520	1,635	1,993	2,511	2,894	3,258	3,402	3,256	2,634	2,153	1,689
Below Norm	1,298	1,283	1,494	1,611	2,020	2,346	2,708	2,856	2,684	2,079	1,650	1,378
Dry	1,043	1,073	1,375	1,342	1,596	1,936	2,114	2,095	1,896	1,420	1,240	1,114
Critical	879	876	978	1,186	1,295	1,433	1,456	1,406	1,281	1,071	979	922
Dry & Crit	977	994	1,217	1,280	1,476	1,735	1,851	1,819	1,650	1,280	1,136	1,037

SLWRI CP4A minus SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	-3	77	-5	0	0	0	0	0	0	0	0	0
0	7	-5	18	-6	0	0	0	0	0	6	0	0
0	34	-1	0	0	0	0	0	0	0	-3	-3	-4

0	54	25	-1	-21	-21	0	1	13	-2	0	12	33
1	18	17	-3	-2	6	36	10	0	-1	-3	-5	-2
1	40	39	11	64	35	3	10	-28	20	-9	6	1
1	20	-9	31	-2	6	-1	-3	5	11	57	1	28
1	-1	19	-16	27	-1	11	5	-1	55	5	4	-11
1	-7	-4	-20	18	8	2	2	-2	3	34	64	62
Long Term												
Full Simulation	11	8	5	6	3	2	3	2	9	11	12	10
Water Year Types												
Wet	1	1	0	5	0	0	0	0	0	1	1	1
Above Norm	-5	0	-2	11	1	0	0	0	-2	-6	-7	-8
Below Norm	35	25	20	11	7	8	8	7	19	24	38	34
Dry	3	-2	-5	2	3	2	2	-1	18	10	6	0
Critical	29	27	19	5	5	3	7	5	15	32	35	32
Dry & Crit	14	10	5	3	4	3	4	2	17	19	18	13

San Luis (Combined State and Federal) Storage

SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	743	907	1,201	1,545	1,793	2,039	1,786	1,457	1,195	949	705	722
20%	612	733	1,092	1,353	1,662	1,894	1,717	1,342	958	813	595	633
30%	544	675	978	1,278	1,488	1,762	1,613	1,223	825	692	522	576
40%	494	573	868	1,158	1,435	1,665	1,462	1,161	753	626	434	520
50%	410	507	759	1,078	1,337	1,562	1,405	1,061	675	527	380	430
60%	339	447	697	980	1,264	1,467	1,339	987	635	463	309	365
70%	285	422	661	898	1,142	1,284	1,185	863	531	414	258	317
80%	238	362	523	805	989	1,222	1,074	812	460	332	187	171
90%	182	292	442	710	936	1,030	938	711	365	239	130	145
Long Term												
Full Simulation	454	568	820	1,107	1,342	1,536	1,386	1,088	742	589	431	464
Water Year Types												
Wet	609	651	925	1,214	1,529	1,800	1,608	1,264	948	737	622	682
Above Norm	495	604	896	1,176	1,399	1,638	1,431	1,052	703	499	456	531
Below Norm	552	733	1,025	1,021	1,256	1,495	1,352	1,034	645	588	478	516
Dry	284	438	608	1,123	1,298	1,420	1,302	1,048	667	600	266	259
Critical	220	356	591	886	1,046	1,086	1,026	864	557	346	183	170
Dry & Crit	259	405	601	1,028	1,197	1,287	1,192	974	623	498	233	223

SLWRI CP4A

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	731	912	1,220	1,559	1,794	2,039	1,779	1,454	1,162	931	701	714
20%	610	750	1,118	1,348	1,658	1,894	1,706	1,317	945	771	585	629
30%	541	690	984	1,284	1,540	1,781	1,558	1,200	831	678	506	589
40%	496	593	868	1,171	1,436	1,696	1,505	1,157	726	596	434	503
50%	421	509	786	1,045	1,370	1,583	1,405	1,071	674	506	372	426
60%	358	464	696	978	1,227	1,425	1,317	990	633	449	287	344
70%	277	422	639	914	1,102	1,292	1,188	867	545	391	251	273
80%	228	371	570	816	1,028	1,187	1,088	807	439	310	182	169
90%	182	284	440	747	921	1,082	936	703	331	204	144	145
Long Term												
Full Simulation	454	574	825	1,112	1,345	1,534	1,381	1,079	728	573	423	457
Water Year Types												
Wet	607	662	942	1,229	1,545	1,811	1,616	1,269	947	731	618	675
Above Norm	515	636	930	1,161	1,387	1,632	1,424	1,045	698	494	454	535
Below Norm	560	755	1,048	1,035	1,263	1,482	1,342	1,025	637	583	469	510
Dry	273	428	587	1,121	1,292	1,409	1,286	1,026	641	574	261	249
Critical	212	330	561	883	1,043	1,081	1,015	844	523	297	159	158
Dry & Crit	249	389	577	1,026	1,192	1,278	1,178	953	594	463	220	213

SLWRI CP4A minus SLWRI NAA

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**

Probability of Exceedance												
0	-12	5	19	14	1	0	-7	-3	-33	-18	-4	-8
0	-2	17	26	-5	-4	-1	-11	-25	-13	-42	-10	-4
0	-4	14	7	5	52	19	-55	-23	6	-13	-16	13
0	2	20	0	13	1	30	44	-4	-27	-30	-1	-17
1	11	1	27	-33	33	21	0	10	-1	-21	-8	-4
1	19	17	-1	-2	-37	-42	-21	3	-2	-14	-22	-21
1	-8	0	-22	16	-40	8	3	4	14	-23	-7	-44
1	-10	9	47	11	39	-35	14	-5	-21	-22	-5	-2
1	0	-8	-2	37	-15	52	-2	-8	-34	-35	14	0
Long Term												
Full Simulation	0	6	5	4	3	-3	-5	-9	-13	-16	-8	-7
Water Year Types												
Wet	-2	11	16	15	16	11	8	5	-1	-6	-5	-7
Above Norm	19	33	33	-15	-12	-6	-8	-7	-5	-5	-1	4
Below Norm	9	22	23	14	7	-13	-10	-9	-8	-5	-9	-6
Dry	-12	-9	-21	-1	-6	-11	-17	-22	-26	-26	-5	-10
Critical	-8	-26	-30	-3	-3	-6	-11	-20	-34	-49	-24	-12
Dry & Crit	-10	-16	-24	-2	-5	-9	-14	-21	-29	-35	-13	-11

Keswick Release

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,042	11,419	17,116	21,339	30,876	19,017	10,404	10,476	12,667	15,000	11,812	14,834
20%	8,068	10,204	10,598	14,946	23,904	12,339	5,973	9,507	11,980	15,000	11,070	12,726
30%	7,308	9,121	5,231	8,632	11,983	8,688	4,962	8,876	10,878	15,000	10,469	11,422
40%	6,922	7,505	4,486	3,250	4,697	4,099	3,742	8,018	9,952	14,677	9,885	9,037
50%	6,205	6,167	3,487	3,250	3,250	3,250	3,250	7,599	9,116	14,297	9,585	5,841
60%	5,750	4,814	3,250	3,250	3,250	3,250	3,250	7,025	8,773	13,534	9,158	5,240
70%	5,190	4,205	3,250	3,250	3,250	3,250	3,250	6,537	8,340	12,673	8,750	4,999
80%	4,672	3,250	3,250	3,250	3,250	3,250	3,250	5,698	8,020	11,604	8,287	4,570
90%	3,954	3,250	3,250	3,250	3,250	3,250	3,250	5,247	7,595	10,716	7,832	4,031
Long Term												
Full Simulation	6,419	7,049	7,212	8,755	11,163	8,445	5,501	7,764	9,874	13,434	9,716	8,187
Water Year Types												
Wet	7,972	9,549	7,647	18,068	20,677	16,277	8,659	8,491	8,777	13,265	10,427	13,151
Above Norm	6,807	10,404	7,023	7,522	15,154	8,724	4,769	8,176	10,008	14,407	10,368	9,475
Below Norm	5,574	5,543	8,989	3,673	6,417	3,842	3,651	6,956	9,930	13,608	9,730	5,459
Dry	5,564	4,374	7,827	3,747	3,615	3,854	3,811	7,342	11,202	14,051	8,894	4,636
Critical	4,932	4,043	3,464	3,250	3,416	3,451	4,087	7,350	10,061	11,700	8,736	4,655
Dry & Crit	5,311	4,242	6,082	3,548	3,535	3,692	3,921	7,345	10,746	13,111	8,831	4,644

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,245	11,630	15,818	20,021	28,153	19,119	10,736	10,357	13,031	15,000	11,786	14,949
20%	8,303	10,529	9,595	12,032	21,806	12,330	6,724	9,434	12,319	15,000	11,134	12,751
30%	7,509	9,253	5,010	8,049	11,316	8,261	4,446	8,640	10,976	15,000	10,615	11,502
40%	7,213	7,703	4,297	3,266	4,285	4,029	3,562	8,091	10,409	15,000	10,135	9,517
50%	6,563	6,244	3,250	3,250	3,250	3,250	3,250	7,636	9,583	14,501	9,757	6,020
60%	5,946	4,800	3,250	3,250	3,250	3,250	3,250	7,029	8,917	13,534	9,476	5,480
70%	5,469	4,136	3,250	3,250	3,250	3,250	3,250	6,619	8,428	13,206	9,015	5,156
80%	4,956	3,250	3,250	3,250	3,250	3,250	3,250	5,984	8,052	12,035	8,632	4,746
90%	4,410	3,250	3,250	3,250	3,250	3,250	3,250	5,229	7,592	11,003	8,221	4,163
Long Term												
Full Simulation	6,644	7,129	6,716	8,613	10,668	8,384	5,481	7,712	10,054	13,566	9,899	8,387
Water Year Types												
Wet	8,328	10,170	7,302	17,732	20,159	16,229	8,633	8,630	8,826	13,316	10,449	13,393
Above Norm	7,091	10,698	6,517	7,273	13,702	8,483	4,691	7,543	9,842	14,474	10,452	9,657
Below Norm	5,812	4,849	8,231	3,670	5,926	3,782	3,570	6,686	10,205	13,845	9,814	5,499
Dry	5,663	4,255	7,005	3,637	3,451	3,857	3,855	7,551	11,770	14,237	9,485	4,815
Critical	4,988	3,943	3,446	3,426	3,427	3,447	4,111	7,332	10,179	11,869	8,876	5,003
Dry & Crit	5,393	4,130	5,582	3,553	3,441	3,693	3,958	7,463	11,134	13,290	9,241	4,890

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	204	211	-1299	-1318	-2724	101	332	-119	364	0	-26	115
0	235	325	-1003	-2914	-2098	-8	750	-73	340	0	64	25
0	202	132	-221	-582	-667	-427	-516	-236	98	0	146	81
0	291	198	-189	16	-412	-70	-180	73	457	323	249	480
1	358	77	-237	0	0	0	0	38	467	204	172	179
1	195	-14	0	0	0	0	0	5	144	0	318	240
1	280	-68	0	0	0	0	0	82	89	533	264	157
1	284	0	0	0	0	0	0	287	31	431	346	176
1	455	0	0	0	0	0	0	-18	-3	287	389	132
Long Term												
Full Simulation	225	81	-496	-142	-495	-60	-20	-52	180	132	184	200
Water Year Types												
Wet	356	621	-346	-336	-518	-48	-25	138	49	51	22	242
Above Norm	284	294	-506	-250	-1452	-241	-78	-634	-167	66	83	182
Below Norm	238	-694	-758	-3	-491	-60	-81	-270	274	237	84	40
Dry	100	-119	-822	-110	-164	4	44	208	568	186	590	178
Critical	55	-100	-18	176	11	-3	25	-19	118	169	140	349
Dry & Crit	82	-112	-500	4	-94	1	36	117	388	179	410	246

Nimbus Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2,574	3,789	8,491	12,273	14,692	9,755	6,740	7,474	4,615	5,000	2,760	3,824
20%	1,767	3,181	3,883	7,700	10,979	7,003	5,058	4,500	3,752	5,000	2,331	3,002
30%	1,573	2,667	2,171	5,306	7,367	5,050	4,432	3,532	3,612	5,000	1,750	2,313
40%	1,500	2,335	2,000	3,678	5,734	4,165	3,476	2,841	2,729	3,900	1,750	1,866
50%	1,500	1,925	2,000	1,750	2,944	3,006	2,505	2,042	2,195	3,346	1,750	1,533
60%	1,500	1,664	1,979	1,700	1,822	1,870	2,107	1,750	1,750	2,929	1,750	1,533
70%	1,434	1,434	1,492	1,700	1,445	1,745	1,750	1,612	1,750	2,596	1,478	1,478
80%	1,060	1,060	1,087	1,309	1,264	945	1,078	1,065	1,071	2,344	850	800
90%	800	800	800	924	842	800	800	800	800	994	800	800
Long Term												
Full Simulation	1,578	2,472	3,642	5,038	5,865	4,255	3,364	3,061	2,713	3,368	1,717	1,948
Water Year Types												
Wet	2,093	3,627	4,254	10,606	10,880	7,232	5,565	5,325	4,015	3,453	2,391	3,155
Above Norm	1,652	2,305	3,386	5,309	7,213	6,209	3,400	2,931	2,674	4,645	1,745	2,102
Below Norm	1,619	2,986	4,207	2,291	4,715	2,798	3,120	2,531	2,433	4,421	1,726	1,535
Dry	1,242	1,610	4,391	1,528	1,897	2,044	1,835	1,599	2,139	2,987	1,265	1,126
Critical	845	830	786	1,172	946	871	1,133	1,095	1,115	1,251	897	892
Dry & Crit	1,083	1,298	2,949	1,386	1,517	1,575	1,555	1,398	1,729	2,292	1,118	1,033

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2,392	3,754	8,664	12,273	14,692	9,755	6,740	7,474	4,615	5,000	2,979	3,405
20%	1,595	2,729	4,197	7,904	10,972	6,987	5,058	4,501	3,766	5,000	2,389	2,771
30%	1,500	2,244	2,432	5,270	7,367	5,050	4,432	3,532	3,260	5,000	1,924	2,219
40%	1,500	1,925	2,000	3,678	5,733	4,165	3,476	2,874	2,527	3,855	1,750	1,731
50%	1,500	1,925	2,000	1,750	3,432	2,995	2,505	1,902	2,187	3,335	1,750	1,533
60%	1,500	1,683	2,000	1,700	2,465	1,857	2,081	1,750	1,750	2,878	1,750	1,533
70%	1,389	1,434	1,492	1,700	1,445	1,745	1,745	1,608	1,750	2,512	1,588	1,478
80%	992	1,035	992	1,268	1,264	961	1,059	1,059	1,130	2,373	840	800
90%	800	800	800	805	842	800	800	800	800	1,216	800	790
Long Term												
Full Simulation	1,506	2,358	3,781	5,040	5,956	4,268	3,352	3,049	2,689	3,364	1,765	1,850
Water Year Types												
Wet	1,869	3,216	4,580	10,629	10,932	7,230	5,563	5,324	4,016	3,448	2,400	2,944
Above Norm	1,642	2,245	3,560	5,271	7,442	6,314	3,400	2,931	2,567	4,583	1,729	2,019

Below Norm	1,606	3,089	4,236	2,247	4,964	2,814	3,132	2,529	2,381	4,316	1,840	1,510
Dry	1,266	1,619	4,426	1,572	1,894	2,023	1,785	1,535	2,107	2,997	1,323	1,153
Critical	827	870	777	1,162	937	868	1,121	1,115	1,170	1,402	1,004	750
Dry & Crit	1,090	1,320	2,966	1,408	1,511	1,561	1,520	1,367	1,732	2,359	1,196	992

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	-183	-35	174	0	0	0	0	0	0	0	218	-419
0	-172	-452	315	203	-7	-16	0	2	14	0	58	-231
0	-73	-423	261	-36	0	0	0	0	-352	0	174	-94
0	0	-410	0	0	-1	0	0	33	-202	-45	0	-134
1	0	0	0	0	488	-11	0	-140	-8	-12	0	0
1	0	18	21	0	643	-13	-26	0	0	-51	0	0
1	-45	0	0	0	0	0	-5	-5	0	-84	110	0
1	-68	-25	-96	-41	0	16	-19	-7	59	29	-11	0
1	0	0	0	-119	0	0	0	0	0	222	0	-10
Long Term Full Simulation	-72	-113	140	2	90	13	-12	-12	-23	-4	48	-98
Water Year Types												
Wet	-225	-411	325	23	51	-2	-3	0	0	-4	9	-211
Above Norm	-11	-59	174	-38	230	105	0	0	-107	-62	-16	-83
Below Norm	-13	103	29	-44	249	17	11	-2	-52	-106	114	-25
Dry	24	10	35	44	-3	-21	-50	-64	-32	11	59	27
Critical	-18	40	-10	-11	-9	-3	-12	20	55	150	106	-142
Dry & Crit	7	22	17	22	-5	-14	-35	-31	3	67	78	-41

Trinity River Below Lewiston Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	373	300	300	586	2,195	1,730	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	870	870
40%	373	300	300	300	300	300	540	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term Full Simulation	364	366	651	711	743	690	588	3,753	2,210	890	793	783
Water Year Types												
Wet	373	300	1,230	1,596	1,313	1,449	731	4,620	3,560	1,161	660	660
Above Norm	373	775	681	300	829	475	467	4,450	2,663	1,048	800	800
Below Norm	373	300	300	300	559	300	508	3,763	1,767	916	870	870
Dry	373	300	300	300	300	300	529	3,216	1,251	667	870	870
Critical	311	275	300	300	300	300	580	1,973	783	450	870	798
Dry & Crit	348	290	300	300	300	300	550	2,719	1,064	580	870	841

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	373	300	300	1,321	2,578	1,730	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	870	870
40%	373	300	300	300	300	300	540	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												

Full Simulation	364	366	639	719	787	698	588	3,753	2,210	890	793	774
Water Year Types												
Wet	373	300	1,193	1,621	1,436	1,476	731	4,620	3,560	1,161	660	660
Above Norm	373	775	681	300	877	475	467	4,450	2,663	1,048	800	800
Below Norm	373	300	300	300	549	300	508	3,763	1,767	916	870	870
Dry	373	300	300	300	300	300	529	3,216	1,251	667	870	870
Critical	311	275	300	300	300	300	580	1,973	783	450	870	738
Dry & Crit	348	290	300	300	300	300	550	2,719	1,064	580	870	817

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	0	0	0	736	383	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	-420
1	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation	0	0	-12	8	44	8	0	0	0	0	0	-9
Water Year Types												
Wet	0	0	-37	25	123	27	0	0	0	0	0	0
Above Norm	0	0	0	0	49	0	0	0	0	0	0	0
Below Norm	0	0	0	0	-10	0	0	0	0	0	0	0
Dry	0	0	0	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	0	0	0	-59
Dry & Crit	0	0	0	0	0	0	0	0	0	0	0	-24

Clear Creek Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation	185	188	190	225	207	194	191	265	181	85	85	148
Water Year Types												
Wet	200	200	200	309	249	207	200	277	200	85	85	150
Above Norm	200	200	200	192	196	196	196	277	200	85	85	150
Below Norm	193	193	193	189	189	189	189	269	186	85	85	150
Dry	181	183	183	192	192	192	192	264	180	85	85	150
Critical	137	149	163	171	171	171	171	224	120	85	85	133
Dry & Crit	163	170	175	183	183	183	183	248	156	85	85	143

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150

70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation	185	188	190	225	207	194	191	265	181	85	85	148
Water Year Types												
Wet	200	200	200	309	249	207	200	277	200	85	85	150
Above Norm	200	200	200	192	196	196	196	277	200	85	85	150
Below Norm	193	193	193	189	189	189	189	269	186	85	85	150
Dry	181	183	183	192	192	192	192	264	180	85	85	150
Critical	137	149	163	171	171	171	171	224	120	85	85	133
Dry & Crit	163	170	175	183	183	183	183	248	156	85	85	143

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types												
Wet	0	0	0	0	0	0	0	0	0	0	0	0
Above Norm	0	0	0	0	0	0	0	0	0	0	0	0
Below Norm	0	0	0	0	0	0	0	0	0	0	0	0
Dry	0	0	0	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	0	0	0	0
Dry & Crit	0	0	0	0	0	0	0	0	0	0	0	0

Sacramento River at Red Bluff Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,759	13,246	27,411	36,830	47,932	30,317	16,629	13,190	12,508	14,536	11,129	14,948
20%	9,062	11,985	18,861	24,508	33,672	19,596	13,140	11,331	11,804	14,259	10,432	12,869
30%	8,346	10,858	10,869	16,468	22,275	14,597	8,156	9,889	10,834	14,059	9,698	11,770
40%	7,718	10,506	8,200	11,638	13,308	10,747	7,164	9,159	10,090	13,909	9,411	9,646
50%	6,900	8,208	6,796	8,758	10,401	8,667	6,010	8,480	9,580	13,616	9,005	5,958
60%	6,238	7,065	6,276	7,117	8,412	7,716	5,468	8,057	9,151	13,144	8,693	5,721
70%	5,862	6,343	5,687	6,321	7,179	6,580	5,325	7,789	8,683	12,260	8,480	5,396
80%	5,470	5,340	5,140	5,468	5,878	5,643	5,037	7,298	8,294	10,936	8,043	4,771
90%	4,906	4,901	4,718	4,944	5,196	4,980	4,651	6,609	7,905	9,987	7,568	4,467
Long Term												
Full Simulation	7,243	9,315	12,217	15,928	19,241	14,580	9,049	9,399	10,093	12,835	9,238	8,483
Water Year Types												
Wet	8,794	12,094	12,565	30,413	33,270	25,523	14,397	10,969	9,291	12,553	9,749	13,429
Above Norm	7,744	12,721	12,195	16,271	24,706	16,405	8,867	9,935	9,837	13,337	9,623	9,721
Below Norm	6,662	7,897	14,236	8,723	12,570	8,005	6,730	8,229	10,051	12,977	9,265	5,715
Dry	6,301	6,645	13,934	6,994	9,034	8,398	5,788	8,448	11,309	13,628	8,632	5,016
Critical	5,475	5,544	6,555	6,008	6,471	5,993	5,240	8,251	10,313	11,590	8,624	4,960
Dry & Crit	5,971	6,205	10,982	6,600	8,009	7,436	5,569	8,369	10,910	12,813	8,629	4,994

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	10,081	13,522	26,618	36,852	45,018	30,414	16,613	13,018	12,972	14,412	11,077	15,159
20%	9,235	12,250	17,013	24,498	32,333	19,587	13,140	10,430	12,141	14,278	10,500	12,947

30%	8,624	11,430	10,870	16,480	21,523	14,455	8,433	9,540	11,155	14,091	9,895	11,743
40%	8,029	10,856	8,200	11,634	13,884	10,743	7,162	9,217	10,466	13,917	9,527	9,683
50%	7,008	8,617	6,981	8,736	9,885	8,765	5,901	8,357	9,653	13,633	9,257	6,272
60%	6,601	6,904	6,295	7,121	8,409	7,579	5,389	8,039	9,232	13,186	8,943	5,787
70%	6,209	6,239	5,705	6,561	7,178	6,571	5,165	7,749	8,729	12,533	8,624	5,519
80%	5,788	5,415	5,514	5,851	5,911	5,636	4,943	7,497	8,333	11,383	8,328	5,145
90%	5,020	4,920	4,727	4,966	5,196	4,980	4,599	6,987	7,829	10,189	7,815	4,474
Long Term												
Full Simulation	7,463	9,395	11,722	15,790	18,747	14,521	9,004	9,314	10,223	12,911	9,383	8,664
Water Year Types												
Wet	9,143	12,714	12,217	30,085	32,754	25,475	14,349	11,073	9,295	12,555	9,734	13,653
Above Norm	8,021	13,013	11,687	16,021	23,256	16,170	8,759	9,258	9,591	13,315	9,635	9,871
Below Norm	6,894	7,201	13,483	8,722	12,078	7,946	6,604	7,898	10,251	13,129	9,283	5,735
Dry	6,395	6,527	13,114	6,887	8,872	8,401	5,805	8,636	11,823	13,753	9,176	5,172
Critical	5,528	5,446	6,540	6,186	6,482	5,989	5,265	8,231	10,433	11,760	8,798	5,301
Dry & Crit	6,048	6,095	10,484	6,607	7,916	7,436	5,589	8,474	11,267	12,956	9,025	5,224

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	322	277	-793	21	-2914	97	-16	-172	464	-123	-52	211
20%	173	265	-1848	-10	-1338	-9	0	-901	337	19	68	78
30%	278	572	1	12	-753	-141	277	-349	321	32	196	-27
40%	311	350	0	-4	576	-4	-1	58	376	7	116	36
50%	108	409	185	-21	-516	98	-110	-123	73	17	251	314
60%	363	-161	19	4	-4	-137	-78	-18	81	42	250	66
70%	347	-103	18	241	0	-9	-161	-40	46	273	144	123
80%	318	74	374	383	33	-7	-93	199	39	447	285	374
90%	115	18	10	22	0	0	-52	379	-77	202	247	7
Long Term												
Full Simulation	219	80	-495	-138	-494	-60	-45	-85	130	76	145	181
Water Year Types												
Wet	349	619	-347	-328	-517	-48	-48	104	5	2	-16	225
Above Norm	277	292	-507	-250	-1,450	-235	-108	-677	-246	-22	11	150
Below Norm	232	-696	-753	-1	-492	-59	-126	-332	200	153	19	20
Dry	94	-118	-820	-107	-162	3	17	188	514	125	544	156
Critical	53	-98	-15	178	11	-4	25	-21	120	170	173	341
Dry & Crit	78	-110	-498	7	-93	0	20	104	357	143	395	230

Sacramento River near Wilkins Slough Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,077	13,389	21,166	22,019	22,695	21,653	19,316	12,702	7,786	9,079	6,703	14,480
20%	7,683	12,500	19,967	21,293	21,576	20,358	17,834	9,260	6,855	8,730	5,925	12,732
30%	7,129	11,210	13,925	19,770	20,976	18,826	11,467	6,355	6,274	8,535	5,396	10,516
40%	6,295	10,345	12,060	15,313	19,703	15,830	9,176	5,244	5,726	8,289	4,811	9,189
50%	5,822	8,393	8,194	10,736	15,904	13,398	7,602	4,686	5,072	7,934	4,583	5,430
60%	5,154	7,105	7,239	9,464	12,261	10,242	7,057	4,432	4,832	7,594	4,529	5,010
70%	4,583	5,789	5,905	7,817	10,174	8,741	6,434	3,978	4,714	6,791	4,380	4,561
80%	4,374	4,688	5,583	6,918	7,469	7,821	5,715	3,699	4,516	5,963	4,061	4,245
90%	3,699	3,879	4,673	6,001	6,295	5,838	5,180	3,457	3,645	4,642	3,419	3,454
Long Term												
Full Simulation	6,081	8,970	11,290	13,434	15,230	13,829	10,324	6,549	5,780	7,417	4,971	7,899
Water Year Types												
Wet	7,572	12,013	11,438	19,197	19,837	18,120	14,974	9,525	6,332	7,435	5,258	13,031
Above Norm	6,622	10,966	12,066	16,026	18,867	17,495	11,954	7,557	5,781	7,703	5,392	9,117
Below Norm	5,783	8,322	12,873	11,720	14,293	11,054	8,889	5,174	5,190	7,176	4,791	5,032
Dry	4,956	6,360	11,555	8,561	11,496	11,223	6,926	4,373	5,821	8,050	4,419	4,330
Critical	4,347	5,055	7,949	7,662	8,306	8,015	5,389	3,962	5,210	6,427	4,966	4,260
Dry & Crit	4,712	5,838	10,113	8,202	10,220	9,940	6,311	4,208	5,577	7,401	4,638	4,302

SLWRI CP4A

	Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,067	13,558	21,065	22,033	22,651	21,651	19,314	11,739	7,854	9,002	6,760	14,629
20%	7,814	12,902	19,668	21,304	21,577	20,376	17,833	9,223	6,964	8,649	5,946	13,125
30%	7,318	12,169	13,962	19,761	20,852	18,821	11,458	6,061	6,446	8,532	5,607	10,893
40%	6,489	10,761	11,739	15,314	19,516	15,897	9,174	5,049	5,980	8,393	4,973	9,171
50%	6,218	8,683	8,178	10,515	15,904	13,402	7,573	4,754	5,501	7,965	4,643	5,779
60%	5,382	6,836	7,250	9,469	12,263	10,188	6,661	4,630	4,924	7,623	4,577	5,119
70%	4,769	5,809	5,779	7,829	10,178	8,741	6,355	4,432	4,747	7,206	4,529	4,582
80%	4,521	4,872	5,643	6,919	7,499	7,805	5,678	3,853	4,655	6,127	4,513	4,507
90%	3,768	4,255	4,674	6,017	6,362	5,845	5,113	3,528	3,846	4,646	3,570	3,715
Long Term												
Full Simulation	6,299	9,126	11,188	13,435	15,175	13,823	10,282	6,470	5,911	7,488	5,131	8,074
Water Year Types												
Wet	7,915	12,619	11,373	19,183	19,820	18,125	14,928	9,637	6,327	7,437	5,246	13,260
Above Norm	6,888	11,380	11,872	15,885	18,792	17,497	11,854	6,892	5,565	7,680	5,393	9,263
Below Norm	6,018	7,764	12,749	11,709	14,094	10,997	8,763	4,847	5,394	7,315	4,811	5,055
Dry	5,060	6,409	11,409	8,562	11,468	11,228	6,945	4,563	6,327	8,161	4,990	4,467
Critical	4,393	4,967	7,947	7,853	8,315	8,020	5,421	3,943	5,334	6,599	5,206	4,583
Dry & Crit	4,793	5,832	10,024	8,278	10,207	9,945	6,335	4,315	5,930	7,537	5,076	4,513

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-10	169	-101	14	-44	-2	-2	-963	69	-77	57	149
20%	131	402	-298	12	1	18	-1	-37	110	-82	21	393
30%	189	959	36	-9	-125	-5	-9	-294	172	-3	210	377
40%	194	416	-321	1	-187	67	-3	-194	254	104	161	-19
50%	396	290	-16	-221	1	4	-28	68	429	31	60	349
60%	228	-269	10	5	2	-54	-396	197	91	29	48	109
70%	186	20	-127	13	4	1	-79	454	32	415	149	21
80%	147	184	59	1	31	-16	-37	154	140	164	452	263
90%	69	376	1	16	67	7	-67	71	201	4	151	261
Long Term												
Full Simulation	217	156	-102	1	-55	-6	-42	-79	131	71	160	175
Water Year Types												
Wet	343	606	-64	-14	-17	6	-46	112	-5	2	-12	229
Above Norm	266	414	-194	-142	-75	2	-100	-665	-216	-23	1	145
Below Norm	235	-557	-123	-11	-199	-57	-126	-327	204	139	20	23
Dry	104	50	-147	1	-27	5	18	191	506	111	570	136
Critical	46	-88	-2	191	9	4	33	-18	125	173	240	323
Dry & Crit	81	-5	-89	77	-13	5	24	107	353	136	438	211

Feather River Below Thermalito Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,000	2,500	5,214	13,905	14,450	13,583	8,465	8,316	5,071	10,000	8,036	10,000
20%	4,000	2,500	3,758	2,101	9,661	9,033	3,668	5,394	3,966	9,577	7,694	9,544
30%	4,000	2,500	2,189	1,700	3,798	5,691	2,371	2,883	3,666	9,209	7,485	8,119
40%	4,000	2,039	1,700	1,700	1,700	4,681	1,578	2,397	3,314	8,816	6,733	7,635
50%	2,036	1,700	1,700	1,700	1,700	1,700	1,021	2,004	2,892	8,355	5,503	5,233
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,399	2,541	8,060	3,406	3,478
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,000	2,202	7,044	2,118	1,490
80%	1,200	1,200	1,200	900	1,200	1,000	1,000	1,000	1,873	4,567	1,526	1,230
90%	900	900	900	900	900	800	750	1,000	1,498	1,864	1,152	1,000
Long Term												
Full Simulation	2,575	2,007	2,793	4,396	5,095	6,003	3,016	3,441	3,131	7,250	4,889	5,353
Water Year Types												
Wet	3,827	3,031	4,385	10,406	11,827	13,191	6,648	6,374	3,720	7,772	5,830	9,082
Above Norm	3,606	2,376	2,847	2,513	3,697	6,866	1,957	3,332	2,985	9,335	7,645	7,934
Below Norm	2,130	1,653	1,739	1,468	1,463	1,660	1,131	1,467	3,239	9,002	6,849	4,196
Dry	1,392	1,249	2,088	1,394	1,555	1,439	1,220	1,944	3,003	6,460	2,400	1,787
Critical	1,124	966	1,579	1,175	1,457	1,478	1,096	1,740	2,063	3,179	1,540	1,388

Dry & Crit	1,285	1,136	1,885	1,307	1,516	1,455	1,170	1,863	2,627	5,148	2,056	1,628

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,000	2,500	5,246	13,905	15,356	14,151	8,473	8,313	4,501	10,000	8,068	10,000
20%	4,000	2,500	3,985	2,116	10,031	9,033	3,668	5,394	3,843	9,674	7,692	9,543
30%	4,000	2,500	2,189	1,700	3,798	5,691	2,355	2,883	3,580	9,155	7,501	8,134
40%	4,000	2,065	1,700	1,700	1,700	4,681	1,748	2,454	3,122	8,791	6,733	7,639
50%	1,920	1,700	1,700	1,700	1,700	1,700	1,018	2,017	2,821	8,272	5,555	5,210
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,385	2,511	7,726	3,591	3,478
70%	1,512	1,200	1,700	1,200	1,700	1,700	1,000	1,000	1,927	7,319	1,912	1,608
80%	1,200	1,200	1,200	900	1,200	1,000	1,000	1,000	1,710	4,182	1,325	1,244
90%	900	900	900	900	900	800	750	1,000	1,221	1,956	1,085	1,001
Long Term												
Full Simulation	2,550	2,020	2,845	4,380	5,148	6,005	3,018	3,452	3,003	7,222	4,844	5,395
Water Year Types												
Wet	3,825	3,030	4,397	10,356	11,911	13,194	6,649	6,373	3,712	7,758	5,828	9,082
Above Norm	3,569	2,293	2,876	2,513	3,869	6,883	1,956	3,337	3,005	9,409	7,661	7,944
Below Norm	2,114	1,710	1,882	1,467	1,463	1,655	1,131	1,483	3,037	8,911	6,599	4,230
Dry	1,312	1,325	2,135	1,394	1,555	1,439	1,232	1,980	2,682	6,595	2,396	1,913
Critical	1,135	964	1,639	1,175	1,460	1,478	1,095	1,739	1,907	2,839	1,520	1,443
Dry & Crit	1,241	1,180	1,936	1,307	1,517	1,454	1,177	1,884	2,372	5,093	2,046	1,725

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	32	0	906	568	7	-3	-570	0	32	0
20%	0	0	227	15	371	0	0	0	-123	97	-3	-1
30%	0	0	0	0	0	0	-17	0	-86	-53	16	15
40%	0	26	0	0	0	0	170	57	-192	-26	0	4
50%	-116	0	0	0	0	0	-3	13	-71	-84	51	-23
60%	0	0	0	0	0	0	0	-14	-30	-335	185	0
70%	-188	0	0	0	0	0	0	0	-275	275	-206	118
80%	0	0	0	0	0	0	0	0	-163	-384	-201	15
90%	0	0	0	0	0	0	0	0	-277	92	-67	1
Long Term												
Full Simulation	-25	14	51	-16	52	3	3	11	-128	-29	-45	43
Water Year Types												
Wet	-2	-1	12	-49	84	3	1	-1	-9	-13	-3	0
Above Norm	-37	-83	29	0	171	17	-1	5	20	74	17	9
Below Norm	-16	57	144	0	0	-5	0	17	-201	-90	-249	34
Dry	-80	75	46	0	0	-1	12	36	-321	136	-4	126
Critical	11	-2	59	0	4	-1	0	-1	-156	-340	-20	55
Dry & Crit	-43	45	52	0	1	-1	7	21	-255	-55	-11	98

Fremont Weir Spill

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	100	100	7,560	24,566	40,628	16,349	5,991	100	100	0	0	100
20%	100	100	3,813	11,074	14,648	6,628	4,814	100	100	0	0	100
30%	100	100	1,410	5,316	7,152	5,092	1,326	100	100	0	0	100
40%	100	100	441	2,801	5,484	3,593	684	100	100	0	0	100
50%	100	100	173	1,253	2,934	1,657	178	100	100	0	0	100
60%	100	100	100	669	1,974	771	102	100	100	0	0	100
70%	100	100	100	148	720	349	100	100	100	0	0	100
80%	100	100	100	100	150	138	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation	122	412	3,347	9,237	12,186	7,743	2,508	160	109	0	0	100
Water Year Types												
Wet	100	454	4,729	24,925	30,089	18,911	6,393	288	128	0	0	100

Above Norm	100	1,161	1,426	5,810	10,874	8,436	1,913	100	100	0	0	100
Below Norm	231	100	3,318	1,502	3,413	1,119	730	100	100	0	0	100
Dry	100	302	4,737	792	1,795	1,194	267	100	100	0	0	100
Critical	100	100	224	364	530	405	119	100	100	0	0	100
Dry & Crit	100	221	2,931	621	1,289	879	208	100	100	0	0	100

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	100	100	7,232	24,600	38,666	15,625	5,993	100	100	0	0	100
20%	100	100	3,223	11,059	13,840	6,622	4,794	100	100	0	0	100
30%	100	100	1,228	5,307	7,148	5,089	1,306	100	100	0	0	100
40%	100	100	399	2,801	5,146	3,722	669	100	100	0	0	100
50%	100	100	173	1,256	2,934	1,658	174	100	100	0	0	100
60%	100	100	100	587	1,798	769	103	100	100	0	0	100
70%	100	100	100	148	511	293	100	100	100	0	0	100
80%	100	100	100	100	151	137	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation	121	378	3,154	9,133	11,953	7,718	2,501	160	109	0	0	100
Water Year Types												
Wet	100	454	4,642	24,688	29,728	18,878	6,385	288	129	0	0	100
Above Norm	100	1,056	1,342	5,700	10,357	8,340	1,884	100	100	0	0	100
Below Norm	222	100	2,979	1,501	3,198	1,110	729	100	100	0	0	100
Dry	100	217	4,299	734	1,766	1,197	268	100	100	0	0	100
Critical	100	100	229	365	531	405	120	100	100	0	0	100
Dry & Crit	100	170	2,671	586	1,272	880	209	100	100	0	0	100

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	0	0	-328	33	-1962	-724	3	0	0	0	0	0
0	0	0	-590	-14	-808	-6	-19	0	0	0	0	0
0	0	0	-182	-9	-4	-2	-21	0	0	0	0	0
0	0	0	-42	1	-338	129	-16	0	0	0	0	0
1	0	0	0	3	0	2	-4	0	0	0	0	0
1	0	0	0	-82	-175	-1	0	0	0	0	0	0
1	0	0	0	0	-210	-56	0	0	0	0	0	0
1	0	0	0	0	0	-1	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation	-2	-34	-193	-104	-233	-26	-6	0	1	0	0	0
Water Year Types												
Wet	0	0	-87	-237	-361	-33	-8	0	2	0	0	0
Above Norm	0	-105	-85	-110	-517	-96	-28	0	0	0	0	0
Below Norm	-9	0	-338	-1	-215	-9	-1	0	0	0	0	0
Dry	0	-85	-438	-58	-29	3	1	0	0	0	0	0
Critical	0	0	5	1	1	0	0	0	0	0	0	0
Dry & Crit	0	-51	-261	-34	-17	2	1	0	0	0	0	0

Yolo Bypass Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	164	589	11,637	35,940	52,656	20,793	11,697	348	168	48	186	292
20%	163	251	6,512	16,282	21,293	11,303	7,137	178	168	48	55	214
30%	160	149	2,412	8,398	12,427	8,645	2,847	173	168	48	55	159
40%	154	110	782	4,852	8,707	4,991	909	170	168	48	55	159
50%	145	108	523	1,725	5,297	2,673	329	168	167	48	55	159
60%	140	105	235	757	2,570	1,221	246	164	167	48	55	159
70%	129	100	157	442	724	583	215	163	166	48	55	158
80%	115	100	110	163	319	213	191	158	164	48	55	155
90%	104	100	100	123	133	144	176	153	162	48	54	152

Long Term												
Full Simulation	230	586	4,772	12,403	16,078	10,478	3,933	318	190	48	101	194
Water Year Types												
Wet	186	703	6,046	32,483	38,509	25,204	9,677	577	241	48	147	230
Above Norm	137	1,289	2,470	8,988	14,850	11,532	3,406	294	166	48	95	165
Below Norm	564	367	5,006	2,436	5,313	1,746	1,213	167	166	48	114	185
Dry	141	428	7,093	1,241	2,991	1,819	574	177	167	48	62	165
Critical	162	122	562	682	893	697	226	168	164	48	54	197
Dry & Crit	150	306	4,481	1,017	2,152	1,371	435	173	166	48	59	178

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	164	589	11,542	35,955	50,923	19,620	11,689	348	168	48	186	292
20%	163	251	6,408	16,267	21,300	11,301	7,140	178	168	48	55	196
30%	160	149	2,040	8,433	11,569	8,662	2,847	173	168	48	55	159
40%	154	110	783	4,856	8,193	5,370	904	170	168	48	55	159
50%	145	108	512	1,725	5,297	2,664	321	168	167	48	55	159
60%	140	105	221	752	2,542	1,236	245	164	167	48	55	159
70%	129	100	150	442	627	582	215	163	166	48	55	158
80%	115	100	105	161	319	213	191	158	164	48	55	155
90%	104	100	100	121	131	143	178	153	162	48	54	152
Long Term												
Full Simulation	228	544	4,574	12,293	15,813	10,453	3,927	318	190	48	101	193
Water Year Types												
Wet	186	703	5,967	32,235	38,099	25,170	9,670	577	242	48	147	229
Above Norm	137	1,185	2,383	8,868	14,333	11,436	3,377	294	166	48	95	165
Below Norm	555	323	4,667	2,434	5,002	1,736	1,212	167	166	48	114	185
Dry	141	341	6,626	1,179	2,964	1,822	576	177	167	48	62	165
Critical	162	122	563	684	896	697	226	168	164	48	54	197
Dry & Crit	150	254	4,201	981	2,137	1,372	436	173	166	48	59	178

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	-94	15	-1733	-1173	-7	0	0	0	0	0
20%	0	0	-105	-15	7	-2	3	0	0	0	0	-18
30%	0	0	-372	35	-858	17	1	0	0	0	0	0
40%	0	0	1	3	-514	378	-5	0	0	0	0	0
50%	0	0	-11	0	0	-9	-8	0	0	0	0	0
60%	0	0	-14	-5	-28	15	-1	0	0	0	0	0
70%	0	0	-7	0	-97	-1	0	0	0	0	0	0
80%	0	0	-5	-3	0	0	0	0	0	0	0	0
90%	0	0	0	-2	-2	-1	2	0	0	0	0	0
Long Term												
Full Simulation	-2	-42	-198	-110	-264	-26	-6	0	1	0	0	-1
Water Year Types												
Wet	0	0	-79	-248	-411	-34	-8	0	2	0	0	-2
Above Norm	0	-105	-87	-120	-517	-96	-28	0	0	0	0	0
Below Norm	-9	-44	-338	-1	-311	-9	-1	0	0	0	0	0
Dry	0	-87	-467	-62	-27	3	1	0	0	0	0	0
Critical	0	0	1	2	3	0	0	0	0	0	0	0
Dry & Crit	0	-52	-280	-36	-15	2	1	0	0	0	0	0

Sacramento River at Freeport Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	15,292	21,733	49,977	64,532	70,461	63,347	47,418	38,838	20,596	24,668	17,225	29,442
20%	14,203	18,914	35,492	53,926	61,454	51,718	34,273	28,070	16,037	24,271	16,792	28,243
30%	13,440	18,360	21,301	38,584	50,815	37,692	24,751	16,041	13,937	23,378	16,078	22,384
40%	11,988	16,788	18,002	24,553	43,643	29,862	21,551	13,615	13,486	20,811	15,873	21,531
50%	10,726	14,821	15,313	19,731	31,616	24,371	17,272	12,254	12,826	19,850	15,187	14,339

60%	8,984	13,020	14,771	17,954	24,474	19,896	14,069	11,320	12,173	19,150	14,059	12,562
70%	8,027	9,835	13,268	14,664	19,073	18,376	12,893	10,733	11,411	17,799	10,705	9,425
80%	7,938	8,675	10,504	13,012	16,198	14,183	11,182	10,023	10,680	15,635	8,800	8,772
90%	6,491	7,223	9,198	11,710	13,814	11,165	10,130	8,628	10,111	9,926	7,938	7,745
Long Term												
Full Simulation	11,048	15,729	22,612	30,312	37,333	31,235	23,265	18,061	14,743	19,321	13,527	17,503
Water Year Types												
Wet	14,226	20,653	24,676	49,975	57,959	48,464	37,393	28,974	19,644	20,744	16,099	27,853
Above Norm	12,705	18,846	24,150	36,831	45,199	42,247	25,028	20,288	14,923	22,781	16,741	21,809
Below Norm	11,329	16,065	26,873	20,732	30,683	21,119	18,376	13,643	13,383	21,940	15,287	13,318
Dry	8,168	11,742	22,132	16,324	21,871	19,224	13,863	10,891	12,361	18,329	9,784	9,680
Critical	6,495	7,534	12,350	13,350	15,730	12,714	10,697	8,099	9,107	11,207	8,301	7,389
Dry & Crit	7,499	10,059	18,219	15,134	19,414	16,620	12,597	9,774	11,059	15,480	9,191	8,764

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	15,307	21,735	49,290	64,683	70,428	62,680	47,411	38,827	20,142	24,785	17,225	29,426
20%	14,282	19,255	34,548	53,887	61,450	51,710	34,342	26,218	15,614	24,112	16,788	28,350
30%	13,467	18,520	20,796	38,584	50,860	37,752	24,757	16,041	13,938	23,321	16,078	22,366
40%	12,527	17,420	18,782	24,919	42,382	29,855	21,470	13,615	13,398	20,811	15,872	21,567
50%	10,724	15,202	15,313	19,736	31,596	24,374	17,183	12,342	12,984	20,055	15,099	14,041
60%	9,208	12,346	14,889	17,904	24,487	19,794	14,090	11,400	12,359	18,992	14,075	12,566
70%	8,262	10,008	13,370	14,573	19,175	18,395	12,627	10,931	11,511	17,772	11,004	10,077
80%	7,943	8,678	10,504	12,929	16,228	14,181	11,182	10,106	10,710	15,952	9,276	8,907
90%	6,485	7,048	9,014	11,711	13,765	11,167	10,167	8,614	10,107	9,876	8,626	7,893
Long Term												
Full Simulation	11,172	15,750	22,513	30,274	37,271	31,222	23,217	17,984	14,719	19,372	13,694	17,627
Water Year Types												
Wet	14,345	20,849	24,740	49,886	57,989	48,455	37,348	29,080	19,634	20,742	16,095	27,874
Above Norm	12,923	19,090	23,923	36,639	44,676	42,241	24,940	19,621	14,619	22,811	16,742	21,880
Below Norm	11,544	15,574	26,660	20,680	30,763	21,082	18,262	13,358	13,333	21,883	15,172	13,352
Dry	8,218	11,804	21,857	16,328	21,798	19,210	13,844	11,052	12,514	18,590	10,430	9,971
Critical	6,543	7,487	12,423	13,528	15,777	12,714	10,717	8,101	9,097	11,212	8,612	7,647
Dry & Crit	7,548	10,077	18,084	15,208	19,390	16,612	12,593	9,872	11,147	15,639	9,703	9,041

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	15	1	-687	151	-33	-667	-8	-11	-454	116	0	-16
0	78	341	-944	-39	-4	-9	69	-1853	-423	-159	-4	108
0	27	160	-505	0	45	60	5	0	1	-58	0	-18
0	540	632	781	366	-1261	-8	-80	0	-88	0	0	36
1	-2	382	0	6	-19	3	-89	88	157	205	-89	-298
1	224	-674	118	-50	13	-102	22	80	186	-158	16	4
1	235	173	102	-91	101	19	-267	199	100	-27	300	652
1	5	3	0	-83	30	-2	0	83	30	317	476	135
1	-6	-175	-184	1	-49	2	37	-14	-4	-50	688	148
Long Term												
Full Simulation	124	21	-99	-38	-62	-13	-48	-77	-24	52	166	124
Water Year Types												
Wet	119	196	65	-89	30	-9	-44	106	-10	-3	-4	21
Above Norm	218	243	-227	-191	-523	-6	-87	-667	-304	29	1	71
Below Norm	215	-491	-212	-52	80	-36	-113	-284	-50	-57	-115	33
Dry	50	62	-275	4	-72	-14	-20	161	153	261	646	291
Critical	48	-47	73	178	47	-1	20	2	-10	5	312	257
Dry & Crit	49	19	-136	74	-25	-8	-4	97	88	158	512	277

Sacramento River at Rio Vista Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	10,601	18,614	58,354	91,312	116,114	72,273	55,185	32,432	12,644	14,451	9,947	24,038

20%	9,453	15,463	36,473	60,144	74,306	55,786	37,681	22,642	9,125	14,166	9,607	22,949
30%	8,165	14,396	19,462	45,193	55,283	40,471	21,482	12,192	7,738	13,591	9,096	13,765
40%	6,931	12,524	14,875	27,552	44,876	30,378	18,687	10,083	7,344	11,875	8,871	13,127
50%	5,834	10,657	11,750	18,594	31,703	21,808	13,817	8,885	6,902	11,158	8,479	8,370
60%	4,871	8,344	10,766	15,365	23,120	16,759	11,017	8,165	6,493	10,701	7,599	7,004
70%	4,181	6,039	9,606	11,842	16,431	15,401	9,746	7,443	5,954	9,754	5,354	5,044
80%	4,032	5,150	7,013	10,427	13,194	11,134	8,258	7,005	5,473	8,301	4,082	4,477
90%	3,032	4,062	5,910	9,340	10,877	8,302	7,370	5,865	5,037	4,384	3,553	3,752
Long Term												
Full Simulation	6,802	12,216	22,773	38,142	47,769	36,431	22,609	14,164	8,799	10,820	7,348	11,883
Water Year Types												
Wet	9,513	16,971	25,663	75,757	88,304	66,284	40,746	23,930	13,200	11,785	9,133	21,877
Above Norm	7,861	15,637	21,884	40,707	53,642	47,049	23,584	16,102	8,821	13,170	9,547	13,744
Below Norm	7,292	12,138	26,806	19,608	31,247	18,842	15,597	10,125	7,310	12,590	8,558	7,571
Dry	4,256	8,343	24,826	14,457	21,023	17,260	11,041	7,785	6,567	10,162	4,750	5,093
Critical	3,116	4,390	9,617	11,227	13,467	10,412	7,869	5,343	4,328	5,305	3,769	3,583
Dry & Crit	3,800	6,762	18,742	13,165	18,001	14,521	9,772	6,808	5,671	8,219	4,358	4,489

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	10,948	18,615	56,177	91,577	115,855	72,403	55,178	32,422	12,219	14,510	9,947	24,038
20%	9,678	15,499	35,575	60,166	74,189	55,784	37,612	21,208	8,870	14,073	9,559	23,024
30%	8,463	14,820	18,984	43,801	55,278	41,053	21,606	12,192	7,738	13,499	9,094	13,752
40%	7,427	13,373	15,178	27,554	44,327	30,369	18,701	10,083	7,260	11,875	8,885	13,117
50%	6,016	10,866	11,751	18,901	30,906	21,811	13,664	9,013	6,974	11,284	8,495	8,090
60%	4,984	8,004	10,766	15,374	22,755	16,753	11,039	8,258	6,573	10,656	7,618	7,000
70%	4,362	6,087	9,676	11,816	16,432	15,370	9,447	7,790	5,954	9,736	5,587	5,491
80%	4,032	5,362	7,013	10,429	13,221	11,132	8,246	7,075	5,493	8,504	4,343	4,562
90%	3,032	4,031	5,776	9,341	10,834	8,304	7,408	5,864	4,990	4,420	3,940	3,799
Long Term												
Full Simulation	6,966	12,217	22,484	38,000	47,451	36,394	22,561	14,097	8,782	10,913	7,464	11,968
Water Year Types												
Wet	9,732	17,233	25,635	75,432	87,920	66,242	40,699	24,022	13,195	11,963	9,131	21,893
Above Norm	8,161	15,839	21,607	40,421	52,670	46,948	23,480	15,523	8,607	13,190	9,548	13,792
Below Norm	7,482	11,576	26,269	19,562	31,005	18,801	15,496	9,878	7,275	12,551	8,480	7,594
Dry	4,311	8,296	24,108	14,399	20,933	17,251	11,026	7,925	6,673	10,340	5,191	5,291
Critical	3,158	4,358	9,683	11,391	13,511	10,411	7,886	5,345	4,321	5,305	3,990	3,759
Dry & Crit	3,850	6,721	18,338	13,196	17,964	14,515	9,770	6,893	5,732	8,326	4,710	4,678

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	347	1	-2177	265	-259	129	-7	-10	-425	59	0	0
20%	225	36	-898	23	-117	-3	-69	-1434	-255	-92	-47	75
30%	298	424	-477	-1393	-5	582	124	0	0	-92	-1	-12
40%	496	849	303	2	-549	-9	15	0	-84	0	14	-10
50%	182	209	0	308	-796	3	-153	128	72	126	17	-280
60%	114	-340	0	10	-365	-6	22	92	80	-45	19	-4
70%	181	49	70	-26	1	-31	-300	347	0	-19	233	447
80%	0	212	0	2	26	-2	-12	70	20	203	261	85
90%	0	-31	-134	1	-43	2	38	-1	-47	36	387	47
Long Term												
Full Simulation	164	2	-289	-142	-319	-37	-48	-67	-17	92	115	85
Water Year Types												
Wet	218	262	-28	-325	-385	-42	-46	92	-5	179	-2	16
Above Norm	300	203	-276	-286	-971	-101	-104	-579	-215	20	1	48
Below Norm	190	-562	-537	-46	-241	-41	-100	-247	-35	-39	-79	23
Dry	55	-48	-718	-58	-90	-9	-16	140	106	178	441	198
Critical	42	-32	66	163	44	-1	18	2	-7	0	221	176
Dry & Crit	50	-41	-404	30	-36	-6	-2	85	61	107	353	189

Delta Cross Channel Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,885	4,420	7,710	9,604	10,398	9,445	7,343	6,198	6,097	8,888	6,541	7,985
20%	4,584	4,143	5,778	8,210	9,193	7,906	5,603	4,780	5,257	8,759	6,399	7,017
30%	4,472	3,842	4,212	6,189	7,810	6,065	4,355	3,194	5,100	8,476	6,172	5,225
40%	4,231	3,755	3,937	4,363	6,862	5,026	3,928	2,873	4,964	7,658	6,103	5,011
50%	3,975	3,613	3,804	3,716	5,258	4,307	3,363	2,698	4,800	7,351	5,886	4,932
60%	3,648	3,532	3,655	3,470	4,334	3,716	2,944	2,583	4,607	7,127	5,526	4,742
70%	3,588	3,366	3,459	3,034	3,613	3,520	2,788	2,491	4,387	6,696	4,456	4,072
80%	3,375	3,109	3,199	2,825	3,231	2,964	2,557	2,401	4,164	6,007	3,852	3,860
90%	3,126	2,844	3,071	2,646	2,914	2,560	2,425	2,222	4,005	4,171	3,575	3,531
Long Term Full Simulation	4,009	3,784	4,512	5,104	6,023	5,209	4,155	3,462	4,875	7,180	5,359	5,191
Water Year Types												
Wet	4,390	4,082	4,881	7,700	8,742	7,478	6,017	4,900	5,463	7,636	6,178	5,562
Above Norm	4,485	4,164	4,715	5,968	7,064	6,657	4,388	3,757	4,994	8,286	6,384	7,584
Below Norm	4,170	3,980	5,005	3,841	5,149	3,877	3,511	2,879	4,964	8,016	5,919	5,310
Dry	3,614	3,526	4,354	3,256	3,983	3,628	2,917	2,518	4,660	6,864	4,166	4,150
Critical	3,114	2,918	3,169	2,861	3,169	2,768	2,497	2,149	3,698	4,584	3,693	3,420
Dry & Crit	3,414	3,283	3,880	3,098	3,658	3,284	2,749	2,370	4,276	5,952	3,977	3,858

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,821	4,417	7,620	9,636	10,398	9,357	7,342	6,197	5,920	8,918	6,541	8,051
20%	4,515	4,105	5,654	8,205	9,193	7,905	5,612	4,540	5,254	8,706	6,397	6,893
30%	4,360	3,842	4,281	6,188	7,816	6,071	4,356	3,194	5,099	8,433	6,172	5,222
40%	4,158	3,701	3,942	4,411	6,692	5,025	3,918	2,873	4,963	7,625	6,103	4,999
50%	3,937	3,611	3,820	3,717	5,255	4,307	3,350	2,711	4,848	7,362	5,859	4,932
60%	3,672	3,543	3,614	3,470	4,336	3,705	2,947	2,587	4,659	7,033	5,529	4,753
70%	3,595	3,381	3,424	3,034	3,626	3,522	2,751	2,517	4,409	6,602	4,554	4,280
80%	3,354	3,111	3,209	2,817	3,235	2,964	2,557	2,416	4,181	6,007	4,000	3,899
90%	3,122	2,845	3,032	2,646	2,908	2,560	2,430	2,220	4,004	4,158	3,793	3,578
Long Term Full Simulation	3,969	3,760	4,502	5,099	6,015	5,207	4,149	3,452	4,868	7,139	5,412	5,230
Water Year Types												
Wet	4,290	4,016	4,892	7,688	8,746	7,476	6,011	4,914	5,460	7,455	6,177	5,564
Above Norm	4,403	4,100	4,683	5,943	6,995	6,656	4,376	3,669	4,905	8,295	6,384	7,606
Below Norm	4,192	4,006	4,980	3,834	5,160	3,873	3,496	2,842	4,949	7,998	5,882	5,320
Dry	3,606	3,545	4,326	3,257	3,974	3,626	2,914	2,539	4,705	6,948	4,372	4,243
Critical	3,120	2,903	3,179	2,885	3,176	2,768	2,500	2,149	3,696	4,586	3,793	3,502
Dry & Crit	3,412	3,288	3,867	3,108	3,655	3,283	2,748	2,383	4,301	6,003	4,140	3,946

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-63	-3	-90	31	0	-88	-1	-1	-176	31	0	67
20%	-68	-38	-124	-5	-1	-1	9	-240	-3	-53	-1	-123
30%	-111	-1	69	0	6	6	1	0	0	-43	0	-3
40%	-73	-54	4	48	-171	-1	-10	0	-1	-33	0	-12
50%	-38	-2	16	1	-3	0	-13	13	47	11	-28	0
60%	24	11	-41	0	2	-11	3	4	52	-94	4	11
70%	7	15	-35	0	13	3	-37	26	21	-94	98	208
80%	-22	3	10	-8	4	0	0	15	17	0	148	38
90%	-4	1	-39	0	-6	0	5	-2	-1	-13	218	46
Long Term Full Simulation	-41	-24	-10	-5	-8	-2	-6	-10	-7	-41	53	38
Water Year Types												
Wet	-100	-66	11	-12	4	-1	-6	14	-3	-182	-1	3
Above Norm	-82	-64	-31	-25	-69	-1	-11	-88	-89	9	0	23
Below Norm	22	26	-25	-7	11	-5	-15	-37	-15	-18	-37	11
Dry	-7	19	-28	1	-10	-2	-3	21	45	83	206	93
Critical	6	-15	10	23	6	0	3	0	-3	2	99	82

Dry & Crit	-2	6	-13	10	-3	-1	0	13	26	50	163	88

San Joaquin River at Vernalis Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,513	2,953	4,888	11,496	14,720	15,672	14,803	14,189	9,472	5,927	2,798	3,069
20%	3,168	2,787	2,859	4,812	10,303	10,249	10,711	8,462	4,809	2,637	2,625	2,669
30%	2,993	2,544	2,404	3,750	6,151	8,508	8,620	5,590	3,377	1,998	1,914	2,490
40%	2,802	2,396	2,220	2,675	4,269	5,636	7,616	4,684	2,947	1,751	1,669	2,137
50%	2,601	2,217	2,097	2,388	3,420	3,841	5,858	3,877	2,223	1,462	1,489	1,927
60%	2,395	2,168	2,045	2,288	2,670	3,420	4,672	3,011	1,814	1,340	1,402	1,835
70%	2,241	2,058	1,978	2,114	2,283	2,826	3,769	2,696	1,445	1,154	1,299	1,734
80%	1,986	1,950	1,827	1,882	2,151	2,366	2,781	2,151	1,294	1,090	1,201	1,611
90%	1,849	1,758	1,669	1,698	1,942	2,203	1,869	1,665	1,091	886	1,061	1,473
Long Term												
Full Simulation	2,672	2,613	3,394	5,079	6,666	7,282	7,521	6,064	4,209	2,626	1,847	2,223
Water Year Types												
Wet	3,438	3,639	5,053	10,086	12,487	13,836	13,113	11,281	8,452	5,190	2,763	3,048
Above Norm	2,744	2,413	2,684	4,350	6,484	7,232	7,912	5,901	4,280	2,219	1,823	2,252
Below Norm	2,613	2,322	3,763	3,022	5,384	5,186	6,645	4,630	2,461	1,596	1,655	2,037
Dry	2,168	2,082	2,296	2,150	2,466	2,931	3,664	2,664	1,516	1,169	1,274	1,738
Critical	1,762	1,723	1,722	1,750	2,029	2,102	1,822	1,698	1,023	864	970	1,354
Dry & Crit	2,006	1,939	2,067	1,990	2,292	2,599	2,928	2,277	1,319	1,047	1,152	1,584

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,513	2,953	4,888	11,495	14,720	15,670	14,803	14,189	9,471	5,927	2,798	3,069
20%	3,168	2,787	2,859	4,812	10,300	10,249	10,713	8,462	4,809	2,637	2,625	2,669
30%	2,993	2,544	2,404	3,750	6,151	8,508	8,618	5,590	3,377	2,003	1,918	2,490
40%	2,802	2,396	2,220	2,676	4,269	5,636	7,617	4,684	2,947	1,750	1,669	2,137
50%	2,601	2,217	2,097	2,388	3,420	3,841	5,858	3,879	2,223	1,459	1,489	1,927
60%	2,395	2,168	2,045	2,288	2,670	3,420	4,672	3,011	1,814	1,340	1,404	1,835
70%	2,241	2,058	1,978	2,114	2,283	2,826	3,769	2,695	1,445	1,153	1,299	1,733
80%	1,986	1,950	1,827	1,882	2,151	2,366	2,781	2,150	1,294	1,089	1,201	1,611
90%	1,848	1,758	1,669	1,698	1,942	2,203	1,868	1,675	1,086	886	1,059	1,473
Long Term												
Full Simulation	2,672	2,613	3,394	5,079	6,666	7,281	7,521	6,064	4,209	2,626	1,847	2,223
Water Year Types												
Wet	3,439	3,639	5,053	10,086	12,486	13,836	13,113	11,280	8,452	5,191	2,764	3,048
Above Norm	2,744	2,413	2,684	4,350	6,484	7,232	7,912	5,901	4,280	2,219	1,824	2,252
Below Norm	2,613	2,322	3,763	3,022	5,384	5,186	6,646	4,630	2,461	1,596	1,655	2,037
Dry	2,168	2,082	2,296	2,150	2,467	2,931	3,664	2,664	1,516	1,169	1,274	1,738
Critical	1,762	1,723	1,722	1,750	2,029	2,101	1,822	1,697	1,022	864	968	1,354
Dry & Crit	2,006	1,939	2,067	1,990	2,292	2,599	2,927	2,277	1,318	1,047	1,152	1,585

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	-2	-1	0	0	0	0	0
20%	0	0	0	0	-3	0	2	0	0	0	0	0
30%	0	0	0	0	0	-1	-1	0	0	5	4	0
40%	0	0	0	0	0	0	1	0	0	-1	0	1
50%	0	0	0	0	0	0	0	1	0	-3	0	0
60%	0	0	0	0	0	0	0	0	0	0	2	0
70%	0	0	0	0	0	0	0	-1	0	-1	0	0
80%	0	0	0	0	0	0	0	-1	1	-2	0	0
90%	0	0	0	0	0	0	0	10	-5	0	-2	0
Long Term												
Full Simulation	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types												
Wet	0	0	0	0	0	-1	0	-1	-1	1	1	0

Above Norm	0	0	0	0	0	0	0	0	0	0	0	0
Below Norm	0	0	0	0	0	0	0	0	0	0	0	0
Dry	0	0	0	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	-1	0	-1	0
Dry & Crit	0	0	0	0	0	0	0	0	0	0	0	0

Delta Outflow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	10,156	15,000	66,737	104,461	138,166	89,530	72,901	46,604	21,660	12,828	4,408	19,531
20%	9,688	14,688	38,353	70,923	87,298	68,887	51,592	31,160	10,183	11,578	4,130	19,063
30%	9,375	13,881	17,930	51,944	72,416	47,115	32,689	19,513	9,090	9,450	4,000	15,632
40%	6,875	11,224	12,761	29,338	53,290	36,164	26,893	16,174	7,738	8,260	4,000	10,938
50%	4,002	9,844	10,064	19,796	36,344	25,718	21,968	14,282	7,243	8,000	4,000	4,008
60%	4,000	5,945	5,709	15,924	24,400	19,466	16,432	11,234	7,100	6,500	4,000	3,299
70%	4,000	4,500	5,101	12,892	17,930	17,065	13,654	9,668	6,906	5,000	4,000	3,000
80%	4,000	4,500	4,500	9,091	14,680	12,050	11,117	8,132	6,011	5,000	3,860	3,000
90%	3,000	3,500	4,500	7,940	11,026	10,754	9,580	7,100	5,375	4,000	3,583	3,000
Long Term												
Full Simulation	6,565	11,564	23,306	44,311	56,565	43,894	31,991	20,975	10,949	8,121	4,105	9,472
Water Year Types												
Wet	9,836	17,789	26,717	91,246	105,621	82,013	58,352	37,763	18,189	10,901	4,476	18,713
Above Norm	7,617	13,756	20,635	48,022	64,170	54,990	33,826	23,556	9,890	10,834	4,061	11,771
Below Norm	5,922	10,652	28,124	21,533	37,600	21,702	23,173	14,787	8,109	7,650	4,066	4,061
Dry	3,961	6,926	26,042	14,265	23,296	19,722	14,644	9,692	7,100	5,313	3,999	3,112
Critical	3,083	3,904	8,859	10,548	14,701	12,354	9,347	6,164	5,410	4,149	3,550	3,000
Dry & Crit	3,610	5,717	19,169	12,778	19,858	16,774	12,525	8,281	6,424	4,847	3,820	3,067

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	10,156	15,657	66,106	102,989	137,033	89,660	72,496	46,586	21,642	12,833	4,520	19,688
20%	9,531	14,688	37,332	70,926	87,297	69,690	51,600	27,968	10,183	11,688	4,044	19,063
30%	9,375	13,966	16,917	51,479	67,832	48,138	33,007	19,514	9,119	9,452	4,000	15,614
40%	6,875	10,000	12,369	29,339	53,833	36,154	26,880	16,706	7,700	8,235	4,000	10,938
50%	4,000	9,844	10,070	19,978	36,345	25,722	21,900	14,283	7,243	8,000	4,000	4,008
60%	4,000	5,459	5,798	15,930	23,749	19,711	16,256	11,404	7,100	6,500	4,000	3,356
70%	4,000	4,500	5,100	12,247	18,318	17,090	13,800	9,794	6,810	5,000	4,000	3,000
80%	4,000	4,500	4,543	9,094	14,642	12,037	11,097	8,585	5,973	5,000	3,723	3,000
90%	3,000	3,500	4,500	8,087	11,027	10,740	9,552	7,100	5,375	4,000	3,585	3,000
Long Term												
Full Simulation	6,556	11,383	22,951	44,137	56,227	43,917	31,935	20,891	10,888	8,118	4,073	9,477
Water Year Types												
Wet	9,813	17,789	26,556	90,910	105,209	82,054	58,300	37,869	18,172	10,894	4,457	18,730
Above Norm	7,617	13,626	20,316	47,645	63,134	54,949	33,710	22,889	9,568	10,850	4,061	11,771
Below Norm	5,897	9,905	27,599	21,423	37,446	21,808	23,058	14,503	8,092	7,617	4,056	4,076
Dry	3,971	6,725	25,272	14,219	23,155	19,707	14,616	9,823	7,075	5,302	3,949	3,102
Critical	3,083	3,967	8,866	10,661	14,714	12,365	9,367	6,166	5,409	4,178	3,463	3,000
Dry & Crit	3,616	5,622	18,710	12,796	19,778	16,770	12,517	8,360	6,409	4,852	3,754	3,061

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	657	-631	-1471	-1134	130	-405	-18	-18	5	113	156
20%	-156	0	-1022	3	-1	803	8	-3191	0	110	-86	0
30%	0	85	-1013	-465	-4584	1023	318	1	29	2	0	-19
40%	0	-1224	-391	2	543	-11	-13	532	-38	-26	0	0
50%	-2	0	7	182	0	4	-68	1	0	0	0	0
60%	0	-487	90	7	-651	245	-176	170	0	0	0	57
70%	0	0	-1	-645	388	25	146	126	-96	0	0	0
80%	0	0	43	3	-38	-12	-20	453	-37	0	-137	0
90%	0	0	0	147	1	-14	-28	0	0	0	2	0

Long Term												
Full Simulation	-9	-181	-355	-174	-338	23	-56	-84	-61	-4	-32	6
Water Year Types												
Wet	-22	0	-160	-337	-412	41	-52	106	-17	-8	-20	17
Above Norm	0	-130	-319	-377	-1,036	-40	-116	-667	-322	16	0	0
Below Norm	-26	-747	-525	-110	-153	105	-115	-284	-17	-33	-10	15
Dry	10	-201	-770	-46	-141	-15	-27	131	-25	-11	-51	-10
Critical	0	64	8	113	12	11	20	2	-1	29	-87	0
Dry & Crit	6	-95	-459	18	-80	-5	-9	79	-16	5	-65	-6

Old and Middle River Flow

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-3,750	-3,853	-3,575	-2,823	-422	-845	3,174	2,678	-1,150	-2,567	-2,555	-4,002
20%	-4,185	-4,611	-4,599	-2,823	-1,786	-1,210	2,218	1,364	-1,150	-6,797	-3,127	-5,220
30%	-4,608	-5,129	-5,077	-3,355	-2,857	-2,944	1,657	571	-3,023	-8,084	-5,060	-6,093
40%	-4,835	-5,645	-5,871	-3,453	-3,500	-3,500	1,329	115	-3,500	-9,020	-7,847	-7,942
50%	-5,121	-6,163	-5,871	-4,710	-4,066	-3,500	560	-184	-3,500	-9,739	-9,869	-9,103
60%	-5,560	-6,540	-5,874	-5,000	-5,000	-4,613	-213	-509	-4,348	-10,271	-10,346	-9,486
70%	-6,132	-7,172	-7,635	-5,000	-5,000	-5,000	-461	-666	-5,000	-10,691	-10,679	-9,795
80%	-6,609	-7,887	-9,451	-5,000	-5,000	-5,000	-1,104	-1,077	-5,000	-11,071	-10,818	-9,994
90%	-7,544	-9,959	-9,662	-5,000	-5,000	-5,000	-1,327	-1,242	-5,000	-11,284	-11,081	-10,148
Long Term												
Full Simulation	-5,455	-6,419	-6,159	-3,549	-3,019	-2,749	896	296	-3,446	-8,651	-7,840	-7,786
Water Year Types												
Wet	-5,704	-6,479	-6,767	-1,833	-2,105	-1,597	3,089	1,888	-4,303	-8,945	-10,541	-9,516
Above Norm	-5,871	-7,570	-7,742	-3,664	-3,109	-4,186	1,236	542	-4,557	-9,019	-10,768	-9,532
Below Norm	-6,810	-7,346	-6,469	-4,226	-3,693	-4,284	242	-181	-3,673	-10,861	-9,348	-8,794
Dry	-4,856	-6,275	-5,034	-4,817	-3,656	-2,964	-737	-982	-2,753	-9,466	-4,054	-5,998
Critical	-3,815	-4,274	-4,583	-4,462	-3,168	-1,694	-984	-928	-1,251	-3,849	-2,980	-3,798
Dry & Crit	-4,439	-5,475	-4,854	-4,675	-3,461	-2,456	-836	-960	-2,153	-7,219	-3,624	-5,118

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-3,796	-3,853	-3,492	-2,823	-952	-845	3,174	2,678	-1,150	-2,533	-3,283	-4,158
20%	-4,371	-4,550	-4,537	-2,823	-1,927	-1,210	2,218	1,364	-1,150	-6,957	-3,736	-5,286
30%	-4,633	-5,229	-5,379	-3,355	-2,857	-2,944	1,657	571	-3,500	-8,219	-5,504	-6,605
40%	-4,869	-6,015	-5,871	-4,201	-3,500	-3,488	1,329	115	-3,500	-9,258	-7,928	-7,960
50%	-5,211	-6,373	-5,871	-4,710	-4,036	-3,500	560	-184	-3,500	-9,744	-9,798	-9,109
60%	-5,806	-6,631	-5,871	-5,000	-4,965	-4,105	-229	-509	-4,348	-10,271	-10,321	-9,457
70%	-6,264	-7,412	-8,204	-5,000	-5,000	-5,000	-461	-670	-5,000	-10,690	-10,679	-9,800
80%	-6,891	-8,357	-9,462	-5,000	-5,000	-5,000	-1,104	-1,077	-5,000	-11,128	-10,820	-10,028
90%	-7,434	-10,009	-9,677	-5,000	-5,000	-5,000	-1,327	-1,352	-5,000	-11,304	-11,081	-10,157
Long Term												
Full Simulation	-5,578	-6,566	-6,206	-3,575	-3,029	-2,695	894	290	-3,482	-8,704	-8,025	-7,894
Water Year Types												
Wet	-5,835	-6,659	-6,894	-1,833	-2,134	-1,520	3,089	1,888	-4,311	-8,950	-10,557	-9,518
Above Norm	-6,074	-7,812	-7,740	-3,724	-3,106	-4,128	1,236	542	-4,575	-9,031	-10,770	-9,597
Below Norm	-7,030	-7,543	-6,435	-4,279	-3,623	-4,147	242	-180	-3,643	-10,839	-9,251	-8,811
Dry	-4,891	-6,436	-5,052	-4,807	-3,693	-2,972	-745	-1,009	-2,917	-9,717	-4,698	-6,275
Critical	-3,860	-4,171	-4,646	-4,529	-3,201	-1,697	-984	-928	-1,251	-3,831	-3,358	-4,034
Dry & Crit	-4,478	-5,530	-4,889	-4,696	-3,496	-2,462	-841	-977	-2,251	-7,363	-4,162	-5,378

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	-46	0	84	0	-530	-1	0	0	0	33	-728	-155
0	-185	61	61	0	-141	0	0	0	0	-161	-609	-66
0	-25	-100	-302	0	0	0	0	0	-477	-135	-444	-511
0	-34	-371	0	-748	0	12	0	0	0	-239	-81	-18
1	-90	-210	0	0	31	0	0	0	0	-5	71	-6

1	-246	-91	3	0	35	507	-16	0	0	0	26	30
1	-133	-239	-569	0	0	0	0	-4	0	1	0	-5
1	-282	-471	-11	0	0	0	0	0	0	-57	-2	-33
1	110	-50	-15	0	0	0	0	-110	0	-20	0	-9
Long Term												
Full Simulation	-123	-147	-47	-25	-10	54	-2	-6	-36	-52	-185	-108
Water Year Types												
Wet	-131	-181	-126	0	-29	77	0	0	-7	-5	-15	-2
Above Norm	-203	-242	2	-60	4	58	0	0	-17	-13	-1	-65
Below Norm	-220	-197	34	-53	69	138	0	0	31	22	97	-17
Dry	-35	-161	-18	11	-37	-8	-8	-27	-164	-251	-644	-277
Critical	-45	103	-63	-67	-33	-3	0	0	0	18	-378	-235
Dry & Crit	-39	-55	-36	-20	-35	-6	-5	-16	-98	-144	-538	-260

Jones Export

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,600	4,600	4,600	4,545	4,600	4,600	2,038	1,989	4,427	4,600	4,600	4,600
20%	4,017	4,600	4,600	3,918	4,600	4,272	1,466	1,149	3,752	4,600	4,600	4,600
30%	3,753	4,475	4,600	3,554	4,078	3,714	1,294	1,022	3,131	4,600	4,600	4,485
40%	3,565	4,152	4,155	3,415	3,630	3,528	1,154	891	2,690	4,583	4,600	4,355
50%	3,333	3,462	3,932	3,319	3,342	3,267	1,077	800	2,362	4,350	3,820	3,941
60%	3,016	3,146	3,759	3,243	3,123	2,585	969	800	1,724	3,869	3,208	3,452
70%	2,805	2,809	3,560	3,046	2,597	2,402	924	800	1,534	3,220	2,358	3,281
80%	2,644	2,545	2,983	2,554	2,173	1,987	800	800	800	2,019	1,741	2,999
90%	2,224	1,981	2,342	2,169	1,457	1,262	800	800	428	878	1,274	2,503
Long Term												
Full Simulation	3,276	3,434	3,720	3,270	3,225	3,007	1,261	1,153	2,308	3,572	3,396	3,703
Water Year Types												
Wet	3,562	3,704	4,111	3,565	4,044	3,690	1,594	1,643	3,652	4,143	4,552	4,354
Above Norm	3,084	3,847	4,291	2,895	2,998	3,697	1,143	928	3,013	3,199	4,433	3,866
Below Norm	3,331	3,623	3,972	3,244	3,324	3,448	1,322	985	2,019	4,210	3,263	3,908
Dry	3,270	3,230	3,213	3,299	2,718	2,307	1,105	910	1,361	3,945	1,941	3,241
Critical	2,793	2,523	2,767	2,993	2,325	1,370	823	875	445	1,405	2,194	2,587
Dry & Crit	3,079	2,947	3,034	3,176	2,561	1,933	993	896	995	2,929	2,042	2,979

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,600	4,600	4,600	4,545	4,600	4,600	2,038	1,989	4,326	4,600	4,600	4,600
20%	4,368	4,600	4,600	3,918	4,600	4,059	1,455	1,142	3,706	4,600	4,600	4,600
30%	3,872	4,600	4,600	3,538	4,078	3,695	1,269	1,021	3,020	4,600	4,600	4,490
40%	3,604	4,327	4,262	3,415	3,630	3,445	1,145	938	2,690	4,583	4,600	4,359
50%	3,428	3,572	3,942	3,309	3,342	2,923	1,076	800	2,312	4,342	3,930	4,055
60%	3,154	3,195	3,834	3,246	3,124	2,585	968	800	1,743	3,903	3,010	3,521
70%	2,938	2,872	3,560	3,046	2,597	2,400	905	800	1,597	3,116	2,489	3,185
80%	2,581	2,547	3,093	2,554	2,243	1,839	800	800	800	2,203	2,088	3,023
90%	2,312	2,120	2,170	2,237	1,457	1,262	800	800	427	1,228	1,151	2,521
Long Term												
Full Simulation	3,384	3,532	3,743	3,296	3,237	2,964	1,249	1,156	2,294	3,578	3,397	3,728
Water Year Types												
Wet	3,705	3,863	4,240	3,590	4,040	3,601	1,594	1,643	3,611	4,143	4,569	4,362
Above Norm	3,346	4,171	4,277	2,919	3,002	3,699	1,143	928	2,985	3,155	4,435	3,937
Below Norm	3,534	3,695	3,971	3,276	3,346	3,352	1,252	985	1,973	4,166	3,189	3,918
Dry	3,225	3,255	3,153	3,262	2,742	2,312	1,104	926	1,415	3,948	1,937	3,286
Critical	2,792	2,405	2,752	3,111	2,343	1,375	821	872	445	1,534	2,256	2,583
Dry & Crit	3,052	2,915	2,993	3,202	2,582	1,938	991	905	1,027	2,982	2,065	3,005

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	0	0	0	0	0	0	0	0	-102	0	0	0

0	352	0	0	0	0	-213	-11	-6	-46	0	0	0
0	119	125	0	-17	0	-20	-25	0	-111	0	0	5
0	39	175	107	0	0	-83	-10	46	0	0	0	4
1	95	110	10	-10	0	-344	-2	0	-50	-8	111	114
1	138	49	76	2	0	0	-1	0	19	34	-197	69
1	133	63	0	0	0	-2	-19	0	64	-104	130	-96
1	-63	2	110	0	70	-148	0	0	0	184	347	24
1	88	139	-172	68	0	0	0	0	0	350	-124	18
Long Term Full Simulation	108	98	24	26	11	-43	-13	3	-13	6	1	24
Water Year Types												
Wet	143	159	130	25	-3	-89	0	0	-41	1	17	8
Above Norm	261	323	-13	24	4	2	0	0	-28	-43	2	71
Below Norm	203	72	-2	32	22	-96	-70	0	-46	-44	-74	11
Dry	-45	25	-60	-37	25	5	-1	16	54	3	-4	46
Critical	-1	-118	-14	118	18	5	-2	-3	0	130	62	-4
Dry & Crit	-27	-32	-41	25	22	5	-2	9	32	54	23	26

Banks Export

SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,638	6,680	7,148	6,130	8,437	7,561	2,160	1,989	4,719	6,680	6,680	6,680
20%	3,993	6,474	7,063	3,994	5,815	6,297	1,699	1,300	3,230	6,680	6,680	6,680
30%	3,344	4,379	6,807	3,538	4,250	5,361	1,388	1,058	2,705	6,680	6,680	6,680
40%	2,923	3,767	5,079	3,404	3,699	3,947	1,218	821	2,362	6,680	6,680	6,680
50%	2,625	3,436	4,118	3,318	3,342	3,528	1,095	743	1,837	6,624	6,680	6,507
60%	2,400	2,940	3,902	3,218	3,144	3,214	1,064	700	1,616	6,358	6,199	5,597
70%	2,099	2,758	3,702	3,030	2,904	2,585	954	700	1,166	5,769	1,694	2,984
80%	1,859	2,255	3,176	2,576	2,313	2,323	891	700	300	4,750	710	2,534
90%	1,093	1,743	2,736	2,262	1,504	1,291	700	700	300	691	300	1,540
Long Term Full Simulation	2,858	3,790	4,805	3,692	3,961	3,946	1,353	1,144	2,183	5,436	4,585	4,936
Water Year Types												
Wet	3,083	3,882	6,114	4,705	5,664	5,915	1,797	1,814	3,719	6,477	6,676	6,546
Above Norm	3,485	4,397	5,494	3,707	4,307	4,673	1,126	853	2,668	6,111	6,678	6,672
Below Norm	4,228	4,511	5,006	3,070	3,651	3,876	1,362	919	1,932	6,587	6,113	5,742
Dry	2,068	3,729	3,442	3,223	2,673	2,378	1,220	947	1,134	5,138	1,744	3,232
Critical	1,327	2,230	3,086	2,907	2,216	1,387	806	543	239	1,607	438	1,326
Dry & Crit	1,771	3,130	3,300	3,096	2,490	1,981	1,055	785	776	3,726	1,222	2,469

SLWRI CP4A

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,639	6,680	7,148	6,024	8,437	7,561	2,246	1,989	4,858	6,680	6,680	6,680
20%	4,082	6,502	7,063	3,994	5,468	6,296	1,717	1,280	3,230	6,680	6,680	6,680
30%	3,283	4,620	7,004	3,579	4,249	5,352	1,388	1,067	2,753	6,680	6,680	6,680
40%	2,928	3,827	5,079	3,412	3,701	3,841	1,218	861	2,461	6,680	6,680	6,680
50%	2,664	3,591	4,119	3,309	3,342	3,448	1,095	730	1,860	6,680	6,680	6,577
60%	2,418	3,108	3,918	3,219	3,146	3,109	1,064	700	1,653	6,397	6,610	5,921
70%	2,185	2,773	3,702	2,985	2,904	2,585	955	700	1,519	5,901	2,831	3,216
80%	1,847	2,425	3,258	2,576	2,313	2,323	891	700	300	4,894	1,372	2,550
90%	1,061	1,748	2,821	2,262	1,571	1,291	700	700	300	720	749	1,663
Long Term Full Simulation	2,881	3,867	4,832	3,694	3,960	3,929	1,368	1,148	2,239	5,475	4,773	5,037
Water Year Types												
Wet	3,082	3,955	6,122	4,681	5,699	5,920	1,797	1,814	3,766	6,471	6,676	6,540
Above Norm	3,442	4,389	5,505	3,749	4,298	4,609	1,126	853	2,714	6,109	6,678	6,671
Below Norm	4,259	4,650	4,971	3,097	3,552	3,822	1,432	919	1,945	6,607	6,080	5,755
Dry	2,150	3,874	3,521	3,252	2,689	2,381	1,231	961	1,278	5,399	2,434	3,482
Critical	1,372	2,231	3,169	2,858	2,235	1,385	808	546	238	1,478	731	1,640
Dry & Crit	1,839	3,217	3,380	3,095	2,507	1,983	1,062	795	862	3,830	1,753	2,746

SLWRI CP4A minus SLWRI NAA

Flow (cfs)												
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1	0	0	-106	0	0	86	0	139	0	0	0
20%	89	28	0	0	-347	0	18	-20	0	0	0	0
30%	-61	241	197	41	-1	-10	0	9	48	0	0	0
40%	5	61	0	8	2	-106	0	40	99	0	0	0
50%	39	155	0	-9	0	-80	0	-13	23	56	0	70
60%	19	168	16	1	2	-106	0	0	37	39	411	324
70%	86	16	0	-45	0	0	0	0	353	132	1,137	232
80%	-13	169	82	0	0	0	0	0	0	144	662	15
90%	-32	5	85	0	67	0	0	0	0	29	449	122
Long Term												
Full Simulation	23	77	28	2	-1	-17	15	3	55	39	189	101
Water Year Types												
Wet	-2	73	8	-25	35	5	0	0	47	-6	0	-6
Above Norm	-43	-8	11	42	-8	-64	0	0	46	-2	0	-1
Below Norm	31	139	-35	27	-98	-55	70	0	13	20	-33	13
Dry	82	144	79	29	16	4	11	14	143	261	690	251
Critical	45	1	83	-49	18	-2	2	2	0	-130	293	315
Dry & Crit	67	87	81	-2	17	2	7	9	86	104	531	276

Total Export

SLWRI NAA

Flow (cfs)												
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,309	11,280	11,719	9,905	11,911	11,036	4,076	3,977	8,652	11,280	11,280	11,280
20%	7,547	9,225	11,654	7,989	9,667	10,082	3,074	2,492	6,041	11,280	11,280	11,170
30%	6,738	8,310	10,475	7,075	8,321	8,994	2,668	2,110	5,705	11,264	11,280	11,076
40%	6,352	7,352	9,140	6,825	7,654	7,649	2,336	1,722	5,381	11,156	11,260	10,631
50%	5,670	6,872	8,084	6,637	6,691	6,874	2,158	1,561	3,962	10,506	10,248	10,069
60%	5,426	6,350	7,716	6,437	6,481	5,844	2,054	1,500	3,385	9,859	7,840	8,870
70%	5,082	5,822	7,375	6,173	5,807	5,100	1,904	1,500	3,067	8,719	4,912	6,665
80%	4,685	5,146	6,233	5,638	4,627	4,646	1,781	1,500	1,100	7,275	2,746	5,490
90%	4,112	4,392	5,313	4,524	3,015	2,524	1,500	1,500	719	1,551	2,045	3,913
Long Term												
Full Simulation	6,134	7,224	8,524	6,962	7,186	6,953	2,614	2,297	4,491	9,008	7,981	8,639
Water Year Types												
Wet	6,645	7,587	10,225	8,270	9,708	9,605	3,390	3,457	7,371	10,620	11,228	10,900
Above Norm	6,569	8,245	9,785	6,603	7,304	8,370	2,270	1,781	5,681	9,309	11,111	10,538
Below Norm	7,559	8,134	8,979	6,315	6,974	7,324	2,684	1,904	3,952	10,797	9,376	9,650
Dry	5,338	6,960	6,655	6,521	5,391	4,685	2,326	1,857	2,496	9,083	3,685	6,472
Critical	4,120	4,753	5,852	5,900	4,541	2,757	1,629	1,418	683	3,012	2,632	3,913
Dry & Crit	4,851	6,077	6,334	6,273	5,051	3,914	2,047	1,682	1,771	6,655	3,264	5,448

SLWRI CP4A

Flow (cfs)												
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,293	11,280	11,719	9,904	11,911	10,943	4,076	3,977	8,652	11,280	11,280	11,280
20%	7,778	9,633	11,654	7,989	9,669	10,056	3,074	2,493	6,041	11,280	11,280	11,194
30%	7,015	8,421	10,909	7,075	8,321	8,994	2,668	2,116	5,707	11,280	11,280	11,120
40%	6,452	7,562	9,268	6,825	7,646	7,649	2,336	1,722	5,381	11,126	11,262	10,832
50%	5,857	7,130	8,087	6,607	6,691	6,855	2,158	1,561	3,962	10,690	10,219	10,125
60%	5,491	6,720	7,772	6,445	6,481	5,674	2,054	1,500	3,448	9,805	7,831	8,809
70%	5,160	5,901	7,375	6,173	5,807	5,100	1,904	1,500	3,231	8,964	5,212	7,159
80%	4,812	5,120	6,333	5,708	4,627	4,646	1,781	1,500	1,100	7,370	3,456	5,598
90%	4,064	4,392	5,203	4,745	3,015	2,524	1,500	1,500	714	1,711	2,780	4,287
Long Term												
Full Simulation	6,265	7,400	8,576	6,990	7,196	6,894	2,616	2,304	4,533	9,053	8,171	8,765
Water Year Types												
Wet	6,787	7,818	10,363	8,270	9,739	9,521	3,390	3,457	7,377	10,614	11,244	10,902
Above Norm	6,788	8,560	9,783	6,669	7,300	8,308	2,270	1,781	5,699	9,264	11,113	10,609
Below Norm	7,793	8,345	8,942	6,373	6,898	7,173	2,684	1,904	3,918	10,773	9,268	9,673
Dry	5,375	7,129	6,675	6,514	5,431	4,694	2,335	1,887	2,693	9,346	4,371	6,769

Critical	4,164	4,636	5,921	5,969	4,578	2,760	1,630	1,418	683	3,012	2,987	4,223
Dry & Crit	4,891	6,132	6,373	6,296	5,090	3,920	2,053	1,700	1,889	6,813	3,817	5,751

SLWRI CP4A minus SLWRI NAA

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-17	0	0	-1	0	-93	0	0	0	0	0	0
20%	231	408	0	0	2	-26	0	0	0	0	0	23
30%	277	110	434	0	0	0	0	6	3	16	0	44
40%	100	209	128	0	-8	0	0	0	0	-30	1	201
50%	186	258	3	-30	0	-19	0	0	0	184	-29	56
60%	66	370	56	7	0	-170	0	0	63	-54	-9	-61
70%	78	79	0	0	0	0	0	0	163	244	300	494
80%	127	-26	101	70	0	0	0	0	0	95	711	108
90%	-48	0	-111	221	0	0	0	0	-5	160	734	373
Long Term												
Full Simulation	131	176	51	28	11	-59	2	6	42	45	190	126
Water Year Types												
Wet	141	231	138	0	31	-85	0	0	6	-6	17	3
Above Norm	218	315	-2	66	-4	-62	0	0	18	-45	2	71
Below Norm	234	211	-37	59	-76	-151	0	0	-33	-24	-107	23
Dry	37	169	19	-7	41	9	9	30	197	264	686	296
Critical	44	-117	69	69	36	3	0	-1	0	0	355	311
Dry & Crit	40	55	39	23	39	7	6	18	118	158	553	302

X2 Position

SLWRI NAA

	KM											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	92	93	94	91	85	78	76	78	81	83	86	90
20%	91	92	91	89	83	72	73	72	79	82	85	88
30%	91	92	91	84	81	68	66	70	77	81	84	88
40%	90	91	91	83	74	64	64	67	72	80	83	87
50%	89	90	81	81	72	59	60	63	69	78	81	85
60%	81	81	81	79	64	55	58	60	66	77	78	85
70%	74	74	75	72	54	52	54	57	64	74	77	84
80%	74	74	74	62	51	49	51	53	58	69	77	83
90%	74	74	74	53	49	48	49	50	53	62	74	82
Long Term												
Full Simulation	84	84	82	76	68	61	61	64	69	76	80	85
Water Year Types												
Wet	74	74	73	63	54	51	53	55	59	68	75	83
Above Norm	81	80	78	78	63	55	54	58	64	74	77	83
Below Norm	89	89	84	82	73	62	64	65	70	77	81	85
Dry	91	92	89	83	78	70	67	70	76	81	84	88
Critical	92	94	93	88	83	76	75	78	83	86	88	91
Dry & Crit	91	92	91	85	80	72	70	73	79	83	86	89

SLWRI CP4A

	KM											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	92	93	94	91	85	78	76	78	81	83	86	90
20%	91	92	91	89	83	72	73	73	79	82	85	88
30%	91	92	91	84	81	68	66	70	77	81	84	88
40%	90	91	91	83	75	64	64	67	72	80	83	87
50%	89	90	81	81	72	59	60	63	69	78	81	85
60%	81	81	81	80	64	55	58	60	66	77	78	85
70%	74	74	75	71	55	52	54	57	64	74	77	84
80%	74	74	74	62	51	49	51	53	59	70	77	83
90%	74	74	74	54	49	48	49	50	53	62	74	82
Long Term												
Full Simulation	84	84	83	77	68	61	61	64	69	76	80	86
Water Year Types												

Wet	74	74	73	63	54	51	53	55	58	68	75	83
Above Norm	81	80	78	78	63	55	54	58	64	74	77	83
Below Norm	89	89	85	82	73	62	64	65	70	77	81	85
Dry	91	92	89	83	78	70	68	71	76	81	84	88
Critical	93	94	93	88	83	76	75	78	83	86	88	91
Dry & Crit	92	93	91	85	80	72	70	73	79	83	86	89

SLWRI CP4A minus SLWRI NAA

	KM											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	0	0	0	0	0
1	0	0	0	-1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	1	1	0	0
1	0	0	0	1	0	0	0	0	0	0	0	0
Long Term												
Full Simulation	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types												
Wet	0	0	0	0	0	0	0	0	0	0	0	0
Above Norm	0	0	0	0	0	0	0	0	0	0	0	0
Below Norm	0	0	1	0	0	0	0	0	0	0	0	0
Dry	0	0	0	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	0	0	0	0
Dry & Crit	0	0	0	0	0	0	0	0	0	0	0	0

Total CVP Delivery North of Delta

SLWRI NAA

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	130	63	34	21	15	39	166	415	465	527	440	157
20%	125	57	31	16	15	28	147	409	459	519	424	152
30%	117	53	29	15	15	24	136	397	451	506	404	145
40%	112	50	27	15	15	17	130	389	441	494	397	139
50%	103	48	24	15	14	15	120	373	433	480	373	134
60%	98	43	22	14	14	15	115	358	428	469	364	124
70%	91	40	21	14	13	14	106	349	421	456	346	117
80%	84	36	20	13	13	13	96	335	412	430	329	107
90%	81	34	19	12	12	13	61	314	382	398	300	99
Long Term												
Full Simulation	103	47	25	15	14	22	120	368	431	473	374	128
Water Year Types												
Wet	113	50	28	15	15	19	112	379	437	513	424	146
Above Norm	107	49	25	14	14	16	123	373	451	505	397	143
Below Norm	102	50	23	15	14	23	124	380	440	478	374	125
Dry	104	43	26	16	14	22	123	362	438	449	340	115
Critical	77	43	21	15	14	35	127	331	374	384	295	94
Dry & Crit	93	43	24	15	14	27	124	350	412	423	322	107

SLWRI CP4A

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	132	64	34	20	15	40	171	421	473	527	440	157
20%	126	57	31	16	15	30	149	414	466	518	424	153
30%	117	53	29	15	15	25	138	401	454	512	409	149
40%	111	50	27	15	15	17	129	392	443	504	404	142
50%	105	47	24	15	15	15	121	377	438	491	380	135
60%	98	43	22	15	14	15	117	359	432	476	368	125
70%	92	40	21	14	13	15	107	352	424	459	349	117
80%	85	36	21	13	13	14	95	334	408	434	331	108

90%	78	34	19	12	12	13	61	313	381	392	301	100
Long Term												
Full Simulation	103	47	26	15	14	23	122	370	434	477	377	129
Water Year Types												
Wet	113	50	28	15	15	19	113	382	440	516	427	147
Above Norm	108	49	25	14	14	16	126	377	456	511	402	145
Below Norm	102	50	24	15	14	23	127	384	445	484	379	127
Dry	105	43	26	16	15	22	125	365	442	453	343	117
Critical	76	43	21	14	14	35	127	331	374	384	290	94
Dry & Crit	94	43	24	15	14	27	126	351	415	426	322	108

SLWRI CP4A minus SLWRI NAA

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2	1	0	-1	0	0	5	6	8	0	0	0
20%	1	0	0	0	0	1	2	4	7	0	0	1
30%	0	0	0	0	0	0	1	4	4	6	5	4
40%	-1	0	0	0	0	0	-1	3	2	10	7	3
50%	2	-1	0	0	0	0	1	3	4	11	7	1
60%	0	0	0	0	0	0	2	1	3	7	4	1
70%	1	0	0	0	0	1	1	3	3	3	3	0
80%	0	0	0	0	0	0	0	-1	-4	4	2	1
90%	-3	0	0	0	0	0	0	-1	-1	-6	1	1
Long Term												
Full Simulation	0	0	0	0	0	0	2	3	3	4	2	2
Water Year Types												
Wet	0	0	0	0	0	0	2	2	3	3	3	1
Above Norm	0	0	0	0	0	0	2	4	5	6	5	2
Below Norm	1	0	0	0	0	0	3	4	5	6	4	2
Dry	1	0	0	0	0	0	2	3	4	4	4	2
Critical	-1	0	0	0	0	0	0	0	0	0	-5	0
Dry & Crit	0	0	0	0	0	0	1	2	2	2	0	1

Total CVP Delivery South of Delta

SLWRI NAA

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	197	120	105	133	159	178	214	331	484	561	459	253
20%	185	110	91	110	131	164	193	287	413	473	394	233
30%	177	104	83	97	114	150	182	265	378	423	337	221
40%	169	97	74	84	104	141	169	244	345	389	325	211
50%	164	94	69	75	93	132	156	227	318	354	288	203
60%	160	90	64	67	83	124	145	212	292	323	282	196
70%	154	86	59	57	73	117	133	195	266	291	260	187
80%	149	82	54	51	64	108	126	180	242	270	239	180
90%	134	73	41	34	45	93	103	149	193	200	194	164
Long Term												
Full Simulation	163	94	71	79	97	134	159	232	326	365	309	202
Water Year Types												
Wet	187	111	93	95	115	166	202	297	429	490	394	237
Above Norm	173	101	79	77	94	143	171	249	352	393	329	213
Below Norm	163	93	68	83	101	126	150	223	311	347	303	201
Dry	152	85	58	71	88	115	133	193	263	288	257	185
Critical	120	68	42	56	71	90	101	145	192	202	187	145
Dry & Crit	140	78	52	65	81	105	120	174	235	254	229	169

SLWRI CP4A

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	198	120	106	135	159	179	215	332	485	563	460	254
20%	185	111	92	111	134	170	201	287	413	473	392	233
30%	178	104	84	98	120	153	185	267	381	423	338	222
40%	170	98	75	85	104	140	169	246	347	392	317	211

50%	165	94	70	76	94	133	157	230	322	360	291	204
60%	160	91	64	68	84	124	147	213	295	317	281	196
70%	156	88	61	61	75	120	136	201	276	304	272	190
80%	150	83	54	52	66	106	124	184	247	270	246	181
90%	134	73	45	39	53	93	103	149	202	220	194	164
Long Term												
Full Simulation	164	95	72	80	98	135	160	234	329	367	309	203
Water Year Types												
Wet	188	112	94	96	116	169	205	300	434	495	394	238
Above Norm	174	101	79	77	94	144	172	250	353	395	327	214
Below Norm	163	92	67	83	102	126	149	222	309	344	301	200
Dry	153	85	58	74	91	116	134	194	265	289	261	186
Critical	121	68	43	57	72	91	103	148	196	206	191	143
Dry & Crit	140	79	52	67	84	106	121	175	237	256	233	169

SLWRI CP4A minus SLWRI NAA

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1	1	1	2	0	1.00	1.00	1.00	1.00	2.00	1.00	0.00
20%	1	1	1	1	3	6.00	8.00	0.00	0.00	0.00	-2.00	0.00
30%	1	1	1	1	6	3.00	3.00	1.00	2.00	0.00	0.00	1.00
40%	0	0	1	1	0	-1.00	0.00	2.00	2.00	3.00	-8.00	1.00
50%	1	1	1	1	1	1.00	1.00	2.00	4.00	5.00	3.00	1.00
60%	0	0	0	1	1	0.00	2.00	1.00	2.00	-6.00	0.00	1.00
70%	2	2	2	4	3	3.00	2.00	5.00	10.00	13.00	12.00	3.00
80%	1	1	0	1	2	-2.00	-2.00	3.00	5.00	0.00	6.00	1.00
90%	0	0	4	5	8	0.00	0.00	0.00	9.00	20.00	0.00	0.00
Long Term												
Full Simulation	1	0	1	1	1	2.00	1.00	2.00	3.00	2.00	1.00	0.00
Water Year Types												
Wet	1	1	1	1	1	3	3	4	6	4	-1	2
Above Norm	0	0	0	0	0	1	0	1	1	2	-2	0
Below Norm	0	0	0	0	1	0	0	-1	-2	-3	-2	-1
Dry	0	0	0	3	4	1	1	1	1	1	4	0
Critical	1	1	1	0	0	2	2	3	4	4	4	-2
Dry & Crit	0	0	1	2	2	1	1	2	3	2	4	0

Total SWP Delivery

SLWRI NAA

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	365	297	329	180	177	239	260	360	436	454	463	385
20%	320	270	279	110	143	168	222	316	383	404	424	349
30%	290	251	254	91	103	147	196	288	350	392	407	336
40%	279	241	239	63	84	77	167	268	334	381	403	328
50%	266	223	230	45	57	48	133	219	315	369	389	316
60%	241	208	211	20	32	33	116	170	293	361	380	302
70%	194	180	192	12	19	31	103	154	260	346	347	267
80%	147	154	157	8	15	21	88	138	234	314	288	171
90%	102	89	95	7	11	14	23	92	147	185	139	123
Long Term												
Full Simulation	242	211	223	67	79	96	145	223	304	351	348	280
Water Year Types												
Wet	317	251	283	123	134	175	215	311	387	414	429	351
Above Norm	297	247	252	46	95	134	179	265	349	393	409	335
Below Norm	273	226	215	59	62	70	141	219	312	379	386	327
Dry	169	193	199	38	38	29	100	160	257	328	303	217
Critical	96	95	106	23	22	18	31	88	143	179	134	109
Dry & Crit	139	154	162	32	32	25	72	131	211	268	235	174

SLWRI CP4A

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												

10%	368	297	329	187	181	211	260	363	439	456	464	387
20%	319	274	281	117	139	165	222	313	383	404	424	347
30%	289	251	257	92	104	148	191	285	346	391	406	336
40%	279	241	243	66	83	86	155	257	332	384	396	330
50%	266	221	229	44	61	54	133	219	314	370	388	316
60%	242	207	212	19	34	41	116	173	297	364	382	307
70%	206	183	198	13	22	33	110	159	277	358	368	295
80%	144	163	176	9	16	22	98	148	253	338	307	182
90%	97	94	129	8	12	15	25	109	172	215	141	115
Long Term Full Simulation	243	213	226	69	80	97	145	225	309	356	351	285
Water Year Types												
Wet	320	247	285	124	135	172	214	311	388	414	430	351
Above Norm	296	247	251	46	93	125	178	263	347	391	408	334
Below Norm	273	225	213	62	64	81	138	219	312	378	386	326
Dry	173	201	211	40	42	34	106	166	270	345	320	239
Critical	94	106	112	24	24	19	34	93	153	189	130	114
Dry & Crit	141	163	172	33	35	28	77	137	223	282	244	189

SLWRI CP4A minus SLWRI NAA

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0.10	2.00	0.00	0.00	7.00	4.00	-28.00	0.00	3.00	3.00	1.00	1.00	2.00
0.20	0.00	3.00	2.00	6.00	-4.00	-4.00	0.00	-3.00	0.00	0.00	0.00	-3.00
0.30	0.00	-1.00	3.00	0.00	1.00	1.00	-6.00	-3.00	-4.00	-1.00	0.00	0.00
0.40	0.00	0.00	3.00	3.00	0.00	9.00	-13.00	-12.00	-2.00	3.00	-7.00	2.00
0.50	0.00	-2.00	-1.00	-2.00	5.00	6.00	0.00	0.00	0.00	1.00	-1.00	0.00
0.60	1.00	-1.00	1.00	-1.00	2.00	7.00	0.00	3.00	4.00	3.00	2.00	5.00
0.70	12.00	3.00	6.00	0.00	3.00	2.00	7.00	5.00	17.00	12.00	21.00	28.00
0.80	-3.00	9.00	19.00	1.00	1.00	1.00	10.00	10.00	19.00	24.00	19.00	11.00
0.90	-5.00	4.00	34.00	0.00	2.00	2.00	2.00	17.00	25.00	30.00	1.00	-8.00
Long Term Full Simulation	1.00	2.00	4.00	2.00	1.00	1.00	1.00	2.00	4.00	5.00	3.00	6.00
Water Year Types												
Wet	2	-3	2	1	0	-2	-1	0	1	1	1	1
Above Norm	-1	0	-2	0	-2	-9	-1	-2	-2	-2	-1	-1
Below Norm	0	-1	-2	3	2	11	-3	0	0	-1	-1	0
Dry	4	8	12	2	4	4	6	6	13	17	17	22
Critical	-1	11	6	1	2	1	3	6	10	10	-4	6
Dry & Crit	2	9	10	2	3	3	5	6	12	14	8	15

Shasta Storage

ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,250	3,252	3,356	3,650	3,936	4,242	4,552	4,552	4,500	4,150	3,700	3,400
20%	3,250	3,252	3,334	3,590	3,831	4,147	4,531	4,552	4,462	3,977	3,607	3,400
30%	3,238	3,196	3,317	3,531	3,713	4,062	4,487	4,552	4,318	3,762	3,397	3,310
40%	3,055	3,135	3,285	3,466	3,654	4,008	4,426	4,522	4,125	3,593	3,234	3,158
50%	2,954	2,968	3,234	3,342	3,530	3,953	4,262	4,402	3,996	3,417	3,122	3,074
60%	2,813	2,838	3,077	3,252	3,437	3,841	4,185	4,250	3,813	3,221	2,968	2,894
70%	2,643	2,709	2,763	3,029	3,282	3,593	4,074	3,977	3,622	3,118	2,801	2,751
80%	2,327	2,314	2,368	2,781	3,193	3,416	3,939	3,700	3,259	2,860	2,503	2,457
90%	1,762	1,621	2,026	2,157	2,420	2,716	2,688	2,958	2,687	2,413	2,010	1,910
Long Term												
Full Simulation	2,718	2,722	2,854	3,101	3,354	3,695	4,052	4,048	3,758	3,286	2,952	2,829
Water Year Types												
Wet	3,175	3,178	3,267	3,455	3,652	3,869	4,348	4,489	4,369	3,932	3,539	3,317
Above Norm	2,990	2,917	3,096	3,244	3,494	4,004	4,464	4,489	4,173	3,568	3,231	3,119
Below Norm	2,924	2,972	3,045	3,159	3,448	3,846	4,283	4,274	3,909	3,382	3,064	2,979
Dry	2,568	2,626	2,842	2,957	3,325	3,781	4,016	3,891	3,474	3,010	2,722	2,665
Critical	1,439	1,390	1,510	2,341	2,503	2,703	2,781	2,625	2,266	1,909	1,615	1,555
Dry & Crit	2,116	2,132	2,309	2,711	2,996	3,350	3,522	3,385	2,991	2,570	2,279	2,221

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,884	3,886	3,983	4,274	4,554	4,863	5,186	5,186	5,134	4,784	4,334	4,034
20%	3,884	3,886	3,960	4,186	4,428	4,761	5,152	5,186	5,095	4,623	4,238	4,034
30%	3,853	3,804	3,927	4,149	4,309	4,664	5,119	5,186	4,951	4,354	4,017	3,855
40%	3,564	3,683	3,890	4,002	4,217	4,610	5,025	5,125	4,749	4,119	3,841	3,741
50%	3,487	3,541	3,810	3,926	4,114	4,499	4,832	5,010	4,511	3,917	3,607	3,524
60%	3,161	3,307	3,578	3,843	3,965	4,347	4,728	4,739	4,299	3,752	3,359	3,373
70%	3,072	3,054	3,082	3,514	3,886	4,097	4,547	4,376	4,104	3,561	3,247	3,117
80%	2,715	2,693	2,736	3,084	3,454	3,921	4,227	4,157	3,698	3,212	2,909	2,836
90%	2,021	1,858	2,164	2,356	2,594	3,060	2,955	3,209	2,979	2,634	2,274	2,171
Long Term												
Full Simulation	3,179	3,190	3,338	3,588	3,859	4,204	4,560	4,553	4,254	3,769	3,428	3,301
Water Year Types												
Wet	3,784	3,783	3,877	4,067	4,286	4,500	4,977	5,115	4,990	4,542	4,154	3,929
Above Norm	3,515	3,445	3,636	3,743	4,039	4,559	5,026	5,083	4,776	4,164	3,816	3,696
Below Norm	3,369	3,461	3,564	3,624	3,928	4,326	4,769	4,764	4,381	3,847	3,528	3,441
Dry	2,938	2,996	3,242	3,408	3,785	4,256	4,484	4,330	3,893	3,397	3,096	3,036
Critical	1,673	1,624	1,752	2,624	2,782	2,988	3,057	2,896	2,534	2,163	1,850	1,779
Dry & Crit	2,432	2,447	2,646	3,095	3,384	3,749	3,913	3,756	3,349	2,904	2,598	2,533

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	634	634	627	624	618	621	634	634	634	634	634	634
20%	634	634	626	596	597	614	621	634	633	646	631	634
30%	615	608	610	618	596	602	632	634	633	592	620	546
40%	509	549	605	536	563	602	599	603	623	526	606	583
50%	533	574	576	584	584	546	570	607	515	500	486	450
60%	348	469	501	591	528	506	543	489	486	531	390	478
70%	430	344	319	484	605	504	473	398	482	443	446	366
80%	388	379	368	303	260	505	288	456	438	352	406	379
90%	259	237	138	199	174	344	267	252	292	221	264	261
Long Term												
Full Simulation	462	468	484	487	505	509	508	505	497	482	476	472
Water Year Types												
Wet	609	604	609	613	634	631	629	625	621	610	615	613
Above Norm	525	527	540	499	546	555	562	594	603	596	585	577
Below Norm	445	488	519	465	480	480	486	490	472	466	464	461

Dry	371	370	400	451	460	475	468	439	419	388	373	371
Critical	235	233	242	283	279	285	276	271	269	254	235	224
Dry & Crit	316	315	337	384	388	399	391	372	359	334	318	312

Trinity Storage

ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,364	2,386	2,270	2,150	1,975
20%	1,850	1,845	1,850	1,900	2,000	2,100	2,278	2,318	2,306	2,261	2,123	1,975
30%	1,642	1,695	1,805	1,849	1,964	2,100	2,234	2,234	2,163	2,003	1,839	1,686
40%	1,528	1,518	1,670	1,731	1,875	2,038	2,191	2,077	2,053	1,895	1,705	1,542
50%	1,349	1,353	1,474	1,603	1,715	1,860	2,011	1,957	1,865	1,705	1,528	1,397
60%	1,286	1,290	1,348	1,406	1,580	1,725	1,844	1,820	1,813	1,642	1,465	1,337
70%	1,211	1,223	1,261	1,334	1,438	1,552	1,659	1,668	1,666	1,528	1,380	1,254
80%	977	994	1,000	1,089	1,147	1,294	1,483	1,445	1,384	1,235	1,098	1,000
90%	718	758	778	836	887	946	1,060	1,121	1,064	962	836	738
Long Term Full Simulation	1,350	1,362	1,414	1,477	1,588	1,709	1,864	1,858	1,825	1,695	1,545	1,410
Water Year Types												
Wet	1,747	1,762	1,776	1,772	1,934	2,065	2,251	2,285	2,260	2,138	2,007	1,846
Above Norm	1,573	1,576	1,608	1,581	1,736	1,903	2,082	2,087	2,055	1,938	1,773	1,620
Below Norm	1,234	1,267	1,352	1,362	1,437	1,531	1,708	1,694	1,661	1,535	1,388	1,262
Dry	1,135	1,144	1,253	1,371	1,452	1,585	1,721	1,672	1,621	1,466	1,299	1,182
Critical	725	722	747	1,028	1,070	1,140	1,201	1,178	1,147	1,021	869	768
Dry & Crit	971	975	1,051	1,234	1,299	1,407	1,513	1,474	1,432	1,288	1,127	1,016

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,375	2,394	2,270	2,150	1,975
20%	1,850	1,845	1,850	1,900	2,000	2,100	2,279	2,303	2,306	2,190	2,129	1,975
30%	1,642	1,686	1,809	1,861	1,956	2,082	2,235	2,234	2,164	2,003	1,839	1,677
40%	1,511	1,530	1,630	1,731	1,906	2,018	2,182	2,109	2,010	1,877	1,697	1,566
50%	1,357	1,371	1,510	1,631	1,746	1,922	2,033	1,978	1,902	1,748	1,558	1,400
60%	1,308	1,312	1,346	1,387	1,583	1,716	1,850	1,850	1,826	1,642	1,461	1,365
70%	1,214	1,200	1,262	1,316	1,396	1,515	1,662	1,698	1,664	1,524	1,361	1,252
80%	973	1,012	1,004	1,069	1,141	1,330	1,494	1,436	1,369	1,189	1,081	994
90%	718	737	757	795	844	905	1,050	1,110	1,059	958	833	737
Long Term Full Simulation	1,349	1,363	1,413	1,481	1,591	1,711	1,866	1,860	1,824	1,694	1,542	1,408
Water Year Types												
Wet	1,751	1,768	1,782	1,776	1,939	2,062	2,253	2,286	2,262	2,138	2,008	1,851
Above Norm	1,577	1,584	1,614	1,583	1,740	1,907	2,086	2,091	2,053	1,938	1,768	1,619
Below Norm	1,212	1,248	1,333	1,353	1,428	1,522	1,698	1,683	1,651	1,520	1,364	1,234
Dry	1,135	1,143	1,251	1,381	1,465	1,597	1,733	1,684	1,627	1,472	1,301	1,181
Critical	729	732	753	1,035	1,072	1,143	1,204	1,180	1,141	1,021	872	778
Dry & Crit	973	978	1,052	1,243	1,308	1,415	1,521	1,483	1,433	1,291	1,129	1,020

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	11	8	0	0	0
20%	0	0	0	0	0	0	1	-15	0	-71	5	0
30%	0	-9	4	12	-8	-18	1	1	1	0	0	-9
40%	-16	12	-40	0	31	-20	-9	32	-43	-18	-9	24
50%	8	18	36	28	31	62	22	21	36	43	30	3
60%	22	22	-1	-19	3	-9	6	30	13	0	-4	27
70%	3	-23	2	-18	-42	-36	4	30	-2	-4	-18	-2
80%	-5	18	4	-20	-6	36	11	-10	-15	-46	-17	-6
90%	-1	-21	-20	-41	-42	-41	-11	-11	-6	-4	-3	-2
Long Term Full Simulation	-1	1	0	3	3	1	3	2	-1	-1	-3	-2

Water Year Types												
Wet	4	5	5	5	4	-3	3	1	2	0	1	5
Above Norm	5	7	6	2	4	4	4	4	-2	0	-4	0
Below Norm	-22	-19	-19	-9	-9	-9	-10	-11	-10	-15	-23	-27
Dry	0	-1	-2	10	12	12	12	12	5	6	1	-1
Critical	4	10	5	7	2	3	3	3	-5	1	3	10
Dry & Crit	2	3	1	9	8	8	8	8	1	4	2	4

Folsom Storage

ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	709	567	567	567	567	661	792	967	967	942	792	750
20%	687	567	567	567	567	656	792	967	967	908	792	741
30%	592	561	567	567	563	652	792	967	967	839	744	663
40%	538	529	558	561	558	646	792	967	949	765	668	585
50%	494	484	524	543	553	634	792	967	852	663	592	551
60%	439	463	488	509	527	621	792	914	792	596	514	469
70%	408	442	430	460	475	603	748	757	708	552	482	440
80%	378	380	401	422	457	554	660	701	630	478	419	395
90%	316	335	365	370	402	476	567	576	518	418	360	326
Long Term												
Full Simulation	499	469	485	500	508	599	724	842	799	675	584	537
Water Year Types												
Wet	642	543	536	527	515	631	788	960	949	861	734	690
Above Norm	493	466	488	534	539	641	788	957	896	704	609	550
Below Norm	513	487	491	539	545	627	778	912	860	691	622	559
Dry	429	458	475	473	515	599	709	775	695	571	498	458
Critical	284	308	383	399	409	455	478	492	462	378	322	289
Dry & Crit	371	398	438	443	472	541	617	662	602	494	427	390

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	709	567	567	567	567	661	792	967	967	942	792	750
20%	687	567	567	567	567	656	792	967	967	908	786	740
30%	592	567	567	567	563	652	792	967	967	831	739	650
40%	552	565	563	563	558	646	792	967	960	742	671	594
50%	517	520	539	546	554	635	792	967	869	681	617	569
60%	486	491	512	519	530	621	792	926	813	639	573	525
70%	446	449	445	467	484	611	752	796	742	587	499	457
80%	378	390	396	427	457	552	669	721	652	513	440	413
90%	310	334	369	370	407	483	563	579	521	418	360	323
Long Term												
Full Simulation	511	482	492	504	511	602	727	848	810	686	596	549
Water Year Types												
Wet	649	552	544	528	515	631	788	960	952	868	739	696
Above Norm	504	480	497	534	539	641	788	957	904	707	621	561
Below Norm	518	495	494	538	546	628	778	913	867	682	620	556
Dry	462	487	487	486	523	605	720	792	724	610	531	490
Critical	285	309	384	406	417	463	487	501	473	390	332	299
Dry & Crit	391	416	446	454	480	548	627	676	624	522	452	413

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	-6	-1
30%	0	6	0	0	0	0	0	0	0	-8	-6	-13
40%	14	36	5	2	0	0	0	0	11	-22	2	9
50%	23	36	15	3	1	1	0	0	18	18	25	17
60%	47	29	24	10	3	0	0	12	21	43	58	56
70%	38	7	15	7	9	8	4	40	34	34	16	17

80%	0	11	-4	5	0	-2	9	20	22	35	21	19
90%	-6	-1	4	0	5	6	-4	3	3	0	0	-3
Long Term Full Simulation	12	13	7	4	3	3	4	5	12	11	12	12
Water Year Types												
Wet	8	9	8	1	0	0	0	0	3	7	5	6
Above Norm	12	15	9	0	0	0	0	0	8	3	12	12
Below Norm	5	9	3	-2	1	1	0	1	7	-9	-2	-3
Dry	33	30	12	12	8	7	11	17	30	38	34	32
Critical	0	0	1	8	8	7	9	9	11	11	10	10
Dry & Crit	20	18	7	10	8	7	10	14	22	28	24	23

Oroville Storage

ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,088	2,952	2,844	2,846	2,962	3,096	3,362	3,538	3,538	3,317	3,055	3,071
20%	2,545	2,609	2,782	2,788	2,874	3,019	3,305	3,538	3,538	3,045	2,771	2,699
30%	2,289	2,328	2,464	2,787	2,788	2,951	3,281	3,538	3,474	2,975	2,504	2,421
40%	2,081	2,113	2,285	2,539	2,788	2,847	3,233	3,438	3,266	2,732	2,302	2,224
50%	1,548	1,612	1,895	2,315	2,582	2,788	3,166	3,294	3,125	2,502	2,048	1,746
60%	1,507	1,405	1,548	1,824	2,227	2,670	2,989	2,893	2,710	2,073	1,683	1,552
70%	1,311	1,262	1,282	1,501	1,795	2,142	2,553	2,654	2,420	1,835	1,541	1,460
80%	1,232	1,130	1,123	1,295	1,620	1,957	2,198	2,218	1,885	1,540	1,432	1,336
90%	1,102	1,022	1,010	1,129	1,351	1,544	1,601	1,817	1,542	1,348	1,218	1,195
Long Term Full Simulation	1,848	1,816	1,897	2,088	2,305	2,518	2,800	2,924	2,776	2,341	2,054	1,958
Water Year Types												
Wet	2,733	2,692	2,657	2,673	2,872	2,945	3,304	3,507	3,481	3,149	2,905	2,853
Above Norm	2,146	2,102	2,128	2,206	2,528	2,885	3,281	3,489	3,392	2,849	2,403	2,291
Below Norm	1,545	1,516	1,706	1,943	2,195	2,467	2,843	3,042	2,877	2,305	1,845	1,641
Dry	1,298	1,278	1,492	1,706	1,927	2,249	2,448	2,459	2,177	1,684	1,499	1,409
Critical	815	789	851	1,446	1,548	1,689	1,703	1,655	1,415	1,113	940	879
Dry & Crit	1,105	1,082	1,236	1,602	1,775	2,025	2,150	2,137	1,872	1,456	1,275	1,197

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,083	2,950	2,843	2,846	2,962	3,096	3,362	3,538	3,538	3,317	3,050	3,067
20%	2,546	2,611	2,788	2,788	2,856	3,018	3,305	3,538	3,538	3,046	2,768	2,696
30%	2,337	2,343	2,441	2,708	2,788	2,949	3,281	3,538	3,474	2,976	2,503	2,412
40%	2,108	2,109	2,285	2,574	2,788	2,839	3,233	3,438	3,265	2,734	2,297	2,224
50%	1,559	1,604	1,956	2,318	2,583	2,788	3,143	3,294	3,128	2,501	2,023	1,785
60%	1,475	1,407	1,547	1,827	2,227	2,627	2,898	2,942	2,783	2,091	1,700	1,544
70%	1,349	1,286	1,278	1,551	1,757	2,154	2,548	2,650	2,357	1,812	1,539	1,464
80%	1,238	1,107	1,138	1,292	1,599	1,969	2,211	2,268	1,884	1,540	1,432	1,343
90%	1,097	1,020	1,019	1,122	1,349	1,541	1,597	1,814	1,542	1,349	1,220	1,196
Long Term Full Simulation	1,848	1,817	1,898	2,090	2,307	2,520	2,802	2,927	2,781	2,343	2,053	1,958
Water Year Types												
Wet	2,730	2,689	2,654	2,671	2,870	2,945	3,304	3,507	3,482	3,152	2,898	2,848
Above Norm	2,151	2,106	2,134	2,200	2,521	2,881	3,277	3,485	3,389	2,843	2,399	2,289
Below Norm	1,542	1,519	1,708	1,949	2,203	2,475	2,851	3,051	2,893	2,318	1,858	1,646
Dry	1,304	1,283	1,498	1,717	1,938	2,256	2,455	2,470	2,189	1,684	1,500	1,414
Critical	810	786	848	1,445	1,546	1,688	1,703	1,655	1,413	1,110	935	876
Dry & Crit	1,106	1,084	1,238	1,608	1,781	2,029	2,154	2,144	1,879	1,454	1,274	1,199

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-4	-2	0	0	0	0	0	0	0	0	-4	-4
20%	1	2	6	0	-18	-1	0	0	0	1	-3	-3
30%	48	15	-24	-79	0	-2	0	0	0	1	0	-9

40%	28	-4	-1	35	0	-8	0	0	0	2	-5	0
50%	11	-8	61	3	1	0	-23	0	3	-2	-25	40
60%	-32	3	-1	3	0	-43	-90	49	73	18	17	-7
70%	37	23	-4	50	-37	12	-5	-5	-63	-23	-2	4
80%	6	-23	16	-3	-20	12	13	50	-1	0	0	6
90%	-6	-2	9	-7	-3	-3	-4	-3	0	1	2	1
Long Term Full Simulation	0	1	1	2	2	2	2	4	5	2	-1	-1
Water Year Types												
Wet	-3	-3	-3	-2	-2	0	0	0	1	4	-7	-5
Above Norm	5	5	5	-6	-7	-4	-4	-3	-3	-6	-4	-2
Below Norm	-3	3	2	6	8	8	8	9	15	14	14	5
Dry	6	5	6	10	10	7	7	11	12	0	1	5
Critical	-5	-3	-3	-1	-1	-1	-1	-1	-2	-4	-5	-3
Dry & Crit	1	2	2	6	6	4	4	7	6	-2	-1	2

San Luis (Combined State and Federal) Storage

ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1,041	1,278	1,484	1,806	2,026	2,039	2,039	1,944	1,766	1,437	1,180	1,068
20%	747	900	1,143	1,433	1,710	1,883	1,990	1,827	1,416	1,067	793	697
30%	535	733	981	1,268	1,542	1,750	1,841	1,699	1,236	908	702	512
40%	417	620	872	1,147	1,419	1,639	1,662	1,503	1,065	803	610	424
50%	329	499	783	1,059	1,331	1,478	1,522	1,291	950	661	471	353
60%	279	442	682	996	1,263	1,402	1,410	1,209	852	599	419	297
70%	235	373	621	875	1,171	1,309	1,288	1,117	803	535	356	233
80%	199	348	536	835	1,045	1,211	1,234	1,042	695	468	278	204
90%	100	314	475	763	999	1,129	1,137	911	542	394	206	131
Long Term Full Simulation	471	654	879	1,147	1,387	1,534	1,566	1,401	1,056	791	587	465
Water Year Types												
Wet	656	879	1,133	1,300	1,557	1,739	1,833	1,704	1,375	1,112	903	672
Above Norm	233	457	680	1,134	1,364	1,497	1,571	1,388	979	711	543	239
Below Norm	634	796	1,030	1,126	1,385	1,502	1,535	1,337	919	691	558	582
Dry	347	500	695	1,052	1,270	1,405	1,376	1,193	876	636	331	331
Critical	303	431	626	996	1,221	1,357	1,303	1,143	870	527	363	309
Dry & Crit	329	472	667	1,030	1,250	1,386	1,347	1,173	874	592	344	322

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	1,043	1,203	1,438	1,808	2,012	2,039	2,039	1,942	1,761	1,436	1,180	1,065
20%	696	923	1,230	1,466	1,722	1,915	2,009	1,816	1,424	1,061	776	646
30%	533	724	926	1,270	1,507	1,737	1,801	1,690	1,211	903	710	549
40%	422	623	876	1,146	1,425	1,650	1,701	1,474	1,034	796	595	442
50%	314	484	771	1,062	1,316	1,464	1,525	1,285	946	648	486	363
60%	281	433	700	994	1,263	1,412	1,420	1,222	862	613	434	300
70%	235	384	618	915	1,150	1,330	1,318	1,127	775	533	356	237
80%	220	356	572	842	1,078	1,221	1,234	1,059	710	469	287	202
90%	100	315	476	766	1,014	1,150	1,137	934	566	387	198	128
Long Term Full Simulation	470	652	878	1,147	1,388	1,537	1,567	1,398	1,050	788	585	464
Water Year Types												
Wet	653	877	1,136	1,299	1,560	1,740	1,829	1,699	1,368	1,106	901	665
Above Norm	226	447	668	1,156	1,391	1,527	1,595	1,399	984	714	543	233
Below Norm	628	800	1,030	1,112	1,376	1,507	1,538	1,334	908	689	542	575
Dry	350	498	693	1,049	1,264	1,400	1,372	1,187	866	633	334	341
Critical	312	431	627	992	1,214	1,348	1,299	1,137	868	522	370	314
Dry & Crit	335	471	667	1,026	1,244	1,379	1,343	1,167	867	588	348	330

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**

Probability of Exceedance												
10%	2	-75	-47	2	-14	0	0	-3	-6	-1	0	-3
20%	-52	22	87	33	12	32	19	-11	8	-7	-17	-51
30%	-2	-9	-56	2	-35	-13	-40	-9	-25	-6	8	37
40%	5	3	4	0	6	11	39	-29	-30	-7	-15	18
50%	-15	-15	-11	4	-15	-14	3	-5	-5	-12	15	10
60%	2	-9	18	-3	1	10	9	13	10	14	15	4
70%	0	10	-3	40	-21	20	30	10	-28	-2	0	4
80%	20	7	35	7	33	9	0	17	15	1	9	-2
90%	0	1	2	3	15	21	0	23	23	-8	-9	-3
Long Term												
Full Simulation	-1	-2	-1	0	1	3	1	-2	-6	-3	-2	-1
Water Year Types												
Wet	-3	-3	3	0	3	1	-4	-5	-7	-6	-2	-7
Above Norm	-7	-11	-12	22	27	30	24	12	5	3	0	-5
Below Norm	-6	4	0	-14	-10	5	3	-3	-11	-2	-16	-7
Dry	3	-2	-1	-3	-5	-5	-3	-6	-10	-3	3	9
Critical	9	0	1	-4	-7	-9	-4	-6	-2	-4	7	6
Dry & Crit	6	-1	0	-3	-6	-7	-3	-6	-7	-4	5	8

Keswick Release

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	8,737	8,728	16,939	21,852	29,598	19,144	11,736	11,432	13,734	16,000	12,305	10,989
20%	8,361	7,289	10,970	13,878	18,619	12,834	6,803	10,185	12,459	15,513	11,369	9,000
30%	7,421	6,427	5,642	7,628	9,639	9,737	5,771	9,140	11,315	13,938	10,819	7,401
40%	6,996	5,779	4,959	5,000	6,397	5,728	4,873	8,713	10,330	13,509	10,570	6,812
50%	6,479	5,422	4,579	3,259	4,000	3,917	4,014	8,243	9,801	12,705	9,944	6,166
60%	6,017	5,092	3,764	3,250	3,250	3,250	3,250	7,684	9,136	11,800	9,662	5,474
70%	5,603	4,960	3,270	3,250	3,250	3,250	3,250	7,047	8,870	11,447	9,528	5,248
80%	5,291	4,000	3,250	3,250	3,250	3,250	3,250	6,368	8,265	10,846	9,226	4,923
90%	4,686	3,343	3,250	3,250	3,250	3,250	3,250	5,594	7,831	9,624	8,431	4,366
Long Term												
Full Simulation	6,631	6,087	7,213	8,652	10,522	8,779	5,872	8,402	10,326	12,741	10,239	6,899
Water Year Types												
Wet	8,079	6,649	8,330	16,993	18,630	16,270	8,964	9,726	9,312	13,043	11,618	9,597
Above Norm	6,499	8,307	6,667	7,987	14,543	9,085	5,694	8,530	10,544	14,621	10,555	7,201
Below Norm	6,058	5,533	8,117	4,462	6,736	4,719	4,066	7,466	10,878	13,135	9,599	5,808
Dry	5,747	4,980	7,494	3,621	3,642	4,107	4,139	7,819	11,492	12,478	9,291	5,063
Critical	5,623	4,957	3,862	3,682	3,668	3,991	4,060	7,372	9,913	10,139	9,105	4,777
Dry & Crit	5,697	4,970	6,041	3,645	3,652	4,060	4,107	7,640	10,860	11,542	9,217	4,949

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	8,721	8,471	16,317	20,922	27,326	19,286	11,723	11,561	13,975	16,000	12,278	10,968
20%	8,282	6,992	10,965	13,874	18,613	12,579	7,518	10,034	12,636	15,831	11,399	9,579
30%	7,577	6,176	5,447	7,624	9,627	9,674	5,771	9,122	11,688	14,259	10,933	7,466
40%	7,087	5,811	5,000	4,672	5,697	5,030	4,510	8,797	10,581	13,542	10,485	6,610
50%	6,528	5,531	4,182	3,250	3,769	4,470	3,994	8,199	9,821	13,010	10,209	5,955
60%	6,088	5,021	3,758	3,250	3,250	3,250	3,250	7,748	9,303	12,420	9,865	5,562
70%	5,758	4,736	3,250	3,250	3,250	3,250	3,250	7,026	8,995	11,719	9,666	5,248
80%	5,240	3,987	3,250	3,250	3,250	3,250	3,250	6,466	8,260	11,040	9,383	5,056
90%	4,797	3,250	3,250	3,250	3,250	3,250	3,250	5,831	7,789	9,771	8,607	4,451
Long Term												
Full Simulation	6,682	5,955	6,957	8,538	10,211	8,718	5,859	8,451	10,496	12,962	10,353	6,938
Water Year Types												
Wet	8,132	6,702	8,240	16,825	18,249	16,354	8,900	9,796	9,354	13,225	11,480	9,566
Above Norm	6,658	8,253	6,487	7,830	13,722	8,928	5,574	7,989	10,472	14,673	10,782	7,242
Below Norm	6,225	4,751	7,616	4,428	6,455	4,722	3,958	7,415	11,155	13,286	9,744	5,919
Dry	5,731	5,007	6,999	3,468	3,442	3,874	4,243	8,282	11,925	12,977	9,561	5,133
Critical	5,524	4,868	3,814	3,694	3,818	3,893	4,199	7,463	10,080	10,278	9,379	4,836
Dry & Crit	5,648	4,951	5,725	3,559	3,592	3,882	4,226	7,954	11,187	11,898	9,488	5,014

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-16	-257	-621	-930	-2,272	142	-14	129	241	0	-27	-22
20%	-79	-297	-5	-5	-6	-255	715	-151	177	319	30	579
30%	156	-252	-195	-4	-12	-62	0	-18	372	321	114	65
40%	91	32	41	-328	-701	-698	-362	84	250	33	-85	-202
50%	50	109	-397	-9	-231	553	-19	-44	20	305	265	-211
60%	71	-70	-6	0	0	0	0	64	166	620	202	88
70%	155	-224	-20	0	0	0	0	-21	125	272	138	0
80%	-51	-13	0	0	0	0	0	98	-5	194	157	133
90%	112	-93	0	0	0	0	0	238	-42	147	176	84
Long Term Full Simulation	51	-132	-256	-114	-311	-61	-13	49	170	221	113	39
Water Year Types												
Wet	53	53	-90	-168	-380	84	-65	70	42	181	-138	-31
Above Norm	159	-54	-180	-157	-821	-156	-120	-542	-72	52	226	41
Below Norm	167	-782	-501	-34	-281	4	-108	-52	278	151	145	110
Dry	-16	27	-495	-153	-200	-233	104	463	433	500	270	70
Critical	-99	-89	-48	12	150	-98	139	90	167	139	274	59
Dry & Crit	-49	-19	-316	-87	-60	-179	118	314	327	356	271	65

Nimbus Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2,074	4,665	7,285	11,051	12,434	9,415	6,282	7,652	5,948	4,968	3,880	2,426
20%	1,825	4,000	4,803	7,026	9,549	6,265	5,401	4,924	4,671	4,230	3,510	1,968
30%	1,500	3,235	2,848	4,993	6,824	4,739	4,190	3,997	3,918	3,695	2,714	1,750
40%	1,500	2,268	2,230	3,769	5,276	3,846	3,448	3,468	3,243	3,288	2,416	1,750
50%	1,500	2,000	2,000	1,947	3,565	2,919	2,558	2,370	2,711	2,950	1,998	1,750
60%	1,500	1,916	2,000	1,654	2,555	2,152	2,330	1,905	2,420	2,609	1,866	1,750
70%	1,136	1,136	1,916	1,400	1,750	1,750	1,500	1,500	2,107	2,417	1,750	1,649
80%	701	752	1,057	1,400	1,400	1,488	1,050	1,082	1,094	1,990	1,523	1,523
90%	605	595	636	701	1,359	953	953	953	851	1,315	877	877
Long Term Full Simulation	1,438	2,639	3,475	4,553	5,401	4,153	3,351	3,304	3,252	3,045	2,323	1,729
Water Year Types												
Wet	1,746	4,177	4,131	9,279	9,637	6,865	5,386	5,625	5,202	3,603	3,350	1,974
Above Norm	1,587	2,435	3,062	5,113	6,500	5,892	3,474	3,440	3,378	4,113	2,520	1,986
Below Norm	1,819	3,154	4,113	2,260	4,657	2,629	3,194	2,860	2,783	3,625	2,000	2,005
Dry	1,168	1,500	4,209	1,434	1,971	2,306	1,847	1,706	2,181	2,183	1,758	1,529
Critical	580	619	620	1,104	1,135	1,087	1,256	1,053	1,052	1,383	1,123	917
Dry & Crit	933	1,148	2,773	1,302	1,637	1,818	1,610	1,445	1,729	1,863	1,504	1,285

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	2,196	4,731	7,285	11,051	12,434	9,412	6,282	7,652	5,948	4,968	3,880	2,442
20%	1,769	3,969	4,903	7,026	9,549	6,249	5,369	4,924	4,671	4,246	3,510	1,909
30%	1,500	3,239	2,945	4,993	6,796	4,739	4,190	3,969	3,696	3,818	2,850	1,750
40%	1,500	2,319	2,265	3,875	5,469	3,840	3,448	3,468	3,114	3,429	2,439	1,750
50%	1,500	2,000	2,000	2,030	3,565	2,919	2,548	2,370	2,618	2,787	1,944	1,750
60%	1,500	1,877	2,000	1,646	2,516	2,152	2,149	1,845	2,260	2,542	1,750	1,750
70%	1,136	1,136	1,923	1,400	1,750	1,750	1,458	1,366	1,602	2,402	1,750	1,649
80%	701	752	1,057	1,400	1,400	1,488	1,006	1,063	1,006	1,915	1,523	1,523
90%	605	595	636	738	1,359	953	953	953	827	1,248	958	877
Long Term Full Simulation	1,419	2,623	3,572	4,600	5,413	4,152	3,329	3,271	3,139	3,040	2,304	1,728
Water Year Types												
Wet	1,720	4,155	4,152	9,286	9,653	6,863	5,384	5,624	5,153	3,539	3,383	1,950
Above Norm	1,580	2,380	3,160	5,094	6,496	5,889	3,472	3,434	3,243	4,194	2,373	1,997

Below Norm	1,683	3,086	4,204	2,512	4,607	2,618	3,210	2,833	2,665	3,879	1,873	2,021
Dry	1,129	1,553	4,485	1,457	2,050	2,317	1,759	1,584	1,939	2,013	1,811	1,541
Critical	732	613	620	1,102	1,130	1,087	1,227	1,050	1,024	1,365	1,141	917
Dry & Crit	970	1,177	2,939	1,315	1,682	1,825	1,546	1,370	1,573	1,754	1,543	1,292

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	122	66	0	0	0	-3	0	0	0	0	0	16
20%	-56	-31	100	0	0	-16	-33	0	0	16	0	-59
30%	0	4	97	0	-28	0	0	-28	-222	123	137	0
40%	0	51	35	107	193	-6	0	0	-129	140	23	0
50%	0	0	0	83	0	0	-10	0	-93	-163	-54	0
60%	0	-40	0	-8	-39	0	-181	-60	-160	-68	-116	0
70%	0	0	7	0	0	0	-42	-134	-505	-15	0	0
80%	0	0	0	0	0	0	-45	-18	-88	-75	0	0
90%	0	0	0	37	0	0	0	0	-24	-67	80	0
Long Term												
Full Simulation	-19	-16	97	47	12	-1	-22	-33	-113	-5	-18	0
Water Year Types												
Wet	-26	-23	21	6	16	-2	-2	-1	-50	-64	33	-24
Above Norm	-7	-55	98	-18	-4	-4	-2	-6	-135	81	-147	12
Below Norm	-135	-68	91	252	-50	-11	17	-27	-118	253	-127	17
Dry	-39	53	277	23	78	10	-88	-121	-242	-170	53	12
Critical	152	-6	0	-2	-6	0	-29	-3	-28	-18	18	0
Dry & Crit	37	29	166	13	45	6	-64	-74	-157	-109	39	7

Trinity River Below Lewiston Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	373	300	300	1,149	1,194	560	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	540	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	460	1,498	783	450	450	450
Long Term												
Full Simulation	373	350	567	673	640	620	554	3,779	2,104	923	814	814
Water Year Types												
Wet	373	300	994	1,476	1,053	1,238	627	4,636	3,359	1,289	709	709
Above Norm	373	645	621	300	735	436	469	4,462	2,488	1,048	835	835
Below Norm	373	300	300	300	517	319	507	3,774	1,672	869	870	870
Dry	373	300	300	300	300	300	529	3,216	1,251	667	870	870
Critical	373	300	300	300	300	300	575	2,092	783	450	870	870
Dry & Crit	373	300	300	300	300	300	548	2,767	1,064	580	870	870

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	373	300	300	1,149	1,194	560	600	4,709	4,626	1,102	870	870
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
30%	373	300	300	300	300	300	540	4,709	2,526	1,102	870	870
40%	373	300	300	300	300	300	540	4,570	2,526	1,102	870	870
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	870	870
70%	373	300	300	300	300	300	460	2,924	783	450	870	870
80%	373	300	300	300	300	300	460	2,924	783	450	870	870
90%	373	300	300	300	300	300	460	1,498	783	450	450	450
Long Term												

Full Simulation	373	346	572	670	634	642	554	3,779	2,103	923	814	814
Water Year Types												
Wet	373	300	994	1,466	1,056	1,307	627	4,636	3,358	1,289	709	709
Above Norm	373	613	621	300	690	436	469	4,462	2,488	1,048	835	835
Below Norm	373	300	300	300	517	319	507	3,774	1,672	869	870	870
Dry	373	300	321	300	300	300	529	3,216	1,251	667	870	870
Critical	373	300	300	300	300	300	575	2,092	783	450	870	870
Dry & Crit	373	300	312	300	300	300	548	2,767	1,064	580	870	870

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation	0	-5	4	-3	-6	22	0	0	0	0	0	0
Water Year Types												
Wet	0	0	0	-9	3	69	0	0	-1	0	0	0
Above Norm	0	-31	0	0	-45	0	0	0	0	0	0	0
Below Norm	0	0	0	0	0	0	0	0	0	0	0	0
Dry	0	0	21	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	0	0	0	0
Dry & Crit	0	0	12	0	0	0	0	0	0	0	0	0

Clear Creek Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	200	200	200	200	380	200	200	277	318	150	150	150
20%	200	200	200	200	380	200	200	277	318	150	150	150
30%	200	200	200	200	380	200	200	277	318	150	150	150
40%	200	200	200	200	380	200	200	277	318	150	150	150
50%	200	200	200	200	374	200	200	277	318	150	150	150
60%	200	200	200	200	374	200	200	277	318	150	150	150
70%	200	200	200	200	200	200	200	277	318	150	150	150
80%	200	200	200	200	200	200	200	277	318	150	150	150
90%	150	150	150	200	200	200	200	237	318	150	150	150
Long Term												
Full Simulation	195	195	195	202	315	196	198	273	318	150	150	150
Water Year Types												
Wet	200	200	200	220	392	192	200	277	318	150	150	150
Above Norm	200	200	200	192	378	200	200	277	318	150	150	150
Below Norm	200	200	200	196	378	200	200	277	318	150	150	150
Dry	200	200	200	194	200	200	200	277	318	150	150	150
Critical	163	163	163	188	188	188	188	247	318	150	150	150
Dry & Crit	185	185	185	192	195	195	195	265	318	150	150	150

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	200	200	200	200	380	200	200	277	318	150	150	150
20%	200	200	200	200	380	200	200	277	318	150	150	150
30%	200	200	200	200	380	200	200	277	318	150	150	150
40%	200	200	200	200	380	200	200	277	318	150	150	150
50%	200	200	200	200	374	200	200	277	318	150	150	150
60%	200	200	200	200	374	200	200	277	318	150	150	150

70%	200	200	200	200	200	200	200	277	318	150	150	150
80%	200	200	200	200	200	200	200	277	318	150	150	150
90%	150	150	150	200	200	200	200	237	318	150	150	150
Long Term Full Simulation	195	195	195	202	315	196	198	273	318	150	150	150
Water Year Types												
Wet	200	200	200	220	392	192	200	277	318	150	150	150
Above Norm	200	200	200	192	378	200	200	277	318	150	150	150
Below Norm	200	200	200	196	378	200	200	277	318	150	150	150
Dry	200	200	200	194	200	200	200	277	318	150	150	150
Critical	163	163	163	188	188	188	188	247	318	150	150	150
Dry & Crit	185	185	185	192	195	195	195	265	318	150	150	150

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term Full Simulation	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types												
Wet	0	0	0	0	0	0	0	0	0	0	0	0
Above Norm	0	0	0	0	0	0	0	0	0	0	0	0
Below Norm	0	0	0	0	0	0	0	0	0	0	0	0
Dry	0	0	0	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	0	0	0	0
Dry & Crit	0	0	0	0	0	0	0	0	0	0	0	0

Sacramento River at Red Bluff Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,755	12,584	26,461	38,742	43,884	29,638	17,712	13,915	13,540	14,897	11,463	11,466
20%	8,991	9,503	17,254	23,589	30,232	20,067	13,380	11,823	12,340	14,535	10,727	9,291
30%	8,247	8,093	10,972	15,607	20,843	16,506	8,743	10,445	11,319	13,141	10,067	7,592
40%	7,664	7,699	8,973	12,599	13,997	11,238	7,496	9,340	10,666	12,528	9,819	6,999
50%	7,151	7,034	7,029	9,013	10,942	9,031	6,947	8,991	9,862	11,887	9,361	6,198
60%	6,616	6,686	6,606	7,528	8,616	7,991	5,947	8,458	9,413	11,243	9,181	5,744
70%	6,241	6,363	6,037	6,793	7,625	7,518	5,431	8,025	9,044	10,712	8,997	5,429
80%	5,977	6,092	5,821	5,979	6,318	5,908	5,118	7,583	8,479	10,174	8,667	5,022
90%	5,726	5,653	5,260	5,036	5,433	5,487	4,769	6,949	8,240	9,243	8,081	4,715
Long Term Full Simulation	7,453	8,340	12,057	15,649	18,460	14,847	9,374	9,929	10,529	12,014	9,674	7,132
Water Year Types												
Wet	8,915	9,162	13,058	28,805	30,720	25,263	14,648	12,142	9,880	12,321	10,935	9,830
Above Norm	7,440	10,616	11,643	16,670	24,039	16,716	9,787	10,195	10,398	13,486	9,759	7,403
Below Norm	7,112	7,869	13,257	9,517	13,064	8,910	7,068	8,522	10,847	12,210	8,917	5,989
Dry	6,475	7,250	13,363	6,858	9,021	8,690	6,074	8,786	11,499	11,826	8,863	5,373
Critical	6,165	6,465	6,943	6,463	6,770	6,573	5,176	8,226	10,238	9,929	8,958	4,988
Dry & Crit	6,351	6,936	10,795	6,700	8,121	7,843	5,715	8,562	10,994	11,067	8,901	5,219

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,690	11,239	26,456	38,126	43,879	29,628	17,634	13,878	13,544	14,901	11,603	11,447
20%	8,929	8,827	16,583	23,594	30,226	20,061	13,311	11,808	12,453	14,655	10,603	9,740

30%	8,430	8,101	10,335	15,846	20,836	16,571	8,805	10,297	11,567	13,409	10,170	7,820
40%	7,751	7,513	8,508	12,558	13,137	10,695	7,587	9,519	10,692	12,701	9,802	6,825
50%	7,348	6,994	7,032	9,016	10,944	9,038	6,835	8,979	10,043	12,039	9,452	6,260
60%	6,914	6,727	6,623	7,471	8,682	7,905	5,796	8,456	9,551	11,560	9,258	5,792
70%	6,305	6,523	6,124	6,802	7,625	7,110	5,372	8,010	9,168	10,821	9,042	5,408
80%	5,975	6,078	5,915	5,980	6,319	6,065	5,018	7,572	8,570	10,219	8,824	5,139
90%	5,786	5,621	5,260	5,044	5,433	5,487	4,776	7,193	8,235	9,231	8,115	4,805
Long Term Full Simulation	7,498	8,209	11,803	15,537	18,150	14,782	9,329	9,930	10,635	12,162	9,729	7,149
Water Year Types												
Wet	8,968	9,216	12,968	28,641	30,340	25,348	14,566	12,204	9,911	12,491	10,787	9,798
Above Norm	7,596	10,561	11,465	16,515	23,219	16,561	9,647	9,653	10,309	13,515	9,967	7,434
Below Norm	7,276	7,086	12,762	9,485	12,784	8,906	6,900	8,412	11,053	12,275	8,994	6,072
Dry	6,441	7,279	12,869	6,707	8,823	8,446	6,117	9,100	11,741	12,110	8,959	5,379
Critical	6,064	6,379	6,896	6,476	6,921	6,467	5,316	8,295	10,380	10,040	9,211	5,036
Dry & Crit	6,290	6,919	10,480	6,614	8,062	7,655	5,797	8,778	11,197	11,282	9,060	5,242

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-64	-1,345	-5	-617	-5	-10	-78	-37	4	5	140	-19
20%	-61	-676	-671	5	-6	-5	-69	-15	112	120	-124	449
30%	183	7	-638	239	-6	65	62	-149	248	268	103	228
40%	87	-186	-465	-41	-859	-543	91	179	26	173	-17	-174
50%	197	-39	3	3	2	7	-112	-12	181	152	91	62
60%	298	41	17	-57	66	-85	-150	-2	137	317	77	48
70%	63	160	86	9	0	-408	-59	-14	124	109	45	-20
80%	-2	-13	94	1	1	157	-101	-11	92	45	157	117
90%	59	-33	0	7	1	0	7	244	-5	-13	34	91
Long Term Full Simulation	45	-131	-254	-112	-310	-65	-45	1	106	148	55	17
Water Year Types												
Wet	53	53	-89	-164	-380	84	-82	63	31	170	-148	-32
Above Norm	156	-55	-179	-155	-820	-154	-140	-542	-89	29	208	31
Below Norm	163	-782	-495	-32	-280	-4	-168	-109	206	66	78	83
Dry	-34	29	-494	-151	-198	-243	44	314	242	284	96	6
Critical	-101	-86	-46	13	151	-106	140	69	143	112	253	48
Dry & Crit	-61	-17	-315	-85	-59	-188	82	216	203	215	159	23

Sacramento River near Wilkins Slough Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,247	12,436	21,191	22,247	22,552	21,567	19,984	15,000	8,442	9,229	6,863	10,866
20%	8,162	9,318	19,369	21,083	21,433	20,300	17,787	10,450	7,969	8,693	6,371	8,439
30%	7,541	7,359	14,840	19,321	20,657	18,854	11,766	7,032	7,277	7,723	5,860	7,420
40%	6,791	6,717	11,924	18,005	19,723	17,015	9,738	5,494	5,995	7,264	5,541	6,547
50%	6,339	6,135	8,589	11,206	16,325	14,241	8,325	4,988	5,256	6,756	5,172	5,412
60%	5,820	5,801	7,563	9,520	13,331	11,572	7,589	4,629	4,924	5,801	4,803	4,979
70%	5,508	5,494	6,430	8,199	10,397	9,342	6,775	4,315	4,735	5,063	4,587	4,626
80%	5,203	5,001	6,041	7,062	8,277	7,989	6,212	3,893	4,628	4,604	4,514	4,519
90%	4,834	4,737	5,633	6,027	6,443	7,526	5,105	3,567	4,091	4,042	4,138	3,821
Long Term Full Simulation	6,807	7,533	11,593	13,721	15,411	14,178	10,633	6,970	6,178	6,588	5,448	6,512
Water Year Types												
Wet	8,360	8,491	12,066	19,158	19,714	18,215	15,244	10,353	6,774	7,167	6,430	9,367
Above Norm	6,918	8,818	12,248	16,754	19,387	17,676	12,678	7,756	6,347	7,852	5,532	6,819
Below Norm	6,694	7,706	12,861	12,461	14,767	11,779	9,226	5,469	5,994	6,400	4,497	5,340
Dry	5,595	6,490	11,662	8,565	11,557	11,568	7,227	4,710	6,021	6,251	4,763	4,666
Critical	5,281	5,534	8,328	8,114	8,644	8,647	5,348	3,995	5,166	4,791	5,373	4,160
Dry & Crit	5,469	6,108	10,329	8,385	10,392	10,399	6,475	4,424	5,679	5,667	5,007	4,463

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	9,251	12,071	21,074	22,212	22,553	21,566	19,984	13,823	8,527	9,177	7,145	10,846
20%	8,263	9,309	19,058	21,086	21,389	20,298	17,789	10,439	7,961	8,752	6,614	8,417
30%	7,471	7,537	13,981	19,481	20,630	18,848	11,759	6,709	7,536	7,958	5,848	7,421
40%	6,788	6,693	11,835	18,006	19,566	16,879	9,528	5,319	6,254	7,638	5,570	6,669
50%	6,486	6,165	8,529	11,222	16,337	13,763	8,351	5,038	5,730	6,950	5,180	5,476
60%	6,178	5,713	7,566	9,551	13,332	11,555	7,589	4,815	5,002	5,877	4,901	4,990
70%	5,764	5,539	6,552	8,082	10,400	9,423	6,775	4,663	4,768	5,456	4,605	4,634
80%	5,194	5,237	6,012	7,074	8,315	8,094	6,123	4,550	4,655	4,712	4,518	4,526
90%	4,835	4,768	5,627	6,051	6,493	7,287	5,048	3,896	4,282	4,009	4,329	3,821
Long Term												
Full Simulation	6,857	7,449	11,525	13,691	15,398	14,148	10,608	6,976	6,284	6,732	5,503	6,534
Water Year Types												
Wet	8,416	8,544	12,046	19,100	19,698	18,273	15,214	10,423	6,804	7,335	6,278	9,347
Above Norm	7,077	8,806	12,126	16,727	19,257	17,765	12,535	7,230	6,284	7,878	5,735	6,839
Below Norm	6,858	7,101	12,677	12,430	14,760	11,779	9,059	5,370	6,198	6,460	4,589	5,431
Dry	5,570	6,561	11,634	8,543	11,510	11,363	7,281	5,023	6,248	6,527	4,856	4,680
Critical	5,188	5,461	8,289	8,130	8,798	8,537	5,501	4,059	5,311	4,901	5,628	4,202
Dry & Crit	5,417	6,121	10,296	8,378	10,426	10,232	6,569	4,637	5,873	5,877	5,165	4,489

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4	-365	-117	-35	1	-1	-1	-1,177	84	-51	282	-19
20%	101	-9	-311	3	-44	-1	2	-10	-8	59	242	-22
30%	-71	178	-859	160	-27	-6	-6	-323	259	235	-12	1
40%	-3	-25	-90	2	-157	-136	-210	-175	259	374	30	123
50%	148	31	-59	16	13	-478	27	49	475	194	9	64
60%	357	-88	3	31	1	-17	-1	186	78	76	98	11
70%	256	45	123	-116	3	81	0	348	32	393	18	8
80%	-9	236	-29	11	37	105	-89	657	28	107	5	6
90%	1	31	-6	24	50	-238	-58	329	190	-33	190	0
Long Term												
Full Simulation	50	-84	-68	-30	-13	-30	-25	6	106	144	55	21
Water Year Types												
Wet	55	53	-20	-58	-16	58	-29	70	30	168	-152	-20
Above Norm	159	-12	-122	-27	-129	89	-143	-526	-64	26	203	20
Below Norm	164	-605	-184	-31	-6	-1	-167	-99	205	60	92	92
Dry	-25	71	-28	-22	-47	-205	54	313	228	276	93	14
Critical	-93	-73	-39	15	154	-110	153	64	145	110	255	43
Dry & Crit	-52	13	-32	-7	34	-167	93	213	195	209	158	25

Feather River Below Thermalito Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,770	2,500	5,948	13,307	16,571	14,177	7,799	10,424	6,425	9,682	8,054	3,934
20%	3,385	2,500	4,185	4,878	10,840	10,127	3,840	5,825	5,051	9,344	7,685	2,371
30%	2,937	2,202	3,228	1,700	7,488	6,450	1,994	3,485	4,755	9,032	7,300	2,031
40%	2,563	1,865	2,094	1,700	2,625	4,677	1,347	2,556	4,420	8,568	5,839	1,535
50%	1,991	1,700	1,700	1,700	1,700	1,700	1,000	1,901	3,989	8,095	4,524	1,377
60%	1,770	1,700	1,700	1,700	1,700	1,700	1,000	1,485	3,580	6,831	3,218	1,214
70%	1,700	1,425	1,700	1,200	1,700	1,700	1,000	1,000	3,318	4,605	2,505	1,061
80%	1,200	1,200	1,200	900	1,200	1,000	1,000	1,000	2,946	3,758	2,043	1,000
90%	1,106	1,065	916	900	900	800	779	1,000	2,179	2,967	1,680	1,000
Long Term												
Full Simulation	2,283	2,032	3,285	4,437	5,363	5,819	2,929	3,848	4,303	6,918	4,754	1,906
Water Year Types												
Wet	2,853	3,014	5,668	10,350	11,208	12,566	6,508	7,535	5,169	6,330	4,666	1,630
Above Norm	3,233	2,231	3,486	2,388	5,288	6,408	1,671	3,197	3,213	8,638	7,316	2,223
Below Norm	2,331	1,685	1,640	1,916	2,805	2,010	1,118	1,514	3,750	8,738	7,338	3,221
Dry	1,428	1,350	2,056	1,394	1,575	1,458	1,190	2,121	4,500	7,110	2,694	1,377
Critical	1,325	1,131	1,682	1,180	1,442	1,597	1,155	1,826	3,868	4,061	2,456	1,449

Dry & Crit	1,387	1,263	1,907	1,309	1,522	1,514	1,176	2,003	4,247	5,890	2,599	1,406

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,682	2,500	5,947	13,307	16,571	14,180	7,799	10,424	6,132	9,706	8,048	3,719
20%	3,394	2,500	4,191	4,878	10,840	10,127	3,840	5,825	5,117	9,364	7,858	2,572
30%	2,868	2,477	3,228	1,700	7,488	6,450	1,993	3,485	4,817	9,123	7,452	1,967
40%	2,406	1,863	2,205	1,700	2,637	4,685	1,304	2,545	4,418	8,573	5,613	1,549
50%	1,899	1,700	1,700	1,700	1,700	2,245	1,000	1,956	3,959	8,152	4,926	1,376
60%	1,770	1,700	1,700	1,700	1,700	1,700	1,000	1,412	3,654	6,636	3,271	1,213
70%	1,700	1,418	1,700	1,200	1,700	1,700	1,000	1,000	3,317	4,446	2,494	1,061
80%	1,200	1,200	1,200	900	1,200	1,000	1,000	1,000	2,944	3,833	2,070	1,000
90%	1,094	1,065	918	900	900	800	778	1,000	2,161	3,268	1,561	1,000
Long Term Full Simulation	2,260	2,028	3,286	4,427	5,361	5,814	2,929	3,825	4,285	6,962	4,801	1,903
Water Year Types												
Wet	2,809	3,014	5,676	10,328	11,208	12,532	6,508	7,535	5,159	6,283	4,845	1,601
Above Norm	3,100	2,234	3,476	2,372	5,268	6,363	1,671	3,179	3,216	8,681	7,283	2,191
Below Norm	2,379	1,674	1,660	1,918	2,806	2,011	1,118	1,487	3,651	8,761	7,336	3,362
Dry	1,413	1,353	2,043	1,394	1,575	1,513	1,190	2,051	4,490	7,310	2,652	1,340
Critical	1,359	1,108	1,682	1,175	1,445	1,596	1,150	1,824	3,889	4,090	2,490	1,413
Dry & Crit	1,392	1,255	1,899	1,307	1,523	1,546	1,174	1,960	4,250	6,022	2,587	1,369

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-88	0	-1	0	0	2	0	0	-293	24	-6	-214
20%	9	0	6	0	0	0	0	0	65	20	172	201
30%	-69	275	0	0	0	0	-1	0	62	91	153	-65
40%	-157	-2	110	0	12	8	-42	-11	-1	6	-226	14
50%	-93	0	0	0	0	545	0	55	-31	57	403	0
60%	0	0	0	0	0	0	0	-73	75	-195	53	-1
70%	0	-7	0	0	0	0	0	0	-1	-160	-11	0
80%	0	0	0	0	0	0	0	0	-1	74	27	0
90%	-12	0	1	0	0	0	0	0	-18	302	-119	0
Long Term Full Simulation	-23	-4	1	-10	-2	-5	-1	-23	-19	43	47	-3
Water Year Types												
Wet	-44	0	7	-23	0	-34	0	0	-10	-47	179	-28
Above Norm	-133	3	-10	-16	-21	-45	0	-18	3	43	-34	-32
Below Norm	48	-11	19	2	1	1	0	-27	-99	23	-2	141
Dry	-14	3	-13	0	0	55	0	-70	-9	200	-41	-37
Critical	33	-24	0	-5	3	-1	-5	-2	21	29	33	-36
Dry & Crit	5	-8	-8	-2	1	33	-2	-43	3	132	-11	-36

Fremont Weir Spill

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	397	7,126	24,465	38,532	17,733	1,219	0	0	0	0	0
20%	0	33	2,039	9,138	11,130	4,590	0	0	0	0	0	0
30%	0	9	478	3,737	7,656	2,518	0	0	0	0	0	0
40%	0	1	180	1,301	3,879	1,081	0	0	0	0	0	0
50%	0	0	101	664	2,175	287	0	0	0	0	0	0
60%	0	0	26	236	959	135	0	0	0	0	0	0
70%	0	0	10	39	309	77	0	0	0	0	0	0
80%	0	0	1	20	101	14	0	0	0	0	0	0
90%	0	0	0	5	30	0	0	0	0	0	0	0
Long Term Full Simulation	18	322	2,635	7,851	10,711	6,209	1,096	101	29	0	0	0
Water Year Types												
Wet	0	437	4,168	21,846	26,140	16,226	3,348	319	93	0	0	0

Above Norm	0	633	1,027	4,719	10,610	6,147	171	0	0	0	0	0
Below Norm	103	237	2,092	797	3,260	467	56	0	0	0	0	0
Dry	0	231	3,631	376	1,224	350	0	0	0	0	0	0
Critical	0	2	62	104	304	55	0	0	0	0	0	0
Dry & Crit	0	140	2,203	267	856	232	0	0	0	0	0	0

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	398	7,199	24,466	33,515	17,730	1,215	0	0	0	0	0
20%	0	32	1,985	9,136	11,123	4,015	0	0	0	0	0	0
30%	0	9	480	3,443	7,654	2,518	0	0	0	0	0	0
40%	0	1	161	1,240	3,881	1,081	0	0	0	0	0	0
50%	0	0	101	679	2,134	280	0	0	0	0	0	0
60%	0	0	25	236	959	136	0	0	0	0	0	0
70%	0	0	12	36	310	78	0	0	0	0	0	0
80%	0	0	1	20	104	14	0	0	0	0	0	0
90%	0	0	0	5	35	0	0	0	0	0	0	0
Long Term Full Simulation	15	296	2,544	7,783	10,562	6,192	1,091	101	29	0	0	0
Water Year Types												
Wet	0	436	4,160	21,716	25,821	16,235	3,333	318	93	0	0	0
Above Norm	0	604	1,018	4,598	10,451	6,019	170	0	0	0	0	0
Below Norm	88	132	2,016	796	3,168	468	55	0	0	0	0	0
Dry	0	213	3,293	336	1,182	344	0	0	0	0	0	0
Critical	0	2	62	104	307	55	0	0	0	0	0	0
Dry & Crit	0	129	2,001	244	832	228	0	0	0	0	0	0

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	1	72	1	-5,017	-3	-3	0	0	0	0	0
20%	0	-1	-54	-2	-7	-575	0	0	0	0	0	0
30%	0	0	2	-294	-2	-1	0	0	0	0	0	0
40%	0	0	-20	-61	2	0	0	0	0	0	0	0
50%	0	0	0	15	-40	-6	0	0	0	0	0	0
60%	0	0	-1	0	0	2	0	0	0	0	0	0
70%	0	0	2	-2	1	1	0	0	0	0	0	0
80%	0	0	0	0	3	0	0	0	0	0	0	0
90%	0	0	0	0	4	0	0	0	0	0	0	0
Long Term Full Simulation	-2	-26	-91	-68	-149	-17	-5	0	0	0	0	0
Water Year Types												
Wet	0	0	-9	-130	-319	9	-15	0	0	0	0	0
Above Norm	0	-28	-9	-122	-159	-128	-1	0	0	0	0	0
Below Norm	-15	-104	-76	-1	-92	1	0	0	0	0	0	0
Dry	0	-18	-338	-39	-43	-7	0	0	0	0	0	0
Critical	0	0	0	0	3	0	0	0	0	0	0	0
Dry & Crit	0	-11	-203	-24	-24	-4	0	0	0	0	0	0

Yolo Bypass Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	63	735	11,455	33,867	45,187	22,988	6,589	278	68	48	186	128
20%	62	160	5,071	15,968	18,672	8,926	3,336	78	68	48	55	59
30%	58	50	1,564	6,541	10,992	5,285	1,146	73	68	48	55	59
40%	53	27	437	3,219	8,991	2,915	250	70	68	48	55	59
50%	45	10	255	1,225	4,300	1,269	131	68	67	48	55	59
60%	40	8	135	527	1,685	458	111	64	67	48	55	59
70%	29	5	55	273	584	274	87	63	66	48	55	57
80%	16	1	17	75	215	94	78	58	64	48	55	55
90%	5	0	0	24	71	45	56	53	62	48	54	52

Long Term Full Simulation	123	503	3,926	10,628	14,375	8,761	2,551	266	120	48	100	73
Water Year Types												
Wet	86	714	5,272	28,110	33,906	21,896	6,719	629	237	48	143	73
Above Norm	37	761	2,062	7,931	14,448	9,175	1,665	194	66	48	95	65
Below Norm	435	489	3,656	1,818	5,170	1,157	547	67	66	48	114	85
Dry	47	355	5,812	830	2,409	1,037	308	77	67	48	62	70
Critical	41	24	358	422	673	347	107	68	64	48	54	75
Dry & Crit	45	223	3,630	667	1,715	761	227	73	66	48	59	72

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	63	731	11,455	33,868	44,952	22,981	6,589	278	68	48	186	128
20%	62	156	4,857	15,966	18,602	8,630	3,336	78	68	48	55	59
30%	58	50	1,436	6,668	10,897	5,285	1,146	73	68	48	55	59
40%	53	28	437	3,062	8,697	2,915	250	70	68	48	55	59
50%	45	10	257	1,223	4,136	1,262	131	68	67	48	55	59
60%	40	8	135	527	1,687	458	111	64	67	48	55	59
70%	29	5	55	273	583	186	87	63	66	48	55	57
80%	16	1	17	74	216	86	78	58	64	48	55	55
90%	5	0	0	37	71	42	56	53	62	48	54	52
Long Term Full Simulation	121	470	3,842	10,558	14,220	8,729	2,545	266	120	48	100	74
Water Year Types												
Wet	86	714	5,263	27,971	33,572	21,904	6,703	629	237	48	143	73
Above Norm	37	732	2,053	7,816	14,283	9,036	1,664	194	66	48	95	65
Below Norm	422	342	3,514	1,817	5,067	1,159	547	67	66	48	114	85
Dry	47	339	5,559	789	2,374	970	308	77	67	48	62	70
Critical	41	24	358	427	674	347	107	68	64	48	54	79
Dry & Crit	45	213	3,479	644	1,694	721	227	73	66	48	59	74

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	-4	0	1	-236	-8	0	0	0	0	0	0
20%	0	-3	-215	-2	-70	-296	0	0	0	0	0	0
30%	0	0	-128	127	-96	0	0	0	0	0	0	0
40%	0	0	0	-158	-295	0	0	0	0	0	0	0
50%	0	0	2	-2	-164	-6	0	0	0	0	0	0
60%	0	0	0	0	1	0	0	0	0	0	0	0
70%	0	0	0	0	-1	-88	0	0	0	0	0	0
80%	0	0	0	-1	1	-8	0	0	0	0	0	0
90%	0	0	0	14	0	-3	0	0	0	0	0	0
Long Term Full Simulation	-2	-33	-84	-70	-156	-32	-5	0	0	0	0	1
Water Year Types												
Wet	0	0	-9	-139	-334	9	-16	0	0	0	0	0
Above Norm	0	-29	-9	-116	-166	-139	-1	0	0	0	0	0
Below Norm	-13	-147	-141	-1	-103	1	0	0	0	0	0	0
Dry	0	-16	-253	-41	-36	-67	0	0	0	0	0	0
Critical	0	0	0	4	1	0	0	0	0	0	0	4
Dry & Crit	0	-10	-152	-23	-21	-40	0	0	0	0	0	1

Sacramento River at Freeport Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	14,217	23,865	49,521	63,196	66,407	63,147	52,016	42,002	26,410	24,097	18,090	16,529
20%	13,218	15,209	34,519	54,007	59,776	51,360	41,524	29,794	19,660	22,993	17,552	15,130
30%	12,643	14,051	22,801	41,149	51,019	42,300	25,921	18,743	16,027	22,052	17,220	14,458
40%	12,206	13,595	19,108	27,505	45,783	32,542	23,370	14,959	15,466	19,544	16,661	13,788
50%	11,619	12,772	15,632	23,939	32,432	24,893	18,464	13,439	15,184	18,808	15,833	12,872

60%	10,155	11,170	15,188	18,559	25,495	21,941	14,457	12,511	14,598	17,460	15,032	10,899
70%	8,935	10,140	14,640	14,653	20,731	19,092	12,918	11,624	14,100	16,360	11,722	9,950
80%	8,548	9,075	12,620	13,007	17,254	15,408	11,822	10,798	13,216	14,058	10,423	9,363
90%	7,444	7,476	10,017	11,985	14,658	11,941	10,815	9,530	11,734	10,235	9,579	7,570
Long Term												
Full Simulation	11,422	14,405	23,143	30,867	37,658	32,761	24,908	19,514	17,552	18,274	14,609	12,548
Water Year Types												
Wet	13,789	17,577	26,507	50,017	56,996	50,042	40,159	31,656	23,795	20,065	17,337	15,760
Above Norm	12,653	16,589	23,808	37,542	44,917	43,831	27,568	21,281	17,225	22,137	17,511	13,820
Below Norm	12,750	15,512	26,703	22,494	32,499	22,783	19,573	14,716	15,730	20,363	15,838	13,195
Dry	8,843	11,784	21,962	16,451	22,764	20,605	14,494	11,888	14,553	16,627	10,980	10,020
Critical	7,384	7,988	12,807	14,094	16,858	14,123	11,050	8,473	10,975	10,561	9,805	7,355
Dry & Crit	8,259	10,266	18,300	15,508	20,401	18,012	13,117	10,522	13,122	14,201	10,510	8,954

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	14,217	22,954	48,866	63,081	66,404	63,145	52,209	42,003	24,897	24,162	18,090	16,509
20%	13,340	14,831	34,528	54,011	59,772	51,104	41,525	29,763	19,660	23,355	17,525	15,109
30%	12,738	14,054	22,781	40,246	49,361	42,277	25,667	18,892	16,027	21,997	17,192	14,458
40%	12,435	13,656	19,110	27,337	44,514	32,551	23,329	14,955	15,415	20,256	16,661	13,969
50%	11,639	12,970	15,476	23,965	30,587	25,128	18,467	13,439	15,152	19,055	15,792	13,069
60%	9,784	11,509	15,188	18,561	25,496	21,948	14,452	12,511	14,604	18,268	15,129	10,957
70%	8,992	9,932	14,588	15,452	20,736	19,108	12,918	11,788	13,979	16,193	12,649	9,951
80%	8,514	8,996	12,624	13,101	17,260	15,372	11,748	10,817	13,168	14,158	10,296	9,431
90%	7,394	7,476	10,039	11,987	14,875	11,964	10,836	9,530	12,047	10,250	9,692	7,573
Long Term												
Full Simulation	11,431	14,288	23,075	30,866	37,523	32,733	24,848	19,466	17,529	18,453	14,672	12,556
Water Year Types												
Wet	13,774	17,608	26,458	49,983	56,982	50,094	40,086	31,723	23,773	20,112	17,399	15,685
Above Norm	12,672	16,508	23,714	37,475	44,242	43,778	27,423	20,726	17,030	22,285	17,497	13,823
Below Norm	12,836	14,792	26,488	22,719	32,301	22,789	19,423	14,588	15,717	20,700	15,781	13,428
Dry	8,763	11,889	21,980	16,365	22,671	20,510	14,459	12,005	14,529	16,935	11,051	9,974
Critical	7,476	7,883	12,768	14,096	17,012	14,012	11,168	8,531	11,112	10,681	10,079	7,365
Dry & Crit	8,248	10,287	18,296	15,457	20,407	17,911	13,142	10,616	13,162	14,433	10,662	8,930

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-1	-911	-655	-115	-3	-2	193	1	-1,513	65	0	-20
20%	121	-379	9	4	-4	-256	1	-30	0	362	-27	-21
30%	95	3	-21	-902	-1,658	-24	-254	150	0	-54	-28	0
40%	229	61	2	-168	-1,269	9	-41	-3	-51	712	0	182
50%	20	198	-156	26	-1,845	235	3	0	-32	247	-41	197
60%	-371	339	0	2	1	6	-5	0	6	808	97	58
70%	57	-208	-51	800	5	15	0	164	-121	-167	926	1
80%	-34	-78	5	95	6	-36	-75	18	-48	100	-127	68
90%	-50	0	22	2	217	23	21	0	312	15	113	3
Long Term												
Full Simulation	9	-117	-68	-1	-135	-27	-60	-48	-23	179	63	8
Water Year Types												
Wet	-15	32	-50	-34	-14	52	-72	67	-23	47	61	-76
Above Norm	19	-81	-94	-68	-675	-52	-145	-555	-195	148	-14	3
Below Norm	86	-720	-215	225	-198	6	-149	-128	-14	337	-57	234
Dry	-80	105	18	-86	-93	-95	-35	118	-24	308	71	-46
Critical	92	-105	-39	2	154	-111	118	59	137	120	274	10
Dry & Crit	-11	21	-5	-51	6	-102	26	94	40	233	152	-23

Sacramento River at Rio Vista Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,918	19,870	58,529	88,189	106,342	76,061	54,351	35,314	20,902	14,032	10,529	9,590

20%	9,113	11,047	34,890	57,858	68,315	52,857	37,525	24,197	11,607	13,290	10,167	8,727
30%	7,856	9,369	19,473	42,299	57,233	41,164	21,603	14,534	9,060	12,629	9,905	8,184
40%	7,150	8,768	15,827	27,282	46,276	28,370	19,131	11,099	8,638	11,042	9,447	7,743
50%	6,586	8,185	11,900	20,748	30,356	21,355	14,690	9,829	8,423	10,458	8,886	7,133
60%	5,526	7,317	11,087	15,463	23,272	18,992	11,118	9,053	8,119	9,571	8,353	6,021
70%	4,903	6,342	10,086	12,285	17,652	15,453	9,676	8,362	7,709	8,903	6,093	5,181
80%	4,457	5,506	8,903	10,305	13,955	12,002	8,766	7,488	7,161	7,201	5,183	4,791
90%	3,675	4,082	6,573	9,396	11,790	9,006	7,931	6,431	6,147	4,561	4,648	3,548
Long Term Full Simulation	7,116	10,624	22,405	36,847	46,344	36,037	22,657	15,381	10,903	10,098	8,088	6,942
Water Year Types												
Wet	9,428	13,519	26,493	71,410	82,852	64,336	40,185	26,310	16,548	11,306	9,966	9,098
Above Norm	7,824	12,542	21,190	40,261	52,989	46,061	24,052	16,870	10,722	12,710	10,064	7,773
Below Norm	8,231	11,668	25,319	20,517	32,671	19,695	15,965	10,965	8,861	11,505	8,938	7,388
Dry	4,700	8,324	23,403	14,164	21,224	17,680	11,337	8,564	8,016	8,998	5,576	5,246
Critical	3,718	4,662	9,870	11,626	14,229	11,300	8,075	5,586	5,568	4,876	4,818	3,465
Dry & Crit	4,307	6,860	17,989	13,149	18,426	15,128	10,032	7,373	7,037	7,350	5,273	4,533

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,924	19,863	57,628	88,268	106,354	76,051	54,329	35,307	15,452	14,079	10,529	9,576
20%	9,102	11,032	34,083	57,882	68,309	52,735	37,517	24,156	11,607	13,572	10,169	8,717
30%	7,951	9,460	19,439	41,460	56,152	40,575	21,572	14,663	9,062	12,592	9,853	8,184
40%	7,394	8,827	15,822	27,280	45,322	28,375	19,081	11,240	8,603	11,451	9,458	7,843
50%	6,740	8,258	11,960	20,775	30,096	21,357	14,693	9,857	8,421	10,633	8,838	7,374
60%	5,416	7,319	11,090	15,464	23,274	18,206	11,114	9,055	8,135	10,176	8,402	5,807
70%	4,955	6,404	10,086	12,551	17,625	15,510	9,676	8,422	7,682	8,799	6,685	5,150
80%	4,420	5,499	8,902	10,371	14,257	11,971	8,751	7,520	6,933	7,308	5,110	4,810
90%	3,676	4,166	6,731	9,406	11,792	9,026	7,949	6,431	6,248	4,571	4,692	3,549
Long Term Full Simulation	7,142	10,494	22,256	36,778	46,073	35,980	22,600	15,339	10,834	10,220	8,132	6,948
Water Year Types												
Wet	9,433	13,536	26,441	71,242	82,505	64,390	40,105	26,368	16,531	11,338	10,007	9,047
Above Norm	7,911	12,459	21,098	40,086	52,237	45,877	23,925	16,388	10,228	12,810	10,055	7,775
Below Norm	8,359	10,874	24,980	20,711	32,402	19,701	15,836	10,853	8,852	11,733	8,899	7,546
Dry	4,656	8,435	23,150	14,048	21,109	17,531	11,306	8,666	7,999	9,209	5,628	5,215
Critical	3,721	4,585	9,829	11,636	14,368	11,197	8,177	5,637	5,665	4,957	5,006	3,475
Dry & Crit	4,282	6,895	17,822	13,083	18,412	14,997	10,054	7,454	7,065	7,508	5,379	4,519

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	6	-7	-902	79	12	-10	-22	-8	-5,450	47	0	-14
20%	-12	-15	-807	24	-6	-123	-8	-41	0	281	2	-11
30%	95	90	-34	-839	-1,081	-588	-31	130	2	-37	-52	0
40%	244	59	-5	-2	-954	5	-51	141	-35	409	11	100
50%	154	73	60	26	-260	1	3	28	-2	175	-48	241
60%	-110	2	4	1	2	-785	-4	2	16	604	49	-214
70%	53	62	0	266	-27	57	0	59	-27	-103	591	-31
80%	-36	-7	-1	66	302	-31	-15	32	-228	108	-72	19
90%	1	84	158	9	3	20	18	0	102	10	44	2
Long Term Full Simulation	27	-129	-149	-70	-271	-57	-58	-42	-69	122	44	6
Water Year Types												
Wet	5	17	-52	-168	-346	54	-79	58	-16	32	41	-51
Above Norm	87	-83	-92	-174	-752	-185	-127	-482	-494	100	-9	2
Below Norm	127	-794	-339	194	-269	7	-130	-112	-10	228	-38	158
Dry	-44	111	-252	-116	-116	-150	-31	102	-17	211	52	-31
Critical	4	-77	-41	10	138	-103	102	51	97	81	188	10
Dry & Crit	-25	36	-168	-66	-14	-131	22	82	28	159	106	-15

Delta Cross Channel Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,762	4,694	7,645	9,472	9,900	9,424	7,949	6,628	7,019	8,736	6,826	6,336
20%	4,431	4,542	5,660	8,228	8,988	7,876	6,570	5,014	5,809	8,376	6,648	5,886
30%	4,233	4,407	4,288	6,534	7,853	6,668	4,504	3,548	5,610	8,074	6,541	5,670
40%	4,063	4,097	4,095	4,733	7,145	5,376	4,165	3,042	5,522	7,272	6,362	5,454
50%	3,877	3,791	3,865	4,261	5,369	4,373	3,520	2,839	5,436	7,032	6,096	5,161
60%	3,770	3,620	3,720	3,544	4,454	3,983	2,988	2,717	5,296	6,595	5,841	4,527
70%	3,592	3,427	3,541	3,037	3,828	3,602	2,783	2,604	5,099	6,248	4,775	4,219
80%	3,387	3,209	3,211	2,809	3,366	3,117	2,640	2,492	4,899	5,499	4,355	4,033
90%	3,276	2,951	3,079	2,673	3,022	2,656	2,505	2,324	4,464	4,254	4,085	3,454
Long Term Full Simulation	3,953	3,959	4,562	5,177	6,069	5,410	4,368	3,648	5,509	6,857	5,703	5,057
Water Year Types												
Wet	3,935	4,451	5,103	7,715	8,628	7,695	6,386	5,253	6,262	7,435	6,580	6,090
Above Norm	4,370	4,456	4,660	6,065	7,034	6,872	4,720	3,883	5,292	8,102	6,637	5,465
Below Norm	4,518	4,009	4,967	4,068	5,389	4,092	3,663	3,013	5,655	7,530	6,097	5,265
Dry	3,735	3,520	4,324	3,266	4,097	3,805	2,991	2,640	5,302	6,327	4,535	4,244
Critical	3,240	2,993	3,175	2,951	3,311	2,945	2,534	2,187	4,236	4,365	4,158	3,386
Dry & Crit	3,537	3,309	3,864	3,140	3,782	3,461	2,808	2,458	4,876	5,542	4,384	3,901

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,737	4,679	7,573	9,457	9,898	9,424	7,974	6,628	7,130	8,753	6,826	6,330
20%	4,328	4,542	5,661	8,228	8,988	7,843	6,568	5,006	5,966	8,498	6,644	5,879
30%	4,180	4,365	4,288	6,413	7,644	6,664	4,468	3,568	5,623	8,056	6,532	5,670
40%	4,022	4,097	4,092	4,707	6,981	5,377	4,161	3,044	5,523	7,497	6,363	5,512
50%	3,912	3,863	3,900	4,264	5,149	4,404	3,520	2,839	5,464	7,108	6,090	5,237
60%	3,773	3,527	3,720	3,544	4,455	3,984	2,987	2,730	5,317	6,859	5,874	4,543
70%	3,644	3,388	3,541	3,126	3,824	3,604	2,783	2,622	5,092	6,195	5,069	4,221
80%	3,447	3,209	3,215	2,819	3,370	3,112	2,630	2,498	4,895	5,532	4,313	4,054
90%	3,281	2,915	3,080	2,673	3,048	2,660	2,508	2,324	4,547	4,258	4,118	3,455
Long Term Full Simulation	3,933	3,937	4,558	5,177	6,051	5,407	4,360	3,641	5,555	6,914	5,723	5,059
Water Year Types												
Wet	3,915	4,465	5,096	7,711	8,626	7,702	6,376	5,262	6,256	7,450	6,600	6,065
Above Norm	4,302	4,430	4,648	6,056	6,945	6,865	4,701	3,809	5,591	8,150	6,633	5,466
Below Norm	4,464	3,936	4,944	4,098	5,363	4,093	3,643	2,996	5,651	7,638	6,079	5,341
Dry	3,702	3,493	4,341	3,255	4,085	3,792	2,987	2,655	5,295	6,426	4,558	4,229
Critical	3,329	2,965	3,177	2,951	3,331	2,931	2,549	2,194	4,276	4,404	4,246	3,390
Dry & Crit	3,553	3,282	3,876	3,133	3,783	3,448	2,812	2,471	4,888	5,617	4,433	3,894

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-25	-14	-72	-15	-2	0	25	0	111	18	0	-6
20%	-104	0	1	1	-1	-34	-2	-8	157	122	-4	-7
30%	-53	-42	0	-121	-209	-3	-36	20	14	-18	-9	0
40%	-41	1	-3	-26	-164	1	-4	2	0	225	0	57
50%	35	72	35	3	-220	31	0	0	27	76	-6	76
60%	2	-93	0	0	1	1	-1	13	21	265	34	17
70%	52	-39	0	90	-4	3	0	18	-7	-54	295	3
80%	60	0	4	10	3	-5	-10	6	-4	33	-41	21
90%	6	-35	1	0	27	3	3	0	83	5	33	1
Long Term Full Simulation	-20	-22	-4	0	-18	-4	-8	-6	45	58	20	2
Water Year Types												
Wet	-20	14	-6	-4	-2	7	-10	9	-6	15	20	-24
Above Norm	-68	-26	-12	-9	-89	-7	-19	-73	299	48	-4	1
Below Norm	-54	-73	-23	30	-26	1	-20	-17	-4	108	-18	75
Dry	-33	-27	18	-11	-12	-13	-5	16	-7	99	23	-15
Critical	88	-28	2	0	20	-15	16	8	41	39	88	3

Dry & Crit	16	-27	11	-7	1	-13	3	12	12	75	49	-8

San Joaquin River at Vernalis Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,559	3,001	3,993	9,545	13,887	14,790	13,650	12,661	12,203	7,296	3,351	3,337
20%	3,182	2,784	2,891	5,125	10,064	9,751	10,592	7,978	8,138	3,726	2,793	2,791
30%	3,014	2,545	2,393	3,804	6,982	8,363	8,840	5,640	3,323	2,571	2,429	2,541
40%	2,881	2,407	2,208	2,708	4,298	6,598	7,966	4,793	2,517	1,771	1,887	2,319
50%	2,605	2,217	2,105	2,382	3,148	4,317	6,607	4,108	2,040	1,524	1,501	1,935
60%	2,459	2,162	2,046	2,288	2,649	3,620	5,282	3,370	1,775	1,355	1,410	1,844
70%	2,249	2,070	1,936	2,071	2,363	2,826	3,574	2,383	1,459	1,180	1,329	1,762
80%	2,101	1,950	1,837	1,883	2,132	2,409	2,869	2,148	1,338	1,072	1,235	1,665
90%	1,825	1,759	1,669	1,698	1,897	2,225	1,755	1,469	981	882	1,062	1,464
Long Term												
Full Simulation	2,713	2,604	3,225	4,822	6,313	7,160	7,480	5,691	4,519	3,203	2,039	2,327
Water Year Types												
Wet	3,450	3,608	4,520	9,333	11,508	13,279	12,738	10,298	9,342	6,723	3,187	3,282
Above Norm	2,821	2,406	2,631	4,218	6,250	7,485	8,164	5,670	4,671	2,612	2,002	2,332
Below Norm	2,701	2,330	3,759	3,034	5,379	5,128	6,889	4,671	2,391	1,816	1,829	2,108
Dry	2,212	2,083	2,336	2,146	2,467	3,063	3,715	2,590	1,475	1,176	1,292	1,764
Critical	1,772	1,728	1,723	1,748	1,976	2,095	1,739	1,568	969	827	955	1,355
Dry & Crit	2,036	1,941	2,091	1,987	2,271	2,676	2,925	2,181	1,272	1,036	1,157	1,600

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	3,559	3,001	3,993	9,545	13,884	14,790	13,650	12,661	12,203	7,296	3,351	3,341
20%	3,182	2,784	2,891	5,125	10,053	9,751	10,595	7,978	8,139	3,727	2,801	2,791
30%	3,014	2,545	2,393	3,804	6,982	8,363	8,840	5,639	3,330	2,571	2,429	2,543
40%	2,880	2,408	2,208	2,708	4,298	6,598	7,966	4,792	2,517	1,771	1,887	2,319
50%	2,606	2,217	2,105	2,382	3,148	4,317	6,607	4,108	2,040	1,524	1,501	1,938
60%	2,460	2,162	2,046	2,288	2,649	3,620	5,282	3,374	1,775	1,355	1,411	1,845
70%	2,250	2,070	1,936	2,071	2,364	2,826	3,574	2,383	1,459	1,180	1,329	1,761
80%	2,101	1,950	1,837	1,883	2,132	2,409	2,869	2,148	1,340	1,076	1,237	1,664
90%	1,825	1,759	1,669	1,698	1,897	2,225	1,754	1,468	981	884	1,061	1,466
Long Term												
Full Simulation	2,713	2,604	3,225	4,822	6,312	7,160	7,480	5,691	4,520	3,204	2,040	2,328
Water Year Types												
Wet	3,450	3,608	4,520	9,333	11,508	13,279	12,738	10,298	9,342	6,724	3,187	3,282
Above Norm	2,822	2,406	2,631	4,218	6,250	7,485	8,164	5,671	4,671	2,613	2,003	2,332
Below Norm	2,701	2,330	3,758	3,034	5,377	5,128	6,889	4,672	2,392	1,818	1,830	2,109
Dry	2,212	2,083	2,336	2,146	2,467	3,063	3,715	2,591	1,476	1,176	1,292	1,764
Critical	1,772	1,728	1,723	1,748	1,976	2,095	1,739	1,568	969	828	956	1,355
Dry & Crit	2,036	1,941	2,091	1,987	2,271	2,676	2,925	2,182	1,273	1,037	1,158	1,601

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	-3	0	0	0	0	0	0	4
20%	0	0	0	0	-11	0	3	0	1	1	8	0
30%	0	0	0	0	0	0	0	-1	7	0	0	1
40%	0	0	0	0	0	0	0	-1	0	0	0	0
50%	1	0	0	0	0	0	0	0	0	0	0	3
60%	1	0	0	0	0	0	0	4	0	0	1	1
70%	0	0	0	0	0	0	0	0	0	-1	0	0
80%	0	0	0	0	0	0	0	0	2	5	2	-1
90%	-1	0	0	0	0	0	-1	0	0	2	-1	1
Long Term												
Full Simulation	0	0	0	0	0	0	0	0	1	1	1	0
Water Year Types												
Wet	0	0	0	0	0	0	0	0	0	0	0	0

Above Norm	0	0	0	0	0	0	0	1	1	1	1	0
Below Norm	0	0	0	0	-2	0	0	1	1	2	1	1
Dry	0	0	0	0	0	0	0	0	1	1	1	0
Critical	0	0	0	0	0	0	0	1	1	1	1	0
Dry & Crit	0	0	0	0	0	0	0	0	1	1	1	0

Delta Outflow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	8,625	17,167	66,442	99,374	127,577	90,817	67,182	45,020	30,419	11,167	6,174	12,333
20%	8,231	7,271	36,337	65,922	79,872	65,829	51,013	28,121	14,277	9,903	6,174	11,123
30%	8,000	5,490	19,206	48,060	66,175	47,617	27,528	18,427	10,525	8,519	6,174	10,691
40%	7,561	5,101	12,723	29,038	53,427	35,553	23,580	13,775	9,044	8,000	4,844	10,198
50%	5,180	5,000	9,748	23,479	36,375	26,898	17,705	11,570	8,367	8,000	4,232	4,179
60%	4,617	5,000	7,368	15,771	24,822	22,277	13,798	9,752	7,600	7,000	4,000	3,152
70%	4,500	5,000	5,218	11,826	18,291	17,597	11,630	8,273	7,100	5,000	4,000	3,000
80%	4,500	5,000	5,000	9,358	13,814	13,048	9,673	7,092	7,100	5,000	3,719	3,000
90%	4,500	4,547	5,000	7,848	10,565	9,613	8,592	6,020	4,844	4,000	3,500	3,000
Long Term Full Simulation	6,615	8,956	22,614	42,421	53,763	43,981	28,811	18,987	12,859	8,142	4,965	7,100
Water Year Types												
Wet	8,565	11,677	26,891	85,686	98,600	80,796	52,895	35,511	22,763	11,627	6,631	11,880
Above Norm	7,777	8,743	19,965	46,882	62,198	55,939	29,866	19,980	12,027	9,814	5,535	10,855
Below Norm	6,228	10,399	26,510	22,178	38,048	23,943	20,242	12,408	9,142	7,630	4,155	3,719
Dry	4,666	7,101	24,366	13,692	22,278	20,072	13,316	8,537	6,989	5,088	3,819	3,047
Critical	4,605	4,372	8,824	10,927	13,741	11,495	8,816	5,540	5,375	4,094	3,450	3,015
Dry & Crit	4,641	6,010	18,149	12,586	18,863	16,641	11,516	7,338	6,343	4,690	3,672	3,034

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	8,625	15,947	65,218	99,374	127,083	90,806	67,178	45,005	30,404	11,560	6,174	12,334
20%	8,156	6,402	36,692	65,905	79,866	65,366	49,524	27,716	14,278	9,903	6,174	11,126
30%	8,000	5,592	19,165	46,987	65,142	47,224	27,341	18,407	10,525	8,517	6,174	10,749
40%	7,500	5,119	12,732	29,036	53,430	35,562	23,588	13,732	9,049	8,000	4,844	10,165
50%	5,706	5,000	9,977	23,509	36,387	27,422	17,619	11,429	8,200	8,000	4,241	4,179
60%	4,722	5,000	6,704	15,805	24,613	21,981	13,840	9,952	7,600	7,000	4,000	3,258
70%	4,500	5,000	5,218	11,898	18,261	17,596	11,502	8,718	7,100	5,000	3,955	3,000
80%	4,500	5,000	5,025	9,070	13,820	13,057	9,673	7,100	7,100	5,000	3,579	3,000
90%	4,500	4,646	5,000	7,850	10,650	9,613	8,598	6,378	4,844	4,000	3,410	3,000
Long Term Full Simulation	6,612	8,805	22,405	42,315	53,430	43,928	28,753	18,948	12,810	8,160	4,930	7,116
Water Year Types												
Wet	8,551	11,703	26,694	85,513	98,199	80,877	52,859	35,576	22,740	11,630	6,626	11,889
Above Norm	7,738	8,705	19,855	46,569	61,388	55,747	29,735	19,501	11,818	9,892	5,483	10,868
Below Norm	6,244	9,365	26,211	22,402	37,589	23,917	20,088	12,279	9,098	7,635	4,159	3,779
Dry	4,691	7,180	24,060	13,536	22,149	19,913	13,288	8,655	6,969	5,078	3,734	3,046
Critical	4,599	4,411	8,743	10,870	13,876	11,425	8,847	5,586	5,380	4,142	3,393	3,021
Dry & Crit	4,654	6,072	17,933	12,469	18,840	16,518	11,512	7,427	6,333	4,703	3,598	3,036

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	-1,219	-1,225	1	-493	-11	-4	-15	-15	393	0	1
20%	-75	-869	355	-17	-6	-463	-1,489	-405	1	0	0	3
30%	0	102	-41	-1,074	-1,032	-393	-186	-20	0	-2	0	58
40%	-61	18	9	-2	3	9	8	-44	5	0	0	-34
50%	526	0	229	30	12	524	-86	-141	-167	0	9	0
60%	105	0	-664	35	-209	-295	42	199	0	0	0	106
70%	0	0	0	72	-30	-1	-129	445	0	0	-45	0
80%	0	0	25	-288	6	9	0	8	0	0	-140	0
90%	0	99	0	2	86	0	6	359	0	0	-90	0

Long Term												
Full Simulation	-3	-151	-209	-105	-332	-52	-58	-39	-49	18	-35	16
Water Year Types												
Wet	-14	26	-197	-173	-400	81	-36	65	-22	2	-5	9
Above Norm	-39	-38	-110	-314	-810	-191	-131	-480	-209	79	-52	13
Below Norm	16	-1,034	-300	224	-460	-26	-154	-129	-44	5	5	60
Dry	26	78	-305	-157	-128	-159	-28	118	-20	-10	-85	-1
Critical	-6	39	-81	-57	135	-70	31	46	5	48	-58	7
Dry & Crit	13	63	-216	-117	-23	-124	-5	89	-10	13	-74	2

Old and Middle River Flow

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-2,801	-3,170	-4,292	-3,645	-3,153	-1,822	-908	-1,568	-2,409	-2,964	-3,915	-2,324
20%	-3,317	-3,934	-5,087	-3,645	-4,464	-3,258	-1,999	-2,054	-4,023	-5,219	-5,148	-2,866
30%	-3,848	-4,954	-5,290	-4,516	-4,464	-3,258	-2,132	-2,718	-5,000	-7,611	-6,217	-3,004
40%	-4,105	-5,830	-5,290	-4,516	-4,464	-3,258	-2,322	-2,971	-5,000	-8,355	-7,989	-3,438
50%	-4,343	-6,994	-5,290	-4,516	-4,464	-3,258	-2,624	-3,236	-5,000	-9,239	-9,794	-4,898
60%	-4,921	-8,827	-6,163	-5,000	-4,483	-3,258	-3,197	-3,442	-5,000	-9,699	-10,181	-5,524
70%	-5,412	-9,135	-7,929	-5,226	-5,000	-3,258	-3,500	-3,500	-5,000	-10,098	-10,413	-6,074
80%	-6,540	-9,201	-9,509	-5,226	-5,000	-3,258	-3,500	-3,500	-5,000	-10,636	-10,618	-6,996
90%	-7,509	-9,394	-9,695	-5,226	-5,000	-3,708	-3,500	-3,500	-5,000	-11,080	-10,966	-9,301
Long Term												
Full Simulation	-4,794	-6,720	-6,334	-3,958	-3,978	-2,498	-2,264	-2,672	-4,451	-8,119	-8,263	-5,012
Water Year Types												
Wet	-5,343	-8,286	-7,307	-2,380	-2,675	-968	-1,624	-2,306	-4,492	-8,556	-10,081	-4,252
Above Norm	-4,705	-8,954	-7,610	-4,212	-3,925	-2,731	-3,216	-3,427	-4,937	-9,645	-10,277	-2,588
Below Norm	-6,841	-6,443	-6,295	-4,707	-4,652	-3,251	-3,032	-3,300	-4,806	-9,653	-9,960	-8,585
Dry	-4,013	-5,303	-5,116	-5,087	-4,847	-3,294	-2,345	-2,842	-4,795	-8,315	-5,391	-6,003
Critical	-2,476	-3,542	-4,823	-4,553	-4,768	-3,505	-1,685	-1,722	-2,943	-3,564	-4,636	-3,427
Dry & Crit	-3,398	-4,599	-4,999	-4,873	-4,816	-3,379	-2,081	-2,394	-4,054	-6,414	-5,089	-4,973

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-2,923	-3,165	-4,043	-3,645	-3,330	-1,468	-1,603	-1,568	-2,694	-2,978	-4,485	-2,324
20%	-3,310	-4,200	-5,216	-3,645	-4,464	-3,258	-1,999	-2,055	-4,400	-5,192	-5,026	-2,849
30%	-3,876	-4,842	-5,290	-4,516	-4,464	-3,258	-2,132	-2,667	-5,000	-7,610	-6,872	-2,996
40%	-4,108	-5,713	-5,290	-4,516	-4,464	-3,258	-2,291	-2,971	-5,000	-8,614	-8,523	-3,424
50%	-4,472	-7,131	-5,320	-4,516	-4,483	-3,258	-2,588	-3,155	-5,000	-9,570	-9,750	-4,904
60%	-4,910	-8,833	-6,161	-5,000	-4,483	-3,258	-3,187	-3,442	-5,000	-9,833	-10,197	-5,532
70%	-5,337	-9,154	-8,535	-5,226	-5,000	-3,258	-3,500	-3,500	-5,000	-10,271	-10,425	-6,074
80%	-6,533	-9,248	-9,562	-5,226	-5,000	-3,258	-3,500	-3,500	-5,000	-10,636	-10,664	-6,990
90%	-7,458	-9,394	-9,695	-5,226	-5,250	-3,500	-3,500	-3,500	-5,000	-11,080	-10,940	-9,520
Long Term												
Full Simulation	-4,803	-6,720	-6,385	-3,990	-4,019	-2,490	-2,258	-2,664	-4,475	-8,242	-8,338	-4,998
Water Year Types												
Wet	-5,342	-8,291	-7,434	-2,380	-2,724	-949	-1,574	-2,307	-4,492	-8,598	-10,142	-4,174
Above Norm	-4,758	-8,888	-7,615	-4,331	-3,894	-2,731	-3,202	-3,358	-4,950	-9,709	-10,313	-2,579
Below Norm	-6,894	-6,595	-6,239	-4,707	-4,802	-3,282	-3,036	-3,300	-4,835	-9,934	-9,872	-8,729
Dry	-3,920	-5,310	-5,181	-5,113	-4,847	-3,293	-2,339	-2,842	-4,793	-8,510	-5,493	-5,942
Critical	-2,568	-3,411	-4,862	-4,615	-4,791	-3,462	-1,765	-1,734	-3,066	-3,630	-4,933	-3,433
Dry & Crit	-3,379	-4,550	-5,053	-4,914	-4,825	-3,360	-2,109	-2,399	-4,102	-6,558	-5,269	-4,938

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-122	5	249	0	-176	354	-695	0	-284	-14	-569	0
20%	7	-266	-129	0	0	0	0	0	-377	27	122	17
30%	-28	112	0	0	0	0	0	51	0	1	-654	8
40%	-3	117	0	0	0	0	31	0	0	-259	-534	14
50%	-129	-137	-30	0	-18	0	36	81	0	-330	44	-6

60%	10	-6	1	0	0	0	9	0	0	-133	-15	-9
70%	75	-19	-607	0	0	0	0	0	0	-172	-11	0
80%	7	-46	-53	0	0	0	0	0	0	0	-46	6
90%	51	0	0	0	-250	208	0	0	0	0	26	-220
Long Term Full Simulation	-10	0	-51	-32	-40	7	6	8	-24	-123	-75	14
Water Year Types												
Wet	1	-5	-126	0	-49	19	49	-1	0	-42	-61	78
Above Norm	-53	66	-6	-119	30	0	14	69	-13	-64	-36	9
Below Norm	-53	-152	56	0	-150	-32	-5	-1	-29	-281	88	-145
Dry	93	-6	-65	-27	0	2	6	-1	3	-195	-102	61
Critical	-92	131	-39	-62	-22	43	-80	-12	-122	-66	-297	-6
Dry & Crit	19	49	-55	-41	-9	18	-28	-5	-47	-144	-180	34

Jones Export

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,600	4,578	4,132	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,441	4,600	4,600	4,104	3,913	4,600	4,600	4,600	4,600
30%	4,387	4,600	4,600	4,282	4,600	3,850	3,701	3,611	3,627	4,600	4,600	4,503
40%	3,663	4,600	4,459	4,198	4,376	3,492	3,406	3,388	3,434	4,277	4,600	4,199
50%	3,236	4,556	4,290	4,065	4,041	3,303	2,798	3,206	3,293	3,689	4,268	3,687
60%	3,041	3,464	4,182	3,945	3,919	3,058	2,487	2,817	3,193	3,270	3,878	3,328
70%	2,930	2,872	3,916	3,527	3,800	2,868	2,105	2,472	3,138	2,723	3,746	3,019
80%	2,753	2,487	3,362	3,234	3,640	2,643	1,665	1,883	2,800	1,876	3,471	2,624
90%	2,394	2,235	2,500	2,969	2,805	1,895	800	1,629	1,625	1,266	2,775	1,665
Long Term Full Simulation	3,432	3,646	3,914	3,861	3,935	3,315	2,836	3,000	3,278	3,364	3,948	3,513
Water Year Types												
Wet	4,152	4,519	4,298	3,946	3,945	3,578	3,771	3,756	4,136	4,384	4,560	3,709
Above Norm	3,200	4,484	4,452	3,926	4,060	3,723	3,568	3,539	3,713	3,810	4,256	2,163
Below Norm	3,774	3,272	4,150	3,863	3,965	3,148	2,848	3,170	3,211	3,245	3,665	4,483
Dry	3,062	2,861	3,471	3,965	3,988	3,076	2,158	2,378	2,953	3,045	3,333	4,007
Critical	2,259	2,529	2,936	3,451	3,672	2,891	1,079	1,557	1,552	1,327	3,564	2,569
Dry & Crit	2,741	2,728	3,257	3,759	3,862	3,002	1,726	2,049	2,392	2,358	3,426	3,432

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	4,600	4,600	4,600	4,600	4,600	4,600	4,599	4,013	4,600	4,600	4,600	4,600
20%	4,600	4,600	4,600	4,600	4,600	4,497	4,007	3,933	4,600	4,600	4,600	4,600
30%	4,387	4,600	4,600	4,310	4,600	3,766	3,607	3,637	3,627	4,600	4,600	4,535
40%	3,665	4,600	4,527	4,245	4,385	3,458	3,406	3,427	3,477	4,377	4,600	4,179
50%	3,283	4,540	4,305	4,096	4,067	3,287	2,805	3,215	3,317	3,817	4,398	3,745
60%	3,117	3,467	4,195	3,966	3,939	3,073	2,517	2,886	3,232	3,370	4,061	3,452
70%	3,016	3,243	3,960	3,674	3,811	2,873	2,122	2,645	3,149	3,047	3,832	3,044
80%	2,832	2,545	3,520	3,234	3,641	2,744	1,795	1,945	3,014	2,517	3,510	2,775
90%	2,348	2,241	2,475	2,974	2,805	1,987	800	1,781	1,838	1,392	3,152	1,769
Long Term Full Simulation	3,463	3,705	3,948	3,905	4,004	3,311	2,852	3,058	3,318	3,485	4,028	3,526
Water Year Types												
Wet	4,195	4,520	4,367	3,960	3,997	3,565	3,790	3,818	4,136	4,506	4,562	3,684
Above Norm	3,396	4,483	4,456	4,040	4,127	3,659	3,499	3,533	3,714	3,835	4,330	2,196
Below Norm	3,742	3,635	4,087	3,939	4,179	3,263	2,835	3,174	3,232	3,544	3,605	4,502
Dry	2,987	2,890	3,566	3,965	4,005	3,073	2,201	2,550	3,031	3,119	3,522	4,032
Critical	2,327	2,464	2,943	3,520	3,692	2,827	1,166	1,565	1,680	1,402	3,824	2,617
Dry & Crit	2,723	2,720	3,317	3,787	3,880	2,974	1,787	2,156	2,491	2,432	3,643	3,466

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	21	-119	0	0	0	0

20%	0	0	0	159	0	-103	-98	20	0	0	0	0
30%	0	0	0	28	0	-84	-94	26	0	0	0	32
40%	2	0	68	48	9	-34	0	39	42	100	0	-20
50%	46	-15	14	31	26	-16	7	9	24	128	130	58
60%	77	3	13	21	20	15	30	69	40	101	183	125
70%	86	372	43	147	12	6	17	173	11	324	86	25
80%	80	58	157	0	1	101	130	62	213	641	38	150
90%	-47	6	-25	5	0	92	0	152	213	126	377	104
Long Term												
Full Simulation	30	59	34	44	70	-4	16	59	40	121	81	13
Water Year Types												
Wet	43	1	69	14	53	-13	19	63	0	122	2	-25
Above Norm	196	0	4	114	67	-64	-68	-6	1	25	74	33
Below Norm	-32	363	-62	76	214	115	-13	4	21	299	-59	19
Dry	-75	29	95	0	17	-3	42	172	79	74	188	26
Critical	68	-65	7	69	21	-65	87	9	128	75	260	48
Dry & Crit	-18	-9	60	28	18	-28	60	107	99	75	217	35

Banks Export

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	5,673	6,680	7,125	5,473	8,095	6,107	5,981	5,144	5,290	6,680	6,680	6,680
20%	4,335	6,680	7,068	3,908	5,671	4,350	4,727	2,966	3,228	6,680	6,680	4,761
30%	3,551	6,680	7,031	3,428	3,987	3,618	4,160	2,399	2,358	6,680	6,680	3,064
40%	3,056	6,680	5,126	2,951	3,455	3,170	3,339	2,239	2,092	6,680	6,680	2,582
50%	2,613	5,422	4,122	2,841	3,057	2,511	2,832	2,141	1,906	6,680	6,680	2,314
60%	2,414	4,605	3,189	2,753	2,778	2,305	2,536	1,816	1,790	6,664	5,563	1,768
70%	1,965	3,481	2,908	2,644	2,648	2,066	2,168	1,477	1,742	5,684	2,827	1,133
80%	1,502	2,733	2,736	2,453	2,541	1,916	1,683	974	1,698	2,857	300	572
90%	970	1,940	2,588	2,179	2,426	1,756	1,070	651	300	1,069	300	396
Long Term												
Full Simulation	2,991	4,879	4,640	3,383	4,055	3,271	3,212	2,338	2,440	5,361	4,594	2,636
Water Year Types												
Wet	3,312	6,237	6,103	4,418	5,698	4,968	4,600	3,767	3,846	6,553	6,454	2,119
Above Norm	3,217	6,339	5,138	3,214	3,976	3,164	3,769	2,479	2,566	6,391	6,427	1,324
Below Norm	4,833	4,824	4,565	3,000	4,059	3,012	3,578	2,180	1,935	6,383	6,450	5,497
Dry	2,231	3,883	3,292	2,884	2,710	2,040	1,886	1,431	1,754	4,776	1,782	2,908
Critical	1,060	2,033	3,083	2,507	2,586	1,851	1,210	649	883	1,434	785	1,318
Dry & Crit	1,763	3,143	3,208	2,733	2,660	1,964	1,616	1,118	1,406	3,439	1,384	2,272

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	5,786	6,680	7,125	5,473	8,093	6,107	6,029	5,134	5,290	6,680	6,680	6,680
20%	4,371	6,680	7,069	3,817	5,653	4,350	4,621	2,966	2,934	6,680	6,680	4,760
30%	3,243	6,680	7,042	3,395	3,987	3,780	4,161	2,399	2,296	6,680	6,680	3,031
40%	2,916	6,680	5,210	2,949	3,535	3,229	3,337	2,232	2,044	6,680	6,680	2,519
50%	2,638	5,352	4,068	2,841	3,058	2,511	2,801	2,040	1,895	6,680	6,680	2,158
60%	2,430	4,446	3,212	2,753	2,766	2,309	2,536	1,624	1,786	6,664	5,631	1,763
70%	1,949	3,441	2,922	2,644	2,636	2,066	2,138	1,287	1,719	5,804	3,647	963
80%	1,459	2,546	2,736	2,553	2,541	1,916	1,708	988	1,688	3,004	319	583
90%	1,018	1,929	2,593	2,179	2,426	1,750	1,057	568	300	921	300	381
Long Term												
Full Simulation	2,970	4,826	4,667	3,375	4,029	3,267	3,189	2,271	2,424	5,379	4,607	2,612
Water Year Types												
Wet	3,268	6,249	6,173	4,404	5,698	4,960	4,528	3,705	3,846	6,496	6,520	2,059
Above Norm	3,079	6,294	5,169	3,230	3,879	3,227	3,823	2,410	2,580	6,426	6,427	1,281
Below Norm	4,919	4,628	4,565	2,924	4,008	2,931	3,596	2,177	1,946	6,389	6,412	5,644
Dry	2,203	3,861	3,268	2,913	2,693	2,041	1,837	1,260	1,673	4,904	1,733	2,833
Critical	1,093	1,954	3,119	2,510	2,590	1,868	1,211	654	874	1,442	846	1,269
Dry & Crit	1,759	3,098	3,209	2,752	2,652	1,972	1,586	1,017	1,353	3,519	1,378	2,208

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	112	0	0	0	-2	0	48	-11	0	0	0	0
20%	36	0	1	-92	-18	0	-107	0	-294	0	0	-2
30%	-307	0	11	-33	0	162	0	0	-62	0	0	-33
40%	-140	0	84	-1	80	58	-2	-8	-48	0	0	-63
50%	25	-71	-54	0	1	0	-31	-101	-11	0	0	-156
60%	15	-160	23	0	-11	4	0	-191	-4	-1	68	-5
70%	-15	-40	14	0	-12	0	-30	-190	-23	120	820	-170
80%	-43	-187	0	100	0	0	25	15	-10	147	19	11
90%	48	-10	5	0	0	-6	-14	-82	0	-148	0	-15
Long Term												
Full Simulation	-21	-53	27	-8	-26	-4	-23	-67	-15	17	13	-24
Water Year Types												
Wet	-44	12	70	-14	-1	-7	-72	-62	0	-57	66	-60
Above Norm	-138	-45	31	17	-97	64	53	-69	13	35	0	-43
Below Norm	86	-196	1	-76	-50	-80	18	-3	11	6	-38	147
Dry	-27	-22	-24	29	-16	2	-49	-171	-81	128	-49	-75
Critical	33	-79	36	3	4	17	0	5	-10	8	61	-49
Dry & Crit	-3	-45	0	19	-8	8	-29	-101	-53	80	-5	-65

Total Export

ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,934	11,280	11,701	9,239	11,086	9,438	9,410	9,276	9,890	11,280	11,280	11,189
20%	8,226	11,280	11,648	8,037	9,313	8,127	8,354	7,257	7,333	11,280	11,280	8,879
30%	7,468	11,280	11,289	7,300	8,549	7,644	7,817	6,054	5,833	11,263	11,280	7,378
40%	6,647	11,089	9,073	7,115	7,667	6,277	7,349	5,647	5,393	10,556	10,845	6,543
50%	5,871	9,063	7,761	6,945	7,037	5,815	6,211	5,273	5,125	10,284	10,481	5,708
60%	5,544	7,892	7,249	6,753	6,695	5,572	5,276	4,590	4,980	9,268	9,054	4,596
70%	5,223	6,569	6,856	6,561	6,532	5,220	3,739	3,732	4,852	8,658	6,705	3,810
80%	4,731	5,404	6,587	6,301	6,333	4,978	3,336	3,048	4,641	5,344	4,900	3,536
90%	3,983	4,261	5,613	5,389	6,068	4,679	2,595	2,399	2,786	2,290	3,771	3,192
Long Term												
Full Simulation	6,423	8,525	8,555	7,244	7,990	6,586	6,048	5,338	5,718	8,725	8,542	6,149
Water Year Types												
Wet	7,465	10,756	10,401	8,364	9,643	8,545	8,371	7,523	7,982	10,937	11,014	5,828
Above Norm	6,417	10,823	9,590	7,140	8,036	6,886	7,337	6,018	6,279	10,201	10,683	3,487
Below Norm	8,608	8,096	8,714	6,863	8,024	6,160	6,426	5,350	5,146	9,628	10,115	9,980
Dry	5,293	6,744	6,763	6,849	6,698	5,116	4,044	3,809	4,707	7,821	5,116	6,915
Critical	3,320	4,562	6,019	5,958	6,258	4,742	2,289	2,205	2,435	2,761	4,349	3,887
Dry & Crit	4,503	5,871	6,466	6,492	6,522	4,966	3,342	3,167	3,798	5,797	4,809	5,704

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	9,899	11,280	11,706	9,239	12,132	9,933	9,410	9,091	9,890	11,280	11,280	11,280
20%	8,219	11,280	11,655	8,037	9,218	8,127	8,375	7,257	7,336	11,280	11,280	8,915
30%	7,200	11,280	11,346	7,298	8,549	7,644	7,817	6,062	5,833	11,263	11,280	7,304
40%	6,697	11,265	9,153	7,115	7,698	6,278	7,252	5,647	5,393	10,683	10,888	6,542
50%	6,010	9,046	7,761	6,945	7,037	5,791	6,205	5,273	5,125	10,307	10,425	5,839
60%	5,656	7,420	7,271	6,753	6,695	5,572	5,276	4,610	4,980	9,777	9,092	4,596
70%	5,244	6,573	6,840	6,575	6,532	5,221	3,721	3,737	4,852	9,160	6,857	3,751
80%	4,724	5,432	6,632	6,333	6,333	4,978	3,336	3,048	4,661	5,810	4,873	3,521
90%	3,942	4,257	5,609	5,446	6,068	4,679	2,594	2,426	2,792	2,456	3,836	3,239
Long Term												
Full Simulation	6,433	8,531	8,615	7,280	8,033	6,578	6,041	5,330	5,742	8,863	8,635	6,138
Water Year Types												
Wet	7,464	10,769	10,540	8,364	9,695	8,525	8,318	7,523	7,982	11,002	11,082	5,743
Above Norm	6,475	10,777	9,625	7,270	8,006	6,886	7,322	5,943	6,294	10,261	10,757	3,477
Below Norm	8,662	8,263	8,652	6,863	8,187	6,194	6,431	5,351	5,178	9,933	10,018	10,146
Dry	5,191	6,751	6,835	6,878	6,699	5,114	4,037	3,810	4,704	8,024	5,255	6,866

Critical	3,420	4,418	6,062	6,030	6,282	4,695	2,376	2,219	2,554	2,844	4,670	3,886
Dry & Crit	4,483	5,818	6,526	6,539	6,532	4,946	3,373	3,174	3,844	5,952	5,021	5,674

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-35	0	5	0	1,046	495	0	-185	0	0	0	91
20%	-6	0	6	0	-95	0	21	0	3	0	0	35
30%	-267	0	56	-2	0	0	0	8	0	0	0	-74
40%	50	176	80	0	31	0	-97	0	0	127	43	-1
50%	139	-17	0	0	0	-25	-6	0	0	23	-56	131
60%	112	-473	22	0	0	0	0	20	0	509	38	0
70%	21	5	-15	14	0	1	-18	4	0	502	152	-59
80%	-7	28	45	31	0	0	0	1	21	466	-27	-15
90%	-41	-4	-4	57	0	0	-1	27	6	166	65	46
Long Term Full Simulation	10	7	60	36	44	-8	-7	-8	25	138	93	-11
Water Year Types												
Wet	-1	13	139	0	52	-20	-53	1	0	65	68	-85
Above Norm	59	-45	35	131	-30	0	-15	-75	15	60	74	-10
Below Norm	54	167	-62	0	163	35	5	1	32	305	-97	166
Dry	-102	7	71	29	1	-2	-7	1	-3	202	139	-50
Critical	101	-144	43	72	25	-47	87	14	119	83	321	-1
Dry & Crit	-21	-53	60	47	10	-20	31	6	46	155	212	-30

X2 Position

ROC Proposed Action (ROC PA)

	KM											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	93	93	92	91	86	78	77	78	81	84	86	90
20%	91	92	91	89	84	73	72	73	80	83	85	88
30%	91	92	91	88	81	67	64	69	78	82	85	88
40%	90	91	91	87	74	64	62	67	74	81	83	86
50%	88	90	86	84	70	58	60	64	70	78	81	85
60%	81	80	86	81	64	53	57	61	68	77	80	84
70%	81	80	85	73	54	51	53	59	64	73	79	83
80%	80	80	84	64	50	48	49	54	60	67	78	82
90%	80	80	73	52	48	48	48	50	54	59	74	82
Long Term Full Simulation	86	86	85	78	68	61	60	64	70	76	81	85
Water Year Types												
Wet	79	79	81	65	54	50	52	55	60	66	75	82
Above Norm	80	79	82	79	62	54	53	59	65	74	78	83
Below Norm	89	89	85	84	72	61	63	65	72	78	81	86
Dry	91	92	89	85	79	70	66	71	77	82	85	88
Critical	93	93	93	89	83	77	75	78	83	86	88	91
Dry & Crit	92	92	91	86	81	72	70	73	79	84	86	89

Shasta Dam Raise, CP4A, with ROC Proposed Action

	KM											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	93	92	92	91	86	78	77	78	81	84	86	90
20%	91	92	91	89	84	73	72	73	80	83	85	88
30%	91	92	91	88	81	67	64	69	78	82	85	88
40%	90	91	90	87	74	64	63	67	74	81	83	86
50%	88	90	86	85	70	58	60	64	70	78	81	85
60%	81	80	86	81	64	53	57	61	67	76	80	84
70%	81	80	85	73	54	51	53	59	64	73	79	83
80%	80	80	84	64	50	48	49	54	60	67	78	82
90%	80	80	73	54	48	48	48	50	54	59	74	82
Long Term Full Simulation	86	86	86	78	68	61	60	64	70	76	81	85
Water Year Types												

Wet	79	79	81	65	54	50	52	55	60	66	75	82
Above Norm	80	79	82	80	62	54	53	59	65	74	78	83
Below Norm	89	89	86	84	72	61	63	65	72	78	81	86
Dry	91	92	89	85	79	70	67	71	77	82	85	88
Critical	93	93	93	89	84	77	75	78	83	86	88	91
Dry & Crit	92	92	91	86	81	73	70	73	79	83	86	89

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	KM											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	-1	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	2	0	0	0	0	0	0	0	0
Long Term Full Simulation	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types												
Wet	0	0	0	0	0	0	0	0	0	0	0	0
Above Norm	0	0	0	0	0	0	0	0	0	0	0	0
Below Norm	0	0	1	0	0	0	0	0	0	0	0	0
Dry	0	0	0	0	0	0	0	0	0	0	0	0
Critical	0	0	0	0	0	0	0	0	0	0	0	0
Dry & Crit	0	0	0	0	0	0	0	0	0	0	0	0

Total CVP Delivery North of Delta

ROC Proposed Action (ROC PA)

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	106	93	34	21	16	42	174	430	483	532	442	161
20%	100	90	32	17	16	31	155	420	471	526	429	158
30%	94	84	30	15	16	24	147	411	464	521	421	155
40%	87	80	28	15	16	18	137	397	459	514	410	148
50%	79	77	25	15	15	16	125	391	447	510	399	141
60%	73	72	23	15	15	15	122	369	442	501	381	131
70%	68	69	21	15	14	15	111	359	433	468	367	123
80%	62	66	21	14	14	14	102	344	422	452	341	115
90%	57	63	20	13	13	14	62	318	394	415	313	110
Long Term Full Simulation	80	77	26	16	15	24	126	379	445	489	388	136
Water Year Types												
Wet	87	81	29	16	15	20	115	386	445	521	431	152
Above Norm	81	78	26	15	15	17	128	381	462	517	407	148
Below Norm	77	81	25	17	14	25	134	399	463	505	396	135
Dry	80	73	27	16	15	23	131	377	458	472	358	124
Critical	67	68	22	15	15	37	134	341	387	399	308	110
Dry & Crit	75	71	25	16	15	28	132	363	429	443	338	118

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	107	93	35	21	16	45	180	431	486	532	442	161
20%	101	90	32	17	16	32	159	424	477	526	432	158
30%	94	84	30	16	16	25	150	419	469	522	421	155
40%	88	80	28	15	16	18	138	408	463	518	411	151
50%	81	77	25	15	16	16	129	397	457	513	402	143
60%	73	72	24	15	15	15	125	376	447	509	389	135
70%	68	70	21	15	15	15	113	359	438	496	379	130
80%	62	66	21	14	14	15	102	347	426	461	351	118

90%	57	63	21	13	13	14	63	322	395	417	314	109
Long Term Full Simulation	81	77	27	16	15	24	129	382	449	494	392	138
Water Year Types												
Wet	88	81	29	16	15	20	116	386	445	522	432	153
Above Norm	82	78	26	15	15	18	129	382	463	519	408	149
Below Norm	78	81	25	17	15	26	138	403	468	511	401	138
Dry	82	74	27	16	16	24	138	388	470	487	371	129
Critical	68	68	22	15	16	37	135	342	388	401	309	111
Dry & Crit	76	72	25	16	16	29	137	370	437	452	346	122

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	4	6	1	3	0	0	0
20%	1	0	0	0	0	0	4	4	6	0	3	0
30%	0	0	0	0	0	0	3	8	6	1	0	0
40%	1	0	0	0	0	0	1	11	4	4	0	3
50%	2	0	0	0	0	0	5	5	10	3	3	3
60%	0	0	1	0	0	0	3	7	5	8	7	4
70%	0	1	0	1	1	0	3	0	5	27	11	7
80%	0	0	0	1	0	1	1	3	4	9	10	3
90%	0	0	1	0	0	0	0	4	1	1	1	-1
Long Term Full Simulation	1	0	0	0	0	1	3	4	4	5	4	2
Water Year Types												
Wet	0	0	0	0	0	0	1	0	1	1	1	0
Above Norm	0	0	0	0	0	0	1	1	1	1	1	1
Below Norm	1	0	0	0	0	1	4	4	5	6	5	2
Dry	2	1	1	0	0	1	7	11	13	15	12	5
Critical	1	0	0	0	0	1	1	1	2	2	1	1
Dry & Crit	1	1	0	0	0	1	5	7	8	10	8	3

Total CVP Delivery South of Delta

ROC Proposed Action (ROC PA)

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	201	122	108	140	166	180	228	342	502	583	475	258
20%	201	122	108	140	160	170	214	342	501	583	475	258
30%	196	119	104	132	154	160	204	326	476	551	442	247
40%	189	114	96	119	141	151	189	305	441	508	414	233
50%	181	107	87	104	125	143	179	279	400	457	380	221
60%	176	103	82	96	116	133	165	264	376	428	359	207
70%	167	96	72	80	99	129	159	236	332	373	321	201
80%	162	93	67	72	90	123	148	222	310	345	299	174
90%	137	81	60	62	78	109	130	192	270	302	262	157
Long Term Full Simulation	177	105	86	104	124	145	179	276	396	453	377	215
Water Year Types												
Wet	197	120	105	115	138	172	216	333	487	565	455	241
Above Norm	190	114	97	105	125	153	195	305	441	508	417	204
Below Norm	178	105	84	106	127	139	171	271	387	441	371	224
Dry	167	97	74	99	119	128	158	240	338	381	327	208
Critical	136	78	56	84	101	108	125	182	251	278	246	167
Dry & Crit	155	89	66	93	112	120	145	217	303	340	295	192

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	201	122	108	140	166	180	229	342	502	583	475	258
20%	201	122	108	140	161	172	218	342	502	583	475	258
30%	196	119	104	132	156	163	204	328	479	555	452	248
40%	190	115	98	121	145	157	195	306	443	511	420	234

50%	182	108	89	106	128	144	179	283	406	465	385	221
60%	178	104	83	98	117	133	165	269	383	437	363	209
70%	172	100	78	89	109	129	159	253	359	406	346	203
80%	164	94	69	76	92	123	149	228	319	357	310	175
90%	138	81	59	63	79	111	130	188	265	298	257	156
Long Term Full Simulation	178	106	87	106	126	146	181	279	401	460	382	216
Water Year Types												
Wet	198	120	106	116	138	174	218	335	490	568	460	241
Above Norm	191	115	98	105	125	156	197	308	447	515	422	206
Below Norm	181	107	87	108	129	141	174	278	398	455	381	228
Dry	168	97	75	102	122	128	158	243	343	387	332	209
Critical	137	78	57	87	105	108	125	185	256	284	251	169
Dry & Crit	156	90	67	96	115	120	145	220	308	346	299	193

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	1	2	4	0	0	0	0	0
30%	0	0	0	0	2	3	0	2	3	4	10	0
40%	0	1	1	2	4	6	6	1	2	3	6	1
50%	1	1	1	2	4	1	0	4	6	7	5	0
60%	2	1	2	3	0	0	0	5	7	9	3	2
70%	6	4	6	9	11	0	0	17	27	33	25	3
80%	2	1	2	4	2	1	1	6	9	12	11	1
90%	1	0	-1	1	2	2	0	-3	-6	-4	-5	-1
Long Term Full Simulation	1	1	1	2	2	1	2	3	5	7	6	1
Water Year Types												
Wet	0	0	1	1	1	2	3	2	3	3	5	0
Above Norm	2	1	1	1	1	3	2	4	6	7	5	2
Below Norm	2	2	2	2	3	2	3	7	11	14	10	3
Dry	1	1	1	3	4	1	0	3	5	6	4	1
Critical	1	1	1	3	3	0	0	3	5	7	5	2
Dry & Crit	1	1	1	3	3	0	0	3	5	6	5	2

Total SWP Delivery

ROC Proposed Action (ROC PA)

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	353	322	320	206	204	264	241	346	417	439	445	372
20%	329	303	298	122	174	179	223	319	388	412	420	351
30%	315	290	284	100	119	159	200	307	371	399	410	335
40%	272	269	270	92	84	150	186	279	341	386	399	323
50%	246	241	249	49	60	91	141	231	319	376	389	305
60%	207	225	224	20	34	38	125	195	304	366	377	288
70%	170	187	193	13	19	26	114	166	285	346	337	217
80%	131	128	156	5	12	17	28	135	219	278	251	167
90%	92	77	85	5	8	13	22	96	154	192	166	122
Long Term Full Simulation	231	224	232	79	91	111	146	230	305	348	346	267
Water Year Types												
Wet	302	295	289	138	163	191	213	307	377	405	418	335
Above Norm	262	279	290	77	103	142	175	266	351	397	408	305
Below Norm	284	234	238	69	72	110	165	256	333	378	395	314
Dry	160	168	166	39	38	31	87	162	247	311	277	207
Critical	88	83	140	27	24	25	40	96	156	197	176	119
Dry & Crit	131	134	156	34	32	29	68	135	210	265	236	172

Shasta Dam Raise, CP4A, with ROC Proposed Action

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												

10%	353	325	324	205	202	263	241	346	417	439	445	372
20%	325	310	304	117	170	178	222	319	383	411	419	348
30%	309	284	283	98	117	159	200	303	363	396	403	331
40%	271	271	267	91	85	149	181	279	339	384	394	322
50%	243	246	255	53	56	88	142	237	321	375	389	303
60%	202	223	233	23	39	37	125	198	305	367	378	284
70%	175	184	200	13	19	28	115	167	284	345	331	210
80%	120	124	158	6	11	18	28	134	217	273	258	153
90%	92	79	83	5	8	13	22	92	148	186	166	121
Long Term Full Simulation	229	223	233	79	90	107	145	229	305	347	344	265
Water Year Types												
Wet	298	294	291	137	162	190	212	307	377	405	416	335
Above Norm	265	274	291	76	95	136	176	270	353	396	408	309
Below Norm	281	233	236	72	74	96	164	255	331	374	392	310
Dry	159	173	170	39	37	30	85	161	247	310	271	195
Critical	90	83	140	28	25	25	39	95	155	196	177	119
Dry & Crit	131	137	158	34	32	28	67	135	210	265	233	165

Shasta Dam Raise, CP4A, with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Delivery (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0	3	5	-1	-1	-1	-1	0	0	0	0	0
20%	-4	7	6	-5	-5	-1	0	-1	-5	-1	-1	-2
30%	-6	-6	-1	-2	-2	0	0	-4	-7	-3	-7	-3
40%	-1	2	-3	0	1	-1	-5	0	-2	-2	-5	-2
50%	-2	6	7	3	-5	-3	1	6	2	0	1	-1
60%	-5	-1	9	3	4	-1	0	2	1	1	1	-4
70%	5	-2	6	0	0	1	1	1	0	-1	-6	-8
80%	-11	-4	2	0	-1	1	-1	-1	-3	-5	7	-14
90%	0	2	-2	0	0	0	0	-4	-6	-6	0	-1
Long Term Full Simulation	-2	-1	1	0	-1	-4	-1	0	0	-1	-2	-3
Water Year Types												
Wet	-5	-1	2	-1	-1	-1	-1	-1	-1	0	-2	1
Above Norm	2	-5	1	-1	-8	-7	1	4	2	0	0	3
Below Norm	-2	-2	-2	4	2	-14	0	0	-2	-4	-3	-3
Dry	-1	5	4	0	-1	-1	-2	-1	0	-1	-6	-12
Critical	2	-1	0	1	1	0	-1	-1	-1	-1	1	0
Dry & Crit	0	3	2	0	0	-1	-2	-1	0	-1	-3	-7

Sacramento River below Keswick

SLWRI NAA

Temperature (°F)												
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.2	55.4	50.9	47.8	46.5	48.4	52.7	55.4	53.7	53.8	53.9	54.0
20%	54.9	54.8	50.6	47.1	46.2	48.0	51.8	55.0	53.4	53.2	53.3	53.5
30%	54.3	54.6	50.3	46.6	46.0	47.5	51.5	54.6	52.8	52.9	52.6	52.8
40%	53.9	54.3	50.0	46.3	45.7	47.2	50.9	54.3	52.5	52.3	52.1	51.8
50%	53.7	54.0	49.4	46.0	45.1	46.8	50.3	53.8	52.1	51.9	51.9	50.8
60%	53.4	53.4	49.1	45.8	44.6	46.6	50.2	53.6	51.9	51.7	51.3	50.5
70%	53.2	53.2	48.8	45.4	44.2	46.2	49.6	53.1	51.7	51.6	50.9	50.1
80%	53.1	52.6	48.3	44.9	43.8	45.8	49.1	52.5	51.4	51.3	50.8	49.3
90%	52.8	52.1	47.8	43.9	43.5	45.4	48.6	50.6	51.1	51.1	50.5	49.1
Long Term												
Full Simulation	54.2	53.8	49.5	46.0	45.1	46.9	50.5	53.6	52.3	52.2	52.1	51.9
Water Year Types												
Wet	53.3	53.9	49.9	45.2	44.3	46.3	49.9	53.7	52.5	52.1	51.3	49.8
Above Norm	53.2	53.7	49.4	46.1	44.8	46.8	50.8	54.0	52.0	51.7	50.9	49.7
Below Norm	53.7	52.8	48.9	46.0	44.9	47.0	50.9	54.4	52.4	51.9	51.6	51.8
Dry	54.4	53.8	49.3	46.4	45.7	47.4	51.5	53.5	51.8	52.1	52.6	52.6
Critical	57.7	55.1	49.7	46.8	46.1	47.6	49.8	51.9	52.6	53.6	54.8	57.4
Dry & Crit	55.7	54.3	49.5	46.5	45.9	47.5	50.8	52.8	52.1	52.7	53.5	54.6

SLWRI CP4A

Temperature (°F)												
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.3	55.5	51.0	47.7	46.9	48.6	52.0	54.8	53.5	53.4	53.6	53.6
20%	54.7	55.2	50.4	47.1	46.4	48.1	51.2	54.1	52.7	52.6	53.0	53.2
30%	53.9	54.5	50.2	46.8	46.2	47.6	50.9	53.8	52.4	52.0	51.8	51.8
40%	53.6	54.3	49.7	46.5	45.9	47.2	50.4	53.1	52.0	51.8	51.2	51.1
50%	53.4	53.7	49.3	46.4	45.4	46.9	49.9	52.3	51.6	51.7	51.0	50.6
60%	53.1	53.4	49.1	46.1	44.9	46.6	49.7	51.7	51.4	51.6	50.9	49.7
70%	52.8	52.5	48.8	45.6	44.6	46.2	49.1	51.4	51.1	51.5	50.8	49.3
80%	52.6	52.0	48.6	45.4	44.1	45.9	48.7	51.0	50.8	51.4	50.6	49.1
90%	52.0	51.4	48.1	44.7	43.8	45.5	48.2	50.5	50.6	51.3	50.4	49.0
Long Term												
Full Simulation	53.8	53.6	49.5	46.2	45.4	47.0	50.1	52.5	51.9	52.0	51.6	51.1
Water Year Types												
Wet	52.9	53.8	49.7	45.7	44.7	46.2	49.1	51.8	51.8	51.7	50.8	49.2
Above Norm	53.2	53.3	49.0	46.4	45.1	46.8	49.9	52.1	51.5	51.7	50.9	49.6
Below Norm	53.3	53.1	49.4	46.1	45.2	47.1	50.2	52.9	51.8	52.0	51.2	51.3
Dry	53.7	53.2	49.3	46.7	46.1	47.6	51.1	53.2	51.6	51.9	52.1	52.1
Critical	57.0	54.9	50.2	46.9	46.2	47.8	50.6	53.0	52.7	53.2	54.0	55.4
Dry & Crit	55.0	53.9	49.7	46.7	46.1	47.7	50.9	53.1	52.1	52.4	52.8	53.4

SLWRI CP4A minus SLWRI NAA

Temperature (°F)												
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0.1	0.0	0.0	-0.1	0.3	0.2	-0.7	-0.5	-0.2	-0.3	-0.3	-0.5
20%	-0.2	0.3	-0.1	0.0	0.2	0.1	-0.6	-0.9	-0.7	-0.6	-0.3	-0.3
30%	-0.4	-0.1	-0.1	0.2	0.2	0.1	-0.6	-0.9	-0.4	-0.9	-0.8	-1.1
40%	-0.2	-0.1	-0.3	0.2	0.2	0.0	-0.6	-1.1	-0.5	-0.5	-0.9	-0.6
50%	-0.3	-0.3	-0.1	0.4	0.2	0.1	-0.4	-1.5	-0.5	-0.2	-0.9	-0.2
60%	-0.3	0.0	0.0	0.4	0.3	0.0	-0.5	-1.9	-0.5	-0.1	-0.4	-0.8
70%	-0.4	-0.6	0.0	0.2	0.5	0.0	-0.6	-1.8	-0.6	0.0	-0.1	-0.8
80%	-0.5	-0.5	0.3	0.5	0.3	0.1	-0.4	-1.5	-0.6	0.1	-0.1	-0.2
90%	-0.8	-0.7	0.3	0.8	0.3	0.1	-0.4	-0.1	-0.5	0.2	0.0	-0.1
Long Term												
Full Simulation	-0.5	-0.2	0.0	0.3	0.3	0.1	-0.5	-1.1	-0.4	-0.2	-0.5	-0.7
Water Year Types												
Wet	-0.4	-0.1	-0.2	0.4	0.3	0.0	-0.8	-1.9	-0.7	-0.5	-0.5	-0.6
Above Norm	0.0	-0.4	-0.4	0.3	0.3	0.0	-0.9	-1.9	-0.5	0.0	0.0	-0.1
Below Norm	-0.4	0.3	0.4	0.2	0.3	0.1	-0.7	-1.6	-0.5	0.1	-0.4	-0.5

Dry	-0.6	-0.6	-0.1	0.3	0.3	0.2	-0.4	-0.3	-0.2	-0.2	-0.5	-0.6
Critical	-0.7	-0.2	0.5	0.1	0.1	0.1	0.9	1.1	0.1	-0.4	-0.8	-2.1
Dry & Crit	-0.7	-0.5	0.2	0.2	0.2	0.2	0.1	0.3	-0.1	-0.3	-0.7	-1.2

Sacramento River at Clear Creek

SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.9	55.4	50.8	47.7	47.2	49.7	54.2	56.6	55.1	55.2	55.5	55.7
20%	55.3	54.7	50.2	47.1	46.9	49.1	53.3	56.2	54.9	54.4	54.8	55.1
30%	54.7	54.4	50.0	46.7	46.6	48.7	52.9	55.8	54.3	54.2	54.2	54.7
40%	54.3	54.1	49.6	46.3	46.2	48.3	52.4	55.3	53.9	53.7	53.5	53.4
50%	54.0	53.7	49.1	46.0	45.7	48.0	51.9	54.8	53.7	53.4	53.3	52.1
60%	53.8	53.2	48.8	45.7	45.2	47.7	51.5	54.5	53.3	53.0	53.0	51.6
70%	53.6	52.9	48.6	45.4	44.5	46.9	51.0	54.0	53.2	52.8	52.5	51.0
80%	53.5	52.5	48.2	44.9	44.2	46.4	50.5	53.3	52.8	52.6	52.2	50.4
90%	53.2	52.0	47.6	44.2	43.8	45.9	49.7	52.1	52.4	52.3	51.8	50.0
Long Term												
Full Simulation	54.7	53.7	49.3	46.0	45.6	47.9	51.9	54.7	53.7	53.5	53.5	53.2
Water Year Types												
Wet	53.6	53.8	49.6	45.3	44.7	46.9	51.0	54.7	54.1	53.5	52.7	50.6
Above Norm	53.6	53.5	49.2	46.2	45.2	47.6	52.2	55.1	53.5	53.0	52.3	50.9
Below Norm	54.2	52.7	48.8	46.0	45.5	48.1	52.4	55.5	53.8	53.2	53.0	53.4
Dry	54.9	53.6	49.1	46.3	46.4	48.6	53.0	54.6	53.2	53.3	54.1	54.4
Critical	58.1	54.9	49.5	46.8	46.8	49.0	51.6	53.2	54.0	55.1	56.3	58.8
Dry & Crit	56.2	54.1	49.3	46.5	46.6	48.8	52.4	54.1	53.5	54.0	55.0	56.1

SLWRI CP4A

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	56.0	55.3	50.7	47.7	47.4	49.9	53.8	55.9	55.0	54.7	54.9	55.3
20%	55.2	54.8	50.2	47.1	47.0	49.2	53.0	55.3	54.2	53.8	54.5	54.9
30%	54.5	54.3	49.8	46.7	46.8	48.8	52.3	54.9	54.0	53.5	53.3	53.5
40%	54.0	54.1	49.5	46.5	46.5	48.3	51.9	54.3	53.6	53.2	52.9	52.9
50%	53.8	53.7	49.1	46.3	46.0	47.9	51.7	53.5	53.2	53.0	52.6	51.8
60%	53.6	53.1	48.9	46.1	45.5	47.6	51.2	53.0	52.8	52.9	52.4	50.8
70%	53.3	52.4	48.6	45.7	44.9	47.2	50.7	52.7	52.5	52.7	52.2	50.3
80%	53.0	52.0	48.2	45.4	44.5	46.5	50.1	52.2	52.2	52.6	52.0	50.0
90%	52.6	51.4	48.1	44.8	44.1	46.1	49.2	51.8	51.9	52.5	51.7	49.8
Long Term												
Full Simulation	54.2	53.5	49.3	46.3	45.8	48.0	51.5	53.7	53.3	53.3	53.1	52.5
Water Year Types												
Wet	53.2	53.7	49.4	45.7	45.0	46.9	50.3	53.0	53.4	53.0	52.2	50.0
Above Norm	53.6	53.2	48.8	46.5	45.5	47.6	51.4	53.4	53.1	53.0	52.3	50.7
Below Norm	53.8	52.9	49.2	46.1	45.8	48.3	51.8	54.1	53.2	53.3	52.7	53.0
Dry	54.3	53.1	49.0	46.6	46.7	48.8	52.7	54.4	52.9	53.1	53.5	53.8
Critical	57.4	54.7	49.9	46.9	46.9	49.0	52.3	54.2	54.1	54.6	55.5	56.9
Dry & Crit	55.5	53.7	49.4	46.7	46.8	48.9	52.5	54.3	53.4	53.7	54.3	55.0

SLWRI CP4A minus SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0.1	-0.1	-0.1	0.0	0.2	0.1	-0.4	-0.6	-0.1	-0.5	-0.6	-0.5
20%	-0.2	0.1	-0.1	0.0	0.2	0.1	-0.3	-0.9	-0.7	-0.6	-0.2	-0.2
30%	-0.2	-0.1	-0.2	0.0	0.2	0.1	-0.6	-0.9	-0.3	-0.8	-0.9	-1.2
40%	-0.3	0.0	0.0	0.2	0.3	0.0	-0.5	-1.0	-0.3	-0.5	-0.5	-0.5
50%	-0.3	0.0	-0.1	0.3	0.4	-0.1	-0.2	-1.3	-0.5	-0.4	-0.7	-0.3
60%	-0.2	-0.1	0.1	0.4	0.3	-0.1	-0.4	-1.6	-0.5	-0.2	-0.6	-0.8
70%	-0.3	-0.5	0.0	0.4	0.4	0.3	-0.3	-1.3	-0.6	-0.1	-0.3	-0.7
80%	-0.4	-0.5	0.0	0.6	0.3	0.1	-0.4	-1.1	-0.6	0.1	-0.2	-0.4
90%	-0.6	-0.6	0.5	0.6	0.4	0.2	-0.5	-0.3	-0.5	0.2	-0.1	-0.2
Long Term												
Full Simulation	-0.4	-0.2	0.0	0.3	0.3	0.1	-0.4	-0.9	-0.4	-0.2	-0.5	-0.7

Water Year Types												
Wet	-0.4	-0.1	-0.2	0.4	0.3	0.0	-0.7	-1.8	-0.7	-0.5	-0.5	-0.6
Above Norm	0.0	-0.3	-0.4	0.2	0.3	0.0	-0.8	-1.7	-0.4	0.0	0.0	-0.1
Below Norm	-0.4	0.3	0.4	0.1	0.3	0.1	-0.6	-1.4	-0.5	0.1	-0.4	-0.4
Dry	-0.6	-0.6	-0.1	0.3	0.3	0.2	-0.3	-0.2	-0.3	-0.2	-0.6	-0.6
Critical	-0.7	-0.2	0.4	0.1	0.1	0.1	0.7	1.0	0.1	-0.4	-0.8	-1.9
Dry & Crit	-0.6	-0.4	0.1	0.2	0.2	0.2	0.1	0.2	-0.1	-0.3	-0.7	-1.1

Sacramento River at Balls Ferry

SLWRI NAA

	Temperature (°F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	56.4	55.4	50.3	47.6	47.4	50.5	55.3	58.0	56.8	56.3	56.7	57.1
20%	55.8	54.4	49.8	46.8	47.1	49.8	54.7	57.3	56.6	55.8	55.9	56.5
30%	55.3	54.0	49.1	46.2	47.0	49.5	54.1	57.0	56.1	55.3	55.5	56.1
40%	54.9	53.8	48.8	45.9	46.4	49.2	53.7	56.6	55.6	54.8	54.7	54.6
50%	54.5	53.3	48.3	45.8	46.0	48.8	53.4	56.1	55.1	54.4	54.4	53.3
60%	54.3	52.9	48.1	45.5	45.7	48.5	52.9	55.7	54.9	54.2	54.3	52.7
70%	54.1	52.5	47.8	45.2	44.8	47.8	52.4	55.5	54.6	54.0	53.8	51.9
80%	53.8	52.0	47.5	44.9	44.6	47.1	51.8	54.7	54.3	53.6	53.5	51.3
90%	53.7	51.6	47.0	44.4	44.2	46.5	50.8	54.0	53.7	53.3	52.9	50.7
Long Term												
Full Simulation	55.1	53.4	48.6	45.8	45.9	48.7	53.2	56.0	55.3	54.7	54.8	54.2
Water Year Types												
Wet	54.0	53.5	49.0	45.2	45.0	47.5	52.1	56.2	56.0	54.8	54.0	51.5
Above Norm	54.1	53.3	48.5	45.9	45.5	48.3	53.4	56.4	55.2	54.1	53.5	51.9
Below Norm	54.7	52.4	48.2	45.6	45.8	49.0	53.8	56.8	55.2	54.3	54.2	54.7
Dry	55.3	53.1	48.5	46.0	46.7	49.5	54.3	55.8	54.4	54.3	55.4	55.8
Critical	58.4	54.5	48.7	46.7	47.3	49.8	53.0	54.5	55.2	56.2	57.4	59.8
Dry & Crit	56.6	53.7	48.6	46.3	46.9	49.6	53.8	55.3	54.7	55.1	56.2	57.4

SLWRI CP4A

	Temperature (°F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	56.5	55.1	50.1	47.6	47.6	50.5	55.1	57.1	56.4	56.0	56.3	56.8
20%	55.7	54.3	49.5	46.8	47.3	49.9	54.4	56.5	56.2	55.1	55.6	56.2
30%	54.8	54.1	49.0	46.3	47.1	49.7	53.7	56.1	55.6	54.7	54.5	54.9
40%	54.4	53.7	48.8	46.2	46.7	49.2	53.4	55.7	55.3	54.5	54.1	54.1
50%	54.2	53.3	48.5	45.9	46.3	48.9	53.1	55.2	54.8	54.2	54.0	52.9
60%	53.9	52.7	48.2	45.7	45.9	48.4	52.8	54.5	54.3	53.9	53.7	51.9
70%	53.7	52.1	47.8	45.5	45.1	47.8	52.2	54.0	53.8	53.8	53.4	51.2
80%	53.4	51.6	47.5	45.3	44.9	47.1	51.5	53.8	53.5	53.7	53.2	50.8
90%	53.0	51.1	47.0	44.5	44.5	46.5	50.3	53.3	53.3	53.5	52.8	50.5
Long Term												
Full Simulation	54.7	53.2	48.6	46.0	46.2	48.7	52.9	55.2	54.9	54.5	54.3	53.6
Water Year Types												
Wet	53.6	53.4	48.8	45.6	45.3	47.5	51.5	54.7	55.3	54.3	53.5	50.9
Above Norm	54.0	53.0	48.1	46.1	45.8	48.3	52.9	55.0	54.8	54.1	53.5	51.7
Below Norm	54.3	52.5	48.5	45.7	46.1	49.1	53.4	55.6	54.7	54.4	53.9	54.3
Dry	54.7	52.7	48.4	46.3	46.9	49.6	54.0	55.6	54.1	54.2	54.7	55.2
Critical	57.8	54.3	49.0	46.7	47.3	49.9	53.6	55.4	55.4	55.8	56.6	58.0
Dry & Crit	56.0	53.3	48.6	46.4	47.1	49.7	53.8	55.5	54.6	54.8	55.5	56.3

SLWRI CP4A minus SLWRI NAA

	Temperature (°F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0.1	-0.2	-0.2	0.0	0.1	0.1	-0.2	-0.9	-0.4	-0.3	-0.3	-0.3
20%	-0.1	-0.1	-0.3	0.0	0.2	0.1	-0.4	-0.8	-0.5	-0.7	-0.3	-0.2
30%	-0.5	0.1	-0.1	0.1	0.2	0.2	-0.4	-0.9	-0.5	-0.6	-1.0	-1.3
40%	-0.4	-0.1	0.0	0.3	0.3	0.0	-0.3	-0.9	-0.3	-0.4	-0.6	-0.5
50%	-0.2	0.1	0.2	0.1	0.2	0.1	-0.3	-0.9	-0.3	-0.2	-0.4	-0.4
60%	-0.4	-0.1	0.1	0.3	0.2	-0.1	-0.1	-1.2	-0.6	-0.3	-0.5	-0.8
70%	-0.4	-0.3	0.0	0.3	0.3	0.0	-0.3	-1.5	-0.8	-0.2	-0.4	-0.7

80%	-0.5	-0.4	0.0	0.5	0.3	0.0	-0.3	-0.9	-0.7	0.1	-0.3	-0.5
90%	-0.7	-0.5	0.0	0.1	0.4	0.0	-0.4	-0.6	-0.4	0.2	-0.1	-0.2
Long Term												
Full Simulation	-0.4	-0.2	-0.1	0.2	0.2	0.1	-0.3	-0.8	-0.4	-0.2	-0.5	-0.7
Water Year Types												
Wet	-0.4	-0.1	-0.2	0.3	0.3	0.0	-0.5	-1.5	-0.6	-0.4	-0.5	-0.6
Above Norm	-0.1	-0.3	-0.4	0.2	0.3	0.0	-0.6	-1.4	-0.3	0.0	0.0	-0.1
Below Norm	-0.4	0.1	0.3	0.1	0.3	0.1	-0.4	-1.2	-0.5	0.0	-0.4	-0.4
Dry	-0.6	-0.5	-0.1	0.2	0.2	0.2	-0.3	-0.2	-0.3	-0.2	-0.6	-0.6
Critical	-0.6	-0.2	0.3	0.0	0.1	0.1	0.6	0.9	0.1	-0.4	-0.8	-1.9
Dry & Crit	-0.6	-0.4	0.1	0.1	0.2	0.1	0.1	0.2	-0.1	-0.3	-0.7	-1.1

Sacramento River at Jellys Ferry

SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.0	55.0	49.6	47.1	47.7	51.2	56.4	59.5	59.1	57.9	58.1	58.7
20%	56.2	54.1	49.2	46.3	47.4	50.5	56.0	58.6	58.4	57.2	57.3	58.1
30%	55.7	53.7	48.4	46.0	46.9	50.2	55.3	58.2	57.9	56.9	57.0	57.7
40%	55.3	53.4	48.0	45.7	46.7	49.9	54.9	58.1	57.7	56.2	56.2	56.1
50%	55.0	53.0	47.7	45.6	46.3	49.6	54.5	57.4	56.9	55.8	55.9	54.9
60%	54.8	52.4	47.5	45.3	46.0	49.3	54.2	57.0	56.5	55.6	55.6	53.8
70%	54.6	52.1	47.2	45.1	45.3	48.6	53.6	56.8	56.0	55.2	55.3	53.1
80%	54.3	51.7	47.0	44.9	45.0	47.8	53.0	56.0	55.7	54.9	55.0	52.4
90%	54.1	51.3	46.5	44.5	44.5	47.1	51.9	55.4	55.0	54.5	54.2	51.7
Long Term												
Full Simulation	55.5	53.0	48.0	45.6	46.3	49.4	54.3	57.4	57.0	56.1	56.2	55.5
Water Year Types												
Wet	54.5	53.2	48.3	45.2	45.4	48.2	53.1	57.6	58.1	56.3	55.5	52.5
Above Norm	54.6	53.0	47.9	45.7	45.8	49.0	54.5	57.8	57.0	55.4	54.9	53.1
Below Norm	55.2	52.1	47.8	45.4	46.2	49.7	55.0	58.2	56.8	55.6	55.6	56.2
Dry	55.8	52.8	47.8	45.8	46.9	50.2	55.4	57.2	55.8	55.5	56.8	57.4
Critical	58.7	54.0	48.0	46.4	47.6	50.6	54.4	55.9	56.7	57.5	58.7	61.0
Dry & Crit	56.9	53.3	47.9	46.0	47.2	50.3	55.0	56.7	56.2	56.3	57.5	58.8

SLWRI CP4A

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	56.9	54.9	49.7	47.3	47.9	51.5	56.1	58.6	58.7	57.4	57.8	58.4
20%	56.2	54.1	48.9	46.4	47.6	50.7	55.6	58.0	58.0	56.8	56.9	57.8
30%	55.4	53.7	48.3	46.0	47.1	50.2	55.2	57.5	57.7	56.2	56.1	56.5
40%	55.1	53.4	48.1	45.8	46.8	49.9	54.7	57.1	57.2	55.9	55.8	55.6
50%	54.7	53.0	47.8	45.6	46.5	49.7	54.4	56.8	56.5	55.6	55.5	54.6
60%	54.4	52.3	47.6	45.5	46.2	49.2	54.0	56.3	56.1	55.3	55.1	53.2
70%	54.1	51.9	47.2	45.3	45.6	48.6	53.5	55.8	55.4	55.0	54.8	52.3
80%	53.8	51.4	46.9	45.2	45.3	47.8	52.8	55.3	55.1	55.0	54.7	51.8
90%	53.6	50.9	46.6	44.6	45.0	47.3	51.4	54.9	54.8	54.6	54.1	51.4
Long Term												
Full Simulation	55.1	52.8	48.0	45.8	46.4	49.4	54.1	56.7	56.6	55.8	55.7	54.9
Water Year Types												
Wet	54.1	53.2	48.1	45.5	45.6	48.2	52.7	56.4	57.5	55.9	55.1	51.9
Above Norm	54.6	52.7	47.6	45.8	46.1	49.0	54.1	56.8	56.7	55.4	54.9	52.9
Below Norm	54.8	52.2	48.0	45.5	46.4	49.8	54.7	57.1	56.3	55.6	55.3	55.9
Dry	55.3	52.3	47.7	45.9	47.1	50.3	55.2	57.0	55.5	55.4	56.1	56.8
Critical	58.1	53.8	48.3	46.4	47.6	50.7	54.8	56.7	56.8	57.1	57.9	59.2
Dry & Crit	56.4	52.9	47.9	46.1	47.3	50.4	55.1	56.9	56.0	56.1	56.8	57.8

SLWRI CP4A minus SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-0.1	-0.1	0.1	0.2	0.1	0.3	-0.4	-0.9	-0.3	-0.6	-0.2	-0.3
20%	-0.1	-0.1	-0.3	0.1	0.2	0.2	-0.4	-0.6	-0.4	-0.4	-0.4	-0.3
30%	-0.3	0.0	-0.1	0.1	0.2	0.1	0.0	-0.7	-0.2	-0.7	-0.9	-1.2

40%	-0.2	0.0	0.1	0.1	0.1	0.0	-0.2	-1.0	-0.5	-0.3	-0.5	-0.5
50%	-0.3	0.0	0.1	0.1	0.2	0.1	-0.1	-0.6	-0.4	-0.2	-0.4	-0.4
60%	-0.4	-0.1	0.1	0.2	0.1	0.0	-0.2	-0.7	-0.5	-0.3	-0.5	-0.6
70%	-0.5	-0.2	0.0	0.2	0.3	0.0	-0.1	-1.0	-0.6	-0.2	-0.5	-0.7
80%	-0.5	-0.4	-0.1	0.3	0.3	0.1	-0.2	-0.6	-0.7	0.1	-0.4	-0.7
90%	-0.5	-0.4	0.0	0.1	0.5	0.2	-0.4	-0.5	-0.2	0.2	-0.1	-0.3
Long Term Full Simulation	-0.4	-0.2	-0.1	0.2	0.2	0.1	-0.2	-0.7	-0.4	-0.2	-0.5	-0.6
Water Year Types												
Wet	-0.4	-0.1	-0.2	0.3	0.2	0.0	-0.4	-1.3	-0.5	-0.4	-0.5	-0.6
Above Norm	-0.1	-0.3	-0.3	0.1	0.3	0.0	-0.4	-1.1	-0.3	0.0	0.0	-0.1
Below Norm	-0.4	0.1	0.2	0.1	0.2	0.1	-0.3	-1.0	-0.5	0.0	-0.3	-0.4
Dry	-0.5	-0.4	-0.1	0.2	0.2	0.1	-0.2	-0.2	-0.3	-0.2	-0.7	-0.6
Critical	-0.6	-0.2	0.2	0.0	0.1	0.0	0.4	0.8	0.1	-0.4	-0.7	-1.7
Dry & Crit	-0.6	-0.3	0.0	0.1	0.1	0.1	0.0	0.2	-0.2	-0.3	-0.7	-1.0

Sacramento River at Bend Bridge

SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.3	54.8	49.4	46.8	47.9	51.9	57.0	60.2	60.0	59.1	59.3	59.9
20%	56.5	54.0	48.8	46.3	47.6	51.0	56.5	59.2	59.3	58.4	58.6	59.4
30%	56.1	53.4	48.1	45.9	47.2	50.7	55.8	58.9	58.9	57.9	58.0	58.6
40%	55.7	53.1	47.7	45.7	46.9	50.5	55.6	58.7	58.6	57.2	57.4	57.2
50%	55.3	52.7	47.4	45.5	46.5	50.1	55.2	57.9	57.9	56.8	57.2	55.9
60%	55.1	52.2	47.2	45.3	46.3	49.9	54.8	57.7	57.4	56.7	56.7	54.8
70%	54.9	51.8	47.0	45.1	45.8	49.4	54.4	57.4	57.0	56.2	56.4	53.6
80%	54.5	51.4	46.7	45.0	45.3	48.3	53.7	56.6	56.7	55.8	56.1	53.0
90%	54.3	51.0	46.4	44.5	44.8	47.7	52.6	56.1	55.8	55.5	55.4	52.6
Long Term Full Simulation	55.8	52.7	47.7	45.6	46.5	49.9	55.0	58.1	58.0	57.1	57.3	56.5
Water Year Types												
Wet	54.8	53.1	48.0	45.3	45.7	48.7	53.7	58.2	59.0	57.4	56.7	53.2
Above Norm	55.0	52.7	47.7	45.7	46.1	49.5	55.1	58.5	58.0	56.4	56.2	54.0
Below Norm	55.5	51.9	47.5	45.4	46.4	50.4	55.6	58.8	57.7	56.6	56.7	57.4
Dry	56.1	52.4	47.5	45.7	47.1	50.7	56.0	57.9	56.8	56.6	58.0	58.6
Critical	58.9	53.5	47.7	46.3	47.8	51.1	55.2	56.8	57.6	58.6	59.6	61.7
Dry & Crit	57.2	52.9	47.6	45.9	47.4	50.9	55.7	57.5	57.2	57.4	58.7	59.8

SLWRI CP4A

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.1	54.7	49.4	47.0	48.0	51.9	56.7	59.4	59.8	58.5	58.8	59.9
20%	56.4	53.8	48.5	46.4	47.7	51.2	56.3	58.7	59.0	57.7	58.0	59.0
30%	55.8	53.5	48.0	46.0	47.3	50.8	55.8	58.2	58.7	57.2	57.4	57.8
40%	55.4	53.1	47.8	45.8	47.0	50.4	55.4	57.7	58.0	57.0	57.2	56.8
50%	55.0	52.6	47.4	45.6	46.6	50.1	55.0	57.4	57.2	56.7	56.6	55.9
60%	54.7	52.1	47.3	45.5	46.3	49.8	54.5	57.1	56.9	56.5	56.2	54.2
70%	54.4	51.6	47.0	45.3	46.0	49.4	54.3	56.7	56.4	56.0	56.0	53.1
80%	54.2	51.2	46.6	45.2	45.6	48.3	53.5	56.1	56.0	55.8	55.7	52.6
90%	53.8	50.7	46.4	44.8	45.3	48.0	52.2	55.7	55.6	55.6	55.2	52.2
Long Term Full Simulation	55.4	52.6	47.7	45.7	46.7	50.0	54.8	57.5	57.6	56.9	56.9	55.9
Water Year Types												
Wet	54.4	53.0	47.9	45.5	45.9	48.7	53.3	57.0	58.5	57.0	56.3	52.7
Above Norm	54.9	52.5	47.4	45.8	46.3	49.6	54.8	57.5	57.7	56.4	56.1	53.9
Below Norm	55.2	52.0	47.6	45.4	46.6	50.4	55.4	57.9	57.2	56.6	56.4	57.0
Dry	55.6	52.0	47.4	45.8	47.3	50.8	55.8	57.7	56.5	56.4	57.4	58.0
Critical	58.3	53.3	47.9	46.3	47.8	51.2	55.6	57.5	57.7	58.2	58.9	60.1
Dry & Crit	56.7	52.6	47.6	46.0	47.5	51.0	55.7	57.6	57.0	57.1	58.0	58.9

SLWRI CP4A minus SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												

10%	-0.2	-0.1	0.0	0.2	0.1	0.0	-0.3	-0.8	-0.3	-0.6	-0.4	0.0
20%	-0.1	-0.2	-0.3	0.1	0.1	0.1	-0.3	-0.5	-0.3	-0.7	-0.7	-0.4
30%	-0.3	0.1	-0.1	0.1	0.1	0.1	0.0	-0.7	-0.1	-0.7	-0.6	-0.8
40%	-0.3	0.0	0.1	0.1	0.2	0.0	-0.2	-0.9	-0.5	-0.2	-0.2	-0.4
50%	-0.3	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.5	-0.6	-0.2	-0.5	0.0
60%	-0.5	0.0	0.1	0.2	0.0	0.0	-0.3	-0.6	-0.5	-0.2	-0.5	-0.7
70%	-0.5	-0.1	0.0	0.2	0.2	0.0	-0.2	-0.7	-0.6	-0.2	-0.4	-0.5
80%	-0.4	-0.2	-0.1	0.3	0.3	0.0	-0.2	-0.5	-0.7	0.0	-0.4	-0.4
90%	-0.5	-0.2	0.0	0.3	0.5	0.3	-0.4	-0.4	-0.2	0.1	-0.1	-0.3
Long Term												
Full Simulation	-0.4	-0.2	-0.1	0.1	0.2	0.0	-0.2	-0.6	-0.4	-0.2	-0.4	-0.6
Water Year Types												
Wet	-0.4	-0.1	-0.2	0.2	0.2	0.0	-0.3	-1.2	-0.5	-0.4	-0.4	-0.6
Above Norm	-0.1	-0.2	-0.3	0.1	0.2	0.0	-0.3	-0.9	-0.3	0.0	0.0	-0.1
Below Norm	-0.4	0.0	0.2	0.1	0.2	0.1	-0.3	-0.9	-0.5	0.0	-0.3	-0.3
Dry	-0.5	-0.4	-0.1	0.1	0.1	0.1	-0.2	-0.2	-0.3	-0.2	-0.7	-0.5
Critical	-0.5	-0.2	0.2	0.0	0.0	0.0	0.3	0.7	0.1	-0.4	-0.7	-1.6
Dry & Crit	-0.5	-0.3	0.0	0.1	0.1	0.1	0.0	0.2	-0.2	-0.3	-0.7	-1.0

Sacramento River at Red Bluff

SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	58.0	54.8	49.2	46.9	48.3	52.5	57.9	61.3	61.6	61.1	61.3	61.8
20%	57.1	54.1	48.7	46.3	47.9	51.7	57.5	60.3	61.1	60.0	60.5	61.3
30%	56.6	53.4	47.9	46.0	47.5	51.4	56.8	59.9	60.5	59.6	59.8	60.5
40%	56.2	53.1	47.6	45.8	47.1	51.0	56.4	59.7	60.2	58.8	59.5	59.1
50%	55.9	52.7	47.4	45.6	46.8	50.7	56.0	58.9	59.4	58.5	59.0	57.6
60%	55.6	52.3	47.2	45.3	46.4	50.4	55.7	58.6	59.0	58.2	58.6	56.1
70%	55.3	51.9	47.0	45.1	46.0	49.8	55.0	58.5	58.7	57.9	58.2	55.1
80%	55.0	51.4	46.7	45.0	45.4	48.6	54.4	57.8	58.3	57.4	57.9	54.2
90%	54.7	51.1	46.3	44.6	45.2	47.9	53.1	56.6	57.4	57.1	57.0	53.8
Long Term												
Full Simulation	56.3	52.8	47.7	45.6	46.8	50.4	55.7	59.1	59.6	58.8	59.1	57.9
Water Year Types												
Wet	55.2	53.1	48.0	45.3	45.9	49.1	54.2	59.0	60.6	59.1	58.5	54.4
Above Norm	55.4	52.7	47.7	45.7	46.3	49.9	55.8	59.4	59.7	58.0	58.0	55.4
Below Norm	56.1	52.0	47.4	45.4	46.7	50.9	56.5	59.8	59.3	58.3	58.5	59.1
Dry	56.6	52.5	47.4	45.7	47.4	51.3	56.9	59.0	58.4	58.1	59.8	60.4
Critical	59.3	53.6	47.7	46.3	48.2	51.9	56.3	58.0	59.2	60.3	61.3	63.2
Dry & Crit	57.7	52.9	47.5	45.9	47.7	51.5	56.7	58.6	58.7	59.0	60.4	61.5

SLWRI CP4A

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.6	54.8	49.2	47.1	48.4	52.6	57.9	60.5	61.5	60.2	60.7	61.9
20%	57.0	53.9	48.5	46.5	48.1	51.8	57.2	59.8	60.7	59.5	59.7	60.7
30%	56.4	53.5	48.0	46.0	47.5	51.5	56.6	59.2	60.3	59.0	59.3	59.7
40%	55.9	53.0	47.7	45.8	47.3	51.0	56.3	58.9	59.7	58.7	59.1	58.5
50%	55.4	52.6	47.4	45.6	46.9	50.6	55.9	58.5	59.0	58.3	58.5	57.6
60%	55.1	52.2	47.2	45.5	46.5	50.4	55.4	58.2	58.5	58.0	58.0	55.5
70%	54.9	51.6	47.0	45.4	46.2	49.8	54.9	57.7	58.1	57.7	57.7	54.4
80%	54.7	51.1	46.6	45.2	45.7	48.6	54.3	57.2	57.6	57.4	57.4	53.7
90%	54.3	50.9	46.4	44.8	45.5	48.3	52.7	56.5	57.2	57.2	56.9	53.3
Long Term												
Full Simulation	55.9	52.6	47.6	45.8	46.9	50.5	55.6	58.5	59.2	58.5	58.7	57.4
Water Year Types												
Wet	54.8	53.0	47.8	45.6	46.1	49.1	53.9	58.0	60.1	58.7	58.1	53.8
Above Norm	55.3	52.5	47.4	45.9	46.5	50.0	55.5	58.6	59.4	58.0	57.9	55.2
Below Norm	55.7	52.0	47.6	45.5	46.8	51.0	56.3	59.0	58.8	58.3	58.2	58.8
Dry	56.2	52.1	47.4	45.8	47.6	51.4	56.8	58.8	58.0	58.0	59.1	59.8
Critical	58.8	53.4	47.8	46.4	48.2	51.9	56.6	58.6	59.3	60.0	60.7	61.7
Dry & Crit	57.2	52.6	47.6	46.0	47.8	51.6	56.7	58.7	58.5	58.8	59.8	60.6

SLWRI CP4A minus SLWRI NAA

Statistic	Temperature (°F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-0.4	-0.1	0.0	0.1	0.1	0.1	-0.1	-0.8	-0.1	-0.9	-0.6	0.0
20%	-0.1	-0.2	-0.2	0.1	0.2	0.2	-0.2	-0.5	-0.5	-0.5	-0.8	-0.5
30%	-0.2	0.1	0.0	0.1	0.0	0.0	-0.2	-0.7	-0.2	-0.6	-0.5	-0.8
40%	-0.3	-0.1	0.1	0.0	0.2	0.0	-0.1	-0.8	-0.5	-0.1	-0.4	-0.6
50%	-0.4	-0.1	0.0	0.1	0.1	-0.1	-0.1	-0.4	-0.4	-0.2	-0.5	0.0
60%	-0.5	-0.1	0.0	0.2	0.1	0.0	-0.3	-0.4	-0.5	-0.2	-0.5	-0.6
70%	-0.4	-0.2	0.0	0.2	0.2	0.0	-0.1	-0.8	-0.6	-0.2	-0.4	-0.6
80%	-0.3	-0.3	-0.1	0.2	0.3	0.0	-0.1	-0.6	-0.7	0.0	-0.4	-0.5
90%	-0.4	-0.2	0.1	0.3	0.3	0.4	-0.4	-0.1	-0.2	0.1	-0.1	-0.5
Long Term Full Simulation	-0.4	-0.1	-0.1	0.1	0.2	0.0	-0.2	-0.6	-0.4	-0.2	-0.4	-0.6
Water Year Types												
Wet	-0.4	-0.1	-0.2	0.2	0.2	0.0	-0.3	-1.1	-0.5	-0.4	-0.4	-0.6
Above Norm	-0.1	-0.2	-0.3	0.1	0.2	0.0	-0.3	-0.8	-0.3	0.0	0.0	-0.1
Below Norm	-0.3	0.0	0.2	0.1	0.2	0.1	-0.2	-0.9	-0.5	0.0	-0.3	-0.3
Dry	-0.5	-0.3	-0.1	0.1	0.1	0.1	-0.2	-0.2	-0.4	-0.2	-0.7	-0.5
Critical	-0.5	-0.2	0.2	0.0	0.0	0.0	0.3	0.7	0.1	-0.4	-0.6	-1.5
Dry & Crit	-0.5	-0.3	0.0	0.1	0.1	0.1	0.0	0.2	-0.2	-0.3	-0.7	-0.9

Sacramento River below Hamilton City

SLWRI NAA

Statistic	Temperature (°F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.9	55.0	48.8	47.1	49.2	54.1	60.4	64.1	66.0	65.8	65.9	66.2
20%	59.0	54.2	48.4	46.6	48.7	53.4	59.7	63.7	65.5	64.5	65.1	65.5
30%	58.7	53.5	47.8	46.1	48.1	52.8	58.9	63.0	64.8	64.1	64.5	64.3
40%	58.0	53.1	47.4	45.9	47.6	52.2	58.6	62.5	64.6	63.3	63.9	63.0
50%	57.5	52.8	47.2	45.7	47.4	51.9	58.0	62.0	63.7	62.7	63.6	61.6
60%	57.2	52.5	47.1	45.4	47.0	51.2	57.5	61.5	63.2	62.3	63.0	59.5
70%	56.8	52.0	46.9	45.2	46.8	50.7	56.7	61.2	62.9	61.9	62.5	58.1
80%	56.5	51.7	46.6	45.1	45.9	49.5	55.6	60.6	62.3	61.5	62.2	57.2
90%	56.1	51.2	46.3	44.7	45.6	49.0	54.3	59.7	61.4	61.1	61.1	56.5
Long Term Full Simulation	58.0	52.9	47.5	45.8	47.4	51.6	57.6	62.0	63.8	63.1	63.6	61.5
Water Year Types												
Wet	56.7	53.2	47.7	45.5	46.4	50.0	55.6	61.6	64.9	63.6	63.0	57.3
Above Norm	57.2	52.7	47.5	45.8	46.8	50.9	57.3	62.3	64.2	62.3	62.5	58.8
Below Norm	57.9	52.2	47.2	45.6	47.3	52.2	58.3	62.8	63.5	62.5	62.9	63.2
Dry	58.4	52.7	47.2	45.8	48.2	52.7	59.1	62.2	62.5	62.2	64.3	64.4
Critical	60.9	53.7	47.5	46.5	49.2	53.7	59.2	61.6	63.3	64.7	65.5	66.6
Dry & Crit	59.4	53.1	47.3	46.1	48.6	53.1	59.2	62.0	62.8	63.2	64.8	65.3

SLWRI CP4A

Statistic	Temperature (°F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	59.3	54.9	48.9	47.2	49.4	54.1	60.4	63.6	65.8	65.0	65.4	66.1
20%	59.0	54.0	48.2	46.6	48.8	53.3	59.5	63.0	65.1	64.0	64.5	65.0
30%	58.5	53.7	47.7	46.2	48.2	52.9	58.8	62.4	64.6	63.5	64.0	63.8
40%	57.7	53.0	47.5	46.0	47.7	52.2	58.3	62.2	64.3	63.1	63.6	62.5
50%	57.1	52.6	47.2	45.7	47.5	51.9	57.9	61.7	63.3	62.6	63.1	61.2
60%	56.8	52.4	47.0	45.6	47.1	51.2	57.4	61.2	62.8	62.1	62.5	58.9
70%	56.6	51.8	46.7	45.4	46.9	50.8	56.6	60.9	62.2	61.6	62.1	57.8
80%	56.2	51.4	46.6	45.2	46.1	49.6	55.4	60.5	61.8	61.4	61.8	56.8
90%	55.8	51.0	46.2	45.0	45.8	49.0	54.0	59.5	61.1	61.1	61.0	56.1
Long Term Full Simulation	57.6	52.8	47.4	45.9	47.6	51.7	57.5	61.6	63.5	62.9	63.2	60.9
Water Year Types												
Wet	56.4	53.1	47.6	45.7	46.6	50.0	55.4	60.8	64.6	63.3	62.7	56.8
Above Norm	57.0	52.5	47.3	45.9	47.0	50.9	57.1	61.8	63.9	62.3	62.4	58.6
Below Norm	57.5	52.3	47.3	45.6	47.4	52.2	58.2	62.2	63.1	62.4	62.7	62.9

Dry	58.0	52.4	47.2	45.9	48.3	52.7	59.0	62.0	62.1	62.0	63.5	63.9
Critical	60.4	53.6	47.6	46.5	49.3	53.7	59.4	62.1	63.4	64.3	65.0	65.3
Dry & Crit	59.0	52.9	47.3	46.1	48.7	53.1	59.1	62.1	62.6	62.9	64.1	64.5

SLWRI CP4A minus SLWRI NAA

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-0.6	-0.2	0.0	0.1	0.1	0.0	-0.1	-0.5	-0.3	-0.9	-0.5	-0.1
20%	0.0	-0.2	-0.3	0.1	0.1	-0.1	-0.2	-0.7	-0.4	-0.4	-0.6	-0.4
30%	-0.1	0.2	0.0	0.1	0.0	0.1	0.0	-0.5	-0.2	-0.6	-0.6	-0.5
40%	-0.2	-0.1	0.1	0.1	0.1	0.0	-0.3	-0.4	-0.4	-0.2	-0.3	-0.5
50%	-0.4	-0.2	0.0	0.0	0.1	0.0	-0.1	-0.3	-0.4	-0.1	-0.5	-0.4
60%	-0.4	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.3	-0.4	-0.2	-0.5	-0.6
70%	-0.3	-0.2	-0.1	0.2	0.2	0.0	-0.1	-0.4	-0.7	-0.3	-0.3	-0.3
80%	-0.3	-0.2	0.0	0.1	0.2	0.1	-0.1	-0.1	-0.4	0.0	-0.4	-0.5
90%	-0.3	-0.2	0.0	0.2	0.2	0.1	-0.3	-0.2	-0.3	0.0	-0.1	-0.4
Long Term Full Simulation	-0.3	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.4	-0.3	-0.2	-0.4	-0.5
Water Year Types												
Wet	-0.4	-0.1	-0.1	0.2	0.2	0.0	-0.2	-0.8	-0.4	-0.3	-0.3	-0.5
Above Norm	-0.1	-0.2	-0.2	0.1	0.2	0.0	-0.1	-0.5	-0.2	0.0	0.0	-0.1
Below Norm	-0.3	0.0	0.1	0.0	0.1	0.1	-0.1	-0.6	-0.5	-0.1	-0.2	-0.2
Dry	-0.4	-0.3	-0.1	0.1	0.1	0.1	-0.1	-0.2	-0.4	-0.2	-0.8	-0.5
Critical	-0.4	-0.1	0.1	0.0	0.0	0.0	0.2	0.5	0.0	-0.4	-0.6	-1.3
Dry & Crit	-0.4	-0.2	0.0	0.1	0.1	0.0	0.0	0.1	-0.2	-0.3	-0.7	-0.8

Sacramento River below Keswick

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.3	54.5	52.5	48.8	47.5	49.2	53.0	54.3	53.9	52.8	51.4	52.7
20%	54.8	54.2	51.9	48.3	47.0	48.7	52.1	53.6	52.2	52.2	50.8	51.8
30%	54.2	54.1	51.5	47.6	46.7	48.2	51.8	53.2	51.7	51.2	50.6	51.1
40%	52.8	53.9	51.1	47.3	46.3	47.7	51.3	52.8	51.5	51.0	50.5	50.9
50%	52.6	53.8	50.6	47.0	46.0	47.3	51.0	52.5	51.3	50.9	50.4	50.6
60%	52.5	53.6	50.3	46.5	45.3	46.9	50.4	52.1	51.2	50.7	50.3	50.1
70%	52.3	53.3	49.9	46.3	45.0	46.6	50.1	51.8	51.1	50.6	50.2	49.9
80%	52.2	53.1	49.5	45.8	44.4	46.2	49.4	51.6	50.8	50.5	50.1	49.5
90%	52.0	52.7	48.6	45.1	44.0	45.8	49.1	50.9	50.7	50.4	50.0	49.3
Long Term Full Simulation	53.6	53.7	50.7	47.0	45.8	47.4	50.9	52.5	51.7	51.2	50.7	51.1
Water Year Types												
Wet	52.5	53.7	51.2	46.3	45.0	46.6	50.1	52.0	51.7	51.0	50.1	49.8
Above Norm	52.4	53.5	50.6	46.9	45.4	47.1	50.8	52.3	51.2	50.7	50.4	50.0
Below Norm	52.9	53.2	50.3	46.9	45.6	47.5	51.1	52.5	51.4	51.0	50.5	50.6
Dry	53.7	53.7	50.4	47.6	46.6	48.1	51.9	53.1	51.7	51.2	50.7	51.1
Critical	57.5	54.6	50.9	47.9	47.0	48.3	51.2	53.0	52.9	52.7	52.3	55.5
Dry & Crit	55.2	54.1	50.6	47.7	46.7	48.2	51.7	53.1	52.2	51.8	51.4	52.9

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.4	54.5	52.4	49.0	47.7	49.1	52.0	53.2	53.2	52.4	51.2	51.9
20%	52.9	54.3	51.6	48.2	47.2	48.6	51.3	52.8	51.6	51.2	50.9	51.2
30%	52.7	54.1	51.3	47.7	46.8	48.2	50.9	52.4	51.3	51.1	50.7	50.8
40%	52.6	54.0	51.2	47.4	46.5	47.8	50.5	51.8	51.1	51.0	50.5	50.6
50%	52.4	53.9	50.7	47.2	46.1	47.3	50.2	51.5	51.0	50.8	50.4	50.3
60%	52.3	53.6	50.5	46.8	45.5	47.1	49.9	51.1	50.8	50.7	50.3	50.0
70%	52.2	53.4	50.1	46.5	45.2	46.6	49.4	51.0	50.7	50.5	50.2	49.8
80%	52.0	52.9	49.8	46.1	44.8	46.3	49.1	50.8	50.6	50.5	50.1	49.4
90%	51.7	52.6	49.2	45.5	44.3	45.9	48.6	50.5	50.5	50.4	49.9	49.2
Long Term Full Simulation	53.1	53.7	50.8	47.2	46.0	47.4	50.3	51.7	51.3	51.0	50.6	50.7
Water Year Types												
Wet	52.0	53.9	51.2	46.6	45.3	46.6	49.4	51.0	51.0	50.7	50.1	49.6
Above Norm	52.4	53.4	50.4	47.2	45.7	47.1	50.0	51.5	50.9	50.6	50.3	49.9
Below Norm	52.8	53.5	50.5	47.0	45.8	47.5	50.1	51.6	51.0	50.9	50.4	50.5
Dry	52.9	53.3	50.4	47.7	46.8	48.2	51.3	52.2	51.1	50.9	50.7	50.8
Critical	56.5	54.8	51.2	48.0	47.1	48.5	51.1	52.9	53.0	52.3	51.6	54.1
Dry & Crit	54.3	53.9	50.7	47.8	46.9	48.4	51.2	52.5	51.9	51.5	51.1	52.1

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0.1	0.0	-0.1	0.2	0.2	-0.2	-0.9	-1.1	-0.7	-0.4	-0.3	-0.8
20%	-1.9	0.1	-0.3	-0.1	0.2	-0.1	-0.8	-0.8	-0.6	-1.0	0.1	-0.6
30%	-1.5	0.0	-0.2	0.1	0.1	-0.1	-0.9	-0.8	-0.4	-0.1	0.0	-0.4
40%	-0.2	0.1	0.0	0.1	0.1	0.1	-0.9	-1.1	-0.4	-0.1	0.0	-0.3
50%	-0.2	0.1	0.1	0.2	0.2	0.0	-0.8	-0.9	-0.3	-0.1	0.0	-0.3
60%	-0.2	0.0	0.2	0.4	0.2	0.1	-0.5	-1.0	-0.4	-0.1	-0.1	-0.1
70%	-0.2	0.1	0.2	0.2	0.2	0.0	-0.7	-0.8	-0.4	-0.1	-0.1	-0.2
80%	-0.2	-0.2	0.4	0.3	0.4	0.1	-0.2	-0.8	-0.2	0.0	0.0	0.0
90%	-0.3	-0.1	0.6	0.4	0.2	0.0	-0.5	-0.4	-0.2	0.0	-0.1	-0.1
Long Term Full Simulation	-0.5	0.0	0.1	0.2	0.2	0.1	-0.7	-0.8	-0.4	-0.2	-0.1	-0.4
Water Year Types												
Wet	-0.5	0.1	0.1	0.3	0.3	-0.1	-0.7	-0.9	-0.6	-0.2	0.0	-0.2
Above Norm	-0.1	-0.1	-0.2	0.3	0.3	0.0	-0.8	-0.8	-0.3	-0.1	-0.1	-0.1
Below Norm	-0.1	0.3	0.2	0.1	0.2	0.0	-1.0	-1.0	-0.3	-0.1	-0.1	-0.1

Dry	-0.9	-0.4	-0.1	0.1	0.2	0.2	-0.6	-0.9	-0.6	-0.3	-0.1	-0.4
Critical	-1.0	0.1	0.3	0.1	0.1	0.3	-0.2	-0.1	0.1	-0.4	-0.7	-1.4
Dry & Crit	-0.9	-0.2	0.1	0.1	0.1	0.2	-0.5	-0.6	-0.3	-0.3	-0.3	-0.8

Sacramento River at Clear Creek

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.9	54.5	52.1	48.5	48.0	50.1	54.1	55.5	55.3	54.4	53.1	54.6
20%	55.3	54.2	51.4	48.2	47.5	49.8	53.5	54.8	53.9	53.7	52.5	53.5
30%	54.6	53.9	51.0	47.5	47.1	49.3	53.2	54.4	53.3	52.8	52.2	52.8
40%	53.4	53.8	50.7	47.2	46.7	48.5	52.6	54.0	53.0	52.6	52.1	52.5
50%	53.2	53.5	50.3	47.0	46.3	48.2	52.2	53.7	52.7	52.3	51.9	52.1
60%	52.9	53.4	50.0	46.5	45.8	47.9	51.8	53.3	52.6	52.1	51.8	51.6
70%	52.8	53.1	49.6	46.3	45.1	47.3	51.2	52.9	52.5	51.9	51.7	51.3
80%	52.6	53.0	49.1	45.9	44.8	46.9	50.8	52.6	52.1	51.7	51.4	50.7
90%	52.4	52.6	48.5	45.2	44.3	46.3	49.9	51.7	51.9	51.5	51.2	50.4
Long Term Full Simulation	54.0	53.6	50.4	47.0	46.2	48.3	52.2	53.7	53.1	52.6	52.1	52.5
Water Year Types												
Wet	52.9	53.6	50.8	46.3	45.3	47.2	51.0	53.1	53.1	52.3	51.5	50.9
Above Norm	52.9	53.3	50.3	46.9	45.7	47.8	52.0	53.5	52.7	52.0	51.8	51.4
Below Norm	53.4	53.1	50.0	46.8	46.0	48.5	52.5	53.8	52.7	52.4	52.0	52.2
Dry	54.2	53.5	50.1	47.4	47.1	49.1	53.3	54.2	53.0	52.6	52.3	52.9
Critical	57.8	54.5	50.6	47.8	47.6	49.5	52.8	54.2	54.2	54.4	53.8	57.0
Dry & Crit	55.7	53.9	50.3	47.6	47.3	49.3	53.1	54.2	53.5	53.3	52.9	54.5

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	55.9	54.5	51.9	48.8	48.0	50.3	53.8	55.0	54.6	53.9	52.7	53.8
20%	53.5	54.2	51.2	48.0	47.7	49.6	52.7	54.1	53.2	52.8	52.5	53.0
30%	53.3	53.9	50.9	47.7	47.2	49.2	52.4	53.7	52.8	52.6	52.2	52.5
40%	53.2	53.8	50.7	47.4	47.0	48.9	52.0	53.1	52.6	52.4	52.1	52.4
50%	52.9	53.6	50.3	47.0	46.5	48.1	51.7	52.7	52.3	52.2	51.9	51.9
60%	52.8	53.5	50.2	46.7	45.9	47.8	51.2	52.5	52.1	52.0	51.7	51.4
70%	52.7	53.1	49.7	46.5	45.4	47.4	50.8	52.2	52.0	51.8	51.5	51.2
80%	52.5	52.8	49.4	46.1	45.1	46.8	50.3	51.8	51.7	51.7	51.4	50.5
90%	52.1	52.4	49.1	45.7	44.6	46.3	49.4	51.5	51.6	51.6	51.2	50.2
Long Term Full Simulation	53.6	53.6	50.5	47.1	46.4	48.3	51.6	52.9	52.7	52.4	52.0	52.2
Water Year Types												
Wet	52.5	53.7	50.9	46.6	45.5	47.1	50.4	52.2	52.5	52.1	51.5	50.8
Above Norm	52.9	53.3	50.1	47.2	46.0	47.8	51.3	52.9	52.4	51.9	51.7	51.3
Below Norm	53.3	53.3	50.2	46.9	46.2	48.5	51.7	52.9	52.3	52.3	51.9	52.1
Dry	53.5	53.1	50.0	47.5	47.3	49.3	52.7	53.4	52.4	52.3	52.2	52.6
Critical	56.9	54.6	50.8	47.9	47.7	49.7	52.6	54.1	54.3	53.9	53.1	55.7
Dry & Crit	54.9	53.7	50.3	47.7	47.4	49.5	52.7	53.7	53.1	53.0	52.6	53.8

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	0.0	0.0	-0.2	0.3	0.1	0.2	-0.3	-0.5	-0.7	-0.5	-0.3	-0.8
20%	-1.8	0.0	-0.1	-0.2	0.1	-0.2	-0.9	-0.7	-0.7	-0.9	0.1	-0.5
30%	-1.3	0.0	-0.1	0.2	0.1	-0.1	-0.8	-0.7	-0.4	-0.2	-0.1	-0.3
40%	-0.3	0.1	0.0	0.2	0.3	0.4	-0.6	-1.0	-0.4	-0.1	0.0	-0.1
50%	-0.3	0.1	0.0	0.0	0.1	-0.1	-0.5	-1.0	-0.4	-0.1	-0.1	-0.2
60%	-0.1	0.1	0.1	0.3	0.2	-0.1	-0.5	-0.8	-0.5	-0.1	-0.1	-0.2
70%	-0.1	0.0	0.1	0.3	0.3	0.1	-0.4	-0.6	-0.4	-0.1	-0.1	0.0
80%	-0.2	-0.2	0.3	0.2	0.2	-0.1	-0.5	-0.8	-0.4	-0.1	0.0	-0.2
90%	-0.3	-0.2	0.6	0.4	0.4	0.0	-0.5	-0.2	-0.3	0.0	0.0	-0.2
Long Term Full Simulation	-0.5	0.0	0.0	0.2	0.2	0.1	-0.6	-0.7	-0.4	-0.2	-0.1	-0.3

Water Year Types												
Wet	-0.4	0.1	0.1	0.3	0.2	0.0	-0.6	-0.9	-0.6	-0.2	0.0	-0.2
Above Norm	-0.1	0.0	-0.2	0.3	0.3	0.0	-0.7	-0.6	-0.3	-0.1	-0.1	-0.1
Below Norm	-0.1	0.3	0.2	0.1	0.2	0.0	-0.8	-0.9	-0.3	-0.1	-0.1	-0.1
Dry	-0.8	-0.4	-0.1	0.1	0.2	0.2	-0.6	-0.9	-0.6	-0.3	-0.1	-0.3
Critical	-0.9	0.1	0.3	0.1	0.1	0.2	-0.2	-0.1	0.1	-0.4	-0.7	-1.2
Dry & Crit	-0.8	-0.2	0.1	0.1	0.1	0.2	-0.4	-0.6	-0.3	-0.3	-0.3	-0.7

Sacramento River at Balls Ferry

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	56.3	54.4	51.5	48.2	48.0	51.0	55.5	56.9	56.7	55.8	54.3	56.0
20%	55.7	54.0	50.6	47.5	47.7	50.2	54.6	56.3	55.5	55.1	53.8	54.8
30%	55.1	53.7	50.2	47.0	47.4	49.9	54.2	55.7	55.0	54.2	53.5	54.3
40%	54.0	53.5	49.8	46.7	46.9	49.4	53.8	55.4	54.8	53.9	53.3	53.9
50%	53.8	53.2	49.4	46.5	46.5	48.9	53.5	55.0	54.5	53.6	53.1	53.3
60%	53.4	53.0	49.1	46.2	46.0	48.6	53.1	54.7	54.1	53.4	53.0	52.8
70%	53.3	52.7	48.7	45.8	45.3	48.1	52.4	54.3	53.8	53.1	52.8	52.4
80%	53.1	52.4	48.2	45.5	45.1	47.4	52.0	53.8	53.4	52.8	52.5	51.7
90%	52.8	52.0	47.7	45.2	44.7	46.8	50.8	53.3	53.0	52.6	52.4	51.3
Long Term												
Full Simulation	54.5	53.2	49.6	46.6	46.4	48.9	53.3	55.1	54.6	53.9	53.3	53.7
Water Year Types												
Wet	53.4	53.3	50.1	46.1	45.6	47.7	52.0	54.6	54.9	53.7	52.7	52.0
Above Norm	53.4	53.0	49.4	46.5	46.0	48.5	53.1	55.0	54.3	53.1	53.0	52.5
Below Norm	53.9	52.7	49.3	46.4	46.2	49.2	53.8	55.3	54.1	53.5	53.2	53.5
Dry	54.7	53.1	49.3	46.9	47.3	49.8	54.5	55.4	54.2	53.8	53.5	54.3
Critical	58.1	54.2	49.5	47.5	47.9	50.2	54.0	55.4	55.4	55.7	55.0	58.1
Dry & Crit	56.1	53.5	49.4	47.2	47.5	50.0	54.3	55.4	54.7	54.5	54.1	55.8

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	56.3	54.3	51.4	48.5	48.0	50.8	55.1	56.2	56.3	55.3	54.1	55.1
20%	54.3	54.0	50.5	47.5	47.8	50.2	54.2	55.6	55.1	54.2	53.8	54.4
30%	53.8	53.6	50.2	47.2	47.6	49.9	53.6	55.0	54.7	53.9	53.5	53.9
40%	53.7	53.5	49.8	46.8	47.0	49.6	53.4	54.5	54.2	53.8	53.3	53.6
50%	53.4	53.3	49.5	46.6	46.6	48.8	53.1	54.0	53.9	53.5	53.0	53.1
60%	53.2	53.0	49.2	46.3	46.2	48.5	52.5	53.9	53.7	53.2	52.8	52.7
70%	53.1	52.7	48.7	46.1	45.6	48.1	52.1	53.6	53.2	52.9	52.7	52.4
80%	52.9	52.2	48.5	45.8	45.4	47.4	51.5	53.3	53.1	52.7	52.6	51.5
90%	52.6	51.8	48.0	45.4	44.9	46.9	50.3	52.8	52.7	52.6	52.3	51.1
Long Term												
Full Simulation	54.0	53.2	49.6	46.7	46.6	49.0	52.8	54.4	54.2	53.7	53.2	53.4
Water Year Types												
Wet	52.9	53.4	50.2	46.3	45.8	47.7	51.5	53.8	54.4	53.5	52.7	51.8
Above Norm	53.4	52.9	49.2	46.7	46.2	48.5	52.6	54.5	54.1	53.0	52.9	52.5
Below Norm	53.8	52.9	49.4	46.4	46.3	49.2	53.2	54.4	53.7	53.4	53.1	53.3
Dry	54.0	52.7	49.2	47.0	47.4	50.0	54.0	54.6	53.5	53.5	53.4	53.9
Critical	57.3	54.3	49.7	47.5	47.9	50.4	53.8	55.3	55.5	55.3	54.3	57.0
Dry & Crit	55.3	53.4	49.4	47.2	47.6	50.1	53.9	54.9	54.3	54.2	53.8	55.2

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-0.1	-0.1	-0.1	0.3	0.0	-0.2	-0.5	-0.7	-0.5	-0.5	-0.2	-0.9
20%	-1.4	0.0	-0.1	0.0	0.1	0.1	-0.4	-0.6	-0.3	-1.0	0.0	-0.4
30%	-1.3	-0.1	0.0	0.2	0.1	0.0	-0.6	-0.7	-0.4	-0.2	0.0	-0.4
40%	-0.3	0.0	0.1	0.1	0.1	0.2	-0.4	-0.8	-0.6	-0.1	0.0	-0.2
50%	-0.3	0.1	0.1	0.1	0.1	-0.1	-0.4	-1.0	-0.5	-0.1	-0.1	-0.2
60%	-0.2	0.0	0.1	0.2	0.2	-0.1	-0.6	-0.8	-0.4	-0.2	-0.1	-0.2
70%	-0.1	0.0	0.1	0.3	0.3	0.0	-0.3	-0.6	-0.6	-0.2	-0.1	0.0

80%	-0.3	-0.2	0.3	0.3	0.3	0.0	-0.5	-0.5	-0.3	-0.1	0.1	-0.2
90%	-0.3	-0.2	0.2	0.2	0.3	0.1	-0.5	-0.6	-0.3	0.0	-0.1	-0.2
Long Term												
Full Simulation	-0.5	0.0	0.0	0.1	0.2	0.0	-0.5	-0.7	-0.4	-0.2	-0.1	-0.3
Water Year Types												
Wet	-0.4	0.1	0.1	0.2	0.2	0.0	-0.5	-0.8	-0.5	-0.2	0.0	-0.2
Above Norm	-0.1	0.0	-0.2	0.2	0.3	0.0	-0.5	-0.5	-0.2	-0.1	-0.1	-0.1
Below Norm	-0.1	0.2	0.1	0.1	0.1	0.0	-0.6	-0.8	-0.3	-0.1	-0.1	-0.1
Dry	-0.7	-0.3	-0.1	0.1	0.1	0.2	-0.5	-0.9	-0.6	-0.3	-0.1	-0.3
Critical	-0.8	0.1	0.2	0.0	0.0	0.2	-0.2	-0.2	0.0	-0.4	-0.7	-1.2
Dry & Crit	-0.8	-0.2	0.0	0.1	0.1	0.2	-0.4	-0.6	-0.4	-0.4	-0.3	-0.7

Sacramento River at Jellys Ferry

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	56.7	54.0	50.8	47.7	48.2	51.6	56.5	58.3	58.5	57.4	56.0	57.7
20%	56.1	53.7	49.9	47.1	47.7	50.8	55.8	57.9	57.5	56.5	55.3	56.6
30%	55.6	53.4	49.4	46.7	47.4	50.4	55.2	57.3	57.1	56.0	55.0	56.0
40%	54.6	53.2	49.0	46.3	47.0	50.0	54.9	56.7	56.9	55.7	54.8	55.5
50%	54.3	52.9	48.6	46.1	46.7	49.6	54.6	56.5	56.4	55.3	54.5	54.8
60%	54.1	52.7	48.2	45.8	46.4	49.3	54.2	56.1	55.9	54.9	54.4	54.4
70%	53.8	52.2	48.0	45.6	45.7	48.9	53.6	55.9	55.4	54.4	54.2	53.8
80%	53.6	52.0	47.4	45.4	45.5	48.0	53.2	55.4	54.9	54.1	53.9	52.9
90%	53.3	51.5	47.1	44.9	45.2	47.6	51.9	54.8	54.4	53.9	53.7	52.5
Long Term												
Full Simulation	55.0	52.9	48.9	46.2	46.7	49.5	54.4	56.6	56.4	55.4	54.8	55.2
Water Year Types												
Wet	53.9	52.9	49.4	45.9	45.9	48.3	53.0	56.2	57.1	55.4	54.2	53.3
Above Norm	54.1	52.6	48.6	46.2	46.2	49.1	54.1	56.6	56.1	54.5	54.4	54.0
Below Norm	54.5	52.3	48.6	46.0	46.4	49.9	54.9	56.8	55.7	54.9	54.7	55.0
Dry	55.3	52.7	48.5	46.4	47.3	50.4	55.5	56.8	55.6	55.2	55.0	55.9
Critical	58.4	53.8	48.7	47.1	48.1	50.8	55.2	56.7	56.9	57.2	56.4	59.4
Dry & Crit	56.5	53.2	48.6	46.7	47.6	50.6	55.4	56.8	56.1	56.0	55.6	57.3

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	56.7	54.1	50.8	47.8	48.1	51.6	56.1	57.9	58.2	56.9	55.8	57.0
20%	55.0	53.7	49.8	47.1	47.8	51.0	55.4	57.0	57.4	56.0	55.4	56.1
30%	54.4	53.4	49.4	46.8	47.4	50.5	54.7	56.5	56.8	55.7	54.9	55.5
40%	54.3	53.1	49.0	46.4	47.0	50.0	54.5	56.3	56.4	55.3	54.7	55.3
50%	54.0	52.9	48.6	46.1	46.8	49.5	54.3	55.8	55.8	55.0	54.5	54.5
60%	53.9	52.5	48.4	45.9	46.5	49.2	53.6	55.4	55.5	54.8	54.3	54.2
70%	53.6	52.2	48.0	45.8	45.9	48.8	53.3	55.1	54.8	54.2	54.1	53.9
80%	53.4	51.9	47.5	45.5	45.6	48.0	52.8	54.9	54.4	53.9	54.0	52.8
90%	53.1	51.5	47.2	45.0	45.5	47.5	51.5	54.4	54.1	53.8	53.7	52.3
Long Term												
Full Simulation	54.6	52.9	48.8	46.3	46.8	49.6	54.0	56.0	56.0	55.2	54.7	54.9
Water Year Types												
Wet	53.5	53.0	49.4	46.0	46.0	48.3	52.6	55.6	56.7	55.2	54.2	53.1
Above Norm	54.0	52.6	48.4	46.3	46.4	49.1	53.8	56.3	56.0	54.4	54.3	53.9
Below Norm	54.4	52.4	48.7	46.1	46.5	49.8	54.5	56.0	55.3	54.8	54.6	54.9
Dry	54.6	52.4	48.4	46.5	47.4	50.5	55.1	56.0	55.0	54.8	54.9	55.6
Critical	57.6	53.9	48.9	47.1	48.1	51.0	55.0	56.6	56.9	56.8	55.7	58.4
Dry & Crit	55.8	53.0	48.6	46.7	47.7	50.7	55.1	56.2	55.7	55.6	55.2	56.7

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-0.1	0.1	0.0	0.1	-0.1	0.0	-0.4	-0.4	-0.2	-0.5	-0.3	-0.7
20%	-1.2	0.0	-0.2	0.0	0.1	0.2	-0.4	-0.9	-0.1	-0.5	0.0	-0.5
30%	-1.1	0.0	0.0	0.1	0.0	0.1	-0.5	-0.8	-0.3	-0.3	-0.1	-0.5

40%	-0.3	-0.1	0.0	0.1	0.1	0.1	-0.4	-0.4	-0.5	-0.4	-0.1	-0.2
50%	-0.3	0.1	0.0	0.0	0.1	-0.1	-0.4	-0.7	-0.6	-0.3	-0.1	-0.2
60%	-0.2	-0.2	0.2	0.1	0.2	-0.1	-0.6	-0.7	-0.4	-0.2	-0.1	-0.2
70%	-0.2	0.0	0.1	0.2	0.2	0.0	-0.3	-0.7	-0.6	-0.2	-0.1	0.0
80%	-0.2	0.0	0.1	0.1	0.2	-0.1	-0.4	-0.6	-0.4	-0.2	0.0	-0.1
90%	-0.2	0.0	0.1	0.1	0.3	-0.1	-0.4	-0.4	-0.2	-0.1	0.0	-0.1
Long Term Full Simulation	-0.4	0.0	0.0	0.1	0.1	0.0	-0.4	-0.6	-0.4	-0.2	-0.2	-0.3
Water Year Types												
Wet	-0.4	0.1	0.0	0.2	0.2	0.0	-0.4	-0.6	-0.5	-0.2	0.0	-0.1
Above Norm	-0.1	0.0	-0.2	0.1	0.2	0.0	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1
Below Norm	-0.1	0.1	0.1	0.1	0.1	0.0	-0.4	-0.7	-0.4	-0.1	-0.1	-0.2
Dry	-0.7	-0.3	-0.1	0.1	0.1	0.1	-0.4	-0.8	-0.6	-0.4	-0.1	-0.3
Critical	-0.7	0.1	0.1	0.0	0.0	0.2	-0.2	-0.2	0.0	-0.4	-0.7	-1.1
Dry & Crit	-0.7	-0.2	0.0	0.0	0.1	0.1	-0.3	-0.6	-0.4	-0.4	-0.4	-0.6

Sacramento River at Bend Bridge

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.0	54.0	50.6	47.6	48.2	52.0	57.0	59.0	59.5	58.6	57.4	58.8
20%	56.4	53.6	49.4	46.9	47.9	51.2	56.3	58.6	58.6	57.7	56.7	57.9
30%	55.8	53.2	48.9	46.5	47.5	51.0	55.8	58.0	58.2	57.1	56.4	57.2
40%	55.0	52.9	48.5	46.2	47.1	50.4	55.5	57.5	57.8	56.8	56.1	56.7
50%	54.7	52.6	48.1	46.0	46.8	50.1	55.1	57.2	57.3	56.5	55.7	55.9
60%	54.4	52.1	47.9	45.8	46.5	49.8	54.7	56.8	56.9	56.1	55.5	55.5
70%	54.1	51.9	47.5	45.6	46.0	49.4	54.3	56.5	56.4	55.6	55.3	54.9
80%	53.9	51.6	47.2	45.3	45.7	48.5	53.8	56.2	55.8	55.1	55.1	53.9
90%	53.6	51.1	46.8	45.0	45.5	48.0	52.6	55.5	55.2	54.8	54.8	53.4
Long Term Full Simulation	55.3	52.6	48.4	46.1	46.8	50.0	55.0	57.3	57.3	56.5	56.0	56.2
Water Year Types												
Wet	54.2	52.7	48.9	45.9	46.1	48.9	53.6	56.8	58.1	56.5	55.3	54.2
Above Norm	54.4	52.4	48.3	46.1	46.4	49.6	54.7	57.4	57.1	55.5	55.6	55.1
Below Norm	54.8	52.1	48.2	45.9	46.6	50.4	55.5	57.5	56.6	56.0	55.9	56.2
Dry	55.6	52.4	48.1	46.2	47.4	50.9	56.1	57.6	56.6	56.3	56.3	57.2
Critical	58.6	53.4	48.3	46.9	48.2	51.3	55.9	57.5	57.8	58.5	57.5	60.3
Dry & Crit	56.8	52.8	48.2	46.5	47.7	51.1	56.0	57.5	57.1	57.2	56.8	58.4

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	56.9	54.0	50.5	47.6	48.2	52.1	56.7	58.7	59.2	58.2	57.1	58.2
20%	55.5	53.5	49.3	46.9	47.9	51.4	56.1	57.9	58.4	57.2	56.7	57.5
30%	54.9	53.1	48.8	46.6	47.5	51.0	55.4	57.4	58.0	56.7	56.3	56.6
40%	54.7	52.8	48.6	46.3	47.2	50.5	55.2	57.0	57.3	56.6	55.9	56.4
50%	54.4	52.5	48.2	46.0	46.9	50.0	54.8	56.5	56.8	56.1	55.7	55.9
60%	54.2	52.3	47.9	45.9	46.6	49.7	54.4	56.3	56.4	55.9	55.4	55.3
70%	53.9	52.0	47.6	45.7	46.1	49.3	53.9	55.8	55.7	55.4	55.2	54.9
80%	53.7	51.5	47.3	45.5	45.9	48.6	53.5	55.6	55.4	55.0	55.1	53.8
90%	53.4	51.2	46.8	45.2	45.7	47.9	52.0	55.0	55.0	54.7	54.8	53.3
Long Term Full Simulation	54.9	52.6	48.4	46.2	46.9	50.1	54.6	56.7	57.0	56.3	55.8	56.0
Water Year Types												
Wet	53.8	52.8	49.0	46.0	46.3	48.8	53.3	56.2	57.6	56.3	55.3	54.1
Above Norm	54.3	52.3	48.2	46.2	46.6	49.6	54.4	57.1	57.0	55.5	55.5	55.0
Below Norm	54.7	52.2	48.2	45.9	46.7	50.4	55.2	56.8	56.2	55.9	55.8	56.0
Dry	55.0	52.1	48.0	46.3	47.5	51.0	55.7	56.8	56.0	55.9	56.2	56.9
Critical	57.9	53.5	48.4	46.9	48.2	51.4	55.7	57.3	57.8	58.1	56.8	59.4
Dry & Crit	56.1	52.7	48.2	46.5	47.8	51.2	55.7	57.0	56.7	56.8	56.4	57.9

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**

Probability of Exceedance												
10%	-0.1	0.0	-0.1	0.0	0.0	0.1	-0.4	-0.3	-0.4	-0.4	-0.3	-0.5
20%	-0.9	-0.2	-0.2	0.0	0.0	0.2	-0.2	-0.7	-0.2	-0.5	0.0	-0.5
30%	-1.0	-0.1	-0.1	0.1	0.0	0.0	-0.4	-0.7	-0.2	-0.3	-0.1	-0.6
40%	-0.3	-0.1	0.0	0.1	0.1	0.1	-0.2	-0.5	-0.4	-0.2	-0.2	-0.3
50%	-0.3	0.0	0.0	0.0	0.0	0.0	-0.3	-0.7	-0.5	-0.3	0.0	0.0
60%	-0.2	0.1	0.0	0.1	0.1	-0.1	-0.3	-0.5	-0.5	-0.2	-0.1	-0.1
70%	-0.2	0.1	0.1	0.1	0.2	-0.1	-0.4	-0.7	-0.7	-0.2	-0.1	0.0
80%	-0.2	0.0	0.1	0.2	0.2	0.0	-0.2	-0.6	-0.4	-0.1	0.0	-0.1
90%	-0.2	0.0	0.0	0.2	0.2	0.0	-0.6	-0.4	-0.2	0.0	-0.1	-0.1
Long Term												
Full Simulation	-0.4	0.0	0.0	0.1	0.1	0.0	-0.3	-0.6	-0.4	-0.2	-0.2	-0.3
Water Year Types												
Wet	-0.4	0.0	0.0	0.1	0.1	0.0	-0.3	-0.6	-0.4	-0.2	0.1	-0.1
Above Norm	-0.1	0.0	-0.1	0.1	0.2	0.0	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1
Below Norm	-0.1	0.1	0.0	0.0	0.1	0.0	-0.4	-0.7	-0.4	-0.1	-0.1	-0.2
Dry	-0.6	-0.3	-0.1	0.0	0.1	0.1	-0.3	-0.8	-0.6	-0.4	-0.2	-0.3
Critical	-0.7	0.1	0.1	0.0	0.0	0.1	-0.2	-0.2	0.0	-0.4	-0.7	-1.0
Dry & Crit	-0.7	-0.1	0.0	0.0	0.1	0.1	-0.3	-0.6	-0.4	-0.4	-0.4	-0.6

Sacramento River at Red Bluff

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.6	54.1	50.4	47.6	48.5	52.8	58.0	60.2	61.3	60.6	59.4	60.5
20%	57.0	53.6	49.3	46.9	48.2	51.9	57.3	59.8	60.1	59.5	58.5	59.6
30%	56.4	53.2	48.7	46.6	47.6	51.5	56.7	59.1	59.7	59.0	58.3	59.0
40%	55.6	52.9	48.4	46.2	47.4	50.9	56.3	58.6	59.4	58.7	57.9	58.4
50%	55.3	52.5	48.1	46.0	47.0	50.5	55.8	58.2	58.8	58.2	57.6	57.7
60%	54.9	52.3	47.8	45.8	46.6	50.3	55.5	57.9	58.5	57.8	57.4	57.0
70%	54.6	51.9	47.5	45.6	46.2	49.9	54.9	57.5	57.9	57.2	57.1	56.6
80%	54.4	51.6	47.2	45.4	45.9	48.9	54.4	57.1	57.3	56.7	56.6	55.2
90%	54.1	51.2	46.8	45.0	45.7	48.2	53.1	56.4	56.8	56.4	56.5	54.7
Long Term												
Full Simulation	55.8	52.6	48.4	46.2	47.1	50.5	55.7	58.3	58.9	58.3	57.8	57.8
Water Year Types												
Wet	54.7	52.8	48.8	45.9	46.3	49.2	54.1	57.8	59.6	58.3	57.0	55.6
Above Norm	55.0	52.3	48.2	46.1	46.6	50.0	55.4	58.4	58.8	57.2	57.4	56.7
Below Norm	55.4	52.1	48.1	45.9	46.8	50.9	56.4	58.6	58.1	57.8	57.8	58.0
Dry	56.1	52.5	48.0	46.2	47.7	51.4	56.9	58.6	58.1	58.1	58.2	59.0
Critical	59.0	53.4	48.3	46.9	48.5	52.0	56.9	58.6	59.4	60.5	59.3	61.9
Dry & Crit	57.3	52.9	48.1	46.5	48.1	51.7	56.9	58.6	58.6	59.1	58.7	60.1

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	57.4	54.0	50.3	47.6	48.6	52.8	57.6	59.8	61.0	60.2	59.2	60.2
20%	56.1	53.5	49.2	46.9	48.2	51.9	57.2	59.1	59.9	59.2	58.6	59.2
30%	55.5	53.0	48.7	46.6	47.7	51.5	56.4	58.5	59.5	58.6	58.2	58.5
40%	55.2	52.8	48.5	46.3	47.4	51.0	56.0	58.2	59.0	58.3	57.7	58.2
50%	55.0	52.5	48.1	46.0	47.1	50.5	55.6	57.7	58.3	57.9	57.5	57.6
60%	54.8	52.2	47.8	45.9	46.9	50.2	55.1	57.2	58.1	57.6	57.3	57.0
70%	54.4	52.0	47.6	45.7	46.2	49.7	54.7	56.9	57.3	57.0	57.0	56.5
80%	54.2	51.6	47.3	45.5	46.1	48.8	54.0	56.5	57.0	56.6	56.7	55.2
90%	53.9	51.3	46.8	45.2	45.8	48.3	52.5	55.9	56.4	56.3	56.5	54.5
Long Term												
Full Simulation	55.4	52.6	48.3	46.2	47.2	50.5	55.4	57.8	58.5	58.1	57.6	57.6
Water Year Types												
Wet	54.3	52.8	48.9	46.0	46.4	49.2	53.8	57.2	59.2	58.1	57.1	55.5
Above Norm	54.9	52.3	48.1	46.2	46.8	50.0	55.1	58.2	58.6	57.2	57.3	56.6
Below Norm	55.3	52.2	48.1	45.9	46.9	50.9	56.0	57.9	57.8	57.7	57.7	57.8
Dry	55.6	52.2	47.9	46.3	47.8	51.6	56.6	57.8	57.5	57.7	58.0	58.7
Critical	58.4	53.5	48.3	46.9	48.5	52.1	56.7	58.4	59.4	60.1	58.7	61.0
Dry & Crit	56.7	52.7	48.1	46.5	48.1	51.8	56.7	58.1	58.3	58.7	58.3	59.6

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	-0.2	0.0	-0.1	0.0	0.1	0.0	-0.4	-0.4	-0.3	-0.5	-0.2	-0.3
20%	-0.9	-0.1	-0.1	0.0	0.0	0.1	-0.1	-0.6	-0.2	-0.2	0.0	-0.4
30%	-0.9	-0.1	0.0	0.1	0.1	0.0	-0.3	-0.6	-0.2	-0.3	-0.1	-0.5
40%	-0.4	-0.1	0.1	0.1	0.1	0.1	-0.3	-0.5	-0.4	-0.4	-0.2	-0.2
50%	-0.3	0.0	0.0	0.0	0.1	0.0	-0.2	-0.6	-0.4	-0.3	-0.1	-0.1
60%	-0.2	0.0	0.0	0.1	0.2	-0.1	-0.3	-0.7	-0.4	-0.2	-0.1	-0.1
70%	-0.2	0.1	0.1	0.1	0.0	-0.2	-0.2	-0.6	-0.6	-0.2	-0.1	-0.2
80%	-0.2	0.0	0.1	0.2	0.1	0.0	-0.3	-0.6	-0.3	-0.1	0.1	-0.1
90%	-0.2	0.1	-0.1	0.2	0.1	0.1	-0.6	-0.5	-0.4	-0.1	0.0	-0.2
Long Term Full Simulation	-0.4	0.0	0.0	0.1	0.1	0.0	-0.3	-0.5	-0.3	-0.3	-0.2	-0.2
Water Year Types												
Wet	-0.4	0.0	0.0	0.1	0.1	0.0	-0.3	-0.6	-0.4	-0.2	0.1	-0.1
Above Norm	-0.1	0.0	-0.1	0.1	0.2	0.0	-0.3	-0.2	-0.1	-0.1	-0.2	-0.1
Below Norm	-0.1	0.1	0.0	0.0	0.1	0.0	-0.3	-0.7	-0.4	-0.1	-0.1	-0.2
Dry	-0.6	-0.3	-0.1	0.0	0.1	0.1	-0.3	-0.8	-0.6	-0.4	-0.2	-0.2
Critical	-0.7	0.1	0.1	0.0	0.0	0.1	-0.2	-0.2	0.0	-0.4	-0.6	-0.9
Dry & Crit	-0.6	-0.1	0.0	0.0	0.0	0.1	-0.3	-0.6	-0.4	-0.4	-0.4	-0.5

Sacramento River below Hamilton City

ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	59.4	54.4	49.9	47.6	49.4	54.2	60.3	63.7	65.8	65.6	64.4	64.7
20%	58.7	53.8	48.9	46.9	49.0	53.5	59.4	63.2	64.8	64.6	63.4	63.7
30%	58.1	53.4	48.2	46.6	48.3	52.9	58.7	62.4	64.1	64.0	63.1	63.1
40%	57.6	53.0	48.0	46.3	47.9	52.2	58.5	62.0	63.6	63.5	62.5	62.5
50%	57.2	52.5	47.7	46.0	47.6	51.7	57.7	61.6	63.2	63.0	62.1	61.6
60%	56.7	52.2	47.5	45.8	47.2	51.3	57.4	61.0	62.8	62.4	61.9	60.9
70%	56.4	52.0	47.2	45.6	46.9	50.8	56.6	60.6	61.9	61.6	61.5	60.3
80%	56.3	51.7	47.0	45.4	46.4	49.7	55.4	60.0	61.3	60.8	61.0	58.5
90%	55.9	51.4	46.6	45.1	46.1	49.0	54.4	58.9	60.7	60.5	60.6	58.0
Long Term Full Simulation	57.5	52.8	48.0	46.2	47.7	51.7	57.5	61.4	63.1	63.0	62.3	61.7
Water Year Types												
Wet	56.3	52.9	48.4	46.0	46.8	50.1	55.5	60.5	64.0	63.0	61.4	59.1
Above Norm	56.8	52.3	47.9	46.2	47.0	50.9	56.9	61.5	63.3	61.6	61.9	60.5
Below Norm	57.2	52.3	47.8	45.9	47.4	52.1	58.2	61.9	62.3	62.4	62.5	62.1
Dry	58.0	52.7	47.7	46.2	48.4	52.7	59.0	61.9	62.2	62.6	62.9	63.1
Critical	60.5	53.6	47.9	46.9	49.4	53.6	59.6	62.1	63.5	65.4	63.9	65.6
Dry & Crit	59.0	53.0	47.8	46.5	48.8	53.1	59.2	62.0	62.7	63.7	63.3	64.1

Shasta Dam Raise, CP4A with ROC Proposed Action

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
10%	59.2	54.4	49.7	47.6	49.5	54.2	60.3	63.1	65.6	65.1	64.2	64.6
20%	58.2	53.7	48.9	46.9	49.1	53.4	59.3	62.7	64.4	64.4	63.3	63.3
30%	57.6	53.3	48.3	46.6	48.4	52.9	58.6	61.9	64.1	63.6	62.9	62.6
40%	57.1	52.9	48.1	46.3	48.0	52.1	58.1	61.6	63.4	63.1	62.3	62.2
50%	56.9	52.6	47.7	46.1	47.7	51.7	57.6	61.4	62.7	62.5	62.1	61.7
60%	56.4	52.4	47.6	45.9	47.4	51.3	57.2	60.5	62.4	62.3	61.9	60.9
70%	56.2	52.1	47.3	45.8	47.0	50.7	56.6	60.1	61.4	61.4	61.4	60.3
80%	56.0	51.7	47.0	45.5	46.5	49.7	55.2	59.8	61.0	60.6	61.0	58.5
90%	55.3	51.2	46.6	45.2	46.2	49.3	54.1	58.7	60.4	60.4	60.7	57.6
Long Term Full Simulation	57.2	52.8	48.0	46.2	47.8	51.7	57.3	61.0	62.8	62.7	62.2	61.5
Water Year Types												
Wet	56.0	52.9	48.5	46.1	46.9	50.1	55.3	60.1	63.7	62.8	61.5	59.1
Above Norm	56.7	52.3	47.8	46.3	47.2	50.9	56.7	61.4	63.2	61.6	61.7	60.4

Below Norm	57.1	52.4	47.8	46.0	47.5	52.1	58.0	61.4	62.0	62.2	62.4	61.9
Dry	57.5	52.5	47.6	46.2	48.5	52.8	58.8	61.2	61.7	62.2	62.7	63.0
Critical	60.0	53.6	48.0	46.9	49.4	53.7	59.4	61.9	63.5	65.0	63.3	65.0
Dry & Crit	58.5	52.9	47.8	46.5	48.9	53.2	59.0	61.5	62.4	63.3	62.9	63.8

Shasta Dam Raise, CP4A with ROC Proposed Action minus ROC Proposed Action (ROC PA)

	Temperature (°F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance												
0.1	-0.2	-0.1	-0.2	0.0	0.0	0.0	0.0	-0.6	-0.2	-0.5	-0.2	-0.1
0.2	-0.5	-0.1	-0.1	0.0	0.1	0.0	-0.1	-0.5	-0.4	-0.2	-0.1	-0.3
0.3	-0.5	-0.2	0.0	0.0	0.0	0.0	-0.1	-0.5	0.0	-0.3	-0.1	-0.5
0.4	-0.5	-0.1	0.1	0.1	0.1	-0.1	-0.4	-0.4	-0.2	-0.5	-0.2	-0.3
0.5	-0.3	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.5	-0.4	-0.1	0.1
0.6	-0.3	0.2	0.1	0.1	0.2	0.1	-0.2	-0.6	-0.4	-0.1	-0.1	0.0
0.7	-0.2	0.1	0.1	0.1	0.1	-0.2	0.0	-0.5	-0.5	-0.2	-0.2	-0.1
0.8	-0.3	0.0	-0.1	0.0	0.1	0.0	-0.2	-0.2	-0.3	-0.2	0.0	0.0
0.9	-0.5	-0.2	0.0	0.1	0.1	0.3	-0.3	-0.3	-0.3	-0.1	0.1	-0.4
Long Term Full Simulation	-0.3	0.0	0.0	0.1	0.1	0.0	-0.2	-0.4	-0.3	-0.3	-0.1	-0.2
Water Year Types												
Wet	-0.3	0.0	0.0	0.1	0.1	0.0	-0.2	-0.4	-0.3	-0.2	0.1	-0.1
Above Norm	-0.1	0.0	-0.1	0.1	0.2	0.0	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1
Below Norm	-0.1	0.1	0.0	0.0	0.1	0.0	-0.2	-0.5	-0.4	-0.1	-0.1	-0.2
Dry	-0.5	-0.2	-0.1	0.0	0.1	0.1	-0.2	-0.7	-0.6	-0.4	-0.2	-0.2
Critical	-0.5	0.0	0.1	0.0	0.0	0.1	-0.2	-0.2	0.0	-0.4	-0.6	-0.7
Dry & Crit	-0.5	-0.1	0.0	0.0	0.0	0.1	-0.2	-0.5	-0.3	-0.4	-0.3	-0.4

Appendix F. References

CALFED Bay-Delta Program. 2000a (August 28). Final Programmatic Record of Decision. Sacramento, California.

———. 2000b (July). Final Programmatic Environmental Impact Statement/Environmental Impact Report. Prepared by U.S. Department of the Interior, Bureau of Reclamation, U.S. Fish and Wildlife, National Marine Fisheries Service, U.S. Environmental Protection Agency, Natural Resources Conservation Service, U.S. Army Corps of Engineers, and California Resources Agency. Sacramento, California.

California Department of Fish and Wildlife. Unpublished data. Region 1 stream files, Redding, California.

California Department of Fish and Game. 2003. Strategic Plan for Trout Management: A plan for 2004 and beyond. November.

CDFG. *See* California Department of Fish and Game.

CDFW. *See* California Department of Fish and Wildlife.

DuBois, C.A. 1935. Wintu Ethnography. University of California Publications in American Archaeology and Ethnography, Vol. 36. University of California Press, Berkeley, California. pp. 1-148.

Guilford-Kardell, M. 1980. Papers on Wintu Ethnography: 239 Wintu Villages in Shasta County circa 1850. Occasional Papers of the Redding Museum, 1. Redding Museum and Art Center, Redding, California. Prepared with J. Dotta.

Jones & Stokes Associates, Inc. 1988. McCloud River Wild and Scenic River Study Report: Final Study Report. Prepared for The Resources Agency, State of California. Sacramento, California.

Lucas, G., and T. Stienstra. 2007. Land Sale Leads to Worries Over Dam. San Francisco Chronicle, January 28: A-1.

McCloud River. 1991. McCloud River Coordinated Resources Management Plan.

Moyle, P.B. 2002. Inland Fishes of California. Revised edition. University of California Press. Berkeley, California.

National Oceanic and Atmospheric Administration, National Marine Fisheries Service. 2009 (June 4). Biological Opinion and Conference Opinion on the Long-Term

Central Valley Project and State Water Project. Southwest Region. Long Beach, California.

———. 2019 (October 21). Biological Opinion for the Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and State Water Project. Long Beach, California.

North State Resources, Inc. 2008. Technical Memorandum: Lower McCloud River Fish Habitat Survey.

Pacific Gas and Electric Company. 2006. McCloud-Pit Hydroelectric Project: FERC Project 2106. Relicensing Pre-Application Document.

PG&E. *See* Pacific Gas and Electric Company.

Reclamation. *See* U.S. Department of the Interior, Bureau of Reclamation.

Rode, M., and M. Dean. 2004. Lower McCloud River Wild Trout Area Fishery Management Plan, 2004 through 2009. State of California, the Resources Agency, Department of Fish and Wildlife. Original prepared by M. Rode in 1989. Revised and updated by M. Dean in 2004.

Tippets, W.E., and P.B. Moyle. 1978. Epibenthic Feeding by Rainbow Trout (*Salmo gairdneri*) in the McCloud River, California. Journal of Animal Ecology 47:549–559.

U.S. Department of Agriculture, Forest Service. 1994. Wild and Scenic Rivers Evaluation. Appendix E to the Final Environmental Impact Statement: Land and Resource Management Plan, Shasta-Trinity National Forest. Pacific Southwest Region. Redding, California.

———. 1995a (April 28). Record of Decision for the Final Environmental Impact Statement for the Shasta-Trinity National Forests Land and Resource management Plan. Pacific Southwest Region. Shasta-Trinity National Forest. Redding, California.

———. 1995b. Shasta-Trinity National Forest Land and Resource Management Plan. Pacific Southwest Region. Shasta-Trinity National Forest, Redding, California.

———. 1998a (March). Lower McCloud River Watershed Analysis. Shasta- Trinity National Forest, Shasta-McCloud Management Unit.

———. 1998b (May). McCloud Arm Watershed Analysis. Shasta-Trinity National Forest. Redding, California.

———. 2001. Lower McCloud River Habitat Typing Report. Unpublished office report. Shasta-Trinity National Forest, Redding, California.

USACE. *See* U.S. Department of the Army, Army Corps of Engineers.

U.S. Department of the Army, Army Corps of Engineers, South Pacific District. 2011 (January 11). Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios. San Francisco, CA.

U.S. Department of the Interior, Bureau of Reclamation. 2003 (November). Ecosystem Restoration Opportunities in the Upper Sacramento River Region. Office Report, Shasta Lake Water Resources Investigation.

———. 2015 (July 29). Shasta Lake Water Resources Investigation Final Environmental Impact Statement. Sacramento, California.

U.S. Department of the Interior, Bureau of Reclamation, and California Department of Water Resources. 1986 (November). Agreement Between the United States of America and the State of California for Coordinated Operation of the Central Valley Project and the State Water Project. Sacramento, California.

———. 2018 (December). Addendum to the Agreement Between the United States of America and the Department of Water Resources of the State of California for Coordinated Operation of the Central Valley Project and the State Water Project. Sacramento, California.

U.S. Department of the Interior, Fish and Wildlife Service. 2008 (December 15). Biological Opinion on the Coordinated Operations of the Central Valley Project and State Water Project in California. Final. Sacramento, California.

———. 2019 (October 21). Biological Opinion for the Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and State Water Project. Final. Sacramento, California.

U.S. Department of the Interior, Geological Survey. 2007. Water Data Report 2007: 11368000 McCloud River above Shasta Lake, California. Records were collected by Pacific Gas and Electric Company, under general supervision of the U.S. Geological Survey, in connection with Federal Energy Regulatory Commission project no. 2106.

_____. 2011. McCloud Water Data Report

_____. 2013. Water-Data Report 2013

USFS. *See* U.S. Department of Agriculture, Forest Service.

USGS. *See* U.S. Department of the Interior, Geological Survey.

Wales, J.H. 1939. General Report of Investigations on the McCloud River Drainage in 1938. California Fish and Game 25(4):272–309.

Whitney, D. 2004. Concrete Solution for Water Shortage? Raising Shasta Dam's Height Looms Large among Ideas to Boost State's Dwindling Storage. Los Angeles Times, November 21. Available: <http://www.watershedportal.org/news/news_html?ID=165>. Accessed March 4, 2009.

Yoshiyama, R.M., and F.W. Fisher. 2001. Long Time Past: Baird Station and the McCloud Wintu. Fisheries 26(3):6–22.

Appendix G Responses to Comments on the Draft SEIS

Appendix G Responses to Comments on the Draft SEIS

This appendix contains the comments received on the Draft Supplemental EIS (DSEIS) and responses to those comments. More than 6,300 letters were received, of which more than 5,000 are considered form letters and are duplicative in content. Prior to acting on the Final SEIS and the proposed project, the U.S. Bureau of Reclamation (Reclamation) will consider the responses to comments in Appendix G, along with the DSEIS Chapters 1 through 5 and other appendices, all of which are part of the Final SEIS. Section 1.1, Format of Comments and Responses describes the format of the comments and responses, Section 1.2 presents a summary of comments received, Section 1.3 comprises the Master Comment Responses (MCR). Sections 1.4 – 2.9 present the comments and responses in tabular format from Federal Agencies, Tribes, State Agencies, Regional and Local Agencies, special interests (including scientific advisors and consultants), and individuals. Sections 2.0-2.6 present the responses to form letters. Section 2.8 contains a complete list of all agencies, organizations, and individuals who commented on the DSEIS. Section 2.8 also includes names of those who submitted form letters and the form number associated with each respondent.

- Section 1.3 Master Comment Responses
- Section 1.4 Comments from Federal Agencies and Responses
- Section 1.5 Comments from Tribes and Responses
- Section 1.6 Comments from State Agencies and Responses
- Section 1.7 Comments from Regional and Local Governments and Agencies and Responses
- Section 1.8 Comments from Special Interest Groups and Responses
- Section 1.9 Comments from Individuals and Responses
- Sections 2.0- 2.6 Comments from Form Letters and Responses
- Section 2.7 Comments that Present General Opinions
- Section 2.8 Index of Commenters

1.1 Format of Comments and Responses

The order of the comments and responses is as listed above. Letters were assigned a number and individual comments were identified and responded to in tabular format. Comment response tables are provided in sequential order based on the number assigned to each letter. Letter numbering may skip due to letter numbering methodology and skipped numbers do not equate to

skipped letters. Well over 5,000 comment letters were found to be "form letters". Form letters are those that are identical or nearly identical in content. Reclamation has responded to these letters in summary fashion in Section 2.1. Commenters who submitted a form letter and are interested in the response should cross reference the Section 2.2, Index of all commenters to locate the form number associated with their comment.

Written responses are to describe the disposition of any significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections) and provide a good faith, reasoned analysis in response. The range of responses includes clarifying the analysis in the DSEIS, making factual corrections, pointing to sections of the Supplemental Environmental Impact Statement (SEIS) where the comment is addressed, pointing to sections of the FEIS where the comment is addressed, explaining why certain comments do not warrant further response, or acknowledging the comment for consideration by the decision-making bodies. Comments that present opinions about the program unrelated to environmental issues or that raise issues unrelated either to the substance of the DSEIS, or to environmental issues, are generally addressed in Section 2.2. The National Environmental Policy Act (NEPA) lead agency is directed to "assess and consider comments, both individually and collectively" (Title 40, Code of Federal Regulations (CFR) Section 1503.4 (a) (40 CFR 1503.4(a))) and prepare a response to these concerns expressed during the comment period.

No comments were received on the DSEIS that resulted in any new impacts, required new mitigation, required consideration of new alternatives, or resulted in any other substantial changes to the DSEIS. Changes made to the DSEIS in response to comments were limited to minor corrections of errors and omissions. This Final SEIS meets NEPA requirements for responding to comments.

1.2 Summary of Comment Period and Comments Received

The DSEIS was released for public review and comment on August 6, 2020 for a 45-day review. The comment period was extended to a 60-day review which ended October 5, 2020.

A NOA was published by Reclamation in the Federal Register on August 7,2020. A press release was also issued on August 7, 2020. Notifications regarding the release of the SLWRI DSEIS were distributed to the Bureau of Reclamation – California Great Basin NEPA mailing list, and directly to the Winnemem Wintu Tribe via e-mail.To facilitate public review and comment, Reclamation established a virtual open house website to provide information that would typically be provided in an in-person open house meeting. The website included frequently asked questions as well as fillable comment form.

Reclamation received more than 75 letters commenting on the DSEIS from Federal agencies, tribes, State of California (State) agencies, regional and local governments, special interest groups, and individuals. No comments from elected officials were identified. Six form letters were identified during Reclamation's review of comment letters. Form Letter #1 was submitted by over 300 respondents. Form Letter #2 was submitted by more than 500 respondents. Form Letter #3 was submitted by more than 150 respondents. Form Letter #4 was submitted by nearly

200 respondents. Form Letter #5 was submitted by almost 5,000 respondents. Form Letter #6 was submitted by more than 133 respondents.

Reclamation received comments requesting information about where to find the DEIS or other information related to the environmental review. Reclamation made a good faith effort to respond to all requests and provide all requested information. Reclamation also received comments requesting an extension of the comment period. The initial 45-day comment period was extended to provide commenters a 60-day review period.

In all cases, the comments and responses have not resulted in new environmental impacts or a substantial increase in the severity of an environmental impact or create a feasible project alternative or mitigation measure that would clearly lessen environmental impacts. The comments and responses also have not changed the analysis or conclusions of the DSEIS.

In many comments, key issue areas included the following, each of which is addressed in MCRs:

- Clean Water Act (CWA) 404 (r) Compliance
- Water Infrastructure Improvements for the Nation Act (WIIN) Compliance
- ESA Compliance with regard to the Reinitiation of Consultation on the Long-Term Operations of the Central Valley Project
- California Natural Resources Code Regarding the McCloud River

1.3 Master Comment Responses

The following master comment responses address comments that were raised frequently in numerous comment letters.

1.3.1. CWA-1 - CWA 404 (r) Compliance

Several commenters assert that Reclamation's reliance on CWA § 404(r) is misplaced for various reasons, and therefore allege the agency failed to comply with CWA §§401, 402 and 404(b).

First, commenters argue that reliance on CWA § 404(r) is misplaced because it only applies to "Federal project[s] specifically authorized by Congress." Because Congress has not yet authorized or appropriated funds for the project, they argue Reclamation cannot rely on the CWA § 404(r) exception. While these commenters are correct that CWA § 404(r) requires specific authorization by Congress, they misunderstand the timing of that authorization.

CWA § 404(r) provides federal agencies a separate mechanism for compliance with CWA §§ 401, 402 and 404. The agency must submit to Congress "information on the effects of such discharge, including consideration of the guidelines under [404(b)(1)]" and that information "is included *in an environmental impact statement for such project*." 33 U.S.C. § 1344(r) (emphasis added). The agency must submit the EIS (or SEIS) containing that information "before the actual discharge of dredged or fill material…*and prior to either authorization of such project or an appropriation of funds for such construction*." *Id.* (emphasis added). That is so because CWA § 404(r)'s purpose is "for Congress to receive sufficient information in order to make an informed judgement about whether to authorize a federal project." *See Delaware Dept. of Natural Resources and Environmental Control v. U.S. Army Corps of Engineers*, 685 F.3d 259, 281 (3d Cir. 2012).

Consistent with CWA § 404(r), the SEIS includes "information on the effects of such discharge, including consideration of the guidelines under [404(b)(1)]." *See* SEIS at Chapter 3.2, Appendix A. After reviewing that information in the SEIS, EPA submitted a comment on October 1, 2020 noting that "the Supplemental Draft EIS was developed in consideration of and is consistent with the CWA 404(b)(1) Guidelines." *See* SEIS Appendix G, Section 1.4, Table 1.4-2. After publication of the SEIS and ROD, Reclamation will submit the SEIS to Congress, thus complying with CWA 404(r)'s requirement that it be presented to Congress "prior to either authorization of such project or an appropriation of funds for such construction." 33 U.S.C. § 1344(r).

Second, commenters argue that—even under 404(r)—the SEIS does not adequately address the CWA 404(b)(1) guidelines. Specifically, commenters argued that the SEIS fails to adhere to the 404(b)(1) guidelines by failing to provide a "detailed analysis" with respect to whether a discharge will cause or contribute to violations of any applicable State water quality standards, jeopardize the continued existence of threatened or endangered species, cause significant adverse

effects to human health or welfare, cause significant adverse effects to "aquatic ecosystem diversity, productivity and stability," or cause significant adverse effects to "recreational, aesthetic, and economic values." *See* 40 C.F.R. § 230.10. It is unclear what, in these commenters' view, might constitute a sufficiently "detailed" analysis. Reclamation coordinated with EPA and the Corps of Engineers to update the SEIS in response to their concerns. Compliance with 404(b)(1) guidelines is discussed in Chapter 3 of the SEIS, and at greater length in Appendix A.

Finally, several commenters assert that the SEIS's reliance on 404(r) ignores requirements in CWA § 404(t), which requires that federal projects "shall comply with such State or interstate requirements both substantive and procedural to control the discharge of dredged or fill material to the same extent that any person is subject to such requirements." 33 U.S.C. § 1344(t). However, commenters' interpretation of 404(t) would render 404(r) meaningless. That is so because, again, 404(r) is a separate compliance mechanism through which Congress can choose to specifically authorize a federal project. Congress does so with the benefit of the information Reclamation is required to submit under 404(r). Once specifically authorized, a project is "not prohibited or otherwise subject to regulation under [404]." 33 U.S.C. § 1334(r). Thus, compliance with 404(r) brings a project outside the ambit of 404(t).

1.3.2. WIIN-1 - WIIN Act Compliance

Several commenters asserted that the SEIS showed non-compliance with the Water Infrastructure Improvements for the Nation Act (WIIN Act) for several reasons.

First, commenters asserted that the SEIS showed non-compliance with the WIIN Act's requirement that Reclamation find a non-federal cost sharing partner. Commenters are correct that the WIIN Act contains a cost-share requirement, but it does not require a non-federal cost-share partner at the environmental review stage.

Second, several commenters asserted the WIIN Act requires strict compliance with all state environmental laws, and that the SEIS therefore failed to explain how the project specifically adheres to all relevant state environmental laws. However, the WIIN Act does not expand Reclamation's obligation to comply with any state law beyond that which is already required under § 8 of the Reclamation Act, which requires consistency with state water law—those laws addressing the control, appropriation, use, or distribution of water. 43 U.S.C. § 373. Compliance with relevant federal, state, and local environmental laws is described in the FEIS at Chapter 3.4.

1.3.3. ESA-1 - ESA Compliance

Several commenters have suggested that Reclamation cannot rely on the 2019 Biological Opinions from USFWS and NMFS when considering impacts to listed species or critical habitat, and stated that Reclamation must engage in further consultation with USFWS and NMFS to satisfy the ESA before proceeding with the proposed project. Other comments focus on components of the 2019 Biological Opinion from NMFS or FWS and merely mention a potential ESA consultation regarding the SLWRI. However, the scope of the SEIS is "to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond

to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns." (SEIS, 1-2). That does not change Reclamation's regulatory mandate to comply with Section 7 of the ESA. FWS and NMFS have been, and continue to be, cooperating agencies on this project, and Reclamation will continue to comply with all applicable law.

Reclamation has coordinated with USFWS and NMFS throughout the NEPA process, and it will continue to do so. Neither the FEIS nor the SEIS have committed Reclamation to a course of action. *See* FEIS Master Comment Response 33.3.32, EI-1, at 33.3-160-61 ("Although a 'Preferred Alternative' is identified, an EIS does not approve or reject a project. The SLWRI EIS does not make a decision but may provide the basis for an informed and reasonable decision."); FEIS Comment Response 33.6.1, EPA-16, at 33.6-15 ("Throughout the plan formulation process and subsequent NEPA process, Reclamation has engaged and with USFWS, NMFS and CDFW to ensure that the EIS satisfies the requirements of these agencies to the extent possible with respect to future consultation and/or permitting efforts that would proceed subsequent to issuing the Final EIS.").

In the 2015 FEIS, Reclamation modeled its alternatives under the 2008 FWS Biological Opinion, the 2009 NMFS Biological Opinion, and the 1986 Coordinated Operations Agreement (COA) under which CVP was being operated at the time. However, Reclamation also noted that it had "coordinated with USFWS and NMFS regarding potential project effects on Federally listed species." Chapters 11-13 of the FEIS described potential effects of the SLWRI on endangered and threatened species. Additionally, Reclamation stated that it "will prepare the appropriate biological assessments to address potential impacts on Federally listed species and will consult with USFWS and NMFS regarding impacts of the proposed action." FEIS Ch. 26, 13-14; *see also* FEIS Master Comment Response 33.3.30 ESA-1, 33.3-157 ("Reclamation has coordinated with and received technical assistance from NMFS and USFWS for the SLWRI. Reclamation will comply with the Section 7 of the ESA by selecting a preferred alternative (ESA proposed action) and preparing a BA and conducting formal consultation. The Final EIS includes an update of the ESA consultation process, and the resultant BOs will be considered in the ROD. If any dam enlargement was authorized for construction and operation, Reclamation would also evaluate its obligations under other biological opinions.").

After publication of the 2015 FEIS, in 2018, California and the Department of the Interior entered into an amended COA and, after reinitiation of consultation, FWS and NMFS released new 2019 Biological Opinions that included operational changes for Shasta Dam and the CVP as a whole. The SEIS updates the modeling of project impacts to reflect these changed conditions. *See* SEIS Ch. 4. Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment and the largest potential changes from the 2015 FEIS. As a supplement to the FEIS, the SEIS provides updated modeling based on new information but does not change Reclamation's intent to comply with Section 7 of the ESA and seek further consultation as needed. *See* FEIS Master Comment Response 33.3.29, DSFISH-4, at 33.3-147-48 (referring to a

project-specific Biological Opinion and new operations Biological Opinions that may result from reconsultation actions.).

Several commenters appeared to confuse the fact that, while the SLWRI will operate under the current 2019 Biological Opinions, a separate ESA consultation will be necessary to account for potential effects to listed species related to construction and inundation. As stated previously, an expanded Shasta reservoir would be operated under the 2019 Biological Opinions. If, upon construction of the SLWRI, Reclamation chooses to change operations other than described in the 2019 Biological Opinions, it would need to be done in accordance with ESA and other appropriate law.

1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River

Reclamation has acknowledged that the action alternative may conflict with California laws and policies protecting the McCloud River and its wild trout fishery. See FEIS Master Comment Response 33.3.19, WASR-6, at 33.3-102-03; FEIS, Chapter 25. State agencies may determine that they are prohibited from issuing permits or approvals for the project, but Reclamation is obligated to consider alternatives even though they may be inconsistent with existing State law.

1.4 Comments from Federal Agencies and Responses

This section contains the comments submitted by Federal Government Agencies listed in Table 1.4-1. Table 1.4-2 provides the comments and their response in tabular format. Table 1.4-2 is presented by letter number in sequential order.

Table 1.4-1. Federal Agencies Providing Comments on Draft SEIS

Name, Title	Organization	Letter Number
Jean Prijatel, Manager, Environmental Review Branch	US Environmental Protection Agency	1

Table 1.4-2. Responses to Comments Provided by Federal Agencies

Letter Number	Comment Number	Comment	Response
1	1	The EPA is a cooperating agency and we provided comments on the Draft and Final EIS in 2013 and 2015, respectively. We also reviewed and provided feedback on the Administrative Draft of this Supplemental document. The primary purpose of the CWA 404(b)(1) guidelines is to minimize the impacts to wetlands and other WOTUS and ensure the least impactful alternative is implemented to meet the overall project purpose. We have reviewed the information described above and conclude that the Supplemental Draft EIS was developed in consideration of and is consistent with the CWA 404(b)(1) Guidelines and have no additional comments.	Reclamation thanks EPA for its comments on the SLWRI DEIS and its input and assistance for the approach and content of the Draft SEIS. EPA's Draft SEIS input has helped Reclamation include EIS information required for the CWA Section 404 process and helped clarify USACE and EPA SLWRI FEIS issues. The result of project modifications has been to minimize impacts to wetlands and other WOTUS and reduce impacts to the environment.

1.5 Comments from Tribes and Responses

This section contains the comments submitted by Tribes listed in Table 1.5-1. Table 1.5-2 provides the comments and their response in tabular format. Table 1.5-2 is presented by letter number in sequential order.

Table 1.5-1. Tribes Providing Comments on Draft SEIS

Name, Title	Organization	Letter Number
John Ugai, Legal representative; et al.	Winnemem Wintu Tribe	20
Caleen Sisk, Hereditary Chief and Spiritual Leader; et al.	Winnemen Wintu Tribe	56
Stephan Volker, Legal representative; et al.	Winnemen Wintu Tribe	59

Table 1.5-2. Responses to Comments Provided by Tribes

Letter Number	Comment Number	Comment	Response
20	1	The Winnemem again urge Reclamation to more fully consider the cultural and environmental impacts of the Project, which threatens to inundate the Tribe's remaining sacred lands and sites by raising Shasta Dam and expanding Shasta Reservoir. If approved, the Project would complete the federal government's systematic destruction of the Winnemem ancestral homeland and traditional way of life.	Reclamation acknowledges the Tribe's opposition to the project.
20	2	Reclamation has been considering raising Shasta Dam for nearly fifty years. But never once in that half-century has Reclamation addressed the Project's impacts on the Winnemem and their traditional cultural resources. Although the Tribe has worked tirelessly for decades to raise these issues with Reclamation through correspondence, meetings, and formal comments, none of the information, analysis, or detailed material provided to Reclamation has been considered under the National Environmental Policy Act ("NEPA") or the National Historic Preservation Act ("NHPA").	As noted in the FEIS, Master Comment Response GEN-8, Public Outreach and Involvement, Reclamation consulted and coordinated with the Winnemem Wintu during the public review period for the DEIS. Please refer to the FEIS, Master Comment Response CR-1, Potential Cultural Effects regarding the analysis of potential impacts to cultural resources and a discussion on section 106 consultation. Please also refer to the FEIS Master Comment Response CR-15, National Historic Preservation Act Section 106 Consultation for additional information regarding Section 106. Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the

Letter Number	Comment Number	Comment	Response
			wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the FEIS that have not changed are beyond the scope of the SEIS. Please refer to the FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional discussion regarding the adequacy of the EIS.
20	3	The Draft SEIS, and the FEIS it supplements, collapse under the weight of Reclamation's continued failure to comply with the most basic requirements of NEPA and the NHPA. Reclamation's efforts to raise Shasta Dam cannot proceed until Reclamation satisfies these fundamental legal requirements. Reclamation must analyze the cumulative impacts of its long history with the Winnemem, beginning with the wanton unlawful demolition of their homes and villages, the disinterment of their ancestors and reburial in a cemetery that should have been held in trust for them, the destruction of the salmon runs on the McCloud River, and the failure to comply with the dam's original authorizing legislation. Since these actions, and during the entire history of Reclamation's contentious relationship with the Winnemem, Reclamation has never rectified its blatant disregard for the dam's impacts on the Winnemem. Raising Shasta Dam now will be the final destruction of the Winnemem's sacred places, their ancestral homelands, their interconnected traditional cultural properties, and even the Tribe's existence, which is inextricably bound to those sacred places.	Please refer to response to comment 20-2. Please also refer to the FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, Master Comment Response CR-8, Native American Connection to Salmon, and Master Comment Response CR-11, Cultural Resources and NEPA for additional information regarding the cultural resources analysis contained in the FEIS.

Letter Number	Comment Number	Comment	Response
20	4	**I. INTRODUCTION** Reclamation's proposal to raise Shasta Dam would submerge an additional 2,500 acres of the Winnemem's ancestral homeland, thereby cutting off access to the remaining sacred sites still accessible to the Tribe within the proposed twenty-foot raise of the high water mark along the McCloud River. For thousands of years, before the invasion of settlers, disease, and the building of Shasta Dam and the inundation of the heart of the Tribe's traditional territory, the Winnemem lived in hundreds of villages along the McCloud River and its tributaries, prospering from the abundant salmon runs. The Tribe continues to use the River and its surrounding lands for religious activities such as traditional healing and doctoring practices, coming-of-age ceremonies, collecting traditional foods and medicines, spiritual renewal, and quiet contemplation. The Winnemem derive spiritual, cultural, religious, health, and aesthetic benefits from the McCloud River and surrounding forests and mountains. Indeed, access to these touchstone sites is vital to the Winnemem's cultural continuity.	Reclamation acknowledges the Winnemem's connection to the project area, and appreciates the concern raised in this comment.
20	5	The Project threatens the Winnemem Wintu's very existence by destroying and/or flooding the few remaining cultural touchstones and sacred sites along the McCloud River that are still accessible to the Tribe after the original construction of Shasta Dam in the 1940s. The FEIS hides the gravity of the adverse impacts to these sacred sites by unlawfully deferring investigations required by NEPA and the NHPA Section 106 consultation process. And during the ongoing Section 106 process for the Shasta Dam and Reservoir Enlargement Project ("SDREP"), Reclamation is again shrinking from its duty to identify and consider these impacts by deferring such analysis under a Programmatic Agreement. The Draft SEIS is no different. Like Reclamation's other environmental review documents, it does not	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		fully and fairly address this Project's profound and irreparable impacts on the Winnemem and their traditional cultural landscape.	
20	6	Reclamation cannot comply with NEPA until it identifies and addresses the Project's impacts on cultural resources. Indeed, Reclamation's failure to identify those impacts also renders the Draft SEIS inadequate. Without sufficient information regarding cultural impacts, Reclamation cannot fully analyze the Project's impacts on wetlands and jurisdictional waters as well as the traits that make the McCloud River eligible for listing under the federal Wild and Scenic Rivers Act ("WSRA"). The Draft SEIS also improperly interprets the California Wild and Scenic Rivers Act and ignores the impact of the Project on efforts to restore salmon populations to the McCloud River. Finally, the Draft SEIS does not address the other flaws in the FEIS. Reclamation must address all of these issues to qualify for the federal-projection exception it seeks under Section 404(r) of the Clean Water Act and to comply with NEPA.	Please refer to response to comment 20-2. Please refer to the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River for information regarding conflicts with California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the McCloud River Wild and Scenic eligibility.
20	7	Reclamation's refusal to identify and address the Project's impacts on the Winnemem and their sacred lands and sites violates both NEPA and the NHPA. Accordingly, Reclamation must stop, acknowledge its obligations under NEPA and the NHPA to consider cultural resources, and complete the required studies. Reclamation must therefore withdraw and revise the Draft SEIS and the Final Feasibility Report and FEIS. Because of the profound effects of the Project on the Winnemem, the Tribe further urges Reclamation to terminate the proposed Project.	Please refer to response to comment 20-2.
20	8	**II. BACKGROUND A. The Winnemem Connection to the McCloud River** The spiritual practices and cultural identity that define the Winnemem people are tethered to a network of	Reclamation acknowledges the Winnemem's connection to the project area. Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		specific sites in the McCloud River watershed. For thousands of years, the Winnemem have used sacred, cultural, and historical sites along the River for cultural activities such as traditional healing and doctoring ceremonies, traditional dancing, coming-of-age ceremonies, and collecting traditional foods and medicines. The Winnemem remain one of the most active tribes in Northern California, and the Winnemem's sacred sites and practices are well documented. On numerous occasions and in response to various projects, the Tribe has submitted information to Reclamation about specific historic cultural sites, their locations, their significance to the Tribe, and the adverse effects of a dam raise on those sites. Existing ethnographic studies and evidence includes: Lyla Johnston, Chonos Pom, Dance Grounds: Ethnic Endemism Among the Winnemem Wintu and the Cultural Impacts of Enlarging Shasta Reservoir (Dec. 2012) (unpublished B.A. thesis, Stanford University), Exhibit B; Mary Ngo, Loss of Sacred Spaces: The Winnemem Wintu Struggle Against a Cultural Genocide by California Water Demands (Aug. 2010) (unpublished M.A. thesis, California State University, Long Beach), Exhibit C; Elena Nilsson, William Hildebrandt, & Sharon A. Waechter, Native American Tribal Coordination, Shasta Lake Water Resources Investigation, California, Far Western Anthropological Research Group, Inc. (Dec. 2008), Exhibit D; Transcript of Gary Mulcahy, California Waterfix Petition Hearing (Aug. 29, 2016), Exhibit E; Transcript of Chief Caleen Sisk, Sacred Land Film Project (Dec. 1, 2007), Exhibit F; Kardell Place-names Document Collection, Exhibit G. While the Tribe has previously submitted all of this information to Reclamation, we provide this material again with these comments in the hope that the agency will use these documents as the baseline for a full and meaningful consultation with the Winnemem. These and the other evidence submitted by	

Letter Number	Comment Number	Comment	Response
		the Tribe to Reclamation document the Winnemem's connections to the McCloud River and surrounding lands and identify numerous sites of critical cultural importance.	
20	9	Raising Shasta Dam would damage between 38 and 59 sacred sites, 26 of which would be completely inundated. Johnston at 4. The Project would result in the permanent loss of several fundamental sacred sites, which are already seasonally inundated by the controlled fluctuating water levels of Shasta Reservoir. These sites hold irreplaceable cultural value to the Tribe, and continued access to them is fundamental to the Tribe's survival and for future generations to continue on as Winnemem. For example, Winnemem women come of age through a four-day initiation ceremony at a site that the Winnemem call *Balas Chonas Winyupnus* (Puberty Rock). During the ceremony and under the guidance of elder women, young women pray and practice traditional tasks near the medicine rock that anchors the ritual. Before they swim across the McCloud River to join the Tribe as adults, the girls grind medicinal herbs on Puberty Rock. This rock has been a touchstone for the Winnemem for at least a thousand years.	Please refer to response to comment 20-2.
20	10	Puberty Rock, like the other Winnemem sites, cannot be relocated. In the Winnemem worldview, Puberty Rock's location on the McCloud River is preordained and connected with the nearby Two Sisters Mountains, which assist the young women during the ceremony. Moving the ceremony away from the Rock, the River, and the Mountains would cause the ceremony to lose its meaning. Many sites are used only in conjunction with others during elaborate ceremonial processions. If a link in the chain is broken, then the entire ceremony loses meaning. For example, several unique sites make up the Fasting Site Network. These	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		interconnected sites include: *Hamalewegas* (Great Mountain), where Winnemem pray and ask permission to proceed to the fasting grounds; *Chidai-Chiday-Chidayqee* (Cold Spring), where members of the Tribe bless themselves with the water and make smoke offerings; *Sumiil-mii sawal* (the Sugar Pines), where people eat small pieces of bark to prepare their bodies to fast; *Koom Pom Oleel*, the fasting site; and *Aychiwih Lahit Mem* (Sucker Pool), the gateway out of the fasting ceremony. Every site is necessary to complete the Fasting Ceremony. In particular, *Aychiwih Lahit Mem* (Sucker Pool) lies in the River and would be inundated by a dam raise. The Sucker Pool is essential to the training of doctors, medicine people, and warriors, and the loss of this cultural resource would forever harm the ability of the Tribe to train young people for these important roles in the future. The Winnemem Wintu believe that each spiritually significant site has a purpose and that the healing energy within the landmark will be lost if unused. Visiting and taking care of these sites remains a critical component of Winnemem culture and identity. And the Tribe's continued survival depends on the protection and continued access to these sites.	
20	11	**B. The Winnemem's Fraught History with the Federal Government** The place-based Winnemem culture has survived decades of genocide and land theft. At the time of their first contact with non-Indians, over 14,000 Winnemem lived around the McCloud River. By 1910, only 395 Winnemem remained, after smallpox and the government sponsored mercenary killings that accompanied the California Gold Rush decimated their population.	Please refer to response to comment 20-2.
20	12	The federal government also systematically stripped the Winnemem of their land. In 1851, the Winnemem and several	Please see response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		other northern California tribes signed the Cottonwood Treaty, which ceded all tribal lands in exchange for a 25-mile square reservation along the Pit, McCloud, and Sacramento Rivers. However, Congress never ratified the treaty, and the federal government appropriated all Winnemem lands without compensating the Tribe.	
20	13	For a time, 160-acre land allotments to non-reservation Indians permitted the remaining Winnemem to remain on the McCloud River, albeit without a firm tribal land base. But in the early 1940s, the Central Valley Project Indian Lands Acquisition Act (55 Stat. 612) granted the federal government all the rights, title, and interest of the Winnemem within the area to be flooded by Shasta Reservoir.	Please see response to comment 20-2.
20	14	The dam was built between 1938 and 1945, and when the water began to back up behind the new dam, Shasta Reservoir submerged over 250 Winnemem sacred sites, villages, and cemeteries along the McCloud River. Racing the growing reservoir, government agents dug up Winnemem gravesites along the River and reburied the bodies in a segregated cemetery on higher ground as required by 55 Stat. 612. The federal government never placed the new cemetery in trust for the Tribe nor compensated the living Winnemem for their lost homes as required by 55 Stat. 612.	Please see response to comment 20-2.
20	15	By inundating many of the Tribe's remaining sacred sites, the Project threatens to become the last chapter of the federal government's systematic theft of the Winnemem's land and culture. By cutting off access to many sacred sites, the Project would prevent the Winnemem from practicing place-based ceremonies that are integral to their cultural survival. The Winnemem have been outspoken and consistent in their	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		opposition to the dam raise since initial scoping and outreach meetings. On June 4, 2002, Chief Caleen Sisk testified before Congress on the potential effects of the dam raise on remaining sacred sites. In September 2004, the Winnemem conducted a four-day *Hu'p Chonas* (War Dance ceremony) to signal their opposition to the Project and invoke spiritual intervention against any expansion of Shasta Dam.	
20	16	Reclamation's own ethnographer determined that "enlargement of Shasta Dam and Reservoir will inundate and prohibit access to many remaining elements that would likely define this Winnemem Wintu Traditional Cultural Property, further eliminating and damaging irrevocably an already much diminished group of resources . . . For the Winnemem, no alternative that advocates a dam raise is viable, as this second loss of land and resources would be immeasurable." Nilsson at 31.	Please refer to response to comment 20-2.
20	17	**C. The Shasta Lake Water Resources Investigation** The Project seeks to raise Shasta Dam to supply additional water to the Central Valley and support agricultural efforts in the Californian desert. According to Reclamation, an 18.5- foot dam raise—the preferred alternative under the FEIS—would raise the surface level of Shasta Reservoir by 20.5 feet, enlarging the reservoir by a total of 634,000 acre-feet of water. Dep't of the Interior, Shasta Lake Water Resources Investigation, Draft Supplemental Environmental Impact Statement at 5-34 (Aug. 6, 2020) ("Draft SEIS"). This would increase the surface area of the reservoir by 2,500 acres. *Id.* The 18.5-foot raise would nearly double the total inundated area of the lower McCloud River. *Id.* at 5-36.	Please refer to response to comment 20-2.
20	18	Reclamation first considered raising Shasta Dam nearly fifty years ago in an August 1972 report by Reclamation titled An Appraisal	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		of Total Water Management in the Central Valley Basin, California. Cal. Dep't of Water Res., *Enlarged Shasta Wrap-up Report* at 5 (Sept. 9, 1988). Ten years later, in January 1982, Reclamation and the California Department of Water Resources announced a joint study on enlarging Shasta Reservoir. *Id.* at 8. The results of these efforts show that as early as the 1980s, the agencies knew that raising Shasta Dam would have significant social and cultural impacts and inundate "[a] large number of prehistoric, ethnographic, and historic sites." *Id.* at 26, 38-39.	
20	19	Over thirty years later, Reclamation released the Draft SLRWI EIS in June 2013. The Winnemem and numerous other interested parties submitted comment letters detailing the inadequacy of Reclamation's environmental review. *See, e.g.*, 2013 Comment Letter. However, in August 2015, Reclamation issued the FEIS, which does not address these inadequacies. In particular, the FEIS does not identify the impacts of the Project on Winnemem sacred lands and sites and includes untrue and unfounded determinations. Indeed, at no point during Reclamation's half-century of studying raising Shasta Dam has Reclamation adequately studied the Project's impacts on the Winnemem people.	Please refer to response to comment 20-2. Please also refer to FEIS Master Comment CR-1, "Potential Effects to Cultural Resources."
20	20	**III. ARGUMENT** Reclamation limits the scope of the Draft SEIS to information regarding the impacts of the Project on wetlands and other jurisdictional waters, the application of Section 404(r) of the Clean Water Act, technical and modeling adjustments, and revising its analysis of the WSRA. In doing so, Reclamation ignores the numerous reasons why the FEIS is inadequate under NEPA. In particular, Reclamation's refusal to identify and address the cultural impacts of the Project in the FEIS and the Section 106 consultation process violates both NEPA and the NHPA. That	Please refer to response to comment 20-2. Please also refer to Master Comment CWA-1, "CWA 404(r) Compliance," and FEIS Master Comment CR-1, "Potential Effects to Cultural Resources." The FEIS and SEIS fully comply with applicable law, and Reclamation will continue to apply to all applicable law throughout the development of the Project.

Letter Number	Comment Number	Comment	Response
		refusal precludes Reclamation from conducting the necessary analysis of the Project's impact on cultural resources in the Draft SEIS, violating NEPA, the Clean Water Act, and the WSRA. In particular, Section 404(r) of the Clean Water Act requires Reclamation to submit an EIS that complies with NEPA to Congress, and the WRSA requires Reclamation to consider impacts on the McCloud River's outstandingly remarkable cultural values. Until Reclamation addresses the flaws in both the FEIS and Draft SEIS, it cannot meet these requirements. As a result, Reclamation should withdraw both the FEIS and Draft SEIS.	
20	21	**A. Legal Background** NEPA mandates that federal agencies analyze the environmental impacts of a proposed action before proceeding with that action. *See* 42 U.S.C. § 4332(C). In particular, an EIS must "provide [a] full and fair discussion of significant environmental impacts" of the proposed action. 40 C.F.R. § 1502.1. Agencies must therefore identify and address the direct, indirect, and cumulative impacts of the proposed action on the environment.1 40 C.F.R. §§ 1508.7-1508.8 (1978); *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 809 (9th Cir. 1999) ("An EIS must address the cumulative impacts of a project."). To comply with these requirements, agencies must take a "hard look" at the likely effects of the proposed action by conducting a "thorough analysis" of environmental impacts. *Oregon Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 889 (9th Cir. 2007). NEPA, then, requires an EIS to discuss mitigation measures for the identified adverse impacts. 40 C.F.R. §§ 1502.14(e); 1502.16(a)(9) (2020). Reclamation must complete all of this analysis before approving any major federal actions that significantly affect the environment. *See* 42 U.S.C. § 4332(C). "NEPA ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to	Please see the FEIS Master Comment Response EI-1, "Intent of NEPA Process is to Provide Fair and Full Discussion of Significant Environmental Impacts." Please also see FEIS Master Comment Response NEPA-1, "Sufficiency of EIS."

Letter Number	Comment Number	Comment	Response
		correct." *Marsh v. Oregon Nat. Res. Council*, 490 U.S. 360, 371 (1989). An EIS "serve[s] as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made." 40 C.F.R. § 1502.2(g) (2020).	
20	22	Section 106 of the NHPA similarly compels federal agencies to "stop, look, and listen." *Muckleshoot Indian Tribe*, 177 F.3d at 805 (*citing Apache Survival Coalition v. United States*, 21 F.3d 895, 906 (9th Cir. 1994)). Before approving funds or licenses, federal agencies must carefully consider the effect of an undertaking on any district or site that is included in, or eligible for inclusion in, the National Register of Historic Places ("National Register"). 16 U.S.C. § 470f. It is the federal agency's responsibility to identify, evaluate, and nominate historic properties within their jurisdiction to the National Register and to consult with affected parties about mitigation. 16 U.S.C. § 470h-2(a)(2)(A); 54 U.S.C. § 306108; 36 C.F.R. 800.4(c). In particular, federal agencies must gather information from consulting parties and interested Indian Tribes to assist in identifying properties that may be eligible for the National Register because of their religious and cultural significance. 36 C.F.R. § 800.4(a)(3-4). The agency must then make a "reasonable and good faith effort" to identify culturally significant properties within the impacted area, determine whether those properties qualify for the National Register, and evaluate and mitigate the adverse effects2 of the proposed undertaking on those sites. 36 C.F.R. §§ 800.4-800.6. That effort will necessarily involve proper ethnographic work by a qualified researcher who will review archival records, interview tribal members, visit Winnemem cultural sites, and produce a report identifying properties eligible for National Register listing. *See* 36 C.F.R. § 800.11 (requiring adequate documentation for Section 106 consultation). 1 On July 16, 2020, the Council on	Please refer to response to comment 20-22. Please also refer to the FEIS Master Comment Response CR-15, "National Historic Preservation Act Section 106 Consultation," for additional information regarding Section 106. Please also refer to FEIS Master Comment Response NEPA-1, "Sufficiency of EIS." Both the FEIS and the SEIS fully comply with NEPA, and Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		Environmental Quality promulgated a final rule, revising its NEPA regulations and eliminating the specific references to direct, indirect, and cumulative impacts. *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act*, 85 Fed. Reg. 43,304 (July 16, 2020). Several lawsuits challenging the validity of these regulations are currently pending across the country. *See, e.g.*, *Alaska Community Action on Toxics et al v. Council on Environmental Quality et al.*, Case No. 3:20-cv-05199 (N.D. Cal. 2020). Regardless of the ultimate validity of the revised regulations, courts have the ultimate responsibility for interpreting and enforcing NEPA. *See, e.g.*, *Fed. Election Comm'n v. Democratic Senatorial Campaign Comm.*, 454 U.S. 27, 32 (1981) ("[Courts] must reject administrative constructions of the statute . . . that are inconsistent with the statutory mandate or that frustrate the policy that Congress sought to implement."). NEPA explicitly requires a "detailed statement" of "environmental impact[s]," including "any" adverse effects of the project that cannot be avoided—this necessarily includes direct, indirect, and cumulative impacts. 42 U.S.C. § 4332(C)(i), (ii). Decades of judicial precedent interpreting NEPA confirm this requirement, consistently recognizing that NEPA compels agencies to consider the cumulative effects of an action. *See, e.g.*, *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976). 2 Section 106 regulations define "adverse effects" as occurring when "an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." 36 C.F.R. at § 800.5(a)(1). Examples of adverse effects	

Letter Number	Comment Number	Comment	Response
		include destroying property and removing it from its historic location. *Id*. at § 800.5(a)(2).	
20	23	**B. Reclamation Has Never Identified the Cultural Impacts of the Project.** Reclamation's FEIS is flawed in numerous ways, discussed below in Section III(E), *infra*. Of particular concern to the Tribe is Reclamation's failure to adequately evaluate the cultural impacts of the Project. This deficiency arises from Reclamation's refusal to thoroughly catalog and analyze threatened Winnemem cultural resources, the agency's unlawful decision to sever the NEPA and NHPA processes, and a segmented Programmatic Agreement that conceals the true impacts of the undertaking. The Draft SEIS does not cure these flaws. Rather, the document's discussion of both Section 404 of the Clean Water Act and the WSRA are plagued by the same problem that permeates the FEIS—Reclamation's refusal to acknowledge the irreparable harms that the Project would inflict on the Winnemem. In the absence of further study, both the FEIS and the Draft SEIS do not satisfy Reclamation's obligations under NEPA.	Reclamation appreciates the concerns raised in this comment. Please refer to FEIS Master Comment CR-1, "Potential Effects to Cultural Resources."
20	24	**The FEIS Unlawfully Disregards Reclamation's Duty to Identify and Consider the Project's Impacts on Cultural Resources.** NEPA requires agencies to conduct a thorough analysis of the historic and cultural resource impacts before approving a project-specific EIS. *Indigenous Envtl. Network v. United States Dep't of State*, 347 F. Supp. 3d 561, 581 (D. Mont.), *order amended and supplemented*, 369 F. Supp. 3d 1045 (D. Mont. 2018), *and appeal dismissed and remanded sub nom. Indigenous Envtl. Network v. United States Dep't*, No. 18-36068, 2019 WL 2542756 (9th Cir. June 6, 2019). By its own admission, Reclamation has not adequately identified and evaluated the	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		Winnemem's cultural sites and the Project's impact on those sites. Dep't of the Interior, SLWRI, FEIS at 14-17 (Dec. 2014) ("FEIS") ("Only a very small percentage of the project area has been systematically inventoried for cultural resources . . . . Overall, only 8 percent of the study area has been surveyed; 5 percent in a systematic manner and 3 percent using reconnaissance methods.").	
20	25	Worse, Reclamation has not bothered to utilize the abundant ethnographic literature already in its possession that details the Winnemem cultural sites threatened by the Shasta Dam raise. *See* Letter from Anastasia T. Leigh, Regional Environmental Officer, Bureau of Reclamation, to Caleen Sisk, Chief, Winnemem Wintu Tribe at 1 (Jan. 11, 2017) (conceding that Reclamation has on file "a considerable amount of information regarding cultural resources along the McCloud River (e.g., records search results, archaeological site records and GIS data, archaeological and ethnographic overview reports, and the study by Ms. Lyla Johnston cited in [the Tribe's] letter) primarily obtained over the course of the Shasta Lake Water Resources Investigation feasibility study"), Exhibit H ("2017 Leigh Letter"). These studies are replete with the data required for identifications, determinations of eligibility, and findings of adverse effect as required by NEPA and Section 106 of the NHPA.	Please refer to response to comment 20-2.
20	26	In the correspondence and documents provided to the Tribe, Reclamation has reaffirmed its possession of significant ethnographic evidence and its knowledge of over 150 Winnemem cultural sites within the Shasta Reservoir area. Joanne Goodsell, U.S. Bureau of Reclamation, Primary Record, Winnemem Wintu Cultural Landscape at 5 (May 2017), Exhibit I. Specifically, a draft primary record of the Winnemem's Cultural	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		Landscape prepared by Reclamation's own archaeologist lists over fourteen pages of sources relevant to the Winnemem Wintu Cultural Landscape. *Id.* at 7-22. The primary record confirms that: Cultural resources and ethnographic research conducted on behalf of the Bureau of Reclamation over the past decade, to inform feasibility and environmental studies associated with the proposed enlargement of Shasta Dam and Shasta Lake (i.e., Shasta Lake Water Resources Investigation), identified numerous ancestral villages and other areas of cultural importance to the Winnemem Wintu Tribe, and other Native American groups, within the upper Sacramento River, McCloud River, and Pit River watersheds. *Id.* at 5.	
20	27	Reclamation explicitly recognizes the presence of 155 ancestral villages in the Shasta Reservoir area and that "access to most" of the 120 estimated "known villages [which] are still accessible . . . would be lost with the proposed raise to Shasta Dam. *Id.* (citing Nilsson). Reclamation's 2008 ethnographic study also identifies numerous Winnemem sacred sites along the McCloud River that the raising Shasta Dam would inundate, including Puberty Rock, Children's Rock, Coyote Rock, the Kaibai village area, doctoring pools, Dekkas Rock, *Witawacket*, Hirz Bay, North Gray Rocks, Saddle Rock, Eagle Rock, and Samwel Cave. Nilsson at 27-29. The dam raise would also impact numerous other known sacred sites and lands with irreplaceable cultural importance in the Shasta Reservoir area. *Id.* at 29-30.	Please refer to response to comment 20-2.
20	28	However, Reclamation has unlawfully refused to identify the remaining sacred sites and evaluate and mitigate the impacts on them and the known sites in the area. The FEIS ignores the ethnographic evidence already in Reclamation's possession and Reclamation's own recognition of numerous culturally significant	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		sites in the area. The result is a FEIS with "a limited and incomplete picture of the actual number of resources . . . [with] undoubtedly many more cultural resources that have not been identified or formally recorded" and a false conclusion that "it is impossible at this stage to say how many of these resources will be determined eligible [for listing under the NHPA], and how many of the eligible resources will sustain adverse impacts." FEIS at 14-17, 14-20. Despite numerous complaints from the Tribe, the Draft SEIS does not resolve these issues. Dep't of the Interior, SLWRI, SEIS 5-29 (2020) ("Sacred sites important to Native Americans have not been specifically identified."). Reclamation must withdraw the FEIS and Draft SEIS to incorporate further analysis of the cultural resources impacted by the Project.	
20	29	Relatedly, Reclamation has not sufficiently considered the cumulative impacts on cultural resources and the Winnemem people. *See* FEIS at 14-36 to 14-37. The proposed Shasta Dam raise represents just the latest installment in the federal government's systematic theft of the Winnemem's land and way of life. The Winnemem's history and the impacts of the federal government's actions in the area, including the original construction of Shasta Dam and inundation of the Tribe's ancestral homeland, are critical to a full understanding of the Project's impacts. Raising the dam will cause additional, cumulative harm to Tribal Cultural Properties, flooding dozens of the limited remaining Winnemem sites and further disrupting the Tribe's cultural touchstones by eliminating the Tribe's access to these remaining sites. Although Reclamation promised to address these effects in a 2008 letter to the Tribe, Reclamation ignores this history entirely and refuses to engage in meaningful consultation or mitigation for these additional cumulative cultural impacts. Letter from Susan M. Fry, Regional Environmental	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		Officer, Bureau of Reclamation, to Caleen Sisk, Chief, Winnemem Wintu Tribe at 3 (June 26, 2008), Exhibit J.	
20	30	Finally, the FEIS lacks information about Winnemem cultural resources because Reclamation chose to unlawfully sever the NEPA and NHPA environmental review processes. The Winnemem requested Section 106 consulting party status during the SLWRI. However, Reclamation denied the Tribe's request because the SLWRI constituted "feasibility-level planning only and did not have an undertaking requiring Section 106 compliance." In doing so, Reclamation violated its duty to "[i]ntegrate" NEPA's requirements "with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively." 40 C.F.R. §1500.2(c). Instead, Reclamation initiated Section 106 consultation with the Tribe more than three years after publishing the 2015 FEIS. Reclamation's decision to sever the two processes ensured that the tribal consultation could not inform the FEIS. Moreover, Reclamation has never satisfied its Section 106 consultation requirements.	Please refer to response to comment 20-2.
20	31	**Reclamation Has Failed to Fulfill Its Obligations under Section 106 of the NHPA.** Reclamation has flouted its statutory mandate under Section 106 to identify culturally significant properties, determine those properties' eligibility for the National Register, and evaluate and mitigate any adverse effects of the Project on eligible properties. In particular, Reclamation continues to refuse to "make a reasonable and good faith effort to carry out appropriate identification efforts," especially given Reclamation's failure to adequately consult the Winnemem regarding the Project's impacts on cultural resources. 36 C.F.R. § 800.4(b)(1).	Please refer to response to comment 20-2. Please also refer to FEIS Master Comment CR-15, "National Historic Preservation Act Section 106 Consultations."

Letter Number	Comment Number	Comment	Response
20	32	The FEIS cannot satisfy Reclamation's Section 106 obligations because, as discussed above, it does not identify the culturally significant properties impacted by the Project. An agency cannot satisfy its Section 106 duty "to make a reasonable effort to identify historical and cultural resources" when it fails to utilize a sufficiently detailed identification process. *Montana Wilderness Ass'n v. Connell*, 725 F.3d 988, 1009 (9th Cir. 2013). For example, the Ninth Circuit held in *Montana Wilderness* that the U.S. Bureau of Land Management did not make a reasonable and good faith effort to identify cultural resources when it used only the least rigorous method of data collection detailed in its internal manual. *Id.* at 1008-09. Reclamation has put forth even less effort in the present NHPA process. Here, as in *Montana Wilderness*, Reclamation inexplicably chose to utilize only a cursory method of data collection for the FEIS—a Class II probabilistic field survey. *See* FEIS at 14-17 ("To estimate site densities for the project area as a whole, [a] sensitivity analysis was undertaken"). The FEIS itself states that "these estimates are for planning purposes only; additional pedestrian surveys would be needed if one of the affirmative alternatives were to go forward." FEIS at 14-18; *see also* Reclamation Manual, Design Data Collection Guidelines at 1, 11 (stating that cultural resources in the area of the dam and reservoir basin should be "included in the design data" and on the general map for the Project).	Please refer to response to comment 20-2. Please also refer to FEIS Master Comment CR-15, "National Historic Preservation Act Section 106 Consultations."
20	33	Moreover, other agencies only use probabilistic surveys—as opposed to more comprehensive Class III surveys—to supplement preexisting data. *See* BLM Manual 8110 (Release 8-73, Dec. 3, 2004) at .23A, *available at* https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual8110_0.pdf (last visited Aug. 14, 2020) ("In a previously unsurveyed area of potential effect, a class III	Please refer to response to comment 20-2. Please also refer to FEIS Master Comment CR-15, "National Historic Preservation Act Section 106 Consultations."

Letter Number	Comment Number	Comment	Response
		(intensive) survey is generally required when a proposed undertaking would substantially disturb the land surface."). Probabilistic and reconnaissance surveys are appropriate for comparing alternative locations for proposed undertakings or highlighting the need for further inventory— not for determining the specific effects of a proposed land use. *Id*. at .21B, .22A. Reclamation has yet to conduct a comprehensive survey of cultural resources in the Project area. Therefore, the FEIS does not contain the good faith effort to identify culturally significant properties required by Section 106.	
20	34	The FEIS acknowledges its own inability to serve as a basis for Section 106 compliance, noting that Reclamation must engage in a multi-step Section 106 consultation process, which requires the agency to (1) "Initiate Section 106 Process, 36 CFR Part 800.3," (2) "Identify Historic Properties, 36 CFR Part 800.4," (3) "Assess Adverse Effects, 36 CFR Part 800.5," and (4) "Resolve Adverse effects, 36 CFR Part 800.6." FEIS at 14-16. However, Reclamation again signaled its intent to unlawfully defer its duty to identify culturally significant properties, informing the Tribe in July 2018 that it would pursue a "negotiated" programmatic agreement in lieu of the standard consultation process.3 3 The Tribe had no role in drafting the PA, which Reclamation delivered with a narrow comment window on July 19, 2019.	Please refer to response to comment 20-2. Please also refer to FEIS Master Comment CR-15, "National Historic Preservation Act Section 106 Consultations."
20	35	This procedural substitution is permissible only in a limited set of circumstances. *See* 36 C.F.R. §§ 800.14(b). In particular, Reclamation claims that a programmatic agreement is warranted pursuant to 36 C.F.R. § 800.14(b)(1)(ii), which allows the substitution when the "effects on historic properties cannot be fully determined prior to the approval of an undertaking." Letter from Anastasia T. Leigh, Regional Environmental Officer, Bureau	Please refer to response to comment 20-2. Reclamation is fully compliant with the requirements for a Programmatic Agreement under 36 C.F.R. § 800.14(b). Reclamation will continue to comply with all relevant law as the project proceeds.

Letter Number	Comment Number	Comment	Response
		of Reclamation, to Deborah A. Sivas, Mills Legal Clinic (Sept. 27, 2019) (alleging that the "effects on historic properties cannot be fully determined or resolved before construction is scheduled to begin."); Letter from Anastasia T. Leigh, Regional Environmental Officer, Bureau of Reclamation, to Mark Miyoshi, Tribal Historic Preservation Officer, Winnemem Wintu Tribe (Sept. 20, 2019). This dismissive attitude pervades Reclamation documents surrounding the Project, contradicts other statements made by Reclamation, and ignores the abundance of information submitted by the Tribe to Reclamation in connection with this and other Reclamation projects in the area. *See* FEIS at 14-30. (blaming the Tribe for concealing the locations of sacred sites, despite the Tribe's protracted engagement with Reclamation and numerous ethnographers).	
20	36	Here, Reclamation's proposed use of a programmatic agreement is untenable based on Reclamation's previous representations to the Tribe and the ethnographic evidence already available to Reclamation. During the Section 106 consultation process for the Shasta Dam Fish Passage Evaluation, Reclamation "agree[ed] that the McCloud River, inclusive of Native American archaeological sites and locations of traditional and contemporary Winnemem Wintu Tribe cultural importance, comprises a cultural landscape that may be eligible for the National Register of Historic Places (National Register)." 2017 Leigh Letter at 1. As noted above, Reclamation's archaeologist prepared a draft primary record to formally identify the Winnemem's Cultural Landscape as a Traditional Cultural Property eligible for the National Register. *See* Goodsell.	Please refer to response to comment 20-2. Reclamation is fully compliant with the requirements for a Programmatic Agreement under 36 C.F.R. § 800.14(b). Reclamation will continue to comply with all relevant law as the project proceeds.
20	37	Reclamation's archaeologist identified the Winnemem Wintu Cultural Landscape as eligible for listing based on three separate	Please refer to response to comment 20-2. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		criteria. *Id.* at 3-4. First, the Winnemem Cultural Landscape meets "Criterion A, for its association with the creation of the Winnemem Wintu people, and the places and resources of importance to them, a foremost event contributing to the broad patterns of the Winnemem Wintu Tribe and its history." *Id.* at 3. Second, it is eligible under Criterion B for its association with "significant persons, and by extension other beings, of importance to Winnemem Wintu creation stories and oral traditions." *Id.* at 4. Third, the Landscape also meets "Criterion D, for its ability to yield important information related to Native American history, ethnography, archaeology, and other fields of importance." *Id.* Given that Reclamation has recognized the Winnemem Wintu Cultural Landscape as eligible for the National Register, Reclamation cannot utilize the Programmatic Agreement to delay evaluating and mitigating the adverse effects of the Project on Winnemem lands and sacred sites. *See* 36 C.F.R. §§ 800.5-800.6. For the reasons discussed above, Reclamation's position is untenable. Reclamation has had decades to conduct a meaningful consultation with the Tribe.4 And even without systematically identifying all of the Winnemem sacred sites, Reclamation has recognized the eligibility of the Winnemem Wintu Cultural Landscape for the National Register. As a result, Reclamation cannot justify its use of a programmatic agreement or its decision to forego a good faith consultation with the Tribe. Reclamation cannot continue to ignore its statutory mandate to catalog specific cultural properties. 4 On November 9, 2007, representatives of the Tribe met with Reclamation staff at the McCloud River Bridge Campground and the Dekkas Rock Campground. Chief Caleen Sisk participated in a detailed interview.	

Letter Number	Comment Number	Comment	Response
20	38	**3. The Draft Programmatic Agreement Further Segments the Evaluation of the Cultural Resources Affected by the Project in Violation of the NHPA.** According to the draft programmatic agreement, Reclamation intends to unlawfully segment the Project consultation process into two phases: (1) "raising the crest of Shasta Dam by 18.5 feet," and (2) increasing "maximum pool elevation by approximately 20 feet to enlarge the Shasta Reservoir pool capacity." Draft Programmatic Agreement at 10-11. There is only one undertaking at issue here—the raising of Shasta Dam and enlarging of Shasta Reservoir. While Reclamation asserts that its decision to segment the Project for NHPA purposes is a response to the timing of Congressional funding, there is no reason to believe that a project becomes an NHPA undertaking only after an agency secures funding. *See* 36 C.F.R. § 800.16(y) (defining "undertaking" only as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency"). To the contrary, the NHPA requires agencies to consider the effects of undertakings on historic sites *before* approving funds or licenses. 54 U.S.C. § 306108 Reclamation's decision to segment its evaluation of cultural resources is not only unfounded—it subverts the "stop, look, and listen" objective of the NHPA. *Muckleshoot*, 177 F.3d at 805. While the act of vertically raising Shasta Dam would likely have few direct impacts on the Winnemem people, filling the reservoir threatens to irreparably harm the Tribe. If Reclamation unlawfully segments its NHPA obligations for the single Shasta Dam raise undertaking, it will not consider the effects of inundating Winnemem cultural sites until after it completes the Project. This approach violates the spirit and the letter of Section 106 and would allow Reclamation to disguise the Project's impacts until it is too late to mitigate them.	Please refer to response to comment 20-2. As described in the FEIS and SEIS, the purpose of the SLWRI is to examine the feasibility of various alternatives to modify the existing Shasta Dam and Reservoir. Proceeding to the construction phase is contingent upon Congressional approval and appropriation, at which point Reclamation would have approval to move forward with an undertaking. Reclamation will continue to comply with all applicable law. Further, a programmatic agreement under 36 C.F.R. § 800.14(b) applies to the entire project, but can be implemented in phases. This is not a "segmentation," as alleged by commenters here, and is fully compliant with the requirements in 36 C.F.R. § 800.14(b). Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
20	39	**C. The Draft SEIS Does Not Establish the Applicability of Clean Water Act Section 404(r).** In the Draft SEIS, Reclamation seeks to invoke Clean Water Act Section 404(r)'s exception to dredge and fill permitting requirements. Draft SEIS at 3-1. This exception applies narrowly to "Federal project[s] specifically authorized by Congress." 33 U.S.C. § 1344(r). To invoke the exception, "information on the effects of such discharge" must be "included in an environmental impact statement for such project . . . submitted to Congress before the actual discharge of dredged or fill material" and before the "authorization" or "appropriation of funds for such construction." *Id.* To satisfy this requirement, the EIS "transmitted to Congress must comply with [NEPA]." *Bd. of Mississippi Levee Comm'rs v. U.S. E.P.A.*, 674 F.3d 409, 413 (5th Cir. 2012).	Please refer to Master Comment Response 1.3.1. CWA-1 – "CWA 404 (r) Compliance."
20	40	Here, Reclamation cannot invoke Section 404(r) because the FEIS does not comply with NEPA. As explained in the Winnemem's 2013 Comment Letter and summarized below in Section III(E), *infra*, the Draft SEIS does not address, let alone cure these flaws. In particular, Reclamation still refuses to identify the cultural resources in the Project area, including Winnemem sacred sites along the McCloud River. Without such analysis, the Draft SEIS fails to address the impacts of the Project's dredge and fill activities on Winnemem sites. Reclamation estimates that the impoundment and relocation areas encompass approximately 51 acres of wetlands and 103 acres of other jurisdictional waters, excluding Shasta Reservoir at full pool. Draft SEIS at 2-2. Nevertheless, Reclamation does not identify or consider the impacts of dredge and fill activity on cultural resources in these jurisdictional waters. Indeed, Reclamation refuses to "consider off-site alternatives for project relocations with projected impacts to wetlands and other WOTUS of less than 1 acre." *Id.* at 2-3. Of	Please refer to the Final SEIS Master Comment Response 1.3.1. CWA-1," CWA 404 (r) Compliance." Please refer to the 2015 SLWRI FEIS Chapter 14 "Cultural Resources" for a comprehensive discussion on the project's potential impacts to cultural resources.

Letter Number	Comment Number	Comment	Response
		the three project locations it does consider, Reclamation ignores the impacts on Winnemem sacred and cultural sites. For example, Reclamation ignores impacts to Winnemem sacred sites near the Doney Creek Bridge, including Doney Creek itself, which holds incredible significance to the Winnemem as the location for the story of fire and where fire first came to the Tribe. Any dredge or fill activity that disturbs the natural state of the Creek impacts its meaning to the Tribe. This harms the Tribe's ability to connect with the site and pass their traditions and history to future generations of Winnemem.	
20	41	Further, a number of village sites are located near Doney Creek Bridge. Reclamation has never attempted to identify these sites, and the Draft SEIS does not describe the activities around the Doney Creek Bridge in sufficient detail to identify the impacts to these sacred sites. In particular, the village sites contain sacred burial grounds. Disturbing these sites would significantly harm the Tribe, especially in light of the federal government's continued refusal to uphold 55 Stat. 612 in connection with the relocation of approximately 183 Winnemem Wintu graves during the construction of Shasta Dam and Reservoir. The statute required the federal government to hold land for a cemetery in trust for the Winnemem (55 Stat. 612 § 4), but the government has labeled the site the "Shasta Reservoir Indian Cemetery" and allowed several different tribes use the cemetery for burials. These actions, combined with the government reducing the cemetery's size, robbed the Winnemem of a protected location for future burials. Reclamation has therefore never satisfied its obligations under 55 Stat. 612, which remains valid today and creates a continuing legal obligation. The federal government must compensate the Tribe for the injuries it suffered from the original construction of Shasta Dam and filling of Shasta	Please refer to FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources." Reclamation acknowledges the concerns raised in this comment. However, many of the concerns raised in this comment fall outside the scope of the SEIS, which was limited to providing information relevant to the application of Section 404(r) of the CWA for the SLWRI, responding to issues identified by USACE and EPA on the previous EIS, updating operations and modelling to the latest regulatory requirements, updating information included in the 2015 SLWRI FEIS that is relevant to environmental concerns.

Letter Number	Comment Number	Comment	Response
		Reservoir. And Reclamation must mitigate and compensate the Tribe for any new harms caused by its approval of the Shasta Dam raise. No additional work on the existing dam or reservoir should be considered until the damage caused by the previous construction and operation is fully mitigated.	
20	42	The potential impacts to Winnemem sacred sites near Doney Creek Bridge represent the danger of Reclamation's refusal to identify and consider the Project's cultural impacts. Construction of the Project and increased inundation from an enlarged reservoir threaten to destroy many of the Tribe's remaining sacred sites. Yet, Reclamation refuses to acknowledge that the Shasta Dam raise would extinguish the Winnemem's culture and threaten the very survival of its people. Reclamation must address these impacts and the flaws of the FEIS and Draft SEIS in order to invoke Section 404(r)'s narrow exception.	Please refer to the Final SEIS Master Comment Response CWA-1, "CWA 404 (r) Compliance." Please refer to the 2015 SLWRI FEIS Chapter 14 "Cultural Resources" for a comprehensive discussion on the project's potential impacts to cultural resources.
20	43	**D. Wild and Scenic Rivers Act** Congress enacted the WSRA to preserve "the free-flowing condition" and protect the "immediate environments" of rivers that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values." 16 U.S.C. § 1271. The WSRA prohibits federal agencies from "assist[ing] . . . in the construction of any water resources project that would have a direct and adverse effect on the values for which" a river received protection under the Act. *Id.* § 1278(a). Federal agencies also cannot "recommend authorization of any water resources project" or "request appropriations to begin construction of any" project "that would have a direct and adverse effect on [those] values." *Id.* Further, federal agencies must also consider "potential national wild, scenic and recreational river areas" "[i]n all planning for the use	Please refer to the Final SEIS Master Comment Response CNRC-1"California Natural Resources Code Regarding the McCloud River" for information regarding California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the McCloud River Wild and Scenic eligibility.

Letter Number	Comment Number	Comment	Response
		and development of water and related land resources." *Id.* § 1276(d)(1).	
20	44	The U.S. Forest Service ("Forest Service") has determined that segments of the McCloud River are eligible for listing under the WSRA. Draft SEIS at 5-3. Although the Forest Services did not formally designate the lower McCloud River under the WSRA, it joined other signatories in a commitment to manage the River to protect the values that made it eligible for listing under a Coordinated Resource Management Plan ("Management Plan"). *Id.* As the Draft SEIS acknowledges, the Management Plan "requires its signatories to protect the outstandingly remarkable values (ORVs) on lands they own or manage to ensure that the river remains eligible for Federal designation as wild and scenic." *Id.* Reclamation concedes that raising Shasta Dam under any alternative would inundate the lowest eligible segment of the McCloud River and render that portion of the River ineligible for Federal listing as a wild and scenic river. Draft SEIS at 5-5, 5-25 to 5-38.	Please refer to response to comment 20-43.
20	45	However, Reclamation's analysis in the Draft SEIS relies on falsehoods and an inadequate assessment of the impacts to cultural resources. Reclamation also ignores the impact of the Project on other efforts to enhance the fish and wildlife values of the lower McCloud River. As a result, Reclamation has not met its duty to consider the Project's impact on the WSRA values of the lower McCloud River.	Please refer to response to comment 20-43.
20	46	**1. The Draft SEIS Does Not Identify Cultural Impacts.** In order to evaluate a development's impact on the cultural resources of a river eligible for listing under the WSRA, an agency must first conduct a systematic inventory of those resources. *See Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 798 (9th Cir. 2003)	Please refer to response to comment 20-2 and 20-43.

Letter Number	Comment Number	Comment	Response
		(ordering the National Park Service to redetermine the river area boundaries because "a systematic inventory for ethnographic resources has not been undertaken"). Here, despite the availability of ethnographic studies and other evidence regarding the numerous Winnemem cultural sites in the McCloud River watershed, Reclamation has refused to systematically identify the cultural resources impacted by the Project. Because the FEIS lacks such an inventory, and because the Draft SEIS does not cure this deficiency, Reclamation cannot adequately analyze the Project's impacts on the "outstandingly remarkable" cultural values of the McCloud River. Until Reclamation conducts a comprehensive inventory of Winnemem cultural resources, the other analyses that rely on such information will continue to be deficient.	
20	47	**2. The Draft SEIS Misstates California Law and the California Wild and Scenic Rivers Act.** The California Wild and Scenic Rivers Act recognizes that "the McCloud River possesses extraordinary resources in that it supports one of the finest wild trout fisheries in the state." Cal. Pub. Res. Code § 5093.542. Despite claiming that it "has no obligation to analyze" the applicability of the California Wild and Scenic Rivers Act, Reclamation asserts that the California Legislature exempted the Shasta Dam raise from the protections of the Act. DSEIS at 5-3 to 5-4. This statement falsely represents the narrow language in the Public Resources Code, which only applies to "participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam." Cal. Pub. Res. Code § 5093.542(c). It does not authorize participation by a state agency as a cost-partner in a dam raise project, and it expressly forbids any other state "department or agency" from "assist[ing] or cooperat[ing] with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or	Please refer to response to comment 20-43.

Letter Number	Comment Number	Comment	Response
		local government 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." *Id.* Indeed, a California court recently affirmed this prohibition, enjoining Westlands Water District from "taking any action that constitutes planning for or the construction of the Shasta Dam Raise project." *California v. Westlands Water District*, Case No. 192487 at 2 (Shasta Cnty. Super. Ct. July 29, 2019).5 The Draft SEIS must correct its misstatement of the law and address the inability of any state agency to serve as a cost partner. 5 Wetlands Water District later entered into a stipulated judgment, in which it agreed not to take any of the following actions if doing so would violate Public Resources Code section 5093.542: a. Initiate preparation of an environmental impact report or other environmental review document pursuant to CEQA for a project to raise Shasta Dam; b. Enter into any agreement to fund, directly or indirectly, the raising of Shasta Dam; c. Enter into any other agreement that would assist any agency of the federal, state, or local government in the planning or construction of the raising of Shasta Dam; or d. Acquire additional real property to facilitate the raising of Shasta Dam. *Friends of the River et. al v. Westlands Water District*, Case No. 192490 (Shasta Cnty. Super. Ct. Nov. 12, 2019).	
20	48	**3. The Draft SEIS Must Consider Other Planned Management Actions.** Although the Draft SEIS mentions impacts on fish and wildlife, it ignores the Project's implications for the Shasta Dam Fish Passage Evaluation and efforts to reintroduce endangered salmon and steelhead species to the lower McCloud River. The National Marine Fisheries Service's Final Recovery Plan for those species explicitly states that reintroducing these species to	See FISHPASS-1 within Chapter 33 "Public Comments and Responses" of the 2015 SLWRI FEIS for a discussion on fish passage above Shasta Dam. Recent developments on the High-head Dam Juvenile Salmonid Collection System project do not change the conclusions and discussions presented in the 2015 SLWRI FEIS. As FISHPASS-1 explained: "The SLWRI does

Letter Number	Comment Number	Comment	Response
		currently inaccessible historical habitats is necessary to meet their recovery objectives. Nat'l Marine Fisheries Serv., Final Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead at 79 (July 1, 2014). Based on its current "habitat conditions," the Recovery Plan identifies the McCloud River as one of the two highest priority watersheds for reintroduction. *Id.* at 79-82. As a result, maintaining the McCloud River's suitability as a potential habitat and providing fish passage around Shasta Dam are both necessary to the recovery of the endangered salmon and steelhead species. *Id.* at 79-80. The Shasta Dam raise threatens to impede both of these efforts. Further inundation of the McCloud River under the Project may reduce and degrade available stream habitat for introduced species. *See* Dep't of Interior, Shasta Dam Fish Passage Evaluation Preliminary Draft Environmental Assessment at 4-48 (Apr. 2017). And raising Shasta Dam would increase the difficulty of constructing a fish passage. *See id.* at 3-18 (finding that Shasta Dam's height provides a "unique challenge[]" to a fish passage project). California and federal agencies have recognized the fish habitat in the McCloud River as unique and eligible for protection, and the Draft SEIS must identify and consider the Project's effects on efforts to restore threatened and endangered species to that remaining habitat in the McCloud River, such as the wild Chinook salmon that were exported and have been thriving in New Zealand for more than a century.	not include a fish passage component into any of the action alternatives, and would not mitigate, nor is required to mitigate, for past actions that blocked fish from continuing the upstream migration."
20	49	**E. The SEIS Ignores the Other Numerous Inadequacies of the FEIS.** As detailed in the Winnemem's 2013 Comment Letter and discussed above in Section III(B), *supra*, the 2013 Draft EIS is inadequate and does not comply with NEPA. Because	Please refer to response to comment 20-2. Both the FEIS and SEIS fully comply with NEPA. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		Reclamation did not remedy these flaws in the FEIS or the Draft SEIS, the Winnemem incorporate and reiterate those comments here, and again urge Reclamation to withdraw the FEIS or address these issues in the Draft SEIS. While the flaws of the FEIS detailed in the 2013 Comment Letter are too lengthy to reproduce here, the Tribe emphasizes the following issues: The FEIS defines the Project's purpose and objectives too narrowly (2013 Comment Letter at 14-15) and does not address a reasonable range of alternatives (*id.* at 15-19). By incorporating "enlarging Shasta Dam and Reservoir" into the Project Purpose, Reclamation improperly narrowed the range of alternatives considered. FEIS at S-7; *see Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1070 (9th Cir. 2010) ("An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action, and the EIS would become a foreordained formality." (citation and internal quotation marks omitted)). Rather than assessing whether a dam raise was the best way to address the anadromous fish decline and water supply reliability, Reclamation decided to raise the dam and then conducted a study that only determined how much to raise it. Reclamation must revise the Project's purpose and consider a full range of alternatives for increasing anadromous fish survival and improving water supply and reliability.	
20	50	The FEIS improperly purports to tier to the programmatic EIS (PEIS) published for the CALFED Record of Decision (ROD) in 2000. FEIS at 1-27 to 1-29. Not only does reliance on the 20-year-old PEIS violate NEPA's public comment process and prohibitions against relying on outdated and inaccurate information,	Please refer to the FEIS Master Comment Response NEPA-1, "Sufficiency of the EIS" for a discussion regarding tiering to the CALFED PEIS.

Letter Number	Comment Number	Comment	Response
		Reclamation's decision to tier to the PEIS wholly departs from the 2013 Draft EIS, which explicitly states that it "consider[ed] but d[id] not tier from the assessments in the *CVPIA Final Programmatic EIS* (Reclamation 1999b) and *CALFED Final Programmatic EIS/Environmental Impact Report* (EIR) (CALFED 2000b)." Dep't of the Interior, Shasta Lake Water Resources Investigation, Draft Environmental Impact Statement 1-46 (June 2013). Further, the CALFED ROD only discusses a 6.5-foot dam raise—the lowest among the proposed alternatives analyzed in the FEIS. CALFED Programmatic Record of Decision at 44 (Aug. 28, 2000) (considering expanding storage in Shasta Reservoir by approximately 300,000 acre-feet); *see also id.*, Attachment 6a, Programmatic Endangered Species Act Section 7 Biological Op., submitted by the U.S. Fish and Wildlife Service, at 34, 119 (evaluating a 6.5-foot dam raise). Nowhere in the ROD is there a description of a proposal to raise the Shasta Dam 18.5 feet, as described in the FEIS. Accordingly, the broad programmatic review of a potential 6.5-foot Shasta raise conducted in the CALFED PEIS cannot cure the FEIS's otherwise insufficient impacts and alternatives analyses. *Klamath Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 997-998 (9th Cir. 2004) (holding that "tiering" to an EIS that lacks information about specific impacts of the proposed project "could not save" an EIS).	
20	51	Under CEQ regulations, agencies may not "commit resources prejudicing selection of alternatives before making a final decision." 40 C.F.R. § 1502.2(f) (2020). Until an agency issues a record of decision, the agency may not take any actions that would either adversely impact the environment or limit the choice between reasonable alternatives. In violation of these regulations, Reclamation has begun preconstruction activities toward an 18.5-foot dam raise before issuing a record of	Please refer to FEIS Master Comment Response NEPA-1, "Sufficiency of EIS" for additional discussion regarding the adequacy of the EIS and FEIS Master Comment Response EI-1, "Intent of NEPA Process is to Provide Fair and Full Discussion of Significant Environmental Impacts."

Letter Number	Comment Number	Comment	Response
		decision. According to a presentation Reclamation prepared in October 2018 regarding the Project, the preconstruction activities that began in April 2018 include "Engineering design for 18.5' dam raise." These activities demonstrate that Reclamation is attempting to use the FEIS and Draft SEIS as post-hoc rationalizations for its decision to raise Shasta Dam. NEPA bars such pretextual use of an EIS.	
20	52	The FEIS does not adequately analyze the Project's environmental impacts. 2013 Comment Letter at 19-24. In particular, the FEIS does not fully consider the Project's effects on fish and wildlife populations, habitats, and ecosystems. As discussed above, raising the dam complicates the construction of the fish passage necessary to reestablish the salmon's access to traditional spawning grounds and to restore the Winnemem's access to this important cultural resource and food source. Like the Draft SEIS's WSRA analysis, the FEIS ignores the impact of the dam raise on efforts to reintroduce threatened and endangered species to the McCloud River.	Please refer to response to comment 20-2. Please also refer to FEIS Master Comment Response ESA-1, "Compliance with the Endangered Species Act."
20	53	Finally, the FEIS does not sufficiently consider mitigation measures for the Project's historical and cultural resource impacts. NEPA requires more than "[a] mere listing of mitigation measures." *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (citation and internal quotation marks omitted). Instead, Reclamation must discuss mitigation "in sufficient detail to ensure that environmental consequences have been fairly evaluated." *Id.* (citations and internal quotation marks omitted). The FEIS does not provide such detail. It merely mentions mitigation measures for cultural resources and states that adverse effects will be avoided or mitigated through "project redesign, when warranted" or "develop[ing] and implement[ing]	Please refer to response to comment 20-2.

Letter Number	Comment Number	Comment	Response
		measures identified in NHPA Section 106 MOA or PA." FEIS at 14-33 to 14-36. Reclamation thus falls short of even listing the mitigation measures, let alone evaluating them in detail as required by NEPA. After identifying the Project's impacts on cultural resources and the Winnemem, Reclamation must evaluate options to mitigate those impacts. Until it does, the FEIS and Draft SEIS are inadequate.	
20	54	For these and other reasons set forth in the Winnemem's 2013 Comment Letter, the FEIS is inadequate under NEPA. Reclamation must address these errors by either withdrawing and revising the FEIS or expanding the Draft SEIS. Until it does so, Reclamation cannot legally proceed with the Project.	Please refer to response to comment 20-2.
20	55	**IV. CONCLUSION** Reclamation must withdraw and revise the Draft SEIS, the Final Feasibility Report, and the FEIS. The Project threatens to continue the destruction of the Winnemem's ancestral homeland and traditional way of life, and the Tribe urges Reclamation to terminate the Project.	Reclamation acknowledges the commenters' opposition to the Project. Please refer to response to comment 20-2.
56	1	The DSEIS fails to provide analysis of numerous significant changes since the Final EIS for the Project was released in 2015. These include recent and pending changes in protected status under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA) for Shasta salamanders and Shasta snow-wreath, including changes in taxonomic status that reveal anticipated impacts to salamanders to be more severe than disclosed in the DSEIS.	A comprehensive discussion of the impacts to the Shasta snow-wreath can be found in Chapter 12, *Botanical Resources and Wetlands*, in the FEIS as well as the *Botanical Resources and Wetlands Technical Report*. For impacts associated with the proposed Shasta dam raise, various mitigation measures, including developing a Shasta Snow-wreath Conservation Agreement to include all responsible State and Federal resource management agencies and appropriate private landowners, were identified and can be found in Section 12.3.5 of Chapter 12. The status of the Shasta snow-wreath remains the same as was analyzed in the

Letter Number	Comment Number	Comment	Response
			FEIS and analysis contained therein complies with NEPA guidance. Chapter 13 of the FEIS also contains a robust analysis related to potential impacts of the Shasta Salamander. The comment regarding change in taxonomic status does not present new information that would change the effects analysis. Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. CESA does not apply to Reclamation.
56	2	The DSEIS fails to fully analyze and disclose upstream and downstream impacts of the Project on aquatic, riparian, and floodplain rearing and breeding habitats for ESA listed salmonids and riparian dependent species such as the yellow-billed cuckoo.	As a supplement to the FEIS, the SEIS provides updated modeling based on new information but does not change Reclamation's intent to comply with Section 7 of the ESA and seek further consultation as needed.

Letter Number	Comment Number	Comment	Response
		Reclamation has failed to complete ESA consultation for spring-run Chinook salmon, winter-run Chinook salmon, Central Valley steelhead, western yellow-billed cuckoo, southern green sturgeon, northern spotted owl, California red-legged frog, and gray wolf. The DSEIS does not comply with the ESA or CESA.	Please see FEIS Master Comment Response 33.3.29, DSFISH-4, referring to a project-specific Biological Opinion and new operations Biological Opinions that may result from reconsultation actions. Also, the 2019 Biological Opinions are addressed in SEIS Master Comment ESA-1," ESA Compliance" CESA does not apply to Reclamation.
56	3	The DSEIS relies on flawed climate change modeling and analysis regarding cold water flows for salmonids	Please refer to response to comment 56-86. For discussion regarding cold water flows for salmonids, please refer to FEIS Master Comment Response DSFISH-5, "Fish and Wildlife Coordination Act Report," and FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions."
56	4	The Project fails to comply with the requirements of the Clean Water Act.	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance."
56	5	The DSEIS fails to adequately address and disclose seismic issues.	Please refer to FEIS Chapter 8.3.4, "Direct and Indirect Effects" for a discussion of the potential impact of seismic issues. Please also refer to the FEIS, Chapter 4, Geology, Geomorphology, Minerals and Soils for a discussion regarding seismic conditions and risk. Impact Geo-1, Exposure of Structures and People to Geologic Hazards Resulting from Seismic Conditions, Slope Instability and Volcanic Eruption specifically addresses seismic risk.
56	6	Changes in funding and a new cost allocation method for the Project necessitate a new economic analysis. Reclamation is using	The information raised by this comment has been adequately disclosed. However, this comment does not

Letter Number	Comment Number	Comment	Response
		one set of numbers to minimize the benefits for allocating repayment costs and another set of calculations to determine the cost benefit ratio for the Project.	raise any new information related to environmental effects.
56	7	The proposed Project is intended to increase water supply to meet increasing demand, but justification for the project is cloaked in unsupportable claims of benefits for listed salmonids and climate change needs. The Project will significantly degrade breeding, feeding, and sheltering habitat for several listed species. Sacramento winter-run Chinook salmon and the western yellow-billed cuckoo are particularly vulnerable to adverse habitat impacts that will result from the Project.	Please refer to FEIS Master Comment Response COST/BEN-1, "Intent of EIS and Process to Determine Federal Interest." Please also refer to response to comment 56-2.
56	8	The Project is inconsistent with the recovery plan for winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead trout, which proposes fish passage at Shasta Dam to provide access to high elevation and historical, cold-water salmonid habitat. Managing downstream water temperatures for spawning winter-run salmon through cold-water releases from Shasta Dam should be considered a stopgap measure until safe and effective fish passage for salmonids is in place. Reclamation has the ability without the Project to release riparian floodplain activation flows to benefit juvenile salmonids and to conserve western yellow-billed cuckoo habitat, while fulfilling the secondary Project objective to reduce flood damage along the Sacramento River.	Please refer to FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions."
56	9	1. New Information and Status for Shasta Salamanders The DSEIS falls short in failing to mention, let alone evaluate and disclose, impacts to two of the three special-status endemic salamanders that could be affected by the Project. These endemic salamanders are protected under the California	Please refer to response to comment 56-1.

Letter Number	Comment Number	Comment	Response
		Endangered Species Act (CESA), and therefore the Project's potential effects on these species must be assessed within the DSEIS.	
56	10	The Project seeks authorization under the Water Infrastructure Improvements for the Nation Act (WIIN Act, P.L. 114-322). (DSEIS, p. 1-2.) Despite the DSEIS's assertion that compliance with state laws, such as the California Wild and Scenic Rivers Act, is not required for this Project (see DSEIS, p. 5-3), the WIIN Act clearly requires consideration and adherence to state law. The text of the WIIN Act establishes Reclamation's duty to comply with "all applicable environmental laws" when discussing the Secretary's participation in federally owned storage projects. (WIIN Act § 4007(b)(4). The WIIN Act further states that "nothing in this section preempts or modifies any obligation of the United States to act in conformance with applicable state law." (WIIN Act § 4007(j); see also § 4012(a)(1).) The WIIN Act's savings clause (section 4012(a)(2)) requires any Project authorized and pursued under the WIIN Act to comply with the Central Valley Project Improvement Act (CVPIA). The CVPIA, in turn, requires that operation of the Central Valley Project (CVP) must "meet all obligations under State and Federal Law …" (CVPIA, P. L. 102-575 § 3406(a).) As the Project directly implicates the operation of the CVP, the DSEIS that considers raising the Shasta Dam must disclose and fully analyze the Project's potential impacts on California state-listed species.	Please refer to Master Comment Response WIIN-1, "WIIN Act Compliance."
56	11	Moreover, this action is governed by the Council on Environmental Quality's 1978 regulations, as amended, and so all references to the CEQ regulations are to those in effect prior to September 14, 2020 unless otherwise noted. Although CEQ issued a final rulemaking in July 2020 fundamentally rewriting	Reclamation agrees that the 1978 NEPA regulations apply.

Letter Number	Comment Number	Comment	Response
		those regulations, the new rules apply only "to any NEPA process begun after September 14, 2020," or where the agency has chosen to "apply the regulations in this subchapter to ongoing activities." 40 C.F.R. § 1506.13 (2020). The NEPA process for this Project began before September 2020, and the Bureau of Reclamation does not appear to allege it has chosen to apply the 2020 rules to the Project. To ensure certainty, Reclamation should exercise its discretion to continue to apply the 1978 rules here. Attempting to apply the new CEQ regulations without adequate guidance or training, and with conflicting agency policies and procedures still on the books would be highly inefficient and lead to legal liability. Further, the future of the 2020 rules is still uncertain due to pending litigation.	
56	12	Accordingly, and relevant here, the operative CEQ regulations provide that when determining the severity of an impact, the Bureau must consider, among other things, "[w]hether the action threatens threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b)(10). Here, Reclamation must consider whether the Project could result in unlawful harm to state-listed salamanders.	Please refer to response to comment 56-1.
56	13	The Shasta salamander (Hydromantes shastae) is a small lungless salamander that occupies an extremely restricted range in Shasta County, California, adjacent to Shasta Lake. This salamander is primarily a habitat specialist and limestone obligate, found among rock outcrops in habitats with limestone substrates; although some individual salamanders have been found in a broader range of habitats away from limestone. At the time of the FEIS in 2015, the Shasta salamander was	Please refer to comment 56-1.

Letter Number	Comment Number	Comment	Response
		considered a single species, but the publication of an April 2018 scientific study (Bingham et al. 2018) split it into three species, based on mitochondrial DNA analysis. The paper reclassifies the Shasta salamander (Hydromantes shastae) as being restricted to populations found in the eastern portion of its former range, while formally describing two new species, the Samwel Shasta salamander (Hydromantes samweli), and Wintu Shasta salamander (Hydromantes wintu). Although genetically distinct, the Shasta salamander, Samwel Shasta salamander, and Wintu Shasta salamander are morphologically cryptic (indistinguishable from one another). The DSEIS fails to mention the existence and critically imperiled status of the Samwel Shasta salamander and the Wintu Shasta salamander. All three species of salamander will be affected by the Project at some level, but Reclamation has failed to include mention of the newly identified species in the DSEIS. And based on the taxonomic split, it is likely that some or all of the distinct taxonomic units will be affected more severely than anticipated in the DSEIS.	
56	14	Prior to its reclassification as three species, the Shasta salamander already had the smallest known range of any Pacific Northwest amphibian, endemic to a very small portion of the Cascade Range near Shasta Lake. The estimate of the entirety of the suitable habitat for the three Shasta salamander species within their known range is approximately 730 km2. The three reclassified species, by definition, inhabit even smaller zones within that range, and are thus even more vulnerable to extinction. The Shasta salamander is listed as a “threatened” species by the	Please refer to comment 56-1. CESA does not apply to Reclamation.

Letter Number	Comment Number	Comment	Response
		State of California under the California Endangered Species Act. The state has not yet adjusted its listing to acknowledge the new classification of the Shasta salamander as three unique species, but all three species are protected as threatened under the umbrella of the Shasta salamander listing. The DSEIS fails to update the FEIS to reflect the administrative history of the impending federal ESA listing of the Shasta salamander and how the Samwel Shasta salamander and Wintu Shasta salamander will be addressed in the ESA listing process. The Center for Biological Diversity petitioned the USFWS to list the Shasta salamander under the ESA in 2012 (CBD 2012). In 2015, the USFWS responded to the petition and made a finding that listing the Shasta salamander as endangered or threatened may be warranted (USFWS 2015, p. 56429). On April 23, 2018, the Center for Biological Diversity notified the USFWS that the Shasta salamander was actually three distinct species that are only found in the Shasta Lake watershed (CBD 2018). All three species continue to be included as part of the original petition to list the Shasta salamander. Reclamation was made aware of the new scientific information regarding the salamanders during Fish and Wildlife Coordination Act discussions with the USFWS in 2018 and 2019, and during ESA consultation on upstream impacts of the Project in 2019.	
56	15	A Stipulated Settlement Agreement and Proposed Order pursuant to 4(b)(3)(B) of the ESA and its implementing regulations was filed on June 26, 2019 (Center for Biological Diversity v. David Bernhardt), requiring the USFWS to make a final determination whether or not the Shasta salamander complex should be proposed for listing under the ESA by April 30, 2021. The DSEIS lacks an update on the timing of the ESA	Please refer to response to comment 56-1.

Letter Number	Comment Number	Comment	Response
		listing process for the species and fails to disclose the potential future listing of one or all of the species in the Shasta salamander complex. The SEIS should describe the administrative history on the potential listing of the species and provide a clear articulation of how each of the three Shasta salamander species could be affected by the Project.	
56	16	All three species in the Shasta salamander complex are small salamanders that are closely associated with caves, limestone outcrops, and loose rocks with interstitial moisture. Each species has a suite of both similar and distinct habitat requirements, and all will be impacted in varying degrees by the Project. Reclamation has failed to analyze the impacts of the Project on these species and quantify reductions in their populations, including the potential of local extirpation, or even extinction, from direct and indirect effects of the Project.	Please refer to comment 56-1.
56	17	The original filling of Shasta Lake caused significant loss of suitable habitat for Shasta salamanders, and was the most significant historical impact they faced. The dam substantially raised the level of a smaller lake at the site, submerging a portion of the species' historical habitat. The creation of Shasta Reservoir led to continued threats to the salamanders, including constantly expanding recreational development along the shoreline area. Filling of the dam also led to isolation of salamander populations in the Shasta salamander complex, preventing the metapopulation dispersal and breeding that is important for recolonizing extirpated localities. Increasing the size of Shasta Lake and the elevation of the reservoir is likely to further exacerbate these types of population-level impacts.	Please refer to comment 56-1.

Letter Number	Comment Number	Comment	Response
		The plans to raise the level of Shasta Dam and Reservoir poses an imminent threat to the survival and recovery of all three salamander species. Raising the level of the dam by 18 ½ feet would raise the level of the reservoir by 20.5 feet, further flooding hundreds to thousands of acres of the salamanders' already restricted habitat. The proposed Shasta Dam raise would cause extensive take of salamanders and loss of irreplaceable suitable habitat for Shasta salamanders; the loss of 42-51 acres of limestone habitat and of 4,056-5,266 acres of non-limestone habitat. In addition to the direct flooding of additional salamander habitat, the dam raise is expected to cause an upland shift of the housing, businesses, roads, and recreational development that are currently along the reservoir's shoreline, destroying additional salamander habitat, as well as cause an increase in human activities in and near their habitats.	
56	18	The FEIS considers impacts to Shasta salamanders to be significant and unavoidable. The proposed mitigation measures for the significant loss of suitable habitat and take of salamanders is "avoidance," relocation of salamanders, and acquisition of mitigation lands. However, the flooding of 42-51 acres of limestone habitat and of 4,056-5,266 acres of non-limestone habitat cannot be avoided under the project. There is no evidence that salamanders can be successfully relocated, nor that there is any suitable salamander habitat to relocate them to where they could successfully persist. Likewise, due to the habitat specialization of this species, it is unclear whether mitigation lands with suitable habitat can be acquired.	Please refer to response to comment 56-1.
56	19	The Wintu Shasta salamander is a species with a highly restricted range. The species is only found near the McCloud River Arm of Shasta Lake. It has only been detected in eight locations	Please refer to comment 56-1.

Letter Number	Comment Number	Comment	Response
		associated with limestone outcrops and caves (Evelyn and Sweet 2018). Due to its highly restricted range and low number of detections within the range, the species is vulnerable to extinction from stochastic events such as fire, Chytrid fungus, and overstory changes leading to loss of shade and to increased desiccation. The DSEIS fails to address the extraordinary rareness of this species, potential threats to its survival, and the effect the Project will have on any of the remaining populations.	
56	20	The Samwel Shasta salamander has three locality groupings: along the western edge and drainages of Shasta Lake; along the McCloud River and its upper drainages; and an isolated population on a tributary to the Pit River. The DSEIS does not quantify the percent of Samwel Shasta salamander populations that would be lost as a result of the Project.	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law.
56	21	The Shasta salamander's range is along the southern edge of Shasta Lake and between the Squaw Creek Arm and Pit River Arm of Shasta Lake. Many of the detections for this species are in upland and updrainage areas of Shasta Lake, but an unquantified number of populations will be lost as a result of the Project.	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law.
56	22	The three species in the Shasta salamander complex also continue to be threatened by wildfire, mining, timber management, and human recreational activities. Wildfires remove overstory and prey base, potentially leading to desiccation, heat stress, and starvation for Shasta salamanders. It is unclear what the level of impact these has been from wildfires around Shasta Lake since the FEIS was written. In addition, in the spring of 2020, a significant amount of the Shasta salamander range was treated with prescribed fire. Although the full effect of these fires on the species is unknown, it is a cumulative threat that should be quantified and considered in the SEIS. The amount of high-	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		intensity fire wildfire in the habitat of any of the species in the Shasta salamander complex has not been quantified; and this is a cumulative effect that should be considered and quantified in the DSEIS. The combination of wildfire and prescribed-fire effects may be increasing the risk to the species in the Shasta salamander complex and should be discussed in the DSEIS in the context of how the Project may be adding to the risk of localized extirpation for all three species.	
56	23	Reclamation staff has been made aware of the speciation in the Shasta salamander complex, the threat of fire and reservoir inundation to these species, and the legal actions relative to listing as threatened or endangered under the ESA. A full reporting of these issues, and quantification of specific localities that will be lost, was not provided in the DSEIS and is a serious omission.	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law. Inundation was fully considered in FEIS Chapter 13.
56	24	Another newly described endemic amphibian species, the Shasta black salamander (Aneides iecanus), was recently split from other black salamanders in California (Reilly and Wake 2019). The Shasta black salamander occurs only in north central and western Shasta County as well as extreme southeastern Siskiyou County in the vicinity of Castle Crags, and ranges in elevation from 300 m (near the surface of Lake Shasta) to over 1,000 m in Castle Crags (Reilly and Wake 2019). Given that the type locality of the species was drowned by the filling of Lake Shasta (Reilly and Wake 2019), it is likely this species lost considerable habitat due to the original dam and reservoir. This species is a streamside salamander whose habitat could be significantly impacted by the dam raising proposed in the Project. The SEIS should discuss whether the Project will have population level impacts on Shasta black	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law. CESA does not apply to Reclamation.

Letter Number	Comment Number	Comment	Response
		salamander that could lead to listing under CESA or the federal ESA.	
56	25	2. Changed Status for Shasta Snow-Wreath The DSEIS fails to mention the state protected status of the Shasta snow-wreath and pending consideration of listing under the federal ESA, nor does it adequately evaluate the Project's impacts to the snow-wreath. The Shasta snow-wreath (Neviusia cliftonii) is a dicot shrub in the rose family that is found exclusively in western Shasta County around the perimeter of Shasta Lake. The species was first described in 1992 and is now known from a total of 24 occurrences, restricted almost entirely to National Forest System lands (CDFW 2020). Because of extensive searching between 1992-2016, it is unlikely that there will be many more occurrences discovered (Roche 2019). The Shasta snow wreath was severely impacted by the initial construction of Shasta Dam (CDFW 2020). Shasta snow-wreath is presumed to have been more widespread and populations more connected along river corridors before the filling of Shasta Lake in 1948, as evidenced by the many populations that reach their lower limit at the full pool line of Shasta Lake (Lindstrand and Nelson 2006; DeWoody et al. 2012a). The DSEIS fails to mention the September 30, 2019 petition to list the species as endangered or the California Fish and Game Commission's April 21, 2020 formal designation of the Shasta snow-wreath as a protected candidate species under the California Endangered Species Act (CFGC 2020), or to consider	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		the information presented in the federal or state listing petitions regarding the imperiled status of the snow-wreath. Under CESA, species designated as candidate species are afforded the full protection of the law, equal to species listed as threatened or endangered. (Cal. Fish & Game Code § 2068.) In accordance with Reclamation's duty to comply with applicable state environmental laws, discussed above, the DSEIS's failure to adequately analyze impacts to the Shasta snow-wreath violates its NEPA mandate.	
56	26	Despite the protections due Shasta snow-wreath under CESA, the DSEIS only mentions the Shasta snow-wreath in passing in the geology section of Chapter 5, which covers the Wild and Scenic River designation of the McCloud River. Given that the Project was identified by the California Fish and Game Commission (CFGC 2020) and the California Department of Fish and Wildlife (CDFW 2020) as the primary threat to the Shasta snow-wreath and its habitat, the failure of the DSEIS to include the status of this species is a serious omission.	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law.
56	27	According to the CESA listing record, the Shasta snow-wreath is threatened with significant destruction, modification and curtailment of habitat and range as a result of the Project proposal to raise Shasta Dam, which would inundate thousands of additional acres and move infrastructure into suitable snow-wreath habitat, with additive impacts from changed hydrology and construction. The California Department of Fish and Wildlife estimated that this inundation and other associated actions would impact 71-79 percent (17-19 of 24 occurrences) of all the known occurrences of Shasta snow-wreath (CDFW 2020; CFGC 2020). The proposed 18.5-foot dam raise would inundate about 32,300 acres of land surrounding the existing Shasta Reservoir	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		(USDI BOR 2015a). Inundation would destroy 9 known Shasta snow-wreath occurrences and additional potential habitat, as well as change hydrology and drainage of habitat areas (Lindstrand and Nelson 2005a, 2005b; Lindstrand 2007; USDI BOR 2013). Other Shasta snow-wreath subpopulations could be disturbed by the relocation of roads, bridges, campgrounds, and other facilities (Lindstrand 2007; USDI BOR 2015).	
56	28	The USFWS received a petition to list the Shasta snow-wreath under the federal ESA on October 3, 2019 (Roche 2019). To date, the USFWS has not responded to the petition with a 90-day finding to determine whether or not the petition contains sufficient information to move forward with the listing process. Although not currently responsive to the petition, Reclamation and the USFWS are required to give full consideration to the California Fish and Game Commission findings and notice of the CESA status of the Shasta snow-wreath, pursuant to ESA Section 4(b)(1)(B)(ii). (16 U.S.C. § 1533(b)(1)(B)(ii).) By not acknowledging the existence of the USFWS petition and the CDFW status of the species in the DSEIS, Reclamation is keeping crucial information from decision-makers, and violating the requirements of the ESA and CESA.	Please refer to response to comment 56-1. Reclamation will continue to comply with all applicable law. FWS has been a cooperating agency throughout the development of this project, and Reclamation will continue to work closely with FWS, including further consultation, if required. CESA does not apply to Reclamation.
56	29	The DSEIS is conspicuously silent on the existence of the November 2015 Final Fish and Wildlife Coordination Act Report (FWCAR) for the Project (USDOI BOR 2015b). Reclamation is aware that the 2014 version of the FWCAR document was withdrawn from Reclamation by the USFWS for minor editing and that the document was finalized with the necessary edits. In both the 2014 and 2015 versions of FWCAR, there is significant discussion of the threats of the Project to the Shasta snow-wreath. The 2015 FWCAR found that 46 percent of all known	Please refer to comment 56-1. See FISHPASS-1 within Chapter 33 "Public Comments and Responses" of the 2015 SLWRI FEIS for a discussion on fish passage above Shasta Dam. Recent developments on the High-head Dam Juvenile Salmonid Collection System project do not change the conclusions and discussions presented in the 2015 SLWRI FEIS. As FISHPASS-1 explained: "The SLWRI does not include a fish passage component into any of the action alternatives, and would not mitigate,

Letter Number	Comment Number	Comment	Response
		occurrences of the plant species would be adversely affected by the Project (USDOI BOR 2015b); however, the current scientific understanding of the Project is that it is expected to impact 71-79 percent of the known locations (CDFW 2020; CFGC 2020). In the FEIS, Reclamation concluded that the fragmented Shasta snow-wreath populations around Shasta Lake are more vulnerable to extirpation (FEIS, p. 12-219). Throughout the FEIS it is disclosed that the proposed Project mitigation calling for relocation, transplanting, and artificial propagation of Shasta snow-wreath are unproven, with Reclamation concluding that the impacts would remain significant and unavoidable. The SEIS needs to clearly state the CESA status of the species, the USFWS process on the ESA petition to list the species, and updated information on the Project's expected impacts to the species quantified by CDFW and the California Fish and Game Commission in the spring of 2020.	nor is required to mitigate, for past actions that blocked fish from continuing the upstream migration." CESA does not apply to Reclamation.
56	30	3. Failure to Fully Analyze Upstream and Downstream Impacts to Aquatic, Riparian, and Floodplain Habitat for Listed Salmonid and Riparian Species; and Failure to Complete ESA Consultation A. Lack of ESA Consultation In the DSEIS for the Project, Reclamation based its satisfaction of the federal Endangered Species Act (ESA) consultation requirement on two Biological Opinions: the U.S. Fish and Wildlife Service (USFWS) October 21, 2019, Biological Opinion for the Reinitiation of Consultation on the Coordinated Operations of the Central Valley Project and the State Water Project (USFWS 2019) and the National Marine Fisheries Service (NMFS) October 22, 2019, Biological Opinion for the Reinitiation of Consultation	Please refer to Master Comment Response ESA-1, "ESA Compliance."

Letter Number	Comment Number	Comment	Response
		on the Long-Term Operation of the Central Valley Project and State Water Project (NMFS 2019). Yet these Biological Opinions explicitly do not include an analysis of effects to ESA-listed species that would occur as a result of the raising of Shasta Dam in the current Project, and cannot be relied upon here.	
56	31	NMFS has not completed ESA consultation on either upstream or downstream effects of the Project, and these effects have not been fully analyzed by Reclamation in the FEIS or DSEIS. NMFS addressed the lack of information on the Project effects in a footnote to its 2019 Biological Opinion for the Long-Term Operation of the Central Valley Project and State Water Project (NMFS 2019 OCAP BiOp): "There are no operational scenarios in the [biological assessment] 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" (NMFS 2019, Footnote 8, page 203). Reclamation has not consulted with NMFS on the effects of the Project on Recovery Plan implementation for the NMFS Central Valley Chinook Salmon and Steelhead Recovery Plan (NMFS 2014b). In their Biological Opinion on operations, the NMFS 2019 OCAP BiOp included an unfounded expectation of a commitment carried over from the NMFS 2009 Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project RPA Action Suite V, NF 4: Implementation of Pilot Reintroduction Program (which included above Shasta Dam). While the NMFS 2019 OCAP BiOp describes the 2018 Reclamation funding for the Pilot Reintroduction Program, it does not include any discussion of the funding withdrawal directed by Reclamation in the summer of 2019. In addition, the FEIS expressly did not include the Shasta Dam Fish	Please refer to Master Comment ESA-1," ESA Compliance." As stated in the SEIS, its scope is "to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns." (SEIS, 1-2). This does not change Reclamation's intent to comply with Section 7 of the ESA and seek further consultation as needed. FWS and NMFS have been, and continue to be, cooperating agencies on this project, and Reclamation will continue to comply with all applicable law. See response to comment 56-29.

Letter Number	Comment Number	Comment	Response
		Passage Evaluation because Reclamation considered it "too speculative."	
56	32	The USFWS addressed the consultation on future effects through an incomplete ESA consultation on both upstream and downstream effects and by deferring ESA consultation on the future downstream effects of raising Shasta Dam in its 2019 OCAP BiOp. On April 3, 2019, Reclamation initiated ESA consultation with the USFWS on the upstream effects of raising the elevation of Shasta Dam on the northern spotted owl, California red-legged frog, and gray wolf. On August 12, 2019, USFWS staff at the Bay Delta Fish and Wildlife Office were directed by their Field Supervisor to put the consultation on hold and no further ESA consultation on upstream effects ensued. On page 30 of the USFWS 2019 OCAP BiOp, further consultation on downstream effects was deferred in the following way: "There is a separate process and environmental impact statement for the Shasta Dam Raise, for which a Record of Decision and Biological Opinions have not been completed. Reclamation would not change operations described in the [Proposed Action] until the Shasta Dam Raise ROD and separate ESA consultations are completed. In the interim, Reclamation would operate the enlarged reservoir consistent with the operations and requirements of the [Proposed Action]." After construction on raising Shasta Dam is completed, on or before the Project has captured 634,000 acre-feet of wet-season flow and snowmelt, operational criteria are likely to change and Reclamation is expected to reinitiate formal ESA consultation on Project effects and take of listed species. Prior to conducting the deferred ESA consultations there will be significant impacts on	Please refer to response to comment 56-31.

Letter Number	Comment Number	Comment	Response
		numerous listed species and their critical habitats: spring-run Chinook salmon, winter-run Chinook salmon, and Central Valley steelhead juvenile rearing habitat will have been lost or seriously degraded; additional ecological riparian function that maintains western yellow-billed cuckoo Critical Habitat will be permanently removed from the Sacramento River; essential habitat types of Critical Habitat for winter-run Chinook salmon, spring-run Chinook, and Central Valley steelhead will be degraded or lost; spawning flows for southern green sturgeon may be compromised; northern spotted owl nesting territories may lose foraging habitat, resulting in nest failures; and California red-legged frogs may be subjected to habitat loss and increased predation.	
56	33	Reclamation is planning to commit the financial and staffing resources to raise the elevation of Shasta Dam, but to defer ESA consultation until after construction is completed and the reservoir is filling or full and there becomes a need to change the operational criteria. ESA consultation after-the-fact is not consistent with Section 7(d) of the ESA and its implementing regulations under the Code of Federal Regulations (50 CFR Part 402.09). Section 7(d) of the ESA reads as follows: "7(d) Limitation on Commitment of Resources. After initiation of consultation required under subsection (a)(2), the Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2)."	Please refer to response to comment 56-31. This SEIS was prepared in part to comply with CWA section 404(r). As part of that process, the information contained in this SEIS—as well as the FEIS—will be transmitted to Congress in compliance with the requirements of that section. Reclamation will continue to comply with all applicable law, including possible further consultation under Section 7 of the ESA, if necessary.

Letter Number	Comment Number	Comment	Response
56	34	Reclamation has completed a Biological Assessment pursuant to ESA Section 7(c) and its implementing regulations (50 CFR Part 402.12) for upstream Project effects to the northern spotted owl, gray wolf, and California red-legged frog. After Reclamation initiated ESA consultation with the USFWS, the USFWS and Reclamation made full use of the 90 days of consultation period prescribed in section 7(b)(1)(A) of the ESA. To date, the ESA consultation with the USFWS has not been concluded – there is no Biological Opinion or concurrence regarding effects of the Project, including for the original four ESA-listed species and the downstream effects of the Project on the western yellow-billed cuckoo and its proposed Critical Habitat.	Please refer to response to comment 56-31.
56	35	Regarding effects on ESA listed species and their habitat from raising Shasta Dam, Reclamation has put forward the argument in the DSEIS that operational criteria will not change and thus no further ESA analysis or consultation is needed at this time for downstream effects. Reclamation is not upholding their obligations under Section 7(a)(2) of the ESA, by failing to quantify loss of riparian floodplain activation and function, not asking NMFS and the USFWS to conduct jeopardy or adverse modification analyses, not considering the effect of removing 634,000 acre-feet of wet season flow and snowmelt from the Sacramento River, and not considering future losses of wet-season flow.	Please refer to response to comment 56-31.
56	36	NMFS and USFWS have accepted deferment of ESA consultation; however, once the Project is completed NMFS and USFWS will not have the ability to formulate a Reasonable and Prudent Alternative that would include flows used to effectively maintain and conserve habitat for ESA listed species. The Project will also inundate potential winter-run salmon rearing habitat in the	Please refer to response to comment 56-31.

Letter Number	Comment Number	Comment	Response
		McCloud River in a stretch of river that would have contributed to winter-run Chinook salmon survival and recovery when the Pilot Reintroduction Program is reestablished in the future. Without a firm commitment to restore winter-run Chinook salmon upstream of Shasta Dam, this vital recovery action may be further delayed or potentially abandoned. The construction of the Project will not be reversable without significant additional cost and analyses, and the expenditure of greater than $1.4 billion will be irretrievable.	
56	37	In order to be compliant with 50 CRF 402.12, 50 CFR 402.14, and ESA Sections 7(a)(2), 7(c)(1), and 7(d), Reclamation must consult with NMFS on all upstream and downstream Project effects to listed salmonids and their Critical Habitat. Essential habitat types that are found in Critical Habitat along the Sacramento River for the listed salmonids include, but are not limited to: juvenile rearing areas, juvenile migration corridors, and areas for growth and development to adulthood. Within these areas, NMFS (2000) identified essential features of Critical Habitat to include adequate: "(1) substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food, (8) riparian vegetation, (9) space, and (10) safe passage conditions." Water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions for salmonids will all be compromised by the lack of riparian edge and floodplain activation that will be a direct and indirect effect of the Project. Riparian edge and floodplain activation consists of flows outside of the river channels that are periodically inundated to connect floodplains to a river and nourish riparian habitat. Reclamation must confer with the USFWS on the impact to proposed western yellow-billed cuckoo Critical Habitat that is likely to occur with	Please refer to response to comment 56-31.

Letter Number	Comment Number	Comment	Response
		curtailment of riparian activation flows. As the Sacramento River population western yellow-billed cuckoo continues to decline toward zero, Reclamation should consider the combined effects of existing Shasta Dam operations on the species and the accelerated loss of habitat that is expected to occur as a result of the Project.	
56	38	ESA consultation with both agencies is required to quantify take resulting from the Project of winter-run Chinook salmon, spring-run Chinook salmon, Central Valley steelhead, southern green sturgeon, western yellow-billed cuckoo, northern spotted owl, and California red-legged frog. Because of the outstanding dispersal ability of the gray wolf, serious consideration should be given to the future risk of take if a California pair of gray wolves establish a breeding territory in or near the reservoir inundation zone.	Please refer to response to comment 56-31.
56	39	Reclamation has yet to take a hard look at the Project's effects in reducing the amount of Sacramento River downstream rearing habitat available for winter-run Chinook salmon, spring-run Chinook salmon, Central Valley steelhead, and western yellow-billed cuckoo. In particular, winter-run Chinook salmon and western yellow-billed cuckoo in California are perilously close to extirpation. Only offering surveys, monitoring, and planning while these salmon and cuckoo populations continue to decline will not protect the limited remaining habitat upon which these species depend.	Please refer to response to comment 56-31.
56	40	B. Downstream Effects to Riparian Corridor The Project is intended to hold back 634,000 acre-feet water that comes into Shasta Lake as wet season flows and snowmelt. By holding back wet season flows and snow melt, Reclamation will	Please refer to Master Comment Response ESA-1, "ESA Compliance" for a discussion on consultation and ESA compliance. Reclamation will continue to comply with all applicable law, including further consultation, if necessary.

Letter Number	Comment Number	Comment	Response
		potentially prevent the 634,000 acre-feet of water from contributing to downstream riparian edge and riparian floodplain inundation (collectively called "riparian activation") during the reservoir fill period. Planned future operations are highly likely to reduce the sustainability of riparian floodplain habitat. During the period of reservoir fill, wet-season and snowmelt flows up to the reservoir capacity will no longer be available for riparian edge and floodplain activation downstream of Shasta Dam. The entire package of the FEIS, DSEIS, and the purported ESA consultations are characterized by a lack of quantification of effects to riparian ecosystems downstream of Shasta Dam and complete disregard for the ecological needs of listed species dependent upon activated riparian habitat. Reclamation included extensive modeling in the FEIS but the EIS remains silent on Sacramento River flows during the reservoir fill period following construction of the Project.	
56	41	The Project effect of riparian habitat loss for winter-run Chinook salmon, spring-run Chinook Salmon, Central Valley steelhead, and the western yellow-billed cuckoo has not been quantified by Reclamation, NMFS, or USFWS. Mitigation described in the FEIS is only to "Implement a Riverine Ecosystem Mitigation and Adaptive Management Plan." Direct and indirect impacts to the riparian ecosystem and ESA listed species habitat are likely to occur several years in advance of a finalized plan, and the water to activate the riparian floodplain will already be obligated for other uses.	SEIS Chapter 4.3, "Environmental Impacts," considers an updated analysis of the potential impacts to Winter-run Chinook Salmon, Central Valley Steelhead and Yellow-billed Cuckoo.
56	42	Riparian restoration without a committed level of floodplain activation (such as 28 to 56 days of flooding on established upland vegetation) is not likely to provide for optimal juvenile	Comment noted. The FEIS and SEIS contain a full and robust analysis of potential effects. Reclamation has

Letter Number	Comment Number	Comment	Response
		salmonid growth. Jeffries et al. (2008) found that juvenile Chinook salmon reared on vegetated ephemeral floodplain for up to 56 days had faster growth than juveniles in the river below the floodplain and in unvegetated sites. Meyers (2018) found significant growth in the riparian floodplain after 28 days. These periods of floodplain activation have been demonstrated to optimize juvenile salmonid growth, and potentially survival. Reclamation's dependence on Mitigation Bot-7 as mitigation for loss of habitat avoids any acknowledgement of the level of riparian activation needed to maintain healthy riparian ecosystems in the lower Sacramento River.	complied with all applicable law, and will continue to do so.
56	43	If the reservoir fill period occurs during wet years, that water would not be available for riparian activation downstream of Shasta Dam. Wet years are essential for activating the riparian floodplain and enhancing the habitat, making it available for breeding, feeding, and sheltering of ESA listed species. If the reservoir fill period occurs during dry years, followed by wet years or average years, the period of hydrograph diminishment will be prolonged. Reclamation has not provided an analysis of the potential number of years that activated riparian floodplains will be prevented by reservoir fill.	Please refer to response to comment 56-42. Reclamation will continue to comply with applicable law, including further consultation, if necessary. Please also refer to Master Comment Response ESA-1, "ESA Compliance."
56	44	C. Hydrograph Diminishment Shasta operations have already modified and diminished the natural hydrograph of the Sacramento River (Figure 1, from FEIS Figure 4-9). This diminishment of the hydrograph has impacted riparian ecosystems along the Sacramento River to the point that the capacity of the river to support and sustain high quality riparian habitat is largely dependent on flows from tributaries downstream of the Project, such as Cottonwood Creek and Battle	The purpose of the SEIS was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. These issues were considered in the FEIS and the comment does not identify an issue that requires consideration in the SEIS.

Letter Number	Comment Number	Comment	Response
		Creek (USFWS 2020). The suppression or removal of natural hydrograph components, such as winter freshets, wet-season flows, and summer flow recession all result in diminishment or loss of ecological function, riparian habitat diminishment and loss, systemic and systematic loss of western yellow-billed cuckoo breeding habitat, and loss of access to feeding and migration habitat for juvenile salmonids. Existing operation of Shasta Dam has removed the winter freshets from the hydrograph, and current operations do not have streambed mobilization flows, such as those offered by Reclamation for Clear Creek (NMFS 2019 BiOp, p. 327). Current operation also lacks a moderated flow recession in late spring and early summer that would provide for germination and establishment of riparian trees. The wet season component of the natural hydrograph will be further diminished as a result of raising the level of Shasta Dam. High, wet-season (winter and spring) flows result in riparian edge and floodplain inundation amount, duration, and timing which activate the riparian food web and provide food and cover for juvenile salmonids. Reclamation's graphics of the hydrograph, measured downstream of Keswick Dam, do not include projections of the hydrograph during the reservoir fill period of the Project. Habitat loss from current Shasta operations can be ascertained by the amount of riparian activation flows no longer available for floodplain activation. This can be quantified as the area below the "Inflow to Shasta Dam" curve and above the "Future No Action" curve in Figure 1 [Exhibit 1].	

Letter Number	Comment Number	Comment	Response
		The USFWS has collected instream flow incremental methodology (IFIM) data for select areas along the Sacramento River that can be used to determine the level of loss or diminishment of habitat from removal of flows and hydrographic components from the riparian edge of the Sacramento River (CDFW et al. 2014; USFWS 2015). Reclamation did not quantify the baseline effects to the area under the curve to the changes in the hydrograph expected during the reservoir fill period or from post-Project operations.	
56	45	[Exhibit 1] Figure 1. Graphic from Chapter 4 of the FEIS quantifying the loss of water to the Sacramento River from Shasta Dam Operations. From December through April (and May in High Water Years), the amount of water no longer available for floodplain activation is the area below the "Inflow to Shasta Dam" curve and above the "Future No Action" curve.	Please refer to comment 56-44.
56	46	The scale of the graphic in FEIS Figure 4-12 (Figure 2) [Exhibit 2] obscures the effect of loss of these flows to the riparian edge and riparian floodplain in the Sacramento River. Reclamation did not quantify the number of acres or number of miles of riparian edge and riparian floodplain that would not be activated as a result in the change in flows. Due to the fact that these reductions occur during juvenile salmonid rearing and migration, the loss of even a limited number of acres could amount to several miles of loss of juvenile salmonid habitat and could significantly affect juvenile salmonid survival.	Please refer to response to comment 56-42 and response to comment 56-44.
56	47	Figure 2 [Exhibit 2]. Graphic from Chapter 4 of the FEIS comparing alternatives in the FEIS. The scale of the graphic obscures the effect of the additive loss of riparian floodplain activation downstream of Shasta Dam.	Comment noted.

Letter Number	Comment Number	Comment	Response
56	48	In other rivers, it has been shown that the restoration of a flow regime that supports riparian regeneration has led to the return of large riparian trees and diverse riparian cover (Mahoney and Rood 1993; Hughes and Rood 2003; Rood et al. 2003; Rood et al. 2005). A river's flow regime affects the ability of that river to recruit large overstory trees and to support diverse riparian structure and composition (Richter and Richter 2000; Bovee and Scott 2002; Lytle and Poff 2004; Poff et al. 2007; Poff and Zimmerman 2010). Diverse riparian structure supports overhead and instream cover for juvenile salmonids, and diverse organic material that supports riparian and riverine insects that are important food resources for salmonids. Diverse riparian structure with a cottonwood overstory, in areas greater than 50 acres, support western yellow-billed cuckoo breeding and foraging (USFWS 2104). The relationship between flow and establishment of cottonwoods has been well-documented (e.g. Busch and Smith 1995; Fenner et al. 1995; Naiman and Décamps 1997; Mahoney and Rood 1998; Rood et al. 2003b; Poff et al. 2007; Braatne et al. 2007; Carlisle et al. 2010; Opperman et al. 2010). Determining whether riparian establishment flows have occurred is a simple matter of modeling, per Mahoney and Rood (1998). Identifying when riparian establishment flows have occurred would provide the information necessary for determining when Project operations support riparian establishment and when they do not. Because riparian establishment flows are bimodal in nature (they have either occurred or not occurred), testing the probability that riparian establishment flows have an average probability of occurrence can be tested against water year type.	The commenter's point is not entirely clear and it does not identify new information. Comment noted.

Letter Number	Comment Number	Comment	Response
56	49	Removal of Spring Pulse Mitigation In their 2019 OCAP BiOp, NMFS accepted a Spring Pulse as mitigation for planned reductions in flow under current operations. While a Spring Pulse will not make up for the loss of juvenile salmonid rearing habitat from lack of riparian activation, it may effectively increase outmigration survival for spring-run Chinook salmon and steelhead trout. But it is not likely to increase overall outmigration survival for winter-run Chinook salmon. The Spring Pulse is not offered or discussed in the FEIS or DSEIS. During the fill period, Reclamation may not make Spring Pulse flows available for downstream juvenile migration, because such flows are likely to interfere with the ability to meet performance objectives. Current operation of Shasta Dam removes a significant amount wet-season floodplain activation from November through May. Through the OCAP ESA consultation, Reclamation offered a Spring Pulse Flow from April 1 through May 15 in some years as mitigation for existing operations. Unfortunately, the Spring Pulse flows offered by Reclamation in the NMFS 2019 OCAP BiOp are only offered "if the pulse does not interfere with the ability to meet performance objectives or other anticipated operations of the reservoir." With this caveat on a Spring Pulse flow, Reclamation has the ability to hold back water following construction of the Project at its discretion. This will have the compounded effect of removing riparian activation wet season flows from the downstream riverine and riparian ecosystem while also not providing the Spring Pulse flows mitigation, which were designed as a pulse flow of 150,000 acrefeet that could be released up to 57 percent of years.	This comment raised concerns with the current operation of the Shasta Dam, and does not raise substantive concerns relating to the proposed alternatives in the FEIS, or the supplemental analysis in the SEIS. To the extent this comment raises concerns about the reliance on the 2019 BiOp, please refer to Master Comment Response ESA-1," ESA Compliance."

Letter Number	Comment Number	Comment	Response
		In their 2019 OCAP BiOp, NMFS describes at length the proposed Spring Pulse flow from May 1 through May 15, which is only intended to enhance juvenile salmonid outmigration. No provisions are made for loss of activated riparian floodplain during the natural hydrograph period of juvenile rearing and migration from mid-November through May. The wording of the Spring Pulse provision under current operations does not provide a firm commitment to mitigate for the loss of juvenile salmonid rearing habitat or loss of riparian regeneration flows in cuckoo Critical Habitat from existing operations and does not provide any additional mitigation for the impacts of raising Shasta Dam and does not mitigate for current operations.	
56	50	Reclamation's analysis of a Spring Pulse flow did not call for such flows from Shasta Dam in 43 percent of years. Based on the current scientific understanding of the importance of these flows for juvenile salmonid outmigration, this would result in serious impacts to outmigrating winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead, potentially leading to cohort failure. There have not been analyses of how potential cohort failure would affect the survival and recovery of these species. The loss of rearing and outmigration flows for winter-run Chinook salmon in the Sacramento River is particularly dire: "For winter-run Chinook salmon juveniles, exposure to the spring pulse is small, occurring in fewer than 75 percent of years, and in those years, less than 5 percent of the year-class is expected to be influenced. We expect increased survival for those juveniles	Please refer to response to comment 56-49.

Letter Number	Comment Number	Comment	Response
		exposed to the spring pulse as a result of decreased travel time and decreased predation risk" (NMFS 2019 OCAP BiOp, p. 229).	
56	51	D. Loss or Diminishment of Ecological Function There is no commitment in the FEIS or DSEIS to provide the riparian activation (flows outside of the river channels that nourish riparian habitat) that is necessary to enhance juvenile salmonid growth and survival and to enhance, sustain, and conserve western yellow-billed cuckoo habitat. In addition, current Shasta Dam operations do not have a flow recession that would allow the riparian forest to regenerate, and none is proposed in the FEIS or DSEIS. Riparian forests along the Sacramento River contain Critical Habitat for the western yellow-billed cuckoo and are an important source of prey biomass for the cuckoo and for salmonids. Terrestrial invertebrates from riparian forests fall into or interface with the river where they can be preyed upon by salmonids. This in-fall of insect biomass is considered a "terrestrial subsidy" to salmonid bioenergetics. The sedimentation deposited during riparian activation is important for enhancing western yellow-billed cuckoo prey base in the summer. Therefore, without regeneration of the riparian overstory and floodplain habitat, there will be decreased food availability for foraging salmonids and yellow-billed cuckoos and their populations are likely to continue to decline.	Comment noted. Ecological function is discussed in the FEIS at multiple locations, for example please refer to FEIS Chapter 11, "Fisheries and Aquatic Ecosystems."
56	52	Reduction of Overstory Canopy and Composition Lack of riparian floodplain and loss of riparian overstory are common side effects of regulated rivers, due to lack of conditions that lead to riparian regeneration and to a diminished or constrained area for tree establishment. The relationship between	This comment does not identify new information. Please refer to FESI Chapter 2.3.2, "Environmental Commitments Common to All Action Alternatives."

Letter Number	Comment Number	Comment	Response
		flow and establishment of cottonwoods (Populus spp.) has been well-established (e.g. Fenner et al. 1985; Busch and Smith 1995; Naiman and Décamps 1997; Mahoney and Rood 1998; Rood et al. 2003; Braatne et al. 2007; Poff et al. 2007; Carlisle et al. 2010; Opperman et al. 2010). A river's flow regime affects the ability of that river to recruit large overstory trees and to support diverse riparian structure and composition (Richter and Richter 2000; Bovee and Scott 2002; Lytle and Poff 2004; Poff et al. 2007; Poff and Zimmerman 2010). Once riparian-regeneration flows are removed from the ecosystem, the cottonwood canopy ultimately becomes decadent and dies out. The DSEIS and FEIS are silent regarding the importance of cottonwood trees in the riparian ecosystem downstream of Shasta Dam, which are vitally important for maintaining ecological diversity and invertebrate prey biomass in riparian ecosystems in the west. Cottonwood trees are a significant species for contributing to western yellow-billed cuckoo prey base (USFWS 2013, 2014, and 2020) and for contributing to juvenile and adult salmonid prey base (as discussed below). Rood et al. (2003) provide an excellent summary of the effects of a reduced hydrograph on riparian cottonwoods. The secondary objective to "Promote Great Valley cottonwood regeneration along the Sacramento River" was deleted in the FEIS for the Project.	
56	53	Riparian plantings and restoration could return some ecological function of riparian habitat to the Sacramento River, but Reclamation has not quantified the additional loss of habitat and ecological function that would occur as a result of the Project. Reclamation has only committed to "Implement a Riverine Ecosystem Mitigation and Adaptive Management Plan to Avoid	See response to comment 56-72.

Letter Number	Comment Number	Comment	Response
		and Compensate for the Impact of Altered Flow Regimes on Riparian and Wetland Communities" (FEIS Mitigation Measure Bot-7). The proposed planning under Mitigation Measure Bot-7 calls for "no-net-loss performance standards for riparian habitat functions" without having quantified the loss of riparian function that could have been calculated using existing data. Planning to plan is not a valid mitigation for Project impacts. No commitments have been made to ensure that restoration projects will receive the wet-season flows needed to sustain woodland health and to activate the riparian food web.	
56	54	Even though Reclamation removed "Promote Great Valley cottonwood regeneration along the Sacramento River" from the FEIS (FEIS p. 2-13), it was weakly retained in the environmental commitments Table 3-42 Summary of Mitigation Measures as "Feasible modifications to dam operation procedures identified as reducing adverse impacts on meander migration or ecologically important bankfull and overbank flows, or as facilitating cottonwood establishment…" The operational flows for Shasta Dam in the OCAP biological opinions do not contain this commitment, and it is unlikely that Reclamation would consider these flows as feasible when their single flow commitment for listed species, the Spring Pulse, may or may not occur in the 58 percent of years offered.	Please refer to response to comment 56-52.
56	55	Activated riparian floodplain is expected to have the greatest benefit to healthy riparian forests along the Sacramento River. It is vitally important that riparian restoration includes riparian activation; for example, Rubin et al. (2019) found that restoration sites out of the floodplain along the Lower Colorado River had only 4 percent of the aquatic insects and 20 percent of the total insects compared to sites adjacent to and connected with the	The purpose of the SEIS was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS

Letter Number	Comment Number	Comment	Response
		river. If they are not a part of an activated riparian floodplain, riparian plantings may not have the capacity to mitigate for the importance of riparian flows for maintaining cottonwood overstory and riparian forests. The importance of flow regime for regeneration and maintenance of cottonwood trees and riparian forests in the west has been well established (e.g. Scott et al. 1967; Mahony and Rood 1993; Stromberg 1993; Poff et al. 1997; Mahoney and Rood 1998; Stromberg 1998; , Richter and Richter 2000; Stromber 2001; Rood et al. 2003a, 2003b; Stromberg et al. 2007; Poff and Zimmerman 2010). The importance of cottonwood trees to western yellow-billed cuckoo survival has also been well established (USFWS 2013, USFWS 2014, USFWS 2020).	that is relevant to environmental concerns. Reclamation acknowledges the comment.
56	56	Reduction of Invertebrate Biomass Dams are known to reduce aquatic biodiversity and impact the food web downstream (Power et al. 1996; Freeman et al. 2003; Tonra et al. 2015). The primary energetic drivers of riparian ecosystem function are organic matter from riparian vegetation and riparian insects combined with the marine derived nutrients from anadromous fish (Ward and Stanford 1995; Pozo et al. 1997; Cummins et al. 1989; Cederholm et al. 2000; Allan et al. 2003). Without the invertebrate contribution from the riparian edge and floodplain, food availability for juvenile salmonids is severely limited. It is the ecological processes of the riparian habitat that function to enhance food quantity and availability. For example, Cummins et al. (1989) describe a suite of invertebrate taxa grouped in a category called “shredders” that collectively contribute to the invertebrate biomass in rivers. Shredders feed on “conditioned” plant litter that has been leached in the aquatic environment and colonized by	This comment does not raise any significant new information requiring supplemental review.

Letter Number	Comment Number	Comment	Response
		microorganisms, with the conditioning taking ". . . from weeks to months depending upon plant species and stream temperature." Common prey species, for both adult and juvenile salmonids, fall into the category of shredders (i.e., amphipods, isopods, stoneflies, caddisflies, and some mayflies). Shredders convert organic matter (e.g., leaves, twigs, and woody debris) into fine particulate organic matter. Short and Maslin (1977) found that the fine particulate organic matter contribution made by shredders contributed significantly to the food resource base for the invertebrate "collectors" that are also important prey for juvenile and adult salmonids. Consequently, the ecological chain of shredders, conditioners, and collectors allows the riparian ecosystem to provide prey biomass to both the main channel and off-channel areas. Benthic Macroinvertebrates and Reduction of Terrestrial Subsidies Aquatic benthic macroinvertebrate (BMI) assemblages are communities of aquatic macroinvertebrates that are an integral part of a stream's ecosystem and are important food sources for resident stream fish. The quality of the BMI community and its structure reflects the degree of impairment that exists within a stream's ecosystem. Terrestrial subsidies from the riparian overstory are an important component of salmonid food supply, especially in summer (Mason and MacDonald 1982; Wipfli 1997; Nakano et al. 1999; Nakano and Murakami 2001). Like benthic macroinvertebrates, terrestrially derived invertebrates are partially or fully dependent upon the plant biomass provided by riparian trees. The riparian tree energy and biomass contributes to the food chain, and terrestrially derived invertebrate inputs contribute to 50 to 80 percent of salmonid biomass (Allan et al.	

Letter Number	Comment Number	Comment	Response
		2003; Kawaguchi et al. 2003). In rivers with riparian overstory with high canopy closure (i.e., 95 to 97%), bioavailability of terrestrially derived invertebrates is greatest in the summer, when benthic macroinvertebrate bioavailability has tapered off (Nakano and Murakami 2001). Because of this difference in seasonal bioavailability, terrestrially derived invertebrates are the primary food source for rearing and over-summering salmonids. Reduced Marine-Derived Nutrients When salmon returns are low, ecological processes in a river are diminished. The food web of nutrient exchange becomes suppressed, with less nutrients becoming available for riparian food webs and a feedback loop of fewer terrestrial invertebrates being produced and becoming bio-available to foraging fish. Marine-derived nutrients and the macronutrient pulse from adult salmon carcasses are one of the primary drivers of aquatic invertebrate abundance (Bilby et al. 1996; Bilby et al. 1998; Moore et al. 2007). Reduced levels of salmon carcasses in the lower Sacramento River and Shasta Lake watershed reduces the nutrient and micro-nutrient boost that would have occurred if robust and stable salmonid populations were present. A deficiency in marine-derived nutrients reduces the ability of the ecosystem to support large numbers of stream invertebrates and reduces the quantity of available food resources for juvenile salmonids rearing (Bilby et al. 1996; Bilby et al. 1998; Zhang 2003; Moore et al. 2007; Wipfli and Baxter 2010). The upstream migrations of adult salmonids bring large amounts of essential nutrients from the ocean into stream and river systems, where they drive primary and secondary productivity (Bilby et al. 1996; Bilby et al. 1998; Merz and Moyle 2006; Anders	

Letter Number	Comment Number	Comment	Response
		and Ashley 2007; Janetski et al. 2009). These nutrients, which include nitrogen, carbon, and phosphorous, are accumulated in salmon as they gain approximately 95% of their body mass in the ocean (Groot and Margolis 1991). The nutrients brought into stream and riparian ecosystems are resource subsidies that strongly influence the structure and function of freshwater ecosystems and beyond (Merz and Moyle 2006; Janetski et al. 2009). When salmon return to their natal stream or river to spawn and die the nutrients in their excretion, carcasses, and gametes are released into the river and riparian systems. The amount of nutrients that are moved into otherwise nutrient-limited systems can be immense. [See Merz and Moyle (2006) for example of quantification of this effect] Salmon flesh and gametes are also important food sources for juvenile fish and invertebrates. Juvenile salmon and trout and invertebrates will preferentially ingest highly nutritious eggs or flesh from carcasses. For example, Bilby et al. (1998) found that when available, eggs and carcass flesh from spawning salmonids were 60-96% of the stomach contents of juvenile coho and steelhead. Eastman (1996) and others have also found that when marine derived food sources are available, they are often the primary food source of stream-dwelling salmonids and can increase their growth and condition factor (Bilby et al. 1998; Janetski et al. 2009). The benefits brought by marine derived nutrients in the bodies of anadromous salmonids extend far beyond freshwater habitat and into the surrounding area. For example, Helfield and Naiman (2001) used isotope analyses to test for signatures of marine derived nutrients in riparian vegetation and found that foliage of	

Letter Number	Comment Number	Comment	Response
		trees and shrubs near spawning streams consisted of 22-24% marine derived nitrogen. Bilby et al. (1996) used similar methods and found that 18% of the nitrogen in the foliage of plants along sampled Washington streams was marine derived from coho salmon. Nitrogen availability is the limiting factor for terrestrial plant growth in many forests (Chabot and Mooney 1985; Kimmins 1997), and marine derived nitrogen is known to increase the growth rates of plants near spawning areas (Helfield and Naiman 2001; Naiman et al. 2002). Healthy riparian vegetarian increases the quality of instream habitat through shading, sediment and nutrient filtration, nutrient transfers in the form of foliage, and production of large woody material. Thus, salmon-borne marine derived nutrient inputs that enhance riparian production also drive a positive feedback loop in which nutrients improve spawning and rearing conditions for subsequent generations of salmonids. This positive feedback mechanism historically helped maintain the long-term productivity of river corridors along the Pacific coast of North America, including the Sacramento, McCloud, and Pit rivers. Reclamation should estimate the loss of contribution of marine-derived nutrients to the Sacramento River upstream and downstream of Shasta Dam using target numbers provided by NMFS. The effects of reduced nutrient availability and biological production on naturally reproducing anadromous Pacific salmon populations are well known and extensively described in scientific literature (e.g. Schindler et al. 2003; Wipfli et al. 2003; Janetski et al. 2009). Low salmon returns create deficits in marine-derived nutrients, limiting primary and secondary productivity, food availability for juvenile salmonids, riparian vegetation growth and regeneration, and large woody material. If the reduced flows	

Letter Number	Comment Number	Comment	Response
		from the Project cause cohort failures in outmigrating juvenile salmonids, and Reclamation continues to be an obstacle in salmonid recovery implementation upstream of Central Valley Project dams, the nutrient contribution to the ecosystem from marine derived nutrients will be significantly diminished.	
56	57	E. Downstream Effects to Western Yellow-Billed Cuckoo The western yellow-billed cuckoo is a migratory bird that depends on healthy stands of riparian habitat for optimal breeding as well as for foraging during the breeding season. The species was listed as threatened under the ESA in 2014 because of habitat destruction, modification, and degradation from dam construction and operations; water diversions; river flow management; stream channelization and stabilization; conversion to agricultural uses, such as crops and livestock grazing; urban and transportation infrastructure; and increased incidence of wildfire. Dams and altered hydrology are principal drivers of these threats, as discussed at length in the proposed and final listing determinations (USFWS 2013, 2014). The importance of the Sacramento River to the western population of the cuckoo is highlighted in the listing (USFWS 2014). 35,406 acres of Critical Habitat for the cuckoo was designated along the Sacramento River between Red Bluff and Colusa (USFWS 2020) downstream of the project, habitat identified as essential for the survival and recovery of the species. Riparian activation, including periodic flooding, sedimentation and erosion, is important to maintaining a healthy riparian forest and successional riparian ecosystems that western yellow-billed cuckoos depend on for breeding habitat (USFWS 2014).	Please refer to Chapter 13 of the FEIS for a discussion on potential downstream effects to the Western Yellow-Billed Cuckoo.

Letter Number	Comment Number	Comment	Response
		Reclamation has not addressed this ecological feature in the FEIS, DSEIS, or through ESA consultation.	
56	58	Reclamation has never consulted with the USFWS on the downstream effects of the Project on the western yellow-billed cuckoo. Instead, Reclamation based its satisfaction of the ESA 7(a)(2) requirement for the Project on their having completed ESA consultations on existing operations of the Central Valley Project (CVP) and State Water Project (SWP). In addition, Reclamation is attempting to rely on the deeply flawed USFWS 2019 OCAP BiOp. In their 2019 OCAP BiOp, the USFWS did not do an analysis of effects of current CVP operations on western yellow-billed cuckoo or its habitat. They did not determine: (1) the number of acres of activated riparian floodplain lost by current operations or proposed flow reductions; (2) loss or absence of riparian generation, especially the cottonwood trees that are habitat for cuckoo prey, or; (3) the effect of summer flooding on prey base. In addition, the USFWS assumed that the proposed spring pulse flows offered as mitigation for current operations would benefit the western yellow-billed cuckoo. The USFWS focused on willows, which consist of a suite of riparian understory species along the Sacramento River, some of which may persist under Reclamation's altered hydrograph. However, willows depend on winter flooding and scouring to promote the shrubby regrowth and dense willow thickets where cuckoos nest. The USFWS disregarded the floodplain activation flows, summer recession flows, and water table maintenance needed by the overstory cottonwoods that cuckoos depend upon for their invertebrate food sources.	Reclamation disagrees with the comment. Commenters raise concerns about the analysis done in the 2019 BiOp, which is outside the scope of the SEIS. For a discussion of the applicability of, and reliance on the 2019 BiOp, please refer to Master Comment ESA-1, "ESA Compliance."

Letter Number	Comment Number	Comment	Response
		Instead of analyzing how either current operations or the proposed Project would degrade western yellow-billed cuckoo Critical Habitat Physical or Biological Feature 3, the USFWS simply focused on the fact that degradation has been occurring for a long time and, " [t]he effects of the [proposed action] will be imposed on an already degraded, fragmented, and ecologically constrained riparian system" (USFWS 2019 OCAP BiOp, p. 376). The USFWS also pointed out that "Reclamation did not provide information on how past and current water operations has affected cuckoo, nor was habitat suitability modeling provided for the Action Area." The USFWS accepted Reclamation's argument that proposed flow decreases in November and increases in May and June of less than 5 percent "are unlikely to produce any measurable change in quantity or quality of western yellow billed cuckoo habitat" and that there is "no apparent mechanism by which these changes could result in harm to individual western yellow billed cuckoos." Reclamation's position is contrary to the ecological needs of the western yellow-billed cuckoo. Flow decreases in November may affect the water table and result in death of riparian trees. Flow increases in May and June may inundate riparian habitat, including the food resources upon which western yellow-billed cuckoos depend. Rather than determining the effect of the action on the species, the USFWS response was: "Without detailed ecological flow modeling…We assume that the proposed spring pulse flows could benefit the cuckoo to an unknown amount from now until 2030" (USFWS 2019 OCAP BiOp, p. 377). Assuming a benefit to the cuckoo without analyzing effects to	

Letter Number	Comment Number	Comment	Response
		the species or its Critical Habitat is inconsistent with Section 7 of the ESA, implementing regulations under 50 CFR 402, and the legislative history of the ESA from the 1979 amendments to section 7. Assuming a benefit when none can be deciphered does not give the benefit of the doubt to the species. In summarizing operational effects for the OCAP consultation, the USFWS did not measure or quantify effects to the cuckoo, but then determined that "no measurable effects of the [Proposed Action] on reproduction of cuckoo are expected to occur" (USFWS 2019 OCAP BiOp, p. 383). This summary of effects is based on the fallacious argument that the USFWS can make a conclusion about effects without looking for effects or quantifying them accordingly.	
56	59	Lack of Jeopardy or Adverse Modification Analyses. The most egregious failings in the USFWS 2019 OCAP BiOp were that Shasta Dam's contribution to the factors that resulted in the listing of the western yellow-billed cuckoo were not considered, nor were the importance of Physical or Biological Feature 3 of its Critical Habitat. In their 2019 OCAP BiOp, the USFWS did not mention that increasing the elevation of Shasta Dam by 18.5 feet was one of the major threats to the western yellow-billed cuckoo and a significant factor contributing to its ESA status. In the final rule listing the western yellow-billed cuckoo as threatened (USFWS 2014), a primary threat to the species was the present or threatened destruction, modification, or curtailment of its habitat or range in the form of habitat loss from dams and alteration of hydrology from dams (USFWS 2014, p. 60015). In the listing, raising of dams or control structures was identified as an even	See response to comment 56-58.

Letter Number	Comment Number	Comment	Response
		larger current threat to the species, of which the proposal to enlarge Shasta Dam by up to 18.5 feet was called out specifically. In the ESA listing of the cuckoo, the USFWS (2014) noted that flood events from Cottonwood Creek and Battle Creek contributed to the highly dynamic mosaic of cuckoo habitat patches along the Sacramento River from Red Bluff to Colusa, by enhancing the floodplain still hydrologically connected to the river. The cuckoo listing clearly articulated how winter and spring flows once activated the floodplain and that the hydrograph on the Sacramento River is impaired and will continue to be impaired without changes to water release strategies and management. Instead of providing flows that would enhance the riparian floodplain and western yellow-billed cuckoo habitat, Reclamation plans to remove more riparian activation flows from the river, both in the course of continued operations and as a result of the Project. Rather than analyze the contribution of operations to the reduction of cuckoo numbers since surveys began in 1972, the USFWS 2019 OCAP BiOp focused on the relative rarity of birds and general threats to the species. The USFWS 2019 OCAP BiOp provides a general explanation of the effect continued operation of dams and water diversions have on riparian habitats into the future, but then makes a vague reference to riparian restoration on USFWS refuges that has occurred or may occur—also referring to other riparian restoration efforts along the Sacramento and San Joaquin rivers. No effort was made to determine whether the Project would result in less riparian activation in the Sacramento River or how it would affect restoration actions on USFWS refuges or along the Sacramento	

Letter Number	Comment Number	Comment	Response
		River. In their 2019 OCAP BiOp, the USFWS explained that trends in the detection rate of western yellow-billed cuckoos are indicative of the general trend in the species' population, supporting the conclusion that the population in the Sacramento River Valley continues to decline. The USFWS provided population graphics but did not project the outcome of the projected decline. Because it could be argued that reduced number of cuckoo detections could be a result of reduced level of effort, USFWS (2013) normalized the data by reporting number of cuckoos detected per hour (See Figure 3, Figure 15-4 [Exhibit 3] in USFWS 2019 OCAP BiOp). This is a graphic that demonstrates both the population trend and the increasing rarity of the yellow-billed cuckoo along the Sacramento River. The FEIS and DSEIS do not address downstream effects to the cuckoo, even thought is well established in the record that the Project is a serious threat to the species. Proposed Critical Habitat for the western yellow-billed cuckoo (USFWS 2020) identifies altered hydrology as a primary threat to the conservation of the species. In proposing Critical Habitat for the cuckoo, the USFWS (2020) found that habitat patches between Red Bluff and Colusa are still relatively intact, but this is largely due to flow contributions from Cottonwood Creek and Battle Creek—tributaries to the Sacramento River. Hydrologic processes in natural or altered systems that provide for maintaining and regenerating breeding habitat as identified in physical or biological feature 3 (PBF 3) occurs within this Critical Habitat CA-1. These hydrologic processes depend on river flows and the timing of riparian floodplain activation. Changes in hydrology	

Letter Number	Comment Number	Comment	Response
		from upstream dams is identified as a threat to Critical Habitat Unit CA-1 along the Sacramento River from Red Bluff to Colusa and native habitat regeneration and survivability has been compromised by altered hydrology. There is a special management recommendation in the Proposed Critical Habitat rule to: "manage hydrology to mimic natural flows and floodplain/drainage processes."	
56	60	[Exhibit 3] Figure 3. Graphic from USFWS 2019 OCAP BiOp (p. 374, fig. 15-4) demonstrating the increasing rarity of the Western Population Segment of the yellow-billed cuckoo along the Sacramento River.	Comment noted.
56	61	The proposed rule for designating western yellow-billed cuckoo Critical Habitat (USFWS 2020) contains a three-part conservation strategy that included identifying and conserving habitat in large river systems outside the southwest that are being consistently used as breeding areas by western yellow-billed cuckoos. This resulted in the proposed designation of Critical Habitat Unit 63:CA-1, along the Sacramento River in Colusa, Glenn, Butte, and Tehama Counties in California. Designation of Critical Habitat Unit 63:CA-1 is intended to maintain a robust, well-distributed population of the western yellow-billed cuckoo and enhance survival and productivity of the species as a whole. Successful breeding and maintenance of numbers of yellow-billed cuckoos along the Sacramento River contributes to as much as one third of the range of the species. The hydrologic processes that provide for maintaining and regenerating breeding habitat are features that are essential to the conservation of the species (USFWS 2014). In spite of this, the USFWS in its 2019 OCAP BiOp has not taken a hard look at the effect of current operations on the conservation of the species, nor has it considered the effect	See response to 56-58 and 56-58.

Letter Number	Comment Number	Comment	Response
		that loss of western yellow-billed cuckoo breeding in Critical Habitat Unit 63:CA-1 will have on the survival and recovery of the species. There are three data points that constitute full population-survey data for cuckoos on the Sacramento River: 1973, 1977, and 2013 (Figure 4 [Exhibit 4]). Running a simple regression through the population-level data points indicates that the Sacramento River population of the western yellow-billed cuckoo may become extirpated on or around 2026 in the context of existing operations. This type of decline in numbers is appreciable and significant, potentially reducing the range of the species by as much as one-third and removing one of three components of the physical or biological features essential to the conservation of western yellow-billed cuckoo: Physical or Biological Feature 3—Hydrologic processes in natural or altered systems that provide for maintaining and regenerating breeding habitat (USFWS 2020, p.11476). Along the Sacramento River, no appreciable reductions in the threats to the species have occurred, so it is logical to expect numbers to continue to decline. Due to the lack of any substantive measures to protect the species, western yellow-billed cuckoo breeding along the Sacramento River is expected to continue to decline and Critical Habitat Unit 63:CA-1 will continue to be degraded. If the expected trajectory continues, western yellow-billed cuckoos breeding along Sacramento River could be extirpated before the end of the OCAP implied consultation period of 2030 is reached.	

Letter Number	Comment Number	Comment	Response
56	62	Figure 4 [Exhibit 4]. Trend in western yellow-billed cuckoo detections along the Sacramento River from surveys conducted in 1973, 1977, and 2013. Note that a simple regression line indicates that there will be no projected detections by the end of the timeline of the OCAP consultation period (i.e., 2030).	Comment noted.
56	63	F. Downstream Effects on Juvenile Salmonids Anadromous salmonids have complex habitat needs that reflect the natural dynamics of their natal rivers. Some primary habitat needs are: substrate for spawning, water temperatures that support healthy metabolism and viable egg production, water quality that supports in-water prey, riparian overstory for terrestrial infall of prey items, attraction flows for upmigrating adults, dispersal flows for outmigrating juveniles, woody material for juvenile cover and foraging, and floodplain inundation for juvenile access to prey supporting enhanced growth and survival. Clearly temperatures are not the only factor in determining survival of salmonids. The FEIS focuses heavily on the temperature component of survival but is blind to the loss of winter-run Chinook salmon, spring-run Chinook salmon, and steelhead trout juvenile foraging and outmigration habitat that is essential for cohort survival and ultimately survival and recovery of these listed species.	The purpose of the SEIS was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. For a discussion on juvenile salmonids, please refer to FEIS Master Comment Response DSFISH-3, "Fish Habitat Restoration."
56	64	Reclamation is basing its conclusion of a fishery benefit on flawed premises and a lack of ESA consultation on the direct and indirect effects of the project to the Sacramento winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead trout, and their Critical Habitat. Reclamation did not consult with NMFS on Project impacts to juvenile salmonid rearing habitat in the Sacramento River. The	Please refer to Master Comment Response ESA-1, "ESA Compliance" for a discussion on ESA consultation with respect to this project. This comment also raises concerns with current operating criteria, which falls outside the scope of the SEIS. As stated in other comment responses, the purpose of the SEIS was to provide information relevant to the application of

Letter Number	Comment Number	Comment	Response
		FEIS and DSEIS have no discussion or analysis of the effect of removing wet season flows from juvenile salmonid rearing habitat or how loss of riparian activation is expected to result in decline and degradation of Critical Habitat for the species. The operational criteria for Shasta Dam address flood-control and water delivery, but do not provide flows for maintaining riparian habitat or activating juvenile salmonid rearing habitat along the Sacramento River. Reclamation could operate Shasta Dam in a way that would significantly enhance juvenile salmonid habitat while also significantly reducing flood risk along the Sacramento River.	Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns.
56	65	Reclamation based satisfaction of ESA consultation requirements for Project effects to Sacramento winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead trout, southern green sturgeon, and their Critical Habitat on the deeply flawed NMFS 2019 OCAP BiOp. In their 2019 OCAP BiOp, NMFS did not do an analysis of effects of current CWP operations on the listed salmonids, green sturgeon, or critical habitat. They did not determine: (1) the number of acres of activated riparian floodplain lost by current operations or proposed flow reductions; (2) loss or absence of riparian generation, especially the cottonwood trees that are major contributors to the salmonid prey base; or (3) the effect of summer flooding on prey base. NMFS determined that the proposed spring pulse flows offered as mitigation for current operations would have an uneven benefit across these species. NMFS focused on temperatures for winter-run and spring-run holding habitat but ignored the effects of current and future operations on the ecological processes essential to maintaining Critical Habitat for these species. NMFS disregarded the floodplain activation flows, summer regression flows, and water	Please see Master Comment Response ESA-1, "ESA Compliance."

Letter Number	Comment Number	Comment	Response
		table maintenance needed by the riparian overstory to provide for successful juvenile salmonid development and survival and to provide functional ecological processes.	
56	66	Reclamation has not recognized the importance of healthy floodplains to Chinook salmon and steelhead trout (NMFS 2104a) and has failed to make commitments to implement the NMFS Recovery Plan for the species (NMFS 2014b). The FEIS and DSEIS overlook the fact that dams reduce the amount of wet season flows in rivers. This means that holding back wet-season flows for the purposes of increasing anadromous fish survival, increasing water supply, and addressing water resource problems will result in reduction and direct losses of downstream fish and wildlife riparian habitat during the wet season and result in reduced juvenile salmonid survival, loss of riparian function, degradation of riparian habitat, reduced species diversity in the downstream riparian area, and ultimately chronic and systemic reduction of native fish habitat.	Please refer to FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions."
56	67	The Project's failure to provide or promote riparian activation is also inconsistent with the Recovery Plan for Sacramento River Winter-Run Chinook, Central Valley Spring-Run Chinook, and Central Valley Steelhead (NMFS 2014b) The Recovery Plan specifies a range of recovery actions, including restoring and providing access to floodplain habitats, and implementing floodplain and riparian habitat restoration projects. The Recovery Plan specifically calls out as recovery actions: the need to "restore and maintain riparian and floodplain ecosystems along both banks of the Sacramento River to provide a diversity of habitat types including riparian forest, gravel bars and bare cut banks, shady vegetated banks, side channels, and sheltered wetlands, such as sloughs and oxbow lakes"; and the need to "develop and	Please refer to FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions." Please also refer to Master Comment Response ESA-1, "ESA Compliance." Reclamation will continue to comply with all applicable law, including further consultation, if necessary.

Letter Number	Comment Number	Comment	Response
		implement a river flow management plan for the Sacramento River downstream of Shasta and Keswick dams that considers the effects of climate change and balances beneficial uses with the flow and water temperature needs of winter-run Chinook salmon, spring-run Chinook salmon, and steelhead. The flow management plan should consider the importance of instream flows as well as the need for floodplain inundation." The DSEIS does not adequately evaluate the Project's consistency with these recovery actions, despite its potential to conflict with and actively impede these actions, and therefore to impair the conservation and recovery of these species. 40 C.F.R. § 1508.27(b)(9).	
56	68	Critical Habitat for Sacramento winter-run Chinook salmon in the Sacramento River includes the river water, river bottom, and the adjacent riparian zone (NMFS 1993). NMFS (1993) includes reference to a 1992 report by the USFWS that states that riparian streambanks are composed of natural, eroding substrates supporting vegetation that either overhangs or protrudes into the water and which provides shade and escape cover for salmonids. They also noted that riparian vegetation increases river productivity which ultimately provides prey for salmonids. Although NMFS (1993) limits the extent of the Critical Habitat to that which is accessible to winter-run Chinook salmon, it addresses the floodplain and essential habitat of the Sacramento River winter-run Chinook salmon in the following way: "…(5) habitat areas and adequate prey that are not contaminated, (6) riparian habitat that provides for successful juvenile development and survival, and (7) access downstream so that juveniles can migrate from the spawning grounds to San Francisco Bay and the Pacific Ocean" (NMFS 1993, p. 33217). Critical Habitat for Central Valley spring-run Chinook salmon and	The purpose of the SEIS was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. The comment does not identify new information. Please refer to FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions." Please refer to Master Comment Response ESA-1, "ESA Compliance." Reclamation will continue to comply with all applicable law, including further consultation, if necessary.

Letter Number	Comment Number	Comment	Response
		steelhead trout include all areas along the Sacramento River that are reachable to the species. Included in this area is the riparian zone adjacent to the Sacramento River within the Critical Habitat Units (NMFS 2000). Critical Habitat riparian zone is not identified by delineated area but is identified as the part of adjacent riparian habitat that has the functional ecological processes to support the species. Riparian overstory and inundated riparian habitat is critically important for juvenile salmonid growth and survival, because they provide food, cover, refugia from high flows, and thermal diversity. Reclamation has not addressed the essential life-history stage of juvenile salmonid rearing that occurs in activated riparian habitat. The FEIS and DSEIS are absent of explanation about how flows during the reservoir filling period and during future operations will affect juvenile salmonid rearing habitat and how the limited access of juvenile fish to the floodplain may affect juvenile salmonid survival in the Sacramento River. It is unfounded to conclude that low return rates are a result of out-of-basin mortality influences, when the size-recruitment relationship described by Magnusson and Hilborn (2003) and Woodson et al. (2013) has not been addressed.	
56	69	The prolonged lack of floodplain inundation, year after year, is likely to reduce the survivorship of juvenile salmonids in the Sacramento River. If the floodplain fails to activate for two or more consecutive years, this is expected to result in significant cohort suppression or even cohort failure. The pressure of potential cohort suppression and failure on the salmonid populations in the Sacramento River has not been addressed. Survival and production of key life stages may vary among streams and populations for a variety of reasons but identifying	The purpose of the SEIS was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. Please refer to FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous

Letter Number	Comment Number	Comment	Response
		and conserving the limiting life stage is essential for population (and species) recovery (Petrosky et al. 2001). The entire suite of methods for life cycle monitoring currently used in some coastal California streams (Adams et al. 2017) may be difficult to implement on larger rivers such as the Sacramento River, but the concepts of assessing life-stage specific effects on populations are certainly applicable. Rates such as parr-to-smolt and smolt-to-adult survival have been estimated (e.g., Petrosky et al. 2001; Achord et al. 2007; Chesney et al. 2009; USFWS 2010a).	Fish Restoration Program, Doubling Goals and Biological Opinions." Please refer to Master Comment Response ESA-1, "ESA Compliance." Reclamation will continue to comply with all applicable law, including further consultation, if necessary.
56	70	Access to inundated (active), vegetated floodplain and riparian areas results in positive, population-level effects to steelhead trout (Hayes et al. 2008), and the benefit of off-channel and floodplain access to juvenile Chinook salmon growth and survival has been well established (Sommer et al. 2005; Jeffres et al. 2008; Limm and Marchetti 2009). Terrestrial in-fall of riparian invertebrates contributes to the energetics of the river and to the salmonid food web (Allan et al. 2003) and insect biomass from inwater decomposition or inundated riparian vegetation significantly enhances juvenile salmonid recruitment (Cederholm et al. 2000). Chinook salmon and steelhead trout that rear in off-channel areas have greater growth rates than those that rear in the river channel (Jeffries et al. 2008; Limm and Marchetti 2009; Meyers 2018), and juvenile Chinook salmon with greater size and growth rates typically have higher survivorship in low recruitment years (Magnusson and Hilborn 2003; Woodson et al. 2013). Figure 5 [Exhibit 5] shows the growth and biomass advantage to juvenile salmon that have access to an activated floodplain. In two studies of the effect of floodplain inundation on juvenile salmonid survival, the USFWS found a correlation between the number of acre-days of inundated floodplain and juvenile	The purpose of the SEIS was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. The comment does not identify new information. Please refer to FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions." Please refer to Master Comment Response ESA-1, "ESA Compliance." Reclamation will continue to comply with all applicable law, including further consultation, if necessary.

Letter Number	Comment Number	Comment	Response
		salmonid survival in the river (USFWS 2014, unpublished data in USFWS files). Based on that understanding, an acre-day analysis can be used to estimate the number of acres of habitat lost as a result of reduction in wet season flows caused by dam operation (DOI/USFWS 2017, DOI/USFWS 2018, DOI/USFWS 2019), and the relative commensurate mitigation (floodplain restoration) that is based on the managed flow regime. The amount of time that the riparian floodplain is inundated, and the duration of the inundation are two important metrics for determining habitat availably for juvenile salmonids, because both of these conditions contribute to food and cover availability. The longer the floodplain is inundated the more time juvenile salmonids are able to forage on it and the more the invertebrate food-web becomes activated. The more acres of habitat that are inundated, the more area is available to juvenile salmonids for foraging. Because both area and time are important considerations in estimating juvenile salmonid rearing habitat during the springtime high-flow period, the USFWS uses the metric of number of acres multiplied by the number of days, or "acre-days." Acre-days is a metric that takes into consideration both area and time, so it can be used to measure the decrease in floodplain area and decrease in inundation duration caused by dams. In two studies of the effect of floodplain inundation on juvenile salmonid survival, the USFWS found a correlation between the number of acre-days of inundated floodplain and juvenile salmonid survival in the river (USFWS 2014, unpublished data in USFWS files). The during the reservoir fill period, the Project will effectively remove the existing levels of riparian inundation that are	

Letter Number	Comment Number	Comment	Response
		provided by Shasta Dam releases. Reclamation did not quantify this loss of juvenile salmonid habitat empirically, and instead relied on their existing modeling efforts.	
56	71	[Exhibit 5] Figure 5. Graphic from USFWS August 29, 2018, presentation to Federal Energy Regulatory staff under Federal Power Act 10(j) for the Yuba River Development Project. The larger fish are juvenile Chinook salmon reared on an activated floodplain. The smaller fish are the same cohort of fish but were reared in the river during the same time period. The images illustrate the well established benefit of off-channel and floodplain access to Chinook salmon growth and survivorship.	Comment noted.
56	72	G. Quantifying Project Effects to Downstream Riparian Edge and Floodplain The FEIS and DSEIS do not quantify the amount of optimal juvenile salmonid rearing habitat available in the lower Sacramento River, and estimates of the amount of habitat needed to sustain salmonid populations has not been conducted. Although riparian, floodplain, and side channel habitat restoration are proposed at one or more unspecified areas, Reclamation has not made it clear whether the proposed restoration is for existing Shasta Dam impacts that would be funded pursuant to the CVPIA or for Project impacts. It would be very useful to determine the timing and amount of juvenile rearing habitat lost from existing operations as a baseline, then to compare Project impacts to the baseline to quantify the difference and determine the additional mitigation needed for the Project.	This comment does not identify new information. It identifies a concern regarding a funding source for mitigation. However, NEPA does not require that a mitigation plan be legally enforceable, funded or in final form. Reclamation adequately analyzed the impacts and will continue to comply with all applicable law.
56	73	An acre-day analysis is a simple and established methodology for determining the amount of riparian edge and floodplain that is	Please refer to response to comment 56-72.

Letter Number	Comment Number	Comment	Response
		lost by diminishment or removal of wet-season flows (DOI/USFWS 2017). It is important to parse the acre-day analysis by water-year type, to determine the level of effects during periods when salmonids are subjected to different stressors and to quantify the periods with the most relative impact to habitat availability. The acre-day analysis provides an empirical quantification of habitat loss and provides a useful metric for testing water-modeling outputs. Based on empirical data and peer-reviewed scientific literature, the Emigrating Salmonid Habitat Estimation (ESHE) model calculates the amount of rearing habitat needed for a target number of juvenile salmonids. This robust model has been widely used in the Central Valley including in: the San Joaquin "Minimum Floodplain Habitat Area for Spring and Fall-Run Chinook Salmon" (2012) report; the Stanislaus Scientific Evaluation Panel (SEP) document (2017); the Central Valley Flood Protection Plan Conservation Strategy (2017); and efforts by the State of California to develop goals and objectives for San Joaquin tributaries. It would be useful to apply the ESHE model to the Sacramento River to estimate the amount of rearing habitat needed for juvenile salmonids. The acre-day analysis and the ESHE model can be used together in order to compare habitat loss and habitat needs. Reclamation should make the effort to measure habitat loss rather than discounting it.	
56	74	H. Loss of Vital Fishery Habitat on the McCloud River The NMFS Recovery Plan (NMFS 2014b) puts forward an extensive argument regarding the importance of fish passage to	The Recovery Plan was appropriately considered in the FEIS. This comment does not raise any new information relevant to this SEIS.

Letter Number	Comment Number	Comment	Response
		high elevation and historical, cold-water salmonid habitat. A significant focus of the NMFS Recovery Plan was the importance of the basalt and porous lava diversity group that includes the McCloud River. The McCloud River is a Primary Reintroduction Area in the NMFS Recovery Plan, and its importance is mentioned 56 times. Other than a nod to "Assist in recovery efforts for threatened and endangered species" (FEIS p. 12-101), there are no commitments in the Project to move forward with Chinook salmon recovery actions on the McCloud River. The DSEIS makes no mention of the Pilot Reintroduction Program that was planned to begin in 2019. The Shasta Dam Fish Passage Evaluation was not included in the 2014 FEIS because Reclamation considered it to be too speculative (FEIS p. 33.3-159). Reclamation has not quantified the effect of the Project on successful recovery implementation for winter-run Chinook salmon in the McCloud River. Instead of considering the Recovery Plan's extensive explanation of the vital need for fish passage to support recovery of listed salmonids, Reclamation only uses minor discussions in the NMFS Recovery Plan to justify the Project. It is disingenuous to ignore the overarching objectives of the NMFS Recovery Plan and attempt to use it as a justification for a water delivery scheme. Undermining recovery implementation is inconsistent with the purposes of the ESA.	
56	75	By withdrawing funding and participation in the Pilot Reintroduction Program that would have reintroduced winter-run Chinook salmon to the McCloud River, Reclamation has signaled their lack of commitment to fulfilling a promise NMFS depended upon in their 2019 OCAP BiOp. The fact that Reclamation shut down the Pilot Implementation Plan several months prior to	Please refer to Master Comment Response ESA-1, "ESA Consultation." Reclamation will continue to comply with all applicable law, including additional consultation, if necessary.

Letter Number	Comment Number	Comment	Response
		NMFS completing their 2019 OCAP BiOp shows, at best, a serious lack of communication and documentation. At the very least, that "new" information would trigger reinitiation of ESA consultation on current operations and require NMFS to look more closely at the Project's impediment to survival and recovery of listed salmonids.	
56	76	The DSEIS mischaracterizes the hydrograph in the lower McCloud river as being "highly regulated" and asserts that these flows "do not follow a pattern typical of an unimpaired mountain river in northern California" (DSEIS p. 5-11). These misleading statements are most likely the result of using gauge data from directly downstream of McCloud Dam (USGS Gages 11367800 or 11367760), where flows are highly regulated, but not taking into consideration the enhanced hydrology provided by flows from Claiborne Creek, Squaw Valley Creek, Tuna Creek, Little Bollibokka and Big Bollibokka Creeks, Nawtawaket Creek, and Chatterdown Creek. Hydrographic conditions in the lower McCloud River improve with each sequential contribution from these tributary creeks, with the most optimal hydrographic conditions existing downstream of Squaw Valley Creek. As the hydrograph of the lower McCloud River becomes more natural with the contribution each tributary, the result is an approximated natural hydrograph, as measured at USGS Gage 113680000 near Shasta Lake. Reclamation's position that the project would "have some effect on the free-flowing condition of the lower McCloud River and the wild trout fishery within the part of the lower McCloud River" (FEIS p. 1- 36) does not address the effect of McCloud River habitat loss on fully implementing NF 4 of the Near Term Fish-Passage Actions in the NMFS 2009 OCAP BiOp RPA Action Suite	Reclamation disagrees with the commenter's assertion regarding the hydrograph. This comment also raises the 2009 BiOp, which has been replaced and is no longer in effect. Finally, the quoted statement at the end of this comment pulls language from the FEIS addressing CEQA compliance. The FEIS discusses CEQA in FEIS Master Comment Response CEQA-1, "CEQA Compliance," but Reclamation is not required to comply with CEQA, and the SEIS was prepared consistent with Reclamation's federal responsibilities. Reclamation has complied with all applicable law, and will continue to do so.

Letter Number	Comment Number	Comment	Response
		V, NF 4: Implementation of Pilot Reintroduction Program (Implementation of Pilot Reintroduction Program above Shasta Dam). Nor does it address the extensive argument put forward in the NMFS Recovery Plan regarding the need for Chinook salmon reintroduction into the lower McCloud River. This position is also contrary to Reclamation's statement: "Although mitigation has been identified, this impact would be significant and unavoidable" (FEIS p. 25-40).	
56	77	The Project's new inundation zone on the lower McCloud River will eliminate more than one-third of the most dynamic part of the stream reach between Little Bollibokka Creek and the current inundation zone, and it will destroy the truly outstanding fishery habitat and potential future juvenile salmonid rearing habitat in that reach. The larger trout that utilize the larger riverine area and greater food resources of reach 4 are currently the hard-fighting rainbow trout prized by sportfishers. Neither the FEIS nor the DSEIS offer mitigation that will allow the persistence of salmonids in the densities that are currently supported in the habitat that will be lost through inundation. Loss of riverine habitat cannot be realistically mitigated by conversion or enhancement of any other habitat type. When the river is gone, it is gone.	Please refer to response to comment 56-76.
56	78	The FEIS downplays the impact of the Project on lower McCloud River salmonid habitat by describing it as "affecting about 3 percent of the lower McCloud River" although they recognize the loss of 3,550 linear feet or river would compromise approximately 26 percent of Segment 4 (FEIS page 25-37). Tributaries downstream of McCloud Dam contribute to approximately 55 percent of the hydrograph and dominate the wet season flows. Wet season flows provide the streambed mobilization, gravel cleaning, sediment redistribution, and active riparian floodplain	Reclamation acknowledges the concerns raised by the commenter. For impacts to the lower McCloud River, including salmonid habitat, please refer to SEIS Chapter 5.5, "Environmental Consequences and Mitigation Measures."

Letter Number	Comment Number	Comment	Response
		processes that provide optimal conditions for salmonids. The lower reaches of rivers and streams provide for the larger territories needed by larger juvenile salmonids as they grow in size and expand their territories in preparation for outmigration. If the fish passage action described in the NMFS Recovery Plan is implemented, this would be the habitat that juvenile salmonids would be optimizing foraging in Reach 4 and consequently optimizing growth and potentially survival. Removing this habitat from a NMFS Recovery Plan action will remove the significant value this stretch of river would have for recovery of winter-run Chinook salmon.	
56	79	The FEIS calls for "constructing additional resident fish habitat" along the lower reaches of Shasta Lake tributaries, specifically the Sacramento River, the McCloud River, and Squaw Creek (FEIS p. S-24). Reclamation's plan to inundate nearly one mile of blue-ribbon fishing habitat (the best of the best) in the lower McCloud River (USFS 1994, DSEIS p. 5-7), and only offer of a plan to construct man-made habitat that may or may not provide optimal or even useful habitat for native salmonids, demonstrates an astonishing amount of hubris.	The commenter's point is not entirely clear. Comment noted.
56	80	The Emigrating Salmonid Habitat Estimation (ESHE) model calculates the amount of rearing habitat needed for a target number of juvenile salmonids. This robust model is based on empirical data and peer-reviewed scientific literature, and a similar modeling effort could be implemented for the lower McCloud River. A habitat-needs model, such as ESHE, can be paired with a habitat-loss model, such as an acre-day analysis, to fully quantify the effect of the Project on salmonid numbers in the river. Reclamation should make the effort to use appropriate	Please refer to the SEIS Modeling Appendix for further information on the modeling used by Reclamation.

Letter Number	Comment Number	Comment	Response
		modeling to measure the loss of salmonid habitat loss rather than discounting the amount or importance of the habitat.	
56	81	I. Impacts to Ongoing Restoration Actions Reclamation has not modeled the effect of reservoir fill on overtopping flood flows from Fremont and Sacramento weirs that result in floodplain activation flows in the Yolo Bypass. These overtopping flood flows from Fremont and Sacramento weirs are essential to the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan (Yolo Bypass Fish Passage Improvement), which is a $190 million project that includes notching Fremont Weir for increased survival of juvenile spring-run Chinook salmon and steelhead. The Yolo Bypass Fish Passage Improvement project is intended to satisfy RPA Action I.6.1 in the 2009 NMFS OCAP BiOp. It involves a partnership between Reclamation and California Department of Water Resource and is designed to reconnect floodplain habitat in the Yolo Basin specifically improve fish passage for young salmon outmigrating in the Sacramento River. According to Reclamation's web page (https://www.usbr.gov/mp/bdo/yolobypass.html), the action includes modifying the Fremont Weir to "to reconnect the floodplain for fish during the winter season and improve connectivity within the bypass and to the Sacramento River. The project provides seasonal inundation that mimics the natural process of the Yolo Bypass floodplain and improves connectivity within the bypass and to the Sacramento River." Failure to quantify the effect of removing floodplain activation flows during the reservoir fill period, and potentially in subsequent operation of Shasta Dam, is a serious omission.	This commenter cites provisions of the 2009 BiOp, which has been replaced and is no longer in effect. This comment does not raise any significant new information requiring supplemental review. Reclamation has complied with NEPA and its implementing regulations. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
56	82	In the NMFS 2019 OCAP BiOp, five RPA actions from the original 2009 OCAP BiOp are considered as part of Baseline for the ESA analysis. This is in spite of the fact that none of these RPA actions have been completed and two of the RPA actions (i.e., RPA Action Suite V NF 4 and RPA Action I.2.6) are unfunded. The funding status of the remaining three RPA actions is unclear. Disturbingly, the 2019 NMFS OCAP BiOp remains silent on completion of the NMFS 2009 OCAP BiOp RPA Actions NF 5, LF 1, and LF 2. RPA Action NF 5 is the Comprehensive Fish Passage Report, which is an essential step in decision-making for long-term passage at Shasta Dam. The long-Term fish passage actions include LF 1, Long-term Funding and Support for the Interagency Fish Passage Steering Committee, and LF 2, which is the Long-term Fish Passage Program. These recovery implementation actions appear to have been arbitrarily dropped from discussion of Project impacts on the survival and recovery of listed salmonid species. At the time NMFS finalized their 2019 OCAP BiOp, they were fully aware that RPA Action Suite V, NF 4 from the 2009 NMFS OCAP BiOp was unfunded. Their Draft Jeopardy OCAP BiOp from July 2019 states: "In July, 2018, Reclamation informed the Steering Committee that the project was "on hold" and had been defunded for the foreseeable future. Since July, 2018, DWR has continued to move forward with the juvenile collection facilities, but has not received additional financial contributions from Reclamation. Progress on RPA V implementation, aside from DWR's efforts, has stopped."	This comment largely raises concerns related to the analysis in the 2019 BiOp, which fall outside the scope of this SEIS. However, the analysis in both the 2019 BiOp and in the SEIS is robust and fully discloses the relevant effects. Please refer to Master Comment Response ESA-1, "ESA Compliance" for a discussion on the applicability of the 2019 BiOp to this project. The 2009 BiOp has been replaced and is no longer in effect.

Letter Number	Comment Number	Comment	Response
		In their finalized 2019 OCAP BiOp, NMFS only referred to Reclamation's 2018 funding of the Pilot Reintroduction Program, not the subsequent removal of the funding.	
56	83	4. Flaws in Climate Change Modeling and Analysis Regarding Cold Water Flows for Salmonids Reclamation has used climate change as a foundational rationale for the Project but has utterly failed to consider the importance of the cold water needed for winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead trout in the McCloud River. The FEIS puts forward a distorted interpretation of the Recovery Plan as justification for the Project without disclosing the intent of the Recovery Plan and its stated importance of the McCloud River as a "Primary," top priority reach for reintroduction of winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead trout (NMFS 2014b, p. 77).	Please refer to SEIS Chapters 4.2 and 4.3 for a discussion of the availability of cold water and its importance to anadromous fish. Climate change is addressed in the FEIS resource area Chapters 4 through 25, in Chapter 3, "Environment and Environmental Consequences," and in Chapter 5, "Air Quality and Climate." Additionally, the FEIS included a Climate Change Modeling Appendix, which discussed a range of future climatic projections and their implications for California water resources. The FEIS treatment of climate change was also addressed in FEIS master comment responses 33.3.7 and 33.3.38. In developing the SEIS, Reclamation used current climate and sea level conditions when modeling to ensure consistency in comparing to the SLWRIA FEIS. Please refer to the Modeling Appendix.
56	84	Reclamation has not included any discussion of the existing cold-water temperatures in the McCloud River or explained the reason why the basalt lava cold-water flows in the Shasta Lake watershed are so important for the survival and recovery of winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead trout.	Please refer to FEIS Chapter 13 for potential effects to fisheries. This comment does not raise any significant new information within the scope of the SEIS.
56	85	In Appendix 6 of the FEIS, Reclamation shows modeled temperature rise in the Sacramento River at two locations downstream of Shasta Dam (e.g., Table 2-21, FEIS Appx 6). These	Please refer to FEIS Master Comment Response COST/BEN-1, "Intent of EIS and Process to Determine Federal Interest."

Letter Number	Comment Number	Comment	Response
		locations have projected mean air temperature increases of 1.3°F in the 2020s, 3.0°F in the 2050s, and 4.2°F in the 2070s. Reclamation has not modeled projected mean air temperature increases for the lower McCloud River; data that is essential for comparing potential Project benefits to salmonid recovery benefits.	
56	86	Reclamation only modeled the effects of climatic uncertainties for water supply and did not address climatic uncertainties or accepted climate change predictions for the Shasta Lake watershed. Because a significant part of the cold-water contribution into Shasta Lake comes as snowmelt, it would be meaningful to model and quantify projected water temperature changes for at least the next 80 years for the McCloud, Sacramento, and Pit rivers. Modeled temperature changes for these rivers should include the projected tipping point for each river and the projected time in which summer snowmelt would no longer contribute to cooling in the rivers. If any of these rivers have a modeled tipping point that occurs at any time within projected Reclamations modeling scenarios, the cold-water contribution from that river would no longer contribute to the cold-water pool in Shasta Lake. Not modeling the potential loss of cold-water contribution from snowmelt is a serious flaw in the FEIS.	The SEIS compares changes between with and without project under the most recent regulatory requirements (2019 BiOps and amended COA) and with and without project under the regulatory environment when the FEIS was published in 2015. Therefore, the model does represent the effects of the new BiOps. The overall conclusion is that the changes due to the with project conditions compared to the without project conditions are still within bounds of what was analyzed in 2015. For example, the Shasta Lake storage increase of less than 2% cited in the Draft SEIS is comparing the 2015 and 2019 project alternatives. When comparing the 2019 project alternative to the no-project condition, Shasta end of September storage is 312 TAF higher in Dry and Critical years, which is a 14% increase. Under the 2015 simulation Shasta storage in Dry and Critical years was 264 TAF higher (a 13.5% increase). The difference between the 2019 and 2015 being 0.5%, within the 2% difference cited. Another example is the updated temperature management strategy under the 2019 BiOps with the new tiered approach. Based on the model results, the number of years where end of April Shasta storage is

Letter Number	Comment Number	Comment	Response
			greater than 4.1 maf (Tier 1 years) goes from 49 (2015, no project) to 65 (2015, with project) and from 55 (2019 no project) to 68 (2019, with project). As can be seen from the model results, 2019 BiOps result in significantly more number of years with high Shasta storage compared to 2015 conditions and Shasta raise adds significant number of Tier 1 years regardless of the baseline conditions (2015 or 2019). The climate change effects were analyzed and documented in the 2015 FEIS. Reclamation acknowledges that a newer climate dataset is available. However, storage programs in general show increased benefits for both environmental purposes and water supply purposes. The climate signals in general agree on increased temperatures that result in precipitation more in the form of rain rather than snow and overall ambient warming that is impactful on the species. As a result of the change in runoff pattern, more runoff is projected to occur in late fall and early winter months where the temperatures are seasonally cooler and there are storm events, followed by a significant reduction in flows in spring and summer months where the ambient temperature is even higher. Given the stressed conditions created by the change in climate, increased storage enables better management of cold water for the species. Dedicated storage of 191 taf under the Shasta raise project enables availability of cold water longer into the temperature management season.

Letter Number	Comment Number	Comment	Response
			Because the general trend in climate change studies has not changed with more recently published studies (i.e. warming is projected; not cooling); Reclamation expects the with-project conditions would be similarly or more beneficial even under the updated climate projections.
56	87	Reclamation has never conducted or completed ESA consultation on Project effects. The NMFS 2019 OCAP BiOp is flawed in its analysis of downstream effects, and NMFS has compounded that error by arbitrarily constraining its analysis of climate change effects. For example, in their 2019 OCAP BiOp on current operations, NMFS limited their period of analysis for climate change effects to the period from 2019 through 2030 and made their no jeopardy and no adverse modification conclusions based on what appears to be a 2030 sunset of the BiOp. Although NMFS refers to their 2016 Revised Guidance for Treatment of Climate Change in NMFS Endangered Species Act Decisions (Climate Change Guidance, NMFS 2016) 7 times in their 2019 OCAP BiOp, they did not follow the guidance in theory or in practice. By only considering short term increases in temperature and not extending their consideration of effects beyond 2030, NMFS selected an arbitrary point in time upon which to base their conclusions.	Please refer to response to comment 56-31 and 56-58.
56	88	The 2016 Climate Change Guidance directs NMFS to use the best available science regarding climate warming scenarios, advising NMFS that when they are "uncertain of the relative magnitude of effects, more weight will be given to the detrimental effects in decisions made after the initial listing determination." On pages 52 and 153 of their 2019 OCAP BiOp, NMFS presents more	This comment raises concerns with the analysis in the 2019 BiOps. Reclamation acknowledges the comments, however, the analysis in both the 2019 BiOps and in the SEIs is robust and fully discloses the relevant effects. Please refer to Master Comment Response ESA-1, "ESA Compliance."

Letter Number	Comment Number	Comment	Response
		extreme temperature increases for 2050 and 2100 than they used when they accepted the 2030 sunset of the consultation. They also concluded: "NMFS expects that climate conditions will follow a more extreme trajectory of higher temperatures and shifted precipitation into 2030 and beyond" (NMFS 2019, p. 708). Even in the face of uncertain modeling, it is unsupportable for NMFS to casually discount scientific data in deference to a timeline with a more favorable outcome. NMFS referenced the Intergovernmental Panel on Climate Change (IPCC)'s Representative Concentration Fifth Assessment Report (AR5) and their own Regional Guidance in their 2019 OCAP BiOp, but the existence of these documents is largely irrelevant to their argument. AR5 might have been relevant to their argument if NMFS had looked at the climate impact of increased agricultural production from increased water deliveries proposed by Reclamation, but they did not. Instead, NMFS concluded: "Modeling for the proposed operations that uses data specific to [Representative Concentration Pathway] 8.5 is currently unavailable. Therefore, this consultation assumes that the provided modeling represents a best-case scenario regarding climate conditions through 2030" (NMFS 2019 OCAP BiOp, p. 51). NMFS assumed that that temperatures would increase up to 3.4°F between 2020 and 2059 and precipitation changes would range from -6 percent to +24 percent in the same period, but then limited their period of analysis to only 2019 through 2030 and assumed that Reclamation's modeling "represents a best-case scenario regarding climate conditions through 2030" (NMFS 2019, p. 52). NMFS selectively recognized climate change projections in 2050	

Letter Number	Comment Number	Comment	Response
		and 2100, but then ignored their data and constrained their analysis to only up to 2030. The 2030 sunset included in the NMFS 2019 OCAP BiOp is suspiciously concordant with the timing of the beginning of the Project's reservoir fill period beginning in 2025 and a likely fill period of five years. During the 2025 to 2030 time period, the first serious impacts to juvenile salmonid outmigration will have occurred and the impacts will be irreversible. USFWS also accepted Reclamation's proposed term of the ESA consultation through the year of 2030 in their 2019 OCAP BiOp and did not address Reclamation's inconsistent record of compliance with biological opinions or follow-through on proposed mitigation. USFWS recognized that global warming is expected to continue through the century, but constrained their period of analysis to a period where water temperature warming is measurably less, stating: "The amount of anticipated change to the regional climate expected in the near term is lower than it is for the latter half of the century. Therefore, it is less certain that any measurable change from current conditions will occur in the next approximately 10 years than by the latter half of the century" (USFWS 2019 OCAP BiOp, p. 208).	
56	89	Significant salmonid population increases would occur if the NMFS 2019 OCAP BiOp Reasonable and Prudent measure Near Term Fish Passage Actions (NF 4 and 5) and Long-Term Fish Passage Actions (LF 1 and 2) were implemented. The modeled population increases from the Project should be compared to the projected populations increases from full implementation of RPA NF 4 through LF 2.4, which includes the Pilot Reintroduction Program through subsequent long-term fish passage. Before committing to spending more than 1.5 billion dollars to build the	Please refer to Master Comment Response COST/BEN-1, "Intent of EIS and Process to Determine Federal Interest." Please also refer to FEIS Master Comment Response ALTS-1, "Alternative Selection."

Letter Number	Comment Number	Comment	Response
		Project, Reclamation should consider an alternative that meets a comparable fish-conservation objective: such as upstream passage for winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead trout. Fish passage implementation might cost a fraction of the cost of the Project over the next 50 years. Reclamation is moving forward with a costly water delivery scheme without looking closely at the cost comparison of successfully reintroducing winter-run and spring-run Chinook salmon and Central Valley steelhead into the cold climate-buffered waters upstream of Shasta Dam. At a bare minimum, Reclamation should compare the cost of CP4A against the cost of reintroduction of winter-run and spring-run Chinook salmon and Central Valley steelhead into the climate-buffered waters upstream of Shasta Dam. The fact that the cost is for the reintroduction is likely to be from one-fifth to one-tenth of the cost of the Project is an important economic consideration for decision-makers.	
56	90	Reclamation is not meeting the Project's Primary Objective of increasing the survival of anadromous fish populations in the Sacramento River, leaving the other Primary Objective of increasing water supply and water supply reliability as the only remaining Primary Objective. Implementing the Recovery Plan would satisfy the objective of increasing the survival of anadromous fish populations in the Sacramento River for a fraction of the cost. With many of the upstream impacts to fish and wildlife described in the FEIS as significant and unavoidable, these impacts are in direct conflict with the Project's Secondary Objective of conserving, restoring, and enhancing ecosystem resources in the Shasta Lake area.	Please refer to FEIS Master Comment Response COST/BEN-1, "Intent of EIS and Process to Determine Federal Interest."

Letter Number	Comment Number	Comment	Response
56	91	In its rush to move forward with the Project, Reclamation is depending on two flawed biological opinions that do not adequately address Project effects to listed species or Critical habitat and that limit their analyses to the arbitrary period between 2019 and 2030. Lack of consideration of listed-species conservation, Recovery Plan implementation, and Critical Habitat conservation are hallmarks of the FEIS and DSEIS. Reclamation should conduct the analyses required by the ESA, comply with the ESA and its implementing regulations, abandon dependence on biological opinions that do not address Project effects and that arbitrarily address climate change, model riparian floodplain restoration flows downstream of Shasta Dam, and thoroughly model and report climate change cumulative effects in the largest Shasta Lake tributaries.	Please refer to comment 56-58 and Master Comment Response ESA-1," ESA Compliance." Reclamation acknowledges the comments, however, the analysis in both the 2019 BiOp and in the SEIS is robust and fully discloses the relevant effects.
56	92	5. Failure to Comply with the Clean Water Act The DSEIS does not contain sufficient information to meet permitting requirements under the Clean Water Act (CWA). The stated purpose of the SLWRI Draft SEIS is to provide information relevant to the application of § 404(r) of the Clean Water Act (CWA) for the SLWRI. There is, however, no basis for invoking CWA§ 404(r). The conditions have not been met, including the requirement for a completed environmental impact statement transmitted to Congress prior to invoking § 404(r), or a Congressional appropriation for construction. The Draft SEIS fails to meet the statutory hurdles necessary to evade CWA § 401 and §402 and §404 permitting requirements. First invoking § 404 (r) requires that the project has been "specifically authorized." Reclamation's own publication indicates this is not the case: The	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance."

Letter Number	Comment Number	Comment	Response
		DSEIS notes that Congress has neither "authorized construction nor appropriated funds for construction." (DSEIS p. 1-2)	
56	93	Furthermore, the construction impacts, the required NPDES permit for storm water runoff, groundwater dewatering and discharge of fill into the waters of the state trigger federal compliance with state water quality permits and disclosure of the impacts of these discharges downstream of the dam. Insufficient information is provided in the Draft SEIS to remedy these fundamental flaws in the DSEIS. Reliance on CALFED Bay-Delta [Public Law 108-361] is not sufficient in that it is not an authorizing act for this project. In summary, this project has not met the necessary conditions for proceeding to construction or compliance with federal statute: 1. Congress has not specifically authorized this project; 2. Reclamation has not provided evidence that they have a State water right for the project; 3. The required cost sharing partner has not been identified; 4. Reclamation has not documented compliance with CVPIA § 3406 and § 3411; 5. Federal compliance with federal and state water quality statutes is absent including necessary permit approvals from the State Water Resources Control Board with regard to CWA § 401, §404 and § 402. The failure to meet the aforementioned conditions not only disqualifies the Project from consideration under CWA § 404(r), but also demonstrates a failure to comply with state water quality certification requirements.	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance." Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
56	94	6. Undisclosed Seismic Issues Reservoirs are known to trigger earthquakes (Simpson et al. 1988; Talwani 1997; Chen and Talwani 1998; Wang and Manga 2010). Large new reservoirs and enlarged reservoirs are of particular concern, because the massive weight of the impounded water can lead to seismic instability. The energy released in a reservoir-triggered earthquake is from the normal tectonic strain energy being prematurely released due to reservoir filling (Simpson et al. 1988; Chen and Talwani 1998). Reclamation has found fault lines near Shasta Dam. Although Reclamation has documents indicating that there is a seismic risk from enlarging the reservoir, the fault lines and the risk of a reservoir triggered earthquake has not been provided in the DSEIS or FEIS. This is a serious omission. Not including an analysis of the increased earthquake risk from reservoir fill and loading prevents public comment and misleads decision-makers. A full evaluation of the potential for seismic instability from the additional weight from 640,000 acre-feet of water (i.e., more than 870 million tons) should be included in the FEIS. The cost of seismic risk amelioration and a thorough reporting of the potential risk of a reservoir-triggered earthquake should be provided in the FEIS to allow the public and decision makers to make an informed decision.	Please refer to FEIS Chapter 8.3.4, "Direct and Indirect Effects" for a discussion of the potential impact of seismic issues. Please also refer to the FEIS, Chapter 4, Geology, Geomorphology, Minerals and Soils for a discussion regarding seismic conditions and risk. Impact Geo-1, Exposure of Structures and People to Geologic Hazards Resulting from Seismic Conditions, Slope Instability and Volcanic Eruption specifically addresses seismic risk.
56	95	7. Need for a New Cost Analysis Reclamation is required to prepare an updated cost analysis for the Project, given the recent (January 2020) adoption of a new Cost Allocation Methodology and recently proposed (November 2019) P&G and CVPIA restoration funding changes. The Shasta	Please refer to response to comment 56-6.

Letter Number	Comment Number	Comment	Response
		Feasibility and NED relied upon out of date cost allocations. It appears Reclamation is using one set of numbers to minimize the benefits for allocating repayment costs and another set of calculations to determine the cost benefit ratio for the Project. Exaggerating the benefits in one analysis while minimizing the benefits to reduce repayment in another is arbitrary and fails to accurately disclose the costs of the Project.	
56	96	There is an inconsistency between the cost figures Reclamation is using for the Shasta feasibility study completed in 2015, the economic analysis used in the FEIS SLWRI, and justifications relied upon in the Draft SEIS. Reclamation is using two different set of accounting principles: One to determine how much contractors must repay the federal taxpayer for the Project and another to economically justify the Project. For example, the Cost allocations for CVP capital repayment purposes adopted in January 2020 minimize repayment by arbitrarily minimizing benefits of the CVP. See the following comments on the Cost Allocation methodology, adopted here by reference (http://calsport.org/news/wpcontent/uploads/Conservation-Fishing-and-Tribe-Cmts-RE-CVP-Cost-Allocation-Study-Burman-1-2-2020-.pdf). Under that newly adopted methodology the Bureau assumed that roughly 80% of the CVP water benefits exist without the CVP. The NED for Shasta SLWRI, on the other hand, exaggerates or inflates the amount of water benefits of the project so it will appear cost effective in the feasibility study sent to Congress. This is arbitrary. Furthermore, the Bureau has recently proposed changes in funding with regard to the CVPIA mitigation and restoration obligations. The California Department of Fish and Wildlife estimates these changes will have a	Please refer to response to comment 56-6.

Letter Number	Comment Number	Comment	Response
		significant impact on CVP environmental mitigation and restoration programs (see https://calsport.org/news/wpcontent/uploads/CVPIARestorationFund2020Letter-9-11-2020.pdf).	
56	97	The Hoopa Tribe also has raised objections highlighting the serious environmental impacts to their traditional way of life along with legal financial obligations to the restoration of the Trinity River from CVP diversions (see Hoopa Valley Tribal Council September 10, 2020 letter to Mr. Wilson Orvis, Deputy Regional Director for the Mid-Pacific Region of the Bureau of Reclamation). National and local groups representing state and national wildlife refuges have also commented on how this defunding of the required mitigation and water supplies required under the CVPIA will cause significant environmental harm (see references below). The DSEIS fails to disclose or analyze these impacts. The impact of defunding and/or shifting these statutorily required funds necessary for the mitigation of fish and wildlife impacts from the CVP have not been analyzed in the DSEIS nor modeled to disclose the impacts on existing operations. Many of the undersigned have commented and raised significant environmental issues with regard to these changes (see https://calsport.org/news/wpcontent/uploads/Env-Advocates-Cmts-CVPIA-Restoration-Fund_True-Up-_-Proportionality-9....pdf).	Reclamation acknowledges the concerns raised in this comment. However, it does not raise any new information related to environmental effects of the project. Reclamation will continue to comply with all applicable law.
56	98	The SLWRI 2015 feasibility study determined a final recommendation regarding the project could not be made until a cost-share agreement and other relevant considerations are	A cost-share partner is not required at this stage of the project. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		addressed (page ES-2 Final – July 2015). At present no cost-share agreement has been provided to the public for review.	
56	99	We find that the DSEIS is not being conducted consistent with the 1983 U.S. Water Resources Council Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G), Reclamation directives and standards, National Environmental Policy Act (NEPA), Central Valley Project Improvement Act (CVPIA), and the Endangered Species Act (ESA).	Reclamation has fully complied with all applicable law, and will continue to do so throughout the development of this project.
59	1	The 2015 FEIS purported to examine the impacts of raising Shasta Dam by up to 18.5 feet. After its completion, Reclamation submitted it to Congress, along with its Final Feasibility Report for the SLWRI ("Feasibility Report"), and awaited further Congressional direction. While Congress appropriated funding for pre-construction activities as part of the WIIN Act, the Project has been unable to find a legal, non-Federal sponsor as Congress required. The DSEIS purports -- but fails -- to comply with the National Environmental Policy Act, 42 U.S.C. section 4321 et seq. ("NEPA"). Reclamation indicates that it prepared the DSEIS to "provide information relevant to the application of Section 404(r) of the Clean Water Act [("CWA"), 16 U.S.C. section 1344(r)] for the SLWRI, to respond to issues identified by the [United States Army Corps of Engineers ("ACOE")] and [Environmental Protection Agency ("EPA")] on the previous EIS, to update operations arid modelling [sic] to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns." DSEIS 1-2. Reclamation also "revised" its discussion of the McCloud River and "included the	Please see Master Comment Response CWA-1 - CWA 404 (r) Compliance for a detailed response on the Draft SEIS's CWA 404(r) compliance. Please see responses to comments below.

Letter Number	Comment Number	Comment	Response
		revised chapter" in the DSEIS, DSEIS 1-3. Reclamation's analysis fails to foster informed decision making, and provide sufficient information to show compliance with the requirements of NEPA, the CWA, Endangered Species Act ("ESA"), and other applicable laws. Reclamation must address the omissions and errors identified in this letter, and recirculate a legally sufficient DSEIS.	
59	2	As a result of widespread habitat degradation caused by the construction and operation of dams on nearly all major California rivers flowing into the Delta, including many dams built and managed by Reclamation such as Shasta Dam on the Sacramento River, Folsom Dam on the American River, and Friant Dam on the San Joaquin River, anadromous and other imperiled fishes dependent on the Delta and its tributaries have suffered severe population declines. The Sacramento River winter and spring run Chinook salmon, Central Valley steelhead, North American green sturgeon and Delta smelt, for example, have been driven perilously close to extinction. The National Marine Fisheries Service ("NMFS") listed Winter run Chinook salmon as a federally threatened species in 1990, and then due to continuing losses in population, NMFS declared them endangered in 2005. NMFS designated their critical habitat in the Sacramento River and its tributaries in 1993. NMFS listed Spring run Chinook salmon as threatened, and designate their critical habitat, in 2005. NMFS listed Central Valley steelhead as threatened in 2000, and designated their critical habitat in 2005. Many species of fish indigenous to the Delta have already gone extinct; just 12 indigenous species remain. Habitat for the Sacramento River Winter and Spring run Chinook	The Draft SEIS is a supplement to the 2015 SLWRI FEIS, which itself is tiered from the CALFED Programmatic Environmental Impact Statement/Report (PEIS/R), completed in July of 2000. That Programmatic EIS/R considered more than 50 surface water storage sites throughout California and recommended more detailed study of the five sites identified in the CALFED Programmatic ROD. These studies included Shasta Lake Enlargement, Los Vaqueros Reservoir Enlargement, Sites Reservoir, in Sacramento-San Joaquin Delta (In-Delta) storage, and development of storage in the upper San Joaquin River Basin. The SLWRI FEIS relied on evaluations, alternatives development, and screening included in the CALFED PEIS/R, focusing on the subsequent action of evaluating the enlargement of Shasta Dam and Lake. Accordingly, Reclamation tiered its analysis of the SLWRI FEIS to the CALFED PEIS/R. Please also see the Master Comment Response ESA-1 – ESA Compliance, regarding Reclamation's coordination with FWS and NMFS throughout the NEPA process.

Letter Number	Comment Number	Comment	Response
		salmon, Central Valley steelhead, Southern DPS of the green sturgeon, and the Delta smelt has been increasingly degraded over the last several decades by excessive Delta water exports by the Central Valley Project ("CVP") and the State Water Project ("SWP"). Those exports decrease freshwater flows, and increase salinity and the concentration of herbicides, pesticides and toxic agricultural runoff, in Central Valley water bodies including the Delta. Construction of the CVP's dams has directly caused the loss of many salmon runs. In its free-flowing state, the McCloud River -- now above Shasta Dam -- was home to abundant salmon runs, which were an integral part of the Winnemem Wintu Tribe's diet and culture. The McCloud River's cold water flows and ample spawning and rearing grounds provided ideal conditions for salmon to reproduce. But construction of Shasta Dam eliminated salmon access to the McCloud River, causing the loss of the McCloud River's salmon but for a small population that was moved to New Zealand over a century ago. On June 4, 2009, pursuant to its consultation duties under section 7 of the Endangered Species Act ("ESA"), 16 U.S.C. section 1536, NMFS informed Reclamation that: Based on the best available scientific and commercial information, NMFS' final [Biological] Opinion concludes that the CVP/SWP operations are likely to jeopardize the continued existence of Federally listed: - Endangered Sacramento River winter-run Chinook salmon (Oncorhynchus tshawytscha), - Threatened Central Valley spring-run Chinook salmon (O. tshawytscha), - Threatened Central Valley steelhead (O. mykiss),	

Letter Number	Comment Number	Comment	Response
		- Threatened Southern Distinct Population Segment (DPS) of North American green sturgeon (Acipenser medirostris), and - Southern Resident killer whales (Orcinus orca) [who feed on the salmon] NMFS also concludes that the proposed action is likely to destroy or adversely modify the designated critical habitats of - Central Valley spring-run Chinook salmon, - Central Valley spring-run Chinook salmon, - Central Valley steelhead, and - proposed critical habitat for the Southern DPS of North American green sturgeon. NMFS' letter to Donald R. Glaser transmitting final Biological Opinion on CVP/SWP operations dated June 4, 2009, at pages 1-2 (emphasis added). NMFS found that one of the "primary factors" contributing to the decline of the Winter-run and Spring-run Chinook salmon is the Shasta Dam's "blockage of historical habitat." NMFS 2009, pp. 19, 23, 24-25, 36. NMFS determined that the historic salmon runs on the McCloud River, above Shasta Dam, would need to be restored for the species to recover. For that reason, NMFS has mandated that Reclamation act to restore salmon above Shasta Dam. Despite NMFS' 2009 finding that Reclamation should be taking action to restore salmon to their historic spawning grounds on the McCloud River, Reclamation has failed to undertake action to allow fish passage above Keswick and Shasta dams. Since NMFS' 2009 jeopardy finding, Reclamation unlawfully continues to prioritize water deliveries to CVP contractors over actions to protect the continued survival of	

Letter Number	Comment Number	Comment	Response
		these imperiled fish by restoring their historic habitat. Instead of complying with its ESA obligations, Reclamation waited until the political winds shifted to favor the agricultural interests that benefit from increased CVP deliveries. Reclamation has asked for and received new Biological Opinions that arbitrarily alter its obligations. The new 2019 Biological Opinions that the DSEIS apparently relies upon have both been challenged in the United States District Court as arbitrary and capricious, and not in accordance with the best available science (PCFFA et al. v. Ross, U.S. Dist. Ct., E.D. Cal., Case No. 1:20-cv-00431; California Natural Resources Agency v. Ross, U.S. Dist. Ct., E.D. Cal., Case No. 1:20-cv-00426). Reclamation has done so because the Department of Interior is headed by the former lobbyist for Reclamation's largest CVP water contractor, Westlands Water District ("Westlands"). Reclamation's blatant disregard for its obligations under NEPA, the CWA, and the ESA is reflected in its insufficient DSEIS.	
59	3	THE SLWRI PROJECT AS STUDIED IN THE DSEIS REMAINS INFEASIBLE In July 2015, Reclamation released its Feasibility Report. The Feasibility Report indicates that "[a]lternative means of financing (primarily non-Federal) for a majority of the construction costs ... would have to be identified and secured in order for the Secretary of the Interior to be able to recommend a construction authorization to Congress." Feasibility Report ES-39. In 2016, Congress passed the Water Infrastructure Improvements for the Nation Act (P.L. 114-322 (Dec. 16. 2016) ("WIIN Act"). The WIIN Act authorizes the Bureau to "participate ... in an amount	Please see Master Comment Response WIIN-1 - WIIN Act Compliance.

Letter Number	Comment Number	Comment	Response
		equal to not more than 50 percent of the total cost," but requires a non-federal cost share partner to provide "upfront funding as is necessary to pay the non-Federal share of the capital costs." WIIN Act § 4007(b)(2), (3)(B). In March 2018, Congress appropriated $20 million in funding for pre-construction activities for the Shasta Dam Raise Project, including engineering design for an 18.5-foot dam raise. The March 2018 appropriation does not include funding for construction. Public Resources Code ("PRC") section 5093.542(c) provides that "[e]xcept for participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam, no department or agency of the state shall assist or cooperate with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government 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." PRC § 5093.542(c). This prohibition prevents Westlands, or other agencies of the state of California, from preparing documents under the California Environmental Quality Act, PRC section 21000 et seq. ("CEQA"), or taking any other action as the non-federal sponsor to help in the planning or construction of the SLWRI Project. As the SLWRI Project would inundate and convert the lower portion of the McCloud River into a reservoir, thus changing its condition from flowing river to lake, the Project would conflict with PRC section 5093.542's goals. E.g. DSEIS 5-34 to 5-37.	

Letter Number	Comment Number	Comment	Response
		Thus, the conditions necessary for the Secretary to recommend this Project, as identified in the Feasibility Report, cannot be met.	
59	4	RECLAMATION HAS FAILED TO TAKE THE HARD LOOK THAT NEPA REQUIRES Reclamation's DSEIS fails to take a hard look at impacts of the SLWRI Project. The Council on Environmental Quality's NEPA Guidelines mandate, at 40 C.F.R. section 1502.9(d)(1)(ii), that Reclamation's DSEIS address "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." As discussed below, Reclamation has failed to do so here. First, the DSEIS fails to update its analysis of the Project's impacts to special status species. Since Reclamation's 2015 FEIS, the United States Fish and Wildlife Service ("FWS") has committed to review the status of three species of rare salamander found within the Project area -- the Shasta salamander, Samwel Shasta salamander, and Wintu salamander -- and is expected to issue its 12-month findings by April 30, 2021 pursuant to section 4(b)(3)(B) of the ESA (16 U.S.C. § 1533(b)(3)(B)) and its implementing regulations. The potential impact of the Project is not adequately discussed in the 2015 FSEIS. Although the DSEIS acknowledges, in passing, that the McCloud River Arm of the reservoir includes limestone outcroppings that are home to the Shasta salamander, it relies upon outdated data and wholly deficient analysis. Consequently, it makes no mention of the Samwel Shasta salamander or Wintu salamander. DSEIS 5-22. This scant mention of just one of these three imperiled species	The Draft SEIS was written to "provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns" (Draft SEIS 1-2). For impacts to special status species please see the 2015 SLWRI FEIS Chapter 11 "Fisheries and Aquatic Ecosystems," Chapter 12 "Botanical Resources and Wetlands," and Chapter 13 "Wildlife Resources." Regarding specifically the Samwel Shasta salamander and the Wintu salamander, USFWS has not completed its review of the species. If the species are listed or afforded other special status Reclamation will be obligated to consider them under NEPA and ESA. Please also see the Master Comment Response ESA-1 – ESA Compliance, regarding Reclamation's coordination with FWS and NMFS throughout the NEPA process.

Letter Number	Comment Number	Comment	Response
		fails to comply with 40 C.F.R. section 1502.9(d)(l)(ii)'s sweeping mandate. Reclamation must fully address the new information that has been gathered about these species in order to take the hard look at the Project's impacts upon these rare species NEPA requires.	
59	5	Second, Reclamation fails to gather and analyze essential information when it purports to examine the impacts of raising Shasta Dam on downstream water temperature and flows in each type of water year. DSEIS 4-1 to 4-8. The information provided is insufficient because it omits analysis of modeled carryover storage for multiple dry and multiple critically dry years. Id. The DSEIS's discussion of updated scenarios for the 2019 Biological Opinions also fails to tease out how any enlargement of Shasta Dam would alter the temperature of flows released from Shasta Dam. Yet it appears that the lake's resulting increase in surface area and decrease in average depth -- due to the increase in shallow, warmer water around the edge of the lake -- would cause the water temperature to rise in the waters stored behind, and released from, the dam. The DSEIS likewise fails to address how the resulting increase in evaporation due to increased water temperatures and surface area would offset the potential benefit of increasing storage capacity by raising the dam.	Please see response to comment 59-4 for a response on the scope of the Draft SEIS. Reclamation has prepared a modeling appendix that provides additional modeling information and analyses and has included the modeling appendix within the Final SEIS. Please see the 2015 SLWRI FEIS Chapter 33.3.22 "Master Comment Responses for Reservoir Evaporation."
59	6	Indeed, Reclamation's scant analysis fails to provide sufficient information regarding any of the Project's impacts. Instead, it provides only vague generalizations regarding modeling of the effects of the Project's implementation. The DSEIS reveals, for example, that in June of critically dry years, water temperature would not "be lower" than the temperature modeled in the 2015 scenarios. DSEIS 4-6. But the DSEIS fails to reveal how much water temperature might increase, and how this might increase	The Draft SEIS provides updated modeling under consideration of the 2019 Biological Opinions from the USFWS and NMFS and the amended COA. The Draft SEIS does not provide a full, updated reiteration of the effects already discussed within the 2015 SLWRI FEIS; instead, the Draft SEIS analyzes whether the effects under the 2019 scenario would be substantially different than the 2015 scenario. The Draft SEIS

Letter Number	Comment Number	Comment	Response
		evaporative losses. Consequently, the DSEIS fails to provide sufficient data and analysis for the public and decisionmakers to understand the impacts of this increase in temperature on salmonid survival. Too-warm river temperatures in critically dry years downstream of Shasta and Keswick dams have been a significant cause of fish mortality. Yet the DSEIS fails to tie any biological outcomes to its modeled temperatures and flow conditions. DSEIS 4-1 to 4-8. For these reasons, the DSEIS's discussion of the Project's impacts on temperature and flow is insufficient under NEPA.	concludes that the effects are not substantially different than the effects already disclosed, analyzed, minimized, and provided mitigation for within the 2015 SLWRI FEIS.
59	7	Third, Chapter 5 of the DSEIS purports to update its analysis of impacts to the McCloud River as compared to those discussed in the 2015 FEIS. Yet the updated analysis inexplicably and impermissibly removes most references to the Project's conflict with PRC section 5093.542; But removing its analysis of applicable state law does not alter the Project's conflict with the same. Reclamation's DSEIS fails to inform decisionmakers about important aspects of the Project's infeasibility due to its conflict with governing state water law.	Please see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.
59	8	In addition, the DSEIS's updated analysis fails to discuss the Project's inundation of significant cultural properties. Despite the FEIS's admission that even a 6.5-foot increase in the height of Shasta Dam would irreversibly harm the Winnemem Wintu Tribe's culturally significant resources along and in the McCloud River (e.g. FEIS 24-4 to 24-36), the DSEIS's updated McCloud River analysis is silent as to these impacts.	Please see the 2015 SLWRI FEIS Chapter 14 "Cultural Resources."
59	9	Fourth, Reclamation has continued its failure to study any alternative -- aside from the no-action alternative -- that would not raise Shasta Dam. Despite defining its project purpose as: "to improve operational flexibility of the Sacramento-San Joaquin	Please see response to comment 59-2 and the 2015 SLWRI FEIS Chapter 2.1 "Alternatives Development Process."

Letter Number	Comment Number	Comment	Response
		Delta (Delta) watershed system to meet specified primary and secondary project objectives" (FEIS 33.3-114), Reclamation has improperly failed to consider other alternatives to attain this goal. One such option could include fish-passage around Shasta Dam to allow salmon to access their historic spawning grounds. Reclamation's failure to consider a reasonable range of alternatives violates NEPA. 40 C.F.R. § 1502.14(a), (c) (EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives," including "reasonable alternatives not within the jurisdiction of the lead agency").	
59	10	RECLAMATION FAILS TO PROVIDE NECESSARY INFORMATION UNDER THE CWA Section 404(r) of the Clean Water Act states that: The discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress, whether prior to or on or after December 27, 1977, is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 131 l(a) or 1342 of this title (except for effluent standards or prohibitions under section 1317 of this title), if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(1) of this section, is included in an environmental impact statement for such project pursuant to [NEPA] and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for such construction.	Please see Master Comment Response "CWA-1 - CWA 404 (r) Compliance."

Letter Number	Comment Number	Comment	Response
		33 U.S.C. § 1344 (emphasis added). Pursuant to this section, Reclamation has signaled its intention to provide its Final Supplemental EIS to Congress to seek Congress's approval and appropriation, thus avoiding further application of sections 402 and 404 of the CWA to the Project. Yet Reclamation's DSEIS fails to provide the information necessary to satisfy the requirements of CWA section 404(r), as it lacks the detail necessary for Congress to be informed as to the Project's impacts under section 404 and 33 C.F.R. sections 230.10, 320.2(f), and 320.4. Instead, the DSEIS provides only a vague overview of the Project's potential impacts.	
59	11	The DSEIS' many grave deficiencies outlined above are more than sufficient to preclude its satisfaction of section 404(r)'s stringent requirements. For example, the implementing guidelines mandate that a 404 permit cannot issue when the Project [j]eopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended. If an exemption has been granted by the Endangered Species Committee, the terms of such exemption shall apply in lieu of this subparagraph. 40 C.F.R. § 230.10(b)(3). Yet as noted above, the DSEIS has failed to appropriately address the Project's impacts on special status species. Further, Reclamation has failed to reinitiate consultation with FWS and NMFS as necessary to address the Project's	Please see Master Comment Response "CWA-1 - CWA 404 (r) Compliance" and response to comment 59-4. Reclamation is currently undergoing informal consultation with the USFWS and will undergo any necessary consultation with NMFS for compliance with ESA. Please also the Master Comment Response ESA-1 – ESA Compliance, regarding Reclamation's coordination with FWS and NMFS throughout the NEPA process.

Letter Number	Comment Number	Comment	Response
		impacts on threatened and endangered species. For these reasons, the DSEIS cannot serve its informational purpose under CWA sections 404(b)(1) and 404(r), and Reclamation is thereby foreclosed from presenting this Project to Congress for approval.	
59	12	RECLAMATION IS VIOLATING THE ESA The DSEIS refers to the 2019 Biological Opinions that NMFS and FWS issued for the continued long-term operation of the CVP and SWP. The DSEIS does not cite any additional consultation that Reclamation has undertaken to address the Project's impacts to listed species. Yet Reclamation cannot rely upon the 2019 Biological Opinions to satisfy its consultation obligations, because they specifically determined that the SLWRI Project was not part of the actions studied in the 2019 Biological Opinions, and therefore Reclamation would have to undertake separate consultation for the Shasta Dam raise. See, e.g. FWS Biological Opinion, p. 30; NMFS Biological Opinion, p. 230 n. 8 ("NMFS...cannot further evaluate the Shasta Dam raise in this opinion). Because Reclamation has failed to reinitiate consultation with NMFS and FWS regarding the SLWRI Project's impacts on listed species, Reclamation has failed to proceed as required by the ESA.	Please see response to comment 59-11 and Master Comment Response ESA-1 – ESA Compliance, regarding Reclamation's coordination with FWS and NMFS throughout the NEPA process.
59	13	RECLAMATION MUST EXAMINE THE PROJECT'S COMPLIANCE WITH ALL PERTINENT COMPONENTS OF CALIFORNIA'S SUBSTANTIVE WATER LAW Under section 8 of the 1902 Reclamation Act, Reclamation must comply with substantive California water law. Yet Reclamation	Please see Master Comment Response CWA-1 - CWA 404 (r) Compliance and Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River. Reclamation will comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		seeks to avoid compliance with California's substantive water law, both via the 404(r) process, and by simply omitting reference to applicable provisions of California law with which the Project conflicts. That law includes the Delta Reform Act (Water Code section 85000 et seq.), the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.), California's Wild and Scenic Rivers Act (especially PRC section 5093.542), and the Public Trust Doctrine. The Delta Reform Act mandates that all covered actions be consistent with the Delta Plan and the Delta Reform Act's coequal goals. Contrary to the Delta Reform Act and the Delta Plan, the Project will increase reliance upon the Delta for the state's water needs, and impair, rather than restore, the Delta's natural flows. Reclamation's DSEIS fails to address this conflict.	
59	14	California's Wild and Scenic Rivers Act forbids the Project because it would "have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery." PRC § 5093.542. Reclamation's DSEIS fails to address this conflict.	Please see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.
59	15	The Porter-Cologne Water Quality Control Act bars the Project because it would impair beneficial uses protected by that Act under Water Code section 13050(f) including the anadromous and other cold freshwater fisheries of the Sacramento River and its tributaries including the McCloud River. Reclamation's DSEIS fails to address this conflict.	Please see the 2015 SLWRI FEIS Chapter 7 "Water Quality" for a discussion on the Porter-Cologne Water Quality Control Act and its applicability to the project.
59	16	The Public Trust Doctrine requires agencies to mitigate impacts to public trust resources whenever feasible. Contrary to the Public Trust Doctrine, this Project threatens the State's public trust resources, including the McCloud River's wild trout fishery and its historic Chinook salmon fishery. Reclamation must	Please see the 2015 SLWRI FEIS Chapter 2.1 "Alternatives Development Process."

Letter Number	Comment Number	Comment	Response
		consider whether there are feasible alternatives to raising Shasta Dam which Reclamation could undertake that would better protect and fully restore imperiled salmon and trout as public trust resources. Reclamation has failed to do so, and its DSEIS fails to address the Project's conflicts with the Public Trust Doctrine.	
59	17	CONCLUSION For the reasons stated above, Reclamation must recirculate a new DSEIS that takes a hard look at the Project's impacts, and presents a reasonable range of alternatives and mitigation measures designed to lessen them, and complies with other applicable laws including NEPA, the CWA, the ESA, the Reclamation Act of 1902, and the California water laws that the Reclamation Act requires Reclamation to comply with and implement. Absent such compliance, Reclamation cannot recommend this Project to Congress.	Please see response to comments 59-1 through 59-16.

1.6 Comments from State Agencies and Responses

This section contains the comments submitted by State Agencies listed in Table 1.6-1. Table 1.6-2 provides the comments and their response in tabular format. Table 1.6-2 is presented by letter number in sequential order.

Table 1.6-1. Elected Officials Providing Comments on Draft SEIS

Name, Title	Organization	Letter Number
Eric Gillies, Acting Chief, Div of Environmental Planning	CALIFORNIA STATE LANDS COMMISSION	3
Tina Bartlett, Regional Manager	Department of Fish and Wildlife	11
Ellen Sobeck, Executive Director	California State Water Resources Control Board	12
Joshua Purtle, Deputy Attorneys General	State of California Department of Justice	13

Table 1.6-2. Responses to Comments Provided by State Agencies

Letter Number	Comment Number	Comment	Response
3	1	Commission Jurisdiction and Public Trust Lands The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine. Commission staff has determined, based on information currently known to staff, that the Project will not occur on lands under the jurisdiction of the Commission. However, Project construction may indirectly affect State sovereign and Public Trust lands and resources downstream and pertaining to the Sacramento River and adjoining tributaries, and perhaps more indirectly the Delta and San Francisco Bay. On March 13, 2018, the then California Secretary of the California Natural Resources Agency wrote a letter to Congressional leaders expressing opposition to the Project and referencing California Public Resources Code section 5093.542, prohibiting state agencies and departments from assisting in the Project in any way. The Commission concurs with former Secretary Laird's letter. However, as a trustee agency and in the interests of ensuring a full and through analysis of Project impacts, the Commission respectfully submits the following comments.	Reclamation thanks the commission for its review and comments on the SLWRI Draft SEIS.

Letter Number	Comment Number	Comment	Response
3	2	Wetlands and Other Waters of the U.S Commission staff suggests that a map reflecting the Preliminary Jurisdictional Determination dated April 8, 2020, from the USACE Sacramento District and an impact map using that same data, be included as figures in the SEIS or as an Appendix to more clearly display the wetlands/waters impacted by Project construction.	The potential impacts to wetlands included within the Preliminary Jurisdictional Determination are spread over the entire project area, with most impacts measured in hundredths of acres. At the scale necessary to display the entire project area such a map would not usefully display impacts to wetlands in a given location. Reclamation can make detailed projected impacts to wetlands in any area of interest upon request.
3	3	Chapter 2 of the SEIS discusses potential impacts to waters of the U.S. (WOTUS). On page 2-6 the draft SEIS states "The SLWRI FEIS previously identified 31 acres of wetlands and 49 acres of other WOTUS to be converted into lacustrine habitat with the raising of Shasta Dam, resulting in a net loss of approximately 31 acres of wetlands and 49 acres of riverine waters into lacustrine habitat." However, the draft SEIS does not further discuss these impacts "[b]ecause the construction process to raise Shasta Dam will require no placement of dredge or fill material into wetlands or other WOTUS, that process and the resultant conversion of some habitats into lacustrine habitat does not require consideration of the CWA 404(b)(1) guidelines."	Correct; the conversion of wetlands and riverine wetlands into lacustrine does not require consideration under the CWA 404(b)(1) guidelines if the action that causes the conversion would not typically require a CWA 404 permit. As a cooperating agency for the Draft SEIS the USACE reviewed Reclamation's proposed action; that is, the construction and raising of Shasta Dam; and determined that it would not typically require a CWA 404 permit. Effects to wetlands resulting from the various relocations and will be the focus of the Wetland Mitigation Plan.
3	4	The FEIS included Mitigation Measure Bot-4, which requires the preparation of a wetland mitigation plan to mitigate impacts to wetlands and waters within the inundation area (conversion of wetlands/waters into lacustrine habitat) and the relocation areas. The measure states that "Reclamation will prepare a conceptual wetland mitigation plan following current USACE guidance and requirements." Please explain how the mitigation plan will address the conversion of wetland/waters (and the subsequent eradication of existing habitat within those	The Wetland Mitigation Plan would not address wetlands conversions. The SLWRI FEIS included the wetland conversions under the mitigation plan description under the assumption that raising the dam would typically require a CWA 404 permit. As a cooperating agency for the Draft SEIS, USACE assisted Reclamation in its determination that raising Shasta Dam would not typically require a CWA 404 permit and that the resulting wetland conversions would not be subject to CWA 404(b)(1).

Letter Number	Comment Number	Comment	Response
		wetlands/waters) within the inundation area, to assure that those impacts resulting from the expansion of Shasta Lake are mitigated as adequately as the impacted wetlands/water covered in the 404(b)(1) analysis, using the guidelines outlined in "Subpart J--Compensatory Mitigation for Losses of Aquatic Resources." Commission staff requests that additional discussion of this issue be included in the SEIS.	
3	5	Supplemental Information on Stormwater and Other Point-Source Discharges In the FEIS's response to comments made by the Central Valley Regional Water Quality Control Board (CVRWQCB-3) regarding sedimentation, Reclamation stated that "[a]t this point in Reclamation's planning process there is substantial uncertainty with respect to the specific location and types of mitigation activities that may be appropriate and or effective." Chapter 3 of the SEIS, Supplemental Information on Stormwater and Other Point-Source Discharges, provides some basic information regarding the preparation of a Stormwater Pollution Prevention Plan, Spill Prevention and Control Plan, and Erosion and Sediment Control Plan; however, specific information is still lacking. Therefore, the SEIS does not fully address Commission staff's concerns for indirect effects downstream of the Project area. Commission staff suggests that more detail be included in the SEIS to facilitate a better understanding of Reclamation's plans to mitigate potential impacts associated with the potential for downstream sedimentation and contamination.	Due to the size of the project and its numerous activities related to the raising of Shasta Dam and the relocations of its various facilities, Reclamation has committed to developing a comprehensive Stormwater Pollution Prevention Plan, Spill Prevention and Control Plan, and Erosion and Sediment Control Plan. Specific information will be developed for these plans when specific construction plans become available. Reclamation has provided a detailed summary of the components of each of these plans within the Draft SEIS.

Letter Number	Comment Number	Comment	Response
3	6	Wild and Scenic River Considerations for McCloud River Although the McCloud River was been determined eligible for listing under the Federal Wild and Scenic Rivers Act (Federal WSRA; Public Law 90-542, as amended; 16 U.S.C. §§ 1271-1287), the California legislature instead passed an amendment to the California Wild and Scenic Rivers Act to protect the river's wild trout fishery below McCloud Dam (Pub. Resources Code, § 5093.542). The U.S. Forest Service evaluation conducted in 1994/95 stated that the lower McCloud River provides outstanding cultural, fisheries, and geologic values, and its corridor has been classified as a highly sensitive visual area. The SEIS (page 5-19) states that existing data shows that over the course of an average year, the transition from lake to river expands up to about 1.7 miles above the McCloud River bridge due to changing water levels in Shasta Lake, to the full pool elevation of 1,070 feet mean seal level (msl), which is the downstream boundary of Segment 4 (lower segment of the McCloud River). The preferred alternative (CP4, CP4A) would reduce the total length of the McCloud River that is eligible for wild and scenic river designation by about 3,550 feet, increase the maximum elevation of the lake to 1,090 feet msl, and increase the inundated area by approximately 60 acres, inclusive of 20 feet on each side of the river. Since the basis for the river's eligibility for the designation includes many resources, Commission staff believes that a discussion of those resources is applicable. For example, the higher lake levels would affect the habitat available to several	The potential impacts to the McCloud River are described in detail throughout Chapter 5 of the Draft SEIS, including impacts to cultural resources and the river's fisheries.

Letter Number	Comment Number	Comment	Response
		salmonid species and other aquatic organisms. In addition, the wider affected river corridor would result in greater effects on cultural resources as large portions of three recorded sites and known Wintu villages would become inundated. The FEIS concludes these impacts remain significant and unavoidable and that with respect to cultural sites, mitigation is not feasible.	
3	7	While we recognize this is a federal Project and document, it is important that Reclamation recognize that California takes its obligations to the indigenous people of the state seriously and expects its federal partners to do so as well. Commission staff disagrees with Reclamation's conclusion that there are no feasible measures that could lessen, avoid, or compensate Native American Tribes for the unavoidable impacts to sacred sites and other cultural resources and lifeways. Staff encourages Reclamation to actively re-engage federally and non-federally recognized Tribes in meaningful government to government consultation pursuant to the Section 106 process and strive to develop and commit to measures that would lessen the blow to Native cultural sites from flooding. Measures could include, for example, committing to various local co-management efforts that would more actively involve Native partners in fisheries and ongoing resource management programs; developing and implementing educational and training opportunities in resource management for Native youth to boost professional and economic opportunities; identifying, considering, and negotiating opportunities for land returns; and other mitigation ideas that are both feasible and just in response to a Project that will significantly adversely affect Tribal resources and values. Commission staff questions the benefits of FEIS and SEIS certification and Reclamation's plans to raise the level of Shasta Lake.	Comment noted. Reclamation has been actively involved in NHPA Section 106 Consultation with all tribes potentially impacted by the project and will continue to fulfill its duties under Section 106.

Letter Number	Comment Number	Comment	Response
11	1	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 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.	Reclamation acknowledges the CA Department of Fish & Wildlife's position on the project and its benefits and impacts.
11	2	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.	See Master Comment Response 1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
11	3	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). [Footnote 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.] 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.	The conversion of wetlands and riverine wetlands into lacustrine does not require consideration under the CWA 404(b)(1) guidelines if the action that causes the conversion would not typically require a CWA 404 permit. As a cooperating agency for the Draft SEIS the USACE reviewed Reclamation's proposed action; that is, the construction and raising of Shasta Dam; and determined that it would not typically require a CWA 404 permit. Effects to wetlands resulting from the various relocations and will be the focus of the Wetland Mitigation Plan. Please refer to Chapter 2 in the SEIS, Supplemental Information on Impacts to Wetlands and other Waters of the U.S.

Letter Number	Comment Number	Comment	Response
11	4	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 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	Reclamation has developed a modeling appendix to include additional information on how the modeling results were developed for the Draft SEIS. Reclamation has included this appendix within the Final SEIS (See Appendix F, Modeling Appendix).

Letter Number	Comment Number	Comment	Response
		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.	
11	5	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 coldwater 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 red 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	The 2019 scenarios reflect the updated regulatory conditions since the 2015 modeling was completed. This notably includes the 2018 COA Amendment and the 2019 NMFS and FWS Biological Opinions and 2020 Record of Decision for the Reinitation of Consultation on the Long Term Operations of the Central Valley Project. In the section cited, it is important to note that these are an increase in minimum flows. Average annual flows below Keswick and Red Bluff Diversion Dam are lower, which is what results in the higher storage. Additional information on the model assumptions and the results are provided in the Final SEIS Modeling Appendix.

Letter Number	Comment Number	Comment	Response
		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.	
11	6	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.	See response to Comment 4, Comment Letter 11. The climate change effects were analyzed and documented in the 2015 SLWRI FEIS.
11	7	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 summarized averages without variance estimation or documentation of methodology obfuscates the proposed Project's true impacts on fisheries resources.	See response to Comment 4, Comment Letter 11.
11	8	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	The Draft SEIS analyzed the changes in effects due to updated regulations since 2015. The conclusion in the Draft SEIS is that the water supply effects are similar to those identified in 2015 when comparing the with- project to the no-project condition.

Letter Number	Comment Number	Comment	Response
		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.	
11	9	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	For more information on downstream impacts see Master Comment Responses DSFISH-1, DSFISH-2, DSFISH-3, DSFISH-4, DSFISH-8, DSFISH-9, and DSFISH-10 in Chapter 33 "Public Comments and Responses" of the 2015 SLWRI FEIS.
11	10	The Department recommends a tiered analyses of biotic and abiotic impacts based on the CalSim II modeling. The most	For impacts to aquatic resources and fisheries see Chapter 11 "Fisheries and Aquatic Ecosystems" of the 2015 SLWRI

Letter Number	Comment Number	Comment	Response
		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): o Channel Velocity (DSM2-HYDRO) o Entry into Interior Delta o Flow Routing into Channel Junctions Winter-run Chinook salmon and Central Valley Spring-run Chinook Salmon: o Current Sacramento River Temperature Model o Martin 2017 Temperature Model o Through-Delta Survival o Delta Passage Model o Newman 2003 (spring-run only) [Footnote 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).] o Perry 2010 [Footnote 3: 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).]	FEIS. Also, Reclamation has developed a modeling appendix to include additional information on how the modeling results were developed for the Draft SEIS. Reclamation has included this appendix within the Final SEIS (See Appendix F, Modeling Appendix).

Letter Number	Comment Number	Comment	Response
		○ Perry Survival Model 2017 [Footnote 4: 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] ○ 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 2013 [Footnote 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).] (outflow) Delta Smelt and Longfin Smelt (habitat related, quantitative/qualitative analyses): ○ Migration impedance and lost reproductive opportunity ○ Changes in larval transport	

Letter Number	Comment Number	Comment	Response
		○ South Delta facilities-entrainment ○ Microcystis ○ Reduction in transport of food web materials ○ Sediment removal and changes in turbidity ○ Changes in abiotic habitat (X2)	
11	11	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 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	See response to Comment 16 of Comment Letter 11. Additional Temperature modeling results are also included in the Modeling Appendix. Based on the model results, the number of years where end of April Shasta storage is greater than 4.1 maf (Tier 1 years) goes from 49 (2015, no project) to 65 (2015, with project) and from 55 (2019 no project) to 68 (2019, with project). As can be seen from the model results, 2019 BiOps result in significantly more years with high Shasta storage compared to 2015 conditions. In addition, Shasta raise adds a significant number of Tier 1 years regardless of the baseline conditions (2015 or 2019).

Letter Number	Comment Number	Comment	Response
		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.	
11	12	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 Winterrun Chinook salmon and reduce survival for out-migrating yearling Central Valley Spring-run Chinook salmon smolts.	Reclamation acknowledges that the modeling results in the 2019 scenario decrease some flows in some months that would have adverse impacts on winter-run and spring-run juvenile rearing and outmigration in the Sacramento River below Keswick Dam. However, the purpose of the Draft SEIS is not to determine whether the 2019 scenario itself contains significant impacts; rather, it is to compare the 2019 scenario to the 2015 scenario and determine if the impacts are significantly different than those already described. In this case, Reclamation found that the changes in flows under the 2019 scenario would not significantly alter the conclusions of impacts described under the 2015 scenario and within the 2015 SLWRI FEIS.

Letter Number	Comment Number	Comment	Response
		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).	
11	13	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.	Reclamation acknowledges that redd de-watering can occur anytime salmonids construct redds during a certain flow and then the flow is reduced significantly for any reasons. This statement is a comparison between the 2019 scenario and 2015 scenario; see response to comment 12 of comment letter 11 for further discussion on the purpose of the comparisons.
11	14	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	The primary purpose of the description provided is to compare the 2019 and 2015 scenarios and determine if there is a significant difference in the effects already described within the 2015 scenario and the 2015 SLWRI FEIS. The description notes an increase in flows throughout the year; therefore Winter-run Chinook salmon survival would benefit under the 2019 scenario. Noting that the largest differences occur in June through August is for descriptive purposes of the differences in flows

Letter Number	Comment Number	Comment	Response
		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 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.	between the 2019 and 2015 scenarios only and not a determination of significant benefits for Winter-run Chinook salmon.
11	15	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.	See response to Comment 12, Comment Letter 11 for a discussion on the purpose of comparing the 2019 scenario to the 2015 scenario.
11	16	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	The Shasta Lake storage increase of less than 2% cited here is comparing the 2015 and 2019 project alternatives. When comparing the 2019 project alternative to the no-project condition, Shasta end of September storage is 312

Letter Number	Comment Number	Comment	Response
		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.	TAF higher in Dry and Critical years, which is a 14% increase. Under the 2015 simulation Shasta storage in Dry and Critical years was 264 TAF higher (a 13.5% increase). The difference between the 2019 and 2015 being 0.5%, within the 2% difference cited. Additional information is provided in the Modeling Appendix of the Final SEIS.
11	17	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	As described above, the purpose of the Draft SEIS is to compare the 2019 scenario to the 2015 scenario and determine if the effects are significantly different. Given the analysis presented within the Draft SEIS and further described within the modeling appendix, Reclamation has determined that the effects to Winter Run Chinook Salmon and Central Valley steelhead will not be significantly different under the 2019 scenario than they were under the 2015 scenario; which is to say that there remains a net benefit to the species; and compliance with the BiOps in addition to the project demonstrates a continued net benefit to the species of concern.

Letter Number	Comment Number	Comment	Response
		salmon redds would be subject to dewatering through the end of egg and embryo incubation.	
11	18	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. 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	See Master Comment Response 1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River. Also, please see the discussion of regulatory framework and impacts analysis in Chapter 5 of the SEIS.

Letter Number	Comment Number	Comment	Response
		Alternatives with that law and objectives must be disclosed in the SEIS.	
11	19	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.	See Master Comment Response 1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River.
11	20	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."	See Master Comment Response 1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		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).) 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	

Letter Number	Comment Number	Comment	Response
		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.	
11	21	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 scope and purpose of the Draft SEIS does not include the development of new alternatives. For more information on the range of alternatives see Master Comment Responses ALTR-1, ALTD-1, ALTD-2, and ALTS-1 in Chapter 33 "Public Comments and Responses" of the 2015 SLWRI FEIS.

Letter Number	Comment Number	Comment	Response
11	22	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.	Effects to the McCloud River and its fisheries are discussed within Chapter 5 of the Draft SEIS.
11	23	Mitigation Measure WASR-3 Mitigation Measure WASR-3's purpose is to, "Develop and Implement a Comprehensive Multiscale Wild Trout Fishery Protection, Restoration and Improvement Program Within the Lower 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	Both the FEIS and SEIS fully comply with NEPA and its implementing regulations by fully considering mitigation. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		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.	
11	24	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 Fisheries[Footnote 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.] 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,	See FISHPASS-1 within Chapter 33 "Public Comments and Responses" of the 2015 SLWRI FEIS for a discussion on fish passage above Shasta Dam. Recent developments on the High-head Dam Juvenile Salmonid Collection System project do not change the conclusions and discussions presented in the 2015 SLWRI FEIS. As FISHPASS-1 explained: "The SLWRI does not include a fish passage component into any of the action alternatives, and would not mitigate, nor is required to mitigate, for past actions that blocked fish from continuing the upstream migration."

Letter Number	Comment Number	Comment	Response
		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 longterm 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.	
11	25	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	Effects to the McCloud River and its fisheries are discussed within Chapter 5 of the Draft SEIS. Please also refer to Master Comment Response ESA-1, ESA Compliance.

Letter Number	Comment Number	Comment	Response
		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.	
12	1	The State Water Resources Control Board (State Water Board or Board) submits the following comments on the Shasta Lake Water Resources Investigation (SLWRI) Draft Supplemental Environmental Impact Statement (Draft SEIS). As discussed in detail below, it is questionable whether this project may move forward under current legal requirements and, if so, whether the Draft SEIS and prior Final Environmental Impact Statement (FEIS) are adequate for that purpose. The Draft SEIS overestimates the potential benefits the proposed Dam raise would have to anadromous fish, and underestimates the threat of significant harm the proposed Project would have to water quality, fish and wildlife, and tribal sacred sites, among other impacts. These issues should all be addressed before the environmental documentation for this project is finalized.	Reclamation acknowledges the State Water Resources Control Board review of and comments on the Draft SEIS. This comment suggests that the SEIS is legally inadequate. Reclamation disagrees with the comment.
12	2	The stated purpose and need for the Draft SEIS is to supplement the FEIS is to "provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by [the U.S. Army Corps of Engineers (USACE)] and [U.S. Environmental Protection Agency (USEPA)] on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns." Updates to regulatory requirements include recent changes to the applicable Biological Opinions (BiOp) for CVP operations from the National Marine Fisheries Service (NMFS) and U.S.	The Draft SEIS considers the regulatory requirements mentioned by the Board, including the 2019 BiOps and the amended COA. These regulatory requirements are considered under the 2019 scenario within Chapter 4 of the Draft SEIS. The intent of the Draft SEIS is not to provide a full detailed analysis on effects to the environment that were already described within the 2015 SLWRI FEIS. Instead, the Draft SEIS uses updated modeling to determine if the projected impacts of the project are significantly different than those described within the 2015 SLWRI FEIS. These effects are not significantly different

Letter Number	Comment Number	Comment	Response
		Fish and Wildlife Service (USFWS) from 2009 and 2008 versions, respectively, to updated versions finalized in 2019. Other updates to operating rules include recent updates to the Coordinated Operations Agreement (COA). As discussed further below, the combined effects of these changes and the proposed project have the potential to have additional significant impacts on the environment. However, the Draft SEIS makes no attempt to evaluate these effects and instead includes an extremely brief and cursory analysis of a limited set of issues. As described in more detail below, the Draft SEIS should be revised to address these issues and recirculated for public comment.	than the effects already disclosed within the 2015 SLWRI FEIS.
12	3	In addition, the Draft SEIS should describe how the current operational rules would interact with the proposed project, including for temperature management, spring pulse flows, and other requirements and whether there are additional changes to operations rules that should be evaluated. If there are any other updates to the modeling or operating rules, they should also be clearly described.	See response to comment 12-2 and see the Modeling Appendix for additional information on modeling for changes under the 2019 scenario.
12	4	California Wild and Scenic Rivers Act The California Wild and Scenic Rivers Act (Pub. Res. Code, § 5093.50 et seq.) precludes the State and Regional Water Boards from issuing regulatory approvals for the enlargement of Shasta Dam and Reservoir. The California Wild and Scenic Rivers Act includes a section specifically applicable to the McCloud River, which flows into Shasta Reservoir. Subdivision (c) of section 5093.542 of the Public Resources Code provides: Except for participation by the Department of Water Resources in studies involving the technical and economic feasibility of	See Master Comment Response 1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		enlargement of Shasta Dam, no department or agency of the state shall assist or cooperate with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government 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. Section 5093.542 prohibits any agency of the state from assisting or cooperating by "license, or otherwise" with the planning or construction of any dam, reservoir, diversion, or other impoundment facility that could adversely affect the free-flowing character of the McCloud River or its wild trout fishery. This language bars the State Water Board and other agencies of the state from issuing any permit or other approval for any of the action alternatives evaluated as part of the SLWRI because all of the action alternatives evaluated in the FEIS, including the preferred project that is also evaluated in the Draft SEIS, "could have an adverse effect on the free-flowing condition of the McCloud River" within the meaning of section 5093.542. All of the action alternatives would increase the storage capacity of Shasta Reservoir. If additional water is impounded using that increased storage capacity, the areas affected would include the reach of the McCloud River protected under section 5093.542, converting the affected area from a free-flowing stretch of river to impounded waters. Chapter 5.5 of the Draft SEIS confirms that the enlargement of Shasta Dam and Reservoir would reduce the currently free-flowing section of the McCloud River by 1,470 to 3,550 feet, depending on the alternative.	

Letter Number	Comment Number	Comment	Response
12	5	In Section 5.1 of the Draft SEIS, Reclamation acknowledges that California has expressed the opinion that section 5093.542 prohibits the State from being involved in the planning or construction of the enlargement of Shasta Dam and Reservoir. Although Reclamation states that California's interpretation of section 5093.542 is not relevant to the NEPA analysis, section 5.1 of the Draft SEIS addresses section 5093.542 "as background information." Reclamation interprets the narrow exception to section 5093.542, subdivision (c), which allows the Department of Water Resources (DWR) to participate in studies concerning the technical and economic feasibility of the enlargement of Shasta Dam, to apply more broadly to any state agency's assistance or cooperation with the enlargement of Shasta Dam. Reclamation interprets the prohibition against State cooperation or assistance with any project that could adversely affect the McCloud River to apply only to projects other than the enlargement of Shasta Dam. This interpretation is inconsistent with the plain language of the statute, however, which provides only a narrow exception that allows DWR to participate in feasibility studies concerning enlargement of the dam. Otherwise, section 5093.542 prohibits any state agency, including the State Water Board, from assisting or cooperating in any project, including enlargement of Shasta Dam, that could adversely affect the free-flowing condition of the McCloud River or its wild trout fishery. Accordingly, the State and Regional Water Boards are precluded from issuing the regulatory approvals that would be required in order to implement the project, and the project is therefore legally infeasible.	See Master Comment Response 1.3.4. CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
12	6	Clean Water Act Section 404(r) Enlargement of Shasta Dam and Reservoir cannot proceed without various water quality and water right approvals, as discussed in more detail below. One of the stated purposes of the Draft SEIS is to provide information relevant to the application of Clean Water Act section 404(r) (33 U.S.C. § 1344(r)) to the SLWRI. If applicable, section 404(r) would exempt the enlargement of Shasta Dam and Reservoir from certain Clean Water Act permitting requirements. Certain prerequisites must be satisfied in order for section 404(r) to apply, however, and section 404(r) would not exempt the enlargement of Shasta Dam and Reservoir from all permitting requirements, as discussed below. Section 404(r) provides in relevant part: The discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress . . . is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 1311(a) or 1342 of this title (except for effluent standards or prohibitions under section 1317 of this title), if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(1) of this section, is included in an environmental impact statement for such project pursuant to the National Environmental Policy Act of 1969 and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to	See Master Comment Response 1.3.1. CWA-1 - CWA 404 (r) Compliance.

Letter Number	Comment Number	Comment	Response
		either authorization of such project or an appropriation of funds for such construction. In order for section 404(r) to apply to the enlargement of Shasta Dam and Reservoir, the effects of the discharge of dredged or fill material attributable to construction would need to be evaluated in the NEPA document with consideration given to the section 404(b)(1) Guidelines,1 the NEPA document would need to be submitted to Congress, and Congress would need to specifically authorize the project. However, the Draft SEIS (page 1-2) states that "Congress has not authorized construction or appropriated funds for construction" of the proposed project. If Congress declines to authorize the project, section 404(r) would not apply.	
12	7	While section 404(r), when applicable, waives certain Clean Water Act requirements, this waiver is narrow and does not extend to all relevant state and federal permitting requirements. If section 404(r) were to apply to the enlargement of Shasta Dam and Reservoir, then the discharge of dredged or fill material would not require a permit from the USACE under section 404 of the Clean Water Act or a National Pollutant Discharge Elimination System (NPDES) permit under Clean Water Act section 402 (unless the exception for effluent standards or prohibitions under section 1317 applies). A section 404(r) waiver is limited, however, to the regulation of the discharge of dredged or fill material under sections 404, 402, and 301(a) (33 U.S.C. § 1311(a)) of the Clean Water Act. By its terms, section 404(r) does not extend to the discharge of pollutants other than dredged or fill material, or to the regulation of dredged or fill material under state law. Similarly, section 404(r) does not waive other state regulatory	See Master Comment Response 1.3.1. CWA-1 - CWA 404 (r) Compliance. Reclamation has complied with all applicable law, and will continue to do so as this Project proceeds.

Letter Number	Comment Number	Comment	Response
		requirements, such as water right requirements. (33 U.S.C. § 1344(t); 40 C.F.R. § 232.3(e) ["Federal projects which qualify under the criteria contained in section 404(r) of the Act are exempt from section 404 permit requirements, but may be subject to other State or Federal requirements."].) In addition to water quality and water right requirements, the proposed project must also comply with other state laws such as the California Endangered Species Act (CESA). The proposed project could affect multiple state-listed species and may require CESA related approvals from the California Department of Fish and Wildlife (CDFW).	
12	8	Water Quality Approvals Whether or not section 404(r) applies, the enlargement of Shasta Dam and Reservoir would require several water quality approvals. Unless section 404(r) applies, as discussed above, the enlargement of Shasta Dam and Reservoir would require a permit under section 404 of the Clean Water Act for the discharge of dredge and fill material to waters of the United States, and a corresponding water quality certification under section 401 of the Clean Water Act. Even if section 404(r) applies, Reclamation would need to obtain waste discharge requirements under the Porter-Cologne Water Quality Control Act for the discharge of dredged or fill material to waters of the State. Regardless of whether section 404(r) applies, the project would also require one or more NPDES permits under Clean Water Act section 402 (33 U.S.C. § 1342) for storm water discharges and discharges from dewatering activities associated with construction activities. If section 404(r) does not apply to the enlargement of Shasta	See Master Comment Response 1.3.1. CWA-1 - CWA 404 (r) Compliance. Reclamation has complied with all applicable law, and will continue to do so.

Letter Number	Comment Number	Comment	Response
		Dam and Reservoir, then a Clean Water Act section 404 Dredge and Fill Permit from the USACE would be required because project construction would result in the discharge of dredged or fill material to Waters of the United States. If a section 404 permit is required, then section 401 of the Clean Water Act (33 U.S.C. § 1341) would also apply. Section 401 requires every applicant for a federal license or permit which may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the Clean Water Act, including water quality standards and implementation plans promulgated pursuant to section 303 of the Clean Water Act (33 U.S.C. § 1313). Clean Water Act section 401 directs the agency responsible for water quality certification (certification) to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirements of state law. In this instance, the State Water Board is the state agency responsible for certification. (Wat. Code, § 13160; see Cal. Code Regs. tit. 23, § 3855, subd. (b)(1)(B).) In taking a certification action, the State Water Board must either: 1) issue an appropriately conditioned certification; or 2) deny the certification request. (Cal. Code Regs., tit. 23, § 3859.) Even if a section 404 permit is not required, the discharge of dredged or fill material to waters of the State (which are defined to include isolated wetlands and other waters that may not meet the Clean Water Act definition of Waters of the United States) is regulated under the Porter-Cologne Water	

Letter Number	Comment Number	Comment	Response
		Quality Control Act (Wat. Code, § 13000 et seq.). Before discharging dredged or fill materials to waters of the State, Reclamation would be required to file a report of waste discharge with the Central Valley Regional Water Board pursuant to section 13260 of the Water Code, and obtain waste discharge requirements or a waiver. Reclamation would also need to comply with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Materials to Waters of the State (https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/procedures_conformed.pdf) (State Wetlands Policy), which became effective on May 28, 2020. The enlargement of Shasta Dam and Reservoir would also require NPDES permitting under Clean Water Act section 402 (33 U.S.C. § 1342). In California, the NPDES program is administered by the State Water Board and Regional Water Boards. (Wat. Code, § 13370 et seq.) To authorize storm water discharges from construction activity, a project proponent must either apply for an individual NPDES permit or obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, General Permit Order 2009-0009-DWQ, NPDES Permit No. CAS000002 (https://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml). Additionally, discharges from dewatering activities may require coverage under the General Order for Limited Threat Discharges to Surface Water, Order R5-2016-0076-01, NPDES Permit No. CAG995002 (https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf). For	

Letter Number	Comment Number	Comment	Response
		either discharge activity, the Regional Water Board may determine an individual NPDES permit is more appropriate than general permit coverage. The Draft SEIS incorrectly assumes that the need to obtain an NPDES permit for all discharges from construction activities would be waived under section 404(r), and proposes to voluntarily comply with an outdated NPDES permit [Footnote 2: In addition, the Central Valley Regional Water Board's Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters (Order R5-2013-0074, NPDES Permit No. CAG995001) was rescinded on December 5, 2019, and the Central Valley Regional Water Board is no longer accepting applications for coverage under the low threat general order.]. The Draft SEIS states (page 3-3) that: "The identified discharges would typically be covered under the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters NPDES General Permit No. CAG995001, administered by the [Central Valley Regional Water Board]. Reclamation will follow the permit conditions outlined within the NDPES General Permit No. CAG995001 in lieu of applying for permit coverage to address state water quality standards." As explained above, section 404(r) would only apply to the discharge of dredge and fill material and would not obviate the need for an NPDES permit that covers the discharge of stormwater and other pollutants attributable to construction activities. In summary, even if section 404(r) applies to the proposed project, Reclamation would be required to obtain water quality approvals from the State and Regional Water Boards prior to	

Letter Number	Comment Number	Comment	Response
		project implementation. In addition, the project would require a water right approval, as discussed below. Unless section 5093.542 of the Public Resources Code is amended, however, the State and Regional Water Boards would be precluded from issuing any approvals for the project. In addition to State and Regional Water Board approvals, the proposed project must comply with state law and may require additional approvals from other state agencies, such as CESA related approvals from CDFW.	
12	9	Water Right Time Extensions In addition to the water quality approvals described above, the enlargement of Shasta Dam and Reservoir is not authorized without time extensions for several water right permits. Water diversion and storage at Shasta Dam is regulated by the State Water Board pursuant to Reclamation water right Permits 12720, 12721, 12722, 12723, and 12724 (Applications 5625, 5626, 9363, 9364, and 9365, respectively). Reclamation's water right permits include a deadline to complete construction work by December 1, 1985, and a deadline to complete application of the water to beneficial use by December 1, 1990. Construction activities involving expanding the capacity of Shasta Reservoir, which would allow for an increase in beneficial use of water under the permits, cannot commence unless and until the State Water Board approves extensions of time for Reclamation's water rights. (Wat. Code, §§ 1397, 1398.) Reclamation previously filed petitions with the State Water Board requesting extensions of time until December 2030 to complete construction and use of water pursuant to the water right permits. The petitions have been publicly noticed and numerous protests of the proposed time extensions remain	Reclamation will comply with all applicable law; however, issues regarding Reclamation's state water rights permits are beyond the scope of the SEIS.

Letter Number	Comment Number	Comment	Response
		active. California Environmental Quality Act (CEQA) compliance is also necessary before the State Water Board can approve the time extensions. These issues would need to be resolved before a time extension could possibly be granted. And any extension approved by the State Water Board would have to be consistent with section 5093.542 of the Public Resources Code.	
12	10	Adequacy of the Environmental Impacts Analysis The Draft SEIS includes a cursory, incomplete, and inadequate assessment of the potential environmental impacts of the project when considered in combination with changes to applicable BiOps and the COA that prevents meaningful review and comment. The analysis is supported by very minimal, broad, and selective summary statistics that provide limited meaningful information regarding the potential impacts of the project. Those impacts could be substantial when combined with the effects of the updated COA and BiOps, which allow for significantly greater exports from the Bay-Delta watershed by the CVP. Late in the comment period, the State Water Board was forwarded additional modeling information for the project, but Reclamation has not made available the assumptions and other information necessary to consider that modeling. The modeling results indicate little effect (including little benefit) from the project compared to the no action alternative (NAA) evaluated in the Draft SEIS. However, without the associated assumptions and other relevant information on how that modeling was conducted, it is impossible to fully assess the results.	See comment response 12-2.
12	11	Given the magnitude of the project and additional flexibility that was added as part of the recent changes to the COA and	See comment response 12-2.

Letter Number	Comment Number	Comment	Response
		BiOps, it appears likely that significant impacts from those combined effects could occur. For example, based on a limited review of the aforementioned modeling information, the changes to the COA and BiOps would be expected to result in a long-term average annual reduction in Delta outflow of approximately 750 TAF. The cumulative impacts of the COA and BiOps and further reductions to Delta outflow and associated impacts likely to result from the enlargement of Shasta Dam and Reservoir should be evaluated.	
12	12	Adequacy of the Quantitative Analyses The 2015 FEIS evaluated various project alternatives with dam-raise heights of 6.5, 12.5, or 18.5 ft and different operating assumptions, all of which included the 1986 COA and 2008 and 2009 BiOps, relative to a NAA that also included the 1986 COA and 2008 and 2009 BiOps. The Draft SEIS includes the evaluation of an 18.5 ft dam raise with the 2018 COA and 2019 BiOps against a NAA that includes the 2018 COA and 2019 BiOps. This change in the NAA assumptions for the COA and BiOps masks the combined effects of the project and the 2018 COA and 2019 BiOps, which are likely to be substantial as indicated by the comparison of Delta outflow under the two NAA scenarios in Table 1, produced from the aforementioned modeling information forwarded to the Board. Similarly, substantial changes in export operations are likely to result in impacts to fish populations that were not evaluated in the FEIS. The Draft SEIS should be updated to include a full evaluation of the effects of the project compared to the NAA that was evaluated in the 2015 FEIS for the different alternatives. This analysis should include an evaluation of changes in Delta outflows, exports, Old and Middle River reverse flows,	This comment misunderstands the referenced documents: "This change in the NAA assumptions for the COA and BiOps masks the combined effects of the project and the 2018 COA and 2019 BiOps, which are likely to be substantial as indicated by the comparison of Delta outflow under the two NAA scenarios in Table 1, produced from the aforementioned modeling information forwarded to the Board." While Reclamation did model the 2019 scenario (which includes the 2019 BiOps and the amended COA) for the NAA (No Action Alternative), Reclamation also modeled the NAA for the 2015 Scenario (which includes the 2008/2009 BiOps and the 1986 COA). The Draft SEIS analyzes and makes comparisons under the two scenarios in order to determine the magnitude of the differences between them and make a significance determination. For more information see the Modeling Appendix included within the Final SEIS.

Letter Number	Comment Number	Comment	Response
		Sacramento River flows, reservoir storage, water temperatures, and salinity and associated effects on fish and wildlife, water quality, and other applicable resource areas. Table 1. Annual Delta Outflow in Thousand Acre-Feet by Sacramento 40-30-30 Water Year Type, FEIS vs. Draft SEIS No Action Alternatives	
12	13	The SEIS presents limited modeling information and should be updated to include a complete summary of numeric modeling results. The description of modeling results consists of limited and unclear narrative information for the preferred alternative under the 2015 and 2019 modeled scenarios, and includes a discussion of results for limited parameters and locations (Shasta Lake storage, Keswick Dam releases, Sacramento River flows, Delta outflow, and water temperatures). Tables or other standard summaries of results are not provided for these parameters and no results are provided for other locations that could be affected by the project or for other parameters (including Delta exports, salinity, reverse flows and indicators of effects on fisheries). In addition, no appendices or other reference materials related to the modeling and quantitative analyses and associated assumptions were provided.	Reclamation has provided additional modeling information which includes tabulation of the full numerical results within the Modeling Appendix to the Final SEIS.
12	14	The Draft SEIS presents flow comparisons between modeled scenarios in terms of percentage differences without clearly identifying the baseline of comparison or the magnitude (volume) of the differences. For example, in presenting the differences in Delta outflows (page 4-5), the Draft SEIS states, "Delta outflow results for the 2019 scenario and 2015 scenario were within 2% of one another." It is not clear which scenarios were compared (NAA or the preferred alternative) or how the	Reclamation has provided additional modeling information which includes tabulation of the full numerical results within the Modeling Appendix to the Final SEIS. Reclamation has clarified the language within the Draft SEIS when comparisons are made.

Letter Number	Comment Number	Comment	Response
		difference was derived, and no information is provided for the total volume of water associated with the difference. A similar analysis was presented for Shasta Lake storage (page 4-2), which states that "compared to the 2015 scenario…the 2019 scenario with an 18.5-ft raise would increase Shasta Lake storage by 2% or less…" In addition, some of the changes in flows between the 2015 scenario and the 2019 scenario were substantial, but the reason for those changes is not explained. For example, for the minimum Sacramento River flows below Keswick Dam in June, the Draft SEIS states (page 4-3) "The 2015 scenario would decrease flows by 38.9%, compared to a decrease of flows of 0.4% under the 2019 scenario." The Draft SEIS does not explain what is driving this significant change in results and again no reference materials are provided to allow for that evaluation by members of the public. These issues should be addressed.	
12	15	Adequacy of Water Quality Impact Analysis As stated in the Draft SEIS, Reclamation intends to use the Draft SEIS in combination with the SLWRI FEIS and the July 2015 SLWRI Feasibility Report to demonstrate compliance with Clean Water Act section 404(r) and consistency with the section 404(b)(1) Guidelines. Those documents do not contain sufficient information, however, concerning the effects of the discharge of dredged or fill material as part of the construction of the enlargement of Shasta Dam and Reservoir, nor do those documents contain the analysis required by the 404(b)(1) Guidelines.	Reclamation incorporated EPA and USCACE input as cooperating agencies in the Draft SEIS with EPA in order to specifically address the requirements under CWA 404(r) and CWA 404(b)(1), which EPA has deemed sufficient in their comment response to the Draft SEIS (See EPA Comment Response to the Draft SEIS).
12	16	Subpart B of the Guidelines establishes four restrictions on discharges that must be satisfied in order to make a finding	See response to comment 12-15.

Letter Number	Comment Number	Comment	Response
		that a proposed discharge of dredge or fill material complies with the Guidelines. In summary, those four restrictions prohibit discharges (1) if a practicable alternative would reduce adverse impacts on the aquatic environment, (2) if the discharge would cause or contribute to a violation of certain legal standards, including applicable State water quality standards, (3) if the discharge would cause or contribute to significant degradation to Waters of the United States, or (4) if practicable and appropriate steps have not been taken to minimize impacts. (40 C.F.R. §§ 230.4, 230.10(a)-(d).) Section 230.11 of the Guidelines requires certain factual determinations to be made concerning the effects of the discharge(s), and those factual determinations are required to be used in determining compliance with the four restrictions on discharges. (40 C.F.R § 230.11.) Specifically, the Guidelines require factual determinations concerning the effects of the discharge(s) on the physical, chemical, and biological characteristics of the aquatic ecosystem, including the effects of the discharge(s) on: (1) physical substrate, (2) water circulation, fluctuation, and salinity, (3) suspended particulates/turbidity, (4) contaminants, and (5) the aquatic ecosystem and organisms. The Guidelines also require certain factual determinations concerning the proposed disposal sites and an analysis of the cumulative and secondary effects on the aquatic ecosystem. (Id., §§ 230.11, 230.20-230.54.) Reclamation has conducted a preliminary jurisdictional determination of wetlands and other Waters of the United States that could be impacted by the enlargement of Shasta Dam and Reservoir and quantified the number of acres that	

Letter Number	Comment Number	Comment	Response
		would be impacted by the various relocation projects. In addition, Chapter 2.3 of the Draft SEIS sets forth a framework for avoiding and minimizing the impacts of relocating facilities on wetlands and other waters of the United States. However, the FEIS and Draft SEIS do not include detailed information concerning the effects of the discharge. Also lacking was sufficient information to make the factual determinations described in section 230.11 of the 404(b)(1) Guidelines, and to determine whether the proposed discharges would be consistent with the four restrictions on discharges contained in the Guidelines.	
12	17	The Draft SEIS states (page 2-4) that "All impacts to wetlands and other [Waters of the United States] will be mitigated (see Chapter 2.5 for a description of the mitigation plan)." However, the Wetland Mitigation Plan described in Chapter 2.5 is limited to compensatory mitigation for wetlands impacted as a result of project relocations, including roads, dikes, bridges, and recreation facilities. Additional wetland impacts are identified in the FEIS, including a loss of jurisdictional wetlands caused by flooding the impoundment areas. The Wetland Mitigation Plan described in the SEIS should be expanded accordingly to mitigate for all impacts to wetlands. In addition, the wetland mitigation measures described in the FEIS and the Wetland Mitigation Plan described in the Draft SEIS should be updated to recognize the need to comply with the State Water Board's new State Wetlands Policy, referenced above.	The conversion of wetlands and riverine wetlands into lacustrine does not require consideration under the CWA 404(b)(1) guidelines if the action that causes the conversion would not typically require a CWA 404 permit. As a cooperating agency for the Draft SEIS the USACE reviewed Reclamation's proposed action; that is, the construction and raising of Shasta Dam; and determined that it would not typically require a CWA 404 permit. Effects to wetlands resulting from the various relocations were considered under the CWA 404(b)(1), and will be the focus of the Wetland Mitigation Plan.
12	18	In addition to impacts to wetlands, the FEIS recognizes that the proposed project would result in short-term and long-term water quality impacts attributable to run-off and shoreline erosion, and identifies the following water quality mitigation	Due to the size of the project and its numerous activities related to the raising of Shasta Dam and the relocations of its various facilities, Reclamation has committed to developing and implementing a comprehensive multi-

Letter Number	Comment Number	Comment	Response
		measures: • Mitigation Measure WQ-1: Develop and Implement a Comprehensive Multi-scale Sediment Reduction and Water Quality Improvement Program Within Watersheds Tributary to the Primary Study Area • Mitigation Measure WQ-6: Prepare and Implement a Site-Specific Remediation Plan for Historic Mine Features Subject to Inundation in the Vicinity of the Bully Hill and Rising Star Mines The water quality mitigation measures are lacking in detail, and it is unclear how the mitigation measures would adequately minimize potential adverse impacts on water quality. Development of any water quality protection or mitigation plans must include consultation with the State Water Board or Central Valley Regional Water Board. To comply with the Clean Water Act and Porter-Cologne Water Quality Control Act, Reclamation must clearly define the mitigation actions it will implement in the proposed water quality plans, and how those actions will measurably mitigate the impacts of the proposed project. Based on the limited information included in the Draft SEIS for these mitigation measures, it is not at all clear that they will be effective or adequate to reduce these water quality impacts to a less than significant level.	scale sediment reduction and water quality improvement program and a site-specific remediation plan for historic mine features subject to inundation in the vicinity of the Bully Hill and Rising Star mine. Specific information will be developed for these plans when specific construction plans become available. Reclamation has provided a detailed summary of the components of each of these plans within the 2015 SLWRI FEIS.
12	19	The proposed project could specifically result in long-term water quality effects from increased sedimentation and heavy metals (i.e., mercury, copper, zinc, etc.) that are not fully addressed in the FEIS or Draft SEIS. The FEIS does acknowledge (page 7-86) that "[…] two depositional features associated with historic copper mining and smelting operations are immediately adjacent to the shoreline of Shasta Lake in the	Reclamation addressed these comments within the 2015 SLWRI FEIS. See comment responses CVRWQCB-1, 2, 3, 4, and Master Comment Response WQ-1, "Remediation of Abandoned Mines in the Shasta Lake Area."

Letter Number	Comment Number	Comment	Response
		general vicinity of the Bully Hill Mine. As mapped, these two sites appear to have about 7,300 cubic yards of material that could be subjected to shoreline and surficial erosional processes, with a high potential for delivery to Shasta Lake" and identifies that Mitigation Measure WQ-6 could reduce the impact to a less-than-significant level. However, as stated above, Mitigation Measure WQ-6 is lacking in detail and it is unclear how this mitigation measure will adequately minimize potential adverse water quality impacts. In addition, other long-term water quality effects related to mercury and pollutant metals could occur as a result of the proposed project and are not addressed in the FEIS or Draft SEIS. The Central Valley Regional Water Board's 2013 comments on the SLWRI Draft EIS (Attachment 2) included comments related to these impacts that have not been addressed in the Draft SEIS and should be. Specifically, the Central Valley Regional Water Board indicated that the transport of additional suspended sediment from Shasta Lake into the Sacramento River may elevate concentrations of pollutant metals in the Upper Sacramento River and could cause violations of water quality standards. The Central Valley Regional Water Board's 2013 comments are reiterated and incorporated by reference. Before finalizing the environmental documentation for this project, the potential for an increase in pollutant metals concentrations in Shasta Lake and downstream in the Sacramento River should be thoroughly evaluated and documented.	
12	20	Project Impacts Downstream of Shasta Dam The discussion of potential impacts to fisheries and other resources downstream of Shasta Dam included in the Draft SEIS is cursory and inadequate. The analysis only includes a	See response to comment 12-2.

Letter Number	Comment Number	Comment	Response
		limited discussion of winter-run Chinook salmon and steelhead and does not discuss potential effects to any other aquatic species, including other salmonid and anadromous fish species (spring, late-fall, and fall run Chinook salmon, and sturgeon), estuarine species (Delta smelt, longfin smelt, Sacramento splittail), or other ecologically important fish and prey species. In addition, as discussed above, the analysis does not address the full effects of the project combined with the changes to the BiOps and COA. When combined, the potential impacts to fish and wildlife would be significant as discussed above and should be fully evaluated and disclosed.	
12	21	As described in the peer-reviewed Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows produced by State Water Board staff in 2017 (https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf) in support of potential updates to the Bay-Delta Plan and scientific literature referenced in that report, available scientific knowledge indicates that decreasing freshwater outflows, particularly during the winter and spring, and increasing exports and associated reverse flows in the interior Delta are expected to have a negative impact on the survival and abundance of native fish species, including threatened and endangered species. As discussed above, the proposed project when combined with the updated COA and BiOps would be expected to reduce Delta outflows substantially. The Draft SEIS does not address these impacts in any way and should be	See response to comment 12-2.

Letter Number	Comment Number	Comment	Response
		updated to do so and recirculated for public review and comment.	
12	22	In addition, the Draft SEIS should discuss the combined effects of the project with the changed BiOps and COA on winter-run and fall-run Chinook salmon redd dewatering. The Draft SEIS states (page 4-6) that "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 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." The Draft SEIS does not indicate the what the flow levels would be in June through August or other months or discuss how these higher flows would affect redd dewatering for winter-run and fall-run Chinook salmon as flows are ramped down in the summer and fall. Instead, the Draft SEIS assumes without basis that these higher flows would only benefit winter-run Chinook salmon. Impacts from red dewatering already occur under existing conditions. With higher flows during the summer, redd dewater impacts could be exacerbated. These potential impacts should be fully evaluated and disclosed in the Draft SEIS.	See response to comment 12-2 and the Modeling Appendix for additional modeling information.
12	23	The Draft SEIS also does not discuss the combined effects of the project with the changes to the BiOps and COA on the natural hydrograph and associated functional flows. Specific issues that should be addressed include the effects of the project combined with the updates to the BiOps and COA on floodplain inundation, channel maintenance flows, flushing of	See response to comment 12-2 and the Modeling Appendix for additional modeling information.

Letter Number	Comment Number	Comment	Response
		gravels, pulse flows, discouragement of nonnative species (include aquatic vegetation and nonnative fish species), and other functions. The proposed project combined with the changes to the BiOps and COA would further impair the hydrograph by reducing natural winter and spring flows in the river and out of the Delta and increasing summer flows on the river, but not out of the Delta. The impacts of these changes on the magnitude, duration, and frequency of the functions identified above should be fully evaluated and disclosed in the Draft SEIS.	
12	24	Project Impacts Upstream of Shasta Dam The proposed project would have numerous significant impacts on the McCloud River and its native and residence fish and other aquatic and riparian species and the wild and scenic river attributes of the McCloud River. However, the Draft SEIS only proposes limited mitigation to fund the planning for a trout fishery protection plan. Details related to the plan are not provided and it is not clear that the mitigation measure includes commitments for full implementation of the plan. Further, it is not clear that the impacts from the project on resident trout can be fully mitigated and whether the plan would provide mitigation for other impacts to other species, water quality, and other resource areas. The Draft SEIS also minimizes the effects the proposed project and alternatives would have on resident trout species on the McCloud River. While the Draft SEIS indicates that the reach of the McCloud River that would be affected by inundation under the preferred project would almost double (from 36 acres to 60 acres), the Draft SEIS indicates that impacts to migration of resident trout	For additional information on the effects to the McCloud River fisheries and the proposed mitigation see Chapter 5 of the Draft SEIS. The full details of any mitigation plan will need to be developed once more information is available; the Draft SEIS provides a framework for developing the proposed mitigation.

Letter Number	Comment Number	Comment	Response
		species would not be affected and that predator species would not be affected by this increased inundation.	
12	25	Further, the enlargement of Shasta Reservoir would reduce the extent of potential spawning and rearing habitats in the upper Sacramento River, McCloud River, and other tributaries upstream of Shasta Reservoir that are considered prime habitats for the reintroduction of winter-run and spring-run Chinook salmon and steelhead (Sacramento Valley Salmon Resiliency Strategy, 2017 available at https://resources.ca.gov/CNRALegacyFiles/docs/Salmon-Resiliency-Strategy.pdf). However, the Draft SEIS does not address any potential impacts of the proposed Shasta Dam raise project on spawning and rearing habitat availability for salmonids in the impacted streams and rivers above the Shasta Reservoir. The Draft SEIS estimates that the enlargement of Shasta Dam and Reservoir would extend the current "transition reach" by an additional 3,550 feet in the lower McCloud River under the preferred alternative, which would reduce the extent of available spawning and rearing habitat. In addition, the operation of the salmonid reintroduction program, including the locations for adult release and juvenile capture, could be affected by the reservoir elevation change. The Draft SEIS should address these potential impacts for the planned reintroduction of Chinook salmon and steelhead to the streams and rivers above Shasta Reservoir.	See response to comment 12-24.
12	26	Climate Change Analysis The Draft SEIS does not include updated analyses of the potential effects of the project with climate change and sea-level rise. Given the permanent nature of the proposed	Climate change effects were fully analyzed and documented in the 2015 SLWRI FEIS.

Letter Number	Comment Number	Comment	Response
		infrastructure and long-term and significant scope and effect of the project, a thorough updated climate change analysis should be provided in the Draft SEIS. The SEIS should include analyses of the proposed project for expected climate change effects upon the initial operations and any future time periods (e.g., 50- and 100-years post-construction) in the life of the project. Scientific studies [Footnote 3: Berghuijs, W. R., R. A. Woods, and M. Hrachowitz. 2014. A precipitation shift from snow towards rain leads to a decrease in streamflow. Nature Climate Change 4: 583-586. doi:10.1038/nclimate2246. Goulden, M. L., and R. C. Bales. 2014. Mountain runoff vulnerability to increased evapotranspiration with vegetation expansion. PNAS 111: 14071-14075. Milly, P. C. D., and K. A. Dunne. 2020. Colorado River flow dwindles as warming-driven loss of reflective snow energizes evaporation. Science. DOI: 10.1126/science.aay9187.] have suggested that climate change will bring changes in precipitation patterns (from more snow to more rain), higher temperatures, vegetation expansion, and longer growing seasons, which would result in warmer water temperatures and lower annual streamflows than the current conditions. The SEIS should also incorporate climate change scenarios with warmer and drier conditions than the current climate change models forecast for the Central Valley, including the drought sequences similar to those that were experienced from 2012-2016.	
12	27	Cumulative Impacts Analysis The Draft SEIS does not include updated cumulative impact analyses. An updated assessment of the potential cumulative impacts of the project and other water development and related projects is necessary to evaluate the degree and extent	Both the FEIS and the SEIS fully comply with NEPA and its implementing regulations. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		of the possible environmental impacts from the project, including an assessment of the cumulative impacts of the reduced regulatory requirements included in the 2019 BiOps and the improvements to CVP water diversion capacities resulting from the 2018 COA. The cumulative impacts of numerous proposed and planned water development projects north and south of the Delta (including Site Reservoir, Delta Conveyance, San Luis Reservoir expansion, Temperance Flat, Los Vaqueros Reservoir expansion, Pacheco Reservoir expansion, and other projects) combined with reduced regulatory requirements and added CVP operational capacity could significantly reduce Delta outflows and increase exports and result in significant impacts to numerous threatened and endangered and commercially and recreationally important aquatic species. These impacts should be fully evaluated and disclosed in the SEIS.	
12	28	Benefits of the Project The proposed project identifies improved temperature protection as one of the primary purposes for the proposed project. However, the HEC-5Q temperature modeling data for the project only shows limited benefits. The modeling data suggests that the largest decreases in long-term average monthly water temperature under the preferred alternative would occur in April (0.6 °F) and May (0.8 °F) at the Clear Creek compliance location included in the 2019 NMFS BiOp. The benefits during the fall and warmer summer months when temperature protection is the most problematic are more limited. In their comments on the Draft EIS, CDFW (2013) suggested that improving flow management, screening pumps and diversions, enhancement of spawning and rearing habitats,	See 2015 SLWRI FEIS Chapter 2.1 "Alternatives Development Process."

Letter Number	Comment Number	Comment	Response
		removing fish passage barriers, and floodplain habitat restoration would be more efficient and cost effective recovery strategies for anadromous fish in the Central Valley streams and rivers than raising Shasta Dam. CDFW also recommended modification of the temperature control device on Shasta Dam to improve anadromous fish survival. Reclamation did not consider any alternatives implementing these management and restoration actions without the Shasta Dam raise, but should.	
12	29	Attachment 1: January 14, 2019, State Water Board comments on Westlands Water District's 2018 NOP for Shasta Dam Raise Project	Comment noted
12	30	Attachment 2: September 11, 2013, Central Valley Regional Water Board comments on the SLWRI Draft EIS	Comment noted
13	1	Thank you for the opportunity to provide comments on the Bureau of Reclamation's (Reclamation) Draft Supplemental Environmental Impact Statement (SEIS) for Reclamation's proposal to raise Shasta Dam (proposed Project).1 If implemented, the proposed Project would modify flows in the Sacramento and McCloud Rivers; inundate pristine stretches of the McCloud River and threaten the River's wild trout fishery, both of which are protected under the California Wild and Scenic Rivers Act (Cal. Pub. Res. Code § 5093.50 et seq.); harm sensitive species down- and upstream from the reservoir; pollute the reservoir and nearby rivers with sediment and heavy metals; and destroy sacred sites integral to the Winnemem Wintu tribe's culture and traditions. In exchange for these devastating impacts, the proposed Project would increase the	Please see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River. Please also see Chapter 4 of the SLWRI SEIS for an updated discussion of environmental impacts due to the changes in CVP operations since 2015, and Chapter 5 regarding impacts specific to the McCloud River.

Letter Number	Comment Number	Comment	Response
		seasonal carryover storage in Shasta Reservoir by just 634,000 acre-feet and increase water deliveries even less.	
13	2	We submit this comment letter to call your attention to the SEIS's numerous legal deficiencies. First, Reclamation appears to misapprehend or ignore many of the legal requirements that apply to the proposed Project, including requirements under the federal Clean Water Act, the California Endangered Species Act (CESA), and the California Wild and Scenic Rivers Act.	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act. Reclamation has and will continue to comply with all applicable law.
13	3	Reclamation cannot rely on Clean Water Act section 404(r) (33 U.S.C. § 1344(r)) to approve the proposed Project and must obtain Clean Water Act permits from the State Water Resources Control Board (SWRCB) before implementing the proposed Project.	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act.
13	4	Reclamation must consult with Native American tribes, including the Winnemem Wintu tribe, and fully address impacts to cultural resources.	Please see Chapter 14 of the SLWRI FEIS for a discussion of impacts to cultural resources.
13	5	Reclamation misinterprets state-law protections for the McCloud River and the River's wild trout fishery and no exception exists for Reclamation to seek any state agency assistance with its efforts to raise Shasta Dam.	Please refer to Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.
13	6	Reclamation must analyze whether the proposed Project will be consistent with all applicable state laws.	Reclamation will comply with all applicable law. Please also refer to SEIS Master Comment CNRC-1 - California Natural Resources Code Regarding the McCloud River, and CWA-1 - CWA 404 (r) Compliance.
13	7	Reclamation must consult with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Services (NMFS) before proceeding with the proposed Project because it will likely cause significant harm to endangered and threatened species.	Please refer to Master Comment Response ESA-1, ESA Compliance.

Letter Number	Comment Number	Comment	Response
13	8	Second, the SEIS fails to comply with the National Environmental Policy Act (NEPA) for the following reasons: Reclamation must address state agencies' comments submitted during earlier iterations of the proposed Project's environmental review.	Please refer to the SLWRI FEIS Chapter 33, section 33.8, for responses to state agencies' comments.
13	9	The SEIS fails to adequately analyze and disclose impacts to sensitive species in the region, including western yellow-billed cuckoo, several listed fish species, and Shasta snow-wreath.	Please refer to Master Comment Response ESA-1, ESA Compliance, for a discussion of the 2019 Biological Opinions. Reclamation has coordinated with FWS and NMFS throughout the NEPA process and will continue to do so. A comprehensive discussion of the impacts to the Shasta snow-wreath can be found in Chapter 12, *Botanical Resources and Wetlands*, in the FEIS as well as the *Botanical Resources and Wetlands Technical Report*. For impacts associated with the proposed Shasta dam raise, various mitigation measures, including developing a Shasta Snow-wreath Conservation Agreement to include all responsible State and Federal resource management agencies and appropriate private landowners, were identified and can be found in Section 12.3.5 of Chapter 12. The status of the Shasta snow-wreath remains the same as was analyzed in the SLWRI FEIS and analysis contained therein complies with NEPA guidance. Chapter 4.3 of the SEIS contains an updated analysis of effects to the Yellow-billed Cuckoo, Winter-run Chinook Salmon and Central Valley Steelhead.

Letter Number	Comment Number	Comment	Response
13	10	The SEIS fails to adequately analyze mitigation measures for wetland impacts associated with the proposed Project.	Please see Chapter 2 of the SLWRI Final SEIS for an analysis of impacts to wetlands and proposed mitigation.
13	11	As discussed in detail below, Reclamation must correct the legal defects in the SEIS or withdraw the proposed Project.[Footnote 2: The Attorney General submits these comments on the proposed Project based on his independent power and duty to protect the environment and natural resources of the State. See Cal. Const., art. V, § 13; Cal. Gov. Code §§ 12511, 12600-12612; D'Amico v. Bd. of Medical Examiners, 11 Cal.3d 1, 14-15 (1974).]	Comment noted.
13	12	Raising Shasta Dam Would Result in Nominal Increases to the Water Supply and Significant Impacts to Fish and Wildlife, Water Quality, and Tribal Sacred Sites, Among Other Impacts. Reclamation's present effort to raise Shasta Dam began in 2006 when Reclamation released a Public Scoping Report and six years later released a Draft Feasibility Report. Reclamation initiated the NEPA process when it circulated a Draft and Final EIS that examined several proposed Project alternatives for raising Shasta Dam (6.5, 12.5, or 18.5 feet). See Bureau of Reclamation, Shasta Lake Water Resources Investigation, Draft Environmental Impact Statement (2013) (2013 Draft EIS); Bureau of Reclamation, Shasta Lake Water Resources Investigation, Final Environmental Impact Statement (2015) (2015 Final EIS). The Final EIS identified the preferred alternative of raising the dam 18.5 feet. 2015 Final EIS at S-32 to S-34. The SEIS notes that raising the dam 18.5 feet would increase the seasonal carryover storage in Shasta Reservoir by only	Please refer to SLWRI FEIS Master Comment Responses regarding Costs vs. Benefits, section 33.3.8. The SEIS updates the modeling and analysis due to changes in CVP operations, but concludes that for most environmental resources, the magnitude and severity of impacts would not change from the 2015 analysis.

Letter Number	Comment Number	Comment	Response
		634,000 acre-feet. SEIS at 4-2, 5-34. The dam raise also would modify flows in the Sacramento and McCloud Rivers and flood 5,000 acres of habitat. In addition, the proposed Project would cost more than $1.3 billion and increase water available for delivery by only 51,300 acre-feet per year. [Footnote 3: In 2016, Congress enacted the Water Infrastructure Improvements for the Nation (WIIN) Act, which requires at least a fifty-percent contribution from non-federal cost-sharing partners for the Shasta Dam raise and Reservoir expansion. WIIN Act, Pub. L. No. 114-322 (2016). The WIIN Act also requires compliance with all applicable federal and state environmental laws. Pub. L. No. 114-322, §§ 4007(b)(4), 4007(j), 4012. In March 2018, Congress approved $20 million in WIIN Act funding for pre-construction and design engineering to raise Shasta Dam. For 2020, the Secretary of the Interior asked for $57,000,000 for the Shasta Dam and Reservoir Enlargement Project. See Letter from Timothy R. Petty, Ph.D., Assistant Secretary for Water and Science, to Representative Marcy Kaptur, Chairwoman of the Subcommittee on Energy and Water Development, Committee on Appropriations (Feb. 13, 2019) available at https://legistarwebproduction.s3.amazonaws.com/uploads/attachment/pdf/200b398511/WIIN_FY_18_Funding_Congress_Letter_2-13-19.pdf. Congress struck that funding request. See Further Consolidated Appropriations Act, Pub. L. No. 116-94, 133 Stat. 2534, 2665-67 (2020).] The SEIS overestimates the potential benefits the proposed dam raise would have to anadromous fish and water supply deliveries, and underestimates the threat of significant harm the proposed Project would have to water quality, fish and wildlife, and tribal sacred sites, among other impacts.	

Letter Number	Comment Number	Comment	Response
13	13	The proposed Project would pollute the reservoir and nearby rivers with heavy metals and sediment. The proposed Project would increase mercury (from shuttered mining sites), copper, zinc, and other pollutants associated with sediment in the Shasta and Keswick Reservoirs and downstream in the Sacramento River. Increased mercury loading into Shasta Reservoir could increase the mercury levels in fish and invertebrates in the lake and then bio-accumulate in sensitive bird species that feed on fish. Shasta Lake is a popular camping, boating, and fishing destination, see 2015 Final EIS 1-3, 1-35, 18-1 through 18-3, and for several years, the California Office of Environmental Health Hazard Assessment (OEHHA) has advised women and children to reduce their consumption of fish caught from Shasta Lake because the mercury levels could harm the brain and development in fetuses, babies, and children. See OEHHA, Information About Eating Fish from Shasta Lake (2017) (attached as Exhibit 1); see also OEHHA, Health Advisory and Guidelines for Eating Fish from Shasta Lake 18-22 (2017) (attached as Exhibit 2). OEHHA recommends children and women between 18 and 45 consume only one serving or less per week of black bass, carp, catfish, or Chinook salmon caught in Shasta Reservoir. Increased mercury associated with the proposed Project could render these fish species too toxic for human consumption.	Mercury and other contamination from heavy metals are discussed in Chapter 7 of the SLWRI FEIS. Reclamation's analysis found that the project would not result in the inundation of potentially hazardous locations. The comment does not present new information about environmental effects and therefore additional analysis in the SLWRI SEIS was not necessary.
13	14	Increased loading of toxic metals into Shasta Reservoir may affect the Keswick Reservoir's ability to dilute acid mine drainage from the Iron Mountain Mine Superfund site. This may result in increased loading of heavy metals into spawning habitat in the Sacramento River and further downstream into the Delta. Increased sedimentation and turbidity associated with the proposed Project would impact growth, survival, and	See response to comment 13-13.

Letter Number	Comment Number	Comment	Response
		reproductive success of aquatic organisms. Sediment exposure harms include reduced visual capacity, reduced feeding, and reduced tolerance to disease. Increased turbidity would affect fish locating and feeding on prey.	
13	15	The proposed Project also would reduce flows and degrade riparian habitat quality critical to the survival of yellow-billed cuckoo and Shasta snow-wreath. Only about 23 to 25 breeding pairs of yellow-billed cuckoo occur on the Sacramento River between Red Bluff and Colusa. Proposed Project implementation would accelerate the loss of this breeding population. Shasta snow-wreath is an understory shrub endemic to the southeastern Klamath Mountains in northern California. Shasta snow-wreath is a candidate for endangered species protection under CESA. The proposed dam raise would fragment the remaining populations of Shasta snow wreath; in all, forty-six percent of the known snow-wreath population would be lost by raising Shasta Dam. Additionally, the proposed dam raise could harm many other sensitive species in the proposed Project area, including Pacific fishers, bald eagles, western purple martin, Shasta salamander, and Shasta huckleberry.	Please refer to Master Comment Response ESA-1, ESA Compliance.
13	16	The proposed Project also would inundate 60 acres of the McCloud River and increase reservoir levels above the McCloud River Bridge, which would convert part of the McCloud River into reservoir habitat. Inundating stretches of the McCloud River could make it ineligible for listing—and ultimately protection—under the California Wild and Scenic Rivers Act. The California Department of Fish and Wildlife (CDFW) has designated the McCloud River a Wild Trout stream, an aesthetically pleasing and environmentally productive stream	Impacts to the McCloud River are addressed in Chapter 5 of the SEIS. Please also see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		managed exclusively for wild trout. The Shasta Dam raise would inundate miles of wild trout habitat in the McCloud River and destroy spawning habitat. See Section II.B. below for a review of comments submitted by Russell Liebig, Greg Pasternack and G. Mathias Kondolf, and Bruce Herbold, discussing how the harm to riparian species and habitat associated with raising Shasta Dam will be much more severe than Reclamation acknowledges.	
13	17	Last, the proposed Project would significantly impact tribal sacred and cultural sites, including sites important to the Winnemem Wintu tribe. The Winnemem Wintu is a nonfederally recognized, native California tribe that has long opposed the proposed Project. The Winnemem Wintu's traditional territory included the east and west sides of the upper Sacramento River watershed, the McCloud River and Squaw Creek watersheds, and approximately 20 miles of the Pit River. Presently, the Winnemem Wintu tribe includes about 125 members, many of whom live in a 42-acre village. Shasta Dam and Reservoir's original construction submerged about ninety percent of the Winnemem Wintu's village, sacred, burial, and cultural gathering sites, and Reclamation's proposed Project would eliminate much of the remainder by inundating around 20 sacred Winnemem Wintu sites, including a burial ground and prayer rock. The Shasta Dam and Reservoir's original construction also eliminated the Chinook salmon runs essential to Winnemem Wintu diet and culture.	Please see Chapter 14 of the SLWRI FEIS for a discussion of impacts to cultural resources.
13	18	Federal and State Agencies Previously Determined Raising Shasta Dam Would Have Almost None of the Benefits Reclamation Claims.	The SLWRI SEIS updates modeling to account for the 2019 Biological Opinions, which have changed CVP operations, and appropriately discloses the effects of the dam raise. Please refer to SEIS Chapter 4.3. Please also refer to Master

Letter Number	Comment Number	Comment	Response
		Reclamation has represented that raising Shasta Dam would make more cold water available to support anadromous fish downstream in the Sacramento River. However, during earlier iterations of Reclamation's NEPA process, FWS and state agencies commented that the proposed Project would result in negligible or slightly negative impacts to Chinook salmon survival. See Letter from FWS to Regional Director, U.S. Bureau of Reclamation, at 3 (Sept. 20, 2013) (2013 FWS Letter) (attached as Exhibit 3); see also Letter from CDFW to Bureau of Reclamation, Planning Division (Sept. 30, 2013) (2013 CDFW Letter) (attached as Exhibit 4). In ninety percent of years, there would be no benefit to anadromous fish survival. See FWS, Coordination Act Report for the Shasta Lake Water Resources Investigation (2015) (2015 FWS Report) at viii (attached as Exhibit 5). The benefits of an enlarged cold-water pool for Chinook salmon runs are limited to only six to sixteen percent of water years. See id. Instead of benefitting anadromous fish, the proposed Project would degrade fish habitat in the San Francisco Bay-Delta, including habitat for listed Delta smelt, California-listed longfin smelt, juvenile salmon, and California Central Valley steelhead. See 2013 CDFW Letter at 3, 5.	Comment Response ESA-1, ESA Compliance, regarding Reclamation's coordination with FWS and NMFS and ongoing consultation.
13	19	FWS concluded in 2015 that the proposed Project would not provide substantial benefits to fish and wildlife resources and would result in losses of salmonid rearing and riparian habitat. See 2015 FWS Report at viii, xiii. FWS also took issue with Reclamation's modeling. See 2013 FWS Letter at 2; 2015 FWS Report at ix. FWS stated that the modeling used in the Draft EIS did not account for population trends over time or for downstream habitat conditions. See 2013 FWS Letter at 2-3. Also, only a few of the 82 water years modeled showed any benefits to anadromous fish from Shasta Dam's enlargement.	See response to comment 13-18.

Letter Number	Comment Number	Comment	Response
		See id. at 3. Further, FWS noted that other factors beyond increasing the cold water pool, such as improved access to important rearing habitat for juvenile salmon, restoration of downstream fish habitats, the screening of intakes to eliminate fish entrainment, and flow management, would have more substantial effects on the long-term viability of anadromous fish in the Sacramento River. See id. Importantly, FWS determined water management that would accompany Shasta Dam's enlargement would decrease the inundation flows that provide juvenile salmon access to important rearing habitat and benefit other fish species, such as the Sacramento splittail and Delta and longfin smelt. See id. at 3-4.	
13	20	CDFW and the Central Valley Regional Water Quality Control Board (CVRWQCB) also submitted comments on the Draft EIS. See 2013 CDFW Letter; see also Letter from CVRWQCB to Bureau of Reclamation (Sept. 11, 2013) (2013 CVRWQCB Letter) (attached as Exhibit 6). CDFW commented that the proposed Project would result in minimal benefits for anadromous fish and cause "significant and unavoidable impacts to fish, wildlife, native plants, and natural communities." 2013 CDFW Letter at 1. The CVRWQCB commented that the proposed Project would have significant and unavoidable impacts on water quality caused primarily by increased sediment. See CVRWQCB Letter at 1, 3.	These comments were addressed in the SLWRI FEIS, Chapter 33 section 33.8.
13	21	Raising Shasta Dam Would Cause Damage Cumulative to that Caused by Adoption of the FWS and NMFS Biological Opinions. The harm to fish species caused by raising Shasta Dam would be cumulative to the damage already caused by the adoption of the FWS and NMFS 2019 Biological Opinions (BiOps) for the	Reclamation acknowledges the commenter's concerns, but the 2019 BiOps, 2020 ROC Record of Decision and this SEIS provide robust analysis of the anticipated effects of the actions and complies with all applicable law. The comment letter consists largely of legal argument, which is noted. The referenced laws, regulations and caselaw speak

Letter Number	Comment Number	Comment	Response
		Central Valley Project. In August 2016, Reclamation requested reinitiation of consultation on an FWS 2008 BiOp and a NMFS 2009 BiOp on the Long-Term Central Valley Project and State Water Project Operations Criteria and Plan. The 2008 and 2009 BiOps found that the Central Valley Project and State Water Project operations would jeopardize the continued existence of listed species, including endangered Sacramento River winter-run Chinook salmon, threatened Delta smelt, and threatened Central Valley steelhead, and would destroy or adversely modify these species' designated critical habitat. See FWS, Biological Opinion on the Proposed Coordinated Operations of the Central Valley Project and State Water Project at 276, 278 (2008), available at https://www.fws.gov/sfbaydelta/Documents/SWPCVP_OPs_BO_1215_final_OCR.pdf; see also NMFS, Biological Opinion and Conference Opinion on the Proposed Long-Term Operations of the Central Valley Project and State Water Project at 30 (2009), available at https://archive.fisheries.noaa.gov/wcr/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/nmfs_biological_and_conference_opinion_on_the_long-term_operations_of_the_cvp_and_swp.pdf. The 2008 and 2009 BiOps therefore placed restrictions on the amount of water exported via the State Water Project and the Central Valley Project Delta pumps in order to protect listed fish and their critical habitat. See 2008 FWS BiOp at 279-95, 360-63; 2009 NMFS BiOp at 575-726. In 2019, FWS and NMFS issued revised BiOps. Together, the BiOps allow Reclamation to change the flow regime for the Central Valley Project in a way that threatens harm to species in	for themselves. Please refer to Master Comment Response ESA-1, ESA Compliance, for a discussion of the 2019 Biological Opinions and the consultation process. Reclamation has coordinated with FWS and NMFS throughout the project development and environmental review process, and it will continue to do so. Reclamation will comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		the Sacramento River and San Francisco Bay Delta downstream from Shasta Dam. See FWS, Biological Opinion for the Reinitiation of Consultation on the Coordinated Operations of the Central Valley Project and State Water Project at 393-401 (2019) (2019 FWS BiOp), available at https://www.fws.gov/sfbaydelta/cvp-swp/documents/10182019_ROC_BO_final.pdf; see also NMFS, Biological Opinion on the Long-Term Operation of the Central Valley Project and State Water Project at 14-19 (2019) (2019 NMFS BiOp), available at https://repository.library.noaa.200bgov/view/noaa/22046. The 2019 BiOps, however, do not authorize impacts to listed species associated with the proposed Shasta Dam raise. The BiOps represent that "effects of the construction of [the Shasta Dam] raise are being addressed in a separate section 7 consultation" with the wildlife agencies. 2019 FWS BiOp at 404; 2019 NMFS BiOp at 203 n.8.	
13	22	Reclamation Misapprehends or Ignores Legal Requirements for the Proposed Project. As an initial matter, Reclamation appears to misapprehend or ignore legal requirements that apply to the proposed Project. Reclamation must comply with all applicable state and federal laws before it can lawfully raise Shasta Dam.	Reclamation has complied with all applicable law and will continue to do so.
13	23	Reclamation Must Obtain Clean Water Act Permits from the SWRCB Before Implementing the Proposed Project. The SEIS suggests that the proposed Project is exempt from Clean Water Act (CWA) permit requirements, in contrast to various and consistent statements in the Final EIS acknowledging permitting requirements under CWA Sections	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		401 and 404. See SEIS at 3-1; 2015 Final EIS at 1-29, 1-31. Specifically, in the Final EIS, Reclamation determined that the proposed Project's potential to affect Shasta Reservoir's water quality would require Reclamation to prepare and submit a request for CWA Section 401 water quality certification to the CVRWQCB. 2015 Final EIS at 7-32. Reclamation also repeatedly acknowledged in the Final EIS that it must work closely with federal and state agencies to ensure compliance with the "CWA (e.g. Section 401 and 404)[.]" 2015 Final EIS at 7-82, 7-131, 7-175. Now, Reclamation inexplicably and without justification contradicts its prior statements on CWA requirements. Reclamation now seeks to rely on CWA 404(r), stating in the SEIS that "[it] will comply with CWA 404(r) and will not separately obtain permits under CWA Sections 401, 402, and 404[.]" SEIS at A-1. According to the SEIS, "[b]y following CWA 404(r) Reclamation is not subject to CWA 404(r) regulations under CWA 402 if information on the effects of discharge . . . are included in an EIS." SEIS at 3-1. Reclamation misinterprets CWA section 404(r). Section 404(r)'s exemption is limited to the discharge of dredged or fill material that is part of a "Federal project specifically authorized by Congress." 33 U.S.C. § 1344(r). As to all other discharges, Reclamation must comply with the CWA, including by obtaining permits from state permitting agencies.	
13	24	Section 404(r) provides that "[t]he discharge of dredged or fill material as part of the construction of a Federal project	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		specifically authorized by Congress" is not subject to most Clean Water Act permitting requirements if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(1) of this section, is included in an [EIS] for such project . . . and such [EIS] has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for such project. 33 U.S.C. § 1344(r). By its plain language, Section 404(r) does not apply to the proposed Project because it has not been "specifically authorized by Congress"—a fact Reclamation's Deputy Director has admitted. See Winnemem Wintu Tribe v. U.S. Dep't of Interior, 725 F.Supp.2d 1119, 1145 (E.D. Cal. 2010) (declaring "Reclamation is not congressionally authorized to move beyond the feasibility study phase and actually increase Shasta Reservoir storage by raising Shasta Dam"). To the contrary, Congress has appropriated only $20 million under the WIIN Act for Reclamation to study this proposal—far short of the estimated $1.3 billion required for full proposed Project build out. See Del. Dep't of Nat. Res. and Envtl. Control v. U.S. Army Corps of Eng'rs, 685 F.3d 259, 280-82 (3d Cir. 2012) (noting "to trigger Section 404(r), there must be a federal project specifically authorized by Congress," and "funds must be appropriated for project construction"); see also Bd. of Miss. Levee Comm'rs v. U.S. EPA, 785 F.Supp.2d 592, 612-13 (N.D. Miss. 2011) (noting plaintiff must invoke the appropriate	

Letter Number	Comment Number	Comment	Response
		Congressional authorization process, including evidence Congress received, evaluated, and approved an EIS).	
13	25	Further, even if Section 404(r) applies, it does not waive all CWA permit requirements. Rather, Section 404(r) waives CWA permit requirements only for water quality impacts caused by "[t]he discharge of dredged or fill material," not by the many other potential discharges associated with the proposed Project. 33 U.S.C § 1344(r). [Footnote 4: The Section 404(r) exemption is very narrow, and not applicable here. "The narrow nature of this exemption is underscored by the fact that it applies only to discharges integral to construction of designated federal projects. [Citation Omitted.] . . . . 'The conferees did not intend to exempt other discharges which may be associated generally with constructing Federal projects, but which are ancillary to the specific activities submitted to and approved by Congress' [Citation Omitted.]" Monongahela Power Co. v. Marsh, 809 F.2d 41, 51 n. 9 (D.C. Cir. 1987). Reclamation's reading of Section 404(r) would have the narrow exemption swallow the rule.]	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act.
13	26	The SEIS also does not provide a full analysis of the section 404(b)(1) guidelines, as section 404(r) requires. See 33 U.S.C. § 1344(r). The section 404(b)(1) guidelines, codified at 40 C.F.R. pt. 230, set out detailed requirements for the discharge of dredged or fill material pursuant to section 404. See 40 C.F.R. § 230.10(a). Among other things, the guidelines require agencies to evaluate whether a discharge will "[c]ause[] or contribute[] … to violations of any applicable State water quality standards"; "[j]eopardize[] the continued existence" of any threatened or endangered species"; cause significant adverse effects to "human health or welfare," including but not limited to effects	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		on "municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites"; cause significant adverse effects to "aquatic ecosystem diversity, productivity, and stability"; or cause significant adverse effects to "recreational, aesthetic, and economic values." 40 C.F.R. § 230.10(b), (c). Neither the SEIS nor the 2015 Final EIS provides this detailed analysis.	
13	27	Even if Reclamation could rely on section 404(r)—which it cannot—Reclamation must still comply with California state regulations governing the discharge of dredged and fill material. Under CWA section 404(t), California state agencies have authority to "control the discharge of dredged or fill material in any portion of the navigable waters within the jurisdiction of" the state, "including any activity of any Federal agency." 33 U.S.C. § 1344(t). Federal agencies must therefore "comply with such State . . . requirements both substantive and procedural . . . to the same extent that any person is subject to such requirements." Id.; see also Friends of the Earth v. U.S. Navy, 841 F.2d 927, 934-35 (9th Cir. 1988). Reclamation must discuss such state regulations and demonstrate how the proposed Project will comply with them. See 40 C.F.R. § 1506.2. Applicable regulations include the new dredge and fill regulations the SWRCB adopted in 2019, which set out detailed procedures for the discharge of dredged or fill material to state waters. See SWRCB, State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Apr. 2, 2019) (attached as Exhibit 7).	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act, including the applicability of state regulations.
13	28	Reclamation is not, as the SEIS suggests, exempt from all "permits under CWA Sections 401, 402, and 404." SEIS at A-1. To address this flaw, the SEIS should evaluate the CWA permits	Please refer to Master Comment Response CWA-1 - CWA 404 (r) Compliance, for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		it will need to obtain for all proposed discharges, whether or not Congress "specifically authorize[s]" the proposed dam raise. Those include permits related to the discharge of dredged or fill material; discharges and groundwater dewatering caused by new construction accompanying the dam raise; discharges from maintenance of supply wells and pipelines; discharges from well development; and other point-source discharges. SEIS at 3-1 through 3-6.	
13	29	Reclamation Must Consult with Tribes and Fully Analyze Impacts to Winnemem Wintu and Other Tribal Sacred Sites. As discussed, raising Shasta Dam will cause significant and permanent harm to tribal sacred and cultural sites, including sites that are important to the Winnemem Wintu tribe. Reclamation must consult with tribes and comply with the National Historic Preservation Act (NHPA) regarding impacts to tribal sacred sites before proceeding with any work to raise Shasta Dam. The NHPA requires federal agencies, before approving a proposed federal "undertaking," to "take into account the effect of the undertaking on any historic property," 54 U.S.C. § 306108, including by consulting with tribes, see 54 U.S.C. § 306102(b)(4). The 2015 Final EIS acknowledges that "a considerable number of Traditional Cultural Properties and other areas of special concern" are likely "present in the study area." 2015 Final EIS at 14-19. The Winnemem Wintu in particular have repeatedly raised concerns about impacts to their sacred sites, many of	Please see Chapter 14 of the SLWRI FEIS for a discussion of impacts to cultural resources.

Letter Number	Comment Number	Comment	Response
		which will be inundated if Reclamation raises the level of Shasta Reservoir. 2015 Final EIS at 14-24, 24-4. Construction of the original Shasta Dam flooded nearly 27 miles of the McCloud River, including a significant portion of the Tribe's ancestral homeland. Reclamation's proposal to raise the dam would compound that historical harm. For example, the proposed Project would inundate Balas Son or Puberty Rock, which is the site of an important coming-of-age ritual for young women in the Winnemem Wintu tribe. Letter from the Winnemem Wintu Tribe to Tribal Council Representatives Regarding Resolution Opposing the Proposed Raise of Shasta Dam at 2 (Sept. 12, 2020) (attached as Exhibit 8). The dam raise would also submerge important "gathering areas, village sites," and burial sites, "as well as habitat essential to [the Tribe's] salmon restoration efforts." Id. By the Tribe's estimate, "nearly all of the tribe's remaining sites would be put permanently underwater with the reservoir's expansion." Craig Miller, Shasta Dam Project Sets up Another Trump-California Showdown, KQED (Jan. 28, 2019) (attached as Exhibit 9); see also 2015 Final EIS at 14-24 ("The Winnemem Wintu have estimated that 120 ancestral villages still accessible above the current high waterline of Shasta Lake would be adversely impacted" by the proposed dam raise.). Raising Shasta Dam also would threaten other tribal sites, including villages and burial grounds identified by the Pit River Madesi Band. 2015 Final EIS at 24-5. Reclamation must consult with all tribes that the dam raise may affect and provide a full	

Letter Number	Comment Number	Comment	Response
		accounting of impacts to tribal cultural and sacred sites before it moves forward with the proposed Project. The 2015 Final EIS represents that Reclamation would mitigate these impacts but provides no information about what those mitigation measures might entail. 2015 Final EIS at 14-33 through 14-36. Reclamation further concedes that "it is unlikely that adequate mitigation is available to reduce the impact" to sacred and cultural sites "to a less-than-significant level." 2015 Final EIS at 14-24 through 14-25. Reclamation asserts in the 2015 Final EIS that it is not yet required to comply with NHPA requirements because to date Reclamation has only completed "nondestructive project planning" activities. 2015 Final EIS at 14-16. Nevertheless, given the potentially severe impacts to tribal sacred sites, Reclamation must begin the NHPA consultation process as soon as possible to ensure that such impacts are given due weight. The Attorney General submits that the irreversible harm to tribal sacred and cultural sites should be a substantial, if not a dispositive, consideration as Reclamation decides whether to move forward with this proposal.	
13	30	Reclamation May Not Seek any State Agency Assistance with its Efforts to Raise Shasta Dam. No support exists for Reclamation's assertion that "the [California] legislature specifically excepted enlargement of Shasta Dam from the prohibition on [state agencies] assisting or cooperating" with Reclamation. SEIS at 5-4. California has long sought to preserve certain rivers in their natural free-	Please see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		flowing state for extraordinary scenic, recreational, fishery, or wildlife values. See e.g. Cal. Trout, Inc. v. State Water Res. Control Bd., 90 Cal. App. 3d 816, 821 n.3 (1979) (noting California's "clear statutory schemes" for protecting fish and wildlife, which include the California Wild and Scenic Rivers Act, the California Environmental Quality Act, and the California Fish and Game Code); see also Cal. Water Code § 83002(b)(6)(A)(iii) (mandating any feasibility study must evaluate projects consistent with requirements to protect, and not harm, the McCloud River). Consistent with those efforts, the California Wild and Scenic Rivers Act specifically prohibits construction of new dams, diversions, and reservoirs on 47 miles of the McCloud River and specifically bars any state agency or department from participating 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." Cal. Pub. Res. Code § 5093.542(c). The Wild and Scenic Rivers Act makes plain the fundamental protections for the McCloud River, and raising Shasta Dam would violate these long-standing protections.	
13	31	To justify its claim that the proposal to raise Shasta Dam is exempt from the California Wild and Scenic Rivers Act requirements, Reclamation cites a narrow exception that allows the California Department of Water Resources (DWR) to "participat[e] . . . in studies involving the technical and economic feasibility of enlargement of Shasta Dam." Cal. Pub. Res. Code § 5093.542(c). But the exception simply does not apply here. First, DWR is not participating in Reclamation's efforts to raise the dam. Second, the exception applies only to certain types of studies. To read the exception as applying to	Please see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		Reclamation's efforts to enlarge the dam would swallow and nullify the whole prohibition and undermine the purpose of the provision. As such, the SEIS should incorporate the analysis from the Final EIS, which analyzed the California Wild and Scenic Rivers Act's requirements as applied to the McCloud River.	
13	32	Protection of the McCloud River is so fundamental that the Attorney General's Office recently brought a civil action against Westlands Water District (Westlands) when that agency tried to side-step the California Wild and Scenic Rivers Act and remove obstacles to raising Shasta Dam. Specifically, Westlands approved $1,020,000 to study raising Shasta Dam and published an Initial Study / Notice of Preparation of an Environmental Impact Report for the Shasta Dam Raise Project. CDFW and the SWRCB commented on the Initial Study that the Project would impact the lower McCloud River, alter the River's free-flowing condition, and adversely impact the River's trout fishery, in contravention of the California Wild and Scenic Rivers Act. The Attorney General promptly sued and moved for a preliminary injunction to stop Westlands from continuing further environmental review, and the court enjoined Westlands from "taking any action that constitutes planning for or the construction of the Shasta Dam Raise Project[.]" Order Granting Preliminary Injunction, People v. Westlands Water Dist., Case No. 192487 (filed July 29, 2019) (attached as Exhibit 10). Shortly thereafter, Westlands withdrew the Initial Study and terminated the environmental review process. In November 2019, the Attorney General's Office settled with Westlands and Westlands agreed not to conduct environmental review, fund or assist any federal, state, or local agency planning or construction, or acquire real property to	Please see Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		facilitate raising Shasta Dam. This result affirms that the narrow exception in the California Wild and Scenic Rivers Act does not apply to raising Shasta Dam or to any state agency other than DWR.	
13	33	Reclamation Must Analyze all Applicable State Laws. Reclamation must analyze whether the proposed Project would comply with applicable state laws. The SEIS incorrectly asserts Reclamation is exempt from any obligation to analyze state law requirements under the California Wild and Scenic Rivers Act, and instead Reclamation can "re-focus the analysis on the federal requirements." See SEIS at 5-3. These assertions substantially depart from statements in the Final EIS recognizing Reclamation's obligation to analyze and comply with state and local laws, and they are not supported by established law. See, e.g., 2015 Final EIS at S-1, S-6.	. Reclamation will comply with all applicable law. Please also refer to SLWRI Final SEIS Master Comment CNRC-1, California Natural Resources Code Regarding the McCloud River.
13	34	At the outset, Reclamation is required under NEPA to "discuss any inconsistency of a proposed action with any approved State, Tribal, or local plan or law (whether or not federally sanctioned). Where an inconsistency exists, the [EIS] should describe the extent to which the agency would reconcile its proposed action with the plan or law." 40 C.F.R. § 1506.2(d). Such state laws include but are not limited to the laws discussed in this letter: for example, the California Wild and Scenic Rivers Act, CESA, and the 2019 SWRCB dredge and fill regulations.	Please refer to SLRI Final SEIS Master Comment CNRC-1, California Natural Resources Code Regarding the McCloud River. Reclamation will comply with all applicable law. CESA does not apply to Reclamation.
13	35	In addition, Reclamation must comply with any state-law requirements that are incorporated through section 8 of the Reclamation Act. The Reclamation Act of 1902 requires "cooperative federalism" such that Reclamation must comply	Reclamation will comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		with California state laws "relating to the control, appropriation, use, or distribution of water used in irrigation." 43 U.S.C. § 383; see also California v. United States, 438 U.S. 645, 653, 665-679 (1978) (finding a long history of deference to state water law, and one that requires Reclamation to comply with state law in the "control, appropriation, use, or distribution of water"); United States v. State Water Res. Control Bd., 694 F.2d 1171, 1174 (9th Cir. 1982) (holding Congress could have but did not eliminate the role of state law in governing a dam inundation project). Laws "relating to the control, appropriation, use, or distribution of water" include laws that limit impoundment and distribution of water to protect environmental values. See Nat. Res. Def. Council v. Patterson, 791 F. Supp. 1425, 1435 (E.D. Cal. 1992) (resolving any doubts that compliance includes the impoundment and distribution of water), aff'd and remanded sub nom. Nat. Res. Def. Council v. Houston, 146 F.3d 1118 (9th Cir. 1998).	
13	36	The WIIN Act further affirms this deference to state law by providing that the Act "shall not be interpreted or implemented in a manner that … preempts or modifies any obligation of the United States to act in conformance with applicable state law, including applicable State water law[.]" Pub. L. No. 114-322, § 4012(a). Reclamation must therefore analyze whether the proposed Project will comply with relevant state-law requirements, including any state-law requirements incorporated through Reclamation Act section 8.	Please see Master Comment Response WIIN-1 - WIIN Act Compliance for a discussion of the WIIN Act requirements and state law.
13	37	Reclamation Must Consult with Federal Wildlife Agencies Before Authorizing the Proposed Project.	Please refer to Master Comment Response ESA-1, ESA Compliance.

Letter Number	Comment Number	Comment	Response
		The SEIS identifies impacts to Winter-run Chinook salmon, Central Valley steelhead, and western yellow-billed cuckoo that necessitate consultation with FWS and NMFS before Reclamation can move forward with the proposed Project. See SEIS at 4-6. The Final EIS acknowledged the consultation requirement, but to date Reclamation has not completed the required consultation. See 2015 Final EIS at 1-29, 1-30, 27-5. The federal Endangered Species Act (ESA) requires federal agencies to consult with FWS and NMFS before taking action that "may affect" listed species or their critical habitat. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a). The Ninth Circuit has explained: Section 7 . . . requires federal agencies to ensure that none of their activities . . . will jeopardize the continued existence of listed species or adversely modify a species' critical habitat. [Citation omitted.] Section 7 imposes on all agencies a duty to consult with . . . [FWS] . . . before engaging in any discretionary action that may affect a listed species or critical habitat. [Citation omitted.] The purpose of consultation is to obtain the expert opinion of wildlife agencies to determine whether the action is likely to jeopardize a listed species or adversely modify its critical habitat . . . [.] An agency has a duty to consult under Section 7 of the ESA for any discretionary action that "may affect" a listed species or designated critical habitat. [Citation omitted.] . . . Once an agency has determined that its action "may affect" a listed	

Letter Number	Comment Number	Comment	Response
		species or critical habitat, the agency must consult, either formally or informally, with the appropriate expert wildlife agency . . . [.] We have previously explained that "may effect" is a "relatively low" threshold for triggering consultation. [Citation omitted.] "Any possible effect, whether beneficial, benign, or adverse or of an undetermined character," triggers the requirement. [Citation omitted.] Karuk Tribe of Cal. v. U.S. Forest Service, 681 F.3d 1006, 1019-20, 1027 (9th Cir. 2012). The negative and even the beneficial impacts to listed species discussed above require consultation. W. Watersheds Project v. Kraayenbrink, 632 F.3d 472, 496 (9th Cir. 2011) (noting that "[a]ny possible effect, whether beneficial, benign, adverse, or of an undetermined character, triggers the formal consultation requirement") (quotation omitted). Consultation could help avoid impacts to listed species associated with the proposed Project. For instance, FWS commented on the 2013 Draft EIS that Reclamation should discuss an alternative that increases water supply reliability and anadromous fish survival without enlarging Shasta Dam. 2013 FWS Letter at 1. Since Reclamation's express purpose and need for the proposed Project is to "improve operational flexibility of the Delta watershed system," it should consult with FWS on the recommendation that an alternative could accomplish this purpose without raising the dam.	
13	38	As the Attorney General has argued elsewhere, Reclamation should have consulted regarding the potential impacts of the	Please refer to Master Comment Response ESA-1, ESA Compliance.

Letter Number	Comment Number	Comment	Response
		Shasta Dam raise before it adopted the 2019 Biological Opinions regarding operation of the Central Valley Project. The "ESA requires the biological opinion to analyze the effect of the entire agency action," not just an arbitrary segment of it. Conner v. Burford, 848 F.2d 1441, 1453 (9th Cir. 1988) (interpreting the term "agency action" broadly); see also Wild Fish Conservancy v. Salazar, 628 F.3d 513, 522 (9th Cir. 2010) ("The artificial division of a continuing operation into short terms can undermine the consulting agency's ability to determine accurately the species' likelihood of survival and recovery."). At the time Reclamation was consulting on the impacts of Central Valley Project operations more generally, it had already completed a Final EIS for its proposal to raise Shasta Dam. Although, as noted, Congress has not appropriated funds to complete the dam raise, and there are many legal hurdles Reclamation must clear before it can proceed with the proposed Project, Reclamation's intention to raise Shasta Dam, and even the specifics of its proposed operation of the enlarged reservoir, have been clear for years. See, e.g., 2015 Final EIS at S-22 through S-23 (describing Reclamation's proposal to increase water deliveries from enlarged reservoir). The 2019 BiOps' claim that the wildlife agencies could not adequately assess impacts of the proposed Project is therefore unsupported. See 2019 NMFS BiOp at 203 n.8; cf. Wild Fish Conservancy, 628 F.3d at 525 (rejecting a similar claim). Reclamation violated the ESA when it failed to include the Shasta Dam raise in its earlier consultation with the wildlife	

Letter Number	Comment Number	Comment	Response
		agencies. Reclamation must correct that error immediately. At a minimum, Reclamation must complete a section 7 consultation before proceeding any further with the proposed Project.	
13	39	The Draft SEIS Does Not Comply with NEPA. Reclamation must revise the SEIS so that it complies with all NEPA requirements. As a threshold matter, Reclamation should apply the 1978 NEPA regulations rather than the recently revised regulations as it finalizes the supplemental EIS. Part way through the public comment period on the SEIS, the Council on Environmental Quality's (CEQ) Final Rule revising the NEPA regulations became effective. See Final Rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43,304 (July 16, 2020). The Final Rule makes significant changes to forty years of established NEPA regulations. The Attorney General of California and a coalition of 23 other attorneys general (collectively, State Attorneys General) recently filed suit challenging this Final Rule. See California v. Council on Envtl. Quality, Case No. 3:20-cv-06057 (N.D. Cal., complaint filed Aug. 28, 2020) (attached as Exhibit 12).	Reclamation has fully complied with NEPA throughout the SEIS process. Reclamation disagrees with the commenter's legal conclusions regarding the new NEPA regulations, but Reclamation agrees that the 1978 NEPA regulations should apply.
13	40	The new NEPA regulations provide Reclamation with discretion to "apply the regulations in this subchapter to ongoing activities and environmental documents begun before September 14, 2020," the effective date of the revised regulations. 40 C.F.R. § 1506.13. We urge you to comply with the 1978 regulations, if only to avoid creating confusion among commenters and other members of the public about the legal standards that apply to this NEPA process.	See response to comment 13-39.

Letter Number	Comment Number	Comment	Response
13	41	In addition, Reclamation should not apply the revised NEPA regulations because the Final Rule updating the NEPA regulations is unlawful in that it violates NEPA, the Administrative Procedure Act, and other laws. The State Attorneys General challenged the Final Rule because: (i) the Final Rule is contrary to NEPA's text and purpose; (ii) CEQ failed to provide a rational explanation for the Final Rule's numerous changes in policy and interpretation; (iii) CEQ exceeded its statutory authority with certain revisions in the Final Rule; (iv) CEQ violated notice-and-comment requirements; and (v) CEQ failed to analyze the Final Rule's significant environmental impacts or consider reasonable alternatives to the Final Rule, as NEPA requires. See Complaint, California v. Council on Envtl. Quality, No. 3:20-cv-06057, at ¶ 9 (N.D. Cal. filed Aug. 28, 2020). For these reasons, we expect the Final Rule will be vacated as arbitrary, capricious, and contrary to law.	See response to comment 13-39.
13	42	In any event, whichever regulations Reclamation applies, the SEIS does not comply with NEPA. Reclamation has neither taken the required "hard look" at the consequences of its proposed action, nor ensured all the relevant information is available to the public prior to implementing its decision. Congress enacted NEPA in 1969 "to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." 42 U.S.C. § 4331(a). NEPA has two fundamental purposes: (1) to guarantee that agencies take a "hard look" at the consequences of their actions before the actions occur by ensuring that "the agency, in reaching its decision, will have	Reclamation has fully complied with NEPA by taking a hard look at impacts of the project alternatives and disclosing this analysis to the public. Reclamation responded to comments from Federal and state agencies and others in Chapter 33 of the SLWRI FEIS, and has prepared the SEIS in response to comments that further analysis was necessary in certain areas. Reclamation worked with other cooperating agencies during both the EIS and the SEIS process, and has addressed the concerns raised.

Letter Number	Comment Number	Comment	Response
		available, and will carefully consider, detailed information concerning significant environmental impacts;" and (2) to ensure that "the relevant information will be made available to the larger audience that may also play a role in both the decision-making process and the implementation of that decision." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349-50 (1989). To achieve these purposes, NEPA requires the preparation of a detailed environmental impact statement for any "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). In preparing environmental impact statements, federal agencies must consider all of the environmental impacts of their proposed actions. Diné Citizens Against Ruining Our Env't v. Bernhardt, 923 F.3d 831, 851 (10th Cir. 2019). Reclamation's failure to discuss and adequately respond to many Federal and state agency concerns raised during the earlier EIS iterations also contravenes NEPA. Prior to publishing any detailed environmental impact statement, the lead Federal agency official "shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved." 42 U.S.C. § 4332(2)(C). Following circulation of a draft environmental impact statement, the lead agency "shall discuss any responsible opposing view that was not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised." 40 C.F.R. § 1502.9(c). "This disclosure requirement obligates the agency to make available	

Letter Number	Comment Number	Comment	Response
		to the public high quality information, including accurate scientific analysis, expert agency comments and public scrutiny, before decisions are made and actions are taken." Ctr. for Biological Diversity v. U.S. Forest Serv., 349 F.3d 1157, 1167 (9th Cir. 2003).	
13	43	Reclamation Must Adequately Address State Agencies' Comments on the 2013 Draft EIS. California state agencies, including CDFW and CVRWQCB, submitted comments during earlier stages of Reclamation's NEPA review for the proposed Project. See 2013 CVRWQCB Letter and 2013 CDFW Letter (cited above). These comments (attached as exhibits to this letter) raised concerns about Reclamation's failure to adequately consider and disclose potential impacts to water quality, wildlife, and other values associated with raising Shasta Dam. California state agencies also raised concerns related to the scientific evidence supporting the proposed Project—namely, that it would result in minimal benefits for anadromous fish and cause significant and unavoidable impacts to fish, wildlife, native plants, natural communities, and water quality. To date, Reclamation has not provided any meaningful response to the state agencies' comments. NEPA requires Reclamation to assess, consider, and respond to comments. See California v. Block, 690 F.2d 753, 770 (noting "NEPA's public comment procedures are at the heart of the NEPA review process"). "The main policy reason for soliciting public comment is to use public input in assessing a decision's environmental impact." Id. at 771. The requirement to address	Reclamation responded to comments from Federal and state agencies and others in Chapter 33 of the SLWRI FEIS. Additionally, Reclamation has prepared the SEIS to incorporate updated modeling in response to changes to CVP operations since 2015, and has included discussion of environmental impacts and responses to further comments. Reclamation has coordinated with FWS and NMFS throughout the NEPA process, and will continue to consult as warranted.

Letter Number	Comment Number	Comment	Response
		comments subsumes a mandate to disclose, analyze, and respond to opposing viewpoints. 40 C.F.R. § 1502.9(b); see also Seattle Audubon Soc'y v. Espy, 998 F.2d 699, 704 (9th Cir. 1993) (finding that the Forest Service was required to address in the final environmental impact statement scientific criticisms opposing evidence upon which the final statement's management strategy rested); Sierra Club v. Bosworth, 199 F. Supp. 2d 971, 981 (N.D. Cal. 2002) (concluding that a reasoned discussion of major scientific objections must be disclosed in the final impact statement).	
13	44	After Reclamation published a Draft EIS in 2013, CDFW submitted the following comments based on "staff's scientific expertise on California's fish and wildlife and associated habitats including anadromous fish species in the Sacramento River watershed": The DEIS demonstrates that all proposed action alternatives would result in significant and unavoidable impacts to fish, wildlife, native plants, and natural communities. All action alternatives propose very costly enlargements to the cold water pool of Shasta Lake and have highly suspect benefits to anadromous fish survival while providing limited contributions to additional water supply. These benefits, as currently described in the DEIS, would be of minimal value and would not significantly contribute to recovery of anadromous species. See 2013 CDFW Letter at 1. CVRWQCB commented that "[t]he project will have a number of significant and unavoidable direct and indirect impacts on	Reclamation addressed these comments in Chapter 33 of the SLWRI FEIS. Please also refer to SLWRI FEIS Master Comment Responses regarding Costs vs. Benefits, section 33.3.8. Chapter 4 of the SEIS provides an updated discussion of environmental impacts due to the changes in CVP operations.

Letter Number	Comment Number	Comment	Response
		water quality and the environment that cannot be mitigated to the point where these impacts could be considered less than significant." See 2013 CVRWQCB Comment Letter at 3. Those impacts are from "[increased] sediment that will be generated by the raised water level"; "increase[d] turbidity [that] will also reduce the ability of predatory birds . . . to visually spot and capture fish"; and "increased sediment loads to reservoirs" that can "introduce inorganic matter." See 2013 CVRWQCB Letter at 1-3. The Final EIS did not adequately address these comments. With respect to many of the points raised by state agencies, Reclamation simply dismissed the agencies' concerns without any attempt to explain why Reclamation believed those concerns were not supported. See, e.g., 2015 Final EIS at 33.8-21 (Reclamation's response to CVRWQCB's comment that raising Shasta Dam would increase load of metal pollutants in Shasta Reservoir). Reclamation could have remedied this failure in the Draft SEIS, but it did not. The SEIS continues to maintain that the proposed Project (including the 6.5, 12.5, and 18.5 feet alternatives) would contribute to increased survival of anadromous fish, even though CDFW provided unrefuted scientific evidence to the contrary. See e.g. SEIS at 5-27, 5-31. In addition, other than proposing the use of best management practices in connection with the future development of a storm water pollution prevention plan, the SEIS does not address CVRWQCB's concerns related to increased sediment and turbidity. See e.g. SEIS at 3-1 through 3-2. The SEIS provides no	

Letter Number	Comment Number	Comment	Response
		adequate explanation why Reclamation ignored the input of California's expert wildlife and environmental agencies.	
13	45	The comments from state agencies are critical to understanding potential significant water quality impacts and impacts to fish and wildlife species. Responses to these comments are a necessary and legally required step in the NEPA process, and may require significant revisions to Reclamation's review of impacts. If such revisions are necessary, Reclamation should recirculate the SEIS for further public comment.	Comment noted.
13	46	Reclamation Failed to Adequately Analyze Harm to Sensitive Species During the Entire NEPA Process. The SEIS further fails to meaningfully address impacts to sensitive species, including species listed under the ESA: 1. Western yellow-billed cuckoo Western yellow-billed cuckoo are listed as threatened under the federal ESA, and FWS has proposed to designate critical habitat for this species in the Sacramento River below Shasta Dam. The SEIS asserts that impacts to yellow-billed cuckoo and their habitat will not be "significantly different" from the impacts Reclamation described in its 2015 Final EIS. See SEIS at 4-8. However, Reclamation's attempt to rely on the 2015 Final EIS's analysis of impacts to western yellow-billed cuckoo is unavailing, because the Final EIS failed to fully grapple with	Please refer to Master Comment Response ESA-1, ESA Compliance.

Letter Number	Comment Number	Comment	Response
		those impacts. The 2015 Final EIS concedes that raising Shasta Dam could result in "loss of nesting habitat" for some species, including western yellow-billed cuckoo, and could "eventually lead to a reduction in local populations" of cuckoo. 2015 Final EIS at 13-151 to 13-152. But this understates the extent of potential harm to the birds. As FWS explained in a 2015 report to Reclamation, raising Shasta Dam, when combined with other anticipated impacts, could extirpate western yellow-billed cuckoo from the area. 2015 FWS Report at xiii. Reclamation must update the 2015 Final EIS's analysis of cuckoo impacts to include a full and fair assessment of impacts to western yellow-billed cuckoo.	
13	47	Riparian species The SEIS further fails to rationally address impacts to fish and other riparian species. Rivers downstream from the proposed Project provide important spawning and rearing habitat for sensitive anadromous fish species, including Chinook salmon and Central Valley steelhead. See SEIS at 4-6. The SEIS asserts that the proposed Project generally would be beneficial to anadromous fish, "with an increase in cold-water storage and better temperature management." SEIS at 4-7. This assertion ignores earlier assessments by CDFW and FWS—the experts on impacts to these species—that Reclamation has overstated the benefits of increased cold-water storage, and that any benefits from the proposal are outweighed significantly by anticipated harms to anadromous fish from detrimental changes to rearing habitat. 2015 FWS Report at viii, xiii; see also 2013 CDFW Letter at 4-6. According to FWS, "[o]nly one alternative (CP4) provides any substantial benefit to anadromous fish survival[.] . . . In	Reclamation has coordinated with FWS and NMFS throughout the NEPA process. The SLWRI SEIS updates the analysis of environmental impacts due to the changed CVP operations under the 2019 Biological Opinions. Please refer to Master Comment Response ESA-1, ESA Compliance. Reclamation will continue to consult with FWS and NMFS as necessary.

Letter Number	Comment Number	Comment	Response
		about 90 percent of the years, there would be no benefit to anadromous fish survival." 2015 FWS Report at viii. The SEIS ignores these expert assessments.	
13	48	Further, as discussed in the expert comment letters submitted by Russell Liebig, Greg Pasternack and G. Mathias Kondolf, and Bruce Herbold, harm to riparian species and habitat associated with raising Shasta Dam will be much more severe than Reclamation acknowledges. [Footnote 5 The expert comment letters are hereby incorporated by reference, as if set forth here in full.] See Letter from Russ Liebig, Stillwater Sciences, to David Brick, Bureau of Reclamation (Oct. 5, 2020) (Liebig Letter); Letter from Greg Pasternack & G. Mathias Kondolf to David Brick, Bureau of Reclamation (Oct. 4, 2020) (Pasternack & Kondolf Letter); Letter from Bruce Herbold to David Brick, Bureau of Reclamation (Oct. 5, 2020) (Herbold Letter). As the letters state: Increasing the level of Shasta Reservoir could largely eliminate habitat for special status species in the lower reaches of the McCloud River, including habitat for hardhead and foothill yellow-legged frog, Liebig Letter at 4; • Periodic flooding of the lower McCloud River could reduce the productivity of trout food sources in the River and thus harm the local trout population, Liebig Letter at 6; Altering habitat in the lower McCloud River could change the composition of fish species and "may increase the distribution of non-native warm water species to the detriment of native cold-water species," Liebig Letter at 7;	Please refer to Master Comment Response ESA-1, ESA Compliance, regarding Reclamation's coordination with FWS and NMFS and ongoing consultation.

Letter Number	Comment Number	Comment	Response
		The SEIS's prediction that raising the dam will merely shift habitat in the lower McCloud River further upstream is incorrect and ignores the unique geomorphology of the lower River, Pasternack & Kondolf Letter at 4; Habitat in the transition reach of the McCloud River—that is, the portion of the River that is periodically flooded as the level of Shasta Reservoir fluctuates—is unique and "of disproportionate importance to the Lower McCloud River," Pasternack & Kondolf Letter at 4; Riffle habitat in the transition reaches of the lower McCloud River "has the potential to support more salmonid spawning over more of the year" than other segments of the River, Pasternack & Kondolf Letter at 5; The SEIS fails to analyze how the timing of inundation of the lower McCloud River relative to the timing of different stages of the salmonid life cycle may exacerbate impacts to salmonid species, Pasternack & Kondolf Letter at 6; The SEIS ignores impacts to habitat in the existing transition reach, which would be inundated to a greater extent if Reclamation raises Shasta Dam, Pasternack & Kondolf Letter at 6; The SEIS provides no meaningful analysis of mitigation measures that could reduce impacts to fisheries, Pasternack & Kondolf Letter at 7.	

Letter Number	Comment Number	Comment	Response
		FWS agrees that raising Shasta dam could have severe impacts on fish in the proposed Project area. As FWS concluded in its 2015 report: [t]he enlargement of Shasta Dam . . . will reduce rearing capacity for juvenile salmonids by further altering the natural successional process for riparian forest habitat, and by reducing juvenile salmonid access to the high quality rearing habitat found in floodplains and bypasses because of reduced high water flow events. 2015 FWS Report at xiii; see also 2013 CDFW Letter at 4-6. Reclamation must disclose and address all of these issues in the final SEIS.	
13	49	The SEIS further ignores potential impacts to Delta smelt and other fish species in the San Francisco Bay Delta. Raising Shasta Dam would allow Reclamation to increase exports from the Delta, thus potentially worsening the Delta's hydrology. See 2019 FWS BiOp at 404-05; 2015 FWS Report at 125; Herbold Letter at 11. For example, "[i]ncreasing Delta exports during Delta smelt spawning in February could increase entrainment of this federally-listed species especially during critically dry years[.]" 2015 FWS Report at 126. The SEIS, however, makes no attempt to predict how such changes could affect the status of Delta smelt or other species in the Delta. The SEIS also fails to address how impacts from raising Shasta Dam will compound impacts from other water projects in the Central Valley, such as Reclamation's proposals to raise the level of San Luis Reservoir and to alter operation of the Yolo Flood Bypass. Herbold Letter	Please refer to Master Comment Response ESA-1, ESA Compliance.

Letter Number	Comment Number	Comment	Response
		at 11-12. Reclamation must address such impacts, so that members of the public can fully understand all of the proposed Project's potential downstream effects.	
13	50	Shasta snow-wreath California proposed earlier this year to list the Shasta snow-wreath under CESA. See California Regulatory Notice Register, No. 18-7, at 692 (May 1, 2020). Reclamation ignores this proposed listing, despite the fact that raising Shasta Dam could "partly or substantially" inundate "46 percent of all known occurrences of the plant species." 2015 FWS Report at xii. This impact is particularly concerning, as an additional 46 percent of Shasta snow-wreath populations are already threatened by projects not associated with the proposed dam raise, such as mining, fire, invasive species, and "other human-related activities"; just one of the 24 known snowwreath populations is "not currently threatened by the [proposed dam raise] or non-project related activities." 2015 FWS Report at 93. Thus, "[f]urther evaluation of the Shasta snowwreath is needed to determine if the species can be conserved / protected from impacts" associated with raising Shasta dam, 2015 FWS Report at xii, especially in light of California's proposed CESA listing.	Please refer to Master Comment Response ESA-1, ESA Compliance.
13	51	The Draft SEIS Lacks Meaningful Measures to Mitigate Wetland Impacts. Reclamation must provide more information about mitigation measures for impacts to wetlands from the proposed Project. The SEIS indicates that Reclamation will develop a "Wetland Mitigation Plan" with a minimum replacement ratio of three to one at a later time, but it does not provide any details about	The comment does not identify any new information that requires supplemental analysis. Please see Chapter 2 of the SLWRI Final SEIS for an analysis of impacts to wetlands and proposed mitigation. Reclamation cannot determine final mitigation measures until the final details of impacted wetlands and other WOTUS are known, but Reclamation has committed to a 3:1 replacement ratio of acquired lands to impacted lands and has identified a mitigation

Letter Number	Comment Number	Comment	Response
		the contents of that plan or location (on site or off site) of the replacement wetlands. See SEIS at 2-10. Further discussion of mitigation measures is essential to understanding the project's potential wetland impacts. S. Fork Band Council of W. Shoshone of Nev. v. U.S. Dep't of Interior, 588 F.3d 718, 727 (9th Cir. 2009) (EIS must discuss "mitigation measures, with "sufficient detail to ensure that environmental consequences have been fairly evaluated.") (quotation omitted).	bank and in-lieu fee program within the SLWRI project area. Reclamation will continue to develop the mitigation plan.
13	52	CONCLUSION In sum, Reclamation misapprehends and ignores the fundamental environmental protections that apply to its effort to raise Shasta Dam. The draft supplemental EIS further fails to comply with NEPA's basic environmental disclosure requirements. Reclamation must correct these errors before it takes any further step towards implementing the proposed Project.	Reclamation will comply with all applicable law.
13	53	[Attachment 1] EXHIBIT 1 – OEHHA, Information About the Advisory for Eating Fish from Shasta Lake	Comment noted.
13	54	[Attachment 2] EXHIBIT 2– OEHHA, Health Advisory and Guidelines for Eating Fish from Shasta Lake (Shasta County)	Comment noted.
13	55	[Attachment 3] EXHIBIT 3 – Letter from FWS to Regional Director, U.S. Bureau of Reclamation (Sept. 20, 2013)	Comment noted.
13	56	[Attachment 4] EXHIBIT 4 – Letter from CDFW to Bureau of Reclamation, Planning Division (Sept. 30, 2013) DSEIS_013	Comment noted.
13	57	[Attachment 5] EXHIBIT 5 – FWS, Coordination Act Report for the Shasta Lake Water Resources Investigation (2015)	Comment noted.
13	58	[Attachment 6] EXHIBIT 6 – Letter from CVRWQCB to Bureau of Reclamation (Sept. 11, 2013)	Comment noted.

Letter Number	Comment Number	Comment	Response
13	59	[Attachment 7] EXHIBIT 7 – SWRCB, State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (April 2, 2019)	Comment noted.
13	60	[Attachment 8] EXHIBIT 8 – Letter from the Winnemem Wintu Tribe to Tribal Council Representatives Regarding Resolution Opposing the Proposed Raise of Shasta Dam (Sept. 12, 2020)	Comment noted.
13	61	[Attachment 9] EXHIBIT 9 – Craig Miller, Shasta Dam Project Sets up Another Trump-California Showdown, KQED (Jan. 28, 2019)	Comment noted.
13	62	[Attachment 10] EXHIBIT 10 – Order Granting Preliminary Injunction, People v. Westlands Water Dist., Case No. 192487 (filed July 29, 2019)	Comment noted.
13	63	[Attachment 11] EXHIBIT 11 – Memorandum from the Secretary of Interior, State Fish and Wildlife Management Authority on Department of the Interior Lands and Waters (Sept. 10, 2018)	Comment noted.
13	64	[Attachment 12] EXHIBIT 12 – California, et al. v. Council on Envtl. Quality, Case No. 3:20-cv-06057 (N.D. Cal., complaint filed Aug. 28, 2020)	Comment noted.

1.7 Comments from Regional and Local Agencies and Responses

This section contains the comments submitted by Regional and Local Agencies listed in Table 1.7-1. Table 1.7-2 provides the comments and their response in tabular format. Table 1.7-2 is presented by letter number in sequential order.

Table 1.7-1. Regional and Local Agencies Providing Comments on Draft SEIS

Name, Title	Organization	Letter Number
Jason Phillips, CEO	Friant Water Authority	4
Jennifer Pierre, General Manager	State Water Contractors	5
Michael Prowatzke	Western Area Power Administration	6
Jerry Toenyes	Northern California Power Agency	7
Jeffrey Sutton, General Manager	Tehama Colusa Canal Authority	8
Federico Barajas, Executive Director	San Luis & Delta-Mendota Water Authority	10
Bill Diedrich, Chair	San Luis Water District	49

Table 1.7-2. Responses to Comments Provided by Local and Regional Agencies

Letter Number	Comment Number	Comment	Response
4	1	The Draft SEIS should evaluate any potential changes to hydrology, hydraulics, and water management compared to the 2015 Final EIS (Chapter 6). The revised operations and modelling for the No Action and CP-4a could result in different effects to this resource area than those described in the Final EIS.	The SLWRI Draft SEIS analyzed the changes in effects due to updated regulations since 2015. The conclusion in the SLWRI Draft SEIS is that the water supply effects are similar to those identified in 2015 when comparing the with-project to the no-project condition.
4	2	The Draft SEIS does not provide tabular and graphical results for the revised modelling in a format similar to the 2015 Final EIS. The Draft SEIS only provides summary-level descriptions for changes in Shasta and Sacramento River flows and temperatures. More detail should be provided in a format similar to the 2015 Final EIS Modelling Appendix in order to sufficiently understand potential changes in effects to all pertinent resource areas.	Reclamation has developed a Modeling Appendix to provide additional detail on the modeling results provided in the SLWRI Draft SEIS. See Appendix E, Modeling Appendix.
5	1	The SWC is concerned about the analysis and conclusions contained in the Bureau of Reclamation's ("Reclamation") Draft Shasta Lake Storage Investigation Supplemental Environmental Impact Statement ("Draft Supplemental EIS") analyzing the potential impact of raising the elevation of Shasta Reservoir (herein referred to as "Project"). While we are overall supportive of additional storage in California, the significant water supply impact that this Project will have on the SWP is of major concern. The Draft Supplemental EIS shows that this Project will have a potentially substantial impact on the SWP, causing up to a 172,000 acre-feet reduction in SWP Table A supplies and up to a 141,000 acre-feet reduction in SWP Article 21 supplies. At the same time, it is unclear if these changes represent the full extent of the impacts to the SWP	CalSim is a long-term planning tool and model results should be used to evaluate long-term trends rather than individual months. The model results show an average annual decrease of 13 TAF to total SWP deliveries (9 TAF of Table A and 4 TAF of Article 21). This is equivalent to a decrease of 0.25% and is considered minimal. The change in SWP Table A deliveries by water year type are also below 1%. The SWC notes the year with 172 TAF reduction to SWP deliveries - the modeling shows an increase of 175 TAF in the next year. This highlights the importance of using trends when evaluating CalSim model results.

Letter Number	Comment Number	Comment	Response
		because the Draft Supplemental EIS does not consider the SWP's operations under its California Endangered Species Act (CESA) Incidental Take Permit (ITP) and were not included in the modeling used for the Draft Supplemental EIS.	This analysis was done prior to a publicly available model that included the State's ITP actions. However, given that the SWP exports will further be limited under the State's ITP's no-project condition, the effect of a raised Shasta on SWP deliveries would either be similar or smaller to those without the project.
5	2	As described in detail below, SWC are concerned about the NEPA analysis and conclusions contained in the Draft Supplemental EIS. While we are supportive of additional storage, the potential water supply impacts that this Project will have on the SWP are a significant concern. The SWC request that Reclamation fully avoid, minimize, and offset any impacts to the SWP so that this Project will have no redirected negative impacts, the full extent of which needs to be disclosed and analyzed in the Draft Supplemental EIS.	The 2015 SLWRI FEIS Chapter 6 "Hydrology, Hydraulics, and Water Management" determined that there would be no significant impacts to the SWP. The modeling results presented within the Draft SEIS demonstrate that operating Shasta Dam under the 2019 BiOps does not significantly alter operations in such a way that would change the conclusions presented in the 2015 SLWRI FEIS for impacts to the SWP.
5	3	The Draft Supplemental EIS does not meet legal standards. The National Environmental Policy Act (NEPA) regulations explain that the purpose of an environmental impact statement ("EIS") is to: "...ensure agencies consider the environmental impacts of their actions in decision making. It [an EIS] shall provide a full and fair discussion of significant environmental impacts and shall inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment… [An EIS]…shall be concise, clear, and to the point, and shall be supported by evidence that the agency	The Draft SEIS was written to "provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns" (SEIS 1-2). The SEIS includes a comprehensive modeling update which includes an analysis of the project's potential impacts to the CVP. Any species or other scientific knowledge not included in the SEIS was determined to not have a significant impact

Letter Number	Comment Number	Comment	Response
		has made the necessary environmental analyses. An environmental impact statement is a document that informs Federal agency decision making and the public." (40 CFR §1502.1.) The Draft Supplemental EIS lacks sufficient evidence to inform decision-makers and the public because the modeling is not representative of the existing CVP and SWP operations, and there is no meaningful discussion of the Project's impacts to the SWP, aquatic species upstream and in the Delta, and water quality in the Delta, and how the Project's impacts would be avoided or minimized as described in the comments below. Nor does it include alternatives that would avoid or minimize these adverse effects.	on the analysis and effects presented within the 2015 SLWRI FEIS.
5	4	The Draft Supplemental EIS violates NEPA as the modeling results show potentially substantial impacts to the SWP; these effects are not disclosed, discussed, avoided, or minimized. The Draft Supplemental EIS contains no discussion of the effect that this Project will have on the SWP. Our review of the modeling results shows that this Project will have substantial impacts on the SWP. Reclamation's modeling results show that the Project will reduce the annual SWP Table A supplies by up to 172,000 acre-feet and reduce annual SWP Article 21 supplies by up to 141,000 acre-feet. The modeling results also show that this Project will potentially impact Delta outflow and in-Delta water quality, which would result in potential additional impacts to SWP operations. This information was not disclosed in the Draft	Reclamation has developed a modeling appendix to include additional information on how the modeling results were developed for the Draft SEIS. Reclamation has included this appendix within the Final SEIS (See Appendix E, Modeling Appendix). There is confusion on the determination of what constitutes significance within the Draft SEIS. The Draft SEIS does not seek to determine whether any effects to the environment or the SWP are by themselves significant. Instead, the Draft SEIS analyzes new information, specifically the requirements of the 2019 BiOps and updated modeling, to determine if the projected impacts of the project are significantly different than those described within the 2015 SLWRI FEIS. The conclusion of the Draft SEIS is that these effects are not significantly

Letter Number	Comment Number	Comment	Response
		Supplemental EIS or provided in a modeling appendix to the EIS; rather the SWC had to review the modeling studies and the outputs to obtain this information, meaning that neither decision-makers nor the public were informed of this effect to the SWP water supply, which benefits 27 million Californians. Since it was not disclosed, there certainly was no discussion of how this impact on the SWP would be avoided, minimized, and mitigated. The SWC requests a no harm agreement ensuring that this Project does not negatively impact the SWP.	different than the effects already disclosed within the 2015 SLWRI FEIS; not that the effects themselves are not significant. An analysis of these effects and their proposed mitigation can be found within Chapter 6 ""Hydrology, Hydraulics, and Water Management" of the 2015 SLWRI FEIS.
5	5	The Draft Supplemental EIS violates NEPA as the modeling performed is not representative of ongoing CVP and SWP operations and is incomplete and inadequate. The modeling of the No Action Alternative includes an incorrect representation of the operation of the SWP and CVP, and therefore all comparisons of the action alternatives to the No Action Alternative as a means of estimating the effect of the Project are flawed and meaningless and therefore cannot adequately inform decision-makers or the public. By not including the climate change and sea level rise at 2030, the modeling of the No Action Alternative in the Draft Supplemental EIS is inconsistent with Reclamation's LTO final EIS, which is Reclamation's best and most current representation of the No Action Alternative, and CVP and SWP operations under the 2019 biological opinions.	The SEIS analyzes the effects due to updated regulatory environment since 2015. The climate change effects were analyzed and documented in the 2015 SLWRI FEIS.
5	6	As the Draft Supplemental EIS states at p. 4-2, the No Action Alternative includes operations as described in the 2019 biological opinions and the 2018 amendment to the	See response to Comment 1, Letter 6.

Letter Number	Comment Number	Comment	Response
		Coordinated Operations Agreement (COA), but not SWP's operations under its 2020 Incidental Take Permit (ITP). Since the model (CALSIM II) that Reclamation used in the analysis also includes a representation of SWP operations, Reclamation's modeling assumes that the SWP is only operating to the 2019 biological opinions and not the 2020 ITP, which will impact the modeling of both the CVP and SWP operations. For example, as required by the ITP, the SWP is operating under more restrictive Old and Middle River export requirements and higher outflow obligations as compared to the CVP. Similarly, the ITP limits CVP from using SWP facilities under certain conditions. As a result, CVP and SWP diversions, exports and storage operations will differ compared to the operations represented in the No Action modeling used in the Draft Supplemental EIS. The ITP also impacts the operational flexibility of the SWP; and since the Draft Supplemental EIS modeling already shows that Oroville would be impacted by this Project in critical water years when the ITP scenario is not included, the potential impact of the project on Oroville storage is likely even greater than reported in the Draft Supplemental EIS.	
5	7	The modeling also assumes that only 443 TAF of the 634 TAF of proposed increase in Shasta storage in this Project is available for operations. That means the modeling does not represent the filling of 191 TAF of the 634 TAF of new Shasta storage or day-to-day operation of this volume. It is unclear how the 191 TAF will be filled and operated, and its impacts on the Delta, and may have potentially undisclosed additional impacts on the Delta and/or the SWP.	The 191 TAF of storage that is not dynamically simulated is water reserved for cold-water pool. It is intended that this pool will be filled once and not operated after that time. Since this pool is static after its initial filling, it is inconsequential to the long-term dynamic operations in the long-term planning model, and assuming an initial fill coinciding with the CalSim period of record may not accurately reflect real conditions.

Letter Number	Comment Number	Comment	Response
			Reclamation evaluated the potential impacts to the SWP for the initial filling of the reservoir within the 2015 SLWRI FEIS and determined there would be no significant impacts. See Chapter 6 of the 2015 SLWRI FEIS "Hydrology, Hydraulics, and Water Management."
5	8	Cumulative impacts of various ongoing planned storage projects by Reclamation should be analyzed and disclosed. Reclamation and CVP contractors are simultaneously pursuing several expanded storage projects including B.F. Sisk Dam raise and Los Vaqueros expansion in addition to this Shasta Lake Enlargement project. Each project individually and cumulatively will likely impact SWP water supply and operations. The modeling results for Shasta Lake enlargement indicates up to 190,000 acre-feet reduction in SWP exports and the modeling for B.F. Sisk Dam Raise and Reservoir Expansion project indicates up to 155,000 acre-feet reduction in SWP exports. These projects should be analyzed together and the total magnitude of the impacts to SWP should be disclosed. The Draft Supplemental EIS should analyze and disclose the fullest extent of the cumulative impacts of all the ongoing projects on the SWP.	Both the FEIS and SEIS fully comply with Reclamation's obligations under NEPA and its implementing regulations. Reclamation will continue to comply with all applicable law.
5	9	Overall, SWC supports enhancing storage capability in California, and finding environmentally responsible water supply solutions under an increasingly erratic climate condition. However, it is clear based on the project description and the incomplete modeling used in the Draft Supplemental EIS, there is potential for impacts to the SWP	Reclamation has developed a modeling appendix to include additional information on how the modeling results were developed for the Draft SEIS. Reclamation has included this appendix within the Final SEIS (See Appendix E, Modeling Appendix).

Letter Number	Comment Number	Comment	Response
		during the operation of this Project. Therefore, the project description should include a commitment to ensure no harm to the SWP. Operations of the expanded Shasta storage will require revisiting the December 2018 COA amendment between DWR and Reclamation.	The project description and purpose are described within Chapter 1 of the Draft SEIS and Chapter 1 of the 2015 SLWRI FEIS. It is the purpose of an EIS to determine the potential impacts of the project and its alternatives; including a declarative statement on the project's effects prior to providing the analysis on such effects would not be part of the NEPA process.
6	1	WAPA appreciates efforts that the Bureau of Reclamation ("Bureau") takes toward producing reliable, cost-effective hydroelectric power. WAPA continues to encourage the Bureau to explore and consider the general economic feasibility of all Shasta Dam alternatives in reaching a decision. We support the Bureau in assessing these alternatives, particularly in relation to any new conditions in the operational and regulatory environment that have arisen in the five years since the original EIS. While we are not stating a preference for any particular alternative that has been presented, we do recognize the benefits regarding the supplemental EIS's new proposed location for the Lakeshore Fire Guard Station, reducing wetland impacts from 7 to 0.14 acres. We explicitly express our support for this change to the project description. This change as compared to the original alternative is not only noteworthy for its environmental benefits but also for significant potential cost savings to the CVP's beneficiaries, given the Bureau's stated commitment to a minimum 3:1 wetland mitigation ratio.	We thank WAPA for their comments and support for the new proposed location of the Lakeshore Fire Guard Station and our efforts to minimize and mitigate for effects on wetlands and other waters of the U.S. Please refer to master responses for cost/benefits in the SLWRI FEIS (Chapter 33) which provides responses related to the intent of the EIS and process to define Federal interest and responses related to comments on the SLWRI Feasibility Report.
7	1	The Bureau of Reclamation issued a Draft Supplemental Environmental Impact Statement (EIS) for the Shasta Lake Water Resources Investigation on August 6, 2020, and	Please see response to comment 7-2 regarding comments previously provided on the SLWRI DEIS. Please refer to the SLWRI FEIS Master Comment Response COST/BEN-1,

Letter Number	Comment Number	Comment	Response
		requested comments by October 5, 2020. The Northern California Power Agency (NCPA) members receive more than 42 percent of the Central Valley Project (CVP) hydropower marketed by Western Area Power Administration and have contributed significantly to CVP and Shasta Dam repayment. NCPA reasserts our comments submitted to the Draft EIS, attached to the Final EIS, Duplicate DEIS Comments Appendix on Page 357, and also attached herein for your convenience. Also, critical corrections to cost allocation and clarifications on project operations with non-federal partners remain outstanding and require resolution before project construction. As you may recall, a change to the cost allocation and benefit analysis was made after public comment on the DEIS, which erroneously increased the power benefit from 7 percent, or $84 million, to 19 percent, or more than $243 million, in the final report. While we appreciate Reclamation's acknowledgment and commitment to correct the power cost-benefit evaluation, corrections have not yet been made public. In addition, if the project advances with non-Federal participation under the Water Infrastructure Improvements for the Nations Act, important operational and entitlement questions remain. We believe it is essential to define coordinated operations, incremental distribution of output, and whether or not enlarging Shasta Dam 18 ½ feet changes the underlying multipurpose benefit.	Intent of EIS and Process to Determine Federal Interest regarding the intended use of the EIS in the NEPA process. Please also see the SLWRI FEIS Master Comment Response COST/BEN-2, Comments Related to the SLWRI Feasibility Report. The Draft Feasibility Report and related evaluations are beyond the scope of the SLWRI Draft SEIS, therefore no changes have been made. Please refer to the SLWRI Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance regarding non-federal participation.
7	2	Reclamation issued a Draft Environmental Impact Statement (DEIS) for the Shasta Lake Water Resource	The SLWRI Draft SEIS does not alter or change any analysis related to power supply or generation. Because the

Letter Number	Comment Number	Comment	Response
		Investigation on June 28, 2013 and requested written comments by September 30: 2013. The Northern California Power Agency (NCPA) offers the following comments -on the power portions of the DEIS. The hydropower section on page 8 of the Executive Summary states that over the next 1 0 years California's peak demand is expected to increase 30 percent, from about 50□000 megawatts to about 65,000 megawatts. The 50.000 megawatt peak demand is correct for the part of California operated by the California Independent System Operator but does not include the other control area demand in California, such as Imperial Irrigation District, Los Angeles apartment of Water and Power, and the Balancing Authority of Northern California. In total, California□s current peak demand exceeds 60,000 megawatts. In addition, the California Energy Commission projects California's peak demand will increase by approximately 1.3 percent per year. The language in the hydropower section on page -·16 of chapter should also be changed to reflect these corrections. This generation data for potential benefits that is shown in Table 4-4 of the Plan Formulation Appendix conflicts with the potential generation benefits shown for the five comprehensive plans (CP) starting on page 2-38 in Chapter 2 and in the Plan Formulation Appendix. It appears data contained in Tables 23-3 through 23- 7 of Chapter 23, Power and Energy, was used to develop the generation impact for the five CP1s by adding the generation data in	hydropower section of the SLWRI FEIS remains unchanged, the changes requested by the commenter have not been made. Please refer to the SLWRI FEIS responses to comments at 33.10-29 to review the responses to the Norther California Power Agency's comments on the SLWRI DEIS.

Letter Number	Comment Number	Comment	Response
		Impact Hydro - 2 - Decrease in CVP System Energy Generation with the data in Impact Hydro - 3 - Decrease in SWP System Energy Generation. That computation, however, overstates the additional generation developed by the CP alternatives. The data contained in Impact Hydro - 6 - Decrease in Pit 7 Powerplant Energy Generation needs to be subtracted from the additional generation derived from Hydro 2 and 3 to obtain the true generation impact for each CP. In addition, the report needs to clearly state how the generation data for each CP is developed. The Impact Hydro - 1- Decrease in Shasta Powerplant Energy Generation category should be eliminated in all the tables in Chapter 23 since Shasta generation is included in Impact Hydro 2. Including the same Shasta energy generation in both categories is duplicative and leads to confusion regarding the total generation increase for each CP. Impact Hydro 4 and 5 should be extracted from the current tables and_ placed in separate tables so generation impacts are shown in one table and pumping impacts in another. Since some of the generation benefit accrues to the State Water Project (SWP), the report should clearly state that the proportional project cost associated with SWP power benefits will be allocated to SWP for repayment The DEIS should state that a long term contract will need to be negotiated with t e SWP to ensure the repayment of the allocated cost associated with the SWP benefits. Chapter 23, Section 23.1 should be corrected to state that power is marketed by the Western Area Power	

Letter Number	Comment Number	Comment	Response
		Administration, not the Western Power Authority. Chapter 23, Section 23.2, omits an important proposed regulation by the State Water Resources Control Board (SWRCB) that could have a significant effect on each CP. The SWRCB has proposed implementation of unimpaired flow criteria for both the San Joaquin and Sacramento rivers. If that flow criteria is placed into effect, the calculated benefits for each CP will be greatly altered_ In addition~ Reclamation has recently made water releases for fishery that reduces reservoir storage (i.e. Trinity River), or bypasses generation (i.e. Folsom Dam) to meet other regulatory requirements~ The affect of implementing these potential regular on requirements on Shasta Lake needs to be addressed in the DEIS. Thank you for your consideration of these comments.	
8	1	The TCCA supports the prudent and feasible expansion of surface storage in California for a variety of reasons discussed herein. In particular, TCCA is very supportive of the concept of raising Shasta Reservoir for the multiple important benefits this proposed project could provide, as outlined below: 1. Increasing Shasta Reservoir by 18.5 feet will provide an additional 634,000 acre feet of increased surface storage capacity, greatly improving the water supply reliability, drought resiliency, and climate variability associated with the operation of Shasta Reservoir, and the CVP as an integrated Project.	Reclamation acknowledges the commenter's support for the proposed project. The SLWRI FEIS addressed each of the topics raised in this comment. The SLWRI Draft SEIS focused on addressing wetlands and waters of the United States, stormwater and other point-source discharges, Shasta Dam operations and modeling, wild and scenic river considerations for the McCloud River. These issues, along with others addressed in the SLWRI FEIS and SEIS will be considered as part of Reclamation's NEPA decision for the project.

Letter Number	Comment Number	Comment	Response
		2. Increased hydropower generation associated with the Shasta Raise would serve to meet the increasing power needs of the region and the state in an environmentally friendly manner that does not have carbon producing impacts. 3. The Shasta Raise would result in increased flood control protection for the communities, infrastructure and important agricultural lands downstream. Further, the raise would increase the flood control curve for operating Shasta Reservoir, thereby also providing operational flexibility to the system. 4. The raise of Shasta Dam would result in enhanced recreational opportunities. 5. The resulting increased operational flexibility and water supply reliability associated with the Shasta Raise would also serve to increase the use of water produced by surface storage, thereby preserving groundwater supply, and also providing for regional and statewide groundwater banking and conjunctive use opportunities. [An issue of increasing import in light of the implementation of the Sustainable Groundwater Management Act]. 6. The Shasta Raise Project would provide significant important environmental benefits associated with greatly enhanced cold water pool management capability, river flow stabilization, provide increased opportunities for appropriately timed pulse flows, flood plain connectivity, and Delta water quality and habitat benefits. These opportunities would serve to greatly improve river conditions, water quality, and habitat for several threatened and endangered fish species on the	

Letter Number	Comment Number	Comment	Response
		Sacramento River and the Delta, including: Winter-Run Chinook Salmon, Spring Run-Chinook Salmon, Central Valley Steelhead, Green Sturgeon and Delta Smelt. 7. Lastly, the Shasta Raise would have negligible (potential) impacts to a very small portion of the McCloud River for only intermittent and short durations. Moreover, it is very unlikely that the Shasta Raise would have any appreciable impact on the wild trout fishery on the McCloud River. Based on the foregoing, TCCA is very supportive of, and interested in, the potential significant benefits that would result with an enlargement of Shasta Reservoir.	
8	2	However, in the further development of the Project, TCCA does feel it is imperative that additional detail and analysis is necessary on a few critical items. TCCA is interested in clarification related to the proposed integrated operations of an enlarged Shasta Reservoir, more definition of the water supply beneficiaries, and the affect on water accounting and annual allocations for the CVP as whole that would result. Further, TCCA is interested in the resulting effect on CVP rate-setting responsibilities, capital repayment details, and the calculation/segregation of O&M costs resulting from a yet to be defined participation associated with the Shasta Raise. In sum, CVP stakeholders (whether funding participants or not) must be assured that this process will be equitable, transparent, and inclusive, fairly distributing both the responsibilities, both the costs and the benefits, attributable to the Shasta Raise in manner	Reclamation recognizes the TCCA's concern regarding the topics raised in the comment, however these issues are outside the scope of the SLWRI Draft SEIS.

Letter Number	Comment Number	Comment	Response
		that does not redirect costs or water supply impacts to others.	
10	1	Project Benefits Endangered Species Reclamation's analysis of the proposed project under the new BOs indicated that the new operational changes resulted in an increase in reservoir storage. This increase results in a larger cold- water pool, which provides Reclamation the opportunity to better manage temperature and cold water releases for at risk salmonid species for a greater time period and with greater flexibility. The DSEIS states, "In critical years, temperatures are higher earlier in the temperature management season and lower later in the season. In other years (wet, above normal, below normal, and dry) results show consistent decreases in temperature across most months." (SLWRI DSEIS, Page 4-5). Additionally, "The SLWRI project provides benefits to salmonid spawning and egg mortality by increasing the number of years that can be managed to a more stringent standard. The effect is particularly notable in the number of years that change from Tier 2 to Tier 1, but several other years move up a Tier as well." (SLWRI DSEIS, Page 4-7) Importantly, "While the tiny amount of mortality (of salmonids) experienced in Above Normal years does not improve, all other water year types see mortalities decrease according	Reclamation acknowledges the commenter's support for the project. As described in Chapter 1, Introduction, of the SLWRI FEIS, the purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary project objectives are: • Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant • Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir. For additional discussion regarding the project purpose, need, objectives, and alternatives, commenters should refer to the SLWRI FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, "Range of Alternatives." which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives.

Letter Number	Comment Number	Comment	Response
		to both models, with the most significant high mortality numbers in Critical Dry years seeing particularly large reductions." (SLWRI DSEIS, page 4-7). These operational benefits are favorable to several species protected by Endangered Species Act regulations, including Winter-run Chinook Salmon, Central Valley steelhead, and Western Yellow-billed Cuckoo. In fact, the last decade demonstrates the benefits that would be derived for temperature management related protection of winter-run Chinook salmon resulting from an increase in Shasta reservoir capacity from any of the analyzed alternatives. In water years 2011, 2017, and 2019, more than 1.8 million acre-feet, 5 million acre-feet, and 2 million acre-feet, respectively, were released from Shasta Reservoir for flood control purposes. Had an 18.5-foot dam raise been constructed, an analysis performed by the Water Authority's member agencies demonstrated that Reclamation would have been able to store additional water in Shasta Reservoir in each of these water years. This additional water would have increased Reclamations ability to maintain cold water pool for the benefit of winter-run Chinook salmon in 2012, 2018, and 2020, all of which were dry years. This modeling indicates that the project improves temperature dependent related mortality for listed species in the years in which significant negative impact to those species occurs.	Reclamation acknowledges the information provided by the commenter regarding an analysis conducted by the Water Authority's member agencies.
10	2	Project Benefits Communities, Farms, and Refuges Throughout California	Reclamation acknowledges the statements made by the commenter. Please refer to response to comment 10-1 regarding the project purpose, need and objectives.

Letter Number	Comment Number	Comment	Response
		Another key benefit to the reservoir expansion, in conjunction with updated operations, is an increase in water supply reliability for CVP contractors, including the member agencies of the Water Authority. Alternatives CP3, CP4, CP4A, and CP5 would involve an 18.5-foot raise of Shasta Dam and enlarge the total storage space of the reservoir by 634,000 acre-feet. Each of these alternatives has coldwater pool and water management benefits, and provides dedicated improvements to municipal and industrial ("M&I") users, with the remaining storage being used to increase agricultural water supply reliability.	
10	3	McCloud River The DSEIS provides a technical analysis of the federal wild and scenic river values of the lower McCloud River, particularly the reach that could periodically be inundated if Shasta Dam and Shasta Lake were enlarged. The Water Authority's comments regarding the analysis of the McCloud River are below. 1. Chapter 25.4.3 of the Final EIS ("FEIS") for the SLWRI stated that there were "significant and unavoidable" impact to portions of the McCloud River related to Public Resources Code (PRC) Section 5093.542. However, the Draft SEIS concludes that "Reclamation has no obligation to analyze state law requirements under the California Wild and Scenic Rivers Act" (SLWRI SDEIS, page 5.3). Reclamation should consider further clarifying that the conclusions in the FEIS were not based on the type of underlying technical analysis contained in the SLWRI DSEIS, but rather they were based on a policy conclusion.	In the SLWRI SEIS, Reclamation revised the analysis of impacts to the McCloud River to focus on federal requirements. For a discussion of the FEIS analysis regarding the McCloud River, please refer to SLWRI FEIS Master Comment Responses WASR-1, Eligibility of the McCloud River as a Federal Wild and Scenic River; WASR-3, The Shasta-Trinity National Forest LRMP and Protection of the Eligibility of the McCloud River as a Wild and Scenic River; WASR-4, CRMP's Responsibilities to Maintain the Outstandingly Remarkable Values of the McCloud River; WASR-6, Protections of the Lower McCloud River as Identified in the California Public Resources Code, Section 5093.542; and WASR-8, Effects to the Eligibility of Rivers for Inclusion in the Federal Wild and Scenic River System.

Letter Number	Comment Number	Comment	Response
10	4	Additionally, the DSEIS indicates that lands above McCloud River Bridge are limited to access by a fishing club and are not accessible to the public. The extent to which fishing access, including timing, frequency, and duration of that access, would be impacted by the project is unclear. However, it is likely that the remaining portion of Reach 4 would accommodate those fishermen.	Reclamation acknowledges the statements made by the commenter. As noted in Chapter 5 of the SLWRI Draft SEIS, Wild and Scenic River Considerations for the McCloud River is focused on the wild and scenic values of the river. The SLWRI FEIS Chapter 18, Recreation and Public Access, addresses potential recreational impacts and remains unchanged.
10	5	Finally, habitat on the McCloud River for wild trout is not limiting. Periodic habitat loss resulting from the proposed dam raise is unlikely to negatively impact the wild trout population because those fish can migrate upstream and predators, such as bass, which prefer warmer temperatures, are unlikely to leave the transition reach.	Reclamation acknowledges the statements made by the commenter. The SLWRI FEIS Chapter 11, Aquatic Habitat, addresses potential impacts to aquatic species and remains unchanged.
10	6	California, indeed, much of the western United States, is on the brink of a water crisis given the state of aging, impacted, or inadequate infrastructure, particularly in light of the hydrologic impacts of a changing climate. An expansion of Shasta Reservoir, as analyzed in the SLWRI DSEIS proposed alternatives, would provide benefits to Water Authority member agencies by restoring critically-important water supplies to nearly 5 million Californians, particularly to those communities most in need, 1.2 million acres of the nation's most productive farmland, and hundreds of thousands of acres of wildlife habitat. Additionally, each reservoir expansion alternative shows benefits to water management for listed species, including ESA listed salmonids, downstream of the dam. It is important to note that there are few infrastructure projects that have this broad range of benefits.	Please refer to response to comment 10-1

Letter Number	Comment Number	Comment	Response
49	1	The Shasta dam raise project, has the greatest yield of water storage with the least financial and environmental cost of any proposed storage project and State of California. The additional 600,000 acre feet of storage that will be available in flood years, will benefit the environment and the economy in California by increased storage in wet years for use in dry years. Additional surface storage will increase the chances of successful SGMA implementation, since every acre foot of surface water delivery is affective "in lieu recharge" of our groundwater. Every acre foot of recharge minimizes the acres of productive farm land that will be forced into "alternative uses" because of restrictions on pumping in order to balance our groundwater uses to sustainable levels. Actually the largest beneficiary of the Shasta Dam Raise project is that the cold water pool will be increased substantially, which will benefit endangered salmon spawning habitat downstream. All stakeholders understand the endangered species recovery is paramount to having a reliable water supply, therefore this project is vitality important to that end. It is my belief that those who oppose this project have no real desire for solutions to the problem, but benefit in some way by perpetuating the problem. 192,000 acre feet of the 634,000 acre feet of additional storage is dedicated for maintaining cold water below the dam for salmon spawning and rearing purposes. Politics should not be put above the environment and the people of out state. California needs the Shasta Dam raised!	Reclamation appreciates your comment on the SLWRI Draft SEIS and acknowledges your support of the proposed project. For discussion of potential benefits associated with the action alternatives, please refer to Chapter 2, Section 2.5 of the SLWRI FEIS.

1.8 Comments from Special Interests and Responses

This section contains the comments submitted by Special Interests listed in Table 1.8-1. Scientific and technical advisors or consultants are considered Special Interests and included in this section. Table 1.8-2 provides the comments and their response in tabular format. Table 1.8-2 is presented by letter number in sequential order.

Table 1.8-1. Special Interests Providing Comments on Draft SEIS

Name, Title	Organization	Letter Number
G. Mathias Kondolf, PhD and Greg Pasternack PhD		2
Bruce Herbold PhD		9
Brandon Dawson, Staff Attorney; et al.	Sierra Club of California, et al.	17
Ronald Stork, Senior Policy Staff; et al.	Friends of the River, et al.	18
Janet Wall, Conservation Co-Chair	Wintu Audubon Society	19
Raven Stevens	We Advocate Through Environmental Review	51
Joseph Kowalski	National Lawyers Guild Sacramento Chapter	52
Russell Liebig, Senior Fisheries Biologist	Stillwater Sciences	53
Justin Fredrickson, Environmental Policy Analyst	California Farm Bureau Federation	57
Laurie Wayburn, President	The Pacific Forest Trust	60
Mike Wade, Executive Director	California Farm Water Coalition	302
Brian Jonnson, California Director	Trout Unlimited	303
Michael Painter, Coordinator	Californians for Western Wilderness	305

Table 1.8-2. Responses to Comments Provided by Special Interests

Letter Number	Comment Number	Comment	Response
2	1	Reach terminology The DSEIS identifies the "transition reach" as the section of the river that is subject to fluctuating water levels due to impoundment of water in Shasta Reservoir. This reach begins in the reservoir at an approximate elevation of 920 feet above sea level and currently extends upstream to the upper limit of reservoir level fluctuations at elevation 1070 feet. Under different proposed dam-raise scenarios, the upstream end of the reach would expand to either 1080 or 1090 feet above sea level, termed the "expanded transition reach". This reach delineation is based on artificial hydrological constraints and conditions associated with Shasta Dam, not physical or ecological attributes of the river. Under proposed scenarios to raise Shasta Dam, the existing transition reach would be far more severely affected by fluctuating water levels, and impacts would extend to a new section of river immediately upstream. For this newly-impacted section of river, we use the term "expanded transition reach", consistent with the DSEIS, but point out the inherent ambiguity in whether the term includes the current transition reach, or only the newly impacted section upstream.	While the SLWRI Draft SEIS clearly defines that the transition reach would be expanded, it does not denote whether the term expanded transition reach refers to the entire reach (Shasta Lake inundation from 920 to 1090 mean sea level), or only the portion added by the enlargement project (Shasta Lake inundation from 1070 to 1090 mean sea level). The Final SEIS has been revised to clearly define expanded transitional reach.
2	2	Fluvial geomorphology of the existing transition reach and impacted reach Fluvial geomorphology characterizes the physical patterning of river landscapes and seeks to explain the processes controlling it. An understanding of the fluvial geomorphology of the McCloud River is important because aquatic habitat results from both flowing waters and channels through which the water flows. A key point is that the DSEIS assumes that some distinct geomorphic characteristics of the transition Reach are the result of backwater from Shasta Reservoir. However, historical information demonstrates that this reach had	We agree that the bedrock canyon walls have remained relatively unchanged and do provide natural lateral controls on the river in the transition reach over the period of record, with or without the reservoir backwater. The bedrock canyon widens near the McCloud River bridge, which is located at a geologic contact and near faults, which likely exert control

Letter Number	Comment Number	Comment	Response
		distinctive geomorphic characteristics prior to closure of Shasta Dam. These distinctive characteristics are important for salmonid habitat in the river, providing critical habitat not available upstream. The DSEIS states explicitly on p. 44 that the "portion of the transition reach upstream from McCloud River Bridge is dominated by low-gradient riffles and mid-channel pools." This is generally correct but missing key facts relevant to the investigation. Further it cites USFS (2001) as the basis for stating that the transition reach "had undergone type conversions caused by aggradation and scour of sediments for about 3,700 feet upstream from the McCloud River Bridge." This statement is contradicted by historical evidence and by the existence of a flow expansion at this point. These two statements in the DSEIS are important, because they attempt to ascribe the current conditions in this reach to deposition caused by backwater from Shasta Reservoir, and this interpretation plays a role in the DSEIS conclusions about potential impacts of a dam raise on fish habitat and populations. We obtained aerial photography of the transition reach flown in 1943, five years after dam construction began and two years before it was completed (Figure 1) [See Exhibit 1]. According to the USBR, the first two years of dam construction were occupied principally by clearing and excavating the dam site, so the photo reflects conditions three years after actual dam construction had begun. At this point, water flowed freely past the dam site. Even if the dam had some effect of blocking the free flow of the river by this time, it certainly did not impound reservoir waters up to an elevation where they could have induced deposition in this reach. Thus, the 1943 aerial image constituted the best available information on the channel condition prior to dam closure. If, as asserted by the DSEIS, current channel conditions reflect effects of the reservoir and its backwater effect on sediment transport and deposition, then we should see significant differences between the pre-dam baseline condition documented in 1943 aerial	on the river's morphology (Fraticelli et al., 2012). The current transition reach extends upstream of McCloud River bridge and the bedrock canyon expansion; therefore, the wider bedrock valley is entirely within the current full-pool elevation, which is reached one of every three years according to Chapter 6. The 1943 and 2018 aerial photos do show that in those years the river exhibits similar bar features when the reservoir is not yet full (1943) or at a lower pool elevation that does not inundate the transition reach. In other aerial photo years (1993 and 2004), there is a backwater condition where the river is inundated and river bottom conditions are not visible; therefore, it is not possible to verify if a delta has formed or not. We agree that during reservoir drawdown conditions the river is in an incisional mode with increased sediment transport relative to backwatered conditions when the river is likely depositional. The comment notes no delta was evident during a site visit. However, we do not know whether the site visit was conducted: (1) during a reservoir drawdown, when a delta may have already been eroded and

Letter Number	Comment Number	Comment	Response
		photography and current channel conditions. However, the 1943 aerial photograph clearly shows that the landforms between the 1070-ft contour and the McCloud River Bridge are essentially unchanged from 1943 to 2018. A key geomorphic control that was not explicitly recognized by the USFS (2001) nor by the DSEIS is an expansion in the canyon width roughly halfway down the transition reach. As widely seen in such expansion reaches on other rivers, flow spreads out and slows down, inducing natural deposition. On the Lower McCloud River, this deposition takes the form of a pair of bar-riffle complexes, one before and one after an abrupt canyon constriction at the bend there (Figure 1, red arrow) [See Exhibit 1]. Upstream of the constriction, the bar occurs as a well-vegetated midchannel bar. Below the constriction there is a lateral bar on river right. These important geomorphic features are readily evident in the 1943 image, as well as on current (2018) imagery. Downstream of the second bar-riffle complex after the next gentle bend, there is a mid-channel riffle, also present in both 1943 and 2018. Consequently, the geomorphic evidence contradicts the claim of the USFS (2001) and the DSEIS that the river has undergone a "type conversion"--i.e., a change in channel pattern - as a result of reservoir-backwater-induced aggradation. Instead, the reach has retained its basic character since the pre-dam condition documented in 1943. That the reach did not undergo a big change due to backwater from the dam can probably be explained by high sediment transport capacity through the transition reach at all times except when the reservoir is at or near full pool, enabling the channel to pass through the sediment it receives from the river upstream. The DSEIS does not provide any quantitative analysis of the duration and frequency of inundation nor river flow velocities to support the expectation that backwater flooding from the reservoir would induce aggradation in the reach upstream of McCloud River Bridge, and in any event, the comparison of historical aerial imagery with current imagery provides no	redistributed into the downstream reservoir; or, (2) during a full reservoir with backwater conditions. However, we agree if a delta had recently formed it there would likely be evidence of margin delta sediments may still have been present. Unfortunately, bathymetric survey data of the McCloud River arm within Shasta Reservoir during a full pool has never been done to verify if a delta does form at times, prior to subsequent erosion and transportation downstream during a drawdown. Additionally, coarse sediment likely to form a delta in Shasta Reservoir may be trapped in the upstream McCloud Reservoir, limiting the incoming supply and likelihood of a delta. The following text has been removed from the Final SEIS: "The USFS (2001) reported that the aquatic habitat within the transition reach had undergone type conversions caused by aggradation and scour of sediments for about 3,700 feet upstream from the McCloud River Bridge."

Letter Number	Comment Number	Comment	Response
		support for the assertion that the current condition of the reach is an artifact of reservoir-induced deposition. Moreover, in our site visit, we observed no evidence of deltaic sedimentation (e.g., longitudinal and vertical stratification of grain sizes) that would be expected if this reach had been transformed by deposition at the head of the reservoir. The current channel conditions in the transition reach are due to the expansion of the bedrock canyon here, creating distinctive geomorphic features, and with them uniquely important habitats for the river and its ecosystem.	
2	3	[Exhibit 1] Figure 1. Aerial photography of the majority of the existing transition reach from 1943 (left) and 2018 (right). Flow is from upper right to lower left. Two canyon expansions are shown in yellow boxes. They are separated by a canyon constriction indicated by the red arrow. In the upper (right) expansion zone a mid-channel bar occurs in the same location in both 1943 and 2018 imagery. In the lower (left) expansion zone, a river-right lateral bar occurs in both 1943 and 2018 imagery. These features result from canyon topography, and have persisted over the 75 years documented by the aerial photographs, thus they are not attributable to dam-induced backwater deposition, as asserted by USFS (2001) and the DSEIS.	Please see response to comment 2-2.
2	4	In short, the DSEIS incorrectly attributes the geomorphic character of this reach to the dam, when in fact, this reach has a unique, long-standing character arising from a canyon expansion. We address the significance of this for aquatic habitat below. The DSEIS fails to recognize the distinctive, unique attributes of this reach within the Lower McCloud River. For example, the DSEIS (p.5-25) asserts that while the "absolute amount of riverine habitat can vary with flow, the relative proportions of different types of habitat remain relatively constant," implying that raising the dam will simply shift the transition reach characteristics upstream. However, because of the unique geomorphology of the canyon expansions, this statement	Reclamation agrees that the referenced canyon expansion and lateral channel widths in the comment are the likely result of geologic controls. The reach in question is impacted by hydrologic and sediment supply changes from the upstream McCloud Dam. The canyon morphology up and downstream from McCloud River Bridge are distinct.

Letter Number	Comment Number	Comment	Response
		is not true. Flow- dependent habitat conditions in the expansion zone are fundamentally unlike conditions upstream and downstream of this reach.	Reclamation disagrees that flow dependent habitat conditions in the expansion zone are fundamentally unlike conditions upstream and downstream of this reach in ways other than the timing and extent of inundation that occurs due to dam operations. The channel is constrained by steep sideslopes and is generally a low gradient contained channel (<2% channel gradient) with little to no floodplain development anywhere from McCloud Dam down to the confluence with the Pit River. From a fish habitat standpoint the channel morphology is similar throughout the McCloud River from about Ah-di-Nah down through the transition reach. Reclamation also notes that currently the upstream end of the transition reach (1070 mean sea level) extends upstream of the canyon expansion. Therefore, the expansion zone referenced in the comment is already affected by backwatering from Shasta Dam; as described in Chapter 6, Shasta Lake reaches its full-pool elevation one year in three. Raising the dam could result in new periods of backwatered conditions for the expanded canyon zone extending up to elevation 1090 mean sea level ft.

Letter Number	Comment Number	Comment	Response
2	5	Aquatic habitat in the existing transition reach and impacted reach Aquatic habitat constitutes places where organisms perform biotic functions, such as feeding, reproduction, resting, and hiding from predators. Habitats differ among species and even among life stages of the same species. Further complicating matters, the timing of when a river provides the habitat that an organism needs for a particular life stage is very important. Thus, one cannot make an independent assessment of habitat conditions without carefully organizing information and results by species, life stage, and timing of conditions relative to timing of need in the life history of species. In presenting the aquatic habitat of the transition reach, the DSEIS (p.5-13 to 5-14) does not undertake such careful organization. This makes the entire analysis confusing. Later pages also provide unorganized, confusing statements about habitat. For example, at some points, the DSEIS states that riffle habitat is very important, while at other points it says that flatwater is very important, without clearly differentiating importance by species, life stage, and timing.	The document points out that the swift pocket water often appears more like a riffle than a run and the habitable eddies behind boulders that characterize this habitat make it functionally more similar to flatwater habitats. These are the types of habitats typically used by the trout in the McCloud for rearing and feeding. There may be differences in nomenclature of habitats between the Forest Service habitat typing and other references and the SEIS points this out in reference to salmonid habitats.
2	6	The DSEIS makes an important yet very ambiguous assertion on p. 5-14 that "habitat within the current transition reach represents a fraction (only 3%) of the total available aquatic habitat within the lower McCloud River and provides a small portion of the habitats within the reach from the McCloud River Bridge to Tuna Creek." This assertion is evidently intended to downplay the importance of the transition reach ("only 3%") and thereby downplay the potential impacts to the McCloud River fishery. However, not all habitat is of the same value, and the habitats in the transition reach are of disproportionate importance to the Lower McCloud River. We first consider the ambiguities of the DSEIS assertion, and then demonstrate that the habitat importance of this reach cannot be captured by a simple percentage.	The relative importance of habitat in the transition zone is not described in the comment making it difficult for Reclamation to address the intent of the comment.
2	7	The DSEIS assertion that habitat within the current transition reach constitutes only 3% of the total available in the Lower McCloud River is ambiguous, and could mean any of a number of things. Recognizing that there is no such thing	One of the biggest issues in the change in habitat conditions in the McCloud River is the change in suitability for trout.

Letter Number	Comment Number	Comment	Response
		as generic, universal habitat, what exactly is the document referring to in identifying something as 'habitat'? Is it habitat for a specific species in a specific life stage suitable for a specific time period? Is it possibly saying that all wetted length (or area) is habitat and therefore the transition reach represents only 3% of the total wetted length (or area) in a longer reach of the river from the McCloud River Bridge to Tuna Creek? Is it positing that some wetted area is not habitat for any species life stage ever, and so there is some fractionality of habitat area to total wetted area at work for both the transition reach and a longer segment of the McCloud River? The ambiguity confounds understanding and analysis, but is critical to the opinion. If the logic is that "habitat" is merely wetted length and the transition reach's length is only 3% of that of the longer reach, then that is not a scientifically meaningful analysis of habitat conditions and the possible importance of the transition reach.	The trout population utilizes the entire McCloud River from the pool of Shasta Reservoir up to McCloud Dam for all lifestages. Spawning habitats used by trout are interspersed throughout the reach. Short high gradient riffle/cascade sections occur throughout and the trout tend to concentrate at the downstream ends of these features where they transition to pools. Deep bedrock contained pools are plentiful. Early juvenile rearing habitat is not abundant but is sufficient to sustain the trout population. Wetted length is one metric to assess change in habitat area within a heterogenous channel which is relatively similar in channel type throughout the reach downstream of Ah-di-Nah.
2	8	Let's return to what we do know. The DSEIS says that the transition reach is "dominated by low-gradient riffles and mid-channel pools." That's established. We also know that the riffles are part of larger bar- riffle complexes located at canyon expansions. Thus, the question arises as to how available are such conditions elsewhere on the Lower McCloud River? The USFS (2001) habitat typing report for the river from McCloud Dam down to McCloud Bridge broke this reach of river into four smaller segments, of which the downstream-most segment is an approximately 6-mile reach from Tuna Creek down to the McCloud River Bridge, which includes the transition reach. Citing the USFS (2001) report, the DSEIS (p.5-14) reports that this 6-miles reach consist of only 18% riffle. This implies that a high percentage of the low-gradient riffle habitat in this entire longer reach must be located in the transition reach. It's even more significant, however, because looking upstream all the way to the confluence	The comment does not specify in what way the low gradient riffle habitat in the transition reach is unique and special relative to the rest of the McCloud River. The document does point out that the change in the transition reach habitat is a significant effect.

Letter Number	Comment Number	Comment	Response
		with Hawkins Creek (a mile downstream from McCloud Dam), there are no comparable valley expansions. In other words, the aquatic habitat in the transition reach is not only relatively rare low-gradient riffle habitat for the length between the McCloud River Bridge and Tuna Creek, but it is also unique and special habitat for the whole lower McCloud.	
2	9	A key aspect of the uniqueness of this bar-riffle habitat in the transition reach is that it is far less sensitive to discharge than riffle habitat upstream. This can be understood as follows: For a confined canyon, as discharge increases, velocity increases quickly, because there is no lateral space for water to fill, so velocity goes up as depth goes up. Many species, life stages, and timings require low to moderate depths and velocities, so canyon confinement limits habitat functionality to a narrow range of hydrologic conditions. In contrast, in the valley expansions, as discharge increases, water spreads laterally, keeping shallow water and low velocity habitat available for a longer period of time. In fact, velocity can actually go down as discharge increases, because the width of flowing water expands as flow overflows from the low-flow channel. This is why these features in the transition reach are so unique and special to the lower McCloud River. The unique bar-riffle, low-gradient riffle habitat in the transition reach is important for several species-lifestage-timing combinations, which can take advantage of the high-quality habitat here. Riffle habitat suitable for spawning exists over a much wider range of discharges than elsewhere in the Lower McCloud River, and thus this reach has the potential to support more salmonid spawning over more of the year. The presence of a side channel and backwater in the upstream mid-channel bar-riffle complex provides suitable salmonid rearing habitat. The vegetated lateral and mid-channel bar tops provide higher flow refugia beyond what is available elsewhere.	The transition reach would not be inundated during trout spawning periods so spawning habitat in this reach would still be usable after a dam raise. The area that resembles gravel bars along the channel in the newly inundated zone is primarily rough bedrock with vegetation interspersed. There is better quality spawning habitat upstream of the inundation zone. The primary juvenile rearing habitat throughout the river at high flows is in the vegetation in the well-vegetated banks. While velocities overall are lower in wider channel sections the velocities over mid-channel bar in the lower river is still relatively high for juvenile rearing at the highest flows, with lower velocity areas available along the edges of the wetted channel.
2	10	The DSEIS (p.5-15) asserts that adult spawners would migrate further upstream than the transition reach due to limited habitat. This assertion is contradicted by	There is suitable spawning habitat in the transition reach that would be inundated

Letter Number	Comment Number	Comment	Response
		the available evidence. The quality of spawning habitat in the transition reach is high over a greater range of discharges than elsewhere in the Lower McCloud River. Moreover, studies elsewhere provide insights into the migratory behavior of spawning salmonids. In the Central Valley of California, spawning surveys and acoustic tracking of salmonid migration have found that fish do not always go as far upstream as possible, and in some cases fish have been recorded migrating back downstream, evidently after finding upstream conditions less favorable. When water temperature is suitable further downstream, spawning occurs further downstream, too.	in some years and the DSEIS notes the habitat change in the transition reach is a significant effect.
2	11	Project impacts The primary purpose of the DSEIS is to evaluate impacts of alternative project scenarios. As noted above, one cannot make an independent assessment of habitat conditions--whether for existing or possible future conditions--without carefully organizing information and results by species, life stage, and timing of conditions relative to timing of need. As written, the DSEIS partially addresses these factors, but the analysis is not systematic in its approach. For example, the first paragraph of the Fisheries section on p. 5-29 makes a statement about spawning habitat, then other topics are raised, and then the last paragraph of that section on the next page returns to the topic of spawning habitat. All logic about spawning habitat should be organized together. At a minimum, the DSEIS should have organized effects into a table so that impacts and their assumed drivers would be transparent and comparable.	Reclamation thanks the commenter for the suggestions for a systematic analysis. The SEIS notes that the change in habitat is a significant effect based on the analysis presented.
2	12	By mixing up information about different species, life stages, and timings, the DSEIS lacks a coherent analysis of what aspects of fisheries and habitat are impacted by what possible project effects. For example, the DSEIS does not articulate which species, life stages, and timings it asserts to have been improved or harmed by channel change as a result of closure of Shasta Dam (as detailed above, the asserted channel change is contradicted by geomorphic process analysis and historical aerial imagery).	The scope of the SEIS i focuses on information relevant to the application of CWA 404(r), to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information

Letter Number	Comment Number	Comment	Response
			included in the 2015 SLWRI FEIS that is relevant to environmental concerns. Please refer to FEIS Chapter 11 for a robust discussion of potential effects to fisheries.
2	13	The DSEIS also lacks a characterization of the frequency, duration, and timing of inundation of the entire existing transition reach as well as the expanded transition reach under different project scenarios. Inundation is not static, because inflowing discharge and reservoir operations are dynamic. Under the current regime, the transition reach appears to function as a flowing river (with consequent habitat benefits for salmonids) for long periods, despite the fact that the reservoir can occasionally inundate it up to an elevation of 1070 feet. Furthermore, the timing of inundation relative to the timing of different components of salmonid life histories is critical, so just saying that the transition reach inundates or would inundate more overall does not provide the necessary specificity about how such inundation would affect river functions. A proper analysis of impacts would use existing reservoir stage data to analyze how and when the existing transition reach functions as a flowing river, and do so in light of the geomorphic framework of canyon expansions and their influence on flow hydraulics. There are several existing analytical frameworks and software tools for this type of analysis, ranging from the USACE HEC-EFM and the more generalized UCAT/UCUT method of Parasiewicz to the more complex "functional flows" methodology of Escobar-Arias and Pasternack.	The frequency, duration, and timing of inundation is described within the 2015 SLWRI FEIS Chapter 6 “Hydrology, Hydraulics, and Water Management.”
2	14	Another critical flaw is that the DSEIS habitat and fisheries impact analysis focuses on the incremental extension of the maximum inundation zone (the Impacted Reach) for each project scenario, but largely ignores the effects on the existing transition reach. By limiting the analysis to only an expanded increment, the DSEIS creates the appearance of less total impact. This is incorrect. The existing transition reach has unique geomorphic and habitat conditions whose ecological functions merit analysis for impacts under each scenario. The DSEIS	The SEIS concludes that the change in the transition zone habitat would impact the McCloud River fisheries.

Letter Number	Comment Number	Comment	Response
		mentions for each scenario that the transition reach becomes inundated to a higher stage and for a longer period in very broad terms, but it does not carry this thought through to the resulting ecological impacts.	
2	15	In the DSEIS description of direct and indirect effects (Sec 5.5.3), blocks of text are copied or slightly modified among various alternatives. Curiously, the text under CP1 (6-ft rise), Impact WASR-1 acknowledges that raising the dam 6.5 ft would have adverse effects, and states, "This impact would be significant." [emphasis ours] However, the comparable paragraphs under Impact CP2 (12.5-ft rise) and CP3 (18.5-ft rise) include similar statements acknowledging that the increased water levels would make the affected reaches ineligible for federal wild and scenic designation, but do not include statements of significance, even though these larger rises in water level would, perforce, have greater impacts than the 6.5-ft rise.	The language "This impact would be significant." is CEQA language inadvertently left over from the 2015 SLWR FEIS. The SEIS has been updated to remove the CEQA determination of significance for a specific impact within the NEPA document.
2	16	Finally, the Mitigation Measures section seems little more than an empty placeholder. There are no mitigation measures described under the Mitigation Measures section, only vague promises of a 'comprehensive multi-year' plan for fish protection and restoration. The promised plan is 'intended to reduce the impacts of inundation on the wild trout fishery', but it does not propose any specific mechanisms by which this impact could actually be reduced. Thus, the Mitigation Measures section offers no evidence of measures that could really reduce inundation impacts on fisheries; it only asserts that a plan to be developed 10 years hence would somehow be able to compensate for the damage to the fishery from the changed hydrology. While "Reclamation will commit to funding the planning effort" there is no such promise for implementing measures to reduce impacts, if in fact such measures would even exist. This is a critical gap.	The SLWRI is a complex, multi-year project. The Mitigation Measures described provide a framework in order to protect impacts on fisheries within the project area.
2	17	The DSEIS contains many unsupported assertions. One of many examples: The DSEIS (p.5-16 to 5-17) states, "It has been reported the McCloud River rainbow trout tend to be more bottom-oriented when feeding than rainbow trout elsewhere," but the DSEIS does not say who has reported this. Such sloppy	Reclamation acknowledges the commenter's concern and notes that the findings presented within the McCloud River Chapter of the SEIS are complex.

Letter Number	Comment Number	Comment	Response
		writing and lack of rigor pervades the document. The DSEIS is poorly written, with some statements that simply make no sense. For example, the DSEIS (p.5-17) says releases from McCloud reservoir are heavily regulated and notes minimum releases required, then "the releases are typically well above these minimum requirements and tend to stay above 100 cfs due to tributary inflows..." This statement confuses releases from the dam with tributary inflows downstream of the dam. It is correct that flows downstream of the dam are higher due to additions from tributaries, but the DSEIS says releases from the dam are higher because of additions from the downstream tributaries, which is nonsense. Combined with the specific flaws detailed above, the document's lack of organization and lack of scientific rigor render it ultimately ineffective and unconvincing. It is clearly not an adequate analysis of impacts of the proposed dam-raising project on the Lower McCloud River and its fishery.	Reclamation disagrees with the commenter's characterization of the analysis. Chapter 5 of the SEIS revises Chapter 25 of the FEIS—both the FEIS and SEIS offer a robust analysis of the potential effects on the McCloud River, and fully comply with NEPA and its implementing regulations.
9	1	I have reviewed the Draft Supplemental Environmental Impact Statement (DSEIS or supplemental EIS) for raising Shasta Dam by 18.5 ft in order to increase volumetric capacity of the reservoir by 634,000 acre-feet beyond its current capacity of 4,552,000 acre-feet, (i.e. an expansion of about 14%). I provide these comments in my capacity as an independent estuarine consultant. However, I am compensated for this work by the Office of the Attorney General of California. Of course, in many years California does not receive enough inflow to Shasta Reservoir to fill the reservoir to its current capacity, so the added volume of water to be captured varies from the entire 634,000 acre-feet in wetter years to zero in drier years. Impacts of the raise, both positive and negative, vary similarly.	Reclamation acknowledges the comment. . Modeling regarding how often Shasta Reservoir is expected to fill can be found in the 2015 SLWRI FEIS Chapter 6 "Hydrology, Hydraulics, and Water Management."
9	2	Because of questionable modeling assumptions and outputs not in keeping with the stated aims of the project, I do not find the modeled impacts of the project to be credible. The actual likely impacts of the project are difficult to assess because there is so little information presented on how the project would be	Reclamation has developed a modeling appendix to include additional information on how the modeling results were developed for the SLWRI DSEIS.

Letter Number	Comment Number	Comment	Response
		operated, especially in regard to the 2019 Biological Opinions. Finally, I find that the DSEIS fails to meet the requirements of a supplemental EIS in regard to several significant changes in our knowledge and circumstances since the final EIS was issued in 2015.	Reclamation has included this appendix within the SLWRI Final SEIS. The SLWRI DSEIS is written to "provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns" (DSEIS 1-2).
9	3	The purposes of the reservoir expansion are to: (1) increase anadromous fish survival in the upper Sacramento River, (2) increase water supplies and water supply reliability for agricultural, municipal, industrial, and environmental purposes, and (3) address related water resource problems, needs, and opportunities (DSEIS p 4). It is not clear if this list is prioritized or if the three purposes are co-equal.	The project purpose remains the same from the 2015 SLWRI FEIS. Additional detail and information on the project purpose can be found in Chapter 2.1.1 of the 2015 SLWRI FEIS.
9	4	I draw your attention to [one of] three aspects of the SDEIS that relate to possible impacts on fish species of concern, particularly salmon, steelhead and smelt:	Modeling for the SEIS is consistent with the goals of the SLWRI and the language of the 2019 BOs. The modeling done was consistent with the modeling done for the 2019 BOs and represents the best available implementation of the BOs available when the SDEIS was prepared.

Letter Number	Comment Number	Comment	Response
		1. Modeling of the project is not credible. Modeling assumptions are not consistent with the goals of the project and the language of the new biological opinions.	Additional information on how the BOs were implemented can be found in the ROC on LTO Modeling Appendix which is cited in the SLWRI Final SEIS Modeling Appendix. Using the data developed through the modeling efforts and tiering off of the information in the 2015 EIS, the SEIS documents how the proposed action would meet the goals of the project.
9	5	I draw your attention to [one of] three aspects of the SDEIS that relate to possible impacts on fish species of concern, particularly salmon, steelhead and smelt: 2. The likely impacts of the project, based on the goals of the project and the language of the biological opinions, pose substantial threats to the species of concern. These concerns are not adequately addressed.	The potential environmental impacts of the project are discussed in detail within the 2015 SLWRI FEIS. The SLWRI DSEIS analyzes new information, specifically the requirements of the 2019 BiOps and updated modeling, to determine if the projected impacts of the project are significantly different than those described within the 2015 SLWRI FEIS. The conclusion of the SLWRI SEIS is that these effects are not significantly different than the effects already disclosed within the 2015 SLWRI FEIS.
9	6	I draw your attention to [one of] three aspects of the SDEIS that relate to possible impacts on fish species of concern, particularly salmon, steelhead and smelt:	See responses to comments 9-2 and 9-5. The SLWRI SEIS analyzes the effects due to updated regulatory environment since 2015. The climate change effects were

Letter Number	Comment Number	Comment	Response
		3. The supplemental EIS is incomplete and does not address required issues. In particular, the DSEIS fails to address components of the Central Valley Project which BOR is undertaking to significantly alter. The supplemental EIS also fails to include substantial increases in scientific knowledge about species affected by the project and expected and actual aspects of climate change since adoption of the final EIS in 2015.	analyzed and documented in the 2015 SLWRI FEIS.
9	7	Introduction and Overview The Central Valley Project is an integrated water management system of 20 major dams, 500 miles of canals and other conveyance structures, 11 power plants, and the second largest water pumping plant in the world. (See Figure 1. Map of the Central Valley Project [Exhibit 1].) Shasta Dam is the largest dam in California and collects snowmelt and rainwater from the Sacramento and Trinity watersheds. The CVP's primary goals are water supply and flood control. From Shasta Dam, BOR releases water into the Sacramento River where it is delivered to a number of contractors and where it largely determines the suitability of spawning habitat for endangered Winter-run Chinook Salmon. As the water enters the Delta, some may be diverted into a critically important flood bypass; scientific work in the last 20 years, but particularly in the last five, has demonstrated the value of the flood bypass for a wide variety of fish species. A large portion of water entering the Delta in most months of most years is exported by the CVP and its partner, the State Water Project. The exported water is stored in San Luis Reservoir (SLR) until it is needed by contractors south of the Delta. Water is conveyed from San Luis Reservoir to the contractors via the Delta-Mendota Canal and San Luis Canal. The integration of the CVP means that a change in one component is likely to produce changes in other components. Decrease in Shasta storage will reduce river flows, contractor deliveries, floodplain inundation, export water volumes,	The SEIS is a supplement to the 2015 SLWRI FEIS, which itself is tiered from the CALFED Programmatic Environmental Impact Statement/Report (PEIS/R), completed in July of 2000. That Programmatic EIS/R considered more than 50 surface water storage sites throughout California and recommended more detailed study of the five sites identified in the CALFED Programmatic ROD. These studies included Shasta Lake Enlargement, Los Vaqueros Reservoir Enlargement, Sites Reservoir, in Sacramento-San Joaquin Delta (In-Delta) storage, and development of storage in the upper San Joaquin River Basin. The SLWRI FEIS relied on evaluations, alternatives development, and screening included in the CALFED PEIS/R, focusing on the subsequent action of evaluating the enlargement of Shasta Dam and Lake. Accordingly, Reclamation tiered its analysis of the SLWRI FEIS to the CALFED PEIS/R.

Letter Number	Comment Number	Comment	Response
		storage volumes in SLR and flows in the delivery canals. Conversely, impaired capacity of the south-of-Delta delivery canals will tend to keep water in SLR, reduce exports from the Delta and reduce release rates from Shasta Dam. Which CVP component limits delivery will change from month to month, but I am aware of no analysis of which component has most frequently, or most greatly, limited deliveries in the past decades. Future conditions of greater floods and droughts may shift which component is most in need of attention in the coming decades. A programmatic EIS would be most helpful.	
9	8	[Exhibit 1] Fig. 1: Map of The Central Valley Project	Comment noted.
9	9	To deal with the complex interactions amongst the CVP (and SWP) components, environmental impacts of changes to any one of the components is examined with a complex mathematical model--CalSim 2. The following tables are a small part of the outputs of CalSim 2 used for the DSEIS. The DSEIS focusses on how much the new model outputs (that nominally include the new biological opinions) differ from the earlier results. I review the results in terms of how well the project meets the project goals and why those results are probably wrong or inadequate because of other projects that BOR is pursuing and changes in the system since the FEIS was adopted.	Comment noted.
9	10	Modeling Is Not Credible and is Inconsistent. I present tables that show several modeled impacts of the project. In each instance, the results from the 'No action alternative' (SLWRI NAA) are subtracted from the project results (SLWRI CP4A.) Positive numbers indicate greater performance with the project, negative numbers represent greater performance without the project. The results are presented both as percentiles for each month and by year-type. It is not at all uncommon for a year of a given type to contain months that are significantly different than the other months in that year. For example, February 1983 was the wettest month on record and qualified the year as a wet year, but the rest of that year was exceptionally dry. Thus, these	The commenter's point is not entirely clear. The tables provided demonstrate increased Shasta Reservoir storage associated with the proposed alternatives. Additional modeling information can be found within Appendix E, Modeling Appendix.

Letter Number	Comment Number	Comment	Response
		tables, especially in the months from November through May can differ strongly when examined by month versus by year.	
9	11	[Exhibit 2: SLWRI CP4A minus SLWRI NAA] Fig. 2: Tables showing Shasta storage, page 1 of SLWRI_CalSimTables_FO_09042020.pdf	Comment noted.
9	12	Modeling of direct project effects on Shasta storage. This increase in Shasta storage clearly reflects the increased capacity of the reservoir under project conditions. In spring months of wetter years the entire additional 634,000 acre-feet capacity is filled. What is remarkable is that the larger reservoir holds more water in all years, even dry and critical ones, when the present reservoir is not filled. This increase in stored water in drought years is likely the result of a modeling assumption to maintain a minimum pool at 1.9 million acre-feet, which was a requirement of the original 2004 NMFS Biological Opinion but which was reformulated in the 2009 NMFS BiOp (see Table 2-1 from the CalSim Modeling assumptions below [Exhibit 3]), but dropped entirely in the 2019 NMFS BiOp. The proposed preferred alternative CP4A calls for reinstatement of this large minimum pool and greatly affects the model performance. With no such requirement in place in either state or federal regulations, these modeling results probably overstate the amount of water that would be held in the driest years. In wet years following wet years some of the stored water will have to be released to meet flood control requirements. Such releases of extra water during flood conditions generate few environmental or supply benefits; note that in the wettest percentiles of March and April the amount of additional water is the amount of the new capacity, suggesting that the reservoir was full and water had to be released for flood control.	The 2004 and 2009 NMFS BiOps have been superseded by the 2019 NMFS BiOp. The operational modeling presented in the SLWRI DEIS is consistent with the 2015 EIS alternative CP4A, which does include a dedicated 191 TAF storage for cold water pool. This storage is always kept full and not used for any other purposes to preserve cold water in Shasta to the extent possible. This is one reason why the reservoir may be fuller in dry and critical years compared to a no-project condition. Another reason could be higher carryover from a preceding wetter year. This following statement is inaccurate: "This increase in stored water in drought years is likely the result of a modeling assumption to maintain a minimum pool at 1.9 million acre-feet, which was a requirement of the original 2004 NMFS Biological Opinion but which was reformulated in the 2009 NMFS BiOp (see Table 2-1 from the CalSim Modeling

Letter Number	Comment Number	Comment	Response
			assumptions below [Exhibit 3]), but dropped entirely in the 2019 NMFS BiOp…. The proposed preferred alternative CP4A calls for reinstatement of this large minimum pool and greatly affects the model performance. With no such requirement in place in either state or federal regulations, these modeling results probably overstate the amount of water that would be held in the driest years." NMFS 2004 Winter-run Biological Opinion, (1900 TAF in non-critically dry years), and NMFS BO (Jun 2009) Action I.2.1 (NMFS BiOp storage objectives) have never been explicitly modeled in CalSim; but have been achieved through project allocation procedures when hydrologically feasible. The model still has the same guidance in allocation logic to preserve Shasta storage from going below 1900 TAF in non-critical years. The modeling assumes the same capacity for flood control as those in the existing Flood Control Diagram, so any changes in flows due to flood control are already provided for in the SEIS modeling.

Letter Number	Comment Number	Comment	Response
			Additional details on the model assumptions used in the SLWRI Draft SEIS can be found in Appendix E, Modeling Appendix.
9	13	[Exhibit 3: Table 2-1 SLWRI 2012 Version CalSim-II Assumptions (contd.)] Fig. 3: Select CalSim 2 Assumptions	Comment noted.
9	14	Sacramento River flow effects (p 6): The protection of nests and emerging Winter-Run young. Keswick Dam is the moderating dam below Shasta Dam. Flows out of Keswick directly affect the spawning, eggs, and emerging young of Winter-run Chinook salmon. Generally, more water behind Shasta Dam allows more of the cold-water flows that this fish requires. In the unprecedently dry and hot drought years of 2014 and 2015 almost all wild winter-run production failed due to inadequate temperature control. The capture of wintertime flows to fill the new storage space is clear in the reduced flows from Keswick Dam in December through May. The DSEIS is solely concerned with improving flows June-October. This reflects an outdated and simplistic view of what is needed for sustaining Winter-run Salmon and does little for other species of concern. Recent science has emphasized that, when flows are low and/or the adult population is small, it may be important to improve December-May flows to better ensure fry and juvenile movement to the Bay. It may be important to commit water to December-May flows to better ensure fry and juvenile movement to the Bay. Flows at this season benefit downstream species, such as Delta Smelt and Longfin Smelt and facilitate adult Winter-run up-migration in drier years. The modeled flows are most reduced in	The operational modeling operates to existing regulations. The model attempts to store Sacramento River water after current flow requirements are met, which is when there is excess flow in the system. Excess flows occur in the wetter months including the months when there is snow melt above what can be controlled in storage. We see reductions in flow below Keswick mostly in the December through May because those are the times when Shasta would be making releases to comply with the Flood Control Diagram. The commenter is presenting results from the 2015 FEIS. The reduction in flows below Keswick is presented without presenting the very high flows in those months with or without the project and therefore misleading.

Letter Number	Comment Number	Comment	Response
		the months that may be most important in benefitting all life stages when the adult population is small.	
9	15	[Exhibit 4. SLWRI CP4A minus SLWRI NAA table] Fig. 4: Flows from Keswick Dam	Comment noted.
9	16	Real-time management could work to balance the environmental needs of adults and young, but that is not addressed here. To approximate such adaptive management modeling, could shift the priorities of flows in different seasons based on flow conditions three years previously, thus approximating adult abundance in each year. A tremendous amount of scientific work has been done to permit better management of Chinook Salmon in the Central Valley, much of which is of direct management importance. More nuanced modeling that captures that science, is essential in the review of projects like raising Shasta Dam.	The 2019 Biological Opinions from NMFS and USFWS determine flows from Shasta Dam; Shasta Dam is required to operate under its operational requirements from the BiOps and the Amended COA.
9	17	How are downstream components affected? The second goal of the project is to improve deliveries to CVP customers (although it is the primary goal in the BOR mission statement). These customers take water both in the Sacramento Valley (north-of-Delta deliveries) and in the San Joaquin Valley (south-of-Delta deliveries). In order to take water from the north and deliver it when needed, in the south, the CVP (and SWP) export water from the Delta and store it in San Luis Reservoir until it is needed. Taking water from the Delta tends to entrain fish with the exported water and to reduce flows from the Delta into the Bay. These reduced flows cause a variety of environmental problems (described in the attached USFWS report). In most years, north-of-Delta deliveries are already adequate to demands. The project makes a little more water available when the June-August flows are enhanced by the larger Keswick releases, but changes are very small relative to the several hundred thousand acre-feet that are normally taken.	The following statement is inaccurate: "Although exports from the Delta are very slightly up in some months when the increased storage of water is being released upstream, the principle storage south of the Delta is lower in most months modeled and in most years of less than average precipitation. The only explanation I can imagine is that the model's commitment to increase carryover storage in an enlarged Shasta reduces exports from the Delta. Thus, attempting to meet goal #1 reduces the current ability to meet Goal #2." CVP delivery benefits are seen as a result of this project. CVP North of Delta

Letter Number	Comment Number	Comment	Response
		Usually CVP exports range from 1,200-4,600 cfs. The changes reported here are both positive and negative, but generally tiny compared to the baseline amounts. The modeled increased Keswick/Shasta releases from June-November appear to allow occasional slight increases of CVP exports in those months when conditions are most dry. Although exports from the Delta are very slightly up in some months when the increased storage of water is being released upstream, the principle storage south of the Delta is lower in most months modeled and in most years of less than average precipitation. The only explanation I can imagine is that the model's commitment to increase carryover storage in an enlarged Shasta reduces exports from the Delta. Thus, attempting to meet goal #1 reduces the current ability to meet Goal #2. Since exports go up very slightly in drier months, the increased drawdown of SLR minimizes the impact on deliveries south of the Delta.	deliveries are increased annually by 24.3 TAF on average, but the largest benefit is seen in Dry years, where the average annual benefit is 68.9 TAF. CVP deliveries South of Delta see an average increase of 32.5 TAF, with the largest increase in Below Normal years where the average annual deliveries are increased by 64.6 TAF. Changes in Delta Outflow, Flow through the Delta Cross Channel, and Old and Middle River (OMR) Flow are included in the Modeling Appendix. The commenter is presenting results from the 2015 SLWRI FEIS. The results that the commenter shares show change in operations (i.e. when water is moved) due to added flexibility in CVP system with the Shasta raise under the 2015 regulatory environment. In summary, the project shows water supply and environmental benefits under 2015 and 2019 regulatory conditions (2018 COA Amendments, 2019 BiOps and 2020 ROD).

Letter Number	Comment Number	Comment	Response
9	18	[Exhibit 5] Fig. 5: Tables showing North-of-Delta Deliveries	Comment noted.
9	19	[Exhibit 6. Tables showing CVP Exports from the Delta] Fig. 6: Delta Exports	Comment noted.
9	20	[Exhibit 7. Tables showing Storage south of the Delta in San Luis Reservoir] Fig. 7. San Luis Reservoir Storage	Comment noted.
9	21	[Exhibit 8. Table showing South of Delta Deliveries] Fig. 8. South of Delta Deliveries	Comment noted.
9	22	Conclusions on model reliability. The DSEIS modeling effort fails to show much of any results supporting goals #2 and #3. BOR's primary goals are water supply and flood control, so a project that reduces BOR's ability to meet the current level of water supply is unrealistic. Therefore, these model results, both the earlier FEIS and the current DSEIS, are not consistent with BOR's goals and cannot represent a credible vision of the with-project future. The modeling is simply not credible.	The assertion of modeling being not credible is unfounded. The commenter has not identified any credible point where the modeling is lacking. In addition, see responses to comments 9-12 and 9-17.
9	23	The likely impacts of the project based on the 2019 biological opinions. The 2019 NMFS Biological Opinion mandates no carryover storage targets. Instead the BOR will look at how much storage is available on May 1 and decide which tier of protection for Winter-run spawning they will target. Without any binding commitment to meeting the carryover target that was included in the model, actual operations would likely use the increase in water availability from wet months to support greater exports from the Delta. The 2019 USFWS Biological Opinion allows for unrestricted exports, to the 15,000 cfs maximum under undefined "storm" conditions; this is called "storm	Additional information on the modeling assumptions used for the SEIS are included in Appendix E, Modeling Appendix. Reclamation has committed to the cold water management pool tiers as fully analyzed in the 2019 BOs and 2020 ROD. The project alternative includes the same assumptions for meeting the

Letter Number	Comment Number	Comment	Response
		flexibility," or "storm flex." One obvious criterion for '"conditions" is when water is available for export without violating any water quality standard. Modeling in support of the UWFWS Biological Opinion greatly constrained the use of storm flex – eliminating it entirely from wet years (although, of course, one cannot know in February if it is going to be a "wet year.') Release of water from an enlarged Shasta Reservoir could intensify and extend the duration of any such 'storm' condition. The operation of storm flex is a serious concern of increased entrainment and altered flows in the Delta. The addition of water released at this season from an enlarged Shasta would intensify and prolong this impact. The unsupported model assumptions that minimize the use of storm flex, thereby minimize the impact of exports on these fish during their times of greatest sensitivity. Winter-run Chinook Salmon juveniles, Spring-run Chinook salmon yearlings, and Juvenile Sacramento Steelhead descend the Sacramento River principally in the winter months. During these same months adult Delta Smelt ascend the river channels to find their spawning sites. The state-listed Longfin Smelt migrates into the Delta to spawn if the winter has been relatively dry. Historically, large numbers of Longfin Smelt have been killed at the export facilities in April to May of drier years. "Storm flex" later in April and May poses a serious threat of entrainment for San Joaquin Basin outmigrating Steelhead, a separate and significant population. All of these poorly estimated impacts of the new Biological Opinions could be intensified and prolonged by the proposed CVP ability to release capture more water in an enlarged Shasta Reservoir. The unsupported modeling assumptions for both Shasta Reservoir enlargement and for the 2019 Biological Opinions on CVP operations do not permit meaningful quantification of the threat they pose to fishes of concern in the Delta. Based on the actual language in the documents, the threat to listed species is clear.	temperature objectives as the modeling done for the 2019 BOs. The comment about increasing stored water releases from Shasta to create or prolong storm-flex conditions is inaccurate. As stated in the Proposed Action (and adopted in the 2020 ROD): "Reclamation and DWR may operate to a more negative OMR up to a maximum (otherwise permitted) export rate at Banks and Jones Pumping Plants of 14,900 cfs (which could result in a range of OMR values) to capture peak flows during storm-related events. A storm related event occurs when precipitation falls in the Central Valley and Delta watersheds and Reclamation and DWR determine that the Delta outflow index indicates a higher level of flow available for diversion. Reclamation and DWR will define storm-related events in the first year of implementation of this proposed action. Reclamation and DWR will continue to monitor fish in real-time and will operate in accordance with "Additional Real- time OMR Restrictions," above. Under the following conditions, Reclamation and DWR shall not pursue storm-related OMR flexibility

Letter Number	Comment Number	Comment	Response
			for capturing peak flows from storm-related events if: • Integrated Early Winter Pulse Protection (above) or Additional real-time OMR restrictions (above) are triggered. Under such conditions, Reclamation and DWR have already determined that more restrictive OMR is required. • An evaluation of environmental and biological conditions indicates more negative OMR would likely cause Reclamation and DWR to trigger an Additional real-time OMR restriction (above). • Salvage of yearling Coleman NFH late-fall run as yearling Spring-Run Chinook Salmon surrogates exceeds 0.5% within any of the release groups. • Reclamation and DWR identify changes in spawning, rearing, foraging, sheltering, or migration behavior beyond those anticipated to occur under OMR management. Reclamation and DWR will continue to monitor conditions may resume management of OMR to no more negative than -5,000 cfs if conditions indicate the above offramps are

Letter Number	Comment Number	Comment	Response
			necessary to avoid additional adverse effects. If storm-related flexibility causes the conditions in "Additional Real- Time OMR Restrictions", Reclamation and DWR will implement additional real-time OMR restrictions." The model representation of this action is developed based on expected frequency of occurrence of a storm flex event.
9	24	The supplemental EIS is incomplete and does not address all appropriate issues. A supplemental EIS is required "if there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts" (DSEIS p5). Since the FEIS was published in 2015, the BOR has embarked on several projects that would influence the benefits and impacts of expanding Shasta storage. BOR was a partner in the feasibility study and the Draft EIR/EIS for Sites Reservoir. Sites Reservoir is intended to have a volume of 1.5 MAF with half of the water in the reservoir designated for environmental enhancement. Although the water may be flexibly used in practice, the modelling for Sites assumed it was primarily used to conserve cold water in Shasta Reservoir. One obvious difference in impact is that a raise of Shasta Dam must alter outflow to the river. Sites Reservoir only takes water that is pumped into it and therefore in many months can have no impact, and in all months its impacts can be closely controlled. Sites Reservoir and the Shasta Reservoir expansion have the same goals and rely on the same presently uncaptured flows; it seems irresponsible not to assess the degree to which their goals may reinforce or conflict.	See response to comments 9-2 regarding the scope of the Draft SEIS.

Letter Number	Comment Number	Comment	Response
9	25	BOR, in partnership with the San Luis and Delta Mendota Water Authority, developed a Draft Environmental Impact Report/Supplemental Environmental Impact Statement Documents for the B.F. Sisk Dam Raise and Reservoir Expansion Project that would enlarge the storage capacity of San Luis Reservoir. Expansion of SLR will allow greater exports from the Delta by giving more space to store exported water in winter and spring before it is needed for the irrigation season in the San Joaquin Valley.	Comment noted.
9	26	BOR, in partnership with the California Dept of Water Resources, issued in 2019 an EIR/EIS to allow more frequent and longer inundation of the Yolo Flood Bypass. The project is scheduled for completion in 2021. This project includes significant changes in the configuration of the Fremont Weir. These changes to the weir will allow it to overtop at lower river flows. Despite BOR's active involvement in the project, the SDEIS model results (p 13) report the inundation frequency of the bypass with no consideration of the imminent change in the relationship between flows and flooding. BOR, in partnership with the Friant-Kern Authority, issued a draft EIR/EIS on May 8, 2020 to remediate subsidence of the Friant-Kern Canal. The Friant-Kern Canal is the main conduit to supply water from San Luis Reservoir to many contractors south of the Delta. The canal is purely gravity-fed and was designed to carry 4000 cfs. Reduced surface water deliveries during the recent drought initiated massive increases in groundwater pumping which caused the land surface, including segments of the canal, to sink. Even after the drought ended, the added pumping infrastructure allowed greater groundwater pumping and the earth surface has continued to subside. Parts of the canal are sinking by as much as an inch per month. Subsidence has reduced the capacity of the canal by more than half, reducing annual deliveries by as much as 300,000 acre-feet. BOR is a lead on all these project changes, but the future conditions described for each do not address the changes of the others. The operation of all these	Both the SLWRI FEIS and the SEIS are fully compliant with NEPA and its implementing regulations. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		projects will be greatly affected by BOR's interpretation of the vague language in the new Biological Opinions. Sites and Shasta enlargements will increase the amount of water available for export. The new biological opinions commit less water to the needs of endangered fish and allow periods of unlimited export when those fish are most at risk. The expansion of San Luis Reservoir increases the space available to hold exported water during the winter and spring months and, so, will accommodate higher exports. Subsidence remediation of the Friant-Kern Canal will enhance contractor ability to remove water from SLR and further support greater exports from the Delta. Treating these projects separately with no attempt to describe how they will interact with one another is an irresponsible, piecemeal approach to addressing California's water needs. The supplemental EIS must evaluate an integrated vision of how the future CVP will operate with all of the changed features that BOR is currently pursuing.	
9	27	The substantial reconfiguration of the CVP as an integrated water management project has tremendous potential to affect fish and other resources of the Central Valley (as well as project performance). For the likely impacts of Shasta enlargement I believe the impacts of greater entrainment, altered river flows, and reduced outflow on natural resources of the estuary are well covered in the 2015 USFWS review of the earlier environmental documents for this project that I have attached.	Comment noted.
17	1	On behalf of the Natural Resources Defense Council ("NRDC"), Defenders of Wildlife, Golden State Salmon Association, Sierra Club California, California Sportfishing Protection Alliance, The Bay Institute, San Francisco Baykeeper, and Friends of the River, we are writing to provide comments on the Draft Supplemental Environmental Impact Statement ("DSEIS") for the Shasta Lake Water Resources Investigation ("SLWRI") released by the Bureau of Reclamation ("Reclamation") on August 6, 2020. We appreciate that Reclamation extended the deadline for public comments to October 5 and provided NRDC with additional modeling results that have not been publicly disclosed. [Footnote 1: On August 24, 2020, NRDC and other groups requested that Reclamation	Reclamation acknowledges the comment. Reclamation provided all relevant modeling data as requested and did grant a comment period extension to October 5, 2020.

Letter Number	Comment Number	Comment	Response
		provide all the modeling data and results to the public, and they requested that Reclamation extend the public comment period on the DSEIS in light of the failure to provide the modeling results. On September 8, 2020, Reclamation emailed NRDC staff and provided NRDC with "the modeling results associated with the Draft EIS." See email from Derya Sumer to Ashley Cooper dated Sept. 8, 2020, which is attached as part of Exhibit A. Reclamation did not provide requested biological modeling, which suggests that no such modeling was performed. Reclamation also extended the public comment period to October 5, 2020.]	
17	2	Reclamation asserts it prepared the DSEIS to provide information needed to apply section 404(r) of the Clean Water Act for the SLWRI, to "update operations and modelling to the latest regulatory requirements," and to revise the 2015 Final Environmental Impact Statement for the SLWRI ("2015 FEIS") Chapter 25 on the Wild and Scenic River Considerations for the McCloud River. Regardless of its stated purpose, the DSEIS must also meet the requirements of the National Environmental Policy Act ("NEPA"), and, based on our review, the DSEIS fails to do so.	Reclamation did prepare the DSEIS to provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. The SEIS fully complies with Reclamation's obligations under NEPA. Reclamation will continue to comply with all applicable law.
17	3	First, the DSEIS fails to present the public and Congress with the necessary information to comply with section 404(r) of the Clean Water Act and allow Congress to consider waiving certain permitting requirements, including failing to properly consider the Clean Water Act section 404(b)(1) Guidelines. [Footnote 2: The 404(b)(1) Guidelines are found at 40 C.F.R. §§ 230 et seq.] As a result, the DSEIS does not meet NEPA's public disclosure and hard look requirements, and	Comment noted. The SEIS addresses section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A. Also, please see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for an updated discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		the document must be substantially revised before it could be submitted to Congress pursuant to section 404(r) of the Clean Water Act.	
17	4	Second, the DSEIS fails to meet NEPA's public disclosure requirements and to take the necessary hard look at the environmental impacts of enlarging Shasta Dam and Reservoir in light of changed circumstances since the Final EIS in 2015. Reclamation states that one of the purposes of the DSEIS is to update modeling and information relating to meeting the "latest regulatory requirements," which include changes to the operation of Shasta Dam to meet the requirements of the 2019 Biological Opinions for the Long-Term Operations of the Central Valley Project ("CVP") and State Water Project ("SWP") issued by the United States Fish and Wildlife Service and the National Marine Fisheries Service ("2019 Biological Opinions"), and the 2018 Addendum to the Coordinated Operation Agreement ("COA Addendum"). However, the DSEIS wholly fails to make updated findings and conclusions regarding potential environment impacts of the proposed project and alternatives in light of these changed circumstances, and the DSEIS presents misleading and inaccurate modeling data that does not reflect the likely impacts of operating an enlarged Shasta Dam in light of changes to operations of the CVP. In addition, there is substantial new information, including information related to the impacts of climate change on California's hydrology and water resources, that has been released since the issuance of the 2015 FEIS, and the DSEIS entirely fails to address this new information. To satisfy its duties under NEPA, Reclamation must revise the DSEIS and update its analysis of environmental impacts to fully account for these changed circumstances and new information.	Comment noted. Because the 2019 Biological Opinions included operational changes for Shasta Dam and the CVP as a whole, the SEIS updates the modeling of project impacts to reflect these changed conditions. *See* SEIS Ch. 4. Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment and the largest potential changes from the 2015 FEIS. As a supplement to the FEIS, the SEIS provides updated modeling based on new information but does not change Reclamation's intent to comply with Section 7 of the ESA and seek further consultation as needed. Please see FEIS Master Comment Response 33.3.29, DSFISH-4, referring to a project-specific Biological Opinion and new operations Biological Opinions that may result from reconsultation actions. Also, the 2019 Biological Opinions are addressed in SEIS Master Comment ESA-1, ESA Compliance. The SEIS compares changes between with and without project under the most

Letter Number	Comment Number	Comment	Response
			recent regulatory requirements (2019 BiOps and amended COA) and with and without project under the regulatory environment when the FEIS was published in 2015. Therefore, the model does represent the effects of the new BiOps. The overall conclusion is that the changes due to the with project conditions compared to the without project conditions are still within bounds of what was analyzed in 2015. For example, the Shasta Lake storage increase of less than 2% cited in the SEIS is comparing the 2015 and 2019 project alternatives. When comparing the 2019 project alternative to the no-project condition, Shasta end of September storage is 312 TAF higher in Dry and Critical years, which is a 14% increase. Under the 2015 simulation Shasta storage in Dry and Critical years was 264 TAF higher (a 13.5% increase). The difference between the 2019 and 2015 being 0.5%, within the 2% difference cited. Another example is the updated temperature management strategy under the 2019 BiOps with the new tiered approach. Based on the model

Letter Number	Comment Number	Comment	Response
			results, the number of years where end of April Shasta storage is greater than 4.1 maf (Tier 1 years) goes from 49 (2015, no project) to 65 (2015, with project) and from 55 (2019 no project) to 68 (2019, with project). As can be seen from the model results, 2019 BiOps result in significantly more number of years with high Shasta storage compared to 2015 conditions and Shasta raise adds significant number of Tier 1 years regardless of the baseline conditions (2015 or 2019). The climate change effects were analyzed and documented in the 2015 FEIS. Reclamation acknowledges that a newer climate dataset is available. However, storage programs in general show increased benefits for both environmental purposes and water supply purposes. The climate signals in general agree on increased temperatures that result in precipitation more in the form of rain rather than snow and overall ambient warming that is impactful on the species. As a result of the change in runoff pattern, more runoff is projected to occur in late fall and early winter months where the temperatures are seasonally cooler and there are storm

Letter Number	Comment Number	Comment	Response
			events, followed by a significant reduction in flows in spring and summer months where the ambient temperature is even higher. Given the stressed conditions created by the change in climate, increased storage enables better management of cold water for the species. Dedicated storage of 191 taf under the Shasta raise project enables availability of cold water longer into the temperature management season. Because the general trend in climate change studies has not changed with more recently published studies (i.e. warming is projected; not cooling); Reclamation expects the with-project conditions would be similarly or more beneficial even under the updated climate projections
17	5	Third, the DSEIS fails to accurately assess and take a hard look at the impacts of enlarging Shasta Dam to the McCloud River, wrongly asserts that NEPA does not require evaluation of consistency of the proposed project and alternatives with provisions of State law that protect the McCloud River, and fails to accurately assess the consistency of the proposed project and alternatives with provisions of State law that protects the McCloud River.	The SEIS, Chapter 5, Wild and Scenic River Considerations for McCloud River" provides important clarifications on many of the issues raised by the commenters. Please also see Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River." in the Final SEIS for additional information regarding the

Letter Number	Comment Number	Comment	Response
			McCloud River and California Public Resources Code Section 5093.542.
17	6	Each of these issues is addressed in turn below. Included as Exhibit B [Attachment 2] to these comments is a separate letter explaining that Reclamation must also circulate for public review and comment an updated Feasibility Report regarding the Shasta Dam enlargement project.	The SEIS supplements the FEIS by providing updated modeling based on new information. An updated Feasibility Report is outside the scope of the current SEIS.
17	7	Reclamation's DSEIS Does Not Meet the Requirements of 404(r) of the Clean Water Act, and Therefore Cannot Excuse Reclamation from Complying with the Permit Requirements of Section 404 of the Clean Water Act Reclamation prepared the DSEIS to, in part, provide the information it asserts is necessary to apply Clean Water Act section 404(r) to the enlargement of Shasta Dam and obtain Congressional authorization for the project. Section 404(r) of the Clean Water Act provides [t]he discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress, […], is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 1311(a) [CWA § 301(a)] or 1342 [CWA § 402] of this title (except for effluent standards or prohibitions under section 1317 of this title), if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(1) of this section, is included in an environmental impact statement for such project pursuant to the National Environmental Policy Act of 1969 and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for such construction.	The SEIS addresses section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A. USACE is a cooperating agency for the SEIS. Please see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for an updated discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		33 U.S.C. § 1344(r). In other words, three basic requirements must be met for the 404(r) exemption to apply. First, the agency must submit a final EIS to Congress that satisfies NEPA and that includes an analysis conducted under 404(b)(1); second, the EIS must be submitted before discharges from construction begin and before Congress has authorized the project or appropriated funds for its construction; and third, the project must be specifically authorized by Congress. See Bd. Of Mississippi Levee Comm'rs v. U.S. E.P.A., 674 F.3d 409, 418 (5th Cir. 2012). The EIS that Reclamation submits to Congress must comply with NEPA. Courts evaluating the applicability of section 404(r) have found that: [t]o be free of the Section 404(a) permit requirement, the sponsor of such a project must have submitted to Congress an "adequate" environmental impact statement "including consideration of the guidelines developed under" Section 404(b)(1). Of central importance in the House debates was the assurance that consideration and acceptance of the environmental impact statement by Congress would be "equivalent to" review under the Section 404(b)(1) guidelines. Monongahela Power Co. v. Marsh, 809 F.2d 41, 51 (D.C. Cir. 1987) (internal citations and footnotes omitted). One of NEPA's fundamental purposes is "to guarantee relevant information is available to the public." N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1072 (9th Cir. 2011). In addition, Reclamation is required by NEPA to take a "hard look" at the potential impacts of the proposed project and alternatives, which includes a "thorough investigation into environmental impacts and forthright acknowledgment of potential environmental harms." Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt., 606 F.3d 1058, 1072 (9th	

Letter Number	Comment Number	Comment	Response
		Cir. 2010); Nat'l Audubon Soc'y v. Dep't of Navy, 422 F.3d 174, 187 (4th Cir. 2005) ("hard look" requires "thorough investigation into environmental impacts and forthright acknowledgment of potential environmental harms" before irretrievable commitment of resources). To ensure it takes a "hard look," Reclamation must rely on "high quality information" and ensure scientific integrity of the discussions and analyses in its EIS. See 40 C.F.R. §§ 1500.1(b), 1502.24. These requirements must be met in order to allow for "[a]ccurate scientific analysis, expert agency comments, and public scrutiny." Id. In addition, in order to meet the requirements of the 404(b)(1) Guidelines, the DSEIS must include factual determinations regarding specific disposal sites where dredge and fill material will be discharged, as well as the effects of such discharges on the "on the physical, chemical, and biological components of the aquatic environment in light of subparts C through F." [Footnote 3: Subpart C describes the physical and chemical components of a site and provides guidance as to how proposed discharges of dredged or fill material may affect these components. Subparts D through F detail the special characteristics of particular aquatic ecosystems in terms of their values, and the possible loss of these values due to discharges of dredged or fill material." 40 C.F.R. § 230.4.] 40 C.F.R. § 230.11(a)-(h). The 404(b)(1) Guidelines require an analysis – based on site-specific factual determinations – that demonstrates the proposed discharges: (a) are the least environmentally damaging practicable alternative ("LEDPA"), 40 C.F.R. § 230.10(a); (b) will not jeopardize endangered species, 40 C.F.R. § 230.10(b)(3); and (c) will not cause or contribute to a violation of state water quality standards, 40 C.F.R. § 230.10(b)(4). The 404(b)(1) Guidelines contemplate that these factual determinations will be made by the permitting agency, which in most instances is the United States Army Corps of Engineers. However, here Reclamation seeks to bypass this permitting requirement by going straight to Congress. Bypassing the Army Corps does not loosen the mandate to ensure all the requirements of the 404(b)(1) Guidelines are satisfied,	

Letter Number	Comment Number	Comment	Response
		however. See Monongahela Power, 809 F.2d at 51. As the D.C. Circuit explained, "Section 404 transmits a crisp and unwavering message: all significant discharges, whether or not exempt from the permit requirement, must be subjected to Section 404(b)(1) scrutiny or its equivalent." Id.	
17	8	Even when 404(r) is invoked, "both the Regional Administrator(s) and District Engineer(s) shall be consulted" concerning "(a) whether the [EIS] contains the requisite information on the proposed discharges, and (b) whether the proposal is consistent with the [404(b)(1) Guidelines]." See Guidance on Applying Section 404(r) of the Clean Water Act to Federal Projects Which Involve the Discharge of Dredged or Fill Materials into Waters of the U.S., Including Wetlands, Council on Environmental Quality, Memorandum for Heads of Agencies, November 17, 1980 ("CEQ 404(r) Guidance"). [Footnote 4: The CEQ 404(r) Guidance is attached hereto as Exhibit C [Attachment 3] The CEQ 404(r) Guidance further directs that "[i]n all cases, the proponent agency shall ensure that the written conclusions of EPA or the Corps are included in or attached to the environmental impact statement, clearly identified, circulated with the statement, and submitted to the Congress prior to requesting either authorization or appropriation of funds and prior to actual discharge." Id. Therefore, in order to meet the requirements of Clean Water Act section 404(r), Reclamation must prepare and provide Congress with an EIS that meets the requirements of NEPA and contains the information necessary to satisfy all the requirements of the 404(b)(1) Guidelines. The DSEIS does not do so. As explained below, the DSEIS does not present the necessary sites specific factual determinations regarding potential short-term or long-term effects of the discharges of dredge and fill material; it does not demonstrate that the proposed discharges meet the least environmentally damaging practicable alternative (LEDPA) requirement; it does not demonstrate the discharges will not jeopardize endangered species; and it fails to demonstrate the discharges will not cause or contribute to violation of water quality standards.	Please see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
17	9	The DSEIS Does Not Provide the Necessary Site-Specific Analysis and Factual Determinations Regarding the Short-Term and Long-Term Effects of Discharges of Dredge and Fill Material Required by the 404(b)(1) Guidelines The DSEIS first fails to meet the 404(b)(1) Guidelines by failing to provide the necessary site specific details and information on the short-term and long-term effects of the discharges associated with Shasta Dam enlargement. The factual determinations required include determinations regarding physical substrate at the disposal site, the effect of the discharge on water circulation and fluctuation, the effect of the discharge on structure and function of the aquatic ecosystem and organisms, cumulative effects on the aquatic ecosystem, and secondary effects on the aquatic ecosystem (including those that "do not result from the actual placement of dredge or fill material" and including effects from "fluctuating water levels in an impoundment and downstream associated with operation of a dam."). 40 C.F.R. § 230.11(a)-(h). Courts have concluded that, "[t]he entire regulatory scheme requires full evaluation of the effect which the dredging and disposal may have on a given area. The findings on compliance or non-compliance with the requirements entails a comprehensive analysis of each proposed site." Surf & Env't Conservation Coal. v. Dep't of the Army, 322 F. Supp. 2d 126, 132 (D.P.R. 2004). Reclamation's DSEIS fails to meet these requirements, and it therefore fails to meet the requirements of section 404(r) of the Clean Water Act or NEPA's public disclosure and hard look requirements.	The SEIS addresses section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A. Please also see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	10	In Chapter 1.2 of the DSEIS (Scope of the Supplemental Environmental Impact Statement), Reclamation asserts that the "[2015] FEIS was developed with consideration of the 404(b)(1) guidelines." DSEIS at 1-3. The DSEIS goes on to state that "in order to apply 404(r), Reclamation has prepared this supplement to provide [among other things] an updated and adequate description of the discharges to wetlands and other Waters of the U.S. (WOTUS) resulting from the relocations and infrastructure and recreational structures." DSEIS at 1-3; see also DSEIS Appendix A at A-1 (acknowledging that additional "detailed analyses and documentation" beyond that in the 2015 FEIS and 2015 Feasibility Report "would	The SEIS addresses section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A. Please also see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		be required," and claiming that the additional required analyses "are presented" in the DSEIS). However, review of the DSEIS and 2015 FEIS demonstrate that the site-specific factual determinations required by the 404(b)(1) Guidelines are not provided.	
17	11	First, though the DSEIS asserts that the 2015 FEIS was "developed with consideration of the 404(b)(1) Guidelines," it does not provide any citation to any particular section of the 2015 FEIS to demonstrate this to be the case. A review of the 2015 FEIS clearly demonstrates it was not prepared to fully meet the 404(b)(1) Guidelines. In fact, there is no specific mention of the 404(b)(1) Guidelines in the 2015 FEIS. Nor is there any discussion or factual determinations of site-specific effects of the discharge of dredge or fill material in the 2015 FEIS; instead, the 2015 FEIS did not even identify specific sites or locations where dredge and fill material would be discharged. See, e.g., 2015 FEIS at 12-118 (explaining that "final relocation area planning and designs are incomplete"). Absent identification of specific locations of discharges, it is impossible for the 2015 FEIS to have made the site-specific factual determinations regarding the short-term and long-term effects of the proposed discharges as required. [Footnote 5: The 2015 FEIS does contain discussion of the effects to the physical, chemical, biological, and human use characteristics of the aquatic environment that may result from discharges of dredge and fill material associated with enlargement of Shasta Dam. However, these discussions are not the result of, or based on, site-specific analysis that is required by the 404(b)(1) Guidelines.]	One of the purposes of the SEIS was to provide updated information relevant to the application of section 404(r), including discussion of the 404(b)(1) guidelines. The SEIS addresses section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A. Please also see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	12	Second, the DSEIS does not provide the site-specific factual determinations that are absent from the 2015 FEIS. Though the DSEIS does estimate the acreage of Waters of the United States that will likely be impacted by various dredge and fill due to project relocations and infrastructure and recreational structures, it does not identify the specific locations where specific discharges will occur. For some proposed discharges, it does not even attempt to estimate the acreage impacted and instead identifies the impacts to Waters of the United States as "TBD." See DSEIS, Appendix B at B-1 and B-2. The DSEIS even admits that the "exact type	The SEIS addresses section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A. Please also see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		and acreage of wetlands to be mitigated and the type of compensatory mitigation to be used, cannot be known until final engineering plans for project relocations have been developed." DSEIS at 2-10.6 This does not meet Reclamation's obligations to identify and evaluate specific disposal sites. See Surf & Env't Conservation Coal., 322 F. Supp. 2d at 132. As a result, the analysis fails to meet Reclamation's obligations under section 404(r) as well. Monongahela Power, 809 F.2d at 51.	
17	13	Likewise the DSEIS does not make factual determinations regarding the short-term or long-term effects of the discharges on the physical substrate at the disposal site, the effect of the discharge on water circulation and fluctuation, the effect of the discharge on structure and function of the aquatic ecosystem and organisms, cumulative effects on the aquatic ecosystem, or secondary effects on the aquatic ecosystem.	Please see the discussion of section 404(r) and the 404(b)(1) guidelines in Chapter 3 and in Appendix A of the SEIS. Also, see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	14	The DSEIS also unlawfully defers the identification of mitigation to wetlands to a subsequent proceeding. Under the 404(b)(1) Guidelines, mitigation for impacts to Waters of the United States must be identified with specificity and consideration of mitigation must "must assess the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project," among other things. 40 C.F.R. § 230.93(a); see also 40 C.F.R § 230.91-95. The DSEIS and its appendices fail to provide the necessary detail and specificity needed to demonstrate consideration of the 404(b)(1) Guidelines as required by section 404(r) of the Clean Water Act or by NEPA. See DSEIS at 2-3 to 2-6, 2-9.	Please refer to Chapter 2.5 for a description of Reclamation's mitigation plan, and to Chapter 3 and Appendix A for discussion of section 404(r) and the 404(b)(1) guidelines. Also see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	15	Not only does the DSEIS not provide site-specific information and factual determinations relevant to discharges of dredge and fill material associated with the 18.5 foot dam raise, it also fails to even discuss the site-specific information and factual determinations that would be associated with any of the other alternatives for the Shasta Dam enlargement presented in the 2015 FEIS.	Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment

Letter Number	Comment Number	Comment	Response
		As a result, the DSEIS (even when combined with the 2015 FEIS) fails to present the factual determinations related to the effects of the discharge of dredge and fill material required by the 404(b)(1) Guidelines, and thus the DSEIS and 2015 FEIS fail to include necessary information for Reclamation to seek a Congressional waiver under Clean Water Act section 404(r) to its project. See Monongahela Power, 809 F.2d at 51.	and the largest potential changes from the 2015 FEIS. Please see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	16	The DSEIS Does Not Demonstrate that the Proposed Project Is the Least Environmentally Damaging Practicable Alternative as Required by the 404(b)(1) Guidelines The DSEIS also fails to present analysis equivalent to that required by the 404(b)(1) Guidelines by failing to demonstrate that the proposed action is the least environmentally damaging practicable alternative ("LEDPA"). The 404(b)(1) Guidelines provide that, Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. 40 C.F.R. § 230.10(a). The 404(b)(1) Guidelines further provide that the "factual determinations [required by 40 C.F.R. § 230.11] shall be used … in making findings of compliance or noncompliance with the restrictions on discharge in § 230.10." 40 C.F.R. § 230.11. In other words, to make the required showing that the discharges are the LEDPA, the DSEIS must provide the necessary site-specific details and information on the short-term and long-term effects of the discharges associated with Shasta Dam enlargement. Reclamation's DSEIS fails to	EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		meet these requirements, and therefore also fails to meet NEPA's public disclosure and hard look requirements.	
17	17	First, though Reclamation asserts that "the 2015 SLWRI Feasibility Report determined the least environmentally damaging practicable alternative for the dam raise construction" (DSEIS, Appendix A at A-1), the 2015 Feasibility Report made no such determination. Instead, the 2015 Feasibility Report concluded that "it is anticipated that CP4A [the preferred alternative] will be identified as the [LEDPA] pursuant to Section 404 of the Clean Water Act, which is ultimately subject to determination by USACE." 2015 Feasibility Report at 5-30 and 8-2. Moreover, the DSEIS does not provide any additional detail or information, nor any specific factual determinations, to support a finding that CP4A is the LEDPA for dam construction. There is no evidence in the DSEIS or the 2015 Feasibility Report that Reclamation or the USACE made the LEDPA determination for the dam construction as required by the 404(b)(1) Guidelines.	EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	18	Moreover, neither the 2015 FEIS nor the DSEIS makes the factual determinations that alternative CP4A, including analysis of the other discharges associated with dam construction – which Reclamation refers to as "project relocations" – is the LEDPA. Instead, the DSEIS claims to provide a "programmatic approach" to the LEDPA determination for project relocations. DSEIS at 1-3. The discussion of LEDPA for project relocations in the DSEIS is presented on pages 2-3 and 2-4 and, after identifying the standard for determining a "practicable" alternative, states that "Reclamation will follow a procedure for identifying project relocation alternatives that prioritize avoidance. Any impact that cannot be completely avoided will be minimized to the extent practicable. All impacts to wetlands and other WOTUS will be mitigated." These statements of future plans to evaluate alternatives and identify the alternative with the least impact is not a finding based on factual determinations that a particular alternative is the LEDPA. Instead, it is a promise to engage in the required analysis and make the determination in the future. This does not meet the requirements of NEPA, Clean Water Act section 404(r), or the 404(b)(1) Guidelines. The DSEIS's presentation of	EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		a "programmatic approach" to its LEDPA obligations imposed the 404(b)(1) Guidelines does not provide detail and analysis that Congress demanded in any environmental impact statement developed in an effort to apply 404(r). See Monongahela Power, 809 F.2d at 51. For these reasons, the DSEIS does not present and make the required findings regarding the LEDPA – based on required factual determinations – as required by the 404(b)(1) Guidelines. Reclamation's DSEIS therefore also fails to meet NEPA's public disclosure and hard look requirements.	
17	19	The DSEIS Does Not Demonstrate that the Proposed Project Will Not Result in Jeopardy to or Adverse Modification of Critical Habitat of Threatened or Endangered Species as Required by the 404(b)(1) Guidelines The DSEIS also fails to meet the 404(b)(1) Guidelines by failing to demonstrate that the proposed action will not jeopardize or adversely modify critical habitat of endangered species. The 404(b)(1) Guidelines provide that "no discharge of dredged or fill material shall be permitted if it: … jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification of … critical habitat" for those species. 40 C.F.R. § 230.10(b)(3). The 404(b)(1) Guidelines further provide that the "factual determinations [required by 40 C.F.R. § 230.11] shall be used … in making findings of compliance or non-compliance with the restrictions on discharge in § 230.10." 40 C.F.R. § 230.11. Of particular relevance here are impacts from specific discharges as well as secondary effects including impacts from fluctuating water levels and changes in flow associated with dam operations. The DSEIS does not provide any information, analysis, or conclusions regarding whether the discharges of dredge and fill material will jeopardize or adversely modify critical habitat of endangered or threatened species. Chapter 4.3 of the DSEIS discusses impacts to only three species –winter-run Chinook salmon,	The purpose of the SEIS was, in part, to provide updated modeling based on changed operations of the CVP under the 2019 Biological Opinions. Reclamation has coordinated with FWS and NMFS throughout the environmental review process, and will continue to engage in consultation as needed. EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for an updated discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		Central Valley steelhead, and Western Yellow-Billed Cuckoo – that will be caused by anticipated flow changes that will result from the proposed project, but this analysis does not constitute or provide factual determinations on whether the action will jeopardize the species or adversely modify the species' critical habitat. See DSEIS at 4-6 to 4-8. [Footnote 7: See also Section II(A), infra.] Likewise, the DSEIS fails to even mention or provide required factual determinations regarding numerous threatened or endangered species that are likely to be adversely affected by the project, including gray wolf, northern spotted owl, valley elderberry longhorn beetle, Shasta crayfish, pacific fisher, California red-legged frog, Delta Smelt, and green sturgeon.	
17	20	Moreover, based on publicly available information, Reclamation has not completed Endangered Species Act consultation with either the United States Fish and Wildlife Service or the National Marine Fisheries Service to determine whether the proposed action will jeopardize listed species or adversely modify their critical habitat.8 In addition, as explained in Section II(A) below, the 2019 Biological Opinions do not analyze the impacts of operation of an enlarged Shasta Dam on listed species, and therefore cannot satisfy Reclamation's duties. Absent completion of such consultation, the factual determinations and conclusions regarding whether the action will jeopardize or adversely modify the critical habitat of threatened and endangered species required by the 404(b)(1) Guidelines cannot be made. For each of these reasons, the DSEIS fails to provide the information required by the 404(b)(1) Guidelines for the public and Congress to consider the effects of the discharge of dredge and fill material on threatened and endangered species. As a result, the DSEIS does not meet Reclamation's obligations under section 404(r) of the Clean Water Act, and the DSEIS violates NEPA's public disclosure and hard look requirements.	Please refer to Master Comment Response ESA-1, "ESA Compliance." The purpose of the SEIS was, in part, to provide updated modeling based on changed operations of the CVP under the 2019 Biological Opinions. Reclamation has complied with NEPA, has coordinated with FWS and NMFS throughout the environmental review process, and will continue to engage in Section 7 consultation as needed. EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
17	21	The DSEIS Does Not Demonstrate that the Proposed Project Will Not Cause or Contribute to Violations of Any State Water Quality Standards as Required by the 404(b)(1) Guidelines In addition, the DSEIS fails to meet the 404(b)(1) Guidelines by failing to demonstrate that the proposed action will not cause or contribute to violations of state water quality standards. The 404(b)(1) Guidelines provide that "no discharge of dredged or fill material shall be permitted if it: causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard." 40 C.F.R. § 230.10(b)(1). The 404(b)(1) Guidelines further provide that the "factual determinations [required by 40 C.F.R. § 230.11] shall be used … in making findings of compliance or non-compliance with the restrictions on discharge in § 230.10." Reclamation's DSEIS fails to meet these requirements, and therefore fails to meet NEPA's public disclosure and hard look requirements.	EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.
17	22	Appendix A of the DSEIS provides "Reclamation will follow California state water quality standards by following the permit requirements outlined within the general permits, as described [in Chapter 3]." DSEIS Appendix A at A-1.9 Chapter 3 of the DSEIS does not include factual determinations based on site-specific analysis of measures that Reclamation will take to ensure all state water quality standards will be met. Instead, Chapter 3 identifies two permits – the Construction Storm Water Permit and the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters – that Reclamation proposes to use "as a guideline to describe the effects of the proposed discharges." DSEIS at 3-1. It also asserts that it will take action to develop pollution control measures required by these two permits to control discharges. DSEIS at 3-2 to 3-4. Referencing permits that it promises to use as guidelines to control pollutants is not equivalent to the "factual determinations" regarding the effects of the discharges required by the 404(b)(1) Guidelines. Likewise, reciting the requirements of those permits is not a site-specific analysis of potential threats to water quality and a discussion of specific actions that will be taken to prevent	EPA and USACE were cooperating agencies on the SEIS, and EPA has concluded that the SEIS is consistent with the CWA 404(b)(1) Guidelines. Please refer to Chapter 3 and Appendix A of the SEIS for a discussion of the 404(b)(1) guidelines, and to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act.

Letter Number	Comment Number	Comment	Response
		impacts that could result from those threats. In fact, the DSEIS itself acknowledges that future analyses of the potential impacts of discharges and development of measures to reduce these impacts will be necessary. DSEIS at 3-2. In essence, the DSEIS provides nothing more than promises to take as-yet-undetermined action to ensure impacts from its uncharacterized and undefined discharges do not cause or contribute to violations of state water quality standards. This is not the equivalent of "factual determinations" regarding the effects of discharges that are required by the 404(b)(1) Guidelines. As a result, the DSEIS fails to consider the 404(b)(1) Guidelines as required, and therefore fails to meet NEPA's public disclosure and hard look requirements.	
17	23	The exemption in section 404(r) applies only to discharges of dredge and fill materials. 33 U.S.C. § 1344(r) (specifying "discharge of dredged or fill material as part of the construction"); see S.C. Wildlife Fed'n v. Alexander, 457 F. Supp. 118, 128 (D.S.C. 1978) (requiring section 402 permit for any discharges beyond those caused by dredge and fill in construction). Thus, even if Congress authorizes an exemption pursuant to Section 404(r), Reclamation remains required to meet all state and federal laws beyond this limited exception, including but not limited to permits required by section 402 of the Clean Water Act and the California Water Code for project elements that are not the discharge of dredge and fill materials. As such, and contrary to Reclamation's position in the DSEIS, Reclamation is required to seek Clean Water Act section 402 permits and all applicable State-law based Waste Discharge Requirements from the State of California in order to complete the proposed enlargement of Shasta Dam. The failure of the DSEIS to fully and adequately disclose Reclamation's obligation to obtain these permits, as well as to explain and analyze the actions it will take to comply with these permits, is a failure to comply with NEPA. 40 C.F.R. § 1502.16(c). We also note that the State of California is precluded by Public Resources Code section 5093.542 from granting these permits to Reclamation.	Please refer to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for a discussion of Reclamation's compliance with the Clean Water Act. Reclamation will comply with all applicable law.

Letter Number	Comment Number	Comment	Response
17	24	The DSEIS Fails to Analyze and Ensure Compliance with State Law Requirements Governing the Discharge of Dredge and Fill Material Regardless of whether Clean Water Act section 404(r) can be invoked to avoid having to obtain a Clean Water Act section 404 permit for the enlargement of Shasta Dam, Clean Water Act section 404(t) requires Reclamation to comply with all State laws that govern the discharge of dredge and fill material to waters of the United States. 33 U.S.C. § 1344(t). As a result, to comply with NEPA, the DSEIS must consider and evaluate whether the project is consistent with these State law-based regulations governing discharges of dredge and fill material to waters of the State. See 40 C.F.R. § 1502.16(c); [Footnote 10: This requirement is renumbered in forthcoming regulatory changes as section 1502.16(a)(5) and the text is slightly modified, but this analysis of consistency with state laws and policies for the area is still required under the forthcoming version of the regulations.] see id. at § 1506.2(d). In 2019, the State of California adopted regulations governing the discharge of dredge and fill material to waters of the State, which includes waters of the United States. [Footnote 11: These regulations were adopted by the State Water Resources Control Board on April 2, 2019 and are referred to as the "State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State." A copy of these regulations is available online at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/ resolutions/2019/040219_10_procedures_clean_v032219_conformed_final.pdf and is incorporated by reference.] Though the DSEIS does generally address dredge and fill necessary to complete the proposed project, it does not evaluate or analyze whether the discharges of dredge and fill material that will occur as a result of enlarging Shasta Dam will be consistent with the requirements of these State law-based regulations. Nor does it address or explain how the mitigation or other requirements of these regulations will be met. As a result of these	Please refer to SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for an updated discussion of Reclamation's compliance with the Clean Water Act. The SEIS is fully compliant with all requirements of NEPA.

Letter Number	Comment Number	Comment	Response
		failures, the DSEIS fails to comply with NEPA's public disclosure requirements and fails to ensure Reclamation takes a hard look at the environmental impacts of its proposed action and alternatives.	
17	25	The DSEIS Violates NEPA by Failing to Adequately Analyze and Disclose Potentially Significant Adverse Environmental Impacts from Updated CVP Operations and Relevant New Information Regarding Climate Change To satisfy NEPA, Reclamation must prepare an EIS that takes a "hard look" at the potential impacts of the proposed project and alternatives. This "hard look" demands a "thorough investigation into environmental impacts and forthright acknowledgment of potential environmental harms." Nat'l Parks & Conservation Ass'n, 606 F.3d at 1072. In addition, Reclamation must "guarantee relevant information is available to the public." N. Plains Res. Council, 668 F.3d at 1072. In its EIS, Reclamation must rely on "high quality information" and ensure scientific integrity of the discussions and analyses in its EIS in order to allow for "[a]ccurate scientific analysis, expert agency comments, and public scrutiny." 40 C.F.R. §§ 1500.1(b), 1502.24.12 Despite Reclamation approving significant changes in its operations of the CVP, including operations of Shasta Dam, since the publication of the 2015 FEIS, the DSEIS fails to analyze and disclose the full range of potential adverse environmental effects of enlarging Shasta Dam in light of those significant changes to operations. Reclamation's failure to analyze the potential adverse environmental effects of enlarging Shasta Dam as a result of these significant changes in operations plainly violates NEPA. In addition, since release of the 2015 FEIS, significant new information is available that is relevant to the assessment of environmental impacts of the proposed project and its alternatives, including scientific reports on the effects of climate change, scientific studies on the effects of water temperatures and flow on salmon, new information on the increased seismic risks from enlarging Shasta Dam, and	The SEIS updates the modeling of project impacts to reflect the changed operations of Shasta Dam and the CVP as a whole under the 2019 Biological Opinions, See SEIS Ch. 4. Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment and the largest potential changes from the 2015 FEIS. As a supplement to the FEIS, the SEIS provides updated modeling based on new information but does not change Reclamation's obligation to meet its ESA obligations. Reclamation has coordinated with FWS and NMFS throughout the environmental review process and will continue to do so. Please see FEIS Master Comment Response 33.3.29, DSFISH-4, referring to a project-specific Biological Opinion and new operations Biological Opinions that may result from reconsultation actions. For a discussion on Climate, please refer to response to comment 17-4.] Similarly, please refer to the FEIS, Chapter 4, Geology, Geomorphology, Minerals and

Letter Number	Comment Number	Comment	Response
		recent litigation that resulted in a state court order enjoining the Westlands Water District from participating in enlarging Shasta Dam. Yet the DSEIS fails entirely to discuss or address any of this information as required by NEPA. As explained below, Reclamation must recirculate a revised DSEIS that provides the required analyses of impacts of the proposed action and alternatives in the 2015 FEIS in light of this new information and updated CVP operations to ensure all resource topics and considerations relevant to the impacts of enlarging Shasta Dam are disclosed to the public and are subject to the hard look required by NEPA.	Soils for a discussion regarding seismic conditions and risk. Impact Geo-1, Exposure of Structures and People to Geologic Hazards Resulting from Seismic Conditions, Slope Instability and Volcanic Eruption specifically addresses seismic risk. Reclamation will continue to coordinate with partner agencies, will engage in further consultation as warranted, and will comply with all applicable law.
17	26	The DSEIS Violates NEPA by Failing to Adequately Analyze and Disclose Potentially Significant Adverse Environmental Impacts from Updated CVP Operations Reclamation approved significant changes in its operation of the CVP, including Shasta Dam operations, since Reclamation published the 2015 FEIS, including executing the COA Addendum in 2018 and issuing its Record of Decision for Reinitiation of Consultation on the Coordinated Long-Term Modified Operations of the Central Valley Project and State Water Project in 2020 ("Reinitiation of Consultation"). These changes have altered the timing and amount of flow released from Shasta Dam downstream, in addition to affecting reservoir storage and elevation. Reclamation has never analyzed or disclosed the potential environmental impacts, including cumulative effects, of an enlarged Shasta Dam in light of these significant changes in operations of the CVP. Reclamation's Final EIS for the Reinitiation of Consultation did not include modeling of an enlarged Shasta	See response to comment 17-25.

Letter Number	Comment Number	Comment	Response
		Dam; instead, that EIS admitted that modeling of "Facilities" for Alternative 1 are the "Same as the No Action Alternative," see Modeling Appendix at 16, [Footnote 13: Reclamation's modeling appendix from the 2020 Final EIS for Reinitiation of Consultation is available online at: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=41744 and is incorporated by reference.] and the size of the reservoir was unchanged at 4.552 million acre feet maximum capacity in the modelling (identical to the No Action Alternative), see id. at 52 and 147. The National Marine Fisheries Service concluded in its 2019 Biological Opinion that it could not assess whether the proposed Shasta Dam raise would have adverse or beneficial effects on winter-run Chinook salmon and other listed species, and did not evaluate the effects of enlarging Shasta Dam in the biological opinion, stating that: The proposed action proposes that operational criteria with the Shasta Dam Raise will be the same as operational criteria for the current dam and 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. NMFS 2019 Biological Opinion at 203 and n. 8. [Footnote 14: The 2019 NMFS Biological Opinion is available online at: https://repository.library.noaa.gov/view/noaa/22046 and is incorporated by reference.] Indeed, enlarging Shasta Dam was not included as part of the final project in Appendix 1 to the Record of Decision. [Footnote 15: The Record of Decision is available online at: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=42306 and is incorporated by reference.]	

Letter Number	Comment Number	Comment	Response
		However, it is abundantly clear that the effects of a Shasta Dam raise in conjunction with the changes in CVP operations could cause significant adverse environmental impacts, including cumulative effects. Indeed, in its Final EIS for Reinitiation of Consultation, Reclamation admitted that, "Of the water supply and water quality projects that have not been completed, those most likely to have cumulative effects related to the flow and water temperature effects of Alternative 1 are the Shasta Lake Water Resources Investigation." Reclamation, Reinitiation of Consultation Final EIS at 5-126. The DSEIS also admits that the proposed project would result in a greater than 5 percent reduction in flows in the Sacramento River in certain months and water year types, see DSEIS at 4-3 to 4-5. The DSEIS also admits that a reduction in flows could adversely affect adult winter-run Chinook salmon, id. at 4-6. Despite these acknowledgements, the DSEIS fails to disclose and take a hard look at the full range of impacts as required by NEPA, including by: (1) failing to disclose the full range of modeling results; (2) failing to analyze the potential environmental impacts to the full range of species, cultural resources, geology, environmental justice, and other affected resource categories in light of environmental conditions under current operations and the effects of climate change; and, (3) failing to analyze the impacts for the full range of alternatives analyzed in the 2015 FEIS.	
17	27	NEPA's regulations also impose a continuing duty on Reclamation to supplement an existing EIS when there are "'significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.'" See Idaho Sporting Cong., Inc. v. Alexander, 222 F.3d 562, 566 n.2 (9th Cir. 2000) (quoting 40 C.F.R. § 1502.9(c)(1)(ii)). A supplemental EIS "is required ... if changes, new information, or circumstances may result in significant environmental impacts in a manner not previously evaluated and considered," N. Idaho Cmty. Action Network v. U.S. Dep't of Transp., 545 F.3d 1147, 1157 (9th Cir. 2008) (internal quotation marks omitted). As noted below, there is significant new information and changed circumstances that compel preparation of a supplemental EIS that addresses this new information and changed circumstances.	Comment noted. The SEIS meets Reclamation's NEPA obligations.

Letter Number	Comment Number	Comment	Response
17	28	1. The DSEIS Fails to Disclose the Full Range of Modeling Results The operation of Shasta Dam dictates storage and release of water from Shasta Reservoir and thus modeling of these operations and their impacts on storage levels and downstream flows and temperature form the foundation for analyses and evaluation of the upstream and downstream direct, indirect, and cumulative impacts of the project on the environment. Reclamation asserts that it prepared Chapter 4 of the DSEIS to "describe the effects of the alternatives [in the 2015 FEIS] operating under the 2019 [BiOps]." DSEIS at 4-2. Despite this stated purpose, the DSEIS falls far short of providing information regarding the modeling performed or the results of the modeling to satisfy NEPA's disclosure and hard look requirements. First, Chapter 4 of the DSEIS only presents a few cherry-picked model results, and it fails to disclose all of the modeling results that are the basis for the text in the DSEIS. For instance, the DSEIS asserts the proposed project would result in a greater than 5 percent reduction in flows in the Sacramento River in certain months and water year types, but inexplicably fails to present any information on the results for all months or all water year types. See DSEIS at 4-3 to 4-5. In addition, the entire discussion of the effects on Delta outflow states that, "Reclamation modeled Delta outflow for all months in all water year types. In all months for all water year types, Delta outflow results for the 2019 scenario and 2015 scenario were within 2% of one another." DSEIS at 4-5. But the DSEIS fails to provide any of the modeling results to corroborate these statements. By providing only cherry-picked modeling results, the DSEIS deprives the public and decisionmakers from being able to independently assess any statements or conclusions made in the DSEIS.	The SEIS updates the modeling of project impacts to reflect the changed operations of Shasta Dam and the CVP as a whole under the 2019 Biological Opinions, *See* SEIS Ch. 4. Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment and the largest potential changes from the 2015 FEIS.
17	29	Furthermore, the DSEIS fails to adequately describe the baseline that is being used, and whether it is the baseline used in the 2015 FEIS, or if the baseline accounts for the changes in operations since the 2015 FEIS. For instance, the DSEIS states that maximum releases from Keswick Dam in February would be	NEPA requires consideration of the no action alternative as well as a range of reasonable alternatives to no action. The commenter appears to be referring to

Letter Number	Comment Number	Comment	Response
		reduced by 7.49 under the 2019 scenario, whereas the 2015 scenario would decrease flows by 0.01 percent. DSEIS at 4-3. In contrast, the 2015 FEIS concluded that average flows below Shasta Dam would decrease by 3 percent-5 percent in February under the various alternatives. 2015 FEIS at Table 6-4. It is unclear from the DSEIS how these assertions in the DSEIS relate to the findings in the 2015 FEIS and to the findings in the 2020 Final EIS for Reinitiation of Consultation, but they appear inconsistent with Reclamation's prior findings, and it is unclear from the DSEIS whether this is due in part to a change in the environmental baseline.	baseline considerations under the ESA. However, modeling for the SEIS took into account updated baseline conditions. See Modeling Appendix.
17	30	As noted in footnote 1, Reclamation subsequently provided NRDC with "the modeling results associated with the Draft SEIS." These documents purport to include the results of CalSim modeling for two alternatives: (1) the Reinitiation of Consultation Proposed Action ("ROC Proposed Action (ROC Pav23)"), and (2) "Shasta Dam Raise, CP4A, with ROC Proposed Action." The modeling of the Reinitiation of Consultation Proposed Action should be the same as the modeling results of Alternative 1 in Reclamation's 2020 FEIS for the reinitiation of consultation, [Footnote 16: Reclamation's modeling appendix from the 2020 Final EIS for Reinitiation of Consultation is available online at: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=41744 and is incorporated by reference.] since they purport to model identical operational parameters and identical facilities. However, contrary to our expectation, the modeling results from the DSEIS are wholly inconsistent with the modeling results in Reclamation's 2020 Final EIS for the Reinitiation of Consultation, with significant differences in reservoir storage at Shasta, flows downstream of Shasta, and other operational parameters. See email from Doug Obegi to Derya Sumer dated Sept. 10, 2020, included in Exhibit A.	Please refer to response to comment 17-29.
17	31	It appears that Reclamation's modeling in the DSEIS uses a different environmental baseline that excludes the effects of climate change, resulting in completely inconsistent modeling results. In a subsequent email, Reclamation (Derya Sumer) explained that, "this is a sensitivity analysis on what was analyzed	As the commenter notes, Reclamation previously explained to NRDC that the modeling results are not inconsistent. The modeling for the SEIS reflects inputs

Letter Number	Comment Number	Comment	Response
		in 2015, we ran the ROC PA model with historic hydrology and current sea level conditions to achieve a consistent comparison of with and without project conditions. So, it is expected that the model results the SEIS reflect those inputs and differ from those in the ROC FEIS." See email from Derya Sumer to Doug Obegi dated Sept. 11, 2020, included in Exhibit A (emphasis added). Because of these changes to the environmental baseline, it is impossible to compare the modeling results here with Reclamation's modeling results of the reinitiation of consultation from earlier this year. Providing inconsistent modeling results prevents the public and decisionmakers from understanding the likely effects of enlarging Shasta Dam, in violation of NEPA.	for the project it analyzes, and similarly the modeling for the ROC FEIS reflected the inputs from that process. These can be understood to take a hard look at both projects.
17	32	Equally important, the failure to model the effects of climate change means that the DSEIS fails to accurately assess the likely impacts of enlarging Shasta Dam on the environment, because it excludes Reclamation's assessment of the likely effects of climate change that are already occurring as compared to historic hydrology and sea levels, let alone the longer term effects of climate change for a dam expected to be operated for decades. [Footnote 17: Additional flaws in Reclamation's evaluation and treatment of information related to climate change is discussed below.] Earlier this year in the 2020 Final EIS for the Reinitiation of Consultation, Reclamation included the effects of climate change to model the effects of current operations of the CVP and SWP, including Shasta Dam operations. Using historic hydrological data and sea levels inaccurately assesses environmental impacts, given the magnitude of changes that have already occurred as compared to the 82-year CalSim period of record (1922-2003), as Reclamation recognized in including the effects of climate change in the modeling for the reinitiation of consultation. The failure to accurately model and assess the effects of enlarging Shasta Dam in light of climate change and significant changes to Reclamation's operations of the CVP violates NEPA.	Please refer to response to comment 17-4 and response to comment 17-25._
17	33	The DSEIS Fails to Disclose and Take a Hard Look at Impacts to Species and Other Biological Resources, Cultural Resources, or Environmental Justice	See response to comment 17-4 and response to comment 17-25.

Letter Number	Comment Number	Comment	Response
		Not only does the DSEIS fail to present the full range of modeling results, it fails to present the results of analyzing the full range of potential environmental impacts that would result from enlarging Shasta Dam in light of changed circumstances and new information since the 2015 FEIS. The 2015 FEIS found that enlarging and operating Shasta Dam under the 2008/2009 Biological Opinions would cause significant and unavoidable impacts to several resources – including botanical resources and wetlands, wildlife resources that depend on aquatic or riparian habitats, and cultural resources – as well environmental justice concerns. And while Chapter 4 of the DSEIS includes a cherry-picked and limited discussion of impacts of enlarging and operating Shasta Dam under the 2019 Biological Opinions on some species and resources, it fails to take a hard look at those resources it does discuss and fails entirely to discuss impacts to the full range of resources that could be impacted.	
17	34	First, Chapter 4 of the DSEIS only includes a brief discussion of potential impacts to three species: winter-run Chinook salmon, Central Valley Steelhead, and Western Yellow-billed Cuckoo. DSEIS at 4-6. This discussion is premised on an entirely incomplete presentation of modeling results and impacts to storage, flow, and temperature that provide the basis for assessing impacts the new CVP operations would have on these species, and therefore deprives the public and decisionmakers of the hard look at the impacts required.	See response to comment 17-25. Please see FEIS Master Comment Response 33.3.29, DSFISH-4, referring to a project-specific Biological Opinion and new operations Biological Opinions that may result from reconsultation actions. Also, the 2019 Biological Opinions are addressed in SEIS Master Comment ESA-1, "ESA Compliance."
17	35	Second, the DSEIS completely ignores potential impacts to all other species that were previously considered, including fall-run Chinook salmon, spring-run Chinook salmon, green sturgeon, Delta Smelt, and other fish, birds, and wildlife, either a result of higher reservoir elevations upstream of the dam or as a result of changes in flows downstream of the dam. [Footnote 18: Species not discussed in the DSEIS, but potentially impacted by the project include: fall-run Chinook salmon, spring-run Chinook salmon, green sturgeon, Delta Smelt, gray wolf, northern spotted owl, valley elderberry longhorn beetle, Shasta crayfish, Shasta	The comment does not identify any new information. Please see FEIS Master Comment Response 33.3.29, DSFISH-4, referring to a project-specific Biological Opinion and new operations Biological Opinions that may result from reconsultation actions. Also, the 2019 Biological Opinions are addressed in

Letter Number	Comment Number	Comment	Response
		salamander, pacific fisher, bald eagle, and California red-legged frog,] Analyses of impacts to a full range of species, not just a select few, was considered in the 2015 FEIS and there is no justification or explanation for failing to include analyses of impacts to a full range of species in the DSEIS.	SEIS Master Comment ESA-1, "ESA Compliance."
17	36	The resource topics and impacts presented in the 2015 FEIS that require supplementation as a result of the operational changes include the following: Analysis of botanical resources and wetlands: These resources that occur upstream of Shasta Dam are directly, indirectly, and cumulatively impacted by the water storage levels. These resources that occur downstream of Shasta Dam are directly, indirectly, and cumulatively impacted by the timing and flow of releases from Shasta Dam (as regulated by Keswick Dam). The 2015 FEIS identified significant and unavoidable impacts to many of these resources upstream and downstream of Shasta Dam based on analysis of operations under the old operational rules. See 2015 FEIS Table S-3. Both the context and the intensity of the impacts to these resources may change as a result of the new operational rules, but nowhere has Reclamation disclosed or taken a hard look at the impacts to these resources under the new operational rules.	The comment does not identify any new information except to assert that Reclamation should have considered the new operational rules, which are considered in this SEIS.
17	37	Analysis of wildlife resources that depend on aquatic or riparian habitats: The wildlife resources that occur upstream of Shasta Dam are directly, indirectly, and cumulatively impacted by the water storage levels. Wildlife resources that occur downstream of Shasta Dam are directly and indirectly affected by the timing and flow of releases from Shasta Dam (as regulated by Keswick Dam). The 2015 FEIS identified significant and unavoidable impacts to many wildlife resources based on analysis of operations under the old operational rules. See 2015 FEIS Table S-3. It also identified significant and less than significant impacts to other species and habitats. Id. Both the context and the intensity of the impacts to these wildlife resources may change as a result of the new operational rules. However, other than the insufficient evaluation of impacts to winter-run chinook salmon, Central Valley Steelhead, and Western Yellow-Billed Cuckoo discussed above,	The comment does not identify any new information except to assert that Reclamation should have considered the new operational rules, which are considered in this SEIS. See also response to comment 17-25 and response to comment 17-4.

Letter Number	Comment Number	Comment	Response
		nowhere has Reclamation disclosed or taken a hard look at the impacts to these wildlife resources under the new operational rules.	
17	38	In addition to failing to analyze impacts to these resources based on modeling of the new CVP Operations, the DSEIS completely ignores significant new scientific information regarding impacts to species. For example, in November 2015 the Fish and Wildlife Service issued a Fish and Wildlife Coordination Act Report ("CAR") that identified significant adverse impacts to rare and special status species in the vicinity of Shasta Lake, riparian habitat along the Sacramento River, and aquatic habitat in the Delta that could result from the Shasta Dam enlargement. [Footnote 19: he CAR is included in Exhibit E [Attachment 5]. It is also available online at: https://www.friendsoftheriver.org/wp-content/uploads/2019/07/USFWS_SLWRIFWCAR_2015-ocr-compressed.pdf and is incorporated by reference.] The FWS found "[r]aising Shasta Lake would inundate a portion of the limited habitat of the following six rare, but not federally-listed, species each of which is endemic to the vicinity of Shasta Lake: Shasta snow-wreath (Neviusia cliftonii), Shasta salamander (Hydromantes shastae), Shasta sideband snail (Monadenia trogiocjytes trogiocjytes), Wintu sideband snail (Monadenia trogiocjytes wintu), Shasta chaparral snail (Triiobopsis ropert), and Shasta hesperian snail (Vespericoia shasta)." CAR at xi. The DSEIS does not address or disclose any of this information or the opinion of this expert agency despite the clear relevance of this information to the potential adverse impacts of the project. Reclamation must explain in the SEIS how it has considered the information from the CAR in its analysis and explain why it does not agree with the agency's expert opinion. See Alliance to Save the Mattaponi v. U.S. Army Corps of Eng'rs, 606 F.Supp.2d 121, 132 (D.D.C.2009) (finding "The Corps ... must demonstrate that it has considered significant comments and criticisms by explaining why it disagrees with them; it may not dismiss them without adequate explanation.")	Please see SEIS Master Comment ESA-1, "ESA Compliance," addressing the 2019 Biological Opinions and the Reinitiation of Consultation. Reclamation has worked closely with FWS as a cooperating agency on this project, and has appropriately considered the FWCA in its analysis. Please refer to FEIS Master Comment Response DSFISH-5, "Fish and Wildlife Coordination Act Report."

Letter Number	Comment Number	Comment	Response
17	39	Moreover, the unreasonably limited analyses in the DSEIS fails to consider scientific information related to fish species that occupy effected habitat downstream of Shasta Dam that post-dates the 2015 FEIS. Such more recent scientific information strongly demonstrates that reductions in flows in the Sacramento River downstream of an enlarged Shasta Dam would significantly harm winter-run Chinook salmon, spring-run Chinook salmon, and fall-run Chinook salmon by reducing the survival of juvenile salmon migrating downstream in the winter and spring months. [Footnote 20: See, e.g., Stuart Munch et al 2020. Science for integrative management of a diadromous fish stock: interdependencies of fisheries, flow and habitat restoration, Can. J. Fish. Aquat. Sci. 77: 1487–1504 (2020) dx.doi.org/10.1139/cjfas-2020-0075; Michel, Cyril 2019. Decoupling outmigration from marine survival indicates outsized influence of streamflow on cohort success for California's Chinook salmon populations, Can. J. Fish. Aquat. Sci.76: 1398–1410 (2019) dx.doi.org/10.1139/cjfas-2018-0140; Friedman, W. R. et al. 2019. Modeling composite effects of marine and freshwater processes on migratory species. Ecosphere 10(7):e02743. 10.1002/ ecs2.2743; Mark Henderson et al, 2018. Estimating spatial-temporal differences in Chinook salmon outmigration survival with habitat and predation related covariates. Can. J. Fish. Aquat. Sci. 76(9): 1549-1561, https://doi.org/10.1139/cjfas-2018-0212; Notch, Jeremy et al 2020. Outmigration survival of wild Chinook salmon smolts through the Sacramento River during historic drought and high water conditions. Environ Biol Fish, https://doi.org/10.1007/s10641- 020-00952-1. A copy of these peer reviewed studies is included in Exhibit E.] The DSEIS wholly ignores the potential adverse impacts to juvenile salmon from reduced flows in the Sacramento River. The DSEIS likewise wholly ignores the adverse impacts to Longfin Smelt and Delta Smelt from reduced Delta outflow in the winter and spring months. For instance, in its final biological opinion, the U.S. Fish and Wildlife Service identified potential adverse effects from raising the height of Shasta Dam including reduced Delta inflow in the winter and spring, reduced habitat downstream from the dam (floodplain, channel margin, and riparian habitat). FWS 2019 Biological	Please see SEIS Master Comment ESA-1, "ESA Compliance," addressing the 2019 Biological Opinions and the Reinitiation of Consultation. The studies and effects cited in this comment were considered in the 2019 BiOps, and a raise of the Shasta dam would not reduce flows.

Letter Number	Comment Number	Comment	Response
		Opinion at 405. [Footnote 21: The FWS 2019 Biological Opinion is available online at: https://www.fws.gov/sfbaydelta/cvpswp/documents/10182019_ROC_BO_final.pdf and is incorporated by reference.] Scientific studies continue to demonstrate that reductions in winter-spring Delta outflow significantly reduce the survival and abundance of Longfin Smelt. See, e.g., Nobriga and Rosenfield 2016. Population Dynamics of an Estuarine Forage Fish: Disaggregating Forces Driving Long-Term Decline of Longfin Smelt in California's San Francisco Estuary, Transactions of the American Fisheries Society, 145:1,44-58, DOI: 10.1080/00028487.2015.1100136. Reclamation must update the analysis of environmental impacts to fish and wildlife to account for this more recent scientific data and studies, and the failure to do so violates NEPA.	
17	40	Third, the DSEIS fails to analyze whether increased reservoir elevation as a result of changes in operations, in combination with an enlarged Shasta Dam, would result in more frequent inundation of Native American sacred sites or increase the duration of inundation and/or the impacts of such inundation. As a result, the DSEIS fails to adequately analyze the likely impacts to cultural resources and environmental justice as follows: Analysis of cultural resources: The 2015 FEIS identifies significant and unavoidable impacts to "Traditional Cultural Properties" as a result of inundation by water stored behind an enlarged Shasta Dam. See 2015 FEIS Table S-3. Under the old operational rules, inundation would be expected to occur at certain times of year and for certain lengths of time. Under the new rules, the times of year and length of time of inundation may change, and the context and intensity of the impacts to these resources will likewise change. However, nowhere has Reclamation disclosed or taken a hard look at the impacts to these resources under the new operational rules.	Please see the discussion of impacts to cultural resources in Chapter 5 of the SEIS. Chapter 24 of the FEIS analyzed impacts to environmental justice. Please also refer to FEIS Master Comment CR-1, "Potential Impacts to Cultural Resources."
17	41	Analysis of environmental justice: The 2015 FEIS stated the enlargement of Shasta Dam could have significant and unavoidable "cumulative impacts from	Please see Chapter 24 of the FEIS, analyzing impacts to environmental

Letter Number	Comment Number	Comment	Response
		disproportionate placement of environmental impacts on Native American populations, leading to disturbance or loss of resources associated with locations considered by the Winnemem Wintu and Pit River Madesi Band members to have religious and cultural significance in the vicinity of Shasta Lake." See 2015 FEIS Table S-3. The context and intensity of these disproportionately inflicted cumulative impacts are influenced by the time of year and length of time that water is stored behind Shasta Dam and inundates resources with religious and cultural significance to these tribes. Changes to the impacts to Native American populations resulting from the new rules has not been analyzed, disclosed, or scrutinized as required by NEPA.	justice, and the updated analysis of impacts to cultural resources in Chapter 5 of the SEIS. Please also refer to FEIS Master Comment Response CR-1, "Potential Impacts to Cultural Resources."
17	42	Not only does the DSEIS fail to disclose and take the required hard look at the impacts to cultural resources and environmental justice, the limited analysis it does provide is inconsistent with previous discussions in the 2015 FEIS. For example, the DSEIS falsely claims that, "Sacred sites important to Native Americans have not been specifically identified." DSEIS at 5-29. Yet in the 2015 FEIS, Reclamation admitted that, The Winnemem Wintu have identified important localities within the study area, many of which are locations where ceremonies are regularly conducted. Along the McCloud River, these include Children's Rock, Coyote Rock, Dekkas Rock, doctoring pools near Nawtawaket Creek, Eagle Rock and Samwel Cave, Hirz Bay, Kaibai village, North Gray Rocks, Puberty Rock, Saddle Rock, and Watawacket village and spiritual area. 2015 FEIS at 24-4. The 2015 FEIS concluded that more frequent inundation of Puberty Rock in the McCloud River caused by raising Shasta Dam would result in a disproportionally high and adverse impact. Id. at S-129, 24-17, 24-20, 24-23, 24-25 to 24-26, 24-29, 24-32. The DSEIS purports to include updated modeling of lake elevations, but it fails to consider the effects of enlarging Shasta Dam in light of updated operations on the frequency or duration of the inundation of Puberty Rock or other sacred sites.	Please see Chapter 24 of the FEIS, analyzing impacts to environmental justice, and the updated analysis of impacts to cultural resources in Chapter 5 of the SEIS. Please also refer to FEIS Master Comment Response CR-1, "Potential Impacts to Cultural Resources."

Letter Number	Comment Number	Comment	Response
17	43	Fourth, the DSEIS fails to update the analysis of geologic impacts from enlarging Shasta Dam (GEO-1) in light of recent information from Reclamation regarding increased seismic risks of enlarging Shasta Dam that was not discussed in the 2015 FEIS. In response to Earthjustice's FOIA request, Reclamation has disclosed records that indicate a significantly increased seismic risk from enlarging Shasta Dam. [Footnote 22:A copy of these documents that are cited in this paragraph are included in Exhibit F [Attachment 6] Although there are substantial redactions in these documents, a number of significant seismic concerns were identified that have not been publicly disclosed, including: Estimated seismic loads are significantly higher (200-300 percent higher) than the seismic loads used by Reclamation in its prior risk assessment in 2014. See email from Robert Pike (USBR) to Thomas Luebke et al, re: Background Information for Shasta Call, Feb. 11, 2019; see also Reclamation, Shasta Dam and Reservoir Enlargement Project (SDREP) – Dam Raise Final Design Status Report, August 2019. As a result, the analysis of GEO-1 in the 2015 FEIS likely underestimates impacts and is not consistent with Reclamation's current understanding of seismic risks. Raising the dam is likely to increase the loss of life expected as a result of a dam failure ("Life loss under existing conditions is less than under raised conditions"). See email from Sheena Barnes (USBR) to Anastasia Johnson et al, re: Shasta RCEM Draft Report, Feb. 8, 2019 (Attaching draft Tech. Memo No. SV-86-68130-2018-1), at 121 There are significant concerns regarding cavitation damage and failure from an enlarged spillway associated with the dam enlargement. See Bureau of Reclamation, Alternatives for Preventing Cavitation Damage on the Shasta Dam Spillway, Hydraulic Laboratory Report HL-2019-06, December 2019. While it appears from these documents that Reclamation ceased design work on enlarging Shasta Dam without resolving these significant seismic concerns, there is no question that Reclamation has not analyzed or disclosed these risks	Reclamation prepared the SEIS as a supplement to the FEIS as required under NEPA. The DSEIS used and disclosed data from pre-2013 work that included information on local active faults and relevant earthquakes. Reclamation recognized that data gaps exist. Thus, a new Reclamation seismic study is being completed to address this data gap and more thoroughly document site conditions. The study is not yet finalized.

Letter Number	Comment Number	Comment	Response
		pursuant to NEPA or accounted for them in the 2015 Final Feasibility Report. Reclamation must update the analysis of geologic and seismic impacts (GEO-1) to account for these seismic risks.	
17	44	Finally, the DSEIS fails to update the analysis of cumulative impacts given these significant changes to Shasta Dam operations and changes to other water projects being considered that would affect flows in the Sacramento River and would affect Delta outflow, including Sites Reservoir.	Reclamation prepared the SEIS as a supplement to the FEIS as required under NEPA. The SEIS concludes that operating under the 2019 scenario does not significantly change the impacts described under the 2015 scenario within the 2015 SLWRI FEIS, which includes cumulative impacts.
17	45	For each of the resource categories described in this section [Cultural resources, Environmental Justice, Geology/Seismicity, Fish and Wildlife, Botanical Resources and Wetlands], the environmental impacts of enlarging Shasta Dam and operating it under the new rules has not been disclosed to the public as required by NEPA. Likewise, Reclamation has not taken a hard look at the impacts to these resources considering the new operational rules, despite the fact that the context and intensity of each of these impacts is different under the new rules. As a result, Reclamation must revise the DSEIS to supplement the 2015 FEIS as required by NEPA.	Comment noted. Reclamation prepared the SEIS as a supplement to the FEIS as required under NEPA and has complied with NEPA in examining impacts altered by the changed regulatory framework and updated operations of the CVP.
17	46	The DSEIS Fails to Disclose and Take a Hard Look at the Full Range of Alternatives Under the New CVP Operations Chapter 4 of the DSEIS also fails to consider the full range of alternatives in the 2015 FEIS, and instead it only considers potential impacts from an undefined 18.5-foot dam raise and an unclear no action alternative. The 2015 FEIS evaluated several different alternatives that included an 18.5 foot dam raise, but Chapter 4 of the DSEIS fails to identify which of these alternatives it analyzes (even though those alternatives included different operations), and it excludes analyses of potential impacts from the other alternatives presented in the Final	Comment noted. The SEIS updates the modeling of project impacts to reflect the changed operations of Shasta Dam and the CVP as a whole under the 2019 Biological Opinions, *See* SEIS Ch. 4. Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment

Letter Number	Comment Number	Comment	Response
		EIS. [Footnote 23: In contrast, Chapter 5 of the DSEIS purports to analyze impacts from all of the alternatives considered in the 2015 Final EIS.] While the range of alternatives considered in the 2015 FEIS was itself inadequate, the failure of the DSEIS to provide a full analysis of the impacts of new operations for each of the alternatives considered in the 2015 FEIS is a violation of NEPA.	and the largest potential changes from the 2015 FEIS. The Final SEIS complies with NEPA.
17	47	Taken together, Chapter 4 of the DSEIS fails to demonstrate that Reclamation took a "hard look" at the potential adverse impacts of enlarging Shasta Dam in light of the significant changes in CVP operations since the 2015 FEIS and in light of the more recent scientific information and data on the environmental impacts of reductions in instream flow downstream of Shasta Dam. The DSEIS must be completely revised to provide the public with the modeling and data that is relied upon and to analyze potential adverse impacts from all of the alternatives to all of the impact categories, and Reclamation must recirculate the DSEIS for public comment after so doing.	The SEIS updates the modeling of project impacts to reflect the changed operations of Shasta Dam and the CVP as a whole under the 2019 Biological Opinions, *See* SEIS Ch. 4. Reclamation focused its modeling updates in the SEIS on the no action alternative and the 18.5-ft dam raise, in order to model the largest change in potential impacts to the environment and the largest potential changes from the 2015 FEIS. The Final SEIS complies with NEPA.
17	48	The DSEIS Violates NEPA by Failing to Address and Adequately Analyze and Disclose New Scientific Information Regarding the Impacts of the Project in Light of Climate Change In addition to changes in CVP Operations, there is substantial new scientific data and information on climate change that is relevant to the environmental impacts of the project, and must be addressed in the DSEIS to satisfy NEPA. [Footnote 24: See Climate Change Risk Faced by the California Central Valley Water Resource System, Schwarz, et al (2018) (included in Exhibit G and available at https://www.energy.ca.gov/sites/default/files/2019-12/Water_CCCA4-EXT-2018-001_ada.pdf); Dettinger et al, Climate Change and the Delta (October 2016) at 12-16 (included in Exhibit G and available online at https://escholarship.org/uc/item/2r71j15r.); Grantham et al, Sensitivity of	Please refer to response to comment 17-25 and 17-4.

Letter Number	Comment Number	Comment	Response
		streamflow to climate change in California (July 11, 2018) (included in Exhibit G and available online at https://doi.org/10.1007/s10584-018-2244-9).] The findings from numerous scientific reports, including those discussed below, uniformly indicate that over the coming decades California's climate will be more volatile, with longer and more frequent droughts, less snowpack, and shifting flow regimes with higher flows in the wet season and lower flows in the dry season. As explained below, changes in precipitation amounts and timing will have profound effects on the amount and timing of water stored in Shasta Reservoir that will in turn directly, indirectly, and cumulatively impact the natural resources and environment impacted by Shasta Dam and Reservoir. As explained in the Statewide Summary Report for the State of California's Fourth Climate Change Assessment, [Footnote 25: All technical reports published in conjunction with California's Fourth Climate Change Assessment are available online here: https://www.climateassessment.ca.gov/techreports/water.html.] which was published in 2018, a decline in performance of storage and conveyance systems is expected, including a decline in reservoir carryover storage (amount of water available in the reservoirs before the start of the wet season in October), reduced Delta water exports, and diminished drought resilience and operational control to meet future downstream river flow temperature requirements. […] On average in ten climate models under 3 RCP 4.5 and RCP 8.5 scenarios, carryover storage in the largest reservoirs (i.e., Shasta and Oroville) is projected to decline markedly, by roughly one-third over the course of this century. This stored water will not be available to use during dry years. [Footnote 26: Statewide Summary Report for the State of California's Fourth Climate Change Assessment at 57, available online at: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf and incorporated by reference.]	

Letter Number	Comment Number	Comment	Response
		Dettinger, et al (2018) explained that the bulk of the scientific data and analysis indicates that the availability of water in conservation facilities will continue to decline, and that the amount of water retained in these facilities will become increasingly inconsistent and more volatile. [Footnote 27: Dettinger et al, Climate Change and the Delta (October 2016) at 12-16.] Grantham et al (2018) summarized the likely impacts of climate change on the availability of water in California's reservoirs as follows: Shifts in streamflow regimes towards higher flow magnitudes in the wet season and lower flow magnitudes in the dry season present a major challenge to California's water storage, flood control, and conveyance systems. Because most of California's large reservoirs are also managed for flood control, it is unlikely that managers can take advantage of increased winter flows for storage. Coupled with flow declines in the spring and early summer, predicted shifts in hydrology are likely to reduce the state's managed water supplies. [Footnote 28: Grantham et al, Sensitivity of streamflow to climate change in California (July 11, 2018).] None of this information, or any discussion of the context or intensity of the impacts that these changes in storage in Shasta Reservoir will have on the environment in, around, and downstream of Shasta Reservoir are disclosed or addressed in the 2015 FEIS or the DSEIS.29 Until Reclamation supplements the 2015 FEIS and evaluates all the alternatives in light of this information, it will not have taken the required hard look at the environmental impacts of the proposed enlargement of Shasta Dam and its alternatives.	
17	49	The DSEIS Fails to Accurately Assess Impacts to the McCloud River and Consistency With State Law Chapter 5 of the DSEIS plainly violates NEPA because it falsely asserts that Reclamation need not consider compliance with state laws under NEPA, wholly misstates the requirements of state law (section 5093.542 of the California Public	I Chapter 5 appropriately addresses Reclamation's obligations with regard to state law. The FSEIS was modified to remove one sentence that stated that Reclamation did not believe California's views are relevant. See also FEIS Master

Letter Number	Comment Number	Comment	Response
		Resources Code), and fails to accurately assess impacts to the McCloud River, its free-flowing condition, its wild trout fishery, and consistency with state laws and policies regarding the McCloud River. First, the DSEIS incorrectly asserts that "Reclamation has no obligation to analyze state law requirements under the California Wild and Scenic Rivers Act, and this section is therefore being revised to reflect and re-focus the analysis on the federal requirements." DSEIS at 5-3. However, NEPA's implementing regulations specifically require that the agency evaluate "[p]ossible 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(c); [Footnote 30: This requirement is renumbered in forthcoming regulatory changes as section 1502.16(a)(5) and the text is slightly modified, but this analysis of consistency with state laws and policies for the area is still required under the forthcoming version of the regulations.] see id. at § 1506.2(d) ("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."). Section 5093.542 of the California Public Resources Code clearly falls within the requirements of these regulations, and as a result, NEPA requires that Reclamation consider consistency with Section 5093.542 of the California Public Resources Code.	Comment Responses WASR-1, WASR-3, WASR-4, WASR-8, and WASR-6. In the SEIS, Reclamation has updated the analysis to focus on federal law, but has fully complied with NEPA requirements. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.
17	50	The appropriate method for addressing this information would be to model Shasta Dam operations taking into account reasonably foreseeable climate conditions based on best available science regarding changes to hydrology and temperatures as a result of climate change. Reclamation is familiar with this concept, and did so (albeit insufficiently) in its Environmental Impact Statement for the Reinitiation of Consultation on the Long-Term Operations of the Central Valley Project. See supra note 13 at 1-2 ("The No Action Alternative includes projected climate change and sea level rise assumptions corresponding to the	Please refer to response to comment 17-25 and response to comment 17-4.

Letter Number	Comment Number	Comment	Response
		Year 2030. Change in climate results in the changes in the reservoir and tributary inflows included in CalSim II. The sea level rise changes result in modified flow-salinity relationships in the Delta."). Neither modeling done for the 2015 FEIS nor modeling done for the DSEIS followed appropriate methods to effectively model the long-term environmental impacts resulting from the enlargement of Shasta Dam in light of predicted climatic conditions. Not only is this a flaw in the 2015 FEIS, it demonstrates the need to supplement the 2015 FEIS to disclose this information to the public and ensure it takes the required hard look at the impacts of the proposed action and alternatives.	
17	51	Second, the DSEIS plainly misinterprets the requirements of section 5093.542 of the California Public Resources Code, advancing an interpretation of this section of state law that is inconsistent with the plain language of the statute, with the State of California's consistent interpretation of the statute, with orders and decisions of the California courts, and with Reclamation's prior interpretations of this section of law. Reclamation now appears to assert in the DSEIS that this section of state law does not prohibit the enlargement of Shasta Dam: However, the legislature separately addressed DWR's participation in the feasibility of enlarging Shasta Dam, authorizing DWR to participate in technical and economic feasibility studies while directing that the agency could not assist or cooperate with planning of any other projects involving construction of a 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 (PRC Section 5093.542(c)). 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). DSEIS at 5-4. Reclamation's novel interpretation of the requirements of California law [Footnote 32: Reclamation's interpretation of state law is not entitled to deference. See Garcia–Lopez v. Ashcroft, 334 F.3d 840, 843 (9th Cir. 2003)	In the SEIS, Reclamation has updated the analysis regarding the McCloud River to focus on federal law, but has fully complied with NEPA and will continue to comply with all applicable law. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		(granting no deference to federal board's interpretation of state law); see also Baber v. Schweiker, 539 F. Supp. 993, 995 (D.D.C. 1982) (finding that deference does not attach to an agency's interpretation of state law); see also Soliman v. Gonzales, 419 F.3d 276, 281 (4th Cir. 2005) (holding that federal agency's interpretation of state law was not entitled to deference). Rather, it is the State's interpretation of the law which is entitled to deference. See Lincoln Am. Corp. v. Victory Life Ins. Co., 375 F. Supp. 112, 118 (D. Kan. 1974) ("an interpretation of state law by a state agency delegated the responsibility of enforcing that law, is entitled to great weight.")] in the DSEIS is grossly inconsistent with the plain language of section 5093.542 of the California Public Resources Code, [Footnote 33: "Except for participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam, no department or agency of the state shall assist or cooperate with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the freeflowing condition of the McCloud River, or on its wild trout fishery." Cal. Pub. Res. Code § 5093.542.] which unambiguously prohibits participation by any agency of State (which would of course include DWR) in the planning or construction of any dam that could have an adverse effect on the free-flowing condition of the McCloud River, while providing a limited exception that allows DWR to participate in studies involving the technical and economic feasibility of Shasta Dam. Reclamation's interpretation improperly inserts the word "other" into the language of the statute to suggest that the statute prohibits DWR from cooperating or assisting "in the planning or construction of any other dam." But section 5093.5042 does not prohibit state agencies from cooperating or assisting the planning or construction of any "other" dam; rather, this section explicitly prohibits state agencies from cooperating or assisting in the planning or construction of any dam that could adversely affect the free flowing nature of the McCloud River.	

Letter Number	Comment Number	Comment	Response
17	52	In addition to this analysis of impacts being required under NEPA's regulations, Reclamation also has a duty to analyze consistency with this section of the Public Resources Code in light of its legal obligation under the WIIN Act to obtain a cost-sharing partner to pay for at least 50 percent of the cost of construction. As discussed further below, the Shasta County Superior Court issued a preliminary injunction preventing Westlands Water District from conducting a CEQA analysis to allow it to act as a cost-sharing partner for the enlargement of Shasta Dam, finding that the California Attorney General had demonstrated a likelihood of success on the merits that Westlands' participation would violate section 5093.542 of the California Public Resources Code.	Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River, and Master Comment Response WIIN-1, WIIN Act Compliance. Reclamation has and will continue to comply with all applicable law during the environmental review and project-planning process.
17	53	In addition to being inconsistent with the plain language of the statute, Reclamation's new interpretation is wholly inconsistent with prior interpretations of this provision of state law by Reclamation. For instance, in the Final EIS Reclamation concluded that all of the 18.5-foot dam alternatives "would conflict with the State PRC," and thus constituted a significant and unavoidable impact under NEPA. 2015 FEIS at 25-40. Similarly, in the Final Feasibility Study, Reclamation determined that, From discussions with the State, it is our understanding there has been a determination that the PRC protecting the McCloud River prohibits State participation in the planning or construction of enlarging Shasta Dam other than participating in technical and economic feasibility studies. Final Feasibility Study at ES-44. Reclamation also repeatedly concluded that section 5093.542(c) includes an exception for the "participation by DWR in studies involving the feasibility of enlarging Shasta Dam." Id. at 2-34 to 2-35; see id. at 1-31 to 1-32 (asserting that the CALFED Record of Decision states that "the California Public Resources Code Section 5093.542 seeks to protect the free-flowing McCloud River but also provides for investigations for potential enlargement of Shasta Dam.").	In the SEIS, Reclamation has updated the analysis regarding the McCloud River to focus on federal law, but has fully complied with NEPA and will continue to comply with all applicable law. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
17	54	Reclamation's misinterpretation of the requirements of section 5093.542 also conflicts with the interpretation of state law as expressed in multiple letters by agencies and departments of the State of California, including but not limited to the California Natural Resources Agency in 2018, the California Department of Fish and Game in 2008, the California Department of Fish and Wildlife in 2019, and the State Water Resources Control Board in 2019. [Footnote 34: Copies of these letters from State agencies and departments are attached hereto as Exhibit H.] Reclamation's misinterpretation of the statute is also inconsistent with the orders of the Superior Court for the County of Shasta, which on July 29, 2019 issued a preliminary injunction preventing Westlands Water District from conducting a CEQA analysis to allow it to act as a cost-sharing partner for the enlargement of Shasta Dam, finding that the California Attorney General had demonstrated a likelihood of success on the merits that Westlands' participation would violate section 5093.542 of the California Public Resources Code. [Footnote 35: In addition to recognizing that federal and state agencies had previously concluded that raising the height of Shasta Dam will have adverse effects on the free-flowing nature of the McCloud River and its wild trout fishery, the Superior Court found that: The plain language of the statute prohibits departments or agencies of the Statefrom financing, facilitating, or even cooperating with any other government agencies in the planning or construction of any water impoundment facility that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery. The prohibition must be read in the context of the entire statute, whose stated policy objectives are to preserve the extraordinary scenic, recreational, fishery, or wildlife values of protected rivers in their free flowing state; and, with respect to the McCloud River, to protect its wild trout waters by managing the river resources in its existing natural condition. See Pub. Resources Code §§ 5093.50, 5093.542.	In Chapter 5 of the SEIS, Reclamation has updated the analysis regarding the McCloud River to focus on federal law, but has fully complied with NEPA and will continue to comply with all applicable law. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
		People v. Westlands Water District, Case No. 192487, tentative ruling dated July 29, 2019, at 10. A copy of this ruling and related court documents is attached as Exhibit I [Attachment 9].]	
17	55	Reclamation's interpretation of section 5093.542 is contrary to the plain language of the statute and is inconsistent with Reclamation's prior interpretations of the statute, the consistent interpretation of the statute by numerous agencies of the State of California, and with the rulings of the Shasta County Superior Court interpreting this section of state law. Reclamation's misinterpretation of the statute is clearly erroneous and misleads the public, and it must revise this section of the DSEIS.	In the SEIS, Reclamation has updated the analysis of impacts to the McCloud River to focus on federal law. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.
17	56	Moreover, while the DSEIS grossly misstates the requirements of state law, the DSEIS does not purport to modify or rescind Reclamation's conclusion in the 2015 FEIS that all of the alternatives that propose to enlarge Shasta Dam would cause a significant environmental impact (WASR-4) as a result of adverse effects on the McCloud River's free-flowing conditions, as identified in California's Public Resources Code, Section 5093.542. [Footnote 37: The same is true with respect to WASR-3 in the 2015 Final EIS. State agencies have previously concluded that enlarging Shasta Dam would harm the wild trout fishery, in violation of section 5093.542 of the Public Resources Code. See, e.g., Letter from the California Department of Fish and Wildlife to Westlands Water District dated January 14, 2019, included as part of Exhibit H.] Reclamation has not provided the public with any notice or opportunity to comment on language purporting to modify finding WASR-4 in the 2015 FEIS, and it would violate NEPA if Reclamation acted to withdraw these findings of a significant environmental impact without first notifying the public and providing the public with an opportunity to comment on such changes.	In the SEIS, Reclamation has updated the analysis of impacts to the McCloud River to focus on federal law, and has fully complied with NEPA. Reclamation will continue to comply with all applicable law. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.
17	57	The lawsuit by the State of California and the orders of the Shasta County Superior Court represent significant new information that Reclamation must address in supplementing the 2015 FEIS. Reclamation has failed to satisfy its duty under NEPA, as the DSEIS entirely fails to address or discuss the State's	Reclamation has complied with NEPA in issuing the SEIS, and will continue to comply with all applicable law. Please see Master Comment Response CNRC-1,

Letter Number	Comment Number	Comment	Response
		lawsuit, this court ruling, and/or how Reclamation would reconcile its proposed action with the requirements of state law.	California Natural Resources Code Regarding the McCloud River.
17	58	In contrast to its misinterpretation of section 5093.542, in the DSEIS Reclamation reaffirms that all of the project alternatives would adversely affect the free flowing condition of the McCloud River and would result in significant adverse environmental impacts to the free flowing condition of the McCloud River and its eligibility as a Wild and Scenic River under federal law. DSEIS at 5-27, 5-31 to 5-33, 5-35 to 5-37. And as discussed in the attachments, numerous state agencies have repeatedly concluded that enlarging Shasta Dam would adversely affect the free flowing condition of the McCloud River and adversely affect its wild trout fishery, which would violate section 5093.542 of the California Public Resources Code. Thus, the DSEIS does not change the findings regarding WASR-3 and WASR-4 in the 2015 FEIS, and any attempt to suggest these findings were overridden or withdrawn are inconsistent with the requirements of state law, the findings of state agencies, and Reclamation's own findings in this DSEIS.	In the SEIS, Reclamation has updated the analysis of impacts to the McCloud River to focus on federal law, and has fully complied with NEPA. Reclamation will continue to comply with all applicable law. Please see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.
17	59	The DSEIS fails to fulfill Reclamation's obligations under NEPA and section 404(r) of the Clean Water Act. Reclamation must revise the DSEIS to provide the public with: (1) an accurate, site specific analysis of impacts to Waters of the United States that complies with section 404(r) of the Clean Water Act and the 404(b)(1) Guidelines; (2) an updated analysis of the full range of potential environmental impacts from all of the alternatives for enlarging Shasta Dam that accounts for changed circumstances and new information since the 2015 FEIS, including significant changes in water project operations and new scientific information; and (3) an accurate assessment of the impacts to and consistency with state laws and policies protecting the McCloud River.	In the SEIS, Reclamation has fully complied with NEPA, and Reclamation will continue to comply with all applicable law. Please see SEIS Master Comment CWA-1, "CWA 404 (r) Compliance" for an updated discussion of Reclamation's compliance with the Clean Water Act, ESA-1, "ESA Compliance," for a discussion of updated CVP operations and consultation, and Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River."
17	60	[Attachment 1] Exhibit A	Comment noted.

Letter Number	Comment Number	Comment	Response
		1. Letter from NRDC et al to David Brick dated August 24, 2020 requesting extension of public comment period and copy of all modeling results and information relied upon in the SDEIS 2. Email from Derya Sumer to Ashley Cooper of NRDC dated Sept. 8, 2020 3. 4 pdf attachments to email from Derya Sumer to Ashley Cooper 4. Email from Doug Obegi to Derya Sumer dated September 10, 2020 5. Email from Derya Sumer to Doug Obegi dated September 11, 2020	
17	61	[Attachment 2: Exhibit B. Oct. 5, 2020, letter to David Brick of Reclamation from NRDC et al.]	Comment noted.
17	62	[Attachment 3: Exhibit C. 9/12/1980, CEQ Memorandum for heads of agencies]	Comment noted.
17	63	[Attachment 4] Exhibit D: 1. Email from David Brick to Kaylee Allen et al dated April 3, 2019. 2. Email from Kaylee Allen to Lauren Sullivan dated August 12, 2019.	Comment noted.
17	64	[Attachment 5] Exhibit E: 1. Fish and Wildlife Coordination Act Report for Shasta Lake Water Resources Investigation Project, November 2015. 2. Stuart Munch et al 2020. Science for integrative management of a diadromous fish stock: interdependencies of fisheries, flow and habitat restoration, Can. J. Fish. Aquat. Sci. 77: 1487–1504 (2020) dx.doi.org/10.1139/cjfas-2020-0075. 3. Michel, Cyril 2019. Decoupling outmigration from marine survival indicates outsized influence of streamflow on cohort success for California's Chinook salmon populations, Can. J. Fish. Aquat. Sci.76: 1398–1410 (2019) dx.doi.org/10.1139/cjfas-2018-0140. 4. Friedman, W. R. et al. 2019. Modeling composite effects of marine and freshwater processes on migratory species. Ecosphere 10(7):e02743. 10.1002/ecs2.2743. 5. Mark Henderson et al, 2018. Estimating spatial-temporal differences in Chinook salmon outmigration survival with habitat and predation related covariates. Can. J. Fish. Aquat. Sci. 76(9): 1549-1561,	Comment noted.

Letter Number	Comment Number	Comment	Response
		https://doi.org/10.1139/cjfas-2018-0212; 6. Notch, Jeremy et al 2020. Outmigration survival of wild Chinook salmon smolts through the Sacramento River during historic drought and high water conditions. Environ Biol Fish, https://doi.org/10.1007/s10641-020-00952-1. 7. Cyril Michel et al 2015. Chinook salmon outmigration survival in wet and dry years in California's Sacramento River. Can. J. Fish. Aquat. Sci. 72: 1749–1759 dx.doi.org/10.1139/cjfas-2014-0528. 8. Benjamin Martin et al 2016. Phenomenological vs. biophysical models of thermal stress in aquatic eggs. Ecology Letters (2016), doi: 10.1111/ele.12705. 9. Nobriga and Rosenfield 2016. Population Dynamics of an Estuarine Forage Fish: Disaggregating Forces Driving Long-Term Decline of Longfin Smelt in California's San Francisco Estuary, Transactions of the American Fisheries Society, 145:1,44-58, DOI: 10.1080/00028487.2015.1100136.	
17	65	[Attachment 6] Exhibit F: 1. Email from Robert Pike (USBR) to Thomas Luebke et al, re: Background Information for Shasta Call, Feb. 11, 2019. 2. Bureau of Reclamation, Shasta Dam and Reservoir Enlargement Project (SDREP) – Dam Raise Final Design Status Report, August 2019. 3. Email from Sheena Barnes (USBR) to Anastasia Johnson et al, re: Shasta RCEM Draft Report, Feb. 8, 2019 (Attaching draft Tech. Memo No. SV-86-68130-2018-1). 4. Bureau of Reclamation, Alternatives for Preventing Cavitation Damage on the Shasta Dam Spillway, Hydraulic Laboratory Report HL-2019-06, December 2019.	Comment noted.
17	66	[Attachment 7] Exhibit G: 1. Schwarz, et al, Climate Change Risk Faced by the California Central Valley Water Resource System (2018) 2. Dettinger et al, Climate Change and the Delta (October 2016) 3. Grantham et al, Sensitivity of streamflow to climate change in California (July 11, 2018)	Comment noted.

Letter Number	Comment Number	Comment	Response
		4. Statewide Summary Report for the State of California's Fourth Climate Change Assessment	
17	67	[Attachment 8] Exhibit H: 1. Letter from California Natural Resources Agency Secretary John Laird to Representative Paul Ryan et al dated March 13, 2018. 2. Letter from California Department of Fish and Game to Donald Glaser dated November 7, 2008 3. Letter from California Department of Fish and Wildlife to Bureau of Reclamation dated September 30, 2013. 4. Letter from the California Department of Fish and Wildlife to the Bureau of Reclamation and U.S. Fish and Wildlife Service dated February 13, 2015. 5. Letter from the California Department of Fish and Wildlife to Westlands Water District dated January 14, 2019 6. Letter from the State Water Resources Control Board to Westlands Water District dated January 14, 2019. 7. Letter from the State Lands Commission to Westlands Water District dated January 14, 2019.	Comment noted.
17	68	[Attachment 9] Exhibit I: 1. Complaint, People of the State of California v. Westlands Water District, Case No. 192487, Shasta County Superior Court (Filed May 13, 2019) 2. Tentative Ruling, People of the State of California v. Westlands Water District, Case No. 192487, Shasta County Superior Court, July 28, 2019. 3. Order granting preliminary injunction, People of the State of California v. Westlands Water District, Case No. 192487, Shasta County Superior Court (July 29, 2019). 4. Stipulation for Entry of Judgment, People of the State of California v. Westlands Water District, Case No. 192487, Shasta County Superior Court (Filed November 7, 2019).	Comment noted.
18	1	We offer these comments on the Draft Supplemental Environmental Impact Statement (DSEIS) for the Shasta Lake Water Resources Investigation (SLWRI).	This comment makes general comments regarding the SLWRI FEIS and Feasibility

Letter Number	Comment Number	Comment	Response
		The action alternatives of this Investigation are contrary to state and federal law. The DSEIS makes assumptions and reaches conclusions contrary to law and evidence, fails to establish freedom from state permitting, fails to adopt proper significance criteria, fails to consider new information, fails to correct and update relevant parts of the SLWRI FEIS and Feasibility Report, and improperly seeks to conceal information and conclusions of the preceding FEIS and Report.	Report, California law, permitting, federal law, and alternatives. Each of these comments is later explained in greater detail. Responses to these comments are provided in the subsequent portions of this table.
18	2	There is sufficient information in the SLWRI FEIS, Final Feasibility Report, the DSEIS, and comments to the DSEIS to conclude that the action alternatives of the SLWRI and synonymous Shasta Dam and Reservoir Expansion Project (SDREP) and Shasta Dam Raise Project (SDRP) are not feasible, in part because (1) California law prevents cost-sharing partners from cooperating and assisting Reclamation with this project, (2) certain required permits will not be available to Reclamation and others, and (3) that the action alternatives are unlawful under federal law. Information developed in the SLWRI requires that a non-reservoir expansion alternative be adopted in the project Record of Decision (ROD) as the preferred and recommended alternative for the SLWRI/SDREP -- and the SLWRI ended. Information developed in the SLWRI (or information that should have been developed) does not support adoption of the dam- raise (action) alternatives.	This comment makes general comments regarding the SLWRI FEIS and Feasibility Report, California law, permitting, federal law, and alternatives. Each of these comments is later explained in greater detail. Responses to these comments are provided in the subsequent portions of this table.
18	3	DSEIS Chapter 1.1 Project Background The DSEIS describes the purpose of the SLWRI EIS to, in part, "evaluat[e] the potential environmental effects of alternative plans to enlarge Shasta Dam and Lake to (1) increase anadromous fish survival in the upper Sacramento River ..." (DSEIS p. 1-1) However, the SLWRI environmental impact statement does not disclose relevant determinations (including updated evidence) that the project does not meet this stated purpose. Neither does it consistently undertake proper analysis of the action alternatives nor always reach proper conclusions, as noted in our comments here and other comments on the SLWRI, which we incorporate here but have not repeated comprehensively in these comments.	We acknowledge the concerns raised in this comment, and note the opposition to the conclusions reached in the SEIS. The SEIS was written to "provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest

Letter Number	Comment Number	Comment	Response
			regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns" (DSEIS 1-2). The SEIS includes a comprehensive modeling update which incorporates modeling requirements under the 2019 BiOps and the Amended COA. Any species or other scientific knowledge not included in the SEIS was determined to not have a significant impact on the analysis and effects presented within the 2015 SLWRI FEIS.
18	4	Fish & Wildlife Coordination Act Report Discussion and Update Needed -- The DSEIS, fails to disclose the conclusions of the Fish & Wildlife Coordination Report prepared by the U.S. Fish & Wildlife Service, Department of the Interior, from November 2015 (2015 FWCAR), which was completed later than the SLWRI FEIS and Feasibility Reports.[1] The 2015 FWCAR covered Reclamation's late-developing preferred alternative, 4a. The 2015 FWCAR noted the following: Based on the Service's evaluation of the information available, as contained in this report, as well as evaluations contained in the EIS and associated documents provided by Reclamation, the Service has determined that the proposed project does not provide substantial benefits to fish and wildlife resources within the Shasta Lake pool or the adjacent upland habitats. The Service has also determined that the proposed project does not provide any substantial benefit to anadromous fish downstream of the RBPP and only provides minimal benefit to anadromous fish (winter- and spring-run Chinook salmon) upstream of the RBPP. It is the Service's opinion that based on the existing information; the proposed action, by further restricting high water flows, will result in additional losses of salmonid rearing and riparian habitat, and adversely affect the	Please refer to FEIS appendix titled "Fish and Wildlife Coordination Act Recommendations for the Shasta Lake Water Resources Investigation Appendix." Reclamation has worked with FWS as a cooperating agency throughout this project and has appropriately considered the FWCA in its analysis. Reclamation will continue to do so, and will continue to comply with all applicable law. Additionally, the FWCA report cited by the commenter raises no issues not already addressed in the analysis contained in the FEIS. Please refer to FEIS Master Comment DSFISH-5, "Fish and Wildlife Coordination Act Report." Please also see the FEIS Master Comment Response COST/Ben-1, Intent

Letter Number	Comment Number	Comment	Response
		recruitment and natural succession of riparian forest along the Sacramento River and bypasses. Upon consideration of the information provided to date, the level of potential impacts to fish and wildlife resources, and the lack of specificity on potential mitigation and compensation measures the Service is unable to support the adoption of any of the proposed action alternatives.[2] (2015 FWCAR p. xiii) This is relevant new information from an expert agency within the Department of the Interior that should have been disclosed and discussed in the DSEIS, as well as other relevant data and conclusions in the FWCAR. Again, it shows that the action alternatives of the SLWRI fail to meet one of the fundamental purposes of the project. [Footnote 1: The failure to present the November 2015 FWCAR is inconsistent with the conclusions of law of the DSEIS, where the following is stated: Pursuant to NEPA, an agency must prepare a supplemental environmental impact statement if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. (DSEIS p. 1-2, emphasis added)] [Footnote 2: Reclamation should have a copy of this report. Our copy was obtained under a Freedom of Information Act request and is FOR Exhibit 01. It can also be found at the following URL: https://www.friendsoftheriver.org/wp-content/uploads/2019/07/USFWS_SLWRI-FWCAR_2015-ocr-compressed.pdf.]	of EIS and Process to Determine Federal Interest regarding the intent of the NEPA document. The Feasibility Report is separate from the NEPA document and has not been changed. Comments on the Final Feasibility Report are beyond the scope of the SEIS.
18	5	DSEIS WIIN Responsibilities -- This serious mischaracterization of project performance and feasibility is relevant not only to Reclamation's National Environmental Policy Act (NEPA) responsibilities. The Secretary of the Interior purports to have made a "determination for commencement of construction"	This comment raises several issues pertaining to Reclamation's compliance with the WIIN Act. For those comments, please refer to the Final SEIS Master

Letter Number	Comment Number	Comment	Response
		under the authority of the Water Infrastructure Improvements for the Nation Act of 2016 (WIIN).[3] That determination requires statutory determinations and an agreement, neither of which have been demonstrated in SWWRI or other Reclamation documents. WIIN § 4007(b) (3) COMMENCEMENT. - The construction of a federally owned storage project that is the subject of an agreement under this subsection shall not commence until the Secretary of the Interior- (A) determines that the proposed federally owned storage project is feasible in accordance with the reclamation laws; (B) secures an agreement providing upfront funding as is necessary to pay the non-Federal share of the capital costs; and (C) determines that, in return for the Federal cost-share investment in the federally owned storage project, at least a proportionate share of the project benefits are Federal benefits, including water supplies dedicated to specific purposes such as environmental enhancement and wildlife refuges. As discussed in these comments, the SLWRI action alternatives: (A) lack legal/environmental feasibility under state and federal laws, including Reclamation law, both for Reclamation and its likely cost-sharing partners; (B) Reclamation has not nor is likely to secure an agreement with likely cost-sharing partners, a failure which also has a bearing on economic/financial feasibility of the project; and (C) The SLWRI purports to establish federal benefits largely on the basis of its claim for salmonid benefits. The Fish & Wildlife Coordination Act Report refutes this claim and does not support any significant allocation of project costs to "federal" benefits pursuant to WIIN §4007(b)(3)(C). Thus the SLWRI WIIN §4007(b)(3) (A) and (C) determinations are not justified, nor has the Secretary secured any agreements with cost-sharing partners under §4007(b)(3)(B). These are all necessary for a "determination for commencement of construction." The DSEIS, however, is silent on these key issues.	Comment Response WIIN-1, WIIN Act Compliance. This comment also raises FWCA issues. Please also refer to FEIS master comment DSFISH-5, "Fish and Wildlife Coordination Act Report." Reclamation has worked closely with FWS as a cooperating agency on this Project, and will continue to do so. The FWCA was appropriately considered, and Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		[Footnote 3: https://www.friendsoftheriver.org/wp-content/uploads/2019 /07/Adm-rprt-on-2018-CA-reservoir-enlargement-approps-request-ocr.pdf. FOR Exhibit 02. Reclamation has not responded to Freedom of Information Act requests for any determination document and analysis. The document here announcing the determination was, nevertheless, a "Report to the House and Senate Committees on Appropriations" from the Administration and is incorporated by reference.]	
18	6	Little project benefits in new CVP deliveries -- The DSEIS also summarizes another project purpose: The SLWRI FEIS evaluated the potential environmental effects of alternative plans to enlarge Shasta Dam and Lake to, in part, ... (2) increase water supplies and water supply reliability for agricultural, municipal, industrial, and environmental purposes ... It would be good to remind DSEIS readers that the average annual new deliveries expected from the SLWRI preferred but not recommended alternative were modeled to be 51,300 acre-feet.[4] This is 0.7% of CVP annual deliveries of about 7 million acre-feet.[5] This project does not have much of a return on investment for the CVP. [Footnote 4: SLWRI Feasibility Report, p. 5-4 table 5-2.] [Footnote 5: SLWRI Feasibility Report, p. 1-9, 1-20.]	The project remains beneficial to the CVP, as noted by the commenter. Comments on the Feasibility Report are outside the scope of the SEIS.
18	7	No resolution of unresolved feasibility issues or feasibility report updates -- The DSEIS notes that "[t]he SLWRI Feasibility Report presented the results of planning, engineering, environmental, social, economic, and financial studies and potential benefits and effects of alternatives plans for the SLWRI project." (DSEIS p. 1-2) The DSEIS does not provide the status of any supplemental assessments on the status of any SLWRI post-Feasibility Report analysis. Some may have examined engineering/economic feasibility. For example, from documents	Please refer to response to comment 18-4.

Letter Number	Comment Number	Comment	Response
		obtained under the Freedom of Information Act (FOIA), in early 2019, Reclamation was examining the seismic safety of the existing and expanded dam. The documents were redacted, and we have not received the conclusions of the study and assessments in FOIA documents that we are aware of.[6] Matters of public safety are of interest to the public (the 2017 Oroville Spillway incident has heightened awareness of this matter) and apparently may have at least cost and schedule implications to the project[7] in addition to any environmental impacts associated with the remediation work. [Footnote 6: Some additional review has been undertaken since 2015. A MS Powerpoint slide of a February 11, 2019, Reclamation Leadership Seismic discussion, depicted that a seismic evaluation would be complete at the end of December 2019. According to the presentation, a 2018 estimate anticipated that seismic loads [perhaps as measured on the dam or key foundations] were 300% to 400% higher than the 2014 estimate. The final seismic load estimate was to be in September 2019. (FOR Exhibit 03)] https://www.friendsoftheriver.org/wp-content/uploads/2020 /09/13_Redacted.pdf. [Footnote 7: A March 2019 Reclamation Denver Service Center presentation included a draft timeline for a seismic remediation or joint dam-raise/seismic remediation project start estimate of 2028. (FOR Exhibit 04) https://www.friendsoftheriver.org/wp-content/uploads/2020/09/07-MR_Redacted.pdf.]	
18	8	Reclamation also failed to discuss significant new information regarding the numerous dam safety studies that have been conducted in the five years since the FEIS was released. With these comments, we are attaching other engineering reports that Reclamation has issued or contributed to since 2015, all of which were obtained through FOIA and which Reclamation should have considered or discussed in this draft supplemental EIS:	See response to 17-43.

Letter Number	Comment Number	Comment	Response
		FOR Exhibit 05 [M2], "Alternatives for Preventing Cavitation Damage on the Shasta Dam Spillway," Hydraulic Lab. Report HL-2019-06 (produced December 2019) FOR Exhibit 06 [D2], "Shasta Dam and Reservoir Enlargement Project (SDREP) -- Dam Raise Final Design Status Report" (produced August 2019) FOR Exhibit 07 [001], "Shasta Dam Raise Consequence Study," Technical Memo. No. SV-86-68130-2018-1 (produced July 2018) FOR Exhibit 08 [004], "Shasta Dam Hydrologic Hazard Analysis for Final Design -- Volume I," Technical Memo. 86-68210-2019-01 (produced October 2018) FOR Exhibit 09 [006], "Shasta Dam Raise Failure Inundation Study," Technical Memo. ENV-2019-011 (produced December 2018) Exhibit 10 [008] "Population at Risk (PAR) Estimation for Shasta Dam Raise Final Design Risk Analysis" (produced December 2018) There will no doubt be others that Reclamation should disclose and discuss.	
18	9	Reclamation's Virtual Open House for the DSEIS noted that the 18.5-foot dam raise alternative was the preferred alternative for the SLWRI.[8] However, neither the DSEIS nor the Virtual Open House reveals that chapter nine of the SLWRI Feasibility Report describes unresolved considerations of the SLWRI and that the "Secretary [of the Interior] is unable to provide a recommendation for implementation of the SLWRI NED Plan until these considerations are addressed."[9] (The National Economic Development [NED] Plan is the preferred alternative in the SLWRI FEIS.) In reviewing chapter nine for the preparation of these comments, the still unresolved issues discussed in the SLWRI Feasibility Report chapter nine (or of the obvious sequelae) include some of the following: outstanding issues with Central Valley Project (CVP) contractors for participation of State Water Project (SWP) contractors in a federal project, conflict with state law, state permitting constraints, and the unavailability of non-federal partners due to state law. None of these unresolved constraints on the action alternatives have been resolved --	The comment raises a number of legal arguments. Please refer to the SEIS Master Comment Responses WIIN-1, "WIIN Act Compliance," CWA-1, "CWA 404(r) Compliance," and CNRC-1, "California Natural Resource Code Regarding the McCloud River."

Letter Number	Comment Number	Comment	Response
		nor are likely to be resolved. The DSEIS does not resolve them or describe any actions to resolve them. The DSEIS mostly omits, obscures, fails to understand, and misleads on these matters. However, the obvious failure to resolve the "unresolved considerations" of the SLWRI should result in non- dam-raise alternative as the preferred and recommended alternative for the SLWRI. [Footnote 8: http://www.virtualpublicengagement.com/usbr_shasta/history.html. (FOR Exhibit 11)] [Footnote 9: Chapter 9, Considerations and Recommendations, Department of the Interior, Final Shasta Lake Water Resources Investigation, Feasibility Report, July 2105. p. 9-1.]	
18	10	The only major resolution of the SLWRI Feasibility Report chapter nine unresolved issues was the passage of the Water Infrastructure Improvements for the Nation Act of 2016 (WIIN), which established rules for federal/non-federal participation in Reclamation WIIN storage projects and rules for WIIN projects. The significant new provisions of the WIIN "that have a bearing on the proposed action" (DSEIS p. 1-2) are not discussed in the DSEIS, contrary to NEPA regulations discussed in the DSEIS and our comments.	Please refer to the FEIS Master Comment Response, COST/BEN-2, Comments Related to the SLWRI Feasibility Report. Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance.
18	11	The WIIN requires a Secretarial determination of feasibility according to Reclamation law. (§4007(b)(3)(a)) Reclamation law now includes the WIIN, a law that was passed after the SLWRI Feasibility Report. The demonstrated California Wild & Scenic Rivers Act (CAWSRA (PRC §5093.542©) prohibition applying to nearly all likely non-federal cost-sharing partners, discussed later in our comments, should make a Secretarial feasibility determination impossible, since cost-sharing is a requirement under the WIIN. (WIIN §4007(b)(2)) The reservoir construction prohibition of CAWSRA that, among others, applies to Reclamation, §5093.542(b), should also result in an "infeasible determination." Other provisions of the WIIN discussed in these comments make a Reclamation feasibility and Secretarial feasibility determination unsupportable and contrary to	Please refer to the FEIS Master Comment Response, COST/BEN-2, Comments Related to the SLWRI Feasibility Report. Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance.

Letter Number	Comment Number	Comment	Response
		Reclamation law and common sense. These matters should be disclosed in a background section of the DSEIS and in other relevant sections of the DSEIS.	
18	12	The WIIN expires on January 1, 2021.[10] The DSEIS does not describe the consequences of the expiration of the WIIN. The DSEIS does not disclose how Reclamation intends to advance this project and meet its obligations under Reclamation law either before or after the expiration of the WIIN. The DSEIS does not discuss how this may affect the feasibility and environmental obligations of the project. [Footnote 10: "WIIN §4013. Duration -- Subtitle J, California, expires five years from the date of enactment with the exception of §4007 storage projects already under construction." The DSEIS correctly notes that Congress has neither "authorized construction or ap propriated funds for construction." (DSEIS p. 1-2)]	Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance.
18	13	Failure to properly revise the SLWRI chapter 26 -- The DSEIS attempts to revise the SLWRI FEIS chapter 25 to include only analysis of National Wild and Scenic Rivers Act (WSRA) (DSEIS p. 5-3) eligibility considerations (and consistency with the Shasta- Trinity National Forest Land and Resource Management Plan), but as just discussed above and later in these comments, the provisions of the CAWSRA are relevant to the DSEIS action alternatives. The SLWRI FEIS had its problems, but in contrast to the DSEIS it reached some relevant conclusions "that have a bearing on the proposed action" (DSEIS p. 1-2) to Reclamation's DSEIS action alternatives. Some are the following: As described in more detail under "Regulatory Framework," the PRC and Federal WSRA share several similar components: the establishment of a wild and scenic rivers system; the purpose of protecting certain rivers in their "free-flowing" condition; the identification of extraordinary or outstandingly remarkable values that make such rivers eligible for protection; a study process and procedure for including rivers in the system; and classifications of "wild," "scenic," and "recreational." Both the Federal WSRA and PRC prohibit new water	Please refer to the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River for information regarding conflicts with California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the McCloud River Wild and Scenic eligibility.

Letter Number	Comment Number	Comment	Response
		impoundments on designated rivers, and both contain directives to government agencies to use their powers to further the policies of the legislation. (SLWRI FEIS p. 25-3) The McCloud River's fishery and its free-flowing condition are identified in both the USFS evaluation and the PRC. (SLWRI FEIS p. 25-13) The Federal WSRA defines free flowing as "existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway" (16 USC Section 1286). The PRC defines free-flowing as "existing or flowing without artificial impoundment, diversion, or other modification of the river." (SLWRI FEIS p. 25-18) Despite upstream and downstream dams and diversions, the lower McCloud River meets the definition of a free-flowing river under both the Federal WSRA and PRC. (SLWRI FEIS p. 25-19) Impact WASR-4 (CP3, CP4, CP4A, and CP5): Effects to McCloud River Free-Flowing Conditions, as Identified in the California Public Resources Code, Section 5093.542 ... [T]he impacts would conflict with the State PRC. (SLWRI FEIS p. 25-40) As discussed in these comments, the DSEIS unlawfully apparently proposes to omit these passages from the SLWRI FEIS.	
18	14	The DSEIS omits that, of course, the PRC, itself, essentially establishes for purposes of state law, the free-flowing nature of the McCloud River, including the portion of the McCloud River that would be converted into Shasta "Lake" by the SLWRI action alternatives. ... The Legislature further finds and declares that maintaining the McCloud River in its free-flowing condition to protect its fishery is the highest and most	Please refer to Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River."

Letter Number	Comment Number	Comment	Response
		beneficial use of the waters of the McCloud River within the segments designated in subdivision (b), and is a reasonable use of water within the meaning of Section 2 of Article X of the California Constitution. §5093.542(a) These are matters "that have a bearing on the proposed action" (DSEIS p. 1-2) to the SLWRI and are thus appropriately required to be disclosed in the supplemental environmental impact statement.	
18	15	The DSEIS discloses that "[b]oth the SLWRI Feasibility Report and SLWRI FEIS were submitted to U.S. Congress [sic]." (DSEIS p. 1-2) This 2015 action may have been contrary to statute. The 2004 federal statute[11] authorizes the Secretary of the Interior to, in consultation with the Governor of California, submit the feasibility report of this and other named federal projects to the Congress once the Secretary determines that it should be constructed[12] using in whole or in part federal funds.[13] To our knowledge, Reclamation has not documented gubernatorial consultation or a lawful determination that the project should be constructed. [Footnote 11: HR 2828, 108th Congress. The "Water Supply, Reliability, and Environmental Improvement Act." P.L. 108--361.] [Footnote 12: "(i) IN GENERAL.--If on completion of the feasibility study for a project described in clause (i) or (ii) of subparagraph (A), the Secretary, in consultation with the Governor, determines that the project should be constructed in whole or in part with Federal funds, the Secretary shall submit the feasibility study to Congress." (Public Law 108--361, §103(d)(1)(B)(i)) (HR 2828) The Shasta Dam raise is listed in clause (i).] [Footnote 13: MP-15-122 Reclamation Transmits to Congress Final Report on Proposed Shasta Dam Raise, U.S. Bureau of Reclamation, Mid Pacific Region News Release, July 29, 2015. MP-720, ENV-6.00, United States Department of the	Reclamation disagrees with this comment. The FEIS and feasibility report was developed in cooperation with the State of California.

Letter Number	Comment Number	Comment	Response
		Interior, Bureau of Reclamation, Mid-Pacific Regional Office, November 24, 2015, letter to Interested Parties: "The U.S. Department of the Interior has released the Final Feasibility Report and Final EIS for the SLWRI for review by the general public and U.S. Congress." "The Final Feasibility Report does not include a recommendation for Congressional action, but rather describes outstanding issues the Secretary of the Interior has identified for resolution before making a recommendation." (Emphasis added) https://www.friendsoftheriver.org/wp-content/uploads/2020/10/MP-15-122-Reclamation-Transmits-to-Congress-Final-Report-on-Proposed-Shasta-Dam-Raise.doc, adopted by reference.]	
18	16	The 2015 SLWRI Feasibility Report does concede Reclamation's awareness of some of this subject area: Section 103(d)B(i) of Public Law 108-361 makes clear the intent of Congress that the Secretary consult with the State prior [to] submitting the report. From discussions with the State, it is our understanding there has been a determination that the PRC protecting the McCloud River prohibits State participation in the planning or construction of enlarging Shasta Dam other than participating in technical and economic feasibility studies. (p. 9-2) As discussed in our comments on the DSEIS above and below, a determination by the state, as described above, would necessarily be on the basis of determination that the river-to-reservoir conversion over the free-flowing portion of the PRC §5093.542(b) -- described reach of the McCloud River/McCloud Arm of Shasta Reservoir would mean, under PRC §5093.542(c), that the Shasta Dam raise and consequent reservoir expansion could have an adverse effect on the free-flowing status of the McCloud River and/or its wild trout fishery. Reclamation could not have been unaware of this. After all, the SLWRI FEIS chapter 25 made adverse free-flowing[14], spawning habitat[15], and potential fishery[16] determinations too. SLWRI FEIS chapter 25 also made a "would conflict with the State PRC" determination on the basis of river-to-reservoir conversion impact on free-flowing.[17] It also stated "Significant effects	Please refer to Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River."

Letter Number	Comment Number	Comment	Response
		were identified related to the compatibility of the project with the PRC, Section 5093.542."[18] It is not clear, however, whether this SLWRI FEIS chapter 25 statement was related to the §5093.542(b) reservoir prohibition or the §5093.542(c) "assistant or cooperate...in the planning and construction" prohibition -- or both. Neither the SLWRI FEIS chapter 25 nor the DSEIS directly discuss that the §5093.542(b) no-reservoir provision applies to Reclamation. Either violation alone is fatal to the action alternatives of the SLWRI. The DSEIS in any revision of FEIS chapter 25, should have made both easy determinations. [Footnote 14: SLWRI FEIS pp. 25-32, 25-34--35, 25-40.] [Footnote 15: SLWRI FEIS pp. 25-30, 25-34, 25-29.] [Footnote 16: SLWRI FEIS pp. 25-31, 25-35, 25-40.] [Footnote 17: SLWRI FEIS chapter 25 p. 25-40.] [Footnote 18: SLWRI FEIS chapter 25 p. 25-44.]	
18	17	The DSEIS, in the context of determinations by the potential federal wild & river manager, continues to establish the potential adverse fishery impacts, makes the adverse effect on spawning determination, and makes the free-flowing conflict determination on the McCloud River, although purportedly only in the context of the National Wild & Scenic Rivers Act. Thus the DSEIS provides the required findings necessary to make a conflict determination with the California Wild & Scenic Rivers Act. The CAWSRA conflict conclusion should, therefore, also be disclosed in the DSEIS as it was in the SLWRI FEIS chapter 25.	Please refer to Master Comment Response CNRC-1, "California Natural Resource Code Regarding the McCloud River."
18	18	DSEIS Chapter 1.2 Scope of the Supplemental Environmental Impact Statement NEPA regulation responsibilities -- We appreciate the DSEIS setting the stage here: Pursuant to NEPA, an agency must prepare a supplemental environ-	Please refer to the FEIS Master Comment Response, COST/BEN-2, Comments Related to the SLWRI Feasibility Report. We acknowledge the concerns raised in

Letter Number	Comment Number	Comment	Response
		mental impact statement if ... "there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts.[19] An agency may also prepare a supplemental analysis if it determines that the purposes of NEPA will be furthered by doing so."[20] (DSEIS p. 1-2) Despite setting forth this standard for supplementation, Reclamation did not follow it. As explained in these comments, there are significant new circumstances and information arising subsequent to the SLWRI FEIS and Final Feasibility Report that have not been adequately analyzed by Reclamation as required by NEPA. [Footnote 19: NEPA regulations 40 C.F.R. (§ 1502.9(c)) at the time of preparation of the DSEIS, stated: "Agencies (1) Shall prepare supplements to either draft or final environmental impact statements if: (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." Current regulations 40 C.F.R. § 1502.9(d) state: "(d) Supplemental environmental impact statements. Agencies: (1) Shall prepare supplements to either draft or final environmental impact statements if a major Federal action remains to occur, and: (i) The agency makes substantial changes to the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts."] [Footnote 20: Current 40 C.F.R. §1502.9(d)(2) "Agencies: May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so." Regulations at the time of preparation of the DSEIS were	this comment. Chapter 1 of the SEIS describes the NEPA supplementation standard and the scope of this SEIS.

Letter Number	Comment Number	Comment	Response
		the following: "§1502.9 (c) Agencies: ... (2) May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so."]	
18	19	Clean Water Act responsibilities -- The DSEIS is brief. The stated purpose is also narrow. The purpose of the SLWRI SEIS is to provide information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling [sic][21] to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. CWA 404(r) states: The discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress, whether prior to or on or after the date of enactment of his subsection, is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 301(a) or 402 of the Act (except for effluent standards or prohibitions under section 307), if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(l) of this section, is included in an environmental impact statement for such project pursuant to the National Environmental Policy Act of 1969 and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for each construction. (DSEIS p. 1-2, emphasis added) The DSEIS go on:	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance," on the applicability of CWA 404(r).

Letter Number	Comment Number	Comment	Response
		The SLWRI FEIS was developed with consideration of the CWA 404(b)(1) guidelines. In order to apply CWA 404(r), Reclamation has prepared this supplement to provide: (1) an updated and adequate description of the discharges to wetlands and other Waters of the U.S. (WOTUS) resulting from the relocations of infrastructure and recreation structures: (2) a programmatic approach to conducting alternatives analyses and determination of the Least Environmentally Damaging Practicable Alternative for relocation activities with significant impacts to wetlands and other WOTUS: and (3) a compensatory wetland mitigation plan for all significant and unavoidable impacts to wetlands and other WOTUS. (DSEIS p. 1-3) The DSEIS fails to meet Clean Water Act requirements -- The DSEIS does not achieve these purposes. In order for CWA 404(r) to exempt a project from certain requirements of the Clean Water Act (CWA), Reclamation must analyze the impacts of the project, including the effects of the discharge of dredge or fill material, in an EIS that complies with NEPA, transmit that EIS to Congress, and Congress must subsequently specifically authorize[22] the project. [Footnote 21: "Modelling" is a United Kingdom and its Commonwealth spelling.] [Footnote 22: Reliance on P.L. 96-375 or the CALFED Bay-Delta P.L. 108-361 for a "specific" authorization is not sufficient. These statutes authorized project studies and are not authorizing statutes for construction of the SDREP or SLWRI elements, apparently conceded in DSEIS p. 1-2.]	
18	20	Comments by Natural Resources Defense Council (NRDC) et al. (adopted by reference here) demonstrate that Reclamation's DSEIS does not meet the requirements of 404(r) of the Clean Water Act, and therefore cannot excuse Reclamation from complying with the permit requirements of Section 404 of the Clean Water Act. More specifically: (1) The DSEIS does not provide the necessary site-specific analysis and factual determinations regarding the short-term and long-term effects of discharges of dredge and fill material required by the	Appendix A addresses the information necessary to comply with the 404(b)(1) guidelines, please also refer to Master Comment Response CWA-1, "CWA 404(r) Compliance," on the applicability of CWA § 404(r)

Letter Number	Comment Number	Comment	Response
		404(b)(1) Guidelines; (2) the DSEIS does not demonstrate that the proposed project is the least environmentally damaging practicable alternative as required by the 404(b)(1) Guidelines; (3) the DSEIS does not demonstrate that the proposed project will not result in jeopardy to or adverse modification of critical habitat of threatened or endangered species as required by the 404(b)(1) Guidelines; (4) the DSEIS does not demonstrate that the proposed project will not cause or contribute to violations of any state water quality standards as required by the 404(b)(1) Guidelines; and (5) the DSEIS fails to analyze and ensure compliance with state law requirements governing the discharge of dredge and fill material. Congress, of course, has not authorized the SDREP for construction. (DSEIS p. 1-2)	
18	21	State permits still required and not available by law -- Although the DSEIS fails in its purpose, there may have been a broader purpose in mind for the DSEIS: escaping any permitting jurisdiction by the state of California. Nevertheless, in addition to the deficiencies noted above, there are other state permits that Reclamation still must comply with not disclosed in the DSEIS. Some of these have not been discussed in any SLWRI documents. In this regard, the DSEIS did not examine such previously unexamined circumstances or fresh insights "that have a bearing on the proposed action." (DSEIS p. 1-2) For example, in 2019, after the completion of the SLWRI FEIS, the State Water Resources Control Board (Board or State Board) laid out one of the major problems with the SLWRI action alternatives. In addition to prohibiting cooperation in the planning of a project that could adversely affect the free-flowing condition of the McCloud River, section 5093.542 of the Public Resources Code prohibits assistance or cooperation by "license, or otherwise." This language bars the State Water Board and other agencies of the state from issuing any permit or other approval for a project that	This comment raises permitting issues discussed in Master Comment Response CWA-1, "CWA 404(r) Compliance," Reclamation will comply with all relevant permitting requirements as the project proceeds to the construction phase.

Letter Number	Comment Number	Comment	Response
		could adversely affect the free-flowing character of the McCloud River or its wild trout fishery. Necessary permit approvals for the State Water Board includes approvals under sections 401 and 402 of the Clean Water Act and time extensions for U.S. Bureau of Reclamation's (Reclamation) water right permits, as discussed below.[23] (Emphasis added) [Footnote 23: Letter from Eileen Sobeck, executive director of the State Water Resources Control Board to Jose Gutierrez, Westlands Water District, Comments on Westlands Water District's Initial Study/notice of Preparation for the Shasta Dam Raise Project; Shasta County, January 19, 2019, cc to Mr. Michael Ryan, Acting Regional Director Bureau of Reclamation Mid-Pacific Regional Office Federal Office Building 2800 Cottage Way Sacramento, CA 95825. (Letter to Jose Gutierrez, WWD, 2019) (with a cc to Mr. Michael Ryan, Acting Regional Director Bureau of Reclamation Mid-Pacific Regional Office Federal Office Building 2800 Cottage Way Sacramento, CA 95825). https://www.friendsoftheriver.org/wp-content/uploads/2019 /01/WQC_NFisch.JKSahota.-Comments-on-Shasta-Dam-Raise-Project.pdf and also in Exhibit H, NRDC et al. comments on the SLWRI DSEIR, adopted by reference here.]	
18	22	The State Board's constraints under a three-decade-old provision of the CAWSRA were not discussed in the SLWRI FEIS and -- remarkably, given the stated purpose of the DSEIS -- appropriately should, given the unmistakable clarity in the Board's 2020 letter, have been disclosed in the DSEIS under the DSEIS's self-admonition to follow one of its stated purposes: "to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns." (DSEIS p. 1-2) The DSEIS does not allow Reclamation to escape the state permitting consequences of the McCloud River provisions of the California Wild & Scenic Rivers Act (Public Resources Code Section 5093.542 (abbreviated in these comments as §5093.542 or PRC) or other provisions of the California Wild & Scenic Rivers Act (CAWSRA) and California law.	Thank you for the comment, and we note the commenter's concern about the availability of certain state-issued permits. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
18	23	The [State Water] Board has state Porter Cologne Act and other federal Clean Water Act permitting responsibilities that remain unaffected by a procedurally and substantively executed 404(r) EIS.[24] The Board's constraints and their relevance to the action alternatives should have been part of an introductory discussion of the purpose of the Supplemental environmental impact statement and in other relevant parts of the DSEIS. [Footnote 24: See comments to the DSEIS from Natural Resources Defense Council et al., Center for Biological Diversity (CBD) et al., and the State Water Resources Control Board.]	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance." Reclamation will continue to comply with all applicable law.
18	24	The supplemental environmental impact statement and the SLWRI FEIS do not meaningfully support the limited procedural escape from some California-required permits that would necessarily be required of Reclamation for the action alternatives of the SLWRI. Nor can it provide escape for some other state non-CWA permitting requirements.	Please refer to the FEIS Master Comment Response, COST/BEN-2, Comments Related to the SLWRI Feasibility Report. Reclamation will continue to comply with all applicable law.
18	25	SLWRI FEIS chapter 25 comments preview --The DSEIS devotes most of its pages to a revised SLWRI Chapter 25 analysis: Reclamation has also revised the SLWRI FEIS Chapter 25 on Wild and Scenic River Considerations for the McCloud River and included the revised chapter within this Draft SEIS. (DSEIS p. 1-3) To say it another way, the DSEIS Chapter 5 appears to be intended to be the substitute for the SLWRI FEIS Chapter 25. Many of our comments on the DSEIS will be offered to help Reclamation sort out conclusions of law and fact and omissions in the DSEIS's proposed revisions to the SLWRI FEIS Chapter 25.	Please refer to response to comment 18-17.
18	26	Chapter 3. Supplemental Information on Stormwater and Other Point-Source Discharges	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance."

Letter Number	Comment Number	Comment	Response
		Additional discussion on why the DSEIS does not meet Clean Water Act requirements -- The DSEIS asserts the following: By following CWA 404(r) Reclamation is not subject to CWA 404(r) regulations under CWA 402 if information on the effects of the discharge, including guidelines developed under CWA 404(b)(1), are included in an EIS. Reclamation utilized existing CWA 402 permits as a guideline to describe the effects of the proposed discharges. (DSEIS p. 3-1) The DSEIS here omits that CWA 404(r) regulations are also only applicable to projects that are "specifically authorized by Congress." There is no showing in the DSEIS that the Shasta Dam raise project here, in the DSEIS called the SLWRI, but in other Reclamation sites the Shasta Dam and Reservoir Expansion Project (SDREP),[25] has been authorized by the Congress. Indeed, the DSEIS properly asserts that Congress has not authorized construction or appropriated funds for construction (DSEIS p. 1-2), a perhaps even more precise statement of the facts. [Footnote 25: https://www.usbr.gov/mp/ncao/docs/gen-faq-nov.pdf. FOR Exhibit 11.]	
18	27	The DSEIS overreaches here. The NRDC et al. comments on the DSEIS, adopted by reference here, are illustrative: The exemption in Section 404(r) applies only to discharges of dredge and fill materials. 33 U.S.C. § 1344(r) (specifying "discharge of dredged or fill material as part of the construction"); see S.C. Wildlife Fed'n v. Alexander, 457 F. Supp. 118, 128 (D.S.C. 1978) (requiring section 402 permit for any discharges beyond those caused by dredge and fill in construction). Thus, even if Congress authorizes an exemption pursuant to Section 404(r), Reclamation remains required to meet all state and federal laws beyond this limited exception, including but not limited to permits required by section 402 of the CWA and the California Water Code for	Please refer to Master Comment Response CWA-1, "CWA 404(r) Compliance."

Letter Number	Comment Number	Comment	Response
		project elements that are not the discharge of dredge and fill materials. As such, and contrary to Reclamation's position in the DSEIS, Reclamation is required to seek CWA section 402 permits and all applicable State-law based Waste Discharge Requirements from the State of California in order to complete the proposed enlargement of Shasta Dam. The failure of the DSEIS to fully and adequately disclose Reclamation's obligation to obtain these permits, as well as to explain and analyze the actions it will take to comply with these permits, is a failure to comply with NEPA. We also note that the State of California is precluded by Public Resources Code section 5093.542 from granting these permits to Reclamation.	
18	28	Chapter 4.3 Environmental Impacts Other commentary on the Fish & Wildlife Coordination Act Report --This DSEIS section is striking for what it does not review. One noteworthy matter which these comments addressed previously is that it does not include a discussion of the November 2015 Fish & Wildlife Coordination Act Report. (2015 FWCAR) However, the supplemental environmental impact statement needs to review this new matter in greater depth.	Please see response 18-4.
18	29	An appendix to the 2015 FEIS includes recommendations that Reclamation identified from FWS throughout the process of consulting under the Fish and Wildlife Coordination Act (FWCA). See Fish and Wildlife Coordination Act Recommendations for the Shasta Lake Water Resources Investigation Appendix April 2015 ["Recommendations in FEIS appendix"]. However, the FEIS does not include the FWCA report itself.	See response 18-4.
18	30	After the FEIS was released in April 2015, the Fish & Wildlife Service (FWS) issued a revised FWCA report in November 2015.[26] Although the appendix in the FEIS predates the November 2015 FWCA report, the 2015 SLWRI appendix captures nearly all of the recommendations that are in the report. However, the 2015 FWCAR includes recommendations that were not picked up in the FEIS appendix.	See response to 18-4.

Letter Number	Comment Number	Comment	Response
		[Footnote 26: This November 2015 Fish & Wildlife Coordination Act Report is not identified as either "final" or "draft," but it is the first FWCA report to cover the SLWRI preferred alternative. However, a 2017 briefing paper by the Field Supervisor of the San Francisco Bay-Delta Fish and Wildlife Office identifies the latest version as a "draft" and indicated that FWS was "prepared to complete further revisions to the Draft FWCAR if necessary," and that the "FWCAR will not be finalized until Section 7 consultation on the project is initiated and completed." See FOIA doc: Status of Fish and Wildlife Coordination Act Report (FWCAR) for Shasta Lake Water Resources Investigation (SLWRI) by Kaylee Allen (May 2017). FOR Exhibit 12.]	
18	31	The 2015 report also includes extensive analysis from FWS about the various species at risk from the project, which is not included in the Recommendations in the FEIS appendix. These portions of the FWCAR appear to be significant new information about the environment that must be considered in a supplemental environmental impact statement.	Please refer to response to comment 18-4.
18	32	FWS Recommendations FWS identifies various recommendations to protect fish and wildlife and notes that Reclamation removed these measures from further consideration during the 2015 EIS, except for "limited spawning gravel augmentation and proposed floodplain/side channel restoration." Id. at 176. Reclamation ignores some recommendations and fails to adequately respond to others. Many of the recommendations are measures that FWS believes would be more effective for anadromous fish than raising the dam.	Please refer to response to comment 18-4.
18	33	Ignored recommendations The recommendations in the FEIS appendix do not include some of the measures specifically identified in the 2015 report. For example, in the 2015 report, FWS included a recommendation to "Implement appropriate actions	Please refer to response to comment 18-4.

Letter Number	Comment Number	Comment	Response
		from the Recovery Plan for the Evolutionarily 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 (Chinook salmon and Steelhead Recovery Plan) (NMFS 2014)." (2015 FWCAR at x.) Yet Reclamation does not address the Recovery Plan in the FEIS appendix.	
18	34	FWS asked Reclamation to clarify and quantify the extent that the cold water pool would be used to augment flows to provide additional benefits for fish and wildlife species and recommended that the authority for use of the cold pool be at the discretion of FWS, NOAA, and CDFW. (2015 FWCAR at x--xi.) Reclamation failed to respond to the direct request that the agencies be given the authority to determine use of the cold water pool, instead recharacterizing this recommendation as one to clarify whether FWS, NOAA, and CDFW would have an authority. (Recommendations in SLWRI FEIS appendix at 1-7 and 1-35.) The agency also failed to provide any additional explanation as to how decision-making under adaptive management will be made.	Please see response to comment 18-4.Please refer to the FEIS, Master Comment Response, ESA-1, "Compliance with the Endangered Species Act" regarding the consultation process with federal wildlife agencies. Please also refer to response 18-4.
18	35	FWS also recommended that Reclamation increase water use efficiency to a specified level. (2015 FWCAR at xi.) Reclamation ignored this recommendation, responding more generally that "All action alternatives would include a water conservation program for increased water deliveries" but declining to discuss the designation of specified levels of efficiency. (Recommendations in SLWRI FEIS appendix 1-9.)	Please see response to comment 18-4.
18	36	FWS also recommended that Reclamation "restore habitat at inactive gravel mines along the Sacramento River and lower reaches of tributaries." (Nov. 2015 FWCAR at x.) Reclamation responded by describing the CAR process, asserting that all of the CAR recommendations were considered, and concluding that three non-operational measures were prioritized. (Recommendations in FEIS appendix at 1-7.) Reclamation failed to address this measure or explain why it was dismissed.	Please see response to comment 18-4.
18	37	Inadequate response	Please see response to comment 18-4.

Letter Number	Comment Number	Comment	Response
		Some of the responses by Reclamation are irrational or arbitrary. For example, FWS recommended that Reclamation "Collaborate with the Anadromous Fish Screen Program to screen diversions and improve fish passage in mainstem Sacramento River and lower reach of nonnatal tributaries." (2015 FWCAR at x.) Although FWS explicitly notes that its recommendations are "beyond any actions identified and/or required in the Central Valley Project Improvement Act (CVPIA), CALFED, and existing biological opinions," id., Reclamation responded by saying that this recommendation was not considered because "Reclamation has other ongoing programs implementing these actions (e.g. CALFED ERP and CVPIA)." (Recommendations in FEIS appendix at 1-7.) Reclamation provides no explanation why this measure was dismissed.	
18	38	FWS recommended that Reclamation increase minimum flow in the Sacramento River "from the current 3,250 cubic feet per second (cfs) to 4,000 cfs Oct 1 - Apr. 30, if end-of- September storage is 2.4 million af (MAF) or greater (per the AFRP Final Restoration Plan, USFWS 2001)." at 2015 FWCAR p. x. Reclamation responded that dedicating additional water from increased storage provided greater benefit to the species, and that "adaptive management plan may include operational changes to the timing and magnitude of releases primarily to improve the quality and quantity of aquatic habitat. These changes may include increasing minimum flows, timing releases from Shasta Dam to mimic more natural seasonal flows, meeting flow targets for side channels, or retaining the additional 191,000 acre-feet (for CP4A) or 378,000 acre-feet (for CP4) of water in storage to meet temperature requirements." (Recommendations in FEIS appendix at p. 1-7.) Reclamation fails to substantiate its assertion that increased storage would provide greater benefits or to explain why minimum flows could not be combined with increased storage.	Please see response to comment 18-4.
18	39	In addition, multiple agencies worked together to design a specific adaptive management plan. See Status of Fish and Wildlife Coordination Act Report (FWCAR) for Shasta Lake Water Resources Investigation (SLWRI) by Kaylee Allen (May 2017) (FOR Exhibit 12). FWS recommended that the specific measures of	Please see response to comment 18-4.

Letter Number	Comment Number	Comment	Response
		this plan be included. (2015 FWCAR at xi.) Reclamation simply responded that it accepted this recommendation. (Recommendations in FEIS appendix at 1-39.) However, the DSEIS does not include additional information on adaptive management, so it is unclear whether and to what extent FWS recommendations will be implemented.	
18	40	FWS identified a number of measures which it believes should be included as an alternative to raising the dam. (2015 FWCAR p. xi.) Reclamation responded that each of these measures was evaluated in the plan formulation process, and since the EIS tiers to that process, it is not required to consider these measures again, although "many of the management measures, including measures not related to the raising of Shasta Dam, were also evaluated during the SLWRI plan formulation process." (Recommendations in FEIS appendix at p. 1-3.)	Please see response to comment 18-4.
18	41	Analysis of impacts to fish and wildlife resources The November 2015 Report contains extensive analysis of the potential impacts to fish and wildlife from the dam raise, including impacts from the reservoir and downstream, as well as throughout the CVP/SWP service area (which "could experience reservoir water surface elevation fluctuations and stream flow changes downstream from their facilities due to an enlarged Shasta Dam" (2015 FWCAR at iv). The report highlights the risk to six rare species, each of which is endemic to the vicinity of Shasta Lake: the Shasta snow-wreath, Shasta salamander, Shasta sideband snail, Wintu sideband snail, Shasta chaparral snail, and Shasta hesperian snail. Id. at xi. The report also discusses impacts to the purple martin, bald eagle, Pacific fisher, NSO, bank swallows, and yellow billed cuckoo. Id. at xii. The "widespread impacts to unique species within the Shasta Lake basin resulting from lake enlargement" was a primary concern of FWS. See Status of Fish and Wildlife Coordination Act Report (FWCAR) for Shasta Lake Water Resources Investigation (SLWRI) by Kaylee Allen (May 2017) (FOR Exhibit 12).	Please see response to comment 18-4.

Letter Number	Comment Number	Comment	Response
		The report details impacts to Shasta Lake and adjacent habitat and other rare and special status species aquatic that would be destroyed by the enlarged reservoir, 86--90, as well as additional terrestrial and wetlands habitat and species, id. at 90--106. The report also discusses the effects of changes in the timing, frequency, and duration of flood flows on the habitat and species downstream, id. 106-120, including anadromous fish, id. at 109-118. In addition, the 2015 report provides in-depth critiques of the models CALSIM II, 142, and SALMOD, 143-52. The 2017 briefing paper by the Field Supervisor of the San Francisco Bay-Delta Fish and Wildlife Office identifies the fact that the modeling likely over estimates actual benefits to Chinook salmon runs as one of FWS's main points of concern. See Status of Fish and Wildlife Coordination Act Report (FWCAR) for Shasta Lake Water Resources Investigation (SLWRI) by Kaylee Allen (May 2017) (FOR Exhibit 12). Finally, the report discusses impacts from the changes in flow to the Sacramento River from RPBB to the Delta, id. at 120-9, and the effects of increased reliability on water use through the CVP and SWP water service area. 2015 FWCAR id. at 130.	
18	42	Benefits to anadromous fish from dam raise The Nov. 2015 FWCAR states that the project would only provide minimal benefit to anadromous fish upstream of the RBPP, and that this minimal benefit would be "likely offset" due to the impacts on rearing habitat. (2015 Report at xii.) Although the Recommendations in the FEIS appendix identify FWS's concern with the limited benefits to anadromous fish downstream of the dam, that document does not include the conclusion that these impacts would be "likely offset." The report also includes an extensive discussion of the impacts on anadromous fish downstream.	Please see response to comment 18-4.

Letter Number	Comment Number	Comment	Response
		The FWS Field Supervisor of the San Francisco Bay-Delta Fish and Wildlife Office noted that the adverse effects to long-term riparian vegetation recruitment by altered hydrological regime was a primary concern. See Status of Fish and Wildlife Coordination Act Report (FWCAR) for Shasta Lake Water Resources Investigation (SLWRI) by Kaylee Allen (May 2017). (FOR Exhibit 12)	
18	43	Species Not Discussed in DSEIS Specific Species Gray Wolf and northern spotted owl - Reclamation's Construction BA on Threatened and Endangered Species discusses impacts to these two species but they were not discussed in the DSEIS. Valley elderberry longhorn beetle and Shasta crayfish - Reclamation's Paleoflood BA names these species but they were not discussed in the DSEIS Shasta salamander Pacific fisher and bald eagles California red-legged frog Winter-run Chinook salmon and Delta Smelt at Livingston Stone National Fish Hatchery - Winter-run Chinook salmon are mentioned in the DSEIS but the impact to this hatchery is not discussed.	Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. Please refer to the FEIS, Master Comment Response, ESA-1, "Compliance

Letter Number	Comment Number	Comment	Response
			with the Endangered Species Act" regarding the consultation process with federal wildlife agencies.
18	44	Species Not Discussed in DSEIS ROC for the LTO The Reinitiation of Consultation ("ROC") for the Long Term Operations ("LTO") of the Central Valley Project ("CVP") / State Water Project ("SWP") identified a number of species that would be adversely affected by ongoing operations at Shasta Dam, including the dam raise. The species that were anticipated to be adversely affected by the LTO should have likewise been analyzed in the DSEIS, because raising the height of Shasta Dam is going to have ripple effects on long-term operations at Shasta Dam. All of the following species were identified as likely to experience adverse effects from the LTO, as described in the LTO's Chapter 7 here [https://www.usbr.gov/mp/bdo /docs/ba-chapter-7-conclusion.pdf] Central Valley Spring-Run Chinook Salmon Southern OR/Northern CA coastal coho salmon North American green sturgeon Delta smelt Riparian brush rabbit Riparian woodrat Salt marsh harvest mouse Least Bell's vireo Giant garter snake Valley elderberry longhorn beetle Pacific coast salmon (essential fish habitat) Pacific coast groundfish (essential fish habitat)	Please also refer to the Final SEIS, Master Comment Response, ESA-1, "ESA Compliance" regarding Reclamation's intent to seek additional consultation as needed. Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SEIS because the analysis conducted therein was considered adequate and did not

Letter Number	Comment Number	Comment	Response
			meet the criteria for inclusion in a supplemental environmental document.
18	45	Chapter 5. Wild and Scenic River Considerations for McCloud River Reclamation's apparent intent for DSEIS Chapter 5 -- DSEIS Chapter 5 focuses on whether and how the project alternatives could impair the eligibility of or make ineligible for inclusion in the National Wild & Scenic Rivers System the McCloud River reaches proposed for conversion to reservoir. The DSEIS also analyzes consistency with the 1994 Shasta-Trinity National Forest Land and Resource Management Plan (LRMP). On these matters, the DSEIS does not differ markedly with Chapter 25 of the SLWRI FEIS. However, in contrast to the SLWRI FEIS Chapter 25, the DSEIS Chapter 5 purports to not include assessments of conflicts that the action alternatives of the SLWRI/SDREP have with the California Wild & Scenic Rivers Act (CAWSRA), and thus apparently attempting to omit these discussions and conclusions from the SLWRI NEPA documents. As discussed earlier, the Supplemental Environmental Impact Report appears to be intended to substitute the Chapter 5 of the DSEIS for the SLWRI FEIS Chapter 25: Reclamation has also revised the SLWRI FEIS Chapter 25 on Wild and Scenic River Considerations for the McCloud River and included the revised chapter within this Draft SEIS. (DSEIS p. 1-3) Although there were some problems with the SLWRI FEIS Chapter 25, this apparent revision is even more ill-considered -- and not just because compliance with the California Wild and Scenic Rivers Act (CAWSRA) is required for nearly any non-federal partner for the dam raise and Reclamation is required by federal law to comply with the CAWSRA as well. Moreover, Reclamation's revision of	Reclamation's intent in completing the SEIS is stated in Chapter 1.2. As stated there, the purpose of the SLWRI SEIS is to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modeling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concern. Please also refer to Master Comment Response CNRC-1, "California Natural Resource Code Regarding the McCloud River."

Letter Number	Comment Number	Comment	Response
		Chapter 25 should have been informed by post-SLWRI FEIS interaction with the state of California, the potential federal wild & scenic river manager, the experience of aspiring cost-sharing partners, and rulings by the California courts. It was not.	
18	46	Reclamation's current FAQ on the Shasta Dam and Reservoir Expansion project and Virtual Open House may be even more instructive than the DSEIS in illustrating the depth of Reclamation's misunderstanding of the CAWSRA. In relevant part, the FAQ and Virtual Open House[27] say the following: What is the project's effect on the McCloud River? Chapter 5 of the Draft Supplemental Environmental Impact Report was revised to reflect and re-focus the analysis on the federal requirements. The State of California has not designated the McCloud River as Wild and Scenic under the State Wild and Scenic Rivers Act. Instead, portions of the river were designated in the California Public Resources Code Section 5093.542 as supporting a wild trout fishery. Reclamation's view is that there is a question as to whether the legislature intended to prohibit the Shasta Dam raise by enacting section 5093.542 given its support for studying the proposal. (p. 3)[28] (emphasis added) Well, part of that is clear, although muddled and without, apparently, any successful review of the CAWSRA. Unlike the FAQ, the DSEIS does not state there is a question regarding legislative intent. Reclamation's newfound question about legislative intent is erroneous, but consistent with that, the DSEIS appears to be intended to omit the SLWRI FEIS Chapter 25 stated finding that the SLWRI action alternatives conflict with §5093.542. [Footnote 27: http://www.virtualpublicengagement.com/usbr_shasta/faqs.html	Information on potential adaptive management does not fit within the stated purpose of the SEIS, which was to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns.

Letter Number	Comment Number	Comment	Response
		(accessed August 27, 2010). https://www.friendsoftheriver.org/wp-content/uploads/2020/10/SLWRI-Draft-SEIS-Virtual-Open-House.pdf. FOR Exhibit 03] [Footnote 28: https://www.usbr.gov/mp/ncao/docs/sdrep-faq.pdf (accessed August 27, 2020). FOR These were also in station 8 of the DSEIS Virtual Open House. FOR Exhibit 11.]	
18	47	Our comments on the DSEIS should be instructive to Reclamation regarding (1) the DSEIS's decision to "reflect and re-focus" on federal requirements. In a nutshell, Reclamation's action violates NEPA regulations. With regard to the second and third sentences of the FAQ, (2) the legislature enacted a special McCloud River section (§5093.542) of the California Wild & Scenic River Act to protect the river's free-flowing status and wild trout fishery. With regard to the final sentence in the FAQ, (3) the California Wild & Scenic Rivers Act would not have prohibited departments and agencies of the state from assisting and cooperating with Reclamation on projects that could adversely affect free-flowing or the wild trout fishery of the McCloud River with the sole exception of the California Department of Water Resource's (DWR) technical and economic studies on the Shasta Dam raise if the legislature did not believe that the Shasta Dam raise would be in conflict with the Act. The California Natural Resources Agency, state departments and other state agencies, and state courts have uniformly interpreted the provisions of §5093.542 as a legislative intention to apply to the Shasta Dam raise. And so did Reclamation. The SLWRI FEIS Chapter 25 concluded that the SLWRI action alternatives were in conflict with the California Wild and Scenic Rivers Act. The SLWRI supplemental environmental impact statement should do so as well.	The FEIS and SEIS fully comply with NEPA, and Reclamation will continue to comply with all applicable law. Please also refer to response to comment 18-17.
18	48	Introduction to DSEIS chapter 5 -- The DSEIS too often describes matters poorly, incompletely, and with mistakes. In addition, it fails to identify obvious mistakes in the SLWRI FEIS chapter 25. Chapter 5 of the DSEIS begins with the following:	The commenter's point is not entirely clear. The commenter alleges "obvious mistakes," but does not point to any mistakes made in either the FEIS or the

Letter Number	Comment Number	Comment	Response
		This chapter describes the effects of the dam and reservoir modifications proposed under SLWRI action alternatives on the wild and scenic river values of the lower McCloud River, one of the major tributaries to Shasta Lake. (DSEIS p. 5-1) In the view of the DSEIS, this is because the U.S. Forest Service, in the 1994 Shasta- Trinity NF Land and Water Resources Plan (LRMP), found segments of the McCloud River eligible for addition to the National Wild and Scenic River System, including a segment that "could be periodically inundated if Shasta Dam and Shasta Lake were enlarged." (DSEIS p. 5-3) This conclusion is true and supported by the SLWRI and DSEIS.	DSEIS. Therefore, no changes have been made.
18	49	The DSEIS does not describe the effect of the CAWSRA accurately -- The DSEIS also includes a short summary of the McCloud River and the California Wild and Scenic Rivers Act. The DSEIS does not do well here. More precisely, the DSEIS describes the basis of the McCloud River provisions of the California Wild & Scenic Rivers Act (CAWSRA) incompletely enough to be misleading. The State of California also did not identify the McCloud River as Wild and Scenic under the State Wild and Scenic Rivers Act. Instead, portions of the river were designated in the California Public Resources Code (PRC) Section 5093.542 as supporting a wild trout fishery. (DSEIS p. 5-3) "Identify" is not the proper word in the first sentence. "Designate" is correct. The second sentence uses the verb "designated" in a somewhat awkward sense. "Included" would be the more accurate word. More importantly, the second sentence misses the test of accuracy by serious omission as to the purpose and effect of the legislature's action.	This comment has been noted. Please also refer to Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River."
18	50	Interestingly, Chapter 25 of the SLWRI FEIS managed to get this one better, although not without error itself:	This comment has been noted. Please also refer to Master Comment Response

Letter Number	Comment Number	Comment	Response
		The Resources Agency study[29] found it eligible, but the California legislature declined to add the river to the California wild and scenic river system. The legislature instead passed an amendment to the California Wild and Scenic Rivers Act to protect the river's free-flowing condition and the river's fishery below McCloud Dam through the PRC. (SLWRI FEIS p. 25-3) The SLWRI FEIS here only gets the geographic extent of the protection wrong. The actual legislation also applies the described protections in subdivisions (b), (c), and (d) from Algoma to Huckleberry Creek; that is, the so-called upper McCloud River above the PG&E McCloud Reservoir (PRC §5093.542(b)).[30] [Footnote 29: The 1998 Natural Resources Agency Report is the "McCloud River Wild and Scenic River Study Report, Final Study Report, Prepared for the California Resources Agency, Prepared by Jones and Stokes Inc, June 1998" (Jones & Stokes Report).] [Footnote 30: In addition to §5093.542(b), see the Jones and Stokes Report: "Candidate segments on the McCloud River begin at Algoma and proceed to McCloud Reservoir (upper McCloud River) and extend from McCloud Dam to Shasta Lake (lower McCloud River). The upper and lower segments are 20 and 23 miles long, respectively." (p. i, Jones & Stokes Report) The USFS also applied the term "upper McCloud River" to the Algoma to McCloud Reservoir reach. (DSEIS p. 5-5)]	CNRC-1, "California Natural Resources Code Regarding the McCloud River."
18	51	Comments provide an introduction to the CAWRSRA -- It should be understood that §5093.542 of the PRC is a portion of the California Wild and Scenic Rivers Act (CAWSRA). PRC in discussions here and in Reclamation SLWRI documents refer to the applicable portions of the CAWSRA. The key relevant protective provisions of CAWSRA (PRC §5093.542) were signed into law by former California Attorney General and then California Governor George Deukmejian in 1989. Other	This comment has been noted. The suggested change has not been made because it does not raise any substantive issues concerning the SEIS. Please also refer to Master Comment Response

Letter Number	Comment Number	Comment	Response
		relevant provisions date back to the organic act of the California Wild & Scenic River System in 1973. (We have a signed copy of the bill by the author.) The DSEIS should have described the statute, given its relevance here. We provide some relevant review in these comments. The first sentence of CAWSRA is instructive: It is the policy of the State of California that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values shall be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state. (PRC §5093.50) The dual purposes of the special McCloud River CAWSRA provisions are well summarized by the second subdivision of the McCloud River provisions of the CAWSRA: The continued management of river resources in their existing natural condition represents the best way to protect the unique fishery of the McCloud River. The Legislature further finds and declares that maintaining the McCloud River in its free-flowing condition to protect its fishery is the highest and most beneficial use of the waters of the McCloud River within the segments designated in subdivision (b), and is a reasonable use of water within the meaning of Section 2 of Article X of the California Constitution. (PRC §5093.542) The DSEIS should be corrected to properly describe the dual purposes of the California legislature's addition of §5093.542 to the CAWSRA. In addition, the DSEIS should quote the statutory language rather than omit or misdescribe it.	CNRC-1, "California Natural Resources Code Regarding the McCloud River."
18	52	Contrary to the DSEIS, NEPA regulations require an analysis of effect of CAWSRA -- The DSEIS does not disclose the legal basis on which it omits relevant portions of Chapter 25 of the SLWRI FEIS with the following statement: Reclamation has no obligation to analyze state law requirements under the	Both the FEIS and SEIS fully comply with NEPA and its implementing regulations. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		California Wild and Scenic Rivers Act, and this section is therefore being revised to reflect and re-focus the analysis on the federal requirements. (DSEIS p. 5-3) There is no legal basis for this DSEIS decision. The decision is in conflict with NEPA regulations. Existing[31] NEPA regulations are clear: 40 C.F.R. 1502.16 Environmental Consequences (a) states: "The discussion shall include: ... (5) Possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned. (§1506.2(d) of this chapter)" Not only is an accurate analysis of state law requirements properly a subject of NEPA review, the DSEIS does not change the SLWRI Final Feasibility Report. "The alternative ultimately chosen as the recommended plan will need to be consistent with State water law..." (Chpt 9, p. 1) Of course, our comments describe that the action alternatives are required to be consistent with more than water law. Commenters should not have to remind Reclamation of the consequences here of the CAWSRA controls on state and federal actions. Nevertheless, we do, as should Reclamation in the SLWRI supplemental environmental impact statement. Existing[32] NEPA regulations also require impacts to be discussed in relation to their significance. 40 C.F.R. 1502.2(b) Implementation states: ... (b) Environmental impact statements shall discuss impacts in proportion to their significance ... CAWSRA controls are highly significant for the SLWRI. The SLWRI FEIS, no matter its faults, at least got some of its basic NEPA responsibilities right: environmental impact analysis and discussion relevant to CAWSRA is a key issue for the SLWRI/SDREP.	

Letter Number	Comment Number	Comment	Response
		[Footnote 31: The previous NEPA regulation under which the DSEIS may have been prepared do not materially differ from existing NEPA regulations here: "It shall include discussions of: ... (c) 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. (See § 1506.2(d).)" (previous 40 C.F.R. 1502.16(c))] [Footnote 32: The previous NEPA regulations do not materially differ: "§ 1502.2 Implementation. To achieve the purposes set forth in § 1502.1 agencies shall prepare environmental impact statements in the following manner: ...(b) Impacts shall be discussed in proportion to their significance....]	
18	53	The SDREP is subject to state law -- Let us review why. To the extent that the DSEIS takes the erroneous view that state law is irrelevant to federal law in the case of the SLWRI/SDREP, this DSEIS assumption is unwarranted, for federal Reclamation law requires conformance with state law: Reclamation Act § 8 -- That nothing in this Act shall be construed as affecting or is intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or in any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this act, shall proceed in conformity with such laws... § 3406(a) Amendments to Central Valley Project Authorizations Act of August 26, 1937. -- Section 2 of the Act of August 26, 1937 (chapter 832; 50 Stat. 850), as amended, is amended. (4) By adding at the end the following: "(e) Nothing in this title shall affect the State's authority to condition water rights permits for the Central Valley Project." § 3406(b) "The Secretary, immediately upon the enactment of this title, shall	Reclamation has complied with all applicable law, and will continue to do so. Please also refer to response to comment 18-17.

Letter Number	Comment Number	Comment	Response
		operate the Central Valley Project to meet all obligations under state and federal law, including but not limited to the federal Endangered Species Act, 16 U.S.C. § 1531, et seq., and all decisions of the California State Water Resources Control Board establishing conditions on applicable licenses and permits for the project. (1992 Central Valley Project Improvement Act, § 3406(b) (in part), title 34 Public Law 102-575). Shasta Dam is a major facility of the Central Valley Project (CVP). Reclamation is the operator of the project, but it is subject to the authority of the State Water Resources Control Board and must meet all obligations of state and federal law. Under NEPA regulations, Reclamation does have the obligation to disclose and discuss the consequences of state law requirements under the California Wild and Scenic Rivers Act for the action alternatives of this project. It disclosed the conflict with the CAWSRA and incompletely disclosed the consequences in the 2015 SLWRI FEIS. The DSEIS should have disclosed the conflict and more completely disclosed the consequences of the project's conflict with the CAWSRA, but it did not. Rather, it concealed the conflict in violation of NEPA regulations.	
18	54	There is another new and significant circumstance not discussed well in the DSEIS: a new provision of Reclamation law was created in 2016 -- the Water Infrastructure Improvements for the Nation Act of 2016 (WIIN).[33] Reclamation SLWRI DSEIS Virtual Open House, in response to mitigation questions, notes that the SLWRI is a WIIN project: "Since this project falls under the Water Infrastructure Improvements for the Nation Act,..."[34] Reclamation reports that the SLWRI has received pre-construction and design phase funding pursuant to the WIIN[35] and the Department of the Interior purports to have made a Secretarial "Determination of Readiness for Construction" under the WIIN.[36] The project being analyzed by the DSEIS is the SDREP, which is consequently in Reclamation's view a WIIN project. However, the WIIN requires that Reclamation comply with applicable environmental laws,[37] and it does not remove Reclamation's obligations to comply with state law; rather, it reaffirms them.[38]	Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance.

Letter Number	Comment Number	Comment	Response
		And if the SDREP is not subject to the WIIN, it still would be subject to the other provisions of Reclamation law, which (as noted earlier) also makes Reclamation subject to the requirements of state law. [Footnote 33: https://www.usbr.gov/mp/ncao/docs/sdrep-facts.pdf. FOR Exhibit 11.] [Footnote 34: http://www.virtualpublicengagement.com/usbr_shasta/faqs.html. FOR Exhibit 11.] [Footnote 35: SLWRI DSEIS p. 1-2.] [Footnote 36: https://www.friendsoftheriver.org/wp-content/uploads /2019/07/Adm-rprt-on-2018-CA-reservoir-enlargement-approps-request-ocr.pdf, FOR Exhibit 02.] [Footnote 37: WIIN §4007(b)(4) ENVIRONMENTAL LAWS. -- In participating in a federally owned storage project under this subsection, the Secretary of the Interior shall comply with all applicable environmental laws, including the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).] [Footnote 38: WIIN §4007(j) "Consistency with State Law: Nothing in this section preempts or modifies any obligation of the United States to act in conformance with applicable State law." §WIIN §4012 Savings Language. Subtitle J, California, can be summarized as follows: the WIIN should not be interpreted or implemented in a manner that preempts state law, affects obligations of the Central Valley Project Improvement Act, changes the Endangered Species Act (ESA), would cause additional adverse effects on listed fish species, and affects obligations of the Pacific Fishery Management Council under the ESA or Magnuson Stevens Act to manage California to Washington coastal fisheries.]	

Letter Number	Comment Number	Comment	Response
18	55	The WIIN also requires projects such as the SDREP to have cost-sharing partners (§4007(b)(2)).[39] As discussed in these comments, nearly any potential Reclamation non- federal cost-sharing partners are subject to state law, including the California Wild and Scenic Rivers Act. This was not disclosed in the DSEIS or other Reclamation materials associated with the DSEIS. [Footnote 39: "According to the WIIN Act, the federal government can cover up to 50 % of the cost of the project, and a non-federal cost share partner is required to come up with the rest of the funding. A non-federal cost share partner could be water agencies, groups of water users, state agencies or private entities." http://www.virtualpublicengagement.com/usbr_shasta/faqs.html, FOR Exhibit 11. Consequentially, departments and agencies of the state (including water districts and many other subdivisions of the state) are prohibited by the CAWSRA from assisting and cooperating with, "whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government in the planning or construction" (PRC §5093.542(c)) of the SDREP. Local governments have their own responsibilities under the CAWSRA as noted in these comments. Private entities (and Reclamation) must comply with §5093.542(b) and are also subject to certain state permitting requirements on the basis of federal and state law.]	Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance.
18	56	There has already been litigation on this subject against the SDREP's most likely cost- sharing partner.[40] It was filed by Earthjustice on behalf of environmental and fishery group plaintiffs (FOR et al.) and the California Attorney General, and a subsequent preliminary injunction blocking the preparation of an environmental impact report on the Shasta Reservoir Expansion Project was secured.[41] The appeals of this preliminary injunction was unsuccessful before the Appellate Court and the California Supreme Court.[42] The judgment resulted in an agreement and a court order that a California water district (Westlands) not enter into any cost-sharing agreement with Reclamation in violation of PRC §5093.542.[43]	Please refer to the Final SEIS Master Comment Response WIIN-1, "WIIN Act Compliance."

Letter Number	Comment Number	Comment	Response
		[Footnote 40: "As you may be aware, the Westlands Water District is considering participation as a non-federal cost share partner for the U.S. Bureau of Reclamation Shasta Dam Raise Project. Westlands is currently undertaking the development of an EIR to this end." (Dan Pope, Special Projects Manager, Westlands Water District) https://www.friendsoftheriver.org/wp-content/uploads/2020/10/073-20190306-Westlands-EIR-is-to-cost-share.pdf. (FOR Exhibit 13) Westlands Water Districts' environmental impact report being undertaken under the California Environmental Quality Act in conflict with the CAWSRA was later enjoined by a preliminary injunction and an order by the Shasta County Superior Court. (Exhibit I, Comments by NRDC et al. to the DSEIS and included by reference in these comments.)] [Footnote 41: https://www.friendsoftheriver.org/wp-content/uploads/2019/08/2019-0731-Order-Granting-PI.pdf, and in Exhibit I, comments of NRDC et al., included by reference here.] [Footnote 42: https://www.friendsoftheriver.org/wp-content/uploads/2019/09/Cal-Supremes-weigh-in-on-Shasta-case-Redding-Searchlight-9-25-2019.pdf, FOR Exhibit 14.] [Footnote 43: https://www.friendsoftheriver.org/wp-content/uploads/2019/11/2019-1120-Notice-of-Entry-of-Stipulated-Judgment.pdf, and in Exhibit I, comments of NRDC et al., included by reference here.]	
18	57	The passage of the WIIN, Reclamation's apparent decision to move the SDREP forward without solving the "unresolved concerns" in the SLWRI that prevented a "recommended alternative," Reclamation's apparent intent to move this project to construction under the authority of the WIIN, the provisions of the WIIN, the status of cost-sharing partners, a broad and detailed opposition from the state, and the litigation in state court all occurred after the 2015 SLWRI FEIS and Feasibility Report. The environmental requirements imposed or reaffirmed	Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance.

Letter Number	Comment Number	Comment	Response
		by the WIIN on Reclamation and the constraints that state environmental law imposes on the SDREP environmental and water rights permitting and other requirements from the state, as well as the consequences of state law on cost-sharing partners, were not disclosed in the SLWRI FEIS. Their absence from a supplemental environmental impact statement that purports "to update information included in the 2015 SLWRI FEIS that is relevant to environ- mental concerns" (DSEIS p. 1-2) should be corrected. As it stands, the DSEIS does not meet Reclamation's obligations under NEPA to consider all new information or changed circumstances that are significant to the selection of project alternatives or may impact the environment in ways not previously considered.	
18	58	State law applies to Reclamation under federal law. State law also applies to most, if not all, of Reclamation's potential cost-sharing partners. State law applies to state agencies with permitting or other requirement authority. State law prohibits state agencies from issuing approvals for the SDREP. Any supplemental EIS that seeks to update Chapter 25 of the SLWRI FEIS cannot avoid analysis of the consequences of state law. Our comments discuss this further.	Reclamation will comply with all applicable law when proceeding to the construction phase of this project. Please also refer to response to comment 18-17.
18	59	Chapter 5.1 Background DSEIS begins with small mistakes and omissions -- The DSEIS makes small mistakes or awkward descriptions: Although the LRMP found the McCloud River eligible for listing, the LRMP direction was to not formally designate any reach of the river as wild and scenic. Instead, the direction was to manage the lower McCloud River under a CRMP (USFS 1995a). (DSEIS p. 5-3) The Forest Service does not "designate" wild & scenic rivers. Congress does.[44] The direction to form a Coordinated Resources Management Plan (CRMP) was to provide measures to protect the values that make the Shasta-Trinity National Forest Land and Resource Management Plan (LRMP)-described portions of the	Comment noted.

Letter Number	Comment Number	Comment	Response
		McCloud River eligible for designation by Congress as a national wild and scenic river.[45] Unfortunately, in practice, the most significant threat has been the U.S. Bureau of Reclamation, something that the CRMP is apparently ill-prepared to deal with. [Footnote 44: The other route into the federal wild & scenic river system is through an acceptance of a state wild and scenic river by the Secretary of the Interior on petition by its state governor that the river be added to the national system. (National Wild & Scenic Rivers Act §2(a)(ii))] [Footnote 45: "A primary objective of the Plan [CRMP] is to retain the character of the waterways which made them eligible for wild and scenic river consideration." (LRMP p. 4-28-29)]	
18	60	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • The California Attorney General defended important aspects of the McCloud River protection in the CAWSRA from Westlands' planning and cooperation with Reclamation on Westlands/Reclamation's proposed SLWRI Shasta Dam Raise Project (SDRP)[46]/SDREP in state court and won a preliminary injunction in	Please refer to Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River." Please also refer to response to comment 18-17.

Letter Number	Comment Number	Comment	Response
		Shasta County Superior Court[47] expressing his "opinion" and successfully defending that preliminary injunction all the way to the California Supreme Court.[48] [Footnote 46: "Redding, Calif. -- Westlands Water District (District) is preparing an environmental impact report (EIR) under the California Environmental Quality Act (CEQA) for the Shasta Dam Raise Project (Project). Formerly known as the Shasta Lake Water Resources Investigation (SLWRI), the Project would increase the height of Shasta Dam by 18.5 feet and expand capacity of Shasta Lake by up to 634,000 acre feet." ("Shasta Dam Raise Project Scoping Meeting Notice," Westlands Water District, November 30, 2018, p. 1) https://www.friendsoftheriver.org/wp-content/uploads/2018/12/shasta-dam-raise-eir-press-release.pdf. FOR Exhibit 15.] [Footnote 47: https://www.friendsoftheriver.org/wp-content/uploads/2019/08/AG-Becerra-Secures-Ruling-in-Shasta-County-Halting-Westlands.pdf, FOR Exhibit 16.] [Footnote 48: https://www.friendsoftheriver.org/wp-content/uploads /2019/09/Cal-Supremes-weigh-in-on-Shasta-case-Redding-Searchlight-9-25-2019.pdf, FOR Exhibit 14.]	
18	61	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier,	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
		NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • California Natural Resources Secretary John Laird told Congressional leadership that the project would violate California law.[49] [Footnote 49: https://www.friendsoftheriver.org/wpcontent/uploads/2018/04/Shasta-Dam-letter-3.13.18_LLM.pdf, also in Exhibit H, comments of NRDC et al. on the SLWRI DSEIS, included by reference here.]	
18	62	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • Secretary Laird's successor, Wade Crowfoot, noted that "[t]he state's concerns center on the project's adverse impacts on the McCloud River, which is specifically protected under state law."[50] [Footnote 50: https://www.watereducation.org/western-water/californias-new-natural-resources-secretary-takes-challenge-implementing-gov-newsoms, FOR Exhibit 17.]	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
18	63	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • Secretary Crowfoot mentioned the comment letter sent to Reclamation from the Department of Fish and Game, a department of the Natural Resources Agency, which reached conclusions about Westlands Water District's proposed Shasta Dam Raise Project (SDRP) action alternatives that would make them in conflict with the CAWRSA.[51] [Footnote 51: https://www.friendsoftheriver.org/wp-content/uploads/2019/01/CEQA-2018-0321_SHA_TEH_WWD_Shasta-Dam-Raise-Project_NOP-ocr.pdf, also included in Exhibit H, comments of NRDC et al. to the SLWRI DSEIS, included here by reference.]	Please refer to comment response 18-60.
18	64	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3)	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
		As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • Secretary Crowfoot referenced the State Water Resources Control Board letter, which concluded that the CAWSRA barred "the State Water Board and other agencies of the state from issuing any permit or other approval for a project that could adversely affect the free-flowing character of the McCloud River or its wild trout fishery" -- adverse effects that the Board assumes in the absence of evidence otherwise.[52] The Board is part of the California Environmental Protection Agency for administrative purposes. [Footnote 52: https://www.friendsoftheriver.org/wp-content/uploads/2019/01/WQC_NFisch.JKSahota.-Comments-on-Shasta-Dam-Raise-Project.pdf and included in Exhibit H, comments of NRDC et al. to the SLWRI DSEIS, included here by reference. These state comments, communications, and litigation should not have come as a surprise to Reclamation. "The Department appreciates the inclusion of the McCloud River as an issue that needs resolution prior to additional steps taken on the SLWRI. 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." Letter to Ms. Michelle Denning, Bureau of Reclamation, Planning Division 2800 Cottage W ay, MP-720 Sacramento, CA 95825-1893 and to Mr. Mark Littlefield, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846, "California Department of Fish and Wildlife Comments on the U.S. Department of the 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" p. 3, February	

Letter Number	Comment Number	Comment	Response
		13, 2015. http://www.friendsoftheriver.org/wp-content/uploads/2016/01 /20150214-Fwd_-CDFW-cmts-Adobe-OCR.pdf, and included in exhibit H, comments on the SLWRI DSEIS of NRDC et al., included here by reference. This letter, subsequent to the December 2014 SLWRI FEIS, was consistent with CAWSRA conflict conclusions in Chapter 25 of the FEIS, but before the publication of the July 2015 SLWRI Final Feasibility Report. It is not referenced in the DSEIS.]	
18	65	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • The California State Historic Preservation Officer provided Reclamation "written notification that her office will not engage in consultation with Reclamation regarding the SDREP due to prohibitions delineated in California Public Resources Code Section 5093.542."[53] [Footnote 53: https://www.friendsoftheriver.org/wp-content/uploads/2020/ 10/FOR-Exhibit-18-155-Bureau_of_Reclamation-to-fed-Advisory-Council-on-Historic-Preservation-ocr.pdf. FOR Exhibit 18.]	Please refer to comment response 18-60
18	66	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
		of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • The California Department of Transportation apprised Reclamation of the restrictions applying to state departments and that Caltrans would be unable to participate in the Bureau of Reclamation's efforts to revise a Programmatic Agreement for Reclamation's Shasta Dam and Reservoir Enlargement Project (SDREP) for compliance with the National Historic Preservation Act.[54] [Footnote 54: https://www.friendsoftheriver.org/wpcontent/uploads/2020/10/CalTrans-notice-to-Reclamation-RE_-Reclamation-SDREP-NHPA-Compliance-PA.pdf FOR Exhibit 19.]	
18	67	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier,	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
		NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • The State Lands Commission wrote to the Westlands Water District that "[o]n March 13, 2018, the California Secretary of the California Natural Resources Agency wrote a letter to Congressional leaders expressing opposition to the Project and referencing California Public Resources Code section 5093.542, prohibiting state agencies and departments from assisting in the Project in any way. The Commission concurs with Secretary Laird's letter."[55] [Footnote 55: https://www.friendsoftheriver.org/wp-content/uploads/2020/10/SLC-2018111058_Shasta-Dam-Raise_NOP_CommentLetter_final-ocr.pdf, also in comments NRDC et al. Exhibit H, incorporated here by reference.]	
18	68	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • The staff of the California Water Commission, in another action also not documented by the DSEIS, in spite of requests by Reclamation to find a way	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
		around the law, excluded the Shasta Dam raise by regulation from the list of CALFED projects in the Commissions Water Supply Investment Program (WSIP), in spite of the project's presence in the CALFED project list in HR 2828, 108th Congress, the "Water Supply, Reliability, and Environmental Improvement Act." P.L. 108--361. Why? Because the California Water Bond excluded projects under the protection of the state and federal wild and scenic rivers acts from the WSIP.[56] [Footnote 56: California Water Bond Act, Chapter 4, 79711(e) "Nothing in this division [bond act] shall be construed to affect the California Wild and Scenic Rivers Act (Chapter 1.4 (commencing line 5 with Section 5093.50) of Division 5 of the Public Resources Code) or the federal Wild and Scenic Rivers Act (16 U.S.C. Sec. 1271 line 7 et seq.) and funds authorized pursuant to this division shall not be available for any project that could have an adverse effect on the values upon which a wild and scenic river or any other river is afforded protections pursuant to the California Wild and Scenic Rivers Act or the federal Wild and Scenic Rivers Act." By regulation (California Code of Regulations Title 23. Waters. Division 7. California Water Commission, Chapter 1 Water Storage Investment Program, §6001(a)(10)), the Shasta Dam Project was excluded from the California Water Commission list of Water Supply Investment Program CALFED projects. Staff explained the exclusion: "Shasta Enlargement has been removed from the eligible projects list. Although certain CALFED projects are deemed eligible under Section 79751 (a), the exception in this Section incorporating by reference prohibitions in the Wild and Scenic Rivers Act, including Section 5093.542(c) of such Act, would preclude the enlargement of Shasta Dam from being an eligible project under current law." https://cwc.ca.gov/-/media/CWC-website/Files/Documents/2015/07_July/July2015_Agenda_Item_13_Attach_2_Summary_of_SAC_Comment_Letters.pdf, FOR Exhibit 20.]	
18	69	The DSEIS omits much about California's enforcement of the CAWSRA -- The DSEIS (and, to a lesser extent, the SLWRI FEIS) does not cover this critical aspect	Please refer to comment response 18-60.

Letter Number	Comment Number	Comment	Response
		of environ- mental law well. For example, the DSEIS asserts the following: California has expressed an opinion that PRC 5093.542 prohibits the State from being involved in the planning or construction of the proposed action. (DSEIS p. 5-3) As discussed in these comments and not described in the DSEIS, not only have California officials "expressed an opinion," but much more. As discussed earlier, NEPA regulations require disclosure that, in addition to communications with Reclamation preceding the SLWRI FEIS, California officials have sharpened and emphasized the communications of their responsibilities under the CAWSRA. • The State Water Resources Control Board entertained a hypothetical for Westlands and Reclamation's benefit (after describing the unlawful nature of the hypothetical), again demonstrating the infeasibility of the project: In addition to prohibiting cooperation in the planning of a project that could adversely affect the free-flowing condition of the McCloud River, section 5093.542 of the Public Resources Code prohibits assistance or cooperation by "license, or otherwise." This language bars the State Water Board and other agencies of the state from issuing any permit or other approval for a project that could adversely affect the free-flowing character of the McCloud River or its wild trout fishery.... If the proposed Project could proceed in compliance with the Wild and Scenic Rivers Act, the proposed Project would require time extensions for several water right permits. Water diversion and storage at Shasta Dam is regulated by the State Water Board pursuant to Reclamation water right Permits 12720, 12721, 12722, 12723, and 12724 (Applications 5625, 5626, 9363, 9364, and 9365, respectively). Reclamation's water right permits include a deadline to complete construction work by December 1, 1985, and a deadline to complete application	

Letter Number	Comment Number	Comment	Response
		of the water to beneficial use by December 1, 1990. Construction activities involving expanding the capacity of Shasta Reservoir, which would allow for increase in beneficial use under the permits, cannot commence unless and until the State Water Board approves extensions of time for Reclamation's water rights. (Wat. Code, §§ 1397, 1398.) Reclamation previously filed petitions with the State Water Board requesting extensions of time until December 2030 to complete construction and use pursuant to the water right permits. The petitions have been publicly noticed and numerous protests of the proposed time extensions remain active. CEQA compliance is also necessary before the State Water Board can approve the time extensions.[57] [Footnote 57: https://www.friendsoftheriver.org/wp-content/uploads/2019/01/WQC_NFisch.JKSahota.-Comments-on-Shasta-Dam-Raise-Project.pdf pp. 2 and 3. Also included in exhibit H, comments on the SLWRI DSEIS of NRDC et al., included here by reference.]	
18	70	California and its courts have done more than express an opinion. Comments on the DSEIS prepared by NRDC et al. (adopted here) provide some additional insight into the relevance of California's opinion: Reclamation's interpretation of state law is not entitled to deference. See Garcia-Lopez v. Ashcroft, 334 F.3d 840, 843 (9th Cir. 2003) (granting no deference to federal board's interpretation of state law); see also Baber v. Schweiker, 539 F. Supp. 993, 995 (D.D.C. 1982) (finding that deference does not attach to an agency's interpretation of state law); see also Soliman v. Gonzales, 419 F.3d 276, 281 (4th Cir. 2005) (holding that federal agency's interpretation of state law was not entitled to deference). Rather, it is the State's interpretation of the law which is entitled to deference. See Lincoln Am. Corp. v. Victory Life Ins. Co., 375 F. Supp. 112, 118 (D. Kan. 1974) ("an interpretation of state law by a state agency delegated the responsibility of enforcing that law, is entitled to great weight.")	Please refer to comment response 18-60. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
		These events occurred after the SLWRI FEIS (or were not discussed in the SLWRI FEIS), and although they should have been anticipated in 2015, most were not. The DSEIS should have covered these matters as part of its commitment "to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns." (DSEIS p. 1-2)	
18	71	Problems with the DSEIS conclusion that California's views on state law are not relevant, and DSEIS background information on CAWSRA is flawed -- The DSEIS repeats its contrary-to-regulation and facts conclusion that a CAWSRA analysis is irrelevant to a NEPA analysis: Reclamation does not believe California's views are relevant for the purposes of this NEPA analysis. However, because Reclamation previously addressed PRC 5093.542 in the 2015 SLWRI FEIS, it is addressed here as background information. (DSEIS p. 5-4) As discussed in these comments, California has more than a view. It has laws and obligations and responsibilities to follow and enforce. So does Reclamation under federal law with respect to state law. California law is therefore relevant to an SLWRI NEPA analysis under NEPA regulations,[58] as well as other Reclamation SLWRI decision documents. The DSEIS chapter 5 background information provided does not repeat earlier DSEIS statements that the DSEIS chapter 5 is apparently meant to revise chapter 25 of the SLWRI FEIS, the latter where at least some analysis of California law was made. Not providing an analysis of California law in the SLWRI is contrary to NEPA regulations. [Footnote 58: As discussed earlier in these comments, NEPA regulations require Reclamation to discuss potential conflicts with state law. See 40 CFR 1502.16(c) and 1506.2(d).]	Please refer to comment response 18-60. Reclamation will continue to comply with all applicable law.

Letter Number	Comment Number	Comment	Response
18	72	The DSEIS background discussion needs to be well done. Instead, the DSEIS stumbles badly attempting to provide background on the legislature's action providing provisions on the McCloud River in the California Wild & Scenic Rivers Act. The stumbling begins with the following: The legislature instead passed an amendment to the California Wild and Scenic Rivers Act to protect the river's wild trout fishery below McCloud Dam, PRC Section 5093.542. (DSEIS p. 5-4) As noted earlier, this PRC section also applies protections to the McCloud River above the McCloud Reservoir as well (§5093.542(b) (Algoma to Huckleberry Creek). Here, as well as elsewhere in the DSEIS, the DSEIS fails to explain that the river's free-flowing status is protected by the CAWSRA, contrary to NEPA regulations, and a deficiency described in our comments and not encountered to this degree in the parallel section of Chapter 25 of the SLWRI FEIS. The DSEIS then proceeds: The PRC was a compromise between the landowners and the State and served to prevent an energy company from constructing three small dams along the river. These structures were planned in the upper watershed of the McCloud and specifically cited in 5093.542(b). (DSEIS p. 5-4) The legislature's concerns about these proposed dams were part of the reason for the enactment of §5093.542. However, "these structures" are not cited anywhere in subdivision (b) or anywhere in §5093.542, specifically or otherwise, contrary to this assertion in the DSEIS. However, the next subdivision, §5093.542(c), does mention a specific project: the Shasta Dam raise, obviously a concern in the legislature. This subdivision provides exclusive and narrow relief for DWR from certain broad provisions that would otherwise apply to it prohibiting cooperation with any agency of the federal government on the Shasta Dam raise. The prohibition applies to departments and agencies of the	We acknowledge the commenter's concern regarding the background of the PRC. Comment noted.

Letter Number	Comment Number	Comment	Response
		state, including DWR (with the two study exceptions for DWR). The supplemental environmental impact statement should be corrected.	
18	73	The DSEIS continues with a notable and misleading omission and apparent misunderstanding of the California Wild & Scenic Rivers Act: However, the legislature separately addressed DWR's participation in the feasibility of enlarging Shasta Dam, authorizing DWR to participate in technical and economic feasibility studies while directing that the agency could not assist or cooperate with planning of any other projects involving construction of a 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 (PRC Section 5093.542). (DSEIS p. 5-4) (emphasis added) The DSEIS passage here (and the immediately following one subsequently discussed in these comments) may be interpreted that the assist or cooperate prohibition on DWR only applies to other projects but NOT the Shasta dam raise. In concert with the next statement of the DSEIS, subsequently discussed in these comments, the above DSEIS passage can also be read that the CAWSRA only prohibits assistance and cooperation with projects other than the Shasta Dam raise. Both assertions are incorrect. To be clear, the DSEIS is referring to PRC §5093.542(c), which provides DWR an exclusive but narrow exception for DWR's technical and economic feasibility studies of enlarging Shasta Dam from the §5093.542(c) prohibition on cooperation with Reclamation on the SLWRI/SDREP. Clearly, such studies or other assistance and cooperation with Reclamation on the SLWRI would otherwise be prohibited for any department or agency of the state under this CAWSRA code subdivision.	We acknowledge the commenter's concern regarding its interpretation of state law. Comment noted. Reclamation will continue to comply will with all applicable law.
18	74	The DSEIS omits that (with the narrow exception of DWR) any assistance by departments and agencies of the state to Reclamation on the planning and	We acknowledge the commenter's concern regarding its interpretation of

Letter Number	Comment Number	Comment	Response
		construction of the Shasta Dam raise is prohibited since this project (in the eyes of the legislature) could adversely affect the wild trout fishery and rather unambiguously the free-flowing condition of the river at the site of the expanded reservoir. The SLWRI FEIS and even the DSEIS establish these "adversely affect" or "potentially adverse effect" determinations. To clarify further, DWR is a department of the state, and §5093.542(c) applies to departments and agencies of the state. The DSEIS's apparent contention that §5093.542(c) only prohibits DWR from participating in other reservoir projects on the McCloud is contrary to the plain language of the statute, DWR's and the state's reading[59], the SLWRI FEIS chapter 25 reading, the California Attorney General's reading, and the Shasta County Superior Court's reading. [Footnote 59: At the risk of repeating this again, Reclamation knew this once too, although it conflated the DWR with the state and the governor of the state. From discussions with the State, it is our understanding there has been a determination that the PRC protecting the McCloud River prohibits State participation in the planning or construction of enlarging Shasta Dam other than participating in technical and economic feasibility studies. (SLWRI Final Feasibility Report, p. 9-2) (emphasis added)]	state law. Comment noted. Reclamation will continue to comply will with all applicable law.
18	75	The DSEIS fails to understand the breadth of the CAWSRA -- The SLWRI FEIS and the DSEIS fail to disclose and discuss the breadth and reach of the CAWSRA to the actions of state agencies. In addition to the breadth and reach of §5093.542(b) & (c), the following CAWSRA McCloud River code section is never mentioned or discussed. §5093.542(d) All state agencies exercising powers under any other provision of	We acknowledge the commenter's concern regarding its interpretation of state law. The SEIS is intended to provide information relevant to the application of Section 404(r) of the CWA for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to

Letter Number	Comment Number	Comment	Response
		law with respect to the protection and restoration of fishery resources shall continue to exercise those powers in a manner to protect and enhance the fishery of those segments designated in subdivision (b). The SLWRI FEIS and the DSEIS fail to disclose and discuss that DWR and state departments and agencies are not the only parties prohibited from assisting Reclamation on this project. The California Government Code and Water Code define certain political subdivisions of the state as agencies of the state. They include special districts,[60] of which many are Reclamation water-service and repayment contractors. They would also include many State Water Project contractors. The CAWSRA also imposes obligations on local government agencies.[61] §5093.542(c) is easy to understand if read in its entirety: Except for participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam, no department or agency of the state shall assist or cooperate with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government 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. [Footnote 60: See Cal. Gov. Code § 16271(d) and Cal. Water Code § 37823.] [Footnote 61: PRC §5093.61: All local government agencies shall exercise their powers granted under any other provision of law in a manner consistent with the policy and provisions of this chapter. §5093.50: It is the policy of the State of California that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values shall be preserved in their free- flowing state, together	update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns.

Letter Number	Comment Number	Comment	Response
		with their immediate environments, for the benefit and enjoyment of the people of the state. (emphasis added, "chapter" is the CAWSRA)]	
18	76	The DSEIS appears to adopt a reading of CAWSRA in complete conflict with the statutory language -- The DSEIS then expresses an opinion that §5093.542(c) should be read in the exact opposite way it is written: 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). (DSEIS p. 5-4) No, it did not. That is not the meaning of, except for DWR's technical and economic studies on the Shasta Dam raise, "no department or agency of the state shall assist or cooperate with...any agency of the federal...government..." We should not have to remind Reclamation that this matter has already been before the state courts, and a large CVP contractor found its actions to assist and cooperate with Reclamation in the planning of the Shasta Dam raise contrary to CAWSRA enjoined. The DSEIS's contention here is without support. In addition, §5093.542(b) has nothing to do with prohibiting cooperation and assistance with specific (Reclamation's reading) facilities "mentioned" in it. No specific facilities are mentioned in §5093.542(b) as asserted earlier in DSEIS p. 5-4 and perhaps implied here. §5093.542(b) establishes the geographic extent of and the no-new-reservoir prohibition. Subdivision (b) makes no distinction among local, state, or federal agencies. It is applicable to everyone, including Reclamation and DWR. Specific facilities (the Shasta Dam raise) are mentioned in §5093.542(c). §5093.542(c) imposes a no- cooperation-or-assistance prohibition on departments and agencies of the state on the enlargement of Shasta Dam (and other projects that would impair free-flowing and the wild trout fishery), while providing an exception for DWR to conduct technical and economic feasibility studies for the	We acknowledge the commenter's concern regarding its interpretation of state law. Comment noted. Reclamation will continue to comply will with all applicable law.

Letter Number	Comment Number	Comment	Response
		enlargement of Shasta Dam. It could not be clearer. The Shasta County Superior Court found it to be clear and reached the opposite conclusion regarding §5093.542(c) reached by the DSEIS excerpt above: The Shasta Dam by its very nature can limit the McCloud River's free- flowing state by converting free-flowing waters into reservoir waters. Even the language of the statute confirms this point, as section 5093.542, subdivision (c) begins, "Except for participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam..." If the State Legislature did not believe that the Shasta Dam could have an impact on the McCloud River's free-flowing state, then it would not have felt the need to carve out an exception for studies performed by the Department of Water Resources involving enlargement of the Shasta Dam.[62] [Footnote 62: PEOPLE VS. WESTLANDS WATER DISTRICT Case Number: 192487, Tentative Ruling on Preliminary Injunction, Shasta County Superior Court. (August 2019) pp. 11-12. https://www.friendsoftheriver.org/wp-content/uploads/2019/08/2019-07-28-Tentative-Ruling-on-PI.pdf. Also included in Exhibit I, NRDC et al. comments on the DSEIS, adopted here by reference. The injunction was against Westlands' environmental impact report to support a potential decision to cost share with Reclamation on the Shasta Dam Expansion Project.]	
18	77	(§5093.542(b)) does, of course, prohibit the construction of a reservoir on the river segment that the SDREP would convert to part of the "reservoir waters." This subdivision does not mention any specific projects.[63] Both subdivisions (b) and (c) are relevant to the SLWRI, the first (b) applying most obviously to Reclamation, the second (c) (and §5093.61, not discussed in the SLWRI) applying to state departments and agencies and most of the state's relevant political subdivisions. Subdivisions (a) and (b) (and §5093.61), though complementary, should not be confused.	We acknowledge the commenter's concern regarding its interpretation of state law. Comment noted. Reclamation will continue to comply will with all applicable law.

Letter Number	Comment Number	Comment	Response
		[Footnote 63: A specific project is mentioned in another subdivision of §5093.542: "(e) Nothing in this section shall prejudice, alter, affect in any way, or interfere with the construction, maintenance, repair, or operation by the Pacific Gas and Electric Company of the existing McCloud-Pit Development (FERC 2106) under its license, or prevent Pacific Gas and Electric from constructing a hydroelectric generating facility by retrofitting the existing McCloud Dam if the operation for the facility does not alter the existing flow regime below the dam." §5093.542(e)]	
18	78	The DSEIS continues with its aberrant reading of the California Wild & Scenic Rivers Act: Emphasizing the point, the legislature referred to the Shasta Dam project as an "enlargement," and separately referenced other projects as construction of "any dam, reservoir, diversion, or other water impoundment facility" [PRC Section 5093.542(b),(c)]. (DSEIS p. 5-4) Irrelevant and a misreading of the statute. Again, §5093.542(b) imposes the prohibition on reservoir construction that would invade the protected portions of the McCloud River and defines the river reaches for which new reservoir construction is prohibited. It does not reference any projects by name. §5093.542(c) specifically references the Shasta Dam enlargement and establishes the special responsibilities of departments and agencies of the state to not assist and cooperate with Reclamation in the planning of and enlargement of Shasta Dam or other projects that could adversely affect the wild trout fishery and free-flowing nature of the McCloud River.	We acknowledge the commenter's concern regarding its interpretation of state law. Comment noted. Reclamation will continue to comply will with all applicable law.
18	79	Our comments help to explain CAWSRA -- The DSEIS analysis is at best incoherent and at worst seems as if an attempt to mislead. The DSEIS should be corrected. Perhaps a greater familiarity with the state and federal wild and scenic river systems could illuminate.	We acknowledge the commenter's concern regarding its interpretation of state and federal law. Comment noted. Reclamation will continue to comply will with all applicable law.

Letter Number	Comment Number	Comment	Response
		The introduction the McCloud River provisions of CAWSRA Act are as follows: 5093.542. The Legislature finds and declares that the McCloud River possesses extraordinary resources in that it supports one of the finest wild trout fisheries in the state. Portions of the river have been appropriately designated by the Fish and Game Commission, pursuant to Chapter 7.2 (commencing with Section 1725) of Division 2 of the Fish and Game Code, as wild trout waters, with restrictions on the taking, or method of taking, of fish. The Legislature has determined, based upon a review of comprehensive technical data evaluating resources and potential beneficial uses, that potential beneficial uses must be balanced, in order to achieve protection of the unique fishery resources of the McCloud River, as follows: (a) The continued management of river resources in their existing natural condition represents the best way to protect the unique fishery of the McCloud River. The Legislature further finds and declares that maintaining the McCloud River in its free-flowing condition to protect its fishery is the highest and most beneficial use of the waters of the McCloud River within the segments designated in subdivision (b), and is a reasonable use of water within the meaning of Section 2 of Article X of the California Constitution. It is a special version of the introduction to the CAWSRA: 5093.50. It is the policy of the State of California that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values shall be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state. The Legislature declares that such use of these rivers is the highest and most beneficial use and is a reasonable and beneficial use of water within the meaning of Section 2 of Article X of the California Constitution. It is the purpose of this chapter to create a California Wild and Scenic Rivers System to be administered in accordance with the provisions of this chapter.	

Letter Number	Comment Number	Comment	Response
		This CAWSRA introduction was modeled after the introduction to the National Wild & Scenic Rivers Act (WSRA): §1(b) It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes. PRC §5093.542(b) is modeled after PRC §5093.55: Other than temporary flood storage facilities permitted pursuant to Section 5093.57, no dam, reservoir, diversion, or other water impoundment facility may be constructed on any river and segment thereof designated in Section 5093.54; PRC §5093.55 is modeled after a portion §7 of the National Wild & Scenic Rivers Act. These matters are discussed in a Wild & Scenic River Coordination Council technical memo. First, here is the first relevant WSRA statutory language: The Federal Power Commission [FERC] shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, as amended, on or directly affecting any river which is designated in section 3 of this Act as a component of the national wild and scenic rivers system or which is hereafter designated for inclusion in that system, ...	

Letter Number	Comment Number	Comment	Response
		Reservoirs are fundamentally in conflict with the purposes of these two wild & scenic rivers acts since they are the very opposite of free-flowing. That is why the construction of new reservoirs under either statute is prohibited. Just as the officials in California and Chapter 25 of the SLWRI FEIS have concluded that the Shasta Reservoir expansion would be in conflict with the CAWSRA, FERC and federal wild and scenic river managers have concluded that expansion of reservoirs into federal wild and scenic rivers would be in conflict with the WSRA.[64] §5093.542(c) is modeled after PRC §5093.56. No department or agency of the state may assist or cooperate, whether by loan, grant, license, or otherwise, with any department or agency of the federal, state, or local government, in the planning or construction of a dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition and natural character of the river and segments thereof designated in Section 5093.54 as included in the system. §5093.56 was modeled after another part of §7 of the WSRA [N]o department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. (p. 14) These matters are discussed in an Interagency Wild & Scenic River Coordination Council "Section 7" technical memo, matters that also bear on what would be a conflict with the similar provisions of the CAWSRA.[65] With regard to a reservoir expansion onto a WSRA-protected river, the Coordination Council technical	

Letter Number	Comment Number	Comment	Response
		memo assessment on whether there is a violation of the WSRA and that the project needs to be modified or dropped is short: The initial question to be addressed is whether or not the proposed project invades the designated river. The term invade is defined as encroachment or intrusion upon. If the project is determined to invade the designated river, the proponent would be advised to develop measures to eliminate this unacceptable effect. (p. 29) With regard to what "construction" is under the WSRA, the Interagency "Section 7" technical memo is also clear: The Act does not define the terms expressed in Section 7; however, the Department of Agriculture has codified regulations for Section 7 at 36 CFR 297, including definitions. The following definitions are based on 36 CFR 297 and additional interpretation by the river-administering agencies: Construction: Any action carried on with federal assistance affecting the free-flowing characteristics or the scenic or natural values of a wild and scenic river or congressionally authorized study river. (p. 3) Again, the primary goals of the CAWSRA and federal WSRA are clear, to protect free- flowing rivers. Both statutes have both been in existence for around half a century. An Interagency Wild & Scenic River Coordinating Council exists and includes a Bureau and two Services within the Department of the Interior. The Forest Service is a Council member from the Department of Agriculture.[66] The State of California implements its wild and scenic rivers act. Professionals within the Council and the state can provide expert guidance for Reclamation and should have been involved in the DSEIS. [Footnote 64: "Implementing the Wild & Scenic Rivers Act: Authorities and Roles	

Letter Number	Comment Number	Comment	Response
		of Key Federal Agencies" Council Contact: Jackie Diedrich U.S. Forest Service Portland, Oregon, Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council (FOR Exhibit 22): Coordination Processes: The Commission has a three-stage consultation process for hydro-power licensing that requires applicants for a license or applicants seeking an exemption to identify any potential conflicts between the project and any WSR prior to filing. If a conflict is identified, the proponent seldom files an application. Once an application is filed, the FERC routes applications for preliminary permits, licenses and exemptions from licensing for proposed hydroelectric facilities to the river-administering agencies for determination of whether the project is 'on or directly affecting" a designated WSR or congressionally authorized study river. If the river-administering agency determines that any project would be "on or directly affecting" a designated WSR or congressionally authorized study river, the permit, license or exemption application may be dismissed without further processing. FERC recreation and land use staff also maintain copies of the current list of designated WSRs or congressionally authorized study rivers as a basis to identify whether a project has the potential to conflict with the WSRA. (p. 14)] [Footnote 65: "Wild & Scenic Rivers Act: Section 7" October 2004, Council Contact: Jackie Diedrich, U.S. Forest Service Portland, Oregon, Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council. (FOR Exhibit 23)] [Footnote 66: FOR Exhibit 24.]	
18	80	Reservoir expansions into rivers protected by these statutes are contrary to law. The conclusion of the SLWRI FEIS chapter 25 was clear that the SLWRI action alternatives are in conflict with the CAWSRA. The DSEIS appears to be an attempt to omit the SLWRI FEIS chapter 25's conclusion (while at the same time	Please refer to response to comment 18-17.

Letter Number	Comment Number	Comment	Response
		providing the analysis to support a conclusion of an SDREP conflict with the CAWSRA). As discussed in these comments, the DSEIS attempt to avoid reaching and, indeed, omitting obvious SLWRI FEIS conclusions about the impact of its project on the CAWSRA is in conflict with law and regulation.	
18	81	Untangling the DSEIS federal wild & scenic river review history -- The DSEIS, nevertheless, goes on to garble the federal history some more: The USFS defined the lower McCloud River as the portion of the river that is currently periodically inundated by Shasta Lake -- referred to in this chapter as the transition reach -- as part of the lake rather than part of the river. The USFS defined the lower river as extending from McCloud Dam downstream to an elevation of 1,070 feet mean sea level (msl) (approximately 22 total river miles), which corresponds to the current full-pool elevation of Shasta Lake. The USFS determined that this portion of the river does not meet the definition of natural or free flowing because it is downstream of McCloud Dam and some portions of the river offer public access. (p. 5-4) Looking at the first sentence above, the US Forest Service did not define the lower McCloud as the reach periodically inundated by Shasta "Lake." The Forest Service defined the Lower McCloud River to be the reach from below the PG&E McCloud Dam to the gross pool of Shasta Reservoir. It is true that the Forest Service properly considered what was defined in the SLWRI FEIS Chapter 25 as the "transition reach" (the portion of the McCloud Arm of Shasta Reservoir between the upper limit of the reservoir in a statistical critical dry year and gross pool)[67] to be part of Shasta Reservoir -- as noted in the second sentence. Here, the second sentence got it right in the context of WSRA -- and is therefore in conflict with the first sentence. Again, the portion of the first DSEIS sentence defining (for SLWRI purposes) the so-called "transition reach" as the portion of the "Lake" periodically inundated by the reservoir and the second sentence are mostly correct;[68] the Forest Service considered the McCloud Arm of Shasta Lake below gross pool as part of the "lake" (SLWRI FEIS p. 25.4). However, the	Comment noted.

Letter Number	Comment Number	Comment	Response
		meaning of the final DSEIS sentence above is obscure. If the demonstrative pronoun "this" is intended to refer to the upper McCloud Arm of Shasta Reservoir, it is correct that this portion of "river" was properly determined to not be free-flowing in the context of the WSRA by the USFS. However, the reason for the USFS determination was because the upper McCloud Arm of Shasta Reservoir is inundated by the gross pool of Shasta Reservoir (and thus not free-flowing). It was not because the "transition reach" is downstream of the McCloud Dam or because there was public access as stated by the DSEIS. The DSEIS provides no evidence for this statement. The DSEIS gets this right in a later page.[69] [Footnote 67: SLWRI FEIS chapter 25, p. 25-5.] [Footnote 68: The imprecise phrase "periodically inundated by the reservoir" to be equal to the "the transition reach" is, of course, incorrect. A moments thought would reveal that the McCloud Arm of Shasta Reservoir extends farther down the ancestral McCloud River than the high-water mark of a statistical critical dry year.] [Footnote 69: "The upper extent of the lake encompasses the transition reach, which varies between about 920 and 1,070 feet msl. Because of the effects of Shasta Lake on the McCloud Arm, the STNF determined that the transition reach did not meet the eligibility requirements of a wild and scenic river (USFS 1994). The USFS defined the upper limit of the McCloud Arm as an elevation of 1,070 feet, or approximately 5,400 feet above the McCloud River Bridge. This elevation corresponds to the lower limit of Segment 4 as defined in the STNF LRMP." (DSEIS p. 5-12)]	
18	82	[Exhibit 1:] Excerpt from Figure 5.2 SLWRI FEIS and SLWRI DSEIS showing expansion of Shasta "Lake" from elevation 1070' gross pool to elevation 1090' gross pool	Comment noted.

Letter Number	Comment Number	Comment	Response
18	83	It is noteworthy, however, that the DSEIS got the following nearly right: The USFS concluded that all 10 segments of the McCloud River were eligible for listing as a Federal wild and scenic river because they are free flowing, possess good water quality, and exhibit ORVs in the areas of cultural and historical resources, fisheries, geology, and scenic resources. (DSEIS p. 5-7)	The commenter's point is not entirely clear. Comment noted.
18	84	The DSEIS got the following paragraph right (although the second sentence may have a need for clarification): Part of the lowermost segment -- Segment 4 -- would be periodically inundated if Shasta Lake is expanded. Segment 4 extends from about 5,400 feet upstream from the McCloud River Bridge, beginning at an elevation of 1,070 feet msl, to about Little Bollibokka Creek. The lower extent of this segment corresponds with the current full-pool elevation of Shasta Lake ... (DSEIS p. 5-5) With regard to the second sentence, the Figure 5.2 DSEIS map depiction of the proposed enlarged Shasta Reservoir (gross pool of elevation 1090') is not consistent with the preceding DSEIS full-pool estimate of "about Little Bollibokka Creek."[70] Elevation 1,070 (gross pool) is some distance from Little Bollibokka Creek, perhaps 1.5 to 2 miles downstream of the Little Bollibokka Creek confluence with the McCloud River. This is depicted rather clearly in the Reclamation maps. [Footnote 70: Chapter 25 of the SLWRI FEIS also seems to interpret the about "to the confluence with Little Bollibakka Creek" rather broadly. The writers of both the DS EIS and FEIS could have done better here.]	The commenter's point is not entirely clear. Comment noted.
18	85	Chapter 5.2 Regulatory Framework 5.2.1 Federal	Comment noted. Please refer to FEIS Master Comment WASR-1 "Eligibility of

Letter Number	Comment Number	Comment	Response
		Classification vocabulary -- The DSEIS can be imprecise in its descriptions of the National Wild & Scenic Rivers Act (WSRA). The DSEIS should describe the statute and federal regulations and guidance more completely. Depending on the specific conditions of a river, it may be designated as "wild," "scenic," or "recreation [sic]." Different segments of a single river can receive different designations; in other words, some segments can be designated wild, some scenic, and some recreation [sic] or combinations of these designations. The DSEIS is trying to describe "classification," not "designation," and it does this with errors. There is no "recreation" classification. There is a "recreational" classification. Classification is, in fact, predominantly done on the basis of shoreline development and road access, not on whether the river and its viewshed are scenic or used recreationally.	the McCloud River as a Federal Wild and Scenic River."
18	86	The authors of the DSEIS should familiarize themselves with "A Compendium of Questions & Answers Relating to Wild & Scenic Rivers -- A Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council" (Compendium) and other technical reports of the Interagency Council. (FOR Exhibit 25) Once determined eligible, river segments are tentatively classified for study as either wild, scenic, or recreational based on the level of development of the shoreline, watercourse and access at the time of river is found eligible. (Compendium p. 20) The DSEIS provides an incomplete description of §5(d)(1) of the WSRA: The Federal WSRA does not prohibit water developments that may affect portions of rivers that are eligible for inclusion in the National Wild and Scenic Rivers System. Section 5(d)(1) of the act does, however, require that in all planning for the use and development of water and related land resources,	Comment noted. Please refer to FEIS Master Comment WASR-1 "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		consideration be given to potential national wild, scenic, and recreational river areas by all Federal agencies involved. (DSEIS p. 5-7)	
18	87	§5(d)(1) responsibilities -- This DSEIS WSRA §5(d)(1) explanation of federal practice is not particularly clear or complete. The Council's "Compendium of Questions & Answers" referenced above should be helpful to the supplemental environmental impact statement: In response to Section 5(d)(1) of the Act, administering agencies also involve the public in the determination of potential WSRs through normal inventory and study processes. (p. 15) When is a river or river segment evaluated for eligibility for possible inclusion in the National System? There are three instances when federal agencies assess eligibility: 1) at the request of Congress through specific authorized studies; 2) through their respective agency inventory and planning processes; or 3) during NPS evaluation of a Section 2(a)(ii) application by a state. River areas identified through the inventory phase are evaluated for their free-flowing condition and must possess at least one ORV. (p. 17) The 1994 Shasta-Trinity National Forest Land and Resource Management Plan (LRMP) was the §5(d)(1) planning process mentioned in instance (2) above that resulted in the McCloud River eligibility determination. The Council's "Compendium" provides greater insight than the DSEIS about how federal agencies protect rivers found to be eligible in the §5(d)(1) planning process. A river identified for study under Section 5(d)(1) is protected by each agency's policy; i.e., the Act provides no statutory protections. To the extent of each agency's authority, the river's free-flowing condition, water quality, ORVs and classification are protected. This Compendium is reflected in Section 12 of Forest Service Regulations:	Comment noted. Please refer to FEIS Master Comment WASR-1 "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		Management Guidelines: Water Resources Projects (Water Supply/Flood Control). Wild, Scenic, Recreational. Development of water supply dams, diversions, flood control works, and other water resources projects on a section 5(a) study river shall be analyzed under section 7(b) of the Act. A water resources project is defined in 36 CFR part 297 as the construction of developments that affect the river's free-flowing characteristics. Water resources projects determined to have a direct and adverse effect on river values (free-flow, water quality, and outstandingly remarkable values) under section 7(b) are prohibited. Water resources projects proposed on a section 5(d)(1) study river are not subject to section 7(b), but will be analyzed as to their effect on a river's free-flow, water quality, and outstandingly remarkable values, with adverse effects prevented to the extent of existing agency authorities (such as special-use authority). §5(d)(1) also clearly mandates federal agencies to consider federal wild and scenic protection as an alternative to water resources development. The subsection requires the following: "In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic, and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss such potentials." The subsection also directs the Interior and Agriculture Secretaries to "make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of water and related land resources involved." The §5(d)(1) direction is particularly pertinent to the SLWRI since the Forest Service is	

Letter Number	Comment Number	Comment	Response
		committed to recommend the eligible segments of the McCloud River for federal wild and scenic river designation if the CRMP fails and the river's eligibility is threatened.[71] [Footnote 71: Forest Service 1995, Shasta-Trinity National Forests Land and Resource Management Plan (LRMP), pg. 3-23.]	
18	88	The federal mandate to consider wild and scenic protection in "all planning for the use and development of water and related land resources" and as "potential alternative uses of water and related land resources," applies not only to the McCloud River but other streams and rivers that flow into the existing Shasta Reservoir. Other free-flowing streams flowing into Shasta Reservoir that will also be flooded by the reservoir enlargement include (but are not limited to) segments of the upper Sacramento River, Pit River, and Squaw Creek.	See 2015 SLWRI FEIS Master Comment Response WASR-1 "Eligibility of the McCloud River as a Federal Wild and Scenic River" for more information.
18	89	The Sacramento River from Box Canyon Dam to the Whiskeytown-Shasta-Trinity National Recreation Area (WSTNRA) was determined to be eligible by the Forest Service. The river is free-flowing and possesses outstandingly remarkable fish and scenery values.[72] But this eligible stream was not recommended by the agency for wild and scenic due to the limited National Forest lands on the river upstream of the WSTNRA.[73] Nevertheless, §5(d)(1) demands its reconsideration as an alternative to water resources development. [Footnote 72: Forest Service 1995, Shasta-Trinity National Forests LRMP, FEIS Appendix E- Wild & Scenic Rivers Evaluation, Table E-2, p. E-17, 1995.] [Footnote 73: Forest Service 1995, Shasta-Trinity National Forests LRMP FEIS Record of Decision (ROD) p. 17.]	The Shasta-Trinity National Forest (STNF) Land and Resource Management Plan identified several segments of the Sacramento River upstream from the National Recreation Area (NRA) boundary as eligible for consideration under the Federal Wild and Scenic Rivers Act. One of these segments extends from the NRA boundary upstream to Box Canyon Dam. Only 6.7 miles of this 37 mile segment is on National Forest Service lands managed by the STNF; none of these lands are within the segment affected by CP1, CP2, CP3, CP4, or CP4A. See Impact LU-2 of the SLWRI FEIS for more information, and see response to comment 18-88.

Letter Number	Comment Number	Comment	Response
18	90	This requirement also applies to the Pit River upstream of the current Shasta Reservoir and Squaw Creek. Potential outstandingly remarkable values of these stream segments include scenery, wildlife (TES species), botany (Shasta snow-wreath and other rare plants), and Native American cultural values. The Forest service believes that Squaw Creek "rivals the McCloud for attractiveness" (a possible outstandingly remarkable scenery value).[74] In addition, the management area through which Squaw Creek flows "contains significant cultural and historical values" (a possible outstandingly remarkable cultural value).[75] Unfortunately, the Forest Service has not assessed Squaw Creek or the Pit River for their wild and scenic eligibility and suitability. But §5(d)(1) requires this assessment in response to the SLWRI, as it does for reconsideration of wild and scenic eligibility and suitability of the McCloud and Sacramento Rivers. [Footnote 74: Forest Service 1953 & 2014, Shasta Lake Recreation Area Development Plan, Management Guide Shasta and Trinity Units, p. 2-159.] [Footnote 75: Forest Service 1995, Shasta-Trinity National Forests LRMP, p. 4-129.]	See comment response 18-88.
18	91	There is existing precedent in California for Reclamation meeting the requirements of §5(d)(1) in regard to water resource projects. While studying the feasibility of the proposed Auburn Dam project on the North and Middle Forks of the American River, Reclamation implemented §5(d)(1) by convening a multi-agency interdisciplinary team that included Reclamation, Army Corps of Engineers, Forest Service, BLM, and the California Department of Parks and Recreation (all of which managed public lands or possessed regulatory authority within the Auburn Reservoir take-line). The §5(d)(1) assessment ultimately found 23 miles of the Middle Fork American and 21 miles of the North Fork American to be eligible because they are free flowing and possess outstandingly remarkable scenery, recreation, fish, wildlife, cultural, and ecological values.[76]	The commenter's point is not entirely clear. Please refer to Chapter 5 in the SEIS for Wild and Scenic River considerations. Reclamation will continue to comply with all applicable law. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		Reclamation has not appeared to have considered such Reclamation assessments in the SLWRI. [Footnote 76: Bureau of Reclamation 1993, Determination of Wild and Scenic Eligibility of Segments of the American River. https://www.waterboards.ca.gov/waterrights/water_issues/programs /hearings/auburn_dam/exhibits/x_26.pdf. FOR Exhibit 26.]	
18	92	National Rivers Inventory status and responsibilities -- The National Rivers Inventory was also prepared under the authority of §5(d)(1).[77] The upper and lower McCloud River are still part of the inventory.[78] Federal agencies have some specific guidance on proposed projects in the National Rivers Inventory (NRI): The Council on Environmental Quality (CEQ), under 5(d)(1) Wild and Scenic River Act authority, provides guidance to federal agencies with permitting and/or granting authority for projects on or near rivers listed on the NRI. In accordance with executive memorandum, all agencies must "take care to avoid or mitigate adverse effects" to rivers identified in the Nationwide Rivers Inventory.[79] The National Park Service website offers additional guidance:[80] 1. Determine whether the proposed action could affect an NRI river. • Check the current regional/state NRI list to determine whether the proposed action could affect an NRI river (i.e., is the proposed action location in the vicinity of the NRI segment). • If an NRI river segment could be affected by the proposed action, an environmental assessment or and environmental impact statement may be required depending on the significance of the effects.	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		2. Determine whether the proposed action could have an adverse effect on the natural, cultural, and recreational values of the NRI segment. These values are listed as "outstandingly remarkable values" (ORVs) on the state NRI list. Adverse effects on NRI rivers may occur under conditions which include, but are not limited to: • Destruction or alteration of all or part of the free flowing nature of the river; • Introduction of visual, audible, or other sensory intrusions which are out of character with the river or alter its setting; • Deterioration of water quality; or ... The Forest Service Handbook provides direction to Forest Service managers. It provides direction for management of NRI rivers. §2354.62: Management of NRI Rivers -- Rivers occurring within the National Forest and listed in the National Rivers Inventory must be protected to the extent initial studies indicate the river has outstanding values and therefore is eligible for designation by Congress.... Neither the SLWRI nor the DSEIS disclose the NRI status or management direction to federal agencies. The federal status, direction, and consequences should have been comprehensively disclosed in the SLWRI Feasibility Report and NEPA documents. These matters are relevant to the discussion of WSRA §5(d)(1), as well as specific responsibilities of the Forest Service and other federal agencies, including Reclamation. [Footnote 77: "...The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of the water and related land resources involved." (§5(d)(1)]	

Letter Number	Comment Number	Comment	Response
		[Footnote 78: https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977, included by reference.] [Footnote 79: https://www.nps.gov/subjects/rivers/consultation-instructions.htm, (last updated February 27, 2019), adopted here by reference.] [Footnote 80: Ibid.]	
18	93	The DSEIS discusses the CRMP, formed by a memorandum of understanding between landowners and the California Department of Fish and Wildlife. This was the means chosen by the Shasta-Trinity NF to prevent impairment of WSRA eligibility and tentative classification found in the Forest's §5(d)(1) wild and scenic river eligibility assessment. Clearly, Reclamation's preferred alternative determination in its final SLWRI EIS and Feasibility Reports, represent a failure of CRMP scope to protect the river values (free-flowing condition, water quality, and Outstandingly Remarkable Values (ORVs)). Reclamation's unparried action also represents a failure of the Forest Service to invoke the CRMP "provision stating that the USFS reserves the right to pursue designation if the CRMP is terminated or fails to protect these values." (DSEIS p. 5-4-5)	The commenter's point is not entirely clear. This comment does not appear to raise any comment on the SEIS. To the extent it does raise concerns regarding the SLWRI's Wild and Scenic River analysis, please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."
18	94	PG&E McCloud-Pit Project pending new-license update -- The DSEIS discusses the presence of PG&E's McCloud-Pit Hydroelectric Project in a number of contexts on DSEIS pp. 5-11 and 5-18-19. We offer some additional information. PG&E's McCloud-Pit Hydroelectric Project (FERC Project No. 2106), began relicensing in 2006. PG&E filed its Final License Application in July of 2009, followed by FERC's FEIS in February of 2011. The Forest Service under the authority of §4(e) of the Federal Power Act established revised minimum stream flows for the upcoming license in 2010.[81] The required minimum flows from McCloud Dam are higher, 175 cubic feet per second (cfs) as compared to 40--50 cfs in the existing license. The requirement at Ah Di Nah, about 3.5 miles	Comment noted.

Letter Number	Comment Number	Comment	Response
		downstream, is basically unchanged at 200 cfs. However, accretions below the minimum dam release (or spill) will often mean a higher effective minimum at Ah Di Nah. New to the existing license, the upcoming license provides for winter and spring minimum flows that will be substantially higher based on watershed conditions, up to 875 cfs in wet years. Issuance of a new license is pending the release of the California State Water Resources Control Board's final water quality certification. The Board released a draft certification document in November 2019. PG&E assessment of impacts of their existing project -- PG&E offered some comments on project impacts in its Final License Application (FLA): The Licensee acknowledges Project effects consistent with FERC's January 8, 2007, letter in lieu of Scoping Document 2 that states, "...there is no indication that effects from the McCloud-Pit Project extend past the confluence of Squaw Creek and the McCloud River." This assessment is supported by Licensee's study data that demonstrate that flows in the Lower McCloud River downstream of Squaw Valley Creek are primarily influenced by tributary accretion. The Lower McCloud River had reputation as being a great fishery (with associated private fishing resorts) long before the Project was constructed, and this reputation continues today. In fact, the Lower McCloud River is marketed on the Internet and in print by angler guides, fishing supply shops, backpackers, hikers, fly fishing enthusiasts, and The Nature Conservancy for its natural beauty and world class "blue ribbon" river fishing. (FLA p. E1-55) [Footnote 81: https://www.friendsoftheriver.org/wp-content/uploads/2020/09/Revised-Preliminary-4e-Condition.pdf, FOR Exhibit 27.]	
18	95	5.4.1 The McCloud River's Wild and Scenic Values The introduction to this DSEIS section begins with the following:	We appreciate the commenter's concern. Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River

Letter Number	Comment Number	Comment	Response
		This section focuses on the wild and scenic river characteristics and ORVs of the lower McCloud River identified by the USFS in the wild and scenic river evaluation performed for the STNF LRMP (USFS 1994) and the wild and scenic river characteristics and extraordinary value protected under the PRC. (DSEIS p. 5-13) The DSEIS then did provide some insight about how the USFS wild and scenic rivers analysis was also complementary to the PRC analysis: The McCloud River's fishery and its free-flowing condition are identified in the USFS evaluation. These characteristics are discussed first, followed by a discussion of the wild and scenic characteristics and values -- water quality, geology, cultural/historical resources, and visual quality/scenery -- that are identified only in the USFS evaluation. (DSEIS p. 5-13) Helping the DSEIS through its reading of the Jones & Stokes Report -- The DSEIS discussion on the subsection "Free-Flowing Condition" misleads at the following: The 1988 Natural Resources Agency Report specified that the lower reach was not eligible for designation as "free-flowing" because its flows are controlled by the McCloud River Dam and affected by the existing Shasta reservoir. (DSEIS p. 5-19) The 1988 Natural Resources Agency Report is the "McCloud River Wild and Scenic River Study Report, Final Study Report, Prepared for the California Resources Agency, Prepared by Jones and Stokes Inc., June 1988" (Jones & Stokes Report). The DSEIS does not reference its conclusion on DSEIS p. 5-19, but as some of our organizations were involved in the original study and designation, we may have some insights into where the SLWRI improperly summarized the Jones & Stokes Report. Our comments, thus, clarify the DSEIS	considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		misleading characterization of the Jones & Stokes Report. The DSEIS statement above is in conflict with the conclusions of the Jones & Stokes Report. Our comments excerpt the relevant conclusions of the Jones & Stokes Report that clarify: The presence of one or more extraordinary resource values along a free- flowing river generally qualifies the river for eligibility. The upper McCloud River..., lower McCloud River..., and Squaw Valley Creek all maintain extraordinary resource values and are eligible for inclusion in the System. (p. v) (emphasis added) In essence, the presence of one or more extraordinary resource values qualifies a free-flowing river for eligibility. (p. 5-8) (emphasis added) The presence of these extraordinary resources in free-flowing environments qualifies Segments 2--4, 6--10, and 12--13 as eligible for inclusion in the California Wild and Scenic Rivers System. (p. 5-9) (emphasis added) The DSEIS mischaracterization of the Jones & Stokes Report's description of the free-flowing status of the Lower McCloud River and thus the implied inconsistencies with the Jones & Stokes Report eligibility determination are reconcilable without much difficulty by reading the Report. The DSEIS appears to imply that "the lower reach" is equivalent to the Lower McCloud River (or the lower McCloud reaches found to be eligible by the Forest Service), a DSEIS misunderstanding of the Jones & Stokes Report. The short three-words within quotation marks, "the lower reach," used in DSEIS p. 5-19, are easily misread to refer the "Lower McCloud River." The DSEIS three-word quote from the Jones & Stokes Report actually refers to the portion of the McCloud River immediately below the PG&E McCloud Dam where tributary flow accretions are minimal and to the portion of the McCloud Arm of Shasta Reservoir downstream of the McCloud River Bridge. To help resolve the confusion, read the discussion in the rest of the full Jones and Stokes Report	

Letter Number	Comment Number	Comment	Response
		paragraph on which the DSEIS p. 5-19 implied mischaracterization is based, especially the last sentence of the paragraph: A large percentage of water is diverted from the McCloud River at McCloud Dam. The diversion precludes designation of the lower McCloud River as "free-flowing." Other State designated rivers such as the lower American, Trinity, and Klamath Rivers, however, also are controlled by large impoundments. Likewise, Federal Guidelines state that "the fact that a river segment may flow between large impoundments will not necessarily preclude its designation" (47 FR 39457). The lower McCloud River maintains high summer flows responsible for many of the extraordinary values of the McCloud River. Consequently, the segment from 0.25 mile below McCloud Dam to the McCloud Bridge located near Shasta Lake is considered to have extraordinary water resources. The 0.25- mile segment below McCloud Dam and the segment below the McCloud Bridge (distance depending upon reservoir water levels) are not extraordinary because of major river channel modifications caused by a dam and impoundment, respectively. (Jones & Stokes Report p. 3-9) This interpretation is summarized succinctly in the introduction of the Jones & Stokes Report. The lower 10 miles of the upper McCloud River, as well as the entire 23 miles of the lower McCloud River, maintains extraordinary resource values and are eligible for inclusion in the System. Short reaches below McCloud Reservoir and upstream of McCloud Reservoir and Shasta Lake are ineligible because of resource degradation caused by water diversion or reservoir fluctuations. (p. ii) In the Jones & Stokes Report, state segment 10 is the segment that would be affected by an expanded reservoir, a segment that the report found to be eligible for inclusion in the California Wild and Scenic Rivers System. The legislature, in response, fashioned the McCloud River provisions of the CAWSRA.	

Letter Number	Comment Number	Comment	Response
		Beginning observations on the DSEIS USFS ORV discussion -- The DSEIS then follows with a discussion of the "Outstandingly Remarkable Values Identified in [the] USFS Evaluation." The DSEIS discussion needs work. The DSEIS introduces three outstandingly remarkable values (ORV) that the Forest Service identified in the LRMP: but (1) it omits the "nationally significant trout fishery" ORV. (see DSEIS pp. 5-20-23 & LRMP p. E-6); and (2), the p. 5-23 DSEIS discussion on the Forest Service tentative scenic classification of Forest Service segment 4 (the segment that would be directly affected by the reservoir expansion) in the "Outstandingly Remarkable Values Identified in USFS Evaluation" subsection is misplaced. Nevertheless, it is noteworthy that this DSEIS classification discussion notes that "[s]egment 4 does not contain any human-made or other impoundments that affect its free-flowing conditions." This statement is about a classification criteria but obviously also relevant to the many Chapter 5 discussions confirming the free-flowing status of the USFS-defined lower McCloud River.	
18	96	5.5.2 Criteria for Determining Significance of Effects DSEIS significance wild & scenic river and USFS plan criteria are too narrow -- The DSEIS p. 5-25 significance criteria are too narrow: Impacts of an alternative on the wild and scenic river values of the lower McCloud River would be significant if project implementation would: • Affect the eligibility for Federal listing as a wild and scenic river of any portion of the lower McCloud River above the 1,070-foot elevation • Conflict with the STNF LRMP or with management of the McCloud River under the CRMP These significance criteria involve the Forest Service administration of §5(d) of	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		the WSRA and the Shasta-Trinity NF Land and Resource Management Plan. However, the significance criteria are incomplete. There are closely related significance criteria that belong in the DSEIS. As discussed in these comments, significance criteria should also include the following: • Consistency with the California Wild & Scenic Rivers Act • Consistency with the Whiskeytown-Shasta-Trinity National Recreation Area Management Guide • Consistency with federal guidance on project that would place a reservoir on a National Rivers Inventory (NRI) river • Consistency with the Forest Service Handbook or other Forest Service Guidance • Does proposed new gross pool inundate inventoried USFS roadless areas protected by the USFS Roadless Rule	
18	97	5.5.3 Direct and Indirect Effects Introduction -- The DSEIS analysis of the significance of impacts of the action alternatives in this chapter is difficult to parse out. Therefore, comments are necessary. The DSEIS and SLWRI FEIS adopt the Forest Service free-flowing, water quality, and Outstandingly Remarkable Values determinations. That may be appropriate as they were supported by the Forest Service in its §5(d)(1) planning effort in the 1994 Shasta-Trinity NF Land and Resource Management Plan (LRMP). However, it is Reclamation's SLWRI FEIS and DSEIS that analyzes the significance and consequences of its action alternatives here. The most complete SLWRI discussion is on the first of the action alternatives, the 6.5 foot raise, the smallest of the action alternatives. The discussion of the other action alternatives tends to be a "like the 6.5- foot raise, but only more" discussion.	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		The DSEIS p. 5-27-30 wild & scenic river analysis consistently finds that the portion of the McCloud River that would be inundated by the gross pool of the expanded reservoir would become ineligible for inclusion in the National Wild & Scenic Rivers System because of adverse impacts to free-flowing and water quality. This analysis is consistent with the SLWRI FEIS. For many reasons discussed in our comments and the DSEIS, we agree.	
18	98	DSEIS ORV discussion -- The discussion on outstandingly remarkable values [ORV] is the difficult discussion to follow. With regard to the fishery ORV, the DSEIS concludes that there are: potential adverse effects on the fish that occur in the river. Potential adverse effects on fish could include a reduction in spawning habitat for trout in the expanded transition reach and an increase in the range of warmwater fish in the lower McCloud River. (DSEIS p. 5-29) The DSEIS concludes that "only the amount of spawning gravels in the expanded transition reach represents only a small percentage of the suitable spawning habitat in the lower McCloud River. However, any effect on spawning habitat would be considered adverse." (DSEIS pp. 5-30, 5-33, and 5-38) The SLWRI FEIS found the fishery ORV impact to be potentially significant. So does the DSEIS. These conclusions did and would meet the CAWSRA conflict criteria of "could" have a significant adverse impact on the fishery and, as discussed in these comments, should be disclosed.	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River." Please also refer to response to comment 18-17.
18	99	The DSEIS does not include the expert conclusions of the post SLWRI FEIS California Department of Fish and Wildlife comments concerning the significant impact on the McCloud River fishery: 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	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		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. (Letter to Jose Gutierrez, WWD, 2020 p. 8) Supra The California Department of Fish and Wildlife conclusions are relevant to the federal fishery ORV [outstandingly remarkable value] and the CAWSRA analysis and should have been included in the DSEIS. They are also relevant to the state's administration of this portion of the CAWSRA.	
18	100	The DSEIS discussion of fishery impacts lacks any ORV [outstandingly remarkable value] explicit eligibility impairment conclusion, state or federal, although the discussion would seem to warrant a conclusion of an adverse impact on this ORV that would impair eligibility. Based on the first bullet of the DSEIS p. 5-25 significance criteria, the DSEIS should determine a fishery ORV adverse effect that would impair eligibility. The USFS, the §5(d)(1) eligibility and potential wild & scenic river manager, should also be asked to make its determination in consultation with state and federal agencies with responsibilities for fishery management.	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."
18	101	Regarding an adverse-effect conclusion on the geology ORV [outstandingly remarkable value], there is some discussion in the DSEIS that some features will be subject to inundation and erosion. However, the DSEIS reaches the conclusion that the geology ORV would not be adversely affected. (DSEIS p. 5-30) That, of course, is Reclamation's opinion. The USFS, the §5(d)(1) eligibility and potential wild & scenic river manager, should also be asked to make its determination.	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."
18	102	The DSEIS discussion on cultural ORV [outstandingly remarkable value] losses, in particular, seems inconsistent with the apparent lack of finding of an adverse impact on ORV eligibility. (DSEIS pp. 5-28-29) The DSEIS should make a determination on whether the impacts on this ORV impair eligibility. The USFS, the §5(d)(1) potential wild & scenic river manager, in consultation with affected	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and

Letter Number	Comment Number	Comment	Response
		Native Americans and knowledgeable historians, should also be asked to make its determination.	Scenic River." Reclamation will continue to comply with all applicable law.
18	103	The DSEIS has further trouble understanding the Forest Service ORV [outstandingly remarkable value] analysis: As described above under Affected Environment, the ORVs that make Segment 4 of the McCloud River eligible for listing as a wild and scenic river are cultural/historical resources, fisheries, geology, and visual quality/scenery. (DSEIS p. 5-28) The Forest Service did not determine that visual quality/scenery was an outstandingly remarkable value in the segment 4 reach of the McCloud River, although it did in other segments. (LRMP p. E-6). Nevertheless, the DSEIS consistently found that visual quality would be impaired by the action alternatives: The visual quality of the affected portion of Segment 4 would decrease as the vegetation along the banks becomes inundated and eventually dies, the bathtub ring expands, and evidence of flow is reduced. (DSEIS p. 5-30) The DSEIS ORV analysis does make a muddled adverse eligibility impact determination for the action alternatives on either the basis of an impairment in an ORV or tentative classification: The affected portion of Segment 4 would no longer have the qualities that contributed to its classification by the USFS as "scenic." (DSEIS p. 5-30) The DSEIS determination of an eligibility impairment of a "scenic" classification or a "scenic" ORV or both -- or conflict with the LRMP on some other basis -- requires clarification. The supplemental environmental impact statement should reanalyze and clarify what is intended.	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
18	104	DSEIS analysis of Forest Planning conflicts and consistency -- In the DSEIS discussion of the action-alternatives conflicts with the Shasta-Trinity National Forest Land and Resource Management Plan (LRMP), the DSEIS contains some omissions and reaches some erroneous conclusions: Impact WASR-2 (CP1): Conflict with Shasta-Trinity National Forest Land and Resource Management Plan. The inundation of approximately ... feet of Segment 4 would not conflict with the provisions in the STNF LRMP to protect the ORVs that make the McCloud River eligible for listing under the Federal WSRA. Although raising Shasta Dam would result in inundation of part of Segment 4, the McCloud River and the adjoining lands in this part of the segment are not National Forest System lands and therefore not subject to the LRMP. (In various forms on DSEIS pp. 5-30--1, 5-34, 5-38) Proper significance criteria for this subject area -- The above are DSEIS conclusions. However, the Forest Service has the authority to accomplish all or part of a §5(d)(1) study of the McCloud River within its reservation boundary,[82] as it did in the 1994 LRMP. The Forest Service has the duty and authority to determine that reservoir expansion and flooding of an eligible segment of the McCloud within its reservation boundary violates Forest Service policy and its LRMP. The Forest Service has the duty and authority to determine that the reservoir expansion within its reservation boundary would be on a National Rivers Inventory river and violates direction to protect such rivers. The Forest Service has the duty and authority to determine that the reservoir expansion within its reservation boundary and on its land would be on a National Forest roadless area protected by the roadless rule and impair its potential to be added to the National Wilderness System. The Forest Service has the duty and authority to determine that the reservoir expansion within its reservation boundary and its lands could negatively affect special status species that it has committed to protect. It has the duty and authority to determine that the reservoir expansion within its reservation boundary violated the intent of and constitutes failure of	Please refer to Chapter 5 of the SEIS for a discussion on Wild and Scenic River considerations. Please also refer to FEIS Master Comment WASR-1, "Eligibility of the McCloud River as a Federal Wild and Scenic River." Reclamation is committed to continue working with our Federal partners in accordance with all applicable law.

Letter Number	Comment Number	Comment	Response
		the CRMP and that it also violates the protective management proposed in the LRMP and Forest Service Policy. The Forest Service is also bound by its own ROD to consider and recommend wild and scenic river protection for the eligible segments of the McCloud River if the CRMP fails. [Footnote 82: https://www.friendsoftheriver.org/wp-content/uploads/2020/10/Shasta_Trinity_National_Forest_Map.png, FOR Exhibit 28.]	
18	105	The DSEIS provides an incomplete analysis of whether the expansion is inconsistent with the LRMP. For example, the enlarged reservoir footprint of DSEIS action alter- natives would be within the described boundary of one inventoried roadless areas -- the Backbone Roadless Area.[83] These areas are protected under the Forest Service's Roadless Area Conservation Rule.[84] The Forest Service should be asked to determine whether the action alternatives would impair the eligibility of the affected portions of roadless areas for inclusion in the National Wilderness System.[85] [Footnote 83: Appendix E of the LRMP describes the Backbone Roadless Area as "immediately adjacent to (and west of) Shasta Lake. (Shasta-Trinity National Forest LRMP Appendix C, Roadless Area Descriptions and Evaluations, 1994, p. 8). This Roadless Area is immediately west of and adjacent to the Sacramento Arm of Shasta Reservoir and the part of it immediately adjacent to the reservoir is on Forest Service land within the reservation boundary and would be inundated by the expanded reservoir. On the basis of clear map references, the West Girard Roadless Area comes quite close to touching the McCloud Arm of Shasta Reservoir. A detailed map analysis of the proposed gross pool would be required to establish whether the expanded reservoir would inundate part of the roadless area. It is unclear from the description and the maps whether the Devil's Rock Roadless Area touches the Pit Arm of S hasta Reservoir. A detailed new gross-pool map depiction and comparison with a detailed map of the roadless	The United States Forest Service is a cooperating agency on this project and Reclamation is committed to continue working with our Federal partners in accordance with all applicable law.

Letter Number	Comment Number	Comment	Response
		area would be needed to determine if the new gross pool would inundate part of the Devil's Rock Roadless Area.] [Footnote 84: While the Roadless Rule focuses on road building policy, "...The intent of this final rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management."(summary, 36 CFR Part 294 Special Areas; Roadless Area Conservation; Final Rule).] [Footnote 85: Stewardship of roadless area lands is not just a Forest Service or BLM responsibility or opportunity. FERC recently denied a preliminary permit application for a project in a designated wilderness area (167 FERC ¶ 62,162) even when a preliminary permit is not a license to construct. "A permit is issued to allow the permit holder to conduct investigations and studies to determine the feasibility of the proposed project and to prepare a license application, and it does not grant land-disturbing or other property rights." The Commission, however, noted "Although the Commission has stated that section 4 of the Wilderness Act does not prohibit issuance of a preliminary permit for a proposed project, the Commission has also denied preliminary permit applications 'where licensing of the project to be studied is clearly statutorily precluded, because no purpose would be served by issuing a permit for a proposed development that could not be licensed.' " Similarly, while Reclamation is not statutorily prohibited from conducting investigations into prohibited projects, it's time to adopt a non-action alternative for the SLWRI because the SDREP is statutorily precluded on at least CAWSRA grounds.]	
18	106	The expanded bathtub rings associated with the action alternatives would affect all the arms of Shasta Reservoir. As described in p. 5-30 of the DSEIS for the proposed McCloud Arm of Shasta Reservoir, this would impair the Forest Service tentative wild & scenic river "scenic classification" and eliminate the qualities that contributed to qualities that contributed to its proposed classification.[86] The DSEIS does not disclose and discuss any conflict with the LRMP with the	Please refer to FEIS Master Comment Response WASR-3, "The Shasta-Trinity National Forest LRMP and Protection of the Eligibility of the McCloud River as a Wild and Scenic River."

Letter Number	Comment Number	Comment	Response
		expanded bathtub rings of the action alternatives, but the DSEIS clearly finds an adverse effect on scenic quality, as noted in the DSEIS and the SLWRI FEIS chapter 25, and the DSEIS narrative discussion and conclusion should have come in the conflict with the Shasta-Trinity National Forest plans. The expanded bathtub ring would be located all along the reservoir and not confined to the McCloud Arm. The SLWRI LRMP Record of Decision makes the following commitments: The Shasta and Trinity Units of the National Recreation Area (NRA) will continue to be managed to retain scenic values (LRMP ROD p. 9) Also, in describing the LRMP preferred alternative, the ROD leads with the following bullet: This alternative also emphasizes • visual quality because only a small portion of the land base is within allocations that permit development or disturbance (LRMP ROD p. 12) (emphasis added) The Management Area Direction for the NRA Shasta Unit states the following: The Shasta Unit of this MA is managed as a showcase recreation area. It provides high quality recreation opportunities at a variety of lake levels. Associated scenic, scientific, and historical values are conserved and interpreted through an actively managed interpretive program. (LRMP 4-111) (emphasis added) And again in the 2014 NRA Guide: Management direction for the Whiskeytown-Shasta-Trinity National Recreation Area (NRA) will be based on and responsive to the following (as written in Title 36, CFR, sec. 251.40[a]): 1. provide public outdoor recreation opportunities; 2.	

Letter Number	Comment Number	Comment	Response
		conserve scenic, scientific, historic, and other values that contribute to public enjoyment; and 3. manage, use, and dispose of renewable natural resources which will promote, but do not significantly impair, public recreation or conservation of scenic, scientific, historic, or other values contributing to public enjoyment. (LRMP p. 4-24) (emphasis added) And again in 2014: Management Guide, Shasta and Trinity Units, Whiskeytown-Shasta- Trinity National Recreation Area, Shasta-Trinity National Forest, 2014 NRA Purpose The primary purposes of the National Recreation Area are (1) public outdoor recreation benefits and (2) the conservation of scenic, scientific, historic, and other values which contribute to public enjoyment of the recreation resources. Natural resources will be managed, utilized and disposed of to the extent that the Forest Service determines such uses are compatible with and do not significantly impair recreation and scenic, scientific, historic, or other values contributing to public enjoyment. (NRA Legislation Section 4) (NRA Management Guide p. 1-2) (emphasis added) NRA Goals (in legislation) The goals of the NRA, as expressed in the Law, were "...to provide, in a manner coordinated with the other purposes of the Central Valley Project, for the public outdoor recreation use and enjoyment of the Whiskeytown, Shasta, Clair Engle [Trinity], and Lewiston reservoirs and surrounding lands...by present and future generations and the conservation of scenic, scientific, historic, and other values contributing to public enjoyment of such lands and waters." (p. 1-10) (emphasis added) Given the SLWRI FEIS and DSEIS discussion and conclusion about the adverse	

Letter Number	Comment Number	Comment	Response
		effects of the action alternatives on the LRMP tentative "scenic classification" of the affected reach of the McCloud River, the DSEIS should identify loss of visual quality associated with reservoir bathtub rings as a conflict with the LRMP and NRA Guide. [Footnote 86: "Visual Quality/Scenery The visual quality of the affected portion of Segment 4 would decrease as the vegetation along the banks becomes inundated and eventually dies, the bathtub ring expands, and evidence of flow is reduced. These conditions would be similar to those in the current transition reach. The affected portion of Segment 4 would no longer have the qualities that contributed to its classification by the US FS as 'scenic.' " (DSEIS p. 5-30)]	
18	107	The DSEIS does not provide information on the LRMP conflicts with Reservoir expansion and the Shasta Snow Wreath. These comments do so briefly here. Let's start with LRMP: Rare Plants -- Analysis of the Management Situation Management and protection of sensitive plans is accomplished through identification and inventory of suitable habitat, surveys of project areas for potentially affected populations, protection of habitat, and population monitoring. (LRMP p. 3-7, repeated in the LRMP ROD p. 3-4) The new shrub species, Shasta snow-wreath, has been found in this management area. This species, first discovered in 1992, has been proposed for addition to the Regional Forester's Sensitive Species list. (LRMP p. 4-111) Management Area Direction 8 -- National Recreation Area -- Shasta Unit Threatened, endangered, and sensitive species management focuses on	A comprehensive discussion of the impacts to the Shasta snow-wreath can be found in Chapter 12, *Botanical Resources and Wetlands*, in the FEIS as well as the *Botanical Resources and Wetlands Technical Report*. For impacts associated with the proposed Shasta dam raise, various mitigation measures, including developing a Shasta Snow-wreath Conservation Agreement to include all responsible State and Federal resource management agencies and appropriate private landowners, were identified and can be found in Section 12.3.5 of Chapter 12. The status of the Shasta snow-wreath remains the same as was analyzed in the FEIS and analysis

Letter Number	Comment Number	Comment	Response
		protecting, enhancing, and restoring their habitat. Species Management Guides have been developed and are being implemented for plant species of interest. (LRMP p. 4-112) 11 -- Pit Management Area (LRMP p. 4-125) Threatened, endangered, and sensitive species management focuses on protecting, enhancing, and restoring their habitat. LRMP Chapter 4: General Management Direction for all STNF (including NRA) lands Threatened, Endangered, and Sensitive Species (Plants and Animals) (LRMP p. 4-5) 32. Monitor and protect habitat for Federally listed threatened and endangered (T&E) and candidate species. Assist in recovery efforts for T&E species. Cooperate with the State to meet objectives for State-listed species. 33. Manage habitat for sensitive plants and animals in a manner that will prevent any species from becoming a candidate for T&E status. 4. Botany (LRMP p. 4-14--15) Sensitive and Endemic Plants a. Map, record, and protect essential habitat for known and newly discovered sensitive and endemic plant species until conservation strategies are developed. b. Analyze the potential effects of all ground-disturbing projects on sensitive and endemic plants and their habitat. Mitigate project effects to avoid a decline in species viability at the Forest level.	contained therein complies with NEPA guidance. Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SDEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. Reclamation has fully complied with applicable law, and will continue to do so throughout the development on this project.

Letter Number	Comment Number	Comment	Response
		c. Monitor the effects of management activities on sensitive and endemic plants. If monitoring results show a decline in species viability, alter management strategy. d. Provide reports of sensitive plant populations to the California Natural Diversity Data Base (Department of Fish and Game [DFG]) annually. e. Coordinate sensitive plant inventory and protection efforts with the DFG, the U.S. Fish and Wildlife Service, the Nature Conservancy, the California Native Plant Society, and other concerned agencies, organizations, and adjacent landowners. f. Develop at least one conservation strategy per year. g. Review the Forests' sensitive species list periodically. Recommend appropriate changes to the Regional Forester. h. Protect type localities of sensitive and endemic plants for their scientific value. Sensitive Plants (LRMP 4-44) 13. Conduct inventories of known populations, habitat analysis, and field reconnaissance for potential populations in project influence zones. 14. Known sensitive plants, and those identified in the future, will be afforded the protection necessary to maintain or increase populations. Suitable habitat will be maintained or increased at a level that will assure the successful survival of the species throughout their range. 15. Modify projects so that sensitive plants will not be jeopardized; document such action. If actions that may have an adverse effect on sensitive species cannot be avoided, the activity will be deferred until such time as the effect of the proposed action can be assessed. Subsequent action will follow the recommendation resulting from such study, (i.e., protection, mitigation or action as planned). 16. Information pertaining to numbers, distribution, population dynamics, and	

Letter Number	Comment Number	Comment	Response
		response to the management of Forest sensitive plant species will be recorded and communicated to the Regional Office annually. Forest personnel will make recommendations to the Region for status revision or retention. 18. Attempt to acquire identified critical habitat through land exchange. Subsequent to the LRMP, the Shasta snow-wreath became a Forest Service sensitive plant.[87] It is endemic to lands around Shasta Reservoir. The DSEIS does not mention the September 30, 2019, petition to list the species as endangered or the California Fish and Game Commissions April 21, 2020, notice that the Shasta snow-wreath is a candidate species under the California Endangered Species Act (CESA). The DSEIS only mentions the Shasta snow-wreath in passing in the geology section of Chapter 5, which covers the wild & scenic river eligibility of the McCloud River. The SDREP was identified by the California Fish and Game Commission and the California Department of Fish and Wildlife (CDFW) as the primary threat to the Shasta snow-wreath and its habitat. [Footnote 87: https://www.friendsoftheriver.org/wp-content/uploads/2020/09/Copy-of-Regional-Foresters-Sensitive-Plant-Lichen-Fungi-species-list-2013-California.xlsx, included here by reference.]	
18	108	On Sep 30, 2019, CDFW received a petition to list the Shasta snow-wreath as endangered under CESA. After reviewing the petition, CDFW staff summarized the threats to the species in a staff summary on February 21, 2020. Based on the staff summary and its administrative record, the California Fish and Game Commission found on April 21, 2020, that the information provided would lead a reasonable person to conclude there is a substantial possibility that the requested listing could occur. In addition, also on April 21, 2020, the California Fish and Game Commission provided notice that the Shasta snow-wreath is a	Please refer to response to comment 18-107.

Letter Number	Comment Number	Comment	Response
		candidate species under CESA. The DSEIS, according to NEPA regulations discussed earlier, should have disclosed and discussed this new circumstance.	
18	109	According to the CESA listing record, the Shasta snow-wreath is endangered with significant destruction, modification, and curtailment of its habitat and range. Inundation resulting from the Project, with the additive impacts from changed hydrology and construction, would destroy or significantly impact a total of 19 of 24 known occurrences, or 79 percent of extant locations (CDFW 2020). CESA candidate species enjoy the same protection as listed species unless their candidate status is terminated. As noted previously in our comments, the LRMP calls for the Forest to cooperate with the state to protect state-listed species and with DFG (now the California Department of Fish & Wildlife - CDFW) on sensitive plant protection efforts.	Please refer to response to comment 18-107.
18	110	The USFWS received the petition to list the Shasta snow-wreath and to designate Critical Habitat for the Shasta snow-wreath on October 3, 2019. To date, the USFWS has not responded to the petition with a 90-day finding, pursuant to Section 4(b)(3)(A) of the ESA and its implementing regulations, to determine whether or not the petition contains sufficient information to move forward with the listing process. Although not currently responsive to the petition, Reclamation and the USFWS will need to give full consideration to the California Fish and Game Commission findings and notice of the CESA status of the Shasta snow-wreath, pursuant to ESA Section 4(b)(1)(B)(ii). (16 U.S.C. § 1533(b)(1)(B)(ii)) The DSEIS should disclose and discuss the USFWS petition and the CDFW status of the listed, candidate, and sensitive species in the DSEIS. In some cases, as discussed here, these are "significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts." (DSEIS p. 1-2)	Please refer to response to comment 18-107.
18	111	The DSEIS is conspicuously silent on the existence of the November 2015 Final Fish and Wildlife Coordination Act Report for the Project (2015 FWCAR, USFWS	

Letter Number	Comment Number	Comment	Response
		2015). There is significant discussion of the threats of the Project to the Shasta snow-wreath. The 2015 FWCAR found that 46 percent of all known occurrences of the plant species would be adversely affected by the Project; however, the current scientific understanding of the Project is that it is expected to impact 79 percent of the known locations (CDFW 2020).	Please refer to response to comment 18-107, and response to comment 18-4.
18	112	In the SLWRI FEIS, Reclamation concluded that the fragmented Shasta snow-wreath populations around Shasta Lake are more vulnerable to extirpation (SLWRI FEIS, p. 12-219), and at multiple locations in the FEIS noted that the mitigation calling for relocation, transplanting, and artificial propagation of Shasta snow-wreath are unproven, with Reclamation concluding that the impacts would remain significant and unavoidable. The DSEIS should clearly state the updated CESA status of the species, the USFWS delay on the ESA petition to list the species and its Critical Habitat, and specifically report the impact to the species in the listing process in the spring of 2020 by CDFW and the California Fish and Game Commission.	Please refer to response to comment 18-107.
18	113	The LRMP sensitive plant management commitments are in some degree of conflict with the action alternatives. The supplemental environmental impact statement should discuss this and add this as a conflict and a potential conflict with the LRMP.	Please refer to response to comment 18-107.
18	114	Another new circumstance requiring additional environmental analysis is the recent determination by biologists based on genetic testing to split the Shasta salamander (Hydromantes shastae) into three distinct species, the Shasta salamander, Samwell salamander (Hydromantes samweli), and Wintu salamander (Hydromantes wintu). Before the split into three separate species, the Shasta salamander had the smallest known range of any Pacific Northwest amphibian. Many populations are located adjacent to the existing reservoir. The range of these three species is now even more limited and threatened by the reservoir expansion proposed in SLWRI. The Forest Service will likely update its sensitive species list to include all three species. The SLWRI DSEIS fails to recognize this changed circumstance. Comments to the DSEIS by the Center for Biological	Please refer to response to comment 18-107.

Letter Number	Comment Number	Comment	Response
		Diversity et al., adopted here, provide more detail on the Shasta, Samwell, and Wintu salamander.	
18	115	The DSEIS 12.5-ft. raise impacts on the wild trout fishery is incomplete and conflicts with its own analysis and of expert agencies -- The DSEIS contains an edited-down version of the SLWRI FEIS "Effects to McCloud River Wild Trout Fishery, as Identified in the California Public Resources Codes, Section 5093.542" under a 12.5-foot dam raise alternative. (DSEIS p. 5-34) Comparing the DSEIS with the SLWRI FEIS chapter 25 section, the reviewer needs to look at the described SLWRI FEIS PRC impact for the 6.5 foot dam raise, where the discussion was more complete (the higher dam-raise alternative discussions tended to say "the same as 6.5 feet, only more so"). The DSEIS draws no conclusion. The SLWRI FEIS did not make this mistake. Here are two of the conclusions of the corresponding SLWRI FEIS subsection: Implementation of proposed modifications to Shasta Dam and Shasta Lake could affect the wild trout fishery (access and ecology) of the lower McCloud River identified in the State PRC. This impact would be potentially significant. ... While the overall impacts to the fishery (populations and habitat) are small in the context of the entire lower McCloud River. This impact would be potentially significant. (p. 25-31) The DSEIS does not contain any explanation on why it should drop these conclusions from the original SLWRI FEIS.	Please refer to response to comment 18-17.
18	116	The DSEIS does not include the conclusions of the post SLWRI FEIS California Department of Fish and Wildlife expert comments concerning the significant impact of the SDRP on the McCloud River fishery: Inundation of the McCloud River would result in a significant loss of this river	Reclamation has updated the analysis of impacts on the McCloud River to focus on federal law, and has fully complied with NEPA. Reclamation will continue to comply with all applicable law. Please

Letter Number	Comment Number	Comment	Response
		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. (Letter to Jose Gutierrez, WWD, 2020 p. 8) Supra As discussed in our comments earlier, one of the two PRC statutory thresholds prohibiting Agencies of the State from assisting and cooperating with Reclamation is whether a project "could" have an adverse effect on the wild trout fishery. The Department's conclusion is that there "would" be "direct and indirect adverse impacts to the current trout fishery in conflict with State law..." The absence of the corresponding SLWRI FEIS conclusions and the Department of Fish & Wildlife's conclusions renders the title of this DSEIS subsection, "Impact WASR-3 (CP2): Effects to McCloud River Wild Trout Fishery, as Identified in the California Public Resources Code, Section 5093.542," inaccurate.	refer to Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River."
18	117	The DSEIS discusses the SLWRI FEIS's and DSEIS's well-supported conclusions that the action alternatives result in a reduction of eligible the river reaches. In that discussion, however, there is an irrelevant and, in part, erroneous sentence: The property along the 3,550 feet river corridor is owned by Westlands Water District[88] and no public access is available. (DSEIS p. 5-35) Wild & Scenic River eligibility irrelevancy -- The property immediately around the potentially affected SDREP portion of the McCloud River is largely owned by the Westlands Water District, although there are nearby Shasta-Trinity Nation Forest lands and the property is within the boundaries of the reservation.[89] However, public access is not an eligibility determination criteria.[90] Free-flowing and ORVs certainly are. The Forest Service identified ORVs in the Lower McCloud are cultural/historic, fisheries, and geology. [Footnote 88: There is some controversy over Westlands ownership of the	Reclamation appreciates the commenter's concern that the quoted language is represented as an eligibility determination. The quoted language is not the basis for Reclamation's conclusion in Impact WASR-1 regarding the potential impacts to Wild and Scenic River eligibility.

Letter Number	Comment Number	Comment	Response
		Bollibakka Fly Fishing Club. In the Complaint for Declaratory and Injunctive Relief and Verified Petition for Writ of Mandate filed by Earthjustice, of behalf of Friends of the River; Golden Gate S almon Association; Pacific Coast Federation of Fishermen's Associations; Institute for Fisheries Resources; Sierra Club; Defenders of Wildlife; and Natural Resources Defense Council, against the Westlands Water District, an Agency of the State, in the Shasta County Superior Court, May 13, 2019, the following was noted: In fact, Westlands has been assisting and cooperating with planning and construction of the proposed dam raise for over a decade. According to Westlands' financial statements, in 2007, Westlands purchased approximately 3,000 acres of property along the McCloud River "to facilitate the raising of Shasta Dam by the U.S. Department of the Interior." This property is known as the Bollibokka Fishing Club. Westlands acquired it for over $30,000,000, a sum greater than the original asking price. §5093.542(c) forbids Agencies of the State such as Westlands from assisting and cooperating with planning and construction with Reclamation on projects that could have an adverse effect on the fishery or free-flowing status of the McCloud River.] [Footnote 89: Shasta Trinity NF boundary map, https://www.friendsoftheriver.org/wp-content/uploads/2020/10/Shasta_Trinity_National_Forest_Map.png. FOR Exhibit 28.] [Footnote 90: Public access may have a bearing on the "recreational O RV," but that matter is, in part, irrelevant here since the Forest Service did not find this area to possess a recreational ORV.]	

Letter Number	Comment Number	Comment	Response
18	118	The DSEIS statement that there is "no public access" available is incorrect. The navigation easement for small watercraft is well established in California. The use of such watercraft creates one form of public access to the river. Public access (including for anglers) is also a legal right within the bed and banks of the McCloud River, which is navigable by small watercraft. It is true that public access, across private property outside the bed and banks of the river, is more restricted in the absence of easements and other access mechanisms within state law. The State Lands Commission discusses these matters in one of its publications: Under California law, the public has a general legal right to access and enjoy California's navigable waterways at any point below the high water mark. While there are several navigability tests under state and federal laws, a waterway is "navigable" for purposes of the California public right of navigation if it is "capable of being navigated by oar or motor propelled small craft. The public's right to access and use California's navigable waters is not, in general, affected by who owns the waterway's bed and banks, be it a government entity or a private party. California's public right of navigation applies to waterways where the underlying land is currently or was formerly state-owned and also to waterways where the underlying land is privately owned and has never been state owned. In fact, private landowners may not interfere with the public use of recreationally navigable waters on their property.[91] Also, access to the Bollibokka Club property is available to members of the Club. Members can bring guests who are not members. The Bollibokka property is described by its managers in this way: The Club surrounds more than 3,000 acres, and slightly more than seven miles of some of the best wild trout fishing in the American West.	Comment noted. Please refer to response to comment 18-117.

Letter Number	Comment Number	Comment	Response
		The seven private miles of the majestic McCloud on Bollibokka tumble through beautiful, rugged mountain terrain and, arguably, some of the finest fly fishing water on the continent. Bollibokka is bordered upstream by more than a dozen miles of other private property. All of it extends to the high ridges on either slope of the McCloud and, collectively, this has been some of the most jealously guarded angling in the nation for more than a hundred years. The McCloud River is famous for its breathtaking beauty and its trout. The river itself is a classic freestone stream, with one set of terraced riffles, and deep rainbow and brown trout-filled pools after another. Bollibokka is surrounded by Shasta-Trinity National Forest but located just 36 miles north and east of Redding on the south slope of Mount Shasta. The McCloud's rainbow trout (salmo shasta) were used to successfully stock New Zealand, Argentina, Chile, and to establish healthy rainbow populations in many of our western states. These beautiful, native rainbows are noted for their strength, aggression, and are the most famous and widely distributed trout in the world. Bollibokka is managed by The Fly Shop® as a club, not a lodge. Bollibokka Club annual memberships are perfect for individuals, groups of friends, corporations, companies, clubs, or organizations. More information on club membership is described below under "Membership and Fees". The pristine waters of the McCloud River and their famed hard fighting, beautiful Rainbow Trout are unspoiled and thriving in this majestic wilderness. Dry fly fishing can be good to amazing from April through November, with late spring, early summer, and fall being traditionally the strongest times of year for hatches. Caddis, Stoneflies, and a myriad of mayflies thrive in the nutrient-rich emerald water. Midsummer days with a hopper dropper or Turk's Tarantula can also be rewarding. Nymphing all season long can be very productive, and the variety of water holds a challenge for all levels of angler. Many nice fish are also	

Letter Number	Comment Number	Comment	Response
		caught each year on streamers. Bollibokka is a wild, fly fishing only, catch and release fishery. The property has an extensive and well maintained trail system along the entire river, with side trails providing easy access to many of the best pools and riffles. Fishing on the Bollibokka Club is a combination of hiking and fishing the terraced pocket water and casting into broad, deep pools, often sight-casting to individual feeding trout. Guides are available upon request through The Fly Shop® Guide Service and have extensive knowledge and experience at Bollibokka.[92] That is nice writing.[93] [Footnote 91: A Legal Guide to the Public's Rights to Access and Use California's Navigable Waters, State Lands Commission, November 20, 2017, pp. 29-30. https://www.slc.ca.gov/wp-content/uploads/2018/11/2017-PublicAccessGuide.pdf, FOR Exhibit 29.] [Footnote 92: https://www.theflyshop.com/adventures/bollibokka.html (accessed September 21, 2020), FOR Exhibit 30.] [Footnote 93: The Westlands Water District appears to have argued in its reply brief against the California Attorney General's motion for a preliminary injunction against their Shasta Dam Raise Project EIR (and may offer comments on the DSEIS) that public access is required for a "fishery." A "fishery" connotes catching fish, and generally a particular location for doing so. (Webster's 3d New Internat. Dict. (2002) p. 858; see also Fish & G. Code § 7650(c); 16 U.S.C. § 1802(13).) There is no public access for fishing along the banks of the portion of the lower McCloud River that would be newly inundated. Westlands owns that property. (Memorandum of Points and Authorities in	

Letter Number	Comment Number	Comment	Response
		Opposition to Motion for Preliminary Injunction, in the case of People of the State of California ex Rel. Attorney General Xavier Becerra, Plaintiff and Petitioner, v. Westlands Water District and Does 1-20, Defendants and Respondents. pp. 14-15.) Setting aside the issue of whether anglers are required for a fishery, there is public access within the bed and banks of the lower McCloud. There is also Bollibakka Club member and guest access outside of the bed and banks to the river to what Club managers describe as "some of the best wild trout fishing in the American West." See also PG&E's comments on the Lower McCloud fishery from their final license application quoted earlier in these comments. The Forest Service and the Jones and Stokes Report report outstandingly remarkable and extraordinary resources fishery values for this reach of river. PRC §5093.542 leads with, "[t]he Legislature finds and declares that the McCloud River possesses extraordinary resources in that it supports one of the finest wild trout fisheries in the state." (emphasis added) Under these circumstances, the supplemental environmental impact statement should neither accept the argument that there is not an outstanding fishery along the Lower McCloud nor that there are no anglers who fish it.]	
18	119	Attachment 1: November 2015, United States Department of the Interior Fish and Wildlife Service, Fish and Wildlife Coordination Act Report For the Shasta Lake Water Resources Investigation Prepared for U.S. Bureau of Reclamation, Sacramento, California Prepared by: U.S. Fish and Wildlife Service, San Francisco Bay-Delta Fish and Wildlife Office, Sacramento, California	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	120	Attachment 2: January 2018, "Report to the House and Senate Committees on Appropriations, Distribution of Fiscal Year 2017 Funding for Water Conservation and Delivery -	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are

Letter Number	Comment Number	Comment	Response
		Pub. L. 114-322 (Section 4007), Water and Related Resources, Bureau of Reclamation, and Discussion of Criteria and Recommendations"	provided in these responses to comments.
18	121	Attachment 3: February 11, 2019, Reclamation Powerpoint: "Shasta Dam and Reservoir Enlargement Project (SDREP)", Reclamation Leadership Seismic Discussion	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	122	Attachment 4: March 14, 2019, Reclamation PowerPoint: "Shasta Dam Baseline Issue Evaluation & SDREP", Mid-Pacific Region/Dam Safety/Technical Service Center	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	123	Attachment 5: Hydraulic Laboratory Report HL-2019-06, "Alternatives for Preventing Cavitation Damage on the Shasta Dam Spillway" Shasta Dam and Reservoir Enlargement Project Central Valley Project, California, Mid-Pacific Region	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	124	Attachment 6: August 2019, Reclamation Report, "Shasta Dam and Reservoir Enlargement Project (SDREP) - Dam Raise Final Design Status Report", Central Valley Project – Shasta/Trinity, Mid-Pacific Region	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	125	Attachment 7:	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are

Letter Number	Comment Number	Comment	Response
		July 2018, Reclamation Technical Memorandum No. SV-86-68130-2018-1, "Shasta Dam Raise Consequence Study", Shasta-Central Valley Project, Mid Pacific Region	provided in these responses to comments.
18	126	Attachment 8: October 2018, Reclamaton Technical Memorandum 86-68210-2019-01, "Shasta Dam Hydrologic Hazard Analysis for Final Design - Volume I", Central Valley Project, California, Mid-Pacific Region	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	127	Attachment 9: December 20, 2018, Reclamation Memo, "Population at Risk (PAR) Estimation for Shasta Dam Raise Final Design Risk Analysis, Shasta Dam, Central Valley Project - Shasta/Trinity, Mid-Pacific Region." To: Manager Waterways and Concrete Dams Group 2, Attn: Adam Toothman (86-68130) From: Bill Goettlicher, Physical Scientist, Geographic Applications & Analysis Group (86-68260), Technical Service Center - Denver, CO	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	128	Attachment 10: December 2018, Reclamation Memo, "Shasta Dam, Central Valley Project, Dam Raise Failure Inundation Study, TM-ENV-2019-11" To: Manager, Waterways and Concrete Dams Group 2, Attn: Adam Toothman (86-68130) From: José A. Feliciano Cestero, Hydraulic Engineer, Geographic Applications & Analysis Group (86-68260), Technical Service Center	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	129	Attachment 11: 10/3/2020 Reclamation Website: Shasta Lake Water Resources Investigation Draft Supplemental Environmental Impact Statement Virtual Open House www.virtualpublicengagement.com/usbr_shasta/welcome.html	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.

Letter Number	Comment Number	Comment	Response
18	130	Attachment 12: May 2017, Information Memorandum For The Regional Director, "Status of Fish and Wildlife Coordination Act Report (FWCAR) for Shasta Lake Water Resources Investigation (SLWRI)" From: Kaylee Allen, Field Supervisor, San Francisco Bay-Delta Fish and Wildlife Office, (916) 930-5603	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	131	Attachment 13: March 6, 2019, email "Briefing Meeting on the Shasta Dam Raise Project by the Westlands Water District" From Don Pope, Special Projects Manager, Wetlands Water District	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	132	Attachment 14: September 25, 2019, News article from Record Searchline - "State Supreme Court weighs in on Shasta Dam case" by Damon Arthur	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	133	Attachment 15: November 30, 2018, Westlands Water District Press Release, "Public Scoping Meeting to Be Held for Shasta Dam Raise Project"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	134	Attachment 16: July 31, 2019, Office of Attorney General Press release, "Attorney General Becerra Secures Ruling in Shasta County Halting Westlands Water District Involvement in Illegal Shasta Dam Project"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.

Letter Number	Comment Number	Comment	Response
18	135	Attachment 17: April 25, 2019, Water Education Foundation news article, "California's New Natural Resources Secretary Takes on Challenge of Implementing Gov. Newsom's Ambitious Water Agenda: Western Water Q&A: Wade Crowfoot Addresses Delta Tunnel Shift, Salton Sea Plan and Managing Water Amid a Legacy of Conflict" by Gary Pitzer	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	136	Attachment 18: January 17, 2019, Letter from Reclamation to Advisory Council on Historic Preservation, "National Historic Preservation Act (NHPA) Section 106 Consultation for the Shasta Dam and Reservoir Enlargement Project (SDREP) Paleoflood Studies, Archaeological Monitoring Plan and Methodology, Shasta County, California (I 8-NCAO-086.002)"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	137	Attachment 19: November 7, 2019, email from Caltrans to Reclamation declining to participate in Reclamation's NHPA Section 106 revised Programmatic Agreement.	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	138	Attachment 20: January 14, 2019, letter from CA State Lands Commission to Shasta Dam Raise Project, "Notice of Preparation (NOP) for a Draft Environmental Impact Report (EIR) for the Shasta Dam Raise Project, Shasta County"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	139	Attachment 21: Summary of Stakeholder Advisory Committee Member Comment Letters on Definitions of Public Benefits and Eligible Project Types	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.

Letter Number	Comment Number	Comment	Response
18	140	Attachment 22: January 1999 Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council, "Implementing the Wild & Scenic Rivers Act: Authorities and Roles of Key Federal Agencies"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	141	Attachment 23: October 2004 Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council, "Wild & Scenic Rivers Act: Section 7"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	142	Attachment 24: Interagency Wild and Scenic Rivers Coordinating Council Members	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	143	Attachment 25: A Compendium of Questions & Answers Relating to Wild & Scenic Rivers, A Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council Compiled By: Gary Marsh, Bureau of Land Management (Retired), Washington, DC Contact: Dan Haas, U.S. Fish & Wildlife Service, Burbank, Washington May 1997, Revised: June 2006, May 2011, May 2014, January 2017, August 2018	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	144	Attachment 26: March 23, 1999, Letter from Reclamation to Friends of the River, "Determination of Wild and Scenic Eligibility of Segments of the American River (General Investigation Program)"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are

Letter Number	Comment Number	Comment	Response
			provided in these responses to comments.
18	145	Attachment 27: March 1, 2010, Letter from USDA General Counsel to FERC, "Revised Preliminary Section 4(e) Condition, McCloud-Pit Hydroelectric Project, FERC No. 2106, Pacific Gas and Electric Company"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	146	Attachment 28: Shasta Trinity National Forest map.	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	147	Attachment 29: 11/20/2017 CA State Lands report, "A Legal Guide to the Public's Rights To Access and Use California's Navigable Waters"	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
18	148	Attachment 30: 10/4/20, Description of the Bollibokka Fly Fishing Club https://www.theflyshop.com/adventures/bollibokka.html	This attachment was submitted in support of the comments provided and has been reviewed and considered. The responses related to this attachment are provided in these responses to comments.
19	1	CALIFORNIA STATE LAW APPLIES TO THE PROJECT AND STATE LAW PROHIBITS THE DAM RAISE Section 3406(b) of the Central Valley Project Improvement Act, a federal statute, states, in part: "The Secretary, immediately upon the enactment of this title, shall operate the Central Valley Project to meet all obligations under	Please refer to the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River for information regarding

Letter Number	Comment Number	Comment	Response
		state and federal law, including but not limited to the federal Endangered Species Act, 16 U.S.C. s 1531 et. Seq., and all decisions of the California State Water Resources Control Board establishing conditions on applicable licenses and permits for the project." Therefore, California law applies to the project. California law will not allow the dam raise, as set forth in Public Resources Code, Section 5093.542(b) which prohibits the expansion of a reservoir that would inundate free-flowing sections of the McCloud River, or even the McCloud arm of the Shasta River above the McCloud River Bridge. Section 5093.542 of the Public Resources Code repeatedly states that the free-flowing condition of the McCloud River must be preserved. The Draft Supplemental Environmental Impact Statement states that portions of the McCloud River would be "periodically inundated if Shasta Lake is expanded." Chapter 5, p. 5-5. Therefore the raising of the dam is prohibited, as this would interfere with the free-flowing condition of the McCloud River. The California Department of Fish and Wildlife has noted that the project would change part of the McCloud River into reservoir habitat, destroying the free-flowing condition of the river. The expanded reservoir would flood segments of the McCloud and upper Sacramento Rivers which have been identified by the Forest Service as eligible for protection in the National Wild and Scenic Rivers System.	conflicts with California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the McCloud River Wild and Scenic eligibility.
19	2	SINCE THE LOSS OF TRIBAL LANDS AND SITES WOULD BE IRREVERSIBLE THE RAISING OF THE DAM IS PROHIBITED The Draft Supplemental Environmental Impact Statement states that : "…prehistoric, historic and modern Traditional Cultural Properties, sacred locations, and important use areas are located throughout the lower McCloud River basin…" Chapter 5, p. 5-21. There is no method that could possibly protect these sites. Since the raising of Shasta Dam will have significant and unavoidable impacts on these priceless irreplaceable areas, it cannot be allowed.	Please refer to the FEIS, Master Comment Response CR-1, Potential Cultural Effects regarding the analysis of potential impacts to cultural resources and a discussion on section 106 consultation. Please also refer to the FEIS Master Comment Response CR-15, National Historic Preservation Act Section 106 Consultation for additional information regarding Section 106.

Letter Number	Comment Number	Comment	Response
			Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the FEIS that have not changed are beyond the scope of the SEIS. Please refer to the FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional discussion regarding the adequacy of the EIS.
19	3	THE SMALL INCREASE IN WATER SUPPLY DOES NOT JUSTIFY THE EXPENSE AND ENVIRONMENTAL DESTRUCTION OF THE PROJECT The average increased deliveries under the Bureau of Reclamation's preferred project are less than one	Please refer to the FIES, Master Comment Response P&N-1, Purpose and Need for responses to common

Letter Number	Comment Number	Comment	Response
		percent of the Central Valley Project's annual deliveries or a little more than one tenth of one percent of the state's annual water budget. Shasta Lake Water Resources Investigation Feasibility Report, pp. 1-9,1-20. In view of the enormous cost of the project and cultural and environmental destruction , water conservation would be an intelligent alternative. It is instructive that in 2015 during a three-month period, California's urban water users saved more than eight times the dam raise project's average annual water yield. (See State Water Resources Control Board data regarding water conservation).	comments regarding the purpose and need for the project. Please refer to the FEIS Master Comment Response LTR-1, Range of Alternatives – General, regarding the range of alternatives evaluated.
19	4	THE PROJECT SHOULD BE REJECTED BECAUSE IT WILL HAVE SIGNIFICANT AND UNAVOIDABLE NEGATIVE IMPACTS ON THREATENED AND ENDANGERED SALMON AND STEELHEAD The Bureau of Reclamation claims that the raising of the dam would benefit anadromous fish by lowering water temperatures in the Sacramento River. This contradicts scientific studies and reports. The U.S. Fish and Wildlife Service has stated that any claimed benefit would not be substantial downstream of the Red Bluff pumping plant. In any event, any minimal benefit would be outweighed by harm to fish caused by restriction of high water flows, which would result in loss of salmonid rearing habitat and riparian areas needed by the fish. (according to the U.S. Fish and Wildlife Service).	The FEIS identifies potential impacts and mitigation for fish and wildlife resources. Please see the FEIS Master Comment Response NEPA-1, Sufficiency of EIS.
19	5	THE PROJECT SHOULD BE REJECTED BECAUSE IT WILL HAVE SIGNIFICANT AND UNAVOIDABLE NEGATIVE IMPACTS ON SENSITIVE WILDLIFE SPECIES The flooding caused by the project will cause permanent loss of habitat for numerous sensitive wildlife species, including Pacific fisher, northern spotted owl, northern goshawk, Cooper's hawk, purple martin, foothill yellow-legged frog, three Shasta salamander species and several special status bat and mollusk species. The project will also result in the inundation of several rare plant populations and their habitat (including fully or partially flooding 11 of the 24 known sites where the Shasta snow-wreath, a rare flowering shrub living nowhere else on Earth is found).	The FEIS addresses potential impacts to sensitive species. Please refer to response to comment 19-2.The aquatics and wildlife resources chapters not addressed in the SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document.
19	6	THE PROJECT SHOULD BE REJECTED BECAUSE IT WILL HAVE SIGNIFICANT AND UNAVOIDABLE NEGATIVE IMPACTS ON THE Sacramento River NATIONAL	Please see response to comment 19-5.

Letter Number	Comment Number	Comment	Response
		WILDLIFE REFUGE The raising of the dam and consequent reservoir enlargement will modify flows through the Sacramento River National Wildlife Refuge, with possible significant impacts on the river's riparian ecosystem and protected wildlife species that rely on the ecosystem (including the threatened yellow-billed cuckoo and bank swallow).	
19	7	CONCLUSION The raising of Shasta Dam should be prohibited for the reasons mentioned above. The Bureau of Reclamation should prepare a supplemental EIS that concedes that the project is in conflict with state law, that state permits and approvals will never be issued for the dam raise and that the project is in conflict with federal water law which requires the federal government to comply with state law.	Please see responses to comments 19-1 through 19-6 which address the comments summarized here.
51	1	It is with the strongest conviction that we condemn the U.S. Bureau of Reclamation's proposed Shasta Dam raise project. This project clearly violates California State, Federal and International law. We do not exaggerate when we say that it will continue the long-standing policy of cultural genocide against the Winnemem Wintu Tribe. For centuries, they have been the Indigenous caretakers of the McCloud River (Winnemem Waywacket.) There are at least 39 sacred sites of the Winnemem Wintu Tribe that would be damaged or covered by this project's storage water. These may be some of the last sites available to the Tribe. You will note that many of their sites, villages and graves are already under the waters of Shasta Lake. The remaining sites must be safeguarded so the Winnemem Wintu people can continue to practice their cultural traditions which depend upon ceremonial places and essential places where the young people learn about their people, teachings and heritage. To lose this is nothing less than cultural genocide	Reclamation acknowledges the commenters opposition to the project. Please refer to the SLWRI FEIS, Master Comment Response CR-1, "Potential Cultural Effects" regarding the analysis of potential impacts to cultural resources and a discussion on section 106 consultation. Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The SEIS focuses on updated operational

Letter Number	Comment Number	Comment	Response
			requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the SLWRI FEIS, including Chapter 14, Cultural Resources, was not addressed in the SLWRI SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the SLWRI FEIS that have not changed are beyond the scope of the SLWRI SEIS. Please refer to the SLWRI FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional discussion regarding the adequacy of the EIS.
51	2	Once again, we must remind you that your own agency acknowledges that the proposed dam raise would violate the California Wild and Scenic Rivers Act. This act does not allow you to raise the dam because it would cause flooding. Even the Shasta Superior Court ruled that Westland's Water District could not participate either as a funder or a lead agency. It breaks CEQA law. The Wild and Scenic Rivers Act requires federal agencies to take actions to protect the McCloud River. And the WIIN Act, requires the project to adhere to all environmental laws including California's Wild and Scenic River Act.	Please refer to the SLWRI Final SEIS Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River" for information regarding conflicts with California laws and policies protecting the McCloud River. Please also refer to the SLWRI FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the

Letter Number	Comment Number	Comment	Response
			McCloud River Wild and Scenic eligibility. Please refer to the SLWRI FEIS, Master Comment Response CEQA-1, "CEQA Compliance" for information regarding Reclamation's anticipated need for CEQA compliance in the future.
51	3	The WIIN Act also requires that 50% of the funding cost be paid for by a partner. Who is that funding partner? Westlands Water District, the primary beneficiary of this proposed project, is disallowed from participating. This means that the Bureau cannot continue moving forward with this project or the supplemental EIS.	Please refer the SLWRI Final SEIS Master Comment Response WIIN-1, "WIN Act Compliance" for a discussion regarding compliance with the WIIN Act.
51	4	You must complete Section 106 with the Winnemem Wintu. You must not continue to violate the law by continuing to push this project forward without that consultation. The Tribe must not be coerced into signing a 'Programmatic Agreement (PA).' PA's are meant for large programs, the impacts of which cannot be determined until individual projects are identified and are not appropriate for a single project like the proposed dam raise. Consultation needs to happen without a PA and needs to happen on the front-end of the project, rather than later.	Please refer to the SLWRI FEIS Master Comment Response CR-15, N"ational Historic Preservation Act Section 106 Consultation" for additional information regarding Section 106.
51	5	More than 75 years ago, the Tribe was flooded out of their homelands and were NEVER compensated for the lands submerged by the dam. Not only is the Bureau attempting to break the law now, it has been breaking the law and their agreement under the Central Valley Indian Lands Acquisition Act (55 Stat 612) which promised compensation to the Winnemem Wintu Tribe.	Please refer to the SLWRI FEIS, Master Comment Response CR-1, "Federal Recognition" regarding past grievances with the Federal Government. Reclamation will continue to comply with all applicable law.
51	6	Are you aware that the U.S. Fish and Wildlife Service's own analysis determined the dam raise would not improve conditions for Sacramento River runs? Winnemem Wintu TEK (Traditional Ecological Knowledge) agrees with this	As discussed in the SLWRI FEIS, Master Comment Response DSFISH-5, "Fish and Wildlife Coordination Act Report," the

Letter Number	Comment Number	Comment	Response
		assessment. There is proof that the Bureau is not capable of managing water temperature for fish because in 2015-2016, their mismanagement killed 95% of the salmon eggs.	2007 CAR did not a suitable basis for comparison. Further, the 2014 National Marine Fisheries Final Recovery Plan cited to the need for cold water sources to support anadromous fish. Also refer to the SLWRI FEIS Master Comment Response DSFISH-8, "National Marine Fisheries Service Recovery Plan, Anadromous Fish Restoration Program, Doubling Goals and Biological Opinions." Please refer to the SLWRI Final SEIS Master Comment Response ESA 1 "ESA Compliance," for additional information regarding coordination with Federal fish and wildlife agencies. Reclamation continues to work closely with those agencies, who have been cooperating agencies on this project.
51	7	The Forest Service's 2009 Biological Opinion concluded that in order for endangered salmon to survive climate change, they must have swim-ways around the Keswick and Shasta Dams. They must= have access to their own traditional waterways which include Winnemem Waywacket (McCloud River) and other waterways above these dams in the high country. An astounding 4,800 acres of riparian and salmon habitat would be inundated if this project is to go through. It is clear to us that this project is only to benefit Central Valley water users and water brokers. Moving water for money is the new scheme. This dam raise project was never intended to benefit the salmon as the dam raise idea began 30 years prior to the 2009 Biological Opinion.	The cited BiOp is no longer operative. Reclamation will consult with federal agencies, including the US Forest Service as required. Please see the SLWRI FEIS Master Comment Response FISHPASS-1, Fish Passage Above Shasta Dam for information related to management measures considered to improve fish migration. Please see response to comments 51-8 and 51-9 regarding potential benefits to fish as a result of the project.

Letter Number	Comment Number	Comment	Response
51	8	The project would likely increase water exports to Westlands Water District. This land within this District is well known for being unsuitable for irrigation and experts recommend the land be fallowed due to the high/toxic levels of selenium. The best idea to preserve California's freshwater supply is to work on groundwater recharge (without effecting stream flows), ecological restoration, and water conservation measures. This proposed dam raise project is not a good use of taxpayer money as, in the best estimates, it would only yield approximately 50,000 additional acre-feet per year. That is less than 1/10th of 1% of California's water budget!	As noted in the SLWRI FEIS Master Comment Response P&N-1, Purpose and Need and Objectives, water supply reliability is one of the project's goals. The other is to increase survival of anadromous fish. Please see FEIS Master Comment DSFISH-3, "Fish Habitat Restoration," Master Comment DSFISH-4, "Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements," Master Comment DSFISH-5, "Fish and Wildlife Coordination Act," and Master Comment DSFISH-9, "Flow-Related Effects on Fish Species of Concern" for a discussion on how the proposed project could impact fish species of concern in the Sacramento River. Please also see the SLWRI FEIS Master Comment Response ALTD-1, Alternative Development – Water Supply Reliability for a discussion regarding the relative unit water cost of other alternatives compared to the proposed project.
51	9	In Conclusion: It is obvious the project is to benefit Westlands Water District and some "well connected" Central Valley agriculture companies. You have no right to violate the law to benefit these entities. It is clear the Bureau could not care less for the Winnemen Wintu Tribe and the people of California. Continuing this project will	A summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the SLWRI FEIS, highlighting the range of positive impacts to a variety of

Letter Number	Comment Number	Comment	Response
		result in cultural genocide of the Winnemen Wintu Tribe. We find such "collateral damage" illegal, unethical, and immoral. You must stop this project now.	beneficiaries. Please also refer to the SLWRI FEIS Chapter 33, Master Comment Responses for Water Supply Reliability Benefits & Beneficiaries; WSR-1, Water Supply Demands, Supplies and Project Benefits; WSR-8, Action Alternatives Don't Meet All Water Demands; and WSR-12, Increasing Water Supply Reliability under Action Alternatives.
51	10	Instead, we urge you to work directly with the Tribe to create a climate resiliency plan and allow them to work with you to create a swim-way around the two dams so the Salmon can return. And lastly, fulfill your obligation under the 1941 Central Valley Indians Lands Acquisition Act to provide livable land for the Tribe. Show the world you understand and are dedicated to fulfilling your obligations to the Tribe and begin this collaboration now.	As noted in the FEIS, Master Comment Response GEN-8, Public Outreach and Involvement, Reclamation consulted and coordinated with the Winnemem Wintu during the public review period for the SLWRI FEIS. As noted above, Chapter 18, remains unchanged and is not included in the SLWRI SEIS. Reclamation will continue to follow all applicable laws.
52	1	The National Lawyers Guild Sacramento Chapter Board writes you in support of the Winnemem Wintu in their opposition to raising the Shasta Dam. For far too long the legal system of this country has maintained its colonial nature, denying rights to indigenous peoples and infringing on their lands and culture. Raising the dam would flood the traditional homelands of the Winnemem Wintu, violating the land they use for their spiritual practices and jeopardizing the ecosystem of the salmon they have looked after for generations. At a moment when the country is finally acknowledging its long history of racism, and the effects of climate change are leading to more and more	Reclamation acknowledges the National Lawyers Guild, Sacramento Chapter's and the Winnemem Wintu Tribe's opposition to raising Shasta Dam. This comment raises issues that were addressed in the SLWRI FEIS master responses for general issues (Master Response GEN-5, (Some people support the dam raise and others oppose the dam raise) and in master responses for cultural resources addressing environmental justice (CR-5), United

Letter Number	Comment Number	Comment	Response
		environmental devastation, the government should be working with, not against, indigenous communities.	Nations on the rights of indigenous people (CR-6), and Native American's connection to salmon (CR-8). These issues are not addressed further in the SLWRI SEIS.
52	2	Raising the Shasta Dam violates California law. The McCloud River has been recognized under the state Wild and Scenic Rivers Act, which means it should be protected from the impacts of raising the dam.	The SLWRI FEIS fully addresses the potential effects of dam raise on rivers designated under the Wild and Scenic Rivers Act in Chapter 5 of the SEIS. The analyses indicate that alternatives could affect portions of the McCloud River wild and scenic river designation eligibility. Mitigation Measure WASR-3 (for Alts CP1-5) would develop and implement a comprehensive multi-scale wild trout fisheries protection, restoration and improvement program to reduce effects on the lower McCloud River. Please also refer to Master Comment Response CNRC-1, "California Natural Resources Code Regarding the McCloud River."
52	3	The raising would also violate federal law. Under Section 106 of the National HistoricPreservation Act, the Bureau is required to consult with the Winnemem Wintu people about the impacts of the proposed move on their historic and cultural properties. The Bureau has claimed it does not have sufficient information regarding such sites, despite studies, letters of support and other evidence that has been submitted.	As described in Master Response CR-15, National Historic Preservation Act Section 106 Consultation in the SLWRI FEIS, Reclamation met with the Winnemen Wintu tribe in 3 meetings and has provided numerous opportunities to provide input regarding the project alternatives and potential effects on cultural and tribal resources.

Letter Number	Comment Number	Comment	Response
			The NEPA process is also designed to facilitate input during the scoping process and related to comments on the SLWRI FEIS. Additional Section 106 consultation will occur as the project approval process proceeds.
52	4	Furthermore, when the dam was being constructed during World War II, Congress passed the Central Valley Indian Lands Acquisition Act (55 Stat 612), which promised the Winnemem Wintu compensation for the lands submerged by the dam. The Bureau has never fulfilled its obligations under this law	Reclamation acknowledges the opinion regarding the Central Valley Indian Lands Acquisition Act. No additional response is provided because this comment is not related to the project alternatives, their effects or the NEPA process.
52	5	National Lawyers Guild Sacramento seeks to build a truly just justice system and advocates for policy based on human rights and dignity over profit. This project would infringe on a long-mistreated community, violate state law and risk destroying already endangered salmon populations, mostly for the benefit of small-scale commercial users..	Please refer to response to comments 52-1through 52-4 above.
53	1	DSEIS Text Page 5-7, Section 5.2.1, 4: The lower river provides habitat for several salmonid species: bull trout/Dolly Varden (Salvelinus confluentus), which is believed to be extinct… Comment: Bull trout, previously misidentified as "Dolly Varden" in the McCloud River, are not extinct. They are believed to have been extirpated from the McCloud River.	The SEIS has been updated to note the change from believed to be extinct to extirpated.
53	2	DSEIS Text Page 5-11, Section 5.4, Lower McCloud River, 2: Under its current FERC license, PG&E's McCloud-Pit Hydroelectric Project maintains a minimum instream flow of 50 cfs from May through November and 40 cfs from December through April through controlled releases. Accordingly, flows in the lower McCloud River are highly regulated, and annual flows in the river below McCloud Dam do not follow a pattern typical of an unimpaired mountain river in northern	At McCloud Dam, required minimum flows are 50 cfs from May 1 through November 30, and 40 cfs from December 1 through April 30. However, as you identified, these are not the same as instream flows established below

Letter Number	Comment Number	Comment	Response
		California. Comment: The minimum instream flows cited are incorrect. Releases from McCloud Dam are monitored at two compliance points: (1) just downstream of McCloud Dam (USGS Gage 11367760), and (2) at Ah-Di-Na (USGS Gage 11367800) approximately 3.5 miles downstream of the dam. Releases from McCloud Dam are currently adjusted to meet a minimum mean daily flow of 160-210 cfs at Ah-Di-Na, depending on month and water year type. The release schedule for McCloud Dam is also expected to increase to a minimum of 200-725 cfs, measured at Ah-Di-Na, in 2021 following receipt of the new FERC License (anticipated late 2020).	McCloud dam for the protection of aquatic resources and the high quality coldwater fishery--they are mislabeled in the DSEIS report. The actual instream flow requirement ranges from 160-210 and is measured at two locations on the Lower McCloud River, as you identified. From reference: "At McCloud dam, required minimum flows are 50 cfs from May 1 through November 30, and 40 cfs from December 1 through April 30; actual flow releases are usually much higher in order to meet downstream requirements at the Ah-Di-Na gage. For the Lower McCloud River at Ah-Di-Na (gage MC-1), there are dual minimum flow requirements for dry and normal years: dry year minimum instream flow requirements range from 160 to 180 cfs, depending on the month. During normal years, the minimum instream flow requirement at Ah-Di-Na ranges from 160 to 210 cfs, depending on the month." The Final SEIS has been updated to reflect these changes.
53	3	Additionally, although the portion of the Lower McCloud River just downstream of McCloud Dam is regulated, the hydrology of the lowermost portion of the McCloud River is fundamentally different from the more altered hydrology that exists just below McCloud Dam. The influence of regulated flows from McCloud Dam on streamflow is greatly diminished by numerous large tributaries that feed into the Lower McCloud River. Subsequently, flows in the lower portions of the	This comment does not identify new information. However, while the hydrology of the lowermost portion of the McCloud is different from the hydrology directly below McCloud Dam and has characteristics reflective of

Letter Number	Comment Number	Comment	Response
		Lower McCloud River are largely a product of accretion flows from several tributaries, including Squaw Valley Creek and Claibourne Creek, both of which contribute significant quantities of water to the McCloud River, and below these tributaries, the McCloud River is reasonably free of effects from McCloud Dam [Footnote 1: PG&E (2006). McCloud-Pit Hydroelectric Project FERC Project No. 2106. Relicensing Pre-Application Document. Volume 1: Public Information. July 2006.]. Thus, flows in the lower portions of the Lower McCloud River reflect a natural hydrograph. The McCloud River above Shasta Lake under the regulated condition also exhibits a number of key characteristics of the unimpaired hydrograph, including variation in flows seasonally and by water year type. Flows near the confluence with Shasta Lake typically range from roughly 300 cfs to 10,000 cfs annually (Figure 1)[Exhibit 1], and there is a five-fold increase in peak flows from drier to wetter water year type (Figure 2)[Exhibit 2]. These conditions led the Shasta-Trinity National Forest to determine that the outstandingly remarkable values of the McCloud River qualify it for designation under the Federal Wild and Scenic Rivers Act, and the lower McCloud River was included for special protection under the California Wild and Scenic Rivers Act (Pub. Resources Code, § 5093.542).	natural hydrology, it has still been fundamentally altered by operation of McCloud Dam and the diversions through McCloud Tunnel. This regulation has resulted in significant reductions in both observed low flows and total annual flow volumes. This can be seen clearly in available flow records from 1946 to present. Therefore, Reclamation maintains that the Lower McCloud River is highly regulated. Please also refer to SEIS Master Comment CNRC-1, "California Natural Resources Code Regarding the McCloud River." No changes have been made to the Final SEIS.
53	4	[Exhibit 1] Figure 1: Flows in the lower McCloud River, upstream of its confluence with Lake Shasta, 2012-2019.	Please see response to comment 53-3.
53	5	[Exhibit 2] Figure 2: Modeled mean monthly flows for the McCloud River above Shasta Lake, by water year quartile.	Please see response to comment 53-3.
53	6	DSEIS Text Page 5-20, Section 5.4.1, The McCloud River's Wild and Scenic Values, Water Quality: Sediment becomes trapped at McCloud Dam and is released into the lower river during large storm events, temporarily increasing turbidity levels, especially in the upper segments of the lower river. Comment: Glacial sediment from Mount Shasta via Mud Creek does collect in McCloud Reservoir; however, increased turbidity below McCloud Dam is typically observed in the summers of dry years, when sloughing of glacial deposits from	As stated in the SEIS, "The turbidity of the lower McCloud River is influenced by the water quality and water levels of the McCloud Reservoir and runoff from upland areas throughout the basin." The notion that "trapped" sediment in the McCloud Reservoir hypolimnion contributes to downstream turbidity is

Letter Number	Comment Number	Comment	Response
		the Konwakiton glacier are transmitted downstream following storm events, and subsequent high density turbidity current travels through the hypolimnion of McCloud Reservoir and to the Lower McCloud River (PG&E 2009) (Footnote 2 Pacific Gas and Electric. 2009. McCloud-Pit Hydroelectric Project FERC Project No. 2106 application for new license. July.) This phenomenon is not a result of "trapped" sediment at McCloud Dam.	not in contradiction to how you have described this phenomenon. A watershed analysis by USFS acknowledges "The primary source of the sediment is the Konwakiton glacier in the Mud Creek drainage upstream of the analysis area." (USFS, 2011, p.40). However other sediment sources do also contribute as noted on p.10 of the watershed analysis: "Water quality in the Lower McCloud River Watershed is influenced by McCloud Reservoir (water temperature increases due to impoundment and reduced flows, and turbidity increases due to delta erosion during reservoir drawdown), Mud Creek debris flows and by land use practices." No changes have been made to the Final SEIS.
53	7	DSEIS Text Page 5-25, Section 5.5.1, Habitat Typing, ¶2: While the absolute amount of riverine habitat can vary with flow, the relative proportions of different types of habitat remain relatively constant. Therefore, Reclamation used the relative proportions of aquatic habitat types to compare impacts to the transition reach with the entire lower river. Comment: Although the transition reach contains similar proportions of physical habitat types as those found in the 24-mile reach as a whole, habitat values for certain special-status species are substantially different in the transition reach than in upstream portions of the lower river. The DSEIS does not acknowledge these differences, which are largely driven by water temperature, and does not consider the loss of stream habitat that would occur in the portions of the lower	The SEIS provides analysis on the McCloud River's trout fishery. Trout habitat occurs throughout the McCloud below McCloud Dam. The analysis within the SEIS focuses appropriately on trout and uses proportions of habitat types to assess effects on trout. The SEIS concludes that the McCloud river could be affected by a reduction in length of river with suitable riverine habitat conditions.

Letter Number	Comment Number	Comment	Response
		McCloud River that would be inundated by the reservoir or the resulting effects on special-status species including hardhead (Mylopharodon conocephalus3) [Footnote 3:Currently a Forest Service Sensitive (FSS) species and CDFW Species of Special Concern (SSC) (California Department of Fish and Wildlife. 2020. Special Animals List. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline).] foothill yellow-legged frog (FYLF, Rana boylii [Footnote 4: Currently a Forest Service Sensitive (FSS) species and State Species of Special Concern; formerly a State Candidate Species for listing. While other populations in California are now listed as endangered or threatened under the California Endangered Species Act, the Northwest/North Coast clade (population group) of the species, which includes the lower McCloud River, was excluded from the listing (California Department of Fish and Wildlife. 2020. Special Animals List). https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline).]), and special-status aquatic mollusks. Because habitat for these species may be limited to the lowermost portions of the lower McCloud River where water temperatures are warmer than upstream reaches, the comparison of the transition reach to the entire lower McCloud River is inappropriate as the potential impacts to these species would be much larger than suggested by an analysis relying solely on habitat proportions.	
53	8	For example, the U.S. Forest Service (USFS) Watershed Analysis included hardhead as potentially present within the lower McCloud River. Although hardhead was not found during the 2007 Lower McCloud River fish surveys supporting the McCloud-Pit Hydroelectric Project FERC relicensing, the availability of suitable habitat was documented (PG&E 2009). [Footnote 5: Pacific Gas and Electric. 2009. McCloud-Pit Hydroelectric Project FERC Project No. 2106 application for new license. July.]. If present, hardhead distribution would be limited by colder water to the lowermost portions of the lower McCloud River. Given that water temperatures decrease from downstream to upstream, any loss of habitat in the lower portions of the lower McCloud River could have an adverse effect on the species or its ability to colonize the river.	A discussion on the potential impacts to hardhead is discussed in the 2015 SLWRI FEIS Chapter 11 "Fisheries and Aquatic Ecosystems," which includes a mitigation plan for the McCloud River and its fisheries. The mitigation plan may include measures specific to hardhead, however, Reclamation is not aware of any habitat enhancement efforts focused on hardhead in California.

Letter Number	Comment Number	Comment	Response
		Because there is a potential effect on hardhead habitat within the transition reach and the distribution of habitat is limited to the lowermost portions of the river, potential effects on hardhead should be evaluated and any mitigation clearly identified.	
53	9	Additionally, FYLF populations are known to exist in the lower portion of the McCloud River (Technical Memo-09 and Technical Memo-29). [Footnote 6: Nevares, S., H. Shepley, and C. Champe. 2009. Surveys of special-status amphibians and aquatic reptiles near project reservoirs and project-affected stream reaches (FA-S2). McCloud-Pit Project, FERC Project No. 2106, Technical Memorandum 09, Pacific Gas & Electric and Stillwater Sciences. February 11.] [Footnote 7: Nevares, S., H. Shepley, and C. Champe. 2009. Second Year Foothill Yellow-legged Frog Visual Encounter Surveys and Breeding Habitat Assessment in the Lower McCloud River. McCloud-Pit Project, FERC Project No. 2106, Technical Memorandum 29, Pacific Gas & Electric and Stillwater Sciences. July 10.] In 2008, evidence of FYLF breeding (observation of egg masses, tadpoles, and/or young-of-year) was documented at four mainstem sites along the Lower McCloud River (between Nawtawaket Creek [River Mile {RM} 0.5] and Tuna Creek [RM 6]), which overlaps with the proposed project transition reaches. FYLF populations are currently limited to the lower sections of the McCloud River where water temperatures are warmer than upstream. FYLF adults and juveniles inhabit perennial and intermittent streams often dominated by cobble and boulder substrate, with a combination of exposed basking sites and cool shady areas adjacent to the water's edge for thermoregulation. Water temperatures recorded during amphibian surveys at locations upstream from RM 6 were likely too cold for FYLF development (e.g., did not consistently reach temperatures at or above 12°C for egg mass development during spring, and at or above 18°C for successful tadpole development in summer), thus limiting their distributions to the lowermost portions of the river. Colder temperatures are presumably not suitable because tadpole development through metamorphosis would not be possible in a single season and could potentially extend the time required for	A discussion on the potential impacts to FYLF is discussed in the 2015 SLWRI FEIS Chapter 13 "Wildlife Resources."

Letter Number	Comment Number	Comment	Response
		metamorphosis by limiting food availability and/or delaying growth. FYLF eggs are laid when average temperatures generally exceed 12°C. Tadpoles are generally found where water temperatures exceed 18°C for at least 1.5 months each year in order for metamorphosis to occur. Because there is a potential effect on FYLF populations within the transition reach and this area represents a potentially significant portion of the reach supporting FYLF, potential effects on FYLF populations should be evaluated and any mitigation clearly identified.	
53	10	The Bureau of Reclamation (2014) Shasta Lake Water Resources Investigation, California Final Environmental Impact Statement identified Impact Aqua-4 (CP1): Effects on Special-Status Aquatic Mollusks. Under CP1, habitat for special-status mollusks may become inundated. Seasonal fluctuations in the surface area and water surface elevation of Shasta Lake could also adversely affect special-status aquatic mollusks that may occupy habitat in or near Shasta Lake and its tributaries. USFS notes that this impact would be potentially significant [Footnote 8: Bureau of Reclamation (2014). Shasta Lake Water Resources Investigation, California Final Environmental Impact Statement. December.]. Per CDFW (2013) [Footnote 9: Shasta Lake Water Resources Investigation, Comments on the Public Draft of the Feasibility Report, and Selected Attachments, January.] comments on the Public Draft of the Feasibility Report for the Shasta Lake Water Resources Investigation, four of the terrestrial mollusks that could be impacted by enlarging Shasta Reservoir are currently petitioned for federal listing under the Endangered Species Act (ESA) and all four of these terrestrial mollusks are species endemic to the vicinity of Shasta Reservoir: Shasta sideband snail (Monadenia troglodytes troglodytes), Wintu sideband snail (Monadenia troglodytes wintu), Shasta chaparral snail (Trilobopsis roperi), and Shasta Hesperian snail (Vespericola shasta). Of these, the Shasta Hesperian snail (Vespericola shasta) was found along the lower McCloud River during surveys conducted in the spring of 2007 and the fall of 2008. Per the McCloud-Pit aquatic mollusk surveys (Technical Memo-69), [Footnote 10: Nevares, S., L. Haley,	A discussion on the potential impacts to special-status aquatic mollusks is discussed in the 2015 SLWRI FEIS Chapter 13 "Wildlife Resources."

Letter Number	Comment Number	Comment	Response
		and M. Ellis. 2008. Survey for special-status aquatic molluscs and invasive crayfish within project reservoirs and project-affected streams. McCloud-Pit Project, FERC Project No. 2106, Technical Memorandum 69, Pacific Gas & Electric and Spring Rivers Ecological Sciences. December 15.] two aquatic mollusk species classified as Sensitive by the USFS—the California floater mussel (Anodonta californiensis/nuttalliana) and the nugget pebblesnail (Fluminicola seminalis)—were found during the aquatic mollusk surveys in 2007–2008. Of these, Fluminicola seminalis was found in the Lower McCloud River at the confluence of Chatterdown Creek (RM 4.2-4.3). Given that this is the lowermost survey location of this study, it is possible that this species exists further downstream and could be adversely affected by the proposed project. Because there are potential effects on special-status aquatic mollusks within the transition reach, these effects should be evaluated and any mitigation clearly identified.	
53	11	DSEIS Text Page 5-29, Section 5.5.3 Direct and Indirect Effects, Impact WASR-1 (CP1): Effect on McCloud River's Eligibility for Listing as a Federal Wild and Scenic River Under, Fisheries ¶1: Potential adverse effects on fish could include a reduction in spawning habitat for trout in the expanded transition reach and an increase in the range of warmwater fish in the lower McCloud River. Fishing opportunities would not be affected more than they are now with the periodic fluctuations in river levels. Comment: Angling could be affected in the new inundation area (transition reach), which is currently a renowned fly-fishing area. Warmwater species are expected to make use of the expanded lake area; however, fly-fishing opportunities, for which the McCloud River is known, would be forced upstream. Although the total duration of inundation is unclear in the DSEIS, the recurring transition between riverine and lacustrine habitats within the newly inundated portion of the Lower McCloud River would reduce the stability of habitat for benthic macroinvertebrate (BMI) populations, which would reduce the overall	A discussion on the potential impacts to recreational fly-fishing is discussed in the 2015 SLWRI FEIS Chapter 18 "Recreation and Public Access," and to benthic macroinvertebrates and warmwater fish in Chapter 11 "Fisheries and Aquatic Ecosystems." Mitigation is proposed in the form of a mitigation plan for the McCloud River and its fisheries, which may include potential enhancements to fishing opportunities.

Letter Number	Comment Number	Comment	Response
		productivity within that portion of stream, and thus, reduce the food availability for the wild trout population, including migratory brown trout, even when not inundated[Footnote 11: Nevares, S. and K. Orr. 2009. Summary of 2007 and 2008 benthic macroinvertebrate surveys in project affected reaches of the Lower McCloud River and Iron Canyon Creek (FA-S4). McCloud-Pit Project, FERC Project No. 2106, Technical Memorandum 35, Pacific Gas & Electric and Stillwater Sciences. May 19.] [Footnote 12: East Merced Resource Conservation District and Stillwater Sciences. 2008. The Merced River Alliance Project Final Report. Volume I: Project overview, outreach, and education. Prepared by East Merced Resources Conservation District, Merced, California, with assistance from Stillwater Sciences, Berkeley, California.] [Footnote 13: Carlisle, D.M., S.M. Nelson, and J. May. 2016. Associations of stream health with altered flow and water temperature in the Sierra Nevada, California. Ecohydrology 9: 930-941.] [Footnote 14: Steel, A.E., R.A. Peek, R.A. Lusardi, and S.M. Yarnell. 2017. Associating metrics of hydrologic variability with benthic macroinvertebrate communities in regulated and unregulated snowmelt dominated rivers. Freshwater Biology 63(8): 844-858.]. A reduction of BMI productivity could have an adverse effect on the wild trout fishery, which would potentially affect fishing opportunities in the transition reach.	
53	12	DSEIS Text Page 5-30, Section 5.5.3, Direct and Indirect Effects, 2: Nonnative warmwater species inhabiting Shasta Lake (e.g., smallmouth bass and spotted bass) are known to exploit riverine and transitional habitats and are effective predators of juvenile trout. No barriers have been observed in the transition reach that could prevent warmwater fish from moving upstream, and no barriers would be created by the expansion of the transition reach. Warmwater fish would continue to be able to move between the lake, the transition reach, and lower McCloud River (Segment 4). Comment: Data from PG&E studies[Footnote 15: Nevares, S. and R. Liebig. 2009. Fish Populations in Project-Affected Stream Reaches (FA-S3); Results of 2007–2009 surveys of Fish Populations in Project-Affected Stream Reaches (FA-S3).	Reclamation acknowledges within the SEIS that nonnative warmwater species are effective predators of juvenile trout and may have a detrimental impact on the native fishery of the McCloud River.

Letter Number	Comment Number	Comment	Response
		McCloud-Pit Project, FERC Project No. 2106, Technical Memorandum 18. Pacific Gas & Electric and Stillwater Sciences. November 16.] show the current fish assemblage in the McCloud River immediately upstream of Shasta Lake includes Sacramento pikeminnow, sculpin, Sacramento sucker, rainbow trout, and brown trout. The change in habitat will likely affect composition and may increase the distribution of non-native warm water species to the detriment of native cold-water species as riverine habitat is converted to lacustrine habitat.	
57	1	These comments are submitted in relation to the Shasta Lake Water Resources Investigation ("SLWRI") Draft Supplemental Environmental Impact Statement ("Draft SEIS/R"). Regrettably, California is ill-prepared to meet significant and steadily mounting water insecurity issues it will face over the remainder of the 21st century without a concerted plan to adapt our aging and out-dated statewide water system. This is a matter in which, not only farmers and other water users throughout the state hold a major stake, but also the state's major population centers and larger economy. Just as Shasta Dam and Lake are and have long been a cornerstone of California's existing statewide water system, a modest expansion in this critical location is, in our view, an indispensable part of any meaningful statewide water infrastructure adaptation strategy for the future. The Bureau's Preferred Alternative for an 18.5-foot dam raise, as identified in its 2015 Final Environmental Impact Statement ("FEIS") is not without cost, impacts, and various challenges. Overall, however, this project offers perhaps the greatest 'bang-for-buck,' within the smallest environmental footprint, of any major proposed water infrastructure project in the state today. The SLWRI project was one of just a very select handful of proposed surface water storage facilities gleaned in the elaborate CALFED effort at the time from a much longer list potential candidates in the late 1990s and early 2000s. In	Reclamation acknowledges this comment and support for the preferred alternative.

Letter Number	Comment Number	Comment	Response
		addition to water supply and other ancillary benefits, one of the primary considerations in this selection was the ability of the project to create an expanded cold-water pool for the benefit of various anadromous fish species	
57	2	While some opponents of the project have cited fisheries issues upfront among alleged issues of concern, the reality is that, without the project, between warming temperatures, shrinking snowpack, period drought and competing demands, the reality is that without the project it may be very difficult to sustain and recover the coldwater species in question indefinitely into the future. Thus, the proposed SLWRI project is perhaps as much necessary for the survival and recover of anadromous fish, if not more so, than for any other purpose. Meanwhile, variable precipitation patterns, including the possibility of larger floods, long droughts, higher temperatures, and less snow, further highlight the great importance and considerable promise of this project..	Reclamation acknowledges the commenters' opinions regarding the merits of the project for downstream fisheries protection and managing variable hydrologic conditions. Please also refer to Chapter 11, Fish and Aquatic Resources and Chapter 6, Hydrology, Hydraulics and Water Management of the SLWRI FEIS and supplementary information in the SLWRI SEIS.
57	3	The Bureau's preferred alternative, as identified in its 2015 Final Environmental Impact Statement (FEIS), would provide an additional 634,000 acre feet of additional storage space. Under the Bureau's Preferred Alternative, Alternative CP4A, this increase in storage space would provide some 191,000 acre-feet of cold water for anadromous fish survival, on the one hand, and on the other 120,000 and 60,000 acre-feet in dry and critical years, respectively, for M&I deliveries. In addition to helping to reduce future water shortages by increasing drought year and average year water supply reliability for agricultural and M&I deliveries across all years, Alternative CP4A includes spawning gravel augmentation and restored riparian, floodplain, and side channel habitat in the upper Sacramento River for fisheries benefits in dry years and critical years and is projected to boost annual in-river fish production by an impressive 171,000 fish.	Please refer to response to comment 57-2 above.
57	4	According to the FEIS, CP4A, the Preferred Alternative, represents an optimized mix of elements from the various other alternatives combined. These elements include:	Reclamation acknowledges comments regarding water management operational flexibility. Regarding consideration of the preferred

Letter Number	Comment Number	Comment	Response
		• Increased water supply reliability; • Coldwater management and improved habitat for anadromous fish; • Improved water quality, on the Sacramento River downstream of the Keswick Dam and in the Sacramento-San Joaquin River Delta below; • A significant increment in additional upstream flood reserve space; • An upgrade to Shasta Dam's existing Temperature Control Device. Operated in coordination with other strategic facilities, including the proposed Sites Reservoir on the Sacramento River below and the proposed San Luis Dam and Reservoir Expansion south of the Delta, as well as the various other major existing facilities, including Oroville and Folsom, the SLWRI project should inject important operational flexibility into a system no longer equal to the many demands it must currently serve. In this context, it would seem important to further note that dedicated cold-water and M&I drought reserves have likely indirect operational flexibility benefits for other uses (including agricultural water deliveries). One supposes this to be the case where the existence of such reserves would tend to remove constraints and, therefore, generally help to avert conflicts among competing uses and priorities. While this seems intuitive, however, our admittedly non-exhaustive review of the FEIS and SEIS has not identified any direct quantification or confirmation of any such increment in reliability for other reservoir purposes, including agricultural deliveries in particular.	alternative's effects with other current and planned water infrastructure projects, the CALSIM II model includes system-wide operation of relevant SWP and CVP facilities. The CALSIM II model includes assumptions for current or planned operations and an estimate of future water supply demand in the service areas. Other projects that could combine with or contribute to surface water changes, such as a potential future Sites reservoir are addressed qualitatively in cumulative impact analyses for each resource topic in the SLWRI FEIS.
57	5	To elaborate somewhat on a related point, the FEIR at S-34 notes that CP3, an 18.5-foot alternative focused on agricultural water supply reliability, was not selected as the preferred alternative due to the alternative's "relatively low increased anadromous fish survival benefits in comparison with all other 18.5-foot raises." For a statewide agricultural organization such as Farm Bureau, it is somewhat disappointing to see that CP4A includes no direct agricultural water reliability component.	As indicated in Table S-2 and on page S-34 of the SLWRI FEIS, Alternative CP 4A was selected as the preferred alternative because it was judged to best balance the need for anadromous fish in-stream benefits and water supply reliability. Alternative CP 4A would increase storage by 634,000 acre-feet/year, increase dry

Letter Number	Comment Number	Comment	Response
			and critical year water supplies by 77,000 acre-feet/year and provide increases in anadromous fish protection factors among other factors identified in Table S-2. While Alternative CP 4A does not specifically address agricultural water supply reliability on page S-34, the increased water supply reliability proposed for alternative CP 4A is generally expected to improve water supply deliveries for M&I and agricultural contractors. As indicated in chapter 6, Hydrology, Hydraulics and Water Management in the SLWRI FEIS, impacts to water deliveries for north of the Delta CVP water service contractors would be less than significant for all action alternatives and would be beneficial or less than significant for CVP south of the Delta water service contractors Alternative CP 4A would create beneficial water delivery conditions for south of Delta CVP water service contractors.
57	6	We further hope that any direct and indirect opportunities for increased agricultural water supply reliability can continue to be explored and incorporated (even if only indirectly) in future stages of project development and implementation. At same time, we trust that the FEIS and related Feasibility Study have already carefully considered this objective and endeavor incorporated it to the extent feasible and cost-effective.	Please refer to response to comment 57-5, above.

Letter Number	Comment Number	Comment	Response
57	7	We additionally recognize that one of the greatest constraints on Central Valley Project agricultural water reliability in recent years has been, precisely, the level of summer cold-water restrictions on releases from Lake Shasta and the various related fisheries concerns reflected in the biological opinions. Accordingly, an additional 191,000 of dedicated cold-water should certainly help to increase overall project flexibility on the whole. In dry and critical years, we similarly understand that prioritization of M&I and health and safety priorities has potential to further constrain deliveries to agricultural contractors, as do problems related to shared water quality responsibilities between Shasta and Oroville and between the CVP and SWP, Delta water quality requirements, flood releases and the like. In this broader context, notwithstanding the absence of any dedicated new agricultural water space in the enlarged reservoir per se, we are again confident that the additional operational flexibility of CP4A from the increase in cold-water and M&I reserve water can produce some commensurate level of related indirect reliability benefits for agricultural contractors.	Please refer to response to comment 57-5, above.
57	8	Of course, there are remain many significant issues to be worked through before the long proposed and studied SLWRI project can become a reality. These include operational uncertainties surrounding biological opinions, financial considerations, alleged wild and scenic features of the Lower McCloud River, the role of state and local interests, and the concerns of tribal interests regarding potentially cultural and archaeological sites in the area. With respect to the wild and scenic issue, it is our understanding that the Lower McCloud is, in fact, not currently designated wild and scenic under either state or federal law, and also that this stretch of river is not in an actual 'free-flowing condition,' due to substantial upstream impairment at a hydropower dam immediately above. However this may be, various complexities and clarifications, including a clearer understanding with the State of California and with the tribes and various landowners in the area, will clearly be needed for the project to one day advance. Notwithstanding these and other challenges, our assessment concludes that none of these obstacles is insurmountable. As a counterweight to these undeniably important and as yet unresolved concerns, it is further important to	Comment noted. Reclamation believes that the FEIS and the updated analysis in the SEIS take a hard look at the issues raised by the comment and agrees that the proposed action supports support water supply and reliability.

Letter Number	Comment Number	Comment	Response
		consider the potential future consequences of a failure to make this key investment in the long-term resilience of our existing statewide water system. In truth, there are very few, if any comparable facilities or locations in the state where the benefits of a readily feasible major system upgrade can deliver such an extensive range of statewide of benefits as in the case of the proposed SLWRI. For the project to one day advance, myriad issues and environmental trade-offs associated with the project will require careful consideration and resolution to the maximum degree possible—and this will be hard work. To simply walk away from the project in light of such complexities, however, would leave no alternative option for realizing the same level of unique benefits anywhere else in the state. This, we think, would prematurely foreclosure an important option related to the long-term resilience and viability of our statewide water system.	
57	9	Along with the FEIS and Final Feasibility Study completed in 2015, supplemental analyses in the Bureau's current SEIS—including new modeling of the 2019 NMFS and USFWS Central Valley biological opinions and new analyses of possible wild and scenic river impacts—fulfill an important objective: They preserve past work and help to position this critical project for a time when the critical importance and imperative statewide need for this project can be more fully and broadly grasped. At this stage, therefore, we heartily thank and congratulate the Bureau for its firm commitment and work to advance this very key project.	Reclamation acknowledges the commenters' opinion regarding the SLWRI FEIS, Feasibility Study, SEIS and support for this project.
60	1	Pacific Forest Trust (PFT) is a non-profit that has worked to conserve and restore California's key watersheds, specifically those for the Shasta and Trinity reservoirs of the Central Valley Project, for the past 27 years. We urge the Bureau of Reclamation to acknowledge watershed restoration and conservation as actions that would lead to longer-term water security than the proposed dam raise in the draft SEIS, and look forward to continuing our work with the Bureau and	Reclamation acknowledges Pacific Forest Trust's comment regarding watershed restoration and conservation. Please also refer to SLWRI FEIS master responses for the purpose and need and range of alternatives – general (Chapter 33,

Letter Number	Comment Number	Comment	Response
		other agencies to safeguard California's forests for clean and abundant water for all.	section 33.3.3 and 33.3.4). The SLWRI does include restoration and enhancement mitigation measures in upstream reservoir areas that would be affected by increased water surface elevations, particularly on the McCloud River. The preferred alternative CP 4A also includes downstream restoration actions and actions to benefit anadromous fish species. The action alternatives evaluated in the FEIS and for which supplemental information was provided in the SEIS are focused on improving operational flexibility of the Sacramento/San Joaquin Delta watershed to improve anadromous fish conditions in the lower Sacramento River and water supply reliability for CVP water service contractors. These actions are consistent with Pacific Forest Trust's watershed restoration and conservation focus.
60	2	Thank you for the opportunity to provide public comment on the Supplemental Draft Environmental Impact Statement (SDEIS) in the Shasta Lake Water Resources Investigation (SLWRI). Pacific Forest Trust (PFT) has worked to conserve and restore California's key watersheds, specifically those for the Shasta and Trinity reservoirs of the Central Valley Project (CVP), for 27 years. We understand and advocate for additional measures to provide a more reliable water supply from the CVP. However, the raising of Shasta Dam is neither the most cost effective nor broadly beneficial to CVP users, nor is it an environmentally beneficial means of achieving this. The proposed dam raise will	Reclamation acknowledges Pacific Forest Trust's opinion regarding watershed restoration and conservation. Please refer to response to comment 60-1 and master responses for purpose and need, range of alternatives, and cost/benefit analysis in the SLWRI FEIS (Chapter 33, sections 33.3.3, 33.3.4, and 33.3.8).

Letter Number	Comment Number	Comment	Response
		not provide the water benefits of enhanced quantity, timing, or quality that watershed restoration and conservation yield more effectively and cheaply. An alternative approach focused on restoring watershed function would be cheaper, more effective for more water users, and far better for the environmental benefits defined in the SDEIS.	
60	3	While improvements to California's built water systems are needed, increasing storage through dams alone cannot solve the issue – we need investments in the natural watershed infrastructure on which the effectiveness of our built storage relies. Much of the state's irrigated agriculture and millions of Californians depend on the four watersheds that fill the Shasta and Trinity reservoirs, but these watersheds are significantly degraded and at further risk from fragmentation, development, and the effects of climate change. A better investment of taxpayer money would be to address these issues within the watersheds themselves, and develop a comprehensive plan for watershed restoration for optimum function. Healthy watershed function is critical to the operation of Shasta Lake, and the SDEIS should acknowledge the matter of watershed restoration and conservation as actions that would lead to longer-term water security than the proposed dam raise.	Reclamation agrees that a healthy Lake Shasta watershed is important and could help further improve reservoir water quality conditions. However, based on the feasibility study and assessments of how water supply reliability can be improved a reservoir enlargement is needed to meet the project purpose and need. Please also refer to response to comment 60-1, above, and master responses for purpose and need, range of alternatives, and cost/benefit analysis in the SLWRI FEIS (Chapter 33, sections 33.3.3, 33.3.4, and 33.3.8).
60	4	Raising Shasta Dam would only increase reservoir storage by 2% on average over a 50-year period, not every year, while enhanced watershed function would provide storage benefits in wet meadows annually, regardless of the water year. The dam raise would also not provide the much-needed enhancement in water flows and extension of cold-water flow timing into the Bay Delta. Lastly, raising the dam would violate the California Wild and Scenic Rivers Act which protects the McCloud River, a river globally recognized for its fishery, biodiversity, and recreation, whereas restoration would not only be fully legal at the state and federal levels, it would enhance the overall function of the McCloud watershed to the benefit of fish, recreation, and biodiversity.	Please refer to response to comment 60-1, above and the SLMRI FEIS master response for Wild and Scenic River designations. Additionally, the SEIS provides additional information regarding effects on Wild and Scenic River designations in Chapter 5, including recommending mitigation measures for restoration and enhancement of affected portions of the McCloud River. Please also refer to

Letter Number	Comment Number	Comment	Response
			Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.
60	5	Californians depend on the Bureau of Reclamation to safeguard their water supply for agricultural and drinking water uses without impairing environmental values. We appreciate your work to improve water infrastructure in the state, and urge you to address the restoration and conservation needs in the watersheds that are the source of the water delivered by the CVP as an alternative to the proposed raising of Shasta Dam.	Reclamation thanks Pacific Forest Trust for its comments. Please also refer to response to comment 60-1, above.
302	1	Thank you for the opportunity to comment on the Draft Supplemental EIS for the Shasta Dam and Reservoir Enlargement Project. Shasta Dam and Reservoir are critical components of California's water supply system. They were designed and built to meet multiple benefits, including water supply, flood protection, power generation, and recreation. Over time, operations of the facility have evolved to include uses that were not originally envisioned when the project was built. Coupled with increased demands from a growing population, a greater awareness and dedication to environmental protection, and concerns over climate change and its potential effect on the state's water supply, Shasta Dam is an even more important part of our effort to find ways to meet our current and future water supply challenges. Multiple benefits are possible by increasing the height of Shasta Dam and subsequently increasing the amount of water storage and the water supplies made available by the project. More water storage means more reliability for water users, one of the principle beneficiaries of the original project. Additionally, more storage will create a larger cold-water pool within the reservoir, a resource experts tell us is critical to the survival of young salmon that migrate down the Sacramento River.	The water storage benefits of increasing Shasta Reservoir storage are described in the SLWRI FEIS.

Letter Number	Comment Number	Comment	Response
302	2	More storage capacity also increases the ability of the project to protect downstream communities from devastating floods. In 2017, the wettest year on record, Shasta Dam was operated in a way that reduced downstream flood risk, potentially saving many lives and billions of dollars in property value. A larger reservoir increases the value Shasta Dam brings to much of Northern California and Bay Area communities prone to flood risk.	The SLWRI FEIS identified the change in frequency of flood flows in the Sacramento River as a beneficial impact of the project. Additional flood storage provided by the project alternatives was not addressed in the SLWRI Draft SEIS.
302	3	Scientists tell us that climate change will bring wetter wet years and drier dry years in the future. No other explanation is needed to urge us to be better prepared to save water in wet years to be able to use in dry ones	The SLWRI FEIS identified a beneficial impact on water deliveries as a result of the project. The SLWRI Draft SEIS concluded that beneficial impacts on water deliveries would continue even with adjustments to increase reservoir storage space for purposes of maintaining the cold water pool.
302	4	On September 23, 2020, California Governor Gavin Newsom signed an executive order directing the State of California to require that all new in-state car sales beginning in 2035 be zero-emission vehicles. Currently, only electric-powered vehicles are able to meet the new zero-emission standard on a wide basis. In 2019, roughly 1.9 million new vehicles were sold in California. Of that, 99,704, or five percent, were all-electric vehicles. The vast increase in electric vehicle purchases required over the next 15 years to meet the Governor's executive order will put an enormous strain on the State's power grid. As a generator of clean hydropower, increasing the generation of electricity by Shasta Dam and many other sources will be essential to meeting this goal..	As discussed in the SLWRI FEIS, developing additional hydropower generation capabilities as Shasta Dam was considered a secondary project objective. The SLWRI FEIS concluded the project alternatives would result in a beneficial impact on hydropower generation. The SLWRI Draft SEIS did not address changes in hydropower generation.
302	5	For these reasons, we urge the Bureau of Reclamation to continue on its path toward raising the height of Shasta Dam. Multiple benefit projects have been a priority for federal and State agencies, farmers and public water agencies, environmental NGO's and many others. Multiple benefits are good for water users, beneficial for environmental water flows, help generate additional clean hydro-power, and serve as a hedge against possible increases in the variability	Reclamation will consider the range and extent of beneficial and adverse impacts when making a NEPA decision on the project.

Letter Number	Comment Number	Comment	Response
		brought about by climate change. Raising Shasta Dam is the kind of project that meets the expectations of people who care about California's diverse economy, quality of life, and the resources we depend on to support our population.	
303	1	I write on behalf of Trout Unlimited and our California members and chapters with concern regarding the DSEIS for the aforementioned project, to expand Shasta Reservoir into the McCloud, upper Sacramento, and Pit Rivers. The DSEIS is legally and factually inadequate and fails to correct deficiencies in the original analysis. In particular, the McCloud River is protected by the California Wild & Scenic Rivers Act, and been found eligible for inclusion in the National Wild & Scenic Rivers System by the U.S. Forest Service. Shasta Dam is a federal facility subject to compliance with state law. This should be documented in the SLWRI NEPA documents, and the Bureau should reject alternatives that conflict with state law.	Please see SEIS master response CNRC-1 California Natural Resources Code Regarding the McCloud River. Reclamation has and will continue to comply with all applicable law.
305	1	We appreciate this opportunity to comment on the Bureau's proposed raise and enlargement of the Shasta Dam and Reservoir, as analyzed in the Shasta Lake Water Resources Investigation (SLWRI) Supplemental Draft Environmental Impact Statement (SDEIS). CalUWild has consistently oppose the raising of Shasta Dam since the proposal was first made and we've submitted comments opposing the proposal before. We join other conservation organizations and Native American Tribes in opposing it once more.	Reclamation thanks the commenter for their participation in the public review process and acknowledges the commenter's opposition to the project.
305	2	We oppose raising the dam and enlarging the reservoir because the enlarged reservoir will drown segments of the McCloud and upper Sacramento Rivers identified by the U.S. Forest Service as eligible for National Wild & Scenic River protection. Furthermore, the project will violate state law protecting of the McCloud's free flowing character and extraordinary wild trout values. The Bureau has failed to consider this protective alternative for several streams flowing into the reservoir, including the McCloud, upper Sacramento, and Pit Rivers, and Squaw Creek.	Please refer to the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River for information regarding conflicts with California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the

Letter Number	Comment Number	Comment	Response
			McCloud River Wild and Scenic eligibility.
305	3	The SDEIS does not address new information available since the original SLWRI Final EIS was released in 2015, particularly regarding the Shasta salamander and the Shasta snow-wreath.	Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS, including Chapters 12 and 13 which address botanic and wildlife resources, was not addressed in the SDEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the FEIS that have not changed are not necessary to revisit. . Please refer to the FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional

Letter Number	Comment Number	Comment	Response
			discussion regarding the adequacy of the EIS.
305	4	The project will cover important Native American cultural sites.	Please refer to the FEIS, Master Comment Response CR-1, Potential Cultural Effects regarding the analysis of potential impacts to cultural resources and a discussion on section 106 consultation. Please also refer to the FEIS Master Comment Response CR-15, National Historic Preservation Act Section 106 Consultation for additional information regarding Section 106. Also note that Chapter 14, Cultural Resources was found to be sufficient and not included in the supplemental environmental document.
305	5	The Bureau's role in proposing and reviewing the environmental impacts of raising the Dam and enlarging the reservoir is problematic, because of the planned deliveries to the Westlands Water District. this presents a clear conflict of interest, since David Bernhardt, the Secretary of the Interior, use to work for the District.	As described in Chapter 1, Introduction, of the SLWRI FEIS, Reclamation's Mid-Pacific Region is responsible for managing the Central Valley Project which stores and delivers water to more than 250 water contractors throughout the California. In 2000, as a result of increasing demands for water supplies and growing concerns over declines in ecosystem resources in California's Central Valley, Reclamation reinitiated a feasibility investigation to evaluate the potential for enlarging Shasta Dam and

Letter Number	Comment Number	Comment	Response
			Reservoir. As part of the planning process, acting as the Lead Agency in compliance with NEPA, Reclamation completed a Draft and FEIS on SLWRI. The purpose of the EIS is to describe the beneficial and adverse effects on the human environment of a proposed action and a reasonable range of alternatives. For further information related to NEPA compliance, please see Master Comment Response NEPA-1, "Sufficiency of EIS." Please also see Chapter 1, Introduction, of the FEIS, for the Project's Purpose and Objectives. The purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary objectives are: • Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant • Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir

Letter Number	Comment Number	Comment	Response
			Also, a summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the FEIS highlighting their variety and that they are not directed to one beneficiary.
305	6	Nothing has changed in the U.S. Fish and Wildlife Service previous determination that the proposal will have "negligible benefits" for threatened and endangered fish populations (salmon and steelhead) in the Sacramento River downstream from the dam. We therefore urge you in the strongest terms to stop this unwise project.	Reclamation acknowledges the commenter's opposition to the project. For information on the anticipated benefits of the project please see FEIS Master Comment DSFISH-3, "Fish Habitat Restoration," Master Comment DSFISH-4, "Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements," Master Comment DSFISH-5, "Fish and Wildlife Coordination Act," and Master Comment DSFISH-9, "Flow-Related Effects on Fish Species of Concern" for a discussion on how the proposed project could impact fish species of concern in the Sacramento River. Reclamation has fully complied with applicable law, and will continue to do so.

1.9 Comments from Individuals and Responses

This section contains the comments submitted by Individuals listed in Table 1.9-1. Table 1.9-2 provides the comments and their response in tabular format. Table 1.9-2 is presented by letter number in sequential order.

Table 1.9-1. Individuals Providing Comments on Draft SEIS

Name, Title	Organization	Letter Number
Julie Bongers		46
Maggid Jonathan Furst, Rabbinic Pastor	Keneset HaLev	47
Nancy Peterson		48
Dennis Bruce		50
Wade Bellenger		203
Mark Westbrook		300
Rachel Huang		301
Clarence Kooi		304
Virginia Morris		307
Janice Gloe		308
Everett Watterson		316
Marc Umeda		317
Jane Perry		318
Joseph Dvorak		321
Will & Mike Nichols	Nichols Ranch, Inc.	327
Sally Ahnger		328
Barbara Clutter		329
Peter F. Brooks, P.E., D. WRE		331
Sue & Archie Mossman		332
Mark Cappetta		333
Wolfgang Rougle		367
Taj Lalwani		374
Ron Zielinski		383

Name, Title	Organization	Letter Number
Joe Kroeker	Starrh Family Farms	384
Bruce Shoemaker		404
Alex Guzman		405
Marcy Winograd		411
Alexander Gaguine		427
Francis Coats		428
Donald Bartlett		440
Megan Shumway		441
Ellen Koivisto		442
Donna Clark		443
Kathe Gardenias		444
Megan Elsea		452
Richard Steckler		455
Trudy Duisenberg		457
Gregory Jacobs		462
Wilma Dibelka		463
Doug Giancoli		469
Chris Yarnes		470
Dale Meisenheiner		475
Cord Roesner		476
Michele Collins		477
Joan Starr		482
Kenneth Firl		487
Richard & Laurie Gurries		488

Table 1.9-2. Responses to Comments Provided by Individuals

Letter Number	Comment Number	Comment	Response
46	1	I am one hundred percent opposed to the Bureau of Reclamation's illegal plans to raise the height of the Shasta dam. Why? From several perspectives:	Reclamation acknowledges the commenter's opposition to the project.
46	2	1). I am a taxpayer, and this would be an unnecessary 1.3 billion project much of which cost will fall on the taxpayer, i.e., on me. Moreover, it is not efficient. Californians conserved eight times as much water in 2015 than the estimated additional annual 50,000 acre-feet that a heightened dam will hold. Also you should know, if you have children in college, that dams in general are outdated. For example, they destroy riparian ecosystems and the creatures who live in them by limiting and deoxygenating downstream water flow, they are subject to year round evaporation, they impede fish migration, etc.	Please refer to the FEIS Master Comment Response ALTD-1, Alternative Development – Water Supply Reliability regarding alternatives considered and their relative per unit cost compared to the proposed project. Please refer to the FEIS Master Comment Response NEPA-1, Sufficiency of EIS regarding the adequacy of the analysis contained in the EIS.
46	3	2) This is illegal from several perspectives. Even if you do not honor California's designation of those portions of the McLeod River that would be flooded by a raised dam because it is a state protected wild and scenic river, the fact that the U.S. Forest Service has concluded that the McCloud River is eligible to be designated as a Wild and Scenic River under US law means that you cannot legally flood any area recorded as eligible.	Please refer to the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River for information regarding conflicts with California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses WASR-1 through WASR-8 for additional information regarding the McCloud River Wild and Scenic eligibility.
46	4	3) Heightening the dam by eighteen feet demonstrates that the US Bureau of Reclamation is environmentally ignorant and willing to defy a US Federal court order.	Reclamation follows all applicable laws.
46	5	4) You have been provided with a Stanford University Center for Comparative Studies in Race and Ethnicity's study documenting 39 sacred sites of the Winnemem	Please refer to the FEIS, Master Comment Response CR-1, Potential Cultural Effects regarding the analysis of potential impacts to cultural resources and a discussion on section

Letter Number	Comment Number	Comment	Response
		Wintu tribe that are currently accessible to and in use by tribal members and that are crucial to their identity and religious and cultural practices. In light of this document and other documents and videos that the Winnemem Wintu have provided you, it is a disrespectful misrepresentation, in fact an outright lie to say they've not provided you with materials you know full well that you are required to request and take seriously under Section 106 of the National Historical Preservation Act.	106 consultation. Please also refer to the FEIS Master Comment Response CR-15, National Historic Preservation Act Section 106 Consultation for additional information regarding Section 106. Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS was not addressed in the SDEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the FEIS that have not changed are beyond the scope of the SEIS. Please refer to the FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional discussion regarding the adequacy of the EIS.
46	6	5) California Environmental Protection Agency's Office of Environmental Health Hazard Assessment has already issued a health advisory for the consumption of fish from Shasta reservoir. It is known to have sufficiently high mercury levels due to leaching from former mines that child-bearing aged women and all minors are advised to	Potential impacts to water quality are addressed in the FEIS Chapter 7, Water Quality. As mentioned above, the water quality chapter was not addressed in the SEIS because the analysis was considered adequate and did not meet the criteria for inclusion in the supplemental environmental document.

Letter Number	Comment Number	Comment	Response
		limit consumption of all fish and refrain from eating any channel fish species at all. Given that additional abandoned mines would be submerged were the dam's height raised, there is no question but that the reservoir's level of toxicity would increase. Toxicity levels at deeper levels of the lake where there is a build up of silt are likely already dangerous and would wreak destruction downstream should there be a breakage of the dame. Rather than bludgeoning ahead with raising the height of Shasta Dam, you should be concerned that the lake is already in danger of becoming too toxic to be of use to anyone who fishes or swims in it, hence to many of those who enjoy it for sustenance and recreation.	
46	7	6) Californians have a long list of cheaper more efficient options that we have not yet implemented, including groundwater recharge, plant restoration, and hundreds of ways we could better conserve and recycle water. Others who are writing you will have spelled out these points and others in more detail. **It's time you listen and desist.**	Please refer to the FEIS Master Comment Response ALTR-1, Range of Alternatives – General for information regarding the range of alternatives evaluated. Please refer to the FEIS Master Comment Response P&N-1, Purpose and Need and Objectives, related to the development of the SLWRI purpose and need and objectives.
47	1	The U.S. Bureau of Reclamation's Shasta Dam project is a threat to the public good on so many level economically, ecologically, civil rights-wise and spiritually. The devastation this project poses the local ecology and native peoples — including the Winnemem Wintu — is well known, and detailed below.	Reclamation acknowledges the commenter's opposition to the project. Please refer to the FEIS Master Comment Response P7N-1, Purpose and Need and Objectives for information regarding the development of the purpose, need, and objectives for the project.
47	2	You should also consider the detriment to the local economy. Tourism is a crucial part of the economy which has only recently begun to rebound from COVD-low of %27 normal to approximately 70% as of September according to MSN news. Eco-tourists and spiritual seekers	The FEIS addresses potential socioeconomic impacts of the project in Chapter 16, Socioeconomics, Population and Housing. The FEIS Chapter 18, Recreation, addresses potential impacts to recreational facilities and resources as a result of the proposed project. Pursuant to NEPA, an

Letter Number	Comment Number	Comment	Response
		comprise the majority of visitors. Anything that negatively impacts the ecology and reputation of Shasta as a sanctuary will severely damage a struggling economic sector, with little or no benefit to the the majority of people in the county. For a crucial minority — Native people suffering disproportionately from COVID and historical wrongs — this wold be a cultural and religious wound that no person of conscience can allow.	agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. The Draft SEIS focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the FEIS, including chapters 16 and 18, was not addressed in the SDEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the FEIS that have not changed are beyond the scope of the SEIS. Please refer to the FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional discussion regarding the adequacy of the EIS.
47	3	I urge you to listen to the still, small voice within and ask yourself if the small gains that raising the dam would pose is justifiable in comparison to the tremendous damage to humans, animals, land, and spirit that this project wold cause.	Please refer to responses to comments 47-1 and 47-2.
47	4	*Additional Information:* In the Bureau's final Environmental Impact Statement, the agency acknowledged that the proposed dam raise would violate the California Wild and Scenic Rivers Act, which protects the McCloud River from being further flooded by reservoir expansion and makes it illegal for state agencies to assist in the project. This is why	Please refer to the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River for information regarding conflicts with California laws and policies protecting the McCloud River. Please also refer to the FEIS, Master Comment Responses

Letter Number	Comment Number	Comment	Response
		the Shasta Superior Court ruled in 2019 that the Westlands Water District could not participate in the proposed raising of Shasta Dam as a funder or as the lead agency conducting the state environmental study, under the state law known as CEQA. [Remaining portion – Form Letter #6]	WASR-1 through WASR-8 for additional information regarding the McCloud River Wild and Scenic eligibility. The remaining portion of this comment letter is responded to in the responses to Form Letter #6.
48	1	The future of this state depends on more water storage. It is the most logical solution to saving our state for the future generations. Nothing else we do can remotely compare with it. Please make it a priority. Thank you	Reclamation appreciates your comment on the SLWRI Draft SEIS and acknowledges your support of water storage projects.
50	1	All possible methods of reclaiming rain water should be designed and established. Release of water should not be done unless emergency declaration is granted.	For discussion regarding the project purpose, need, objectives, and alternatives, please refer to the FEIS, Chapter 33, Master Comment Response P&N-1, "Purpose and Need and Objectives" as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Reclamation acknowledges the comment regarding water release scenarios.
203	1	Mr Brick this is Wade Bellenger (?) I live in Anderson California Shasta County where they are proposing to raise Shasta Dam. I am very much against this proposal. Taxpayers do not need to fund this reservoir increase. One, the dam was never designed for it I think it's a poor idea just to send water to LA. I'm going to do everything I can to stop this project. So put me down as a no vote. If you want to have a conversation my phone number is 530-365-5827. I've tried four times to send an email to your email address but have them all kicked back so that doesn't work so talk to you soon thanks.	Reclamation will consider all comments received on the SLWRI FEIS and SEIS as part of the NEPA decision making process for the project including the project's purpose and need.

Letter Number	Comment Number	Comment	Response
300	1	I see that my email is too late, but I want to express my disdain for raising Shasta Dam. I am including the NMFS contact for Water Operations in hopes of elevating this criticism and that it can be somehow utilized in the NEPA/ESA process. I'm unsure what it takes to stop these ill ideas in the process, but I hope this can contribute.	Reclamation will consider all comments received on the SLWRI FEIS and SLWRI Draft SEIS as part of the NEPA decision making process for the project.
300	2	The Shasta Dam Raise is a terrible solution to a problem that will not go away. The only solution is curbing our water demand that is sold for profit. I am a Civil Engineering major at CSU Sacramento and I have interned with the Bureau of Reclamation, so I have a decent understanding of the situation.	Water demand issues were addressed in the SLWRI FEIS. Topics addressed in the SLWRI Draft SEIS include wetlands and waters of the United States, stormwater and other point-source discharges, Shasta Dam operations and modeling, wild and scenic river considerations for the McCloud River.
300	3	I know that you face pressure from stakeholders and Washington DC to raise Shasta Dam, but it is not the answer. The concept of induced demand applies to this resource as much as it does to transportation. If you widen a highway, traffic worsens. Similarly, if you raise a dam, we will still not have a large enough storage because demand will also continue to rise. The argument that this will reinforce the cold water pool is just a small solution to trying to justify a large problem.	Reclamation will consider all comments received on the SLWRI FEIS and SLWRI Draft SEIS as part of the NEPA decision making process for the project including issues raised with the project's purpose and need.
300	4	Most importantly, this also tramples the rights of people who deserve access to their land. The Winnemem Wintu people only have so little land left. Shasta Lake now floods their home. Shasta Dam was built in a racist climate in this country with no knowledge of the Indigenous land that we drowned and no knowledge of the fish passage we stopped. We continue that racism and ignorance by justifying the dam raise. It starves salmon of oxygen and the ability to migrate back to their proper spawning	Please see SLWRI FEIS master *response 33.3.13 Master Comment Response for Cultural Resources* which addresses comments on the scope of the cultural resources assessment program conducted for the project.

Letter Number	Comment Number	Comment	Response
		grounds. We should be discussing dam lowering instead of dam raising. Additionally, dams and hatcheries are not sustainable for fish populations that are essential to California. We are trying to control the impossible and bending over backward to make it work. Even then, it only works for some. I witnessed how many resources are spent trying to justify infeasible environmental impacts and mitigation to sustain agriculture that is not practical. It all comes at the cost of the environment and Native people. It will get us nowhere. We need a demand-based approach to solving our water issues. We need to discuss how to untangle this mess of interests that influence the Bureau further down the wrong path.	
301	1	I am writing to say that I am disappointed and appalled that this is still a decision on the table and would like to write to let you know that I strongly oppose the Shasta Dam Raise. I stand in solidarity with the Winnemem Wintu tribe. Please critically consider the consequence of the project and listen to the people.	Reclamation has not made a NEPA decision on the project but will do so through the NEPA Record of Decision process. Reclamation will consider the information contained in the SLWRI FEIS and SEIS as well as comments received from agencies, interested parties, and the public as part of that decision making process.
304	1	Fresh water storage in the Delta instead of in Shasta: The water storage capacity of the Sacramento-San Joaquin Delta is enormous. Open water area is about 40,000 acres and marsh land is about 60,000 acres all at or near sea level. Raising the water level by six feet would store 600,000 acre-feet of water, equivalent that of the Shasta	Please see SLWRI FEIS master response 33.3.4 Master Comment Response for Range of Alternatives-General. The master response describes the process Reclamation followed in developing the alternatives evaluated as part of the NEPA compliance process. The intent of the SLWRI Draft SEIS was to expand on portions of the environmental

Letter Number	Comment Number	Comment	Response
		dam project In addition there are 50,000 to 100,000 acres that are 15 or more feet below sea level which can be converted from farms to reservoirs storing one million to two million acre-feet. This is possible if the Salt Water Barrier designed in1929 by the California Department of Public Works, Division of Water Resources (Bulletin No, 22, Walter R. Young, 1929) is built. The cost at that time was estimated to be 50 million dollars. At present only about a third of Delta inflow is exported via the Delta-Mendota canal and the California aqueduct. The Salt Water Barrier and Delta Storage would allow water export to be vastly increased. The $1.3 billion of the Shasta project should be switched to the Salt Water Barrier – Delta Storage project.	analysis provided in the FEIS and not to include new alternatives.
307	1	Am writing to ask you to pay attention to the effect that damn raising would have on the sacred sites of the original inhabitants, the Winnemem Wintu people, on the salmon population, and on the residents of all communities living downstream who would be drinking the water (as the old residue of uncapped stores of mining tailings is spread in the high water). Please take all these negative effects into account and please refuse to authorize raising the dam.	Reclamation acknowledges the commenter's concerns. Please refer to response to comments 308-1 through 8 regarding effects on Winnemen Wintu people, salmon and water quality.
308	1	I should have realized when I wrote you that Westlands Water District left the project last year after the court ruling. But I am sure that you realize there are other groups that also cannot be considered for funding and to be a	Reclamation acknowledges these comments about funding and court orders. Reclamation is not aware of any restrictions to preparing the FEIS and SDEIS to disclose the potential effects and mitigation measures for the action

Letter Number	Comment Number	Comment	Response
		lead agency under the court ruling. And I am very concerned that the Bureau has continued with their studies and pre-construction and future ideas without proper consultation with the court and others adversely affected. And I forgot to mention that residents and business owners living at Shasta Lake are also concerned about negative effects to their homes and businesses should this plan go through!	alternatives. Please refer to Chapters 17, Land Use and Planning and Chapter 19, Aesthetics and Visual Resources of the FEIS among other resources topics for analyses of the potential effects of the SLWRI project on landowners.
308	2	I am contacting you because I care about the Winnemem Wintu people, clean water, the salmon, wildlife, the environment, our Mother Earth and current and future generations. As a decision maker I hope that you will join me in caring about these things too.	Reclamation has endeavored to design the SLWRI project in a manner that balances the needs of stakeholders through increased water supply reliability and care for the environment.
308	3	I strongly oppose the U.S. Bureau of Reclamation's Shasta Dam raise project! It does not respect the Winnemem Wintu People! They have been caretakers of Winnemem Waywacet, McCloud River, since time immemorial. The river and the salmon are sacred to the to them. When the dam was built their land, homes and many sacred sites were flooded. The Indian Land Acquistion Act was passed in 1941 but was never honored. Twenty-four acres were taken from them. If the dam is raised, the rest of their land and sacred sites will be gone forever! The dam raise would inundate or damage at least 39 Winnemem Wintu sacred sites still accessible to tribal members and that are an integral part of their religious and cultural lifeways. This includes Balas Son (Puberty Rock), and other	Reclamation acknowledges the commenters' opposition to the SLWRI project and respects the Winnemem Wintu tribe's cultural values. Please also refer to Chapter 14, Cultural Resources of the SLWRI FEIS for analyses of the cultural resources effects of the preferred alternative and action alternatives.

Letter Number	Comment Number	Comment	Response
		sacred sites essential to Balas Chonas, the coming of age ceremony for young women.	
308	4	The project would violate the 2019 Shasta Superior Court ruling which states that Westlands Water District cannot participate in the proposed raising of Shasta Dam as a funding or lead agency under the state law known as CEQA . And it violates the Scenic River Act which protects the McCloud River from being further flooded by reservoir expansion. And the U.S. Forest Service determined that the McCloud river is eligible to be designated as a Wild and Scenic River under the federal act.	Reclamation acknowledges the commenters opinions regarding court rulings and funding participants. Please refer to master responses WASR 1,3, 4, 6, 8 in the SLWRI FEIS for responses to comments regarding wild and scenic river eligibility and effects on the McCloud River.
308	5	Section 106 of the California National Historic Preservation Act requires the Bureau to consult with the Winnemem Wintu people about impacts of the proposed dam raise on historic and cultural properties. Also please acknowledge that the tribe has provided detailed information to your agency numerous times about the cultural and environmental impacts and consequences. AB 168 was just signed by Governor Newsom which states that a California tribe, whether federally recognized or not, must give consent and approval of a project before it is eligible for a permit. It gives tribal access and consultation management and acquisition of ancestral lands. The Winnemem Wintu people should be consulted and should not have to lose access to their sacred sites!	Please refer to Chapter 14, Cultural Resources and master response CR -15 in the SLWRI FEIS for references for and responses to NHPA Section 106 consultation. Although AB 168 does not apply to federal government activities, Reclamation has consulted with native American tribes and provided extensive opportunity for comment on the SLWRI project through scoping and public review processes required by NEPA for the SLWRI FEIS and SDEIS.
308	6	Raising the dam will also be detrimental to the survival of the endangered Chinook Salmon! The US Fish and Wildlife Services analysis stated that that salmon will be adversely affected if the project proceeds. Winnemem Wintu	Please refer to Chapter 11, Fisheries and Aquatic Ecosystems of the SLWRI FEIS for analyses of the effects on salmonids upstream of Shasta Dam. Effects disclosed for Impacts Aqua-7, 8,12, 13 and 14 indicate that effects of the

Letter Number	Comment Number	Comment	Response
		Ecological Knowledge determines that the raise will not improve conditions for the endangered salmon. A dam raise will impede the salmon returning to the high-country streams and their spawning grounds above the Daswick and Shasta Dams.	action alternatives would be less than significant, beneficial or reduced to a less than significant level with mitigation measures. The Dam raise alternatives would not have greater effect on upstream salmonid spawning that currently occurs under the No Action Alternative.
308	7	The plan will also pollute water from the dam by disturbing abandoned uncapped mines. Toxic substances including cadmium and mercury will pollute the rivers and drinking water. This will negatively affect the health of everyone who drinks and uses the water and will be detrimental to fish, wildlife and to the ecosystems!	The SLWRI FEIS indicates in Chapter 9, Hazards and Hazardous Materials and Waste that all of the potential effects related to release of hazardous materials could be reduced to less than significant levels.
308	8	Please show respect for and consult with Chief Caleen Sisk of the Winnemem Wintu Tribe! Please do not allow destruction of the rest of the land and sacred sites of the Winnemem Wintu people! Please find it in your heart not to raise the dam and to protect the salmon, water, and ecosystems for everyone! I urge you and members of the Bureau of Reclamation, Westlands Water District and the Secretary of the Interior, David Bernhardt to work with Chief Sisk and the Winnemem Wintu people and to let them help to guide you in your decisions. This will be for the good for you, for everyone and for future generations!	Reclamation acknowledges the commenters request and opposition to the SLWRI project.
316	1	Thank you for soliciting public comments for this project, however, I oppose raising Shasta Dam because of the effects on salmon and Native American archaeological sites, as well as the proposed beneficiaries of the dam raise: the Westlands Water District. The several hundred corporate "farmers" who will gain millions of dollars from	The NEPA Purpose and Need and project description in the SLWRI FEIS provide the reasons Reclamation is evaluating raising the storage capacity of Shasta Lake. The SLWRI Draft SEIS is focused on disclosing new and expanded information on the impacts to the resources evaluated in the SLWRI FEIS and Reclamation is not proposing to

Letter Number	Comment Number	Comment	Response
		thistaxpayer funded project do not represent the public's best interests. They grow heavily subsidized crops with heavily subsidized water, all the while exploiting migrant workers with horrible conditions, illegally low wages, and no job security. I live in the Sacramento River basin below Shasta Dam, and I fear that the recovery of salmon in my local creek, which have started to appear for the first time in 50 years, will be devastated beyond recovery. I do not support desecrating God's creation any more than we already have, and what we already have done is the most horrible of sins.	modify the project purpose and need through the SEIS. Prior to making a decision on the project, Reclamation will consider all alternatives addressed through the NEPA process including the No Action Alternative.
317	1	You guys have caused enough problems with the dams that are already built. Follow the science. Leave well enough alone. Do not raise Shasta Dam. It is another bad idea for fish, water, and people.	The NEPA Purpose and Need and project description described in the SLWRI FEIS provides the reasons Reclamation is evaluating raising the storage capacity of Shasta Lake. The SLWRI Draft SEIS is focused on disclosing new and expanded information on the impacts to the resources evaluated in the SLWRI FEIS. Prior to making a decision on the project, Reclamation will consider all alternatives addressed through the NEPA process including the No Action Alternative.
318	1	Existing within the traditional territories of Mount Shasta, the Winnemem Wintu people have been the Indigenous caretakers of the Winnemem Waywacket (McCloud River) since time immemorial. The Winnemem Waywacket is the Winnemem Wintu's religious shrine and sanctuary, which they have, as part of their identity, pledged to protect. Children are not allowed at sacred places at the river until they are old enough to understand their indigenous role to honor and protect. Winnemem Wintu females have their puberty rights in a sacred spot on the Winnemem	Reclamation acknowledges the commenter's opinion regarding the merits of the SLWRI project and the cultural heritage of the Winnemem Wintu tribe. No comments on the SDEIS were provided so no additional response is required. Please also refer to Chapter 14, Cultural Resources of the SLWRI FEIS which addresses effects on important resources and traditional cultural properties and master responses for cultural resource effects in Chapter 33.

Letter Number	Comment Number	Comment	Response
		Waywacket. You, who honors diversity, equity, and inclusion in the workplace understands in your heart the respectful relationship involved in an authorization process. Without the Winnemem Wintu's free, prior and informed consent, the Shasta Dam Raise and resulting discharge is a human rights violation according to the United Nations.	
318	2	I understand that you are doing your job to the best of your ability. I understand that your focus is generational, investing in a future that enables the benefits of modern life by challenging us to the highest standards of honor by conducting ourselves responsibly with trust and integrity. That is why I demand you cease this project. I have a resilient vision of the Winnemem Waywacket moving forward. Given the air, health, water, and soil crisis that is rapidly becoming worse, I envision a river and forest that is safe, sustainable, and embracing of all beings. I am confident that you can help make this happen. I bless your leadership.	Reclamation thanks the commenter for this comment and acknowledges this perspective and opinion.
321	1	The dam raise, in conjunction with the construction of Sites Reservoir, would sacrifice water, salmon and the Delta. In addition, the dam raise would also inundate or impact sacred sites integral to the Winnemem Wintu's culture and history. Sites that would be flooded include Children's Rock and Puberty Rock, vital sacred sites for the Winnemem Wintu's Puberty Ceremony for young women.	Reclamation has designed the SLWRI project balance water supply reliability and downstream ecosystem needs. The FEIS addresses the potential effects resources considered sacred, cultural resources and traditional cultural properties effects in Chapter 4, Cultural Resources. Chapter 33 provides master responses for cultural resources including those known to be sacred to the tribes. No additional response is required because not comments on the SDEIS were provided.

Letter Number	Comment Number	Comment	Response
321	2	This project is in conflict with state law, and should not be allowed.	Reclamation acknowledges this comment. No additional responses is possible because of this comment lacks sufficient details to address alleged conflicts with state law.
327	1	Not so many projects are so ready for the times we live in! It provides: 1. Renewable power with no carbon emissions. 2. Water for Agriculture. One acre of land fallowed for lack of water could feed 12 human beings for one year. Promotes jobs directly and indirectly. Generates increased tax revenues. 3. Provides better flood control from Redding to the Delta. Almost every year the Bureau releases water which increases flooding because inflows exceed current safe lake capacity? 4. Supplies colder and more water for fish. Could improve the benefits of Sites Reservoir if and when both are completed. 5. Would help mitigate potential effects of Climate Change. 6. Supplies a great opportunity for State and Federal government to cooperate for the benefit of Citizens instead of supporting political allies.	Reclamation thanks the Commenter for taking the time to submit their letter in support of the proposed project.
328	1	I'm writing to oppose the U.S. Bureau of Reclamation's Shasta Dam raise project, which violates state, federal and international law. It also represents an act of cultural oppression against the Winnemem Wintu people who have been the Indigenous caretakers of the Winnemem Waywacket (McCloud River) since before Europeans arrived on this continent.	Reclamation acknowledges the commenter's opposition to the SLWRI project and the opinion regarding the Winnemem Wintu Tribe. The FEIS provides analyses of cultural resources effects in Chapter 14, Cultural Resources and provides a master response regarding comments related to tribal resources effects in Chapter 33. No additional response is required because no comments on the SEIS were provided.

Letter Number	Comment Number	Comment	Response
328	2	In 2016 Congress passed the Water Infrastructure Improvements for the Nation Act (WIIN Act), which requires the project to adhere to all environmental laws, including the state of California's Wild and Scenic River Act. Raising the level of the dam would violate that Act. The Bureau is violating the WIIN Act by moving forward without a partner. I urge the Bureau to permanently suspend the Shasta Dam raise project.	Please refer to the Final SEIS Master Comment Response WIIN-1, WIIN Act Compliance for a discussion regarding Reclamation's compliance with the requirements of that Act. Please also see Chapter 5 of the SEIS for a discussion of Wild and Scenic River Considerations for the McCloud River.
329	1	I'm writing to condemn the U.S. Bureau of Reclamation's Shasta Dam raise project, which violates state, federal and international law. It also represents an act of cultural genocide against the Winnemem Wintu people who have been the Indigenous caretakers of the Winnemem Waywacket (McCloud River) since time immemorial.	Reclamation acknowledges the commenter's oppositions to the SLWRI project. Please see Chapter 14 in the FEIS for a discussion of Cultural Resources, and Chapter 25 in the FEIS and Chapter 5 in the SEIS for analysis of impacts to the McCloud River.
331	1	For document review and comment, distribute a version that has line numbers on every page or is editable. Trying to cite a specific location in the document to be reviewed is, at best, cumbersome (see below for how I had to make citations); and most likely would deter more people from commenting.	Thank you for your suggestion. The Draft SEIS was developed using Reclamation's approved template and styles for technical reports which strives for readability and meets requirements for making Federal Agency websites and the information they contain, including pdf documents, accessible to those with disabilities.
331	2	Include an acronym glossary	Thank you for your suggestion. Please see response to comment 331-1 regarding the document following Reclamation's approved template for technical reports.
331	3	Include a study area map that identifies all the basins and reaches (particularly the McCloud)	Reclamation appreciates this suggestion. Several maps are provided in the FEIS. The information contained in the Draft SEIS does not alter those maps.

Letter Number	Comment Number	Comment	Response
331	4	"Project Background" should be preceded by a brief description of what the document is for and what it's going to tell the reader.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	5	Do not use percentages at all. They are misleading and cannot be used for comparative purposes. Use the actual numbers (acres, inundation area, reach length, reservoir storage, biological information, etc.) and explain why a difference between two numbers is important. In other words, answer the "So What?" question. For exampe, if I have 20 cents, and you have 10 cents, I have 100 percent more money than you do. But neither one of us can buy much.	Reclamation acknowledges the commenters suggestion. Percentages are commonly used in technical documents to present information and are useful for the purposes of comparing alternatives.
331	6	All whole numbers less than 10 must be spelled out.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	7	On a couple of pages there are page breaks that should be removed, e.g., 5-26.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	8	Is there a USBR requiremement to describe the short- and long-term effects of climatechange on the project?	Climate is discussed in the FEIS Chapter 5, Air Quality and Climate and in the FEIS Climate Change Modeling Appendix. Please also refer to the FEIS Master Comment Response CC-2, Climate Change Projections for additional information regarding the climate change analysis.
331	9	Section 5 needs a table presenting the parameter amounts associated with each alternative. Trying to do this by reading the text is very daunting.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	10	Page 1-1, 3rd para, last sentence: replace tiered with tied	This sentence refers to the tiering of environmental documents. In this case, from the CALFED Programmatic EIS/R. No change has been made.
331	11	Page 1-3, 1st para, item (2): what's a "programmatic approach"?	The programmatic approach referred to here is the approach under NEPA whereby and agency reviews environmental effects at a program-level opposed to a project-level.
331	12	Page 2-1, 3rd paragraph, last sentence: provide a list of "infrastructure".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	13	Page 2-2, last paragraph, first sentence" change "Received" to "received". And describe why the Determination is important	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS. As discussed in Chapter 2.1 and 2.2 the Preliminary Jurisdictional Determination from the USACE is an important step in the process for obtaining a permit under the Clean Water Act Section 404.
331	14	Page 2-3, 3rd paragraph, 1st sentence. Even though an item of "less than one acre" will not be considered, how many one acre instances can have a cumulative effect?. And last sentence, move "only" to after "evaluate".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	15	Page 2-4, Avoidance item 1: remove "effectively".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	16	Page 2-4, Avoidance item 3: make "alternatives" singular	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	17	Page 2-5, Avoidance item 8: define "optimal" or re-phrase the sentence to make it less ambiguous	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	18	Page 2-5, Avoidance item 10: define "reasonable".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	19	Page 2-6, Chapter 2-4, 1st paragraph, 2nd sentence: add a period between "Lake" and "Because".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	20	Page 2-6 and 2-7, Chapter 2-4, 2nd paragraph, 2nd sentence: Reword to read, " . . . in order to describe the proposed changes to WOTUS, Reclamation recalculated, using updated information, the projected impacts to wetlands and other WOTUS from projectrelocations."	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	21	Page 2-7, Table 2-1: why is the table title "Summary of Discharges"? There are no discharges in the table.	The discharges referred to in Table 2-1 consist of fill material, included in the right-hand column of the table.
331	22	Page 2-7, 1st paragraph below the table, 1st sentence: remove ", intotal"	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	23	Page 2-7, 1st paragraph below the table, 3rd sentence: remove"factual".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	24	Page 2-7, 1st paragraph below the table, 3rd sentence: after the first SLWRI FEIS, change "as" to "because".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	25	Page 2-7, 2nd paragraph below the table, 2nd sentence: add "a combined" after "approximately". And delete "total".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	26	Page 2-8, 3rd line: change "over" to "and".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	27	Page 2-9, Chapter 2.5, 1st line: "permittee responsible" should be hyphenated.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	28	Page 2-9, Chapter 2.5, 3rd line: What's BOT-4?	This refers to the SLWRI FEIS mitigation measures titled, Mitigation Measure Bot-4.
331	29	Page 2-10, 1st full paragraph, 1st sentence: "programs" should be singular.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	30	Page 2-10, 1st full paragraph, 2nd sentence: what kind of agreements, legal, MOU, etc.?	This refers to any agreements with EPA or USACE to use in-lieu fee payments collected by other agencies which could take many forms, including memoranda of understanding or agreement.
331	31	Page 3-2, penultimate paragraph: remove the quotes from around "non-visible".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	32	Page 3-3, 1st line: remove "properly" and add after "handled", "according to established guidance and policy,". Page 3-3, 5th line: "readily located" is pretty loose language. Are there criteria for "readily"? This comment applies to the instance of "readily" at the end of this paragtraph.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS. The term "readily" is given its ordinary meaning and does not have specific criteria.
331	33	Page 3-3, Chapter 3-3, 2nd paragraph: Why "typically"? Is there other guidance that would apply? Perhaps replace with ",in most cases,".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	34	Page 3-4, 2nd line: replace "relatively" with "nearly". Also, "little threat" is used to explain "low threat" Describe differently. Two paragraphs later "low threat" is used and is quoted. Be consistent.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	35	Page 3-4, numbered paragraph 3, 3rd line: "where" may be extraneous and safe to remove.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	36	Page 4-2, 1st paragraph: "modelled" spelled with a double L. Single L everywhere else.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	37	Page 4-2, Chapter 4.2, 1st paragraph: What do the modeling results mean? Lots of numbers, but needs an explanation.	The explanation of how the modeling results are used to evaluate potential environmental effects is provided in Section 3.4 of the SEIS.

Letter Number	Comment Number	Comment	Response
331	38	Page 4-2, last paragraph, third line: "types for" doesn't fit. Remove percentages and clean up the sentences. Impossible to follow.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	39	Page 4-3 through 4-4: Percentages don't tell any story.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	40	Page 4-5, 1st paragraph: What's the significance of the difference between the 2015 and 2019 scenarios?	The 2019 scenario uses more recent operational modeling information as discussed in Chapter 4.1, Background. Specifically, "The 2019 BOs include operational changes for Shasta Dam and the CVP as a whole with regard to Shasta Dam's operational schedule, including timing and magnitude of releases and the amount of storage to be withheld in any given year."
331	41	Page 4-7, 1st paragraph (temperature): what's a tier. Provide overview first, than follow with data. Need to explain what a "more stringent standard" is. And "several" other years did not move up. I see only two more.	Please refer to section 4.2 of the SEIS for an explanation of the temperature tier data in table 4-1.
331	42	Page 4-7, "Summary", 2nd line: Define "significantly different".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	43	Page 4-7, "Summary", 8th line: change "which reflects" to "that reflect"	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	44	Page 4-8, 2nd paragraph: change "within 2% (roughly equivalenrt)" to "equivalent".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	45	Page 4-8, last paragraph: clarify/explain "significantly different".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	46	Page 5-3, 3rd paragraph: Split last sentence in two as follows, " . . . "Scenic Rivers Act. Therefore this section is being . . ."	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	47	Page 5-4, end of page: What is the link between "public access" and free flowing.Also hyphenate free-flowing or don't. It's both ways on the page.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS. Please refer to the FEIS, Master Comment Response WASR-1, Eligibility of the McCloud River as a Federal Wild and Scenic River.
331	48	Page 5-5, 2nd line: replace ". . . encompassing 46 total river miles . . ." with " . . . totaling 46 river miles . . ."	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	49	Page 5-13, Section 5.4.1: 1) Need a map of the segments you discuss, 2) Refer to this section when you first talk about ORVs.	The information is provided in Figures 5-1, 5-2 and 5-3.
331	50	Page 5-18, last paragraph, 1st line: exchange the order of "predominantly" and "controlled".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	51	Page 5-18, last paragraph, 4th line: base flows aren't affected by storms except in the short-term during the recession portion of the event hydrograph.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	52	Page 5-19, 3rd line: Define "unregulated conditions"	The phrase "unregulated conditions" refers to conditions in which flows are not regulated by existing infrastructure.
331	53	Page 5-19, last line before the Water Quality section: Is "full-pool elevation" defined somewhere? I assume this is normal full pool per the water control manual.	Full-pool elevation is discussed in the FEIS Chapter 6, Hydrology, Hydraulics, and Water Management.
331	54	Page 5-24, Gage Data: Why use only WY 2019 data?	The SEIS made use of the most recent available water data record for the relevant area.
331	55	Page 5-27: Delete comparisons using percent, which do not add any relevant information.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	56	Page 5-28, 2nd paragraph, 3rd line: Why is "immediately upstream" used as a reference for temperature comparison?	This is not a comparison statement. This statement informs the reader that the fluctuation of temperatures upstream affect temperatures downstream in the reach discussed in the paragraph the commenter refers to.
331	57	Page 5-28, "Cultural/Historic Resources, 7th line: inseert "thereby" immediately before "affecting".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	58	Page 5-30, 1st full paragraph: remove parentheses after "Shasta Lake" and replace with commas.	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.

Letter Number	Comment Number	Comment	Response
331	59	Page 5-30, next paragraph: Remove "General" before "effects".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	60	Page 5-30, next paragraph, last sentence: Remove "considered".	Reclamation appreciates your comment and has considered this suggestion during the development of the Final SEIS.
331	61	Page 5-31, CP2 – 12.5-Foot: Have you addressed the flood control impacts and/or spillway structural impacts? Hioger pool equals more spill flow and velocity (think cavitation).	Flood management is addressed in the FEIS, Chapter 6, Hydrology, Hydraulics, and Water Management and in the FEIS Physical Resources Appendix, Hydrology, Hydraulics, and Water Management Technical Report.
332	1	We are writing to ask the U.S. Bureau of Reclamation to cancel the Shasta Dam raise project. We are concerned about the destruction of the largest estuary on the Pacific coast, We are also concerned about the flooding of sacred lands of the Winnemem Wintu people who have been the Indigenous caretakers of the Winnemem Waywacket (McCloud River) since time immemorial. Please consider the environmental impacts on this major estuarine habitat for wildlife and on cultural impacts on the native people of this area.	Reclamation acknowledges the commenter's concerns and opposition to the SLWRI project. Please see Chapter 11 of the FEIS for a discussion of fisheries and aquatic ecosystems, Chapter 12 for botanical resources and wetlands, and Chapter 13 for consideration of impacts to wildlife. Effects on resources associated with the Winnemem Wintu tribe are addressed in Chapter 14 of the FEIS, Cultural resources, including effects on known artifacts, sacred sites, and traditional cultural properties.
333	1	I'm writing to condemn the U.S. Bureau of Reclamation's Shasta Dam raise project, which violates state, federal and international law. It also represents an act of cultural genocide against the Winnemem Wintu people who have been the Indigenous caretakers of the Winnemem Waywacket (McCloud River) since time immemorial.	Reclamation thanks the Commenter for submitting a letter in opposition to the proposed project. Reclamation acknowledges the concerns raised regarding Native Americans and their sacred sites and resources. Please see FEIS Master Comment CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources.

Letter Number	Comment Number	Comment	Response
367	1	Please select the "no action" alternative. The plan to raise the dam would cost taxpayers too much for the slender benefits. The plan would destroy parts of a Wild and Scenic River (because a flooded river is a lake, not a river). It inundates cultural resources protected by the SHPA and Section 106. Moreover, valuable habitat for rare plants and animals would be destroyed forever. The significant and unavoidable impacts from this project are not justified by the benefits. I am writing as a private citizen.	Reclamation acknowledges the commenters support for the no action alternative. Please refer to SLWRI FEIS master responses regarding project feasibility and cost-benefits of the project (Chapter 33, COST/BEN-1 through 5). Reclamation believes implementing alternative CP 4A is an efficient approach to providing improved water supply reliability and benefits for downstream anadromous fish species. The Draft SEIS provides additional wild and scenic river analyses, including providing an additional mitigation measure WASR-3, Develop and Implement a Comprehensive Multi-Scale Wild Trout Fishery Protection, Restoration and Implementation program for portions of the McCloud River. A discussion of potential effects on tribal resources is provided in Chapter 14 of the FEIS, Cultural Resources.
374	1	Other commenters have offered more empirical details, but I would like to ask you from my heart: please, choose the people of California, our indigenous tribes, and endangered wildlife critical for our environmental health, instead of supporting the greed of agricultural corporations. Do the right thing.	Reclamation appreciates receiving this letter on the proposed project. For a discussion of the project purpose, need, objectives and alternatives, commenters should refer to the FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, "Range of Alternatives."
383	1	Comment: Capturing more water from floods, saving water for droughts, groundwater recharge, irrigation for our food supply, better drinking water quality, water rate decreases, etc.	For discussion regarding the project purpose, need, objectives, and alternatives, please refer to the FEIS, Chapter 33, Master Comment Response P&N-1, "Purpose and Need and Objectives" as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see Master Comment Response ALTS-1 "Alternative Selection" for alternative

Letter Number	Comment Number	Comment	Response
			selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance).
384	1	Comment: Ca has added millions 'of citizens since the CVP and the SWP. The same for almost all the other states in the US. That means that food and water security is more important than ever. Many state and federal surface water contracts have been hijacked for nebulous environmental reasons, water storage is and will be crucial if we are going feed the US and many parts of the world with the 400 various crops that are grown in Ca. Many of those crops are ONLY grown in Ca. Please consider this information as the SEIS moves forward in process.	Reclamation appreciates the Commenters thoughts and acknowledges these comments will be considered in the environmental review process.
404	1	I'm writing to express my opposition to the U.S. Bureau of Reclamation's Shasta Dam raise project. I am a stakeholder, living adjacent to the Sacramento River in Dunsmuir, north of Redding. This process by which this proposal is being promoted appears to violate numerous laws and would be an act of great injustice against the Winnemem Wintu ,whose traditional culture and livelihoods have already been affected by the Shasta Dam and would be further decimated by this raise proposal.	Reclamation thanks the Commenter for submitting this letter in opposition to the proposed project. Reclamation has endeavored to design the SLWRI project in a manner that balances the needs of stakeholders through increased water supply reliability and care for the environment. Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. Please also see FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already affected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam.

Letter Number	Comment Number	Comment	Response
404	2	The proposed dam raise would violate the California Wild and Scenic Rivers Act, which protects the McCloud River from being further flooded by reservoir expansion and makes it illegal for state agencies to assist in the project. The McCloud River is eligible to be designated as a Wild and Scenic River under federal law as well but the dam raise would would inundate an section of the McCloud eligible for federal listing.	Reclamation understands and acknowledges the sincere concern related to the McCloud River. The Draft SEIS, Chapter 5, Wild and Scenic River Considerations for McCloud River" provides important clarifications on many issues related to the river. Please also see Master Comment Response, CNRC-1, California Natural Resources Code Regarding the McCloud River, in the Final SEIS for additional information regarding the McCloud River and California Public Resources Code Section 5093.542.
404	3	There is no funding partner under contract because Westlands Water District, the primary proponent of the project, has been barred from participating due to state law. Yet the Bureau is moving ahead with the project and avoiding consultation with the Winnemem Wintu people about the impacts of the proposed dam raise on their historic and cultural properties	Reclamation has consulted with native American tribes throughout the process and provided extensive opportunity for comment on the SLWRI project through scoping and public review processes required by NEPA for the SLWRI FEIS and SDEIS. Please also refer to Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.
404	4	It appears the Bureau is violating the law by moving forward with the project and trying to delay consultation by coercing the tribe into signing onto a programmatic agreement (PA). The Winnemem Wintu never received adequate compensation for the lands submerged by Shasta dam. It is completely inappropriate to be considering a dam raise that will further affect the Winneman Wintu when the impacts of the original project have never been properly addressed.	Please see FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. Please also see FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already affected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam.
404	5	The dam raise is being promoted as something that will help improve habitat for endangered winter-run Chinook salmon. However, this has not been proven to be the likely outcome. Planning for the dam raise began more decades ago, it was never intended to benefit salmon, that is just	A comprehensive discussion of the potential impacts to human and natural environmental resources is provided in Chapters 4-26 of the FEIS. The FEIS Chapter 11, Fisheries and Aquatic Ecosystems, specifically addresses potential impacts to special status species which include several

Letter Number	Comment Number	Comment	Response
		window dressing to try to make the project more palatable. This $1.3 billion dam raise is a waste of taxpayer money, a public subsidy to wealthy agricultural interests represented by the Westlands Water District.	species of salmon, steelhead, and trout. Table 11-1 provides a list of special status species Potential Occurring in the Primary and Extended Study Areas. As discussed above and in Chapter 1 of the FEIS, one of the primary objectives of the project is to increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant. As described in the FEIS, Chapter 2, Section 2.5, increasing the ability to meet flow and temperature requirements along the Upper Sacramento River is one of the benefits expected from the project. A summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the FEIS, highlighting the range of positive impacts to a variety of beneficiaries.
404	6	In conclusion, this project is potentially very harmful, especially to the Winnemem Wintu Tribe, it has failed to follow proper legal process and is a waste of taxpayer funds. It should be permanently suspended immediately. Any public funding for the Sacramento River should first go towards redress for the Winnemem Wintu for the dam's original impact and for genuine efforts at improving the resilience of the river in this time of climate change and as well as the health and wellbeing of everyone living downstream.	As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. Please also see Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already affected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam.
405	1	Comment: The Shasta dam should not be raised. It does not need to be and it is a pattern of historical reaction to water needs by the building of infrastructure similar to the 50s. Our modern era requires a modern solution. We need	Reclamation acknowledges your opposition to the proposed project and appreciates receiving the comment on the Draft SEIS. For discussion regarding the project purpose, need, objectives, and alternatives, please see the FEIS, Chapter 33, Master Comment Response P&N-1,

Letter Number	Comment Number	Comment	Response
		to focus on policy changes and management practices. Do NOT RAISE SHASTA DAM!!	"Purpose and Need and Objectives" as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see Master Comment Response ALTS-1 "Alternative Selection" for alternative selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance).
411	1	I am writing to urge you and the Bureau of Reclamation to halt the $1.3 billion Shasta Dam Project in CA because, according to the US. Fish and Wildlife Service, the project would inundate abandoned uncapped mines in the Shasta region, increasing the load of cadmium, mercury and other toxins in the already impaired Shasta reservoir. This increased load would then be flushed down the Sacramento River, jeopardizing habitats along the length of the river and introducing more toxins into drinking water from Redding to Los Angeles. The environmental concerns are too great to go forward with this project.	The SLWRI FEIS indicates in Chapter 9, Hazards and Hazardous Materials and Waste that all of the potential effects related to release of hazardous materials could be reduced to less than significant levels. Water quality is addressed in Chapter 7 of the FEIS. Please also refer to FEIS Master Comment Response WQ-1 – Remediation of Abandoned Mines in the Shasta Lake Area, for a discussion of impacts and mitigation for potential effects of inundating abandoned mines. This comment does not raise new information that requires further supplemental analysis.
427	1	Not the McCloud River! Sacrifice the California Wild and Scenic McCloud ? Since you are asking, I say no. "No Action" alternative. No it's against the law. Thank you.	Reclamation understands and acknowledges the sincere concern the Commenter has regarding the McCloud River. The Draft SEIS, Chapter 5, Wild and Scenic River Considerations for McCloud River" provides important clarifications on issues related to the McCloud River. Please also see Master Comment Response, CNRC-1, California Natural Resources Code Regarding the McCloud River, in the Final SEIS for additional information regarding the river and California Public Resources Code Section 5093.542.

Letter Number	Comment Number	Comment	Response
428	1	Please do not raise the Shasta Dam. Leaving the dam as it is, is the preferred option.	Reclamation appreciates receiving the comment letter and acknowledges the commenters' opposition to the SLWRI project.
428	2	First of all, raising the dam will not do enough good to justify the cost.	Please refer to the FEIS Master Comment Response COST/BEN-1 regarding the estimated costs and Master Response COST/BEN-4 for a discussion of potential non-monetary benefits of SLWRI action alternatives. Additional information can be found in the EIS Engineering Appendix, Attachment 1, "Cost Estimates for Comprehensive Plans," and EIS Chapter 2, "Alternatives," Section 2.3, "Action Alternatives."
428	3	has someone forgotten Febraury 17, 2017, in the Sacramento Valley, when the Oroville main spillway failed, and the known to be inadequate alternative spillway began to fail, requiring he evacuation of about 200,000 people and …, well, maybe you remember now.	Reclamation acknowledges the commenters' concern over engineering and design. Please see the Engineering Summary Appendix in the FEIS for a discussion of engineering related issues for the proposed project.
428	4	And also of importance, raising the dam would inundate lands of cultural significance to native americans and impair habitat and recreational values.	Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. Please see Chapters 11-13 of the FEIS for a discussion of potential habitat effects as well as Chapter 18 for a discussion of recreation and public access potential effects related to the proposed project.
440	1	I am writing to encourage you to follow a more forthright and honest approach to the EIS regarding the proposed changes to the Shasta Dam.	Please see FEIS Master Comment Response NEPA-1 for a discussion of how Reclamation is satisfying, to the fullest extent possible, NEPA requirements for development of the EIS.

Letter Number	Comment Number	Comment	Response
440	2	I am also formally requesting that you add this email as a comment to the Draft Supplemental EIS (DS-Environmental Impact Statement).	Reclamation acknowledges the request and considers this email as a formal comment on the Draft SEIS.
440	3	The proposed project in in conflict with California State regulations, so any attempt to raise the dam will fail to get state permits and approvals. Failing to mention and acknowledge the conflict with state regulations in the EIS misleads the public and the supporters of your proposal, and will be construed as an act of bad faith by all parties. I urge you not to compromise your reputation by failing to include a full disclosure of the legal conflict you are courting, and its consequences.	Reclamation has acknowledged that the action alternative may conflict with California laws and policies, in particular, those protecting the McCloud River and its wild trout fishery. See FEIS Master Comment Response 33.3.19, WASR-6, at 33.3-102-03; FEIS, Chapter 25. State agencies may determine that they are prohibited from issuing permits or approvals for the project, but Reclamation is obligated to consider alternatives even though they may be inconsistent with existing State law. Please also refer to SEIS Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River. As a federal agency, Reclamation will adhere to all applicable federal laws including the Endangered Species Act. A discussion of how Reclamation is complying with ESA can be found in SEIS Master Response ESA-1, "ESA Compliance."
440	4	All interested parties deserve an honest supplemental EIS that concedes that the project is in conflict with state regulations. The responsible path forward is to inform the proponents of the plan to raise the dam that they can't get the necessary state permits and approvals. You have an obligation to note clearly that the project is in conflict with federal water law which requires the Administration to comply with state law.	Reclamation has acknowledged that the action alternative may conflict with California laws and policies, in particular, those protecting the McCloud River and its wild trout fishery. See FEIS Master Comment Response 33.3.19, WASR-6, at 33.3-102-03; FEIS, Chapter 25. State agencies may determine that they are prohibited from issuing permits or approvals for the project, but Reclamation is obligated to consider alternatives even though they may be inconsistent with existing State law. Please also refer to SEIS Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River.

Letter Number	Comment Number	Comment	Response
			As a federal agency, Reclamation will adhere to all applicable federal laws including the Endangered Species Act. A discussion of how Reclamation is complying with ESA can be found in SEIS Master Response ESA-1, "ESA Compliance."
440	5	It is simply dishonest to omit the FEIS language about the conflict with state law and it is factually misleading to attempt a reinterpretation of the state Wild & Scenic Rivers Act to suggest that it doesn't protect the McCloud River.	Reclamation has acknowledged that the action alternative may conflict with California laws and policies, in particular, those protecting the McCloud River and its wild trout fishery. See FEIS Master Comment Response 33.3.19, WASR-6, at 33.3-102-03; FEIS, Chapter 25. State agencies may determine that they are prohibited from issuing permits or approvals for the project, but Reclamation is obligated to consider alternatives even though they may be inconsistent with existing State law. Please also refer to SEIS Master Comment Response CNRC-1 - California Natural Resources Code Regarding the McCloud River. As a federal agency, Reclamation will adhere to all applicable federal laws including the Endangered Species Act. A discussion of how Reclamation is complying with ESA can be found in SEIS Master Response ESA-1, "ESA Compliance."
441	1	I am against raising the Shasta Dam. it will inundate tribal sites, which we have no moral right to do.	Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources.
441	2	In addition, it would further devastate what is left of the wild salmon population	Please see FEIS Master Comment DSFISH-3, "Fish Habitat Restoration," Master Comment DSFISH-4, "Maintaining

Letter Number	Comment Number	Comment	Response
			Sacramento River Flows to Meet Fish Needs and Regulatory Requirements," Master Comment DSFISH-5, "Fish and Wildlife Coordination Act," and Master Comment DSFISH-9, "Flow-Related Effects on Fish Species of Concern" for a discussion on how the proposed project could impact fish species of concern in the Sacramento River.
441	3	This project is an assault on the environment and human rights.	Reclamation acknowledges the commenters opinions regarding the proposed project. Reclamation has endeavored to design the SLWRI project in a manner that balances the needs of stakeholders through increased water supply reliability and care for the environment.
442	1	The environmental mess we're in now is the direct result of failed and faulty policies enacted by generations of "great white men" who've decided that treating ecosystems as plumbing projects, acting as wreckers to make their friends and clients richer, and genocide are the way to go. So why, then, would you think that replicating and expanding on these policies is a good idea in any way at all?	Reclamation acknowledges your opposition to the proposed project and appreciates receiving the comment on the Draft SEIS. For discussion regarding the project purpose, need, objectives, and alternatives, please see the FEIS, Chapter 33, Master Comment Response P&N-1, "Purpose and Need and Objectives" as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see Master Comment Response ALTS-1 "Alternative Selection" for alternative selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance).
442	2	1. The Shasta dam contributed to cultural genocide and supported the literal genocide of native peoples of California. Raising the dam height furthers that agenda by destroying yet more of their cultural resources and heritage.	Reclamation acknowledges the concerns raised regarding historical impacts to Native Americans as well as those related to the SLWRI. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see FEIS Master Comment Response CR-1,

Letter Number	Comment Number	Comment	Response
			"Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. Please also see FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already affected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam. As discussed in the Draft SEIS Chapter 4, Supplemental Information on Shasta Dam Operations and Modeling, Reclamation updated operations and modeling results to reflect the 2019 Biological Opinions on the Long-Term Operations of the CVP issued by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Reclamation concluded that for most environmental resources, the changes in flow under the 2019 scenario are not likely to result in changes to the magnitude and severity of potential impacts compared to those discussed in the FEIS. A full discussion of potential impacts to cultural resources is provided in Chapter 14, Cultural Resources, of the FEIS and an evaluation of potential impacts to Indian Trust Assets is provided in Chapter 15 of the FEIS.
442	3	2. Water storage by ecosystem destruction is bad science. Storing water IN ecosystems prevents desertification and wildfires. Policies to implement this are less expensive to start, easier to maintain, and biologically sound. Taking water from ecosystems to flood other ecosystems causes desertification and reduces biological resilience. We cannot afford either of those ends.	Reclamation acknowledges the opinions of the Commenter. Please see Chapter 6, Hydrology, Hydraulics, and Water Management in the FEIS for a discussion of these topics as they relate to the SLWRI. For additional discussion regarding the project purpose, need, objectives, and alternatives, commenters should refer to the FEIS, Chapter 33, Master Comment Response P&N-1, "Purpose and Need and Objectives" as well as Master

Letter Number	Comment Number	Comment	Response
			Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives.
442	4	3. The ecosystems of much of northern CA depend on salmon. Driving the winter run salmon extinct is choosing disaster for the entire ecosystem.	Reclamation acknowledges the Commenters' concern over impacts to winter run salmon. Please see FEIS Master Comment DSFISH-3, "Fish Habitat Restoration," Master Comment DSFISH-4, "Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements," Master Comment DSFISH-5, "Fish and Wildlife Coordination Act," and Master Comment DSFISH-9, "Flow-Related Effects on Fish Species of Concern" for a discussion on how the proposed project could impact fish species of concern in the Sacramento River.
443	1	As a Yamani Maidu, and a resident of California, I am firmly opposed to the Shasta Dam in it's entirety, let alone any expansion. This dam has caused irreversible environmental and cultural harm. If the Sacramento Valley, or any other valley, need more water, let them do a rain dance.	Reclamation acknowledges the commenters opposition to the SLWRI project.
443	2	This planet was created for all of it's inhabitants, and the audacity of humans to think it is all here for exploiting is incredulous. Not only have our river dwellers suffered as a direct result of this dam, Native people, who rely on the fish for many aspects of their lives have suffered, and continue to suffer. And that doesn't even take into account the lands that were taken in order to build them.	Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see FEIS Master Comment Response CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. Please also see FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already affected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam.

Letter Number	Comment Number	Comment	Response
443	3	I say - take the damn down.	Reclamation acknowledges the request.
444	1	I oppose the raising of Shasta dam for environmental reasons such as protecting salmon and not flooding Native American sacred grounds.	Reclamation acknowledges the commenter's opposition to the project. Please refer to the FEIS Master Comment Response P&N-1 regarding the purpose and need for the project which includes increasing the survival of anadromous fish. Please refer to the FEIS Master Comment Responses CR-1, Potential Effects to Cultural Resources, CR-3, Current Effects to Cultural Resources and CR-8, Native American Connection to Salmon.
452	1	I oppose raising Shasta Dam. The EIR does not address the climate impacts of habitat destruction caused by the dam. Natural habitat is one of the best carbon sinks. Climate change effects are happening faster than predicted in 2014 and we must preserve all natural habitat that we can. Shasta Dam is a colonial icon emblematic of the ongoing efforts to support American capital investment in ever-expanding unsustainable development, while eradicating ecosystems and importantly, continuing a long history of indigenous genocide. The Winnemum Wintu, whose ancestral lands and many sacred sites were flooded over by the initial construction of Shasta dam will have more sacred sites flooded with a dam raise. It's also important to recognize this project as poor, politically motivated infrastructure planning, rather than the science-informed project it's trying to present itself as. Massive dams and infrastructure projects that aim to fundamentally change the course and behavior of rivers aren't good for riparian ecosystems and the species that inhabit them.	Reclamation is appreciative of your comment. Please see the FEIS Master Response P&N-1, "Purpose and Need and Objectives," Master Response CC-1, "Climate Change Uncertainty and Related Evaluations" and Master Response CR-1, "Potential Effects to Cultural Resources" for discussions related to the issues raised in this comment letter.
455	1	I am firmly OPPOSED to the raising of Shasta Dam. I think it is appalling to use public money to benefit private	Thank you for your comment and your participation in the NEPA public review process. Please refer to the FEIS Master

Letter Number	Comment Number	Comment	Response
		interests while destroying more of the world class McCloud River.	Comment Response GEN-5 regarding general opinions regarding the project. Please also see the FEIS Master Comment Response COST/BEN-5, Potential Project Financing and Master Comment Responses WASR 1 through WASR-8 regarding the McCloud River. Please also see the Final SEIS Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River.
457	1	I strongly oppose the raising of Shasta Dam. It is a bad idea for fish, water, and people. Putting a massive structure on this older dam, in close proximity to 2 active volcanoes, is wrong on many levels. This is a political move to simply move too much water south. I strongly oppose raising Shasta Dam.	Please refer to the FEIS Master Comment Response GEN-5 regarding general opinions regarding the project. Please also see the FEIS Master Comment Response P&N-1, Purpose and Need and Objectives, regarding the underlying need for the project. Please refer to the FEIS, Chapter 4, Geology, Geomorphology, Minerals and Soils for a discussion regarding seismic conditions and risk. Impact Geo-1, Exposure of Structures and People to Geologic Hazards Resulting from Seismic Conditions, Slope Instability and Volcanic Eruption specifically addresses seismic risk.
462	1	We do not need more expansive water boondoggles. If Native Americans gather at the dam to protest this project I will join them. I only live a few hours from Redding and I will not let this project go unchallenged.	Reclamation acknowledges the commenter's opposition to the project. Please refer to the FEIS Master Comment Response GEN-5 regarding general opinions regarding the project. Reclamation acknowledges the concerns raised regarding Native American sites and cultural resources. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see Master Comment CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources.

Letter Number	Comment Number	Comment	Response
462	2	I am a native Californian. If I had been old enough I would have strongly opposed to raising Shasta Dam years ago. There is nothing good about this proposal. Have we not done enough to destroy Native American culture. I will gladly donate to a law suit to stop this selfish, arrogant, and anti-environmental.	Please refer to response to comment 462-1 regarding the commenter's opposition to the project and cultural resources.
462	3	I have fished the McCloud River. It is a heritage that few countries in the world have. The river attracts many fishermen all year long now, and destroying part of the river for no real reason is an atrocious act on the part of federal government. We have seen the direction that those who oversee water storage have taken. Taking a stream like this can never be justified.	Reclamation acknowledges the commenter's concern for the McCloud River. The FEIS Chapter 25, Wild and Scenic River Considerations for McCloud River, addresses potential environmental consequences and mitigations for the McCloud River. The FEIS includes a series of Master Comment Responses for the McCloud River Public Resource Code/Fed W&S Eligibility at 33.3.19 which address the issues commonly raised by commenters on the DEIS. The Draft SEIS, Chapter 5, Wild and Scenic River Considerations for McCloud River" provides important clarifications on many of the issues. Please also see Master Comment Response, CNRC-1, California Natural Resources Code Regarding the McCloud River, in the Final SEIS for additional information regarding the McCloud River and California Public Resources Code Section 5093.542.
462	4	We do not need more water storage, we need more water conservation. LA has been quite able to conserve enough water to save Mono Lake and its tributaries. Because this project would be both economically and environmentally harmful, I strongly oppose raising Shasta Dam.	For discussions regarding the project purpose, need, objectives, and alternatives, please refer to the FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the

Letter Number	Comment Number	Comment	Response
			SLWRI alternatives. The FEIS discloses the potential environmental impacts associated with the project in Chapters 4-26. The FEIS Chapter 16, Socioeconomics, Population and Housing addresses potential socioeconomic consequences of the project from Shasta Dam to Red Bluff. Please refer to the FEIS Master Comment Response PLAR-1, Effects to Private Residences and Businesses for additional information regarding potential impacts to businesses.
463	1	I strongly oppose the raising of Shasta Dam. It is a bad idea. I see no value in doing something which benefits a very few and damages the earth, taxpayers, and indigenous tribal lands. Because this project would be both economically and environmentally harmful, I strongly oppose raising Shasta Dam.	Reclamation acknowledges the commenter's opposition to the SLWRI project. Please refer to Master Responses CL-1 and 2 in the SLWRI FEIS for an analysis of effects on cultural resources. Please refer to Master Response Cost/BEN-1, Intent and Process to Determine Federal Intent and Cost/BEN-4, Non-monetary Benefits of Action Alternatives related the economic feasibility and benefits of the SLWRI project.
469	1	I strongly oppose the raising of Shasta Dam. It is a bad idea for fish, water, and people. Too much water is already blocked behind dams in California. The environment cannot support even more dramatic change in the normal natural scheme of life. this project would be both economically and environmentally harmful, and I strongly oppose raising Shasta Dam.	Reclamation acknowledges the commenter's opposition to the SLWRI Project. Please refer to response to comment 463-1, and see the FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives for a discussion regarding the project purpose, need, and objectives.
470	1	The increased elevation of Shasta Dam would exacerbate and threaten the Wild and Scenic section of the McCloud River, which is protected under California law. It would inundate tribal lands, substantially increase taxes, as well as destroy and further block access to critical fish habitat.	Reclamation understands and acknowledges the concern the Commenter has regarding the McCloud River. Please see the Draft SEIS, Chapter 5, "Wild and Scenic River Considerations for McCloud River" for a discussion of issues related to the river and the proposed project.

Letter Number	Comment Number	Comment	Response
			Reclamation acknowledges the concerns raised regarding Native American sites. Please see FEIS Master Comment CR-1, "Potential Effects to Cultural Resources" for a discussion related to potential impacts to Native American resources. A comprehensive discussion of the potential impacts to human and natural environmental resources is provided in Chapters 4-26 of the FEIS. The FEIS Chapter 11, Fisheries and Aquatic Ecosystems, specifically addresses potential impacts to special status species which include several species of salmon, steelhead, and trout. Table 11-1 provides a list of special status species Potential Occurring in the Primary and Extended Study Areas.
470	2	Raising Shasta Dam would further threaten winter-run Chinook and Central Valley Steelhead. It would also likely be the death knell to all hopes for re-introduction of California's only population of Bull trout, native only to the McCloud River.	Please see FEIS Master Comment DSFISH-3, "Fish Habitat Restoration," Master Comment DSFISH-4, "Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements," Master Comment DSFISH-5, "Fish and Wildlife Coordination Act," and Master Comment DSFISH-9, "Flow-Related Effects on Fish Species of Concern" for a discussion on how the proposed project could impact fish species of concern in the Sacramento River.
470	3	New approaches to California's water supply, increasingly critical as global climate change impacts increase, must be innovative, cost-effective, and benefit all stakeholders. Raising Shasta Dam is simply an old, bad solution that only serves to line the pockets of the contracting industry with taxpayer dollars. I strongly oppose the proposed increase in Shasta Dam on ecological, and economic grounds. I suggest the Bureau of Reclamation find more intelligent	Reclamation appreciates the comments on the Draft SEIS and acknowledges the Commenters' opposition to the proposed project. As described in Chapter 1, Introduction, of the FEIS, the purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. For additional discussion regarding the project

Letter Number	Comment Number	Comment	Response
		and less costly solutions to improving California's water supply infrastructure. America can do better.	purpose, need, objectives, and alternatives, commenters should refer to the FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives" as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives.
475	1	When the comment is "raise the height of Shasta Dam" is uses in statements recently releases is it physically add another 18-20 feet to dam top or is it raise the maximum water storage level behind the dam by 18-20 feet... Sorry but I find the statement a little ambiguous, as to "government speak" when some environmental items are being discusses... Not that I am complaining but sometimes its just lack of clarity for us outside the "circle" of research and engineering of proposal.	The SLWRI FEIS (SLWRI FEIS Executive Summary and Chapter 2 Alternatives) provide information on the alternative raises to Shasta Dam and increases in full pool storage of Shasta Lake. As an example, a 12.5-foot increase in the height of Shasta Dam would increase the full pool surface elevation of Shasta Lake by 14.5-feet. This would result in an increase in the maximum storage of Shasta Lake by 443,000 acre feet.
476	1	I am wondering about the Shasta Dam raise project, primarily why only a 18.5 foot raise is being evaluated when there have been greater potential expansions previously assessed? With the previous 1999 study evaluating options for raising 100' or 200' and the information that was provided on these options, it seems these are viable alternatives that would provide substantial longterm benefit for power generation and water surface storage. I am not sure what comments the Bureau of Reclamation is looking for from the public on this project but with the current goals of the USBR, future Central Valley project water demand, potential ecological benefit and numerous other factors mentioned in the 1999 report,	Please refer to the FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, "Range of Alternatives," which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives.

Letter Number	Comment Number	Comment	Response
		evaluating the higher than 18.5' raise seems like it should be considered.	
477	1	When will the new surveys be completed on homes in Lakehead impacted by the high water mark?	As has been demonstrated during the environmental review process, Reclamation is dedicated to openly sharing information and coordinating with property owners and other stakeholders regarding the SLWRI project. The same approach will continue through the life of the project, including construction. Informational meetings, in whatever format works best for the property owners, will be offered in addition to other means of communication and information sharing.
477	2	If our home is impacted by the high water mark only minimally where our septic tank sits below our house, would the septic tank be able to be moved up above our house instead of just eliminating the house altogether?	We acknowledge the commenter's concern. However, this is not the kind of determination that Reclamation can make.
477	3	If our home is majorly impacted by the high water mark, we would like to know how properties will be appraised? The potential of this project happening for decades has kept property values very low in the area, which is not the fault of the homeowners.	Please see Master Comment Response, PLAR-1, in the FEIS for a discussion on how property appraisals will be conducted. Reclamation acknowledges your comment on property values in the area.
477	4	Will there be community information meetings prior to construction where our questions can be answered?	As has been demonstrated during the environmental review process, Reclamation is dedicated to openly sharing information and coordinating with property owners and other stakeholders regarding the SLWRI project. The same approach will continue through the life of the project, including construction. Informational meetings, in whatever format works best for the property owners, will be offered in addition to other means of communication and information sharing.

Letter Number	Comment Number	Comment	Response
482	1	I am writing to register support for the Winnemem Wintu Tribe and millions of other Californians who get their drinking water from the Delta. The proposed Shasta dam raise, Sites Reservoir and Delta Tunnel are all connected. They are meant to divert, store and deliver more water from our rivers to benefit corporate water brokers and powerful agricultural interests. These projects will impact the Sacramento, Bay Delta, and Klamath/Trinity watersheds's salmon and water quality. Coastal towns rely on salmon for income. This is not fish verses farms. Over a million Californians do not have access to clean water, but in many places the almond orchards next to their homes and towns do. Most of these almonds are exported. We need salmon and clean water, not dead fish and toxic algae.	The SLWRI is being studied under separate authorization that is not predicated on the outcome of Sites Reservoir or Delta Conveyance Project studies. Please refer to the FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives for a discussion regarding the project purpose, need, and objectives. A summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the FEIS, highlighting the range of positive impacts to a variety of beneficiaries. The SLWRI FEIS Chapter 7, Water Quality, addresses potential impacts related to water quality. The SLWRI FEIS Chapter 11, Fisheries and Aquatic Ecosystems address potential impacts to fish. The SLWRI FEIS Chapter 14, Cultural Resources addresses potential impacts to cultural and Native American resources. Chapters 7, 11 and 14 of the FEIS were not addressed in the SDEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the FEIS that have not changed are beyond the scope of the SEIS. Please refer to the FEIS, Master Comment Response NEPA-1, Sufficiency of EIS for additional discussion regarding the adequacy of the EIS.

Letter Number	Comment Number	Comment	Response
487	1	Raising Shasta Dam will damage sensitive ecological environments on the Sacramento and McCloud rivers and will not solve our water shortages. We are already approximately 5x oversubscribed on surface water rights of water flowing through the delta and this will be another drop in a very large - mostly empty bucket. We've been adding surface water storage for 75 years now and we have always granted more water rights than we had water available. Until we have reallocated existing water rights such that the state is not vastly over subscribed, and pout a limit on developing new agricultural land and crops that require surface water, I see this as just one more step towards ecological ruin that solves nothing.	Based on new information and in response to comments on the SLWRI FEIS, Reclamation completed and circulated for review the SLWRI Draft SEIS. Topics addressed in the SEIS include wetlands and waters of the United States, stormwater and other point-source discharges, Shasta Dam operations and modeling, wild and scenic river considerations for the McCloud River. The NEPA Purpose and Need and project description described in the SLWRI FEIS provides the reasons Reclamation is evaluating raising the storage capacity of Shasta Lake.
488	1	We are the owners of the property at 19816 Shore Drive, Lakehead, CA 96051. As the property has been in our family for more than 50 years, our first preference would be to stay at this location for generations to come. An alternative would be the installation of a dike or retaining wall situation as we believe that we are above the proposed 18 ½ foot high water elevation mark. A retaining wall would contain any wave action on the lake side of the wall. If it is found that we are forced to relocate, the next alternative would be a property that is of equal type as far as an uninterrupted lake view as close to the water as we have now. The handbook, 'Reclamation Managing Water In The West, Relocation Your Rights and Benefits As A Displaced Person Under the Federal Relocation Assistance Program' states that this would be an option. It would be	Reclamation appreciates your comment. Please refer to the FEIS Master Comment Response PLAR-1, Effects to Private Residences and Businesses, regarding relocation of displaced residences. Also refer to the FEIS, Section 32.7, Next Steps, regarding the necessary Congressional approvals required for the project to move forward once the environmental review process has concluded.

Letter Number	Comment Number	Comment	Response
		our recommendation for there to be new properties opened up further out Lakeshore Drive on government land, to be zoned as private property of equal type as we have now. At this time we have absolutely no interest in a buyout, as we wish to stay on Shasta Lake. Thank you very much for your time and attention to these matters. Please kindly keep us informed of any further data in regards to this situation.	

2.0 Responses to Form Letters

The following sections provide response to form letters that were submitted on the SLWRI DSEIS. Form letters are those that contain identical or very similar content and are numerous in quantity.

2.1 Responses to Form Letter #1

Form Letter #1 was submitted by 344 commenters. The following sections address the comments contained in all letters identified as Form #1. The Index of Commenters includes the names of all commenters who provided a comment letter identified as Form Letter #1.

2.1.1. Comments Regarding McCloud River Protections

Commenters are concerned the SLWRI conflicts with protections that they assert should be afforded to the McCloud River under state and federal law. There is concern over possible inundation to segments of the McCloud River and upper Sacramento River determined eligible by the U.S. Forest Service for National Wild and Scenic Rivers protection. There is concern over conflicts with the Interior Department's obligations under the National Wild and Scenic Rivers Act (WSRA), which requires federal agencies to consider wild and scenic protection as an alternative to water projects that would harm free-flowing rivers. Commenters assert the Bureau has failed to consider this protective alternative for several streams flowing into the reservoir, including the McCloud, upper Sacramento, and Pit Rivers, and Squaw Creek.

Reclamation understands and acknowledges the sincere concern commenters have regarding the McCloud River. Please see the SLWRI SEIS, Chapter 5, *Wild and Scenic River Considerations for McCloud River* for clarification of issues raised by the Commenters. Please also see Master Comment Response, CNRC-1, California Natural Resources Code Regarding the McCloud River, for additional information regarding the McCloud River and California Public Resources Code. Commenters should note the Federal WSRA does not prohibit water developments that may affect portions of rivers that are eligible for inclusion in the National Wild and Scenic Rivers System.

2.1.2. Comments Regarding Sensitive Species

Commenters raised concerns about specific sensitive species in the vicinity of Shasta Dam. Specifically, impacts to the Shasta snow-wreath, a rare shrub, and to the Shasta salamander, which is under listing consideration by the California Fish and Wildlife Commission. Commenters are also concerned information published about these populations since the SLWRI FEIS was not analyzed in the SLWRI SEIS.

A comprehensive discussion of the impacts to the Shasta snow-wreath can be found in Chapter 12, *Botanical Resources and Wetlands*, in the SLWRI FEIS as well as the *Botanical Resources*

and Wetlands Technical Report. For impacts associated with the proposed Shasta dam raise, various mitigation measures, including developing a Shasta Snow-wreath Conservation Agreement to include all responsible State and Federal resource management agencies and appropriate private landowners, were identified and can be found in Section 12.3.5 of Chapter 12. The status of the Shasta snow-wreath remains the same as was analyzed in the SLWRI FEIS and analysis contained therein complies with NEPA guidance.

Chapter 13, *Wildlife Resources,* in the SLWRI FEIS describes the potential impacts to wildlife resources, including special-status species, for the dam and reservoir modifications proposed under the SLWRI action alternatives. Mitigation for impacts is proposed in Section 13.3.5. According to the U.S. Fish and Wildlife Service, the Shasta salamander remains one distinct species and its status as a sensitive species remains the same as was analyzed in the SLWRI FEIS.

Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. For the SLWRI SEIS, the scope focuses on information needed for an application of Section 404(r) of the Clean Water Act, updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the SLWRI FEIS was not addressed in the SLWRI SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document.

While noted by the Commenters that the California Fish and Wildlife Commission is considering listing of the Shasta salamander, Reclamation has no obligation to analyze state law requirements under CESA and is not charged with satisfying protections that come from the state level listing. Rather, Reclamation is responsible for working with the two federal agencies that enforce the Endangered Species Act: The National Marine Fisheries Service and The US Fish and Wildlife Service. At this time, the Shasta salamander is not a species listed for protection under ESA.

2.1.3. Comments Regarding Role of Bureau of Reclamation

Commenters raised concerns over Reclamation's involvement with the environmental review process related to political appointments made within the Department of the Interior and made the assertion that the intent of the SLWRI is to benefit a single entity.

As described in Chapter 1, *Introduction,* of the SLWRI FEIS, Reclamation's Mid-Pacific Region is responsible for managing the Central Valley Project which stores and delivers water to more than 250 water contractors throughout the California. In 2000, as a result of increasing demands for water supplies and growing concerns over declines in ecosystem resources in California's Central Valley, Reclamation reinitiated a feasibility investigation to evaluate the potential for enlarging Shasta Dam and Reservoir. As part of the planning process, acting as the Lead Agency in compliance with NEPA, Reclamation completed a Draft and Final EIS on SLWRI. The purpose of the EIS is not to recommend approval or rejection of the project, but to describe the

beneficial and adverse effects on the human environment of a proposed action and a reasonable range of alternatives. For further information related to NEPA compliance, please see Master Comment Response NEPA-1, Sufficiency of EIS.

Please also see Chapter 1, *Introduction*, of the SLWRI FEIS, for the Project's Purpose and Objectives. The purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary objectives are:

- Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant
- Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir

Also, a summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the SLWRI FEIS highlighting their variety and that they are not directed to one beneficiary.

2.1.4. Comments Regarding Limited Downstream Benefits to Aquatic Species

Commenters raised concerns that implementation of the proposed project would not provide substantial benefit to threatened and endangered salmon and steelhead downstream of Shasta Dam.

These comments restate concerns raised during the public comment period on the SLWRI FEIS. Accordingly, please see SLWRI FEIS Master Comment DSFISH-3, Fish Habitat Restoration, Master Comment DSFISH-4, Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements, Master Comment DSFISH-5, Fish and Wildlife Coordination Act, and Master Comment DSFISH-9, Flow-Related Effects on Fish Species of Concern for a discussion on how the proposed project could impact fish species of concern in the Sacramento River.

2.1.5. Comments Regarding Inundation of Native American Sites

Commenters are concerned the reservoir expansion could lead to eliminate or severely limit access to sensitive Native American sites.

Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes.

Please see Master Comment CR-1, Potential Effects to Cultural Resources, for a discussion related to potential impacts to Native American resources.

2.2 Responses to Form Letter #2

Form Letter #2 was submitted by 546 commenters. The following sections address the comments contained in all letters identified as Form #2. The Index of Commenters provides the names of all commenters who provided a comment letter identified as Form Letter #2. In general, these comments expressed opposition to the project citing negative impacts to species, habitats, and Native American sites as the primary reasons for their opposition.

2.2.1. Comments Regarding McCloud River Protections

Comments raise concerns that the project would violate California State protections for the McCloud River.

Reclamation understands and acknowledges the sincere concern commenters have regarding the McCloud River. The SLWRI FSEIS, Chapter 5, *Wild and Scenic River Considerations for McCloud River*, provides important clarifications on many of the issues raised by the commenters. Please also see Master Comment Response, CNRC-1, California Natural Resources Code Regarding the McCloud River, in the SLWRI FSEIS for additional information regarding the McCloud River and California Public Resources Code Section 5093.542. A detailed discussion regarding the McCloud River is also provided in the SLWRI FEIS, Master Comment Responses WASR-1, Eligibility of the McCloud River as a Federal Wild and Scenic River; WASR-3, The Shasta-Trinity National Forest LRMP and Protection of the Eligibility of the McCloud River as a Wild and Scenic River; WASR-4, CRMP's Responsibilities to Maintain the Outstandingly Remarkable Values of the McCloud River; WASR-6, Protections of the Lower McCloud River as Identified in the California Public Resources Code, Section 5093.542; and WASR-8, Effects to the Eligibility of Rivers for Inclusion in the Federal Wild and Scenic River System. Commenters should note the Federal WSRA does not prohibit water developments that may affect portions of rivers that are eligible for inclusion in the National Wild and Scenic Rivers System.

2.2.2. Comments Regarding Native American Sacred Sites

Comments raise concerns that the project will harm Native American sacred sites. Commenters were specifically concerned about sites held sacred by the Winnemem Wintu Tribe and the project potential to further harm indigenous people.

Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see Master Comment Response CR-1, Potential Effects to Cultural Resources for a discussion related to potential impacts to Native American resources. Please also see Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already affected by inundation under Shasta Reservoir due to the

original construction of the Shasta Dam. As discussed in the SLWRI SEIS Chapter 4, Supplemental Information on Shasta Dam Operations and Modeling, Reclamation updated operations and modeling results to reflect the 2019 Biological Opinions on the Long-Term Operations of the CVP issued by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Reclamation concluded that for most environmental resources, the changes in flow under the 2019 scenario are not likely to result in changes to the magnitude and severity of potential impacts compared to those discussed in the FEIS. A full discussion of potential impacts to cultural resources is provided in Chapter 14, *Cultural Resources*, of the SLWRI FEIS and an evaluation of potential impacts to Indian Trust Assets is provided in Chapter 15 of the SLWRI FEIS.

2.2.3. Comments Regarding Project Purpose and Need and Alternatives

Comments state that the project is unnecessary and costly. Commenters suggested that Reclamation consider other measures such as conservation to reduce demand for water or to focus on other types of water storage projects.

As described in Chapter 1, *Introduction*, of the SLWRI FEIS, the purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary project objectives are:

- Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant
- Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir

For additional discussion regarding the project purpose, need, objectives, and alternatives, commenters should refer to the SLWRI FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, Range of Alternatives, which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see the Final EIS, Chapter 33, Master Comment Responses ALTD-1, Alternative Development – Water Supply Reliability, and Master Comment Response ALTD-2, Alternative Development – Anadromous Fish Survival, related to measures considered during the plan formulation process to address water supply reliability and anadromous fish survival; and Master Comment Response ALTS-1, Alternative Selection, for alternative selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance).

2.2.4. Comments Regarding Environmental Impacts

Comments generally state that the project is harmful to the environment, aquatic species, and habitats. Some commenters raised concerns regarding potential impacts to salmon, steelhead and trout. Commenters expressed strong support for protecting existing aquatic habitat and

maintaining or enhancing more natural flow regimes. Some commenters expressed support for removing the dam to allow greater fish passage.

A comprehensive discussion of the potential impacts to human and natural environmental resources is provided in Chapters 4-26 of the SLWRI FEIS. The SLWRI FEIS Chapter 11, *Fisheries and Aquatic Ecosystems*, specifically addresses potential impacts to special status species which include several species of salmon, steelhead, and trout. Table 11-1 provides a list of special status species Potential Occurring in the Primary and Extended Study Areas.

As discussed above and in Chapter 1 of the SLWRI FEIS, one of the primary objectives of the project is to increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant. As described in the SLWRI FEIS, Chapter 2, Section 2.5, increasing the ability to meet flow and temperature requirements along the Upper Sacramento River is one of the benefits expected from the project.

Please refer to the SLWRI FEIS Master Comment Response DSFISH-3, Fish Habitat Restoration, for information regarding the environmental commitments included in the project to support anadromous fish survival. Please also refer to the SLWRI FEIS Master Comment Response DSFISH-4, Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements, for a description of how the agency representatives from the Water Operations Management Team will work together to operate Shasta Dam to increase survival of anadromous fish. Additionally, the SLWRI SEIS specifically addresses recent changes to operations as a result of the 2019 Biological Opinions issued by the U.S. Fish and Wildlife Service and National Marine Fisheries Service. Chapter 4, *Supplemental Information on Shasta Dam Operations and Modeling* describes updated modeling results comparing two scenarios for Shasta Dam; one for the No Action Alternative and one for the 18.5-ft raise using the 2019 BOs. Reclamation found that for most environmental resources, the magnitude and severity of potential impacts would not change under the 2019 scenario. Please refer to the SLWRI FEIS, Chapter 33, Master Comment Response FISHPASS-1, Fish Passage Above Shasta Dam, regarding management of fish migration above Shasta Dam.

2.2.5. Comments Regarding Beneficiaries

Commenters assert that the project benefits are directed towards a single or limited group of beneficiaries. Commenters suggested that the project offers benefits only to private agricultural interests and has limited or no benefits for species.

A summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the SLWRI FEIS, highlighting the range of positive impacts to a variety of beneficiaries. Please also refer to the SLWRI FEIS Chapter 33, Master Comment Responses for Water Supply Reliability Benefits & Beneficiaries; WSR-1, Water Supply Demands, Supplies and Project Benefits; WSR-8, Action Alternatives Don't Meet All Water Demands; and WSR-12, Increasing Water Supply Reliability under Action Alternatives.

2.2.6. Comments Regarding Economic Impacts

Comments generally state that the project would have negative economic impacts in the project area. The SLWRI FEIS Chapter 16, Socioeconomics, Population and Housing addresses potential socioeconomic consequences of the project from Shasta Dam to Red Bluff. Please refer to the SLWRI FEIS Master Comment Response PLAR-1, Effects to Private Residences and Businesses for additional information regarding potential impacts to businesses.

2.3 Responses to Form Letter #3

Form Letter #3 was submitted by 151 commenters. The following sections address the comments contained in all letters identified as Form #3. The Index of Commenters provides the names of all commenters who provided a comment letter identified as Form Letter #3.

2.3.1. Comments Regarding Impacts to the McCloud River

Commenters are concerned that a significant portion of the McCloud River will be inundated if this project is implemented.

Reclamation understands and acknowledges the sincere concern commenters have regarding the McCloud River. Please see the SEIS, Chapter 5, *Wild and Scenic River Considerations for McCloud River*, for clarification of issues raised by the Commenters. A detailed discussion regarding the McCloud River is also provided in the SLWRI FEIS, Master Comment Responses WASR-1, Eligibility of the McCloud River as a Federal Wild and Scenic River; WASR-3, The Shasta-Trinity National Forest LRMP and Protection of the Eligibility of the McCloud River as a Wild and Scenic River; WASR-4, CRMP's Responsibilities to Maintain the Outstandingly Remarkable Values of the McCloud River; WASR-6, Protections of the Lower McCloud River as Identified in the California Public Resources Code, Section 5093.542; and WASR-8, Effects to the Eligibility of Rivers for Inclusion in the Federal Wild and Scenic River System.

2.3.2. Comments Regarding Inundation of Native American Sites

Commenters are concerned the reservoir expansion could lead to the inundation of 39 Native American sites.

Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see SLWRI FEIS Master Comment CR-1, Potential Effects to Cultural Resources, for a discussion related to potential impacts to Native American resources. Please also see FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already effected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam. As discussed in the SLWRI SEIS Chapter 4, Supplemental Information on Shasta Dam Operations and Modeling, Reclamation updated operations and modeling results to reflect the 2019 Biological Opinions on the Long-Term Operations of the CVP issued by the US Fish and Wildlife Service and the National Marine

Fisheries Service. Reclamation concluded that for most environmental resources, including cultural resources, the changes in flow under the 2019 scenario are not likely to result in changes to the magnitude and severity of potential impacts compared to those discussed in the SLWRI FEIS. A full discussion of potential impacts to cultural resources is provided in Chapter 14, *Cultural Resources,* of the SLWRI FEIS and an evaluation of potential impacts to Indian Trust Assets provided in Chapter 15 of the SLWRI FEIS.

2.3.3. Comments Regarding Impacts to Downstream Flows

Commenters suggested that the proposed project would reduce winter and spring downstream flows into the Delta impacting salmon and steelhead populations.

Please see SLWRI FEIS Master Comment DSFISH-4, Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements, and SLWRI FEIS Master Comment DSFISH-9, Flow-Related Effects on Fish Species of Concern, for a discussion on how the proposed project could impact fish species of concern in the Sacramento River.

2.3.4. Comments Regarding Conflicts with State and Federal Laws

Commenters believe the proposed project conflicts with state and federal laws including the California State Wild Rivers Act and the federal Endangered Species Act (ESA).

Reclamation has acknowledged that the action alternative may conflict with California laws and policies, in particular, those protecting the McCloud River and its wild trout fishery. See SLWRI FEIS Master Comment Response 33.3.19, WASR-6, at 33.3-102-03.State agencies may determine that they are prohibited from issuing permits or approvals for the project, but Reclamation is obligated to consider alternatives even though they may be inconsistent with existing State law.

As a federal agency, Reclamation will comply with all applicable law, including the ESA. A discussion on ESA compliance can be found in Master Comment Response 1.3.3. ROC-1, Reinitiation of Consultation on the Long-Term Operations of the Central Valley Project.

2.4 Responses to Form Letter #4

Form Letter #4 was submitted by 192 commenters. The following sections address the comments contained in all letters identified as Form #4. The Index of Commenters provides the names of all commenters who provided a comment letter identified as Form Letter #4.

2.4.1. Comments Regarding General Support for the Proposed Project

Commenters offered their strong support for the project and as well as appreciation for the opportunity to comment.

Reclamation thanks the Commenters for taking the time to submit their letters on the proposed project.

2.4.2. Comments Regarding Current Restrictions to Water Allocations in Dry Years

Commenters noted the challenges the Bureau currently has in reliably fulfilling its contractual water allocation obligations when needing to hold back water for the benefit of sensitive anadromous fish species.

As described in Chapter 1, *Introduction*, of the SLWRI FEIS, the purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary project objectives are:

- Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant

- Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir

For additional discussion regarding the project purpose, need, objective sand alternatives, commenters should refer to the SLWRI FEIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, Range of Alternatives, which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see the SLWRI FEIS, Chapter 33, Master Comment Responses ALTD-1, Alternative Development – Water Supply Reliability, and Master Comment Response ALTD-2, Alternative Development – Anadromous Fish Survival, related to measures considered during the plan formulation process to address water supply reliability and anadromous fish survival; and Master Comment Response ALTS-1 Alternative Selection for alternative selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance).

2.4.3. Comments Regarding Current Water Temperature Considerations for Sensitive Anadromous Species

Commenters alleged the current Dam and Reservoir's inability to capture, hold, and later supply enough cold water for sensitive fish species in dry years.

As described in Chapter 1, *Introduction*, of the SLWRI FEIS, the purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary project objectives are:

- Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant

- Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir

For additional discussion regarding the project purpose, need, objectives and alternatives, commenters should refer to the Final EIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, Range of Alternatives. which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see the SLWRI FEIS, Chapter 33, Master Comment Responses ALTD-1, Alternative Development – Water Supply Reliability, and Master Comment Response ALTD-2, Alternative Development – Anadromous Fish Survival, related to measures considered during the plan formulation process to address water supply reliability and anadromous fish survival; and Master Comment Response ALTS-1, Alternative Selection, for alternative selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance).

2.4.4. Comments Regarding Enhanced Operational Flexibility from Project Implementation

Commenters noted the operational flexibility that would be available to the entirety of the CVP and SWP if the project were to be implemented which would increase resilience and adaptability in both wet and dry years.

A discussion of water operations under SLWRI action alternatives can be found in the SLWRI FEIS Master Comment Response GEN-7, Rules and Regulations for Water Operations Under Action Alternatives.

2.4.5. Comments Regarding the Estimated Cost of the Proposed Project

Commenters noted the estimated $1.8 billion cost to implement the proposed project is low in comparison to the cost of other proposed improvements elsewhere in the system.

Reclamation appreciates the Commenter's perspective on the cost of the proposed project. A discussion of costs versus benefits can be found in Master Response COST/BEN-1, Intent of EIS and Process to Determine Federal Investment.

2.4.6. Comments Regarding Fish Conservation Benefits

Commenters acknowledged that modeling presented in the environmental documents finds that fish production rates would substantially increase if the proposed project were to be implemented contributing significantly to long-term conservation and recovery efforts.

As discussed in Chapter 1 of the SLWRI FEIS, one of the primary objectives of the project is to increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant. As described in the SLWRI FEIS, Chapter 2, Section 2.5,

increasing the ability to meet flow and temperature requirements along the Upper Sacramento River is one of the benefits expected from the project.

Please refer to the SLWRI FEIS Master Comment Response DSFISH-3, Fish Habitat Restoration, for information regarding the environmental commitments included in the project to support anadromous fish survival. Please also refer to the SLWRI FEIS Master Comment Response DSFISH-4, Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements, for a description of how the agency representatives from the Water Operations Management Team will work together to operate Shasta Dam to increase survival of anadromous fish.

2.4.7. Comments Regarding Cultural and Archaeological Sites

Commenters encouraged Reclamation to incorporate feasible measures to lessen, avoid, mitigate and offset related cultural and archaeological impacts and inundation effects on a portion of the Lower McCloud River.

Reclamation acknowledges the concerns raised regarding Native American sites. As a federal agency, Reclamation will adhere to all applicable laws concerning Native American Tribes. Please see Master Comment Response CR-1, Potential Effects to Cultural Resources, for a discussion related to potential impacts to Native American resources. Please also see Master Comment Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already effected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam. As discussed in the SLWRI SEIS Chapter 4, *Supplemental Information on Shasta Dam Operations and Modeling*, Reclamation updated operations and modeling results to reflect the 2019 Biological Opinions on the Long-Term Operations of the CVP issued by the US Fish and Wildlife Service and the National Marine Fisheries Service. Reclamation concluded that for most environmental resources, including cultural resources, the changes in flow under the 2019 scenario are not likely to result in changes to the magnitude and severity of potential impacts compared to those discussed in the SLWRI FEIS. A full discussion of potential impacts to cultural resources is provided in Chapter 14, *Cultural Resources,* of the SLWRI FEIS and an evaluation of potential impacts to Indian Trust Assets provided in Chapter 15 of the SLWRI FEIS.

2.5 Responses to Form Letter #5

Form Letter #5 was submitted by 4,883 commenters. The following sections address the comments contained in all letters identified as Form #5. The Index of Commenters provides the names of all commenters who provided a comment letter identified as Form Letter #5.

2.5.1. Comments Regarding the No Action Alternative

Many commenters requested that Reclamation should adopt the No Action Alternative. Commenters suggested that water supply reliability could be achieved through other measures such as conservation, water use efficiency mandates and recycling.

As discussed in the SLWRI SEIS Chapter 1.2, Scope of the Supplemental Environmental Impact Statement, the SEIS focuses on providing new information relevant to the application of Section 404(r) of the Clean Water Act (CWA) for the SLWRI, to respond to issues identified by USACE and EPA on the previous EIS, to update operations and modelling to the latest regulatory requirements, and to update information included in the 2015 SLWRI FEIS that is relevant to environmental concerns. The SEIS does not re-evaluate potential alternatives. See SLWRI FEIS Master Comment Response 33.3.32, EI-1, at 33.3-160-61 ("Although a 'Preferred Alternative' is identified, an EIS does not approve or reject a project. The SLWRI EIS does not make a decision but may provide the basis for an informed and reasonable decision.") See SLWRI FEIS Master Comment Response 33.3.4, ALTR-1, at 33.3-22-30 ("Range of Alternatives-General) regarding the NEPA requirements for alternatives development as well as SLWRI alternatives development process.

2.5.2. Comments Regarding Impacts to Sensitive Species

Comments stated that the project would harm many endangered plants, aquatic species, and terrestrial species. Commenters raised concerns about specific sensitive species in the vicinity of Shasta Dam. Specifically, impacts to the Shasta snow-wreath, four mollusks, Pacific fishers, foothill yellow-legged frogs, bald eagles, northern goshawks, and the Shasta salamander, which is under listing consideration by the California Fish and Wildlife Commission.

Aquatic mollusks are addressed in Chapter 11, *Fisheries and Aquatic Ecosystems*, specifically at 11-317, Impact Aqua-4, Effects on Special Status Aquatic Mollusks.

A comprehensive discussion of the impacts to the Shasta snow-wreath can be found in Chapter 12, *Botanical Resources and Wetlands*, in the SLWRI FEIS as well as the *Botanical Resources and Wetlands Technical Report*. For impacts associated with the proposed Shasta dam raise, various mitigation measures, including developing a Shasta Snow-wreath Conservation Agreement to include all responsible State and Federal resource management agencies and appropriate private landowners, were identified and can be found in Section 12.3.5 of Chapter 12. The status of the Shasta snow-wreath remains the same as was analyzed in the SLWRI FEIS and analysis contained therein complies with NEPA guidance.

Chapter 13, *Wildlife Resources*, in the SLWRI FEIS describes the potential impacts to wildlife resources, including special-status species, for the dam and reservoir modifications proposed under the SLWRI action alternatives. The Pacific fisher, foothill yellow-legged frog, bald eagle and northern goshawk are discussed in the SLWRI FEIS Chapter 13, *Wildlife Resources*. Mitigation for impacts is proposed in Section 13.3.5.

According to the U.S. Fish and Wildlife Service, the Shasta salamander remains one distinct species and its status as a sensitive species remains the same as was analyzed in the SLWRI FEIS.

Under NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. For the Draft SEIS, the scope focuses on information needed for

an application of Section 404(r) of the Clean Water Act, updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the SLWRI FEIS was not addressed in the SLWRI SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document.

While noted by the Commenters that the California Fish and Wildlife Commission is considering listing of the Shasta salamander, Reclamation has no obligation to analyze state law requirements under CESA and is not charged with satisfying protections that come from the state level listing. Rather, Reclamation is responsible for working with the two federal agencies that enforce the Endangered Species Act: The National Marine Fisheries Service and The US Fish and Wildlife Service. At this time, the Shasta salamander is not a species listed for protection under ESA.

2.5.3. Comments Regarding McCloud River Protections

Comments raise concerns that the project would violate California State protections for the McCloud River.

Reclamation understands and acknowledges the sincere concern commenters have regarding the McCloud River. The SLWRI SEIS, Chapter 5, *Wild and Scenic River Considerations for McCloud River*, provides important clarifications on many of the issues raised by the commenters. Please also see Master Comment Response, CNRC-1, California Natural Resources Code Regarding the McCloud River, in the SLWRI FSEIS for additional information regarding the McCloud River and California Public Resources Code Section 5093.542. A detailed discussion regarding the McCloud River is also provided in the SLWRI FEIS, Master Comment Responses WASR-1, Eligibility of the McCloud River as a Federal Wild and Scenic River; WASR-3, The Shasta-Trinity National Forest LRMP and Protection of the Eligibility of the McCloud River as a Wild and Scenic River; WASR-4, CRMP's Responsibilities to Maintain the Outstandingly Remarkable Values of the McCloud River; WASR-6, Protections of the Lower McCloud River as Identified in the California Public Resources Code, Section 5093.542; and WASR-8, Effects to the Eligibility of Rivers for Inclusion in the Federal Wild and Scenic River System. Commenters should note the Federal WSRA does not prohibit water developments that may affect portions of rivers that are eligible for inclusion in the National Wild and Scenic Rivers System.

2.5.4. Comments Regarding Native American Sacred Sites

Comments raise concerns that the project will harm Native American sacred sites. Commenters were specifically concerned about sites held sacred by the Winnemem Wintu Tribe and the project potential to further harm indigenous people.

Reclamation acknowledges the concerns raised regarding Native American sites. Please see Master Comment Response CR-1, Potential Effects to Cultural Resources, for a discussion related to potential impacts to Native American resources. Please also see Master Comment

Response CR-3, Current Effects to Cultural Resources, for additional discussions regarding cultural resources already effected by inundation under Shasta Reservoir due to the original construction of the Shasta Dam. As discussed in the SLWRI SEIS Chapter 4, *Supplemental Information on Shasta Dam Operations and Modeling*, Reclamation updated operations and modeling results to reflect the 2019 Biological Opinions on the Long-Term Operations of the CVP issued by the US Fish and Wildlife Service and the National Marine Fisheries Service. Reclamation concluded that for most environmental resources, including cultural resources, the changes in flow under the 2019 scenario are not likely to result in changes to the magnitude and severity of potential impacts compared to those discussed in the SLWRI FEIS. A full discussion of potential impacts to cultural resources is provided in Chapter 14, *Cultural Resources,* of the SLWRI FEIS and an evaluation of potential impacts to Indian Trust Assets is provided in Chapter 15 of the SLWRI EIS.

2.5.5. Comments Regarding Beneficiaries and Cost Allocation

Commenters stated that the project is too costly and should not be funded with taxpayer dollars. Commenters suggested that the project would benefit a small group agricultural interests.

Please refer to the SLWRI FEIS Master Comment Response COST/BEN-1 regarding the estimated costs and potential non-monetary benefits of SLWRI action alternatives are presented in the EIS Engineering Appendix, Attachment 1, "Cost Estimates for Comprehensive Plans," and EIS Chapter 2, *Alternatives*, Section 2.3, *Action Alternatives*.

A summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the SLWRI FEIS highlighting their variety and that they are not directed to one beneficiary. Please also refer to the SLWRI FEIS Chapter 33, *Master Comment Responses for Water Supply Reliability Benefits & Beneficiaries*; WSR-1, Water Supply Demands, Supplies and Project Benefits; WSR-8, Action Alternatives Don't Meet All Water Demands; and WSR-12, Increasing Water Supply Reliability under Action Alternatives.

2.5.6. Comments Regarding Benefits

Commenters asserted that, in their view, the project would have few, if any, benefits to salmon. Commenters also stated that they believed there would be minimal benefits for water supply reliability.

As mentioned above, see please refer to Chapter 2, Section 2.5 of the SLWRI FEIS for a discussion regarding potential benefits associated with the action alternatives. Please see Master Comment DSFISH-3, Fish Habitat Restoration, Master Comment DSFISH-4, Maintaining Sacramento River Flows to Meet Fish Needs and Regulatory Requirements, Master Comment DSFISH-5, Fish and Wildlife Coordination Act, and Master Comment DSFISH-9, Flow-Related Effects on Fish Species of Concern for a discussion on how the proposed project could impact fish species of concern in the Sacramento River.

2.6 Responses to Form Letter #6

Form Letter #6 was submitted by 133 commenters. The following sections address the comments contained in all letters identified as Form #6. The Index of Commenters provides the list of all commenters who provided a comment letter identified as Form Letter #6.

2.6.1. Comments Regarding Impacts to Native American Tribes and Sacred Sites

Commenters raise concerns specific to the Winnemem Wintu tribe and potential inundation of over 39 sacred sites. There is also concern that Reclamation has not satisfied the requirements of Section 106 of the National Historic Preservation Act in this process.

Reclamation acknowledges the concerns raised regarding impacts to Native American tribes and sacred sites. Please see FEIS Master Comment Response CR-1, Potential Effects to Cultural Resources, for a discussion related to potential impacts to Native American resources and a discussion on Section 106 consultation. Please also refer to the SLWRI FEIS Master Comment Response CR-15, National Historic Preservation Act Section 106 Consultation, for additional information regarding Section 106.

Please also refer to the SLWRI FEIS Master Comment Response CR-3, Current Effects to Cultural Resources, Master Comment Response CR-8, Native American Connection to Salmon, and Master Comment Response CR-11, Cultural Resources and NEPA, for additional information regarding the cultural resources analysis contained in the FEIS.

Pursuant to NEPA, an agency must prepare a supplemental EIS if the agency makes substantial changes in the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns that have a bearing on the proposed action or its impacts. For the SLWRI SEIS, the scope focuses on updated operational requirements established by revised Biological Opinions and an amended Coordinated Operations Agreement, and an updated discussion related to the wild and scenic considerations for the McCloud River. The remainder of the SLWRI FEIS, which includes Chapter 14, *Cultural Resources*, was not addressed in the SLWRI SEIS because the analysis conducted therein was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document. As such, comments on portions of the SLWRI FEIS that have not changed are beyond the scope of the SLWRI SEIS. Please refer to the SLWRI FEIS, Master Comment Response NEPA-1, Sufficiency of EIS, for additional discussion regarding the adequacy of the EIS.

2.6.2. Comments California State Protections for the McCloud River

Comments raise concerns that the project would violate California State protections for the McCloud River.

Reclamation understands and acknowledges the sincere concern commenters have regarding the McCloud River. The SLWRI SEIS, Chapter 5, *Wild and Scenic River Considerations for McCloud River* provides important clarifications on many of the issues raised by the

commenters. Please also see Master Comment Response CNRC-1, California Natural Resources Code Regarding the McCloud River, in the SLWRI FSEIS for additional information regarding the McCloud River and California Public Resources Code Section 5093.542. A detailed discussion regarding the McCloud River is also provided in the SLWRI FEIS, Master Comment Responses WASR-1, Eligibility of the McCloud River as a Federal Wild and Scenic River; WASR-3, The Shasta-Trinity National Forest LRMP and Protection of the Eligibility of the McCloud River as a Wild and Scenic River; WASR-4, CRMP's Responsibilities to Maintain the Outstandingly Remarkable Values of the McCloud River; WASR-6, Protections of the Lower McCloud River as Identified in the California Public Resources Code, Section 5093.542; and WASR-8, Effects to the Eligibility of Rivers for Inclusion in the Federal Wild and Scenic River System. Commenters should note the Federal WSRA does not prohibit water developments that may affect portions of rivers that are eligible for inclusion in the National Wild and Scenic Rivers System.

2.6.3. Comments Regarding the WIIN Act

Comments stated that the project would violate the Water Infrastructure Improvements for the Nation Act (WIIN Act).

Please see Master Comment Response WIIN-1, WIIN Act Compliance, in the SLWRI FSEIS for a discussion on how Reclamation is complying with the WIIN Act.

2.6.4. Comments Regarding the Purpose and Need and Alternatives

Commenters suggested that Reclamation consider other measures such as conservation, groundwater recharge, restoration be utilized to reduce demand for water or to focus on other types of water storage projects.

As described in Chapter 1, *Introduction*, of the SLWRI FEIS, the purpose of the proposed action is to improve operational flexibility of the Sacramento-San Joaquin Delta (Delta) watershed system to meet specified primary and secondary objectives. The primary project objectives are:

- Increase survival of anadromous fish populations in the Sacramento River, primarily upstream from the Red Bluff Pumping Plant
- Increase water supply and water supply reliability for agricultural, municipal and industrial, and environmental purposes to help meet current and future water demands, with a focus on enlarging Shasta Dam and Reservoir

For additional discussion regarding the project purpose, need, objectives, and alternatives, commenters should refer to the Final EIS, Chapter 33, Master Comment Response P&N-1, Purpose and Need and Objectives as well as Master Comment Response ALTR-1, Range of Alternatives, which describes NEPA requirements for alternatives development, the relationship of SLWRI to CALFED, and development of the SLWRI alternatives. Also, please see the Final EIS, Chapter 33, Master Comment Responses ALTD-1, Alternative Development – Water Supply Reliability, and Master Comment Response ALTD-2, Alternative Development – Anadromous Fish Survival, related to measures considered during the plan formulation process

to address water supply reliability and anadromous fish survival; and Master Comment Response ALTS-1, Alternative Selection, for alternative selection (e.g., identification of the preferred alternative and Clean Water Act Section 404 compliance). Consideration of other alternatives is outside the scope of the SLWRI SEIS.

2.6.5. Comments Regarding Costs and Benefits

Comments state that the project is wasteful and costly. Comments suggest the proposed project would not achieve the cold water pool as expected and is only designed to benefit a specific group of agriculture water users.

A summary of potential benefits associated with the action alternatives can be found in Chapter 2, Section 2.5 of the SLWRI FEIS, highlighting the range of positive impacts to a variety of beneficiaries. Please also refer to the FEIS Chapter 33, Master Comment Responses for Water Supply Reliability Benefits & Beneficiaries; WSR-1, Water Supply Demands, Supplies and Project Benefits; WSR-8, Action Alternatives Don't Meet All Water Demands; and WSR-12, Increasing Water Supply Reliability under Action Alternatives. A discussion of costs versus benefits can be found in FEIS Master Response COST/BEN-1, Intent of EIS and Process to Determine Federal Investment.

2.6.6. Comments Regarding Water Quality

Commenters raised concerns over inundation of abandoned, uncapped mines in the Shasta region increasing the load of contaminants in the reservoir, and then into the Sacramento River.

The SLWRI FEIS indicates in Chapter 9, *Hazards and Hazardous Materials and Waste*, that all of the potential effects related to release of hazardous materials could be reduced to less than significant levels. The SLWRI FEIS Chapter 7, *Water Quality*, addresses potential impacts to water quality associated inundation of abandoned mines. The SLWRI FEIS Chapters 7 and 9 were not addressed in the SLWRI SEIS because the analysis conducted was considered adequate and did not meet the criteria for inclusion in a supplemental environmental document.

2.7 Responses to Comments that Present General Opinions

Reclamation received letters of stating general opposition or general support for the project. Reclamation thanks commenters for providing their opinion and for their involvement in the public review process. Letters of general opposition and letters of support are not considered substantive and do not require Reclamation to respond individually. Reclamation acknowledges and thanks each commenter for taking the time to review the Draft SEIS and provide their opinion on the project.

The following provides a list of commenters who provided comments that are considered non-substantive for the purposes of NEPA review.

Name
Margaret Eutenier
Alex Reyes
Karen Campbell
Shwe Chin
Karen Juten
Charles McCabe
Kevin Thomas
Susan O'Connor
Molly Watkins
Tasker O. de Generes
Gloria Bell
Synthea Smith
Roseanne Livingston
Shaun Kelly
J.A. Thomas
Jan Harvey
Scott Livington
Colleen Smith
Kristi Diener
James Davis
James E. Talbot

2.8 Index of All Commenters

Name	Title	Organization Name	Letter Number	Form Number
Jean Prijatel	Manager, Environmental Review Branch	US Environmental Protection Agency	1	
G. Mathias Kondolf, PhD			2	
Greg Pasternack PhD			2	
Eric Gillies	Acting Chief, Div of Environmental Planning	CALIFORNIA STATE LANDS COMMISSION	3	
Jason Phillips	CEO	Friant Water Authority	4	
Jennifer Pierre	General Manager	State Water Contractors	5	
Michael Prowatzke		Western Area Power Administration	6	
Jerry Toenyes	Consultant	Northern California Power Agency	7	
Jeffrey Sutton	General Manager	Tehama Colusa Canal Authority	8	
Bruce Herbold PhD			9	
Federico Barajas	Executive Director	San Luis & Delta-Mendota Water Authority	10	
Tina Bartlett	Regional Manager	Department of Fish and Wildlife	11	
Ellen Sobeck	Executive Director	California State Water Resources Control Board	12	
Aarti Kewalramani	Deputy Attorney General	State of California Department of Justice	13	
Joshua Purtle	Deputy Attorneys General	State of California Department of Justice	13	
Brandon Dawson	Staff Attorney	Sierra Club of California	17	
Chris Shutes	Water Rights Advocate and FERC Projects Director	California Sportfishing Protection Alliance	17	
Drev Hunt	Senior Attorney	Natural Resources Defense Council	17	
Gary Bobker	Program Director	The Bay Institute	17	

Name	Title	Organization Name	Letter Number	Form Number
John McManus	President	Golden Gate Salmon Association	17	
Jon Rosenfield	Senior Scientist	San Francisco Baykeeper	17	
Rachel Zwillinger		Defenders of Wildlife	17	
Ronald Stork	Senior Policy Staff	Friends of the River	17	
Brandon Dawson	Staff Attorney	Sierra Club of California	18	
Chris Shutes	Water Rights Advocate and FERC Projects Director	California Sportfishing Protection Alliance	18	
Conner Everts	Facilitator	Environmental Water Caucus	18	
Frank Egger	President	North Coast Rivers Alliance	18	
Isabella Langone	Conservation Analyst	California Native Plant Society	18	
Jonas Minton	Senior Water Policy Advisor	Planning and Conservation League	18	
Regina Chichizola	Co-Director	Save California's Salmon	18	
Ronald Stork	Senior Policy Staff	Friends of the River	18	
Sandra Schubert	Executive Director	Tuleyome	18	
Steve Evans		California Wilderness Coalition	18	
Theresa Simsiman	California Stewardship Director	American Whitewater	18	
Walter Collins	Staff Attorney	California Trout	18	
Janet Wall	Conservation Co-Chair	Wintu Audubon Society	19	
Dborah Sivas	Legal representative for	Winnemem Wintu Tribe	20	
James Colopy	Legal representative for	Winnemem Wintu Tribe	20	
John Ugai	Legal representative for	Winnemem Wintu Tribe	20	
Julie Bongers			46	
Maggid Jonathan Furst	Rabbinic Pastor	Keneset HaLev	47	
Nancy Peterson			48	

Name	Title	Organization Name	Letter Number	Form Number
Bill Diedrich	Farmer/Chair San Luis Water District	San Luis & Delta-Mendota Water Authority	49	
Dennis Bruce			50	
Raven Stevens		We Advocate Through Environmental Review	51	
Raven Stevens		We Advocate Through Environmental Review	51	
Joseph Kowalski		National Lawyers Guild Sacramento Chapter	52	
Russell Liebig	Senior Fisheries Biologist	Stillwater Sciences	53	
Barbara Vlamis	Executive Director	AquAlliance	56	
Bill Jennings	Executive Director/Chairman	California Sportfishing Protection Alliance	56	
Brandon Dawson	Staff Attorney	Sierra Club of California	56	
Caleen Sisk	Hereditary Chief and Spiritual Leader	Winneman Wintu Tribe	56	
Carolee Krieger	President & Executive Director	California Water Impact Network	56	
Conner Everts	Executive Director	Southern California Watershed Alliance	56	
Conner Everts	Facilitator	Environmental Water Caucus	56	
Isabella Langone	Conservation Analyst	California Native Plant Society	56	
Jonas Minton	Senior Water Policy Advisor	Planning and Conservation League	56	
Lloyd Carter	President	California Save Our Streams Council	56	
Ronald Stork	Senior Policy Staff	Friends of the River	56	
Ross Middlemiss	Staff Attorney	Center for Biological Diversity	56	
Stephen Green	President	Save the American River Association	56	
Justin Fredrickson	Environmental Policy Analyst	California Farm Bureau Federation	57	
Stephan Volker	Legal representative for	North Coast Rivers Alliance	59	

Name	Title	Organization Name	Letter Number	Form Number
Stephan Volker	Legal representative for	Winnemem Wintu Tribe	59	
Stephan Volker	Legal representative for	San Francisco Crab Boat Owners' Association	59	
Stephan Volker	Legal representative for	Institute for Fisheries Resources	59	
Stephan Volker	Legal representative for	Pacific Coast Federation of Fishermens Association	59	
Stephan Volker	Legal Representative for	California Sportfishing Alliance	59	
Stephan Volker	Legal Representative for	Save California Salmon	59	
Laurie Wayburn	President	The Pacific Forest Trust	60	
Wade Bellenger			203	
Mark Westbrook			300	
Rachel Huang			301	
Mike Wade	Executive Director	California Farm Water Coalition	302	
Brian Jonnson	California Director	Trout Unlimited	303	
Clarence Kooi			304	
Michael Painter	Coordinator	Californians for Western Wilderness	305	
Virginia Morris			307	
Janice Gloe			308	
Everett Watterson			316	
Marc Umeda			317	
Jane Perry			318	
Joseph Dvorak			321	
Will & Mike Nichols	Nichols Ranch, Inc.		327	
Sally Ahnger			328	
Barbara Clutter			329	
Peter F. Brooks, P.E., D. WRE	P.E., D. WRE		331	
Sue & Archie Mossman			332	
Mark Cappetta			333	
Wolfgang Rougle			367	

Name	Title	Organization Name	Letter Number	Form Number
Taj Lalwani			374	
Ron Zielinski			383	
Joe Kroeker	Starrh Family Farms		384	
Bruce Shoemaker			404	
Alex Guzman			405	
Marcy Winograd			411	
Alexander Gaguine			427	
Francis Coats			428	
Donald Bartlett			440	
Megan Shumway			441	
Ellen Koivisto			442	
Donna Clark			443	
Kathe Gardenias			444	
Megan Elsea			452	
Richard Steckler			455	
Trudy Duisenberg			457	
Gregory Jacobs			462	
Wilma Dibelka			463	
Doug Giancoli			469	
Chris Yarnes			470	
Dale Meisenheiner			475	
Cord Roesner			476	
Michele Collins			477	
Joan Starr			482	
Kenneth Firl			487	
Richard & Laurie Gurries			488	
Michael Madrigal				1
Ed Dobson				1
Rebecca Clark				1
Drew Martin				1
David Conrad				1
Melissa Samet				1
Sammy Ehrnman				1
Kimberly Baker				1
Deidre Moderacki				1

Name	Title	Organization Name	Letter Number	Form Number
Steve Graff				1
Marie Logan				1
Dianne Hellrigel				1
Milan Mehta				1
Alan Carlton				1
Sally Miller				1
Teri Yazdi				1
John Oda				1
Kim Hill				1
George johnson				1
Amy Wolfberg				1
Lucinda Kamler				1
Randall Frank				1
Margot Lowe				1
Sherrill Futrell				1
Deidre Moderacki				1
Heidi Lynn				1
Denise Louie				1
Larry Bahr				1
James Brown				1
paul torrence				1
Jennifer Hayes				1
Richard Bliss				1
Lauretta Bliss				1
Linda Petrulias				1
Eve Egan				1
George. Ludwig				1
Robert Thornhill				1
John Tobin				1
Kae Bender				1
Judith Butts				1
Sandy Commons				1
Marilyn Williams				1
Lily Mejia				1
Lily Mejia				1

Name	Title	Organization Name	Letter Number	Form Number
R Burns				1
Gabrielle Swanberg				1
Martin Horwitz				1
Mary Stanistreet				1
Rachel Wolf				1
Barbara Mesney				1
Marcie Ligammari				1
Kevin Branstetter				1
Davin Peterson				1
donnal poppe				1
Davin Peterson				1
Tom Hougham				1
Sandra Materi				1
Donna Crane				1
Bruce Vincent				1
Diane Verna				1
Kristin Smith				1
nancy Stein				1
John Pasqua				1
Melissa Evask				1
colonel meyer				1
Blake Wu				1
L. Adams				1
Holly Hall				1
Jessica Jasper				1
Linda Petrulias				1
STACIE CHARLEBOIS				1
John Everett				1
Diana Morgan-Hickey				1
Stewart Casey				1
Philip Ratcliff				1
Diane Berliner				1
Ann Wasgatt				1
James Sumler				1
Rayline Dean				1

Name	Title	Organization Name	Letter Number	Form Number
tammy bullock				1
Steve Hylton				1
STACIE CHARLEBOIS				1
Rayline Dean				1
Susan Porter				1
Carol Mone				1
Birgit Hermann				1
Beth Stein				1
Rita Carlson				1
anita simons				1
Ross Heckmann				1
Blake Wu				1
Joann Koch				1
Hal Enerson				1
Laura Overmann				1
Bryna Chang				1
Patty Linder				1
Mike Cass				1
Janet Parkins				1
Lawrence Thompson				1
Jackie Pomies				1
Kathleen Miles				1
Mary Harte				1
DEVIN McCORMICK				1
Carol Gold				1
Lisa Steele				1
Eileen Macmillan				1
Tina Ann				1
Julie Smith				1
Sandy Zelasko				1
Janice Reardon				1
Laurie Tsitsivas				1
Dan Matthews				1
Doug Mccormick				1
Derek Van Hoorn				1

Name	Title	Organization Name	Letter Number	Form Number
Susan lefler				1
Karen Guma				1
ernest boyd				1
Annette Raible				1
Sofia Okolowicz				1
Steve Hindman				1
L Nelson				1
Frank Watrous				1
leslie spoon				1
Diane Ryerson				1
Patricia Savage				1
Anne Veraldi				1
Lenore Reeves				1
Barbara Daugherty				1
Amelia Jones				1
Joseph Pluta				1
Shakayla Thomas				1
Pamela Vasquez				1
Sharma Gaponoff				1
Kenneth Wilcox				1
Julie Ford				1
Jordan Hashemi-Briskin				1
Joseph White				1
Lauren Linda				1
Richard Hubacek				1
Sonja Malmuth				1
Connie Lindgren				1
Marlene Lovewell				1
Ronald Bogin				1
Susan Linney				1
Donald Taylor				1
Frances Blythe				1
Leslie Morelli				1
Sylvia Cardella				1
Jorge De Cecco				1

Name	Title	Organization Name	Letter Number	Form Number
Joan Kaplan				1
Randall Boltz				1
Tom and Lindsay Mugglestone				1
Ronit Corry				1
Joel Ziegler				1
Gail Roberts				1
E P				1
Kathie Boley				1
Frank Lahorgue				1
Pat Blackwell-Marchant				1
Dogan Ozkan				1
Susan Briggs				1
Philip Simon				1
Tami Palacky				1
Cicely Brookover				1
lee jordan				1
Carolyn Borg				1
Jon Anderholm				1
Robert Wallace				1
Rebecca Clark				1
Leanne Bynum				1
James Patton				1
Janet Heinle				1
Kristin Womack				1
Wanda Ballentine				1
Harry Knapp				1
Jim Leske				1
MARYELLEN REDISH				1
Brandon Paul				1
Michael Keene				1
Katherine Wright				1
M. Virginia Leslie				1
Peter Smith				1
Bill Britton				1
Marianna Mejia Contact				1

Name	Title	Organization Name	Letter Number	Form Number
Gina Ness				1
James Kerr				1
Javier Rivera-Diaz				1
Jeff Fromberg				1
Rebecca August				1
Blaise Brockman				1
Charles Smith				1
Leah Fritts				1
Michael Sixtus				1
Joel Masser				1
Phyllis Lager				1
Nancy Hiestand				1
Carol Lawrence				1
Arlene Baker				1
Diana Kliche				1
Cristina Amarillas				1
Daniel Goldberg				1
Jane Fawke				1
Caryn Graves				1
Carol Kuelper				1
Kathie Kingett				1
Noah Youngelson				1
F. Carlene Reuscher				1
Mike Abler				1
Elizabeth Littell				1
Deeann Bradley				1
Richard Popchak				1
Philipp Rittermann				1
Gary Gunder				1
Jane Nachazel-Ruck				1
Corinne Greenberg				1
Kate Leahy				1
Frances Goff				1
Brian Jeffery				1
Julie Ostoich				1

Name	Title	Organization Name	Letter Number	Form Number
Ali Van Zee				1
Bianca Molgora				1
Jeannette Gavin				1
Alan Schenck				1
Timothy Devine				1
Barbara Poland				1
Paul Hunrichs				1
Evan Jane Kriss				1
Kathie Kingett				1
Carolyn Knoll				1
Peter Peterson				1
Elisabeth Armendarez				1
Kathryn St. John				1
Thomas McGee				1
Steven Perry				1
Jeffrey Long				1
Chris Moore				1
Sylvia Vairo				1
Steve Berman				1
Howard J Whitaker				1
Aida Marina				1
Jennifer Miller				1
Robert Oberdorf				1
Eric Polczynski				1
Dogan Ozkan				1
Felicia Chase				1
Roberta Johnson				1
Roberta Johnson				1
Michael Lerner				1
Fred Bamber				1
Arlene Baker				1
Dan Matthews				1
Tami Palacky				1
Frances Goff				1
paul torrence				1

Name	Title	Organization Name	Letter Number	Form Number
Virginia Bennett				1
Kathryn Paddock				1
John Etter				1
Bruce Vincent				1
Diane Verna				1
Sandra Materi				1
Beverly Poncia				1
John Pasqua				1
Marcie Ligammari				1
Angela Embree				1
John Everett				1
Paula Zerzan				1
Michael O'Sullivan				1
Nicholas Lenchner				1
Diane Berliner				1
Philip Simon				1
Allan Chen				1
L. Adams				1
Birgit Hermann				1
Wanda Ballentine				1
Lenore Reeves				1
Amy Wolfberg				1
Jay-R Hipol				1
Anita Goncalves				1
Jean G. Cochran				1
Jane Nachazel-Ruck				1
Terre Dunivant				1
Rayline Dean				1
Billy Trice Jr.				1
Nikki Nafziger				1
Clifford Cooter				1
Sylvia De Baca				1
Renee Klein				1
Susan Briggs				1
Janet Parkins				1

Name	Title	Organization Name	Letter Number	Form Number
Renee Klein				1
Carol Thompson				1
Julie Smith				1
James Sumler				1
Katherine Wright				1
barbara poland				1
Robert Hall				1
F. Carlene Reuscher				1
Joshua Baer				1
Ernest Long				1
leslie spoon				1
Marilyn Williams				1
Steve Berman				1
Caryn Graves				1
Robert Oberdorf				1
Jacqueline Carroll				1
lyn du Mont				1
Barbara Mesney				1
Lawrence Thompson				1
Blaise Brockman				1
Ronit Corry				1
Frances Blythe				1
Joan Smith				1
Bert Greenberg				1
Julie Ford				1
Sylvia Vairo				1
Kathie Kingett				1
Carolyn De Mirjian				1
James Patton				1
Lauretta Bliss				1
Richard Bliss				1
Janet Heinle				1
Richard Spotts				1
Christine Hayes				1
Philip Ratcliff				1

Name	Title	Organization Name	Letter Number	Form Number
Susan Worden				1
Teri Yazdi				1
Randall Boltz				1
VALERIE NORDEMAN				1
Howard J Whitaker				1
Gary Patton				1
Dup Crosson				1
Abigail Hoff				2
vittu2009@gmail.com				2
Elise Cypher				2
Joshua Danson				2
Jamie Pak				2
John McMorrow				2
Annaluna Giacich				2
Justin Taylor				2
Sara Lindorfer				2
Sofia Odeste				2
Santino Plazola				2
Camille Calegari				2
Mia Rosati				2
Joe Sweeney				2
S. Afutrel				2
Gordon Dow				2
Matt Richardson				2
Timothy Devine				2
Stephen Black				2
Susan Summers				2
Mark Blume				2
Regina Hildebrand				2
Brett Hildebrand				2
Rosa Albanese				2
Mark Speer				2
Keith Anderson				2
Julie Ford				2
Brian Means				2

Name	Title	Organization Name	Letter Number	Form Number
Stanley Backlund				2
Kern Aughinbaugh				2
Kalyn Bocast				2
Julie Weeder				2
Bean Pole				2
Don Lintz				2
Dan Culhane				2
George Ackenheil				2
Jj Phair				2
Betsy Phair				2
David Lamiquiz				2
Lee Leardini				2
Richard Flansburg				2
Barbara Perra				2
Fred Bellero				2
Robert McCarthy				2
Charles Hammerstad				2
Brent Campos				2
Malinda Baker				2
Lawrence Kenney				2
Christopher Rodi				2
Susan Nomura				2
Jim Nomura				2
Jack Kusaka				2
Daniel Ferrell				2
Allen Aronson				2
Chris Fairley				2
James Wong				2
Darren Scola				2
Marty Jansen				2
Robert Cushman				2
Robert Chang				2
Rudy Ramp				2
Deborah Ange				2
Greg Someson				2

Name	Title	Organization Name	Letter Number	Form Number
Steve Merlone				2
Don Forbes				2
Harold Knight				2
Michael Marsden				2
Bryan Hoyos				2
George Hayford				2
Dennis Pagones				2
Chris Lima				2
Carlos Navarro				2
Sam Norris				2
Gregg Wrisley				2
Cal Nakanishi				2
Andy Muzzio				2
Peter Hudson				2
Terry Imai				2
Terence Imai				2
James Gill				2
Michael Tomlinson				2
Robert Chacon				2
Jonathan Zittel				2
Patrick Carroll				2
Harry Laswell				2
Mitch Zuklie				2
Ralph Barrett				2
Corey Raffel				2
Claire Meyler				2
Robert Adams				2
Darin Archer				2
Ralph Barrett				2
Arthur Webb				2
Craig LaFargue				2
Bryan Vais				2
Geofrey Wyatt				2
Christel Markevich				2
Geof Garth				2

Name	Title	Organization Name	Letter Number	Form Number
Nicholas Vidinsky				2
Ann Kilby				2
Sylvia Deer				2
Alicia Grayson				2
Lisa Canning				2
Paul Martin				2
Denise Cruz				2
Mary Martin				2
Lisa Sanfelice				2
Mickey Brown				2
James Wilson				2
David Wingate				2
Elizabeth Rodeno				2
Krista Ryan				2
Dawn Robinson				2
Kelly Decker				2
Rick Evans				2
Melissa Schultz Ahearn				2
Patrick Wilkinson				2
Virginia Wheaton				2
Ron Zigelhofer				2
William Ballinger				2
Caleb Carter				2
Roberto Reyes				2
Connor McGuire				2
Andrew Grubbs				2
Louis Bubala				2
Laurie Ashtiani				2
Andy Brohard				2
Sonia Reed				2
Ryan Gamlin				2
Cynthia Engler				2
Nolan Walt				2
Enrique Garcia				2
Matt Browne				2

Name	Title	Organization Name	Letter Number	Form Number
Laura Rangel				2
Bennett Piscitelli				2
Xochitl Cordova				2
Jane Kaufman				2
Dinorah Cos				2
Brent Post				2
Lorena Padilla				2
Anne Sotelo				2
Liana Krause				2
Lily Weaver				2
Kelly Voler				2
Kait Toledo				2
Kim Wiedeman				2
Ramin Dowlati				2
Chris McGovern				2
Gary Freeberg				2
Gage Awbrey				2
Michael Fuchs				2
Zak Graff				2
Marc Moran				2
Kym Robie				2
Chris Ford				2
Kyna Chang				2
Gail Whaley				2
Kelly Contant				2
Tershy Bernie				2
Mark Zimmerman				2
Steele				2
Anthony Evangelista				2
Paula Hodges				2
Dean Alper				2
Emmy Johnson				2
John Vaughan				2
Tom Phillips				2
Brent Stanley				2

Name	Title	Organization Name	Letter Number	Form Number
Elizabeth K Fleming				2
Nabil Lachgar				2
Shannon Maher				2
Paula Duncan				2
Alaya Bouche				2
Lauren Voler				2
Isabelle Voler				2
Peggy Denton				2
Gerald Rees				2
Deborah Filipelli, PhD				2
Val Domingo				2
Robin Gonzalez				2
Vivian Zhu				2
Tim Haines				2
Sarah Johal				2
Jon Provisor				2
Lohren Green				2
Rudy Lautner				2
Kate McClain				2
Nicola Kelly				2
Janice Andersen				2
Richard Whaley				2
Nita Gread				2
Michael Cooper				2
Lori Toomas				2
Elizabeth Eszterhas				2
David Beard				2
Barbara Burns				2
Melody Hamilton				2
Barbara Reisman				2
Katherine Bettis				2
Rudy Ramp				2
Melissa Riparetti-Stepien				2
Ro LoBianco				2
Petra Bingham				2

Name	Title	Organization Name	Letter Number	Form Number
Claire Perricelli				2
Casey Albarran				2
Aubrey Owens				2
James Tietz				2
Donna Thompson				2
Greg Movsesyan				2
Ronald Thompson				2
Jane Patterson				2
Nancy Keleher				2
Tom Peters				2
Virginia Rice				2
Gisele Albertine				2
Malais Wong				2
Steven Chester				2
Mike Nicholson				2
William Ballinger				2
Kenneth Firl				2
Harry White				2
Isaac Anderson				2
Taylor Vine				2
Zachary Stewart				2
Chelsea Pulliam				2
Thomas Thacher				2
Curtis Kroeker				2
James Gill				2
Elijah Savage				2
Dan Oliver				2
Morgan Zeitler				2
Kalman Edelman				2
Austin Raun				2
Alysia Gaye				2
Jeffrey Trafican				2
Lazara Ramos				2
Carol De Hart				2
Renee Sanguinetti				2

Name	Title	Organization Name	Letter Number	Form Number
Maria Karpoukhina				2
Andrea Livingston				2
Alan Ashbaugh				2
Stephanie Hilborn				2
Mark Anderson				2
John McMorrow				2
Cindy Ma				2
Ted Couch				2
Donadl Heisey				2
Pat Lind				2
Eva Iglesias				2
Harry White				2
Kevin Palencia				2
Patrick McKernan				2
Aki Creelman				2
Linda Hummingbird				2
Paul Vais				2
Doug Ballinger				2
Nicholas Wilson				2
Gary Dickenson				2
Del Rae Tienter				2
Matthew Finkle				2
Christopher Puccini				2
Dagmar Riddle				2
Kate Yorke				2
Scott Ferguson				2
Satya Lee				2
Belinda Higuera				2
Gerald Brooks				2
Sue Welch				2
Daisy Schadlich				2
Mike Pease				2
Brook Colley				2
Connie Stringer				2
Vanessa Scholfield				2

Name	Title	Organization Name	Letter Number	Form Number
Renee Casterline				2
Craig LaFargue				2
Alan Ernesto Phillips				2
Dennis Boyd				2
Kevin Dwan				2
Ed Rossi				2
Rick Raddue				2
Michael tomola				2
Kenneth Henderson				2
Edson Rood				2
Jerry Urban				2
Daniel Pace				2
Brenda Lievsay				2
Julia Cheresh				2
Neil Whitelaw				2
Janet Saitone				2
Anne Beulke				2
Chris Barger				2
Stanley Backlund				2
Ken Morrish				2
Stephen Wheeler				2
Nancy Ihara				2
Matthew R Clark				2
William Mattson				2
Art Babcock				2
Robert Chang				2
Blake Robinson				2
Brian Spear				2
Chris Overholt				2
Marjorie Betz				2
Peter Johnson				2
Lisa See				2
Cindy Charles				2
Jerome Politzer				2
Nicolas Bauer				2

Name	Title	Organization Name	Letter Number	Form Number
Jay Bailey				2
Sura Cox				2
Birkin Newell				2
K.S. Iverson				2
Matthew Miller				2
Joshua Restad				2
Stephen Sturken				2
Angelina Alvarez				2
Kim Latos				2
Lori Moreno				2
Sheridan Noelani Enomoto				2
Pesha Lakaidee				2
Misa Joo				2
Kelly McGehee				2
Patrick Burke				2
Sally Rogers				2
William L Martin				2
William Potts				2
David Heyes				2
Janice Powell				2
Janet Gilbert				2
S. Hughess				2
Erik Ramirez				2
Dori Mondon				2
William Tippets				2
Nicole Siskind				2
Rocky Taylor				2
Helene Sisk				2
Paul Finkle				2
Eric Walle				2
Marvin Schinnerer				2
Dick Holmes				2
Brenda Hogan				2
Lee Pono				2
Craig Attebery				2

Name	Title	Organization Name	Letter Number	Form Number
Caephren McKenna				2
Craig Wages				2
Zephrin Lasker				2
Patrick W. Weddle				2
Kevin Strobridge				2
Daniel Kowalski				2
George Cotsirilos				2
Darrell Boyle				2
Stanley Ohara				2
Francis Willis				2
Mark Baginski				2
Cris Caldwell				2
Richard West				2
Fred Bellero				2
Danielle Cresswell				2
Michael Cooper				2
Devin Farrell				2
Ken Rasler				2
Drake Johnson				2
Robert Marshak				2
Bob Cush				2
Patrick McKee				2
Pete Przybylinski				2
Ben Hamilton				2
Jack McCowan				2
Luke Blacklidge				2
Walter Duffy				2
Peter Molinari				2
Robert Adams				2
Elizabeth Knight				2
Matt Kane				2
Diane Hawk				2
Richard Yamasaki				2
Peter Reinheimer				2
Dave Moore				2

Name	Title	Organization Name	Letter Number	Form Number
Brian Kohlman				2
Peter Johnson				2
Margaret Cable				2
Twila Souers				2
Daphne Martin				2
Ciel Niesen				2
Natalie Bradley				2
Ara Johnson				2
Charlene Price				2
Joanne fanucchi				2
Andrea M Danger				2
James Wong				2
Victor Kalasa				2
Gary Smith				2
Joaquin Mayer				2
JR Bonsai				2
Janice Gloe				2
Michael McKibben				2
Nelson Kaiser				2
Caroline Gagne				2
Sebastian Ainslie				2
Carol de Sa Campos				2
David Raymaker				2
Brian Reed				2
Stan Perry				2
Julie Ford				2
Gregory Anzalone				2
Patrick Bock				2
Stephen Lopez				2
Michael W Evans				2
Andrew Lopez				2
Chris Eastman				2
Lori Lopez				2
Tessa Henry				2
Howard Ganz				2

Name	Title	Organization Name	Letter Number	Form Number
Philip Swett				2
Nick Heslip				2
Steven Sides				2
Melissa Riparetti-Stepien				2
Bill Boockford				2
Brad Gee				2
Julia Walle Talbot				2
Jeff Muscatine				2
Greg Thomson				2
Donovan Brown				2
Janice Gloe				2
Richard Dow				2
Terry Sternberg				2
Lisa Ferguson				2
Steve Merlone				2
Geoff Pryor				2
Faith Boucher				2
Ralph Barrett				2
John Kalinowski				2
Mukta Vie				2
Tom Maendle				2
Mark Speer				2
Dominic Grasseschi				2
Henry Little				2
Lee Haines				2
Cheyne Sheldon				2
Daniel Ferrell				2
William Hagen				2
Dennis Pagones				2
Alexis Villavicencio				2
Jeff Wong				2
Thomas Manuel				2
William Walker				2
Ulises Reveles				2
Steven Lloyd				2

Name	Title	Organization Name	Letter Number	Form Number
John Fitzpatrick				2
Tim Shetler				2
Benjamin Miller				2
Brandon Paul				2
Paris Tabor				2
Beth Melville				2
Robert McCarthy				2
Seamus Glennon				2
Joanne Vidinsky				2
Gregg Wrisley				2
James Poulton				2
Kelson Quan				2
Michael Caparelli				2
Scott Nelson				2
Thomas Pelikan				2
Chris Finch				2
Stevenson Brown				2
Robert Miller				2
Bob Shoberg				2
Franklin P Johnson Jr				2
Bruce Olitzky				2
Rick Gustafson				2
Eric Chapman				2
Terence Imai				2
Rick Remedi				2
Jeff Crenshaw				2
Lawrence Kenney				2
Philip Salibi				2
Jerry Zampino				2
Geneva M Omann				2
L A Proctor				2
Grant Volk				2
Marguerite Ogle				2
Kerin L G				2
Joseph P Paoluccio Paoluccio AIA PE				2

Name	Title	Organization Name	Letter Number	Form Number
Meredith Seawell				2
Alice Rogers				2
Raven Stevens				2
Chris Taylor				2
J Geagan				2
George Hayford				2
Evan Sedlock				2
Harry Hanson Jr.				2
Anthony French				2
Timothy Devine				2
Roger Williams				2
Charles Hammerstad				2
Dan Culhane				2
John Sullivan				2
Thomas Shields				2
Patrick Owen				2
Dennis Cakebread				2
Marc Meyer				2
Gordon Dow				2
Dan Johnson				2
Bill Quinn				2
Charles Ward				2
Steve Schramm				2
Brian Kohlman				2
Paul Jones				2
Lani Wild				2
Judith Taylor				2
Carlos Navarro				2
Sarah Benjaram				2
Tom Toretta				2
Major Nelson				2
John Moreno				2
Randall Yates				2
Barbara Perra				2
Chris L				2

Name	Title	Organization Name	Letter Number	Form Number
Richard Dow				2
Sam Norris				2
Ray Lorenson				2
John Fellner				2
Geoff Pryor				2
Karin Mattoon				2
Jo Ann Herr				2
Roger Mammon				2
Dan Stofka				2
Robert Adams				2
Patrick Carroll				2
Barbara Ungersma				2
David Moser				2
Douglas Thorn				2
Rich Vance				2
Leonard Baker				2
Marty Jansen				2
Julie Ford				2
Dave Douglas				2
Michael Metzler				2
Michael Abraham				2
Andrew Weiner				2
Corey Raffel				2
Max Huff				2
Ashley White				2
Megan Nguyen				2
Timothy French				2
Pat Lind				3
Megan Garner				3
Bill Gardner				3
Ernest Long				3
Rudolf Isch				3
Greg Simmons				3
Sargel K				3
Lori Wilson-Hopkins				3

Name	Title	Organization Name	Letter Number	Form Number
Jean Riehl				3
Joseph Krochka				3
Marie Mildner				3
Lori Wilson-Hopkins				3
Lori Wilson-Hopkins				3
Daniel Garcia				3
Stephannie Fernandes				3
Curley Walsh				3
Katie Guetz				3
Maree Mahkewa				3
Linda Tabor-Beck				3
Vicki Rinehart				3
George Koch				3
M. Lahiff				3
Sarah Smith				3
Greg Garrison				3
Celine Wallace				3
Megan Hooker				3
Marcie Keever				3
Charles Seidler				3
Richard Hieber				3
Kevin Jordan				3
Denielle Perry				3
Julene Freitas				3
Olga Jimenez				3
Chris Welch				3
Michael Wellborn				3
Abbot Foote				3
Wendy Fiering				3
Alexander Morris				3
Tessa Henry				3
Melodie Kauff				3
Richard Ely				3
Ken Kirsch				3
Todd Fearon				3

Name	Title	Organization Name	Letter Number	Form Number
April McMurtry				3
Sheila Toner				3
Cindy Charles				3
Mary Peterson				3
Chris Peterson				3
Jennifer Kitt				3
Ellen Loebl				3
Po Frankel				3
Robin Durston				3
Kirk Schumacher				3
Sue Gylling				3
Elizabeth Rocke				3
Naomi Stout				3
Kurt Koldinger				3
Nina Gordon-Kirsch				3
Vegan Sha				3
Dan Silver				3
Graeme Plant				3
Charles Guilbault				3
John Livingston				3
Jason Griffiths				3
Oscar Petrey				3
Tim Cannon				3
David Zeff				3
Edward Sullivan				3
Edward Sullivan				3
Richard Johnson				3
Donna Thies				3
John Yost				3
Patricia Martin				3
Scott Nelson				3
Victor Ochoa				3
Jean Riehl				3
Susan Perrin				3
Roger Groghan				3

Name	Title	Organization Name	Letter Number	Form Number
Yasoy Kelly				3
Elizabeth McCullough				3
Charles Hammerstad				3
Charles McNally				3
Erica Clark				3
Jeffrey Trafican				3
Mike Nicholson				3
James Tolonen				3
Janet Hayes				3
Debra Chapman				3
Pamela Mattz				3
Katie Amodio				3
Don Faia				3
Rosada Martin				3
Ros Paul				3
Jimmy Foust				3
Jeff Wasielewski				3
Jay Doane				3
Brian Kohl				3
Melanie Wayland				3
Marc Reynolds				3
Garth Casaday				3
Tanya Meyer				3
Gretchen Whisenand				3
Martin Blake				3
Kevin Branstetter				3
Mal Gaff				3
Judith Bushey				3
Ted Cheeseman				3
Jeffrey Stone				3
Jorge De Cecco				3
Tim Ryan				3
Carolyn De Mirjian				3
Harold Sloane				3
Stephen Black				3

Name	Title	Organization Name	Letter Number	Form Number
Howard Freiman				3
Risa Stiegler				3
Charles Walbridge				3
Ben Stiegler				3
Philip Simon				3
Ray Rodney				3
Amr Shahat				3
Stephen Bohac				3
Clare Broussard				3
Robert Ferroggiaro				3
Gail Blumberg				3
HJC				3
Ross Heckmann				3
Julie McKee				3
Tom Adams				3
Margaret Goodale				3
Mel McKinney				3
Jerry Hughes				3
Glen Himberg				3
Robert Marshak				3
George Lewis				3
Pamela Nelson				3
Chad Richards				3
Richard Rawson				3
Mark Betti				3
Gary Falxa				3
Roberta Sparkman				3
Marnie Gaede				3
Mark Cunningham				3
Patricia Davis				3
Carolyn De Mirjian				3
Jane Centers				3
Tia Triplett				3
Tia Triplett				3
Gail Blumberg				3

Name	Title	Organization Name	Letter Number	Form Number
Lowell Young				3
Toby Briggs				3
Florie Nunes				4
Daniel Clendenin				4
Erica Machado				4
Kristine Fagundes				4
Hal Carlton				4
Matt Stone				4
Mark Chesini				4
Sue Russo				4
Mary Vanoni				4
Gary Carlin				4
Gino Pedretti III				4
Mike Vereschagin				4
Robert Rodoni				4
Phillip Lehman				4
David Wilson				4
Clarence Parton, Jr				4
Dylan Wilson				4
James Wilson, Jr				4
April England				4
John Vevoda, M				4
George Bohan				4
Tyler Blagg				4
Randy Chrisman				4
David Simpson				4
Deann Middleton				4
Ken Oneto				4
Jeff Moresco				4
Chris Torres				4
Joe Martinez				4
Ron Peterson				4
Gloria Costamagna				4
Amber McDowell				4
Ashley Lima				4

Name	Title	Organization Name	Letter Number	Form Number
Dave Van Ommering				4
Marc Kiefer				4
Dee Murphy				4
Shannon Douglass				4
Steven Steele				4
Nicole Knapp				4
Phillip Brumley				4
Judy Lehman				4
Michael Kawasaki, A				4
Steve Garsino				4
Paul Mirassou				4
Daniel Babshoff				4
Darin Pantaleoni				4
Tom Orvis				4
Alesha Williams				4
Daniel Hartwig				4
Jerry Taft				4
Heston Nunes				4
Giovanna Ghio				4
Jerry Spencer				4
Velina Crook				4
Kathryn Hogan				4
Bill Brammer				4
Teresa Buoye				4
Debora Totoonchie				4
Craig Knudson				4
Sally Long				4
Matthew Efird				4
Mark Dawson				4
Louie Figone				4
John Monroe				4
Sharon Durst				4
Russel Efird				4
Laurena Johnson				4
Laura Gutile				4

Name	Title	Organization Name	Letter Number	Form Number
Judy Parker				4
Margaret Eutenier				4
Michael Vasey				4
Tom Rogers				4
Scott Hudson				4
Craig Knight				4
Mr. & Mrs. Robert Hoek				4
Rosa Peraro				4
Suzanne Yamanishi				4
Jon Yamanishi				4
Blake Mauritson				4
Elizabeth Ponce				4
Laura Martin				4
Ronald Ginochio				4
Reid Parichan				4
Ned Coe				4
Mr. & Mrs. Philip Croak				4
Scott Barnes				4
Mr. & Mrs. Peter Bradford				4
Susan Hoogendam				4
Donny Rollin				4
Daniel Smith				4
Benjamin Olson				4
Pat Burns				4
Ramsey Wood				4
Kevin Fondse				4
Florie Nunes				4
Daniel Clendenin				4
Erica Machado				4
Kristine Fagundes				4
Hal Carlton				4
Matt Stone				4
Mark Chesini				4
Dick Piersma				4
Sue Russo				4

Name	Title	Organization Name	Letter Number	Form Number
Mary Vanoni				4
Gary Carlin				4
Gino Pedretti III				4
Mike Vereschagin				4
Robert Rodoni				4
Phillip Lehman				4
David Wilson				4
Clarence Parton, Jr				4
Dylan Wilson				4
James Wilson, Jr				4
April England				4
John Vevoda, M				4
George Bohan				4
Tyler Blagg				4
Randy Chrisman				4
Amy Blagg				4
David Simpson				4
Deann Middleton				4
Ken Oneto				4
Jeff Moresco				4
Chris Torres				4
Joe Martinez				4
Ron Peterson				4
Gloria Costamagna				4
Amber McDowell				4
Ashley Lima				4
Dave Van Ommering				4
Marc Kiefer				4
Dee Murphy				4
Shannon Douglass				4
Steven Steele				4
Nicole Knapp				4
Judy Lehman				4
Michael Kawasaki, A				4
Robert B Mack				4

Name	Title	Organization Name	Letter Number	Form Number
Steve Garsino				4
Paul Mirassou				4
Daniel Babshoff				4
Darin Pantaleoni				4
Tom Orvis				4
Alesha Williams				4
Daniel Hartwig				4
Jerry Taft				4
Kristen Hukari				4
Heston Nunes				4
Giovanna Ghio				4
Jerry Spencer				4
Velina Crook				4
Kathryn Hogan				4
Bill Brammer				4
Teresa Buoye				4
Debora Totoonchie				4
Craig Knudson				4
Sally Long				4
Matthew Efird				4
Mark Dawson				4
Louie Figone				4
John Monroe				4
Sharon Durst				4
Russel Efird				4
Laurena Johnson				4
Laura Gutile				4
Judy Parker				4
Michael Vasey				4
Tom Rogers				4
Scott Hudson				4
Tischa Coffman				4
Craig Knight				4
Mr. & Mrs. Robert Hoek				4
Rosa Peraro				4

Name	Title	Organization Name	Letter Number	Form Number
Suzanne Yamanishi				4
Jon Yamanishi				4
Blake Mauritson				4
Elizabeth Ponce				4
Laura Martin				4
Ronald Ginochio				4
Reid Parichan				4
Ned Coe				4
Mr. & Mrs. Philip Croak				4
Scott Barnes				4
Mr. & Mrs. Peter Bradford				4
Susan Hoogendam				4
Donny Rollin				4
Daniel Smith				4
Benjamin Olson				4
Pat Burns				4
Ramsey Wood				4
Kevin Fondse				4
Renee Cossutta				5
Niel Lambert				5
Megan Mauriello				5
BARRY SWAN				5
Jessica Liddell				5
Julie Beer				5
Megan LeCluyse				5
Tom Clavin				5
Amanda Dittman				5
L. Ladd				5
Joy Knobloch				5
Christopher Lish				5
Christopher Lish				5
Jason Katona				5
Cathrine Aasen Floyd				5
sara sexton				5
Luciano Graniello				5

Name	Title	Organization Name	Letter Number	Form Number
Ludovic Le Mentec				5
Cindy Risvold				5
Caryn Cowin				5
Frank Stieber				5
Marta Calleja				5
L. Watchempino				5
Bev Vanderstar				5
Charla Miller				5
Tania Malven				5
Tessa Knight				5
Danielle Montague-Judd				5
Thomas D Kennedy				5
Susan Whipple				5
Croitiene ganMoryn				5
Beth Merrill				5
R. Zierikzee				5
Cynthia Hicks				5
Lois Clymer				5
Justin Truong				5
Debbie Earley				5
Joshua Altshuler				5
Susan Ryan				5
Kristina Lamons				5
Linda Jones				5
Michele Lewis				5
Susan Cox				5
Robert Watts				5
Jeff Thayer				5
Subhajit Matilal				5
Subhajit Matilal				5
Karen Naiman				5
sara sexton				5
Debi Combs				5
Karen Shaw				5
Jen Harrison				5

Name	Title	Organization Name	Letter Number	Form Number
Greg Rupert				5
Natalia Meropi Antypa				5
Chrissy Bailey				5
Lisa Allis				5
richard ranieri				5
Ahmad Amanullah				5
Tami MASUOKA				5
Julie Scaramella				5
Lynne Teplin				5
Roshan Khan				5
Judith Vincent				5
Dorothy Neff				5
Mary Dosch				5
Shannon Elliott				5
Victoria Vega				5
Stephen Bailey				5
Janine Vinton				5
Mary Bissell				5
Lusine Karabadzhakyan				5
Heather Mturbush				5
Ramona Brownson				5
Seb Villani				5
Fabiola Banuelos				5
Nancy Paskowitz				5
Patricia Coghlan				5
Agathe Lebel				5
Lisa Hanes Goodlander				5
Lauren Sewell				5
Linda Mason				5
Chris Rogers				5
Anne Kobayashi				5
Line Taillade				5
Gloria-Jean Berberich				5
Lisa Allis				5
B. Rose				5

Name	Title	Organization Name	Letter Number	Form Number
Nathalie Martel				5
Samuel Black				5
Cathy Ream				5
Gillian Broome				5
Michele Hines				5
Maudie Valero				5
Kristi Lin				5
Carol Ng				5
Marie Preston				5
Karen Loeffler				5
Carol Ann Sherratt				5
Anette Cyr				5
Cathy Oppedisano				5
Lisa Lindquist				5
Dave Griswold				5
lisa allarde				5
Shelly Marquis				5
Leslie Chouinard				5
Lorraine Cramer				5
alison sirak				5
Elizabeth Chen				5
Chris Kargl				5
Paul Naylor				5
jeff hopkins				5
Rax Green				5
John Miller				5
Janine Sanders				5
Jeff Hoffman				5
Carolyn Borg				5
Bernardo alayza mujica				5
Luci Evanston				5
Denise Romesburg				5
G Y				5
Debra Cameron				5
Edward Markushewski				5

Name	Title	Organization Name	Letter Number	Form Number
Edie Stone Stone				5
Charlotte Maloney				5
Grace Padelford				5
Noah Tamas-Parris				5
Ren?e Lhebreux				5
Brendan Havner				5
Karen Peterson				5
Jan Crean MD				5
Gretchen Whisenand				5
Linda Garfield				5
Tem Narvios				5
Peggy Cohen				5
c m				5
Nancy O				5
Michael Stuart				5
Mary Dosch				5
Jill Ososki				5
Joseph Melisi				5
Kelli Lee-Allen				5
Amy Steele				5
Debra Moore				5
Elisa De Girolami				5
Anne Canepa				5
Gabriel Elas				5
Catherine Kittle				5
Michael Chutich				5
Lisa Allis				5
Evan Eisentrager				5
Shanti Zinzi				5
Lisa Harding				5
Audrey Urbano				5
Matthew Stuart				5
Eric Fournier				5
Glenn Mellen				5
R A Larson				5

Name	Title	Organization Name	Letter Number	Form Number
Joseph Wenzel				5
Timothy Johnston				5
Maria Cicarelli				5
Catherine Kittle				5
Christine Brazzell				5
Audrey Clark				5
Tammi Garvin				5
Lesley Stansfield				5
Mary Ann Toal				5
Kathleen Wheeler				5
Martha Singleton				5
Jim Hackman				5
Sudeshna Ghosh				5
Alexander Oswald				5
Susan Puder				5
Mary Schroeder				5
Jacqueline Baudouin				5
RICK PLUMA				5
Liz wilton				5
Ad Koch				5
Jana Harker				5
Heidi Siebens				5
Marsha Adams Adams				5
Inge Bjorkman				5
Marlene Schwarz				5
Chris McCully				5
Sharon LeVine				5
Blaire Harrington				5
Lauren Lazos				5
Dena Maguire Young				5
Victoria Shih				5
Sarah Pollock				5
Shawn Esher				5
Rina Sunar				5
Rina Sunar				5

Name	Title	Organization Name	Letter Number	Form Number
Carol Deem				5
Freya Harris				5
Annette Ancel-Wisner				5
Paul Bisio				5
alison merkel				5
Henry M.				5
Nancy Arbuckle				5
Lisa Salazar				5
Robin Jenkins				5
Mark Ward				5
Teresa Ramirez				5
Darlene Morris				5
Barbara Ufer				5
Ellen Stromswold				5
Macie Schriner				5
John Ward				5
Leslie O'Neil				5
Rita Kovshun				5
Sylvie Auger				5
Marcelo Vazquez				5
Dagmar Hildebrandt				5
Suzanne E Webster Roberson				5
Richard Lee				5
Tanya Glasser				5
Ann Wakeman				5
Emma Garner				5
Frederick Pianalto				5
Carol Griffin				5
Sara Esteves				5
Veronica Taylor-Pepin				5
Judy Jurgens				5
Pablo Bobe				5
Curtis Dunn				5
Jennifer Marinilli				5
Laura Kimeu				5

Name	Title	Organization Name	Letter Number	Form Number
Martin Haunhorst				5
Janet Einfalt				5
William Winburn				5
H W				5
Claudia St?ferle				5
Kim Colangelo				5
Amy Bourret				5
Gail Sullivan				5
Kevin Hughes				5
Marion Kaselle				5
Gina Ortiz				5
Cate MacKinnon				5
Alexandra Steiner				5
Mary Grahek				5
Shahaneh Limonadi				5
Timothy Duda				5
Susan Lemont				5
Hayley Somers				5
Denise Lachance				5
Sonja Baris				5
Cynthia Edwards				5
Steven Justis				5
Stephen Simpson				5
Braxton Worth				5
Ricardo Hernandez				5
Marlene Mills				5
Marc Williams				5
Richard Roche				5
Peggy Cohen				5
Julie Roedel				5
Jacky Kusterer				5
Dacia Murphy				5
Emma Tresemer				5
Loralei Saylor				5
Kathleen Williams				5

Name	Title	Organization Name	Letter Number	Form Number
Stuart Clark				5
Susan Croissant				5
Jonathan Gottlieb				5
Mary Durland				5
Petra Jones				5
Gloria Bristow				5
Lyle Collins				5
Lisa Schoultz				5
Luciano Graniello				5
Jon Abrams				5
Shelly Peterson				5
Maria Sanchez				5
Cheryl Gaiefsky				5
Jennifer Barton				5
Gloria Bristow				5
LUCAS WITT				5
Natalie Grime'				5
Kathleen Fox				5
Cb Michaels				5
mauricio carvajal				5
Heidi Ahlstrand				5
Andrea Storrs				5
Samantha Fulton				5
Sarah Weller				5
Gabriella Erdelyi Muise				5
Colleen Cleary				5
Fÿtima Menarelo				5
Ellen Callahan				5
Yael Shimshon				5
Anita Das				5
Bobbie Hensley				5
Y P				5
Cheryl Coen				5
Necole Cook				5
Daniela Bosenius				5

Name	Title	Organization Name	Letter Number	Form Number
Richard Kok				5
canan tzelil				5
NANCY PEARLMAN				5
Susan Harrison				5
Michael Morris				5
Alex Dempsey				5
Weldon Williams				5
Jennifer Corrigan				5
Edmund Jones				5
Dan Morgan				5
V V				5
Amanda Dickinson				5
Robin Swanson				5
Nancy Sharff				5
Robert Park				5
Dannette DeWeese				5
LynnAnne Lange				5
Jason Husby				5
Rebecca Clark				5
Kimberly Wick				5
Kira Durbin				5
Jennifer Ault				5
Nicole Olson				5
Cynthia Murphy				5
Gladys Schmitz				5
Allan Campbell				5
Kathy Stark				5
Hanna Kemink				5
maria mutter				5
maria mutter				5
Kirsten Fulgham				5
Malinda Plog				5
Linda Penrose				5
Christine Zon				5
Sandra Jarmuth				5

Name	Title	Organization Name	Letter Number	Form Number
Sandra Fazio				5
Judith Embry				5
William Snavely				5
Lauren Richie				5
Laura Baldwin				5
Jen Scibetta				5
Philip Ratcliff				5
Kimberly Phillips				5
Tami Hillman				5
Eliot Kaplan				5
Pamela Miller				5
Anne McBride				5
Darryl Colebank				5
Heather Mturbush				5
Verla D. Walker				5
Rosanne Basu				5
Rhonda Carter				5
Bailey Salerno				5
Brandy Horne				5
Lauren Murdock				5
Krystal Barnett				5
Janet Ruggiero				5
Jon Brock				5
Jo Ann Schneider				5
Sarah Alvarez				5
Judith Wilson				5
Sharon Douglass				5
Sylvia Ewerts				5
Makalapua Yong				5
Ann Fisher				5
T Gargiulo				5
Robin Langenbach				5
TRACY JONES				5
benoit dominique				5
Thomas Brustman				5

Name	Title	Organization Name	Letter Number	Form Number
Cori Williams				5
Araceli Aviles				5
Sherry Black				5
marjorie hass				5
Sharon McGregor				5
Rebecca Dick				5
Georges Raymond				5
Kyle Jones				5
Heather Ervin				5
D. Fachko				5
Stephanie Cull				5
Matt Peters				5
Hans G. Knop				5
Suzanne Benn				5
Monica Irwin				5
Melissa Ward				5
SUZANNE PETRI				5
Liza Connelly				5
Malcolm Fea				5
Shelly Wilkerson				5
Douglas Landman				5
Sylvie Delisle				5
Nile Nugnez				5
Laura Glenn				5
Donald Mackler				5
Andr?s Corchs				5
Gabriel Corza				5
Paulette Zimmerman				5
Kenneth Lapointe				5
d robinson				5
ginger brewer				5
c petrick				5
Melissa Hastings				5
Leonard Mole				5
Lois Josimovich				5

Name	Title	Organization Name	Letter Number	Form Number
Marianna Mandavia				5
Elizabeth Binstead				5
Vince Mendieta				5
Carol Hagele				5
christine houeix				5
lina van dijk				5
Valentina Van Dijk				5
kira van dijk				5
adriaan foppen				5
johan van dijk				5
Laura Lattuada Lattuada				5
val van dijk				5
Martha Farone				5
Mikel Sola				5
Baysan Tulu				5
Louise Whittle				5
Janet Delaney				5
Rhonda Egan				5
Carol Oller				5
Carol Alley				5
Michelle Hildebrandt				5
cara artman				5
Nannette Weir				5
Walter Weir				5
Joan Angelosanto				5
Diana Johnson				5
Roberta Swanson				5
Ady Larsen				5
Clint Jones				5
Duncan Carlyle				5
Cameron Carlyle				5
Duncan Carlyle				5
William Carlyle				5
Elle Evans				5
Daisy Carlyle				5

Name	Title	Organization Name	Letter Number	Form Number
Pam Carlyle				5
Elise Carlyle				5
Julia Foreman				5
Barbara Benson				5
Eric Bergman				5
Scott Ploger				5
rose shulman				5
virginia Ball				5
Peter Stevens				5
Sharon Gooding				5
Peter Ball				5
Amanda Lowe				5
Angela Gantos				5
Jessica Rocheleau				5
Jordan Azzopardi				5
Nicole Schoeder				5
Margaret Keene				5
Regina Bennett				5
Sky Yeager				5
K Danowski				5
Brian Smith				5
Anthony Anderson				5
Philip Hult				5
Elizabeth Bossert				5
Jim Head				5
Jennifer Olles				5
Julie Alicea				5
Tika Bordelon				5
Carol Torchia				5
Mary Lahovitch				5
Veronica Stein				5
J. Holley Taylor				5
Andrea Saunders				5
Alice Keyes				5
L M				5

Name	Title	Organization Name	Letter Number	Form Number
Lisa Brehm				5
Travis Miller				5
Lora Schwartzberg				5
Willow ford				5
Angeles M?ndez				5
Hugh Curtler III				5
Ann Blombach				5
Lou Priem				5
Carrie Swank				5
Jill Masson				5
David Dragon				5
LOUISE Rangel				5
Nita Lee				5
Karen Kravcov Malcolm				5
Beth Marshall				5
Peter Dorney				5
Lynn Elliott				5
Connie Raper				5
Rosemarie Pace				5
Joseph M. Varon				5
Jeff Alford				5
Mark Wilson				5
Ellen Gutfleisch				5
Kent John Clark				5
Donna Fine				5
Cleone Stewart				5
Robert INGHAM				5
Cathy Fuller				5
Anna Hanzelova				5
Susan Hittel				5
Gary Overby				5
Shandra Officer				5
Barbara Meislin				5
Len Rogoff				5
Kathryn Mosher				5

Name	Title	Organization Name	Letter Number	Form Number
Paul Dyer				5
Clare Harris				5
Aminy Ostfeld				5
Kerstin Green				5
Jeffrey Schnebelen				5
Bonnie McGill				5
Susan Dellinger				5
Melissa Kyer				5
lyn capurro				5
Kati Grosse				5
Camelia Mitu				5
Lynne Potts				5
Jim Sheridan				5
Jennifer Humbert				5
Jennifer Jackson				5
Doyla Rosati				5
Joy Mukherjee				5
Jeremy Rossman				5
Paul A				5
Karin Kyes				5
Lois Horst				5
Wendy Mulherin				5
F S Grassia				5
Hanna Rosner-Katz				5
Doretta Miller				5
Maggie Topalian				5
D Jackson				5
Alexandra Hopkins				5
Diana Page				5
Kristin Frish				5
Tom Butler				5
Carlos Arnold				5
Geneine Payne				5
Mary McKay				5
Gary Baxel				5

Name	Title	Organization Name	Letter Number	Form Number
Erin McDonald CVT				5
Jacquelinej Westoby				5
Elin Jacks				5
Alan Cunningham				5
David Mayer				5
Caitlin Caldwell				5
Amy Wolfberg				5
julie levin				5
Deborah Gostomske				5
Kathy Abby				5
Christina Jackson				5
June Adler				5
Anne Hepfer				5
Ruth Nakamura				5
JACQUELINE EDMONDSON				5
Marty Bostic				5
Angie Grosland Jones				5
Michael Hazey				5
Marisa Hoke				5
Mildred Huttenmaier				5
Gregory Zyzanski				5
Clara Halfin				5
John Erickson				5
Catherine Ayotte				5
Mark Lotito				5
Dawn Fountain				5
Theresa DeLuca				5
Barbara Maddalena				5
Shirley Mills				5
linda le cocq				5
Wendy Wish				5
ADAM WHITEMAN				5
Martin Tripp				5
Barbara Krantz				5
Deborah Spencer				5

Name	Title	Organization Name	Letter Number	Form Number
Kathie Fierro				5
Iris Pelc				5
Wendi Myers				5
priscilla bergeron				5
Bonita Oliva				5
Sylvie Bendier				5
Debra Hand				5
Gary Markotich				5
Dan Larivey				5
Marilyn K Coats				5
John Krohn				5
Tabassam Shah				5
Nike Cacoullos				5
Peggy Ricci				5
Pat Harding				5
Janice Banks				5
Charlene Cooper				5
Gemma Smith				5
Rebecca Cliff				5
Sam Padmore				5
Ronald Faich				5
Michael Sheppard				5
Kristin Arioli				5
mary camardo				5
Ainga Dobbelaere				5
Elaine Fischer				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5

Name	Title	Organization Name	Letter Number	Form Number
Petra Stadtmueller				5
Joe Good				5
Joe Good				5
Joe Good				5
Joe Good				5
Elizabeth Wedge				5
Joe Good				5
Douglas Kinney				5
john zey				5
Rosemary Caolo				5
Mari Lana Teska Echevarria				5
Jane Yater				5
Tamara McCready				5
Rene Suarez				5
Kim Jordan				5
Doris Rodriguez				5
Anne Roberts				5
Dogan Ozkan				5
Liane Owen				5
Ruth Boice				5
Sandra Boyer				5
Julie Wiebe				5
Madeline Amalphy				5
Maryellen Alviti				5
Laurence Buckingham				5
LEILA ISHIKI				5
Raymond Potvin				5
Iris Patty Yermak				5
Steven Miller				5
Al Cullen				5
Cynthia Sampson				5
Joan Davis				5
Victoria Gershon				5
Martin Baclija				5
Natalie Parra				5

Name	Title	Organization Name	Letter Number	Form Number
Mairja Minic				5
Judith Dover				5
Margarita Perez				5
Geoff Gahm				5
Marija Minic				5
Roland Haney				5
Carol Gahm				5
Tara Gahm				5
Shannon Deming				5
Steve Wise				5
Patricia Nadreau				5
Russell Eubanks				5
Theresa Peckham				5
Leann Turley				5
Mary Puccini				5
Patricia Panitz				5
Pamela Miller				5
Kirsty Chalmers				5
Kevin Klafta				5
Jacqueline Glyde				5
Katherine S Stewart				5
Libby Erie				5
Ellen Hogarty				5
Linda Jennings				5
Carolyn Duryea				5
Diane Kristoff				5
Stephanie Witte				5
Darren Mitton				5
Chris Smith				5
Patricia Greiss				5
Jennifer Fendya				5
Sandra Garber				5
Jerry Niemeyer				5
Mario Velarde				5
Jonathan Lueck				5

Name	Title	Organization Name	Letter Number	Form Number
Lisa James				5
Alice West				5
James Woods				5
Regina Brooks				5
Omar Pivaral				5
Brenda Black				5
Kristen Wambold				5
Anton McInerney				5
Margaret Lamb				5
Don Steininger				5
Livia Ferguson				5
Michelle Dudeck				5
Elizabeth Hemzacek				5
Heather Savino				5
Zora Hocking				5
Rose Elcsics				5
Doris Smith				5
Karen Hirst				5
M. W.				5
Paolo Bressanin				5
Lynne Jones				5
Barbara Zavilowicz Romero				5
Carol G				5
Theresa Roach				5
William Briggs				5
Steven Standard				5
Alex Rappaport				5
Jocelyn Stowell				5
Carol Maindonald				5
Pamela Taylor				5
Cynthia McCarthy				5
Lily Maisky				5
Renee Feliciano				5
Ray Huber Jr				5
Susan Herzer				5

Name	Title	Organization Name	Letter Number	Form Number
Ann Marie Sardineer				5
Julie Berberi				5
Stephen a Johnson				5
Deidre Moderacki				5
Jolynn Jarboe				5
E Smith				5
Connelee Shaw				5
Peter Curia				5
Bonnie Miller				5
Marcia Venegas-Garcia				5
A. Barnett				5
Michael Price				5
Debra Csenge				5
Amelia Narigon				5
Raymond Beard				5
kim davis				5
Joan Lewis				5
M Layram				5
Andrea Kraus				5
Jitka Mencik				5
Robin Kent				5
Patricia Seffens				5
David Gassman				5
marjorie angelo				5
Kathleen Badell				5
Wendy Fast				5
Pilar Quintana				5
Michele Temple				5
Thomas Goldenberg				5
Allan Chen				5
Joan Beldin				5
Patricia Kortjohn				5
Ali Judd				5
W. G.				5
Robin Millis				5

Name	Title	Organization Name	Letter Number	Form Number
benoit dominique				5
Penelope Ward				5
Brittany Scheiner				5
Ann Dorsey				5
James Cronin				5
Bonnie Claggett				5
astrid geest				5
Thomasin Kellermann				5
bryce Smith				5
Vasileios Grigoriou				5
Edward Rengers				5
Joe Tricase				5
Jane Hoffman				5
Chris Tauson				5
Debra Bartlett				5
Brenda Pickvance				5
Constantina Hanse				5
Wendy Fast				5
Jette He				5
Wendy Fast				5
Kathleen Felt				5
S Reiff				5
Catherine King				5
baudouin debrabandere				5
Fabienne Stoudmann				5
Linda Kollman				5
Deborah Rollings				5
Emily Baumgardner				5
Kathleen Schenk				5
Varday Campbell				5
Pamela Roger				5
Sheila Mills				5
Sandra Remilien				5
Jessie Cowley				5
Tia Triplett				5

Name	Title	Organization Name	Letter Number	Form Number
Irene Radke				5
Stefan Ciosici				5
Anne Gregory				5
Estefana Parras				5
Frank Blake				5
Kate Orange				5
Ned Bruno				5
Alex Stavis				5
Tina Brenza				5
Jeanine Yows				5
Jane Lischer				5
Jessie Casteel				5
Ahna-Kristen Backstrom				5
Roy Rodriguez				5
nancy sowersby				5
Karen Kenngott				5
Allison Stillman				5
Nancy Martin				5
Julie Palumbo				5
Jessica Budde				5
Adina Parsley				5
Liliana Hamacher				5
Chip Goldstein				5
lisa bergerud				5
Brenda Evans				5
Marigold Love				5
Georgina Towning				5
Jerry Horner				5
David Katz				5
Barbara Gabbard				5
Nancy Benner				5
Mary Hebold				5
Kate Wessinger				5
ULLA PADE				5
Jean James				5

Name	Title	Organization Name	Letter Number	Form Number
Molly Randisi				5
Eve Saglietto				5
Lynn Kelly				5
Susana Perez				5
Barbara Grove				5
Jessie Fumerola				5
Joan Turner				5
Lisa Jelks				5
Linda Benner				5
Denise Lytle				5
J Trimble				5
Amala Sibylle Kohler				5
Sonya Wilson				5
Megan Abramczyk				5
Kevin Milam				5
Rhonda Johnson				5
Cheryl Dare				5
Jean Preston				5
Sylvia Barnard				5
Margaret Gerhardstein				5
Donald Taylor				5
Caryn Graves				5
Natalie Kl?tzer				5
joyce alexander				5
Lawrence Joe				5
Nicole Shaffer				5
Craig Everhart				5
Nancy Cassels				5
Mark Cohen				5
Cynthia Molinero				5
Susan Bales				5
Jenni Reis				5
Lorraine Oliver				5
Geert Vancompernolle				5
Karina Jahn				5

Name	Title	Organization Name	Letter Number	Form Number
Kenneth W Johnson				5
Bernard Hochendoner				5
Hope Crescione				5
Starling Childs				5
Stacey Wolfe				5
Marion Kraus				5
Nikki Doyle				5
Carlos F Cabezud				5
Joanne Meagher				5
Ira Gerard				5
Andrew Kozakow				5
Helgaleena Healingline				5
Rocio Lario				5
Eve Forde				5
Tomasz Nakonieczny				5
Megan Williams				5
Kimberly Nieman				5
Shari Peto				5
Nancy Neumann				5
Vanessa Gonzalez-Green				5
Wilma V brandwijk				5
Joanne Conti				5
Ann McDermott				5
Donna J Ennis				5
Alexia Brown				5
marilyn dougher				5
Lauren Campbell				5
Lily Clair				5
Ray Yow				5
Brittney Coleman				5
Jane Morris				5
Roger Cardillo				5
Jane Broendel				5
Thomas Bennett				5
sandra arapoudis				5

Name	Title	Organization Name	Letter Number	Form Number
mellisa donaldson				5
Daniel Mink				5
Roseanne Gough				5
Denise Griffin				5
Claudia Nichols				5
Jan Toister				5
James Henriksen				5
Erich Winkler				5
Stephen Muckle				5
Jason Starr				5
Noah Schillo				5
Sarah Del				5
Julie Moylan				5
Rhondda Mills				5
Marie Neville				5
Adele Dawson				5
Lynn Patsiga				5
Marcia Halligan				5
Judy Cacioppo				5
Steven Adams				5
Stephanie Jones				5
Jo Anna Hebberger				5
Judy Wood				5
Julia Landress				5
Karen Bravo				5
Alyssa Melton				5
Tamela Roberson				5
Elisabeth Ritter Ritter				5
Leslie Dee				5
Nick Engelfried				5
Judith Steward				5
Mark Emlet PAc				5
Patricia B Davenport				5
Louis Blair				5
Donna Crane				5

Name	Title	Organization Name	Letter Number	Form Number
Mary Quimby				5
Ronnie Bolling				5
Gloria Aman				5
Barbara Tillman				5
Linda Gilbert				5
Sally Marone				5
Tom Hougham				5
Bridgette Hartung				5
Stan Czarny				5
Anne-Marie Hewitt				5
Kathy Smith				5
DIANA KEKULE				5
Karen Kalavity				5
Neil Wilson				5
Sylvia Bergeron				5
Stephanie Meacham				5
Anil Prabhakar				5
Mike Montes				5
Gunilla Lofstrom				5
Helen Kline				5
Cinzia B.				5
Janet Tice				5
Emma Downing-Warren				5
Debbie Krapf				5
Giampiero Mariani				5
Mark Merrill				5
Thaddeus Kozlowski				5
Dawn Wait				5
TOM PEACE				5
Angela Lawrence				5
Gerald Kretmar				5
Holger Mathews				5
Carla Tuke				5
Shannon D Harkin				5
Ly Doug				5

Name	Title	Organization Name	Letter Number	Form Number
Candice Bell				5
Adriana Nunez				5
MIKE HLAT				5
Taylor Richardson				5
Jeremiah Podleski				5
John Kim				5
Eileen Magee				5
Raymond Grieshaber				5
Chris Talbot-Heindl				5
Wrenn Reed				5
Eleanor McVeigh				5
Lisa Dadgar				5
William Golding				5
Cynthia Mastro				5
Ann Miller				5
Mary Hills				5
Laurel Gress				5
Doreen Tignanelli				5
Megan Ramsey				5
G Feather				5
Mark Gorsetman				5
Kathy Evans				5
Victoria rubietta				5
Donna Selquist				5
Blaire Harrington				5
Vicki Wheeler				5
Lori Gudmundson				5
Etta Wu				5
Rama M				5
Christina Di Marco				5
Joan Innes				5
David A. Woolsey				5
Julia Deasley				5
Doreen Mangels				5
Pamela Hamilton				5

Name	Title	Organization Name	Letter Number	Form Number
Dixie Parker				5
Sandra Britton				5
Jenne Sindoni				5
Brian Yanke				5
Judith Straub				5
Jesse Leithwood				5
Jeannie Perry				5
tony moore				5
Mary Humphrey				5
Judith Barton				5
Rachael Pappano				5
Lynne Stokes				5
Heather Denney				5
Andrew Ashburn				5
Eric dubourgnon				5
Carole Dubourgnon-arsac				5
William Klock				5
Emily Nelson				5
Martyn Roberts				5
Dennis Tackett				5
S. Nam				5
Miranda V				5
Donna Logan				5
Charla Miller				5
Maria de la Rosa-Young				5
Kathleen Amato				5
Patricia High				5
Yvette fernandez				5
Susan Montague				5
Blaire Harrington				5
Veronica R Ramey				5
Yvonne Blomkamp				5
Kent Shifferd				5
Pat Apt				5
Renee Beever				5

Name	Title	Organization Name	Letter Number	Form Number
Shelley Simcox				5
Marcia Radke				5
Tom Harris				5
Alison Ellicott				5
Jeanne Craig				5
ROSALIE WIND				5
dawn King				5
Ed Dunn				5
Ramona Canino				5
Sherry Rogers				5
Bianca Di Meglio				5
Miguela Fry				5
Krystal Weilage				5
Eva Ianeva				5
Edward Giguere				5
Barbara Delgado				5
H Brown				5
Barbara Baird				5
janet forman				5
Janneke Ros				5
Bruce Cratty				5
Astrid Keup				5
Veronica Michael				5
jean buchanan				5
Casey Cordon				5
Monica Smilko				5
Leslie Phelps				5
Micki Avery				5
Mark Mansfield				5
Wally Minnick				5
Sherry Toy				5
Sherry Toy				5
Jennifer Bair				5
Andrew Prost				5
Dennis Miller				5

Name	Title	Organization Name	Letter Number	Form Number
barbara andersen				5
William Anderson				5
Frances Mackiewicz				5
Marie-Laurence Yans				5
Landis Crockett				5
Sandy Lorenzo				5
Ronald Davis				5
roland d'amour				5
Kimberly Hollis				5
Stephanie Mitchell				5
Ilene Budin				5
emme g				5
Santi Britt				5
Ray Szumal				5
Annie Van den Meersschaut				5
Elizabeth Farkas				5
Martin Vandamme				5
Diana Waters				5
Tamar Sautter				5
Lester Belanger				5
Terrie Williams				5
Elizabeth Badenhop				5
Vivian Kirk				5
Rebekah Steers				5
Rodney Martin				5
Andrew Joncus				5
Suzy Schulman				5
Kathy Marie Behl-Whiting				5
Marc Desjardins				5
Lois Sprague				5
russ ziegler				5
Erica Ehrhardt				5
Sharman Plesner				5
Amy Cyr				5

Name	Title	Organization Name	Letter Number	Form Number
Joy Power				5
William Gordon				5
Cb Michaels				5
Milton Davis				5
Sandra Brooks				5
Kim McCoy				5
Kevin O'Donnell				5
Linda Nall				5
Charmaine Hildebrand				5
ElaineAndLeon Pack				5
James Sharp				5
Glenn Clark				5
Paula Jain				5
Maya Burruso				5
Tracy Whitford				5
Jennifer Folsom				5
Donald Kosak				5
Steven Skal				5
Pat Beyer				5
Andy Hughes				5
Chihoko Solomon				5
Kathy Flocco-McMaster				5
Ken Canty				5
Megan Shepherd				5
Brian Wolf				5
Sherri hodges				5
mukund sharma				5
Suzy Leedham				5
Zelma Fishman				5
A Schultz				5
Lisa Clark				5
Elisabeth Richter				5
Nancy Beavers				5
Janet Cavallo				5
Eric Katsikaris				5

Name	Title	Organization Name	Letter Number	Form Number
John Stanton				5
Zoe Spiropoulou				5
Mark Bernacki				5
Stanley Siegel				5
Maggie Kalabakas				5
Jerily Rushworth				5
Tabitha Thomasson				5
Colette Breton				5
Teresa Pitts				5
Oscar Revilla				5
Lynette Belew				5
Ellen Phillips				5
Susan Campbell				5
Dominique Antoine-Vankerckhove				5
sayaka ito				5
AYAKO SAITO				5
Audrey Vales				5
Davin Peterson				5
Laura Scott				5
Jean PUBLIEE				5
T Gadouas				5
Ken and Ethel Kipen				5
louis gauci				5
Doris Verkamp				5
Maria Miranda				5
Alan Barrett				5
John Pasqua				5
Krista Saunders				5
Deborah Palmer				5
John Hammel				5
Karolina Absolonova				5
Lou Orr				5
dawn kenyon				5
Mary Swilling				5
Amanda Franklin				5

Name	Title	Organization Name	Letter Number	Form Number
Judy Moran				5
Jonathan P Tyler				5
Natalie Brunt				5
Franziska Schwerthelm				5
Patricia Favreau				5
Marja Leino				5
Ned Overton				5
Eunice Sousa				5
Patsy Coats				5
Inguna Galvina				5
Marilyn Price				5
Rhianna Lynch				5
Mireille Dumont				5
Katharine Barrett				5
Saskia Santos				5
val?rie RAYNAUD				5
Barri Hitchin				5
Beverley Morris				5
Carol Swing				5
Maureen Curran				5
Lisa Dian				5
claire ferrandon				5
Laura Zuleta				5
Tom Molyneaux				5
Lozz Starseed				5
Judith Falck-Madsen				5
Carol Schaffer				5
Anthony Vella				5
Jo Kirsch				5
Cara Gubrud				5
Jennifer Gilbert				5
roberta fernandez				5
Simon Treen				5
Diane Huffine				5
Kristin Konstanty				5

Name	Title	Organization Name	Letter Number	Form Number
isabel cervera				5
John White				5
Alice Blackwood				5
Bonnie Arbuckle				5
Jemma Boshoff				5
Kristin Vyhnal				5
Cl?mence Aspisi Barraillier				5
Maria Ritter				5
Janet Lee Beatty				5
Mark Pilger				5
Barbara Belland				5
Gina Petty				5
Paul Williams				5
Suzanne Garrett				5
Patricia Pruitt				5
Lawrence Abbott				5
Anza Jacobs				5
Ananthanarayanan Ramakrishnan				5
Lucy B				5
Chris Paterson				5
Ine Busch				5
C G				5
Katharina Wittig				5
Les Fabian				5
David Schenck				5
Barbara Harper				5
Jennifer Cardoza				5
Robert Kastrinos				5
Brian Miller				5
Peter Arras				5
Miriam Wesselink				5
Anna Schofield				5
Duncan Brown				5
Judy Rees				5

Name	Title	Organization Name	Letter Number	Form Number
Ked Garden				5
Sandra Marley				5
Marianne Flanagan				5
Tracy Templin				5
Cheryl Scott				5
Elisabeth Wouters				5
Lana Verplank				5
Grace Bell				5
William Rohe				5
Rute Rodrigues				5
Meryl Pinque				5
James Brown				5
Judy Hershberger				5
Tania Monreal				5
Celeste Del Vecchio				5
Aase Dane				5
Jeff Altaffer				5
Sheila Pereira				5
Dehra Iverson				5
Alena Dubavaya				5
Paul May				5
Paul Cokinis				5
Jason Fish				5
Jerry Persky				5
Andreas Rossing Angeltveit				5
Welthy Silva				5
Maxim Leusink				5
Heyward Nash				5
Raylene Swinock				5
D R				5
Luc Hurt				5
Utkarsh Nath				5
Zuzanna Wilk				5
Valentina Cassiani				5
Mandy Hanton				5

Name	Title	Organization Name	Letter Number	Form Number
Luca Zoboli				5
Filippo Maghella				5
Allan Campbell				5
Vicki Gruman				5
Jarrett Cloud				5
Karen Collns				5
Ann Schaer				5
D. Bullock				5
James Robertson				5
Jan Kleckler				5
Ellen Hall				5
Kendra Htoo				5
H G				5
Lee Rudin				5
Marilyn Walsh				5
Joan Baker				5
Kim Bigley				5
Myra Toth				5
Rena Zaman-Zade				5
Paul Franzmann				5
Lynell Morr				5
Carol Downey				5
WILLIAM C BRIGGS				5
Robert Drop				5
Gayle Janzen				5
Eric Duggan				5
Lacey Levitt				5
Sandra Naidich				5
Tatiana Trubitcyna				5
Martin Marcus				5
Iris Rochkind				5
Claire Trauth				5
Carol Kommerstad-Reiche				5
David Brodnax				5
denia tsiriba				5

Name	Title	Organization Name	Letter Number	Form Number
Hannah Whitted				5
Lyle Collins				5
Leslie Billings				5
S. Andregg				5
Enid Cardinal				5
Richard Shepard				5
MASSIMO PAPPALARDO				5
Sven Koschinski				5
gumus ozkok				5
Jeffrey Clark				5
Savannah Young				5
Caroline Oneal				5
Tracy Ouellette				5
Lauri Graham				5
Niall Carroll				5
Tina Colafranceschi				5
Bonnie Oliver				5
H. M. Millard				5
Maria Schneider				5
Donald Goppert				5
Daniel Medrano				5
Sophia Vassilakidis				5
josh salyer				5
Janna Jones				5
Loretta Low				5
Chris Monti				5
Kittredge Cherry				5
Nasrin Mazuji				5
Pat Jones				5
Simone Jarvis				5
Elzbieta Lis				5
Karen Day				5
Sherry Althouse				5
charlie weaver				5
Linda Carroll				5

Name	Title	Organization Name	Letter Number	Form Number
Cigy Cyriac				5
Judy Fukunaga				5
Yvonne van de Looij				5
Hunter Klapperich				5
Richita Anderson				5
Jason Steadmon				5
Elena Rumiantseva				5
Elliot Daniels				5
David Walker				5
Cathy Curtis				5
Kay Lowe				5
deb Kalahan				5
Karen Suit				5
Chris Kermiet				5
Kevin Gallagher				5
Patricia Collins				5
Karen Swistak				5
Susan Heath				5
Heidi Lorenz				5
Anne Barker				5
Anu Dutt				5
Vicki Leeds				5
Wendy Gollop				5
Adam Pastula				5
Elin Wall				5
E K				5
Christine Hayes				5
John Evererr				5
Emily Withnall				5
Joanne Allen				5
Lois nottingham				5
Jean Marie Naples, MD-Ph.D.				5
Michael Zeller				5
Marian Hussenbux				5
Leah Gibson-Corcoran				5

Name	Title	Organization Name	Letter Number	Form Number
Amanda Graham				5
Levinson Rodriguez				5
D Bello				5
Michelle Pavcovich				5
Elizabeth D				5
Fred Oswald				5
Maureen Edwards				5
Stephanie Nunez				5
John Varga				5
Linda Petrulias				5
Sharon Morris				5
Graham Fulk				5
Barbara Kelly				5
Ramona Laschet				5
Kimberly Egresits				5
Susan Dickerson				5
Kristin Coble				5
Sherri Fryer				5
Pamela VourosCallahan				5
Diane Krell-Bates				5
Patricia Emerson				5
Catherine Dishion				5
Nick Barcott				5
Lori Kegler				5
Liz Wijk				5
Gary Thaler				5
Cindy Stein				5
Monique Edwards				5
Steve Lustgarden				5
Bearnard Bridges				5
Maya Kurtz				5
Patricia Brech				5
Erin Duprey				5
Linda Roberts				5
Christine Fluor				5

Name	Title	Organization Name	Letter Number	Form Number
leslie klein				5
Kurt Schwenk				5
Linley Fray				5
Maria Whelan				5
Barbara Temple-Thurston				5
Diane Rohn				5
Jenice Minamide				5
Teresa Edmonds				5
Pamela Vasquez				5
Lawrence Carbary				5
Donna Newman				5
Tanya Field				5
C. Brezina				5
Lee Bruno				5
Joan Smith				5
Diana Bush				5
Sue Nuccio				5
Shannon Leitner				5
Uwe Krueger				5
Jacqueline McVicar				5
Martin Watts				5
Sam Inabinet				5
Paul Blackburn				5
Mee Mee				5
martine massa				5
thalia lubin				5
Anne W.				5
Sandy Rhein				5
Ann-Kristine Jakobsen				5
Dave Baine				5
Bill Wiebe				5
Terry Poplawski				5
Cynthia R				5
Jan Ellis				5
Felicity Figueroa				5

Name	Title	Organization Name	Letter Number	Form Number
Robert Weingart				5
Robert Jones				5
susan glarum				5
Ivana Breznik				5
Stephanie Reti				5
Karen Yarnell				5
Stephen Rosenblum				5
Belinda Dodd				5
Nan Wollman				5
Michaelene Galus				5
Mary Hicklin				5
Dennis Szczesniak				5
Frank Watrous				5
Frank Richards				5
Francesca Napolitano				5
Kathleen Duffus				5
ElsaMarie Butler				5
Michael Miller Jr				5
Felicity Figueroa				5
Diane-michele petrillo				5
Rita levy				5
S. E. Williams				5
Janie Thomas				5
Ann Pelzer				5
Lilly Blase				5
Rita Glasscock				5
Leslie Feuille				5
Dale Shero				5
Lacey Wozny				5
Marcia Kolb				5
L. Martin				5
Laurel E. Tate				5
Elizabeth Anderson				5
DP Thornton				5
JEFFREY HOLLAR				5

Name	Title	Organization Name	Letter Number	Form Number
Carol Nealy				5
Elaine Livingston				5
Pat De				5
Rita Eccles				5
Stephanie Llinas				5
Frank Ayers				5
Chris Loo				5
O. Stryker				5
Penelope Prochazka				5
Jennifer Smith				5
Kerry Mewhort				5
S. Smith				5
Richard Grassl				5
Pat Annoni				5
Melissa Cathcart				5
Stephanie Fairchild				5
David Morrison				5
robert knowlton				5
Justin Grover				5
Kelly Walker				5
Julee Starkey				5
K Nelson				5
Lisa Whipple				5
Natalie Malec				5
Joel Masser				5
Linda Klein				5
Maria Nowicki				5
Deborah L Steinmetz				5
doug krause				5
Elisabeth N.				5
Candace Rocha				5
Marie Garescher				5
Nancy White				5
Victoria Olson				5
G. White				5

Name	Title	Organization Name	Letter Number	Form Number
Phyllis Senter				5
Gisele Souza				5
Glen Wetzel				5
Joe Marsala				5
Linda Unger				5
Gina Giaccardo				5
N Thompson				5
Nancy Linder				5
G Allen Daily				5
angie heide				5
Debbie McCarthy				5
Enrique Ramirez				5
Carlos Castro				5
Lois Wilson				5
D S				5
Jan Adair				5
mary murgo				5
Ron Hubbard				5
STEPH VESEY				5
Marion Shepherd				5
Thomas Nieland				5
Paula Carlson				5
Carolyn Nieland				5
Allyson Orosco				5
Jane Alexander				5
Cheryl Maslin				5
Amy Elder				5
Jill B.				5
Cinda Johansen				5
Debby Roegner				5
Bill Staley				5
Mika Gentili-Lloyd				5
Faith Conroy				5
L. Rodriguez				5
Jan Robinson				5

Name	Title	Organization Name	Letter Number	Form Number
Chantal C.				5
Dorothy Garling				5
Benjamin Henderson				5
Laura LaVertu				5
Philip Kavan				5
Bev Mustaine				5
Kathleen Corby				5
Aleks Kosowicz				5
DONALD INGLIS				5
Britt Lind				5
Heather aka Heth Drees				5
Elizabeth Sexton				5
Michael Grubb				5
Connor Evanowski				5
Heath Hancock				5
Denise Ress				5
Donna Marchetti				5
Carla Morin				5
James Patton				5
Natalie Aharonian				5
Denee Scribner				5
Mark Freitag				5
Richard Phillips				5
Angelica Freitag				5
Sharon Nolting				5
Kathleen Sewright				5
Crystal Govea				5
Gian Andrea Morresi				5
Vanessa Jamison				5
Wes Weaver				5
Croitiene ganMoryn				5
TONY CHASE				5
Lynne Coles				5
Paula Anton				5
Sandra Serazio				5

Name	Title	Organization Name	Letter Number	Form Number
Charlotte Serazio				5
Linnell Krikorian				5
Tara Belland				5
Susan Roberts				5
N H				5
Mark Houdashelt				5
Jennifer Cunningham				5
Debbie bullard futch				5
Linda Rea				5
Heidi Handsaker				5
David Bernstein				5
Linda Campbell				5
Becky Johnson				5
Steve Aydelott				5
Laura Bernstein				5
Samantha Solomon				5
Hillary Kambour				5
Sam Fernandez				5
imogen fischle stenner				5
Debora Ley				5
C.C. Hollis-Franklyn				5
Susan Worden				5
Dennis Nelson				5
valerie Cooper				5
Margaret Croner				5
Dolores Varga				5
Robert Munro				5
Doug Flack				5
Charles Huber				5
russ ziegler				5
Ted Hume				5
Frank Burke				5
Yvette Frank				5
Christopher Wenzel				5
Andrew Gordon				5

Name	Title	Organization Name	Letter Number	Form Number
Margarita Latimer				5
Scott Crockett				5
John Feissel				5
Tria Shaffer				5
Kimberly Whalen				5
Kathryn Rose				5
Carolyn Barkow				5
Angela Kelly				5
Suzanne Urton				5
Silvana Tropea				5
Georgeanne Spates				5
Alice Julian				5
Nelda Holden				5
Carleen Duquette				5
Tina DeCarla				5
Roberta Olenick				5
Francy Elkins				5
N Houghton				5
Ralph Ward				5
Elizabeth Lotz				5
Michelle Collar				5
Janice Higgins				5
Corinne Sherton				5
Tonya Morrison				5
L. Martin				5
M. Lee Zucker				5
Susan Harmon				5
Drena LaPointe				5
Paul Tuff				5
TERRY HUFF				5
Lynn M Glasscock				5
Peter Sayre				5
Nelli Falzgraf				5
Susan Chakmakian				5
Melissa Rogers				5

Name	Title	Organization Name	Letter Number	Form Number
Alicia Sauer				5
Dennis Lockwood				5
Deborah Wooten				5
Mark Gonzalves				5
Frances Suzanne Murdock				5
Fawn King				5
Deborah Fexis				5
Caroline Van Haeften				5
Zachary Jeffreys				5
Jerry Curow				5
Catherine Beck				5
Laraine Bowen				5
Christine Cardinal				5
William Stone				5
Christopher Dowling				5
Eva Cantu				5
Debra Kilgore				5
Linda Thompson				5
Randi Holt				5
Regina Milione				5
Cathie Dunal MD MPH				5
Todd Fisk				5
Lorenz Steininger				5
Diana Grunloh				5
Eileen Shupak				5
Colleen K				5
Michelle Talhami				5
Shelley Hall				5
Lisa Blanck				5
The Rev Dr Edward Kern				5
Ashley Ouellette				5
Bettina Rosmarino				5
Reem H				5
Eric Scheihagen				5
James Lansing				5

Name	Title	Organization Name	Letter Number	Form Number
Carol Scherpenisse				5
Dorothy Wheeler				5
Charles Ivor				5
Susan Castelli-Hill				5
Steven Fenster				5
Linda Gary				5
Ernesto Machuca				5
Joshua Heffron				5
Bruce Zivley				5
Laurie Larson				5
Kathleen Cook				5
Christine Pikala				5
Meredith Brunner				5
Sue Velez				5
Sandra Webster Webster				5
Linda Luke				5
N Fregin				5
Therese DeBing				5
Karen Kindel				5
paul tescher				5
Joyce Kolasa				5
Shakayla Thomas				5
Geri Collecchia				5
sharon reinstein				5
Angela Frigo				5
Marshal McKitrick				5
Christopher Nall				5
Michelle Kaufman				5
Paul Weiss				5
Nandita Shah				5
Ibn-Umar Abbasparker				5
Tamara Shidlauski				5
Robert Stevens				5
Erika Boka				5
Carol Baier				5

Name	Title	Organization Name	Letter Number	Form Number
Marie Young				5
Sophia McAskill				5
Christy N.				5
Angelika Pfutzner				5
Rippington Alan				5
Robin Patten				5
Savannah Hawkins				5
Corinne Greenberg				5
Karen Robbins				5
Ann Waller				5
Shana Van Meter				5
Charles Hellige				5
Julie Joyce				5
Jorgen Ramstead				5
M Freiberg				5
Pat Wagner				5
Ross Taylor				5
Joseph T Crymes				5
Demetrios Lekkas				5
Michael Hazelton				5
Louise Slattery				5
Linda Buckingham				5
June Campbell				5
Robert Meyer				5
Leann Gail Wells Huber				5
Mary Casale				5
Peter Ianchiou				5
Peggy Ferrell				5
Jon Moulesong				5
Sandra Domizio				5
Dans Sklar				5
Anita Sachanska				5
bernardo alayza mujica				5
Emily Castner				5
Lisa Flowers Ross				5

Name	Title	Organization Name	Letter Number	Form Number
Darlene Kramer				5
Robin Blakesley				5
Carolyn Taylor				5
Robert Miles				5
Gary Goetz				5
Judith Ann Johnson				5
Kevin Crupi				5
Shonna Davis				5
Wendy Weldon				5
Quentin Morris				5
Carol Taggart				5
Susie Foot				5
Laura Fleming				5
Maria Garcia				5
Paul Howard				5
Angelica Fenner				5
Vicki Matheny				5
x o				5
Ann Tagawa				5
Koren Mullins				5
Gaye Hartwig				5
Joseph Mitchell				5
Palmeta Baier				5
Jennifer Schally				5
Michael Kavanaugh				5
Querido Galdo				5
Kevin Chapman				5
Molly Huddleston				5
K Turick				5
Christopher Hall				5
Susan Deutsch				5
Samir Coussa				5
Susan Snyder				5
Rachel Gregg				5
Sagar Patel				5

Name	Title	Organization Name	Letter Number	Form Number
Dragana Mirkovic				5
Richard Glinski				5
Mary Walls				5
Myles Robertson				5
Cynthia Williams				5
Gerri Battistessa				5
Alejandra Lorenzo-Chang				5
Angie Harguess				5
Nathan Harrell				5
Julie Squire				5
Lori Chow				5
Andrew Canham				5
Cindy Hatcher				5
Hannah Lange				5
Beverly Barry				5
c s				5
Susan DeWitt				5
Donna Leavitt				5
Tracy Strickland				5
Thomas Jones				5
Arthur Delgadillo				5
Kimberly Wade				5
Rena P				5
Malcolm Simpson				5
Sandra J Gill				5
Doris Jackson				5
Maryanne Preli				5
Jim Mackey				5
Michael Wallace				5
Larry Gioannini				5
James Bachman				5
Morgan Lazenby				5
Erica Goodwin				5
Miriam Poston				5
Mackenzie Wayne				5

Name	Title	Organization Name	Letter Number	Form Number
Joann Koch				5
Christine Ney				5
Linda Menke				5
Laney Roberts				5
Adam Mills				5
David Harrison				5
Virginia Johnston				5
Brian Faleiro				5
Vera Levitt				5
Natalie Haddad				5
Cally White				5
Pia Heyn				5
Carole Scott				5
Catherine Croom				5
Debra Jones				5
John T				5
Helen Navaline				5
Orysia Twerdochlib				5
Manucher Baybordi				5
G. D.				5
Susan Thurairatnam				5
Thomas Bauer				5
Kathy Kramer				5
Terrance Hutchinson				5
G Caviglia				5
Abigail Gindele				5
Pat Hawthorn				5
Joel Ziegler				5
Daniel And Denise Martini				5
Kristen Hislop				5
Donald Hershey				5
Stephen Dutschke				5
erica johanson				5
Angie Baker				5
D. Chalfin				5

Name	Title	Organization Name	Letter Number	Form Number
Wendy Herbert				5
Joan Kolessar				5
Ruth Bauer				5
Darby Stone				5
Paula Shafransky				5
Richard Carr				5
Mary Stanton				5
Erin Howard				5
Sandra Brooks				5
Allison Yungclas				5
Susan Fischer				5
Urmila Padmanabhan				5
Allison Anderson				5
Hannah Liu				5
Patricia Maddalena				5
Fiona Priskich				5
Donna Dupree				5
Emily Thompson				5
Heather Henthorne				5
Kevin Walsh				5
Lynne Chimiklis				5
Michael Martin				5
Tobi Tyler				5
Miriam Ivaldi				5
Edward Kiner				5
Brenda Roy				5
Christine Nicholson				5
Joann Ramos				5
Judith James				5
Padraic Boocock				5
Bernadette Andaloro				5
Darla Kravetz				5
Rosemary Cavanaugh				5
Susan Miller				5
Caroline Chambers				5

Name	Title	Organization Name	Letter Number	Form Number
Gisele Sampson				5
Vanassa Lundheim				5
Max Sampson				5
nika kollar				5
Sarah Sercombe				5
L.D. Zafar				5
William Lee Kohler				5
Edward Handley				5
Susan Zimmermann				5
Susie Lee				5
Keith Thompson				5
Betty Marr				5
Jacqueline Glyde				5
Anne Jackson				5
Frank Hale Jr.				5
Paul Moss				5
Myra Dremeaux				5
Lee K				5
Amy Curry				5
Lois Cheesman				5
Elena Perez				5
Angela Phoenix				5
Matt Caldie				5
Lou R				5
DAVID BRADBURY				5
Cherry Westerman				5
John Jumonville				5
Rebecca Canright				5
Amy Hansen				5
Margaret Rasmussen				5
Melissa Abreu				5
Mark Canright				5
Eric Moyle				5
Nora Nichols				5
sue carpenter				5

Name	Title	Organization Name	Letter Number	Form Number
genevieve Deppong				5
mark gillono				5
Kevin Curtis				5
Angela Ridolfo				5
Kristen Varbel				5
anthony Montapert				5
Jennifer Hayes				5
Pati Tomsits				5
Ilene Thompson				5
Sarah Bauman				5
Valerie Dorn				5
Barbara Lafaver				5
Ursuls Dicks				5
Eva Labarias				5
Beverly Fowler				5
Starla Morgan				5
Nushin Amirhosseini				5
David L Baczkowski				5
Lisa Dunphy				5
Julie Wiebe				5
Jo Young				5
jacqueline tessman				5
Kristina Lozon				5
Stephanie strickland				5
Marc Draper				5
Jeffrey McCollim				5
Ray Rodney				5
James Davis				5
Adrian Bergeron				5
Cheryl Walker				5
Melissa O'Rourke				5
Sofia Okolowicz				5
David Way				5
Sandy M				5
Sofia Okolowicz				5

Name	Title	Organization Name	Letter Number	Form Number
Deirdre Downey				5
Margaret Loomis				5
Pat Frederick				5
Jill Timm				5
Kathryn Fox				5
Debora Hojda				5
Randy Handwerger				5
nancy Freedman				5
Anna Brewster				5
Eric Indermuehle				5
J M				5
Wendy Adams				5
Lisa Rosenkoetter				5
Barbara Bingham-Deutscher				5
Scott Troup				5
Amy Stoller				5
Ray Nuesch				5
Linda Brunner				5
Carol Orshan				5
Edith Brown				5
Lenore Reeves				5
Robert Lindey				5
Diane DiFante				5
Brian Gingras				5
Denise Bonk				5
Jennifer Bair Bachos				5
Lydia Garvey				5
Jamie O'Toole				5
Donna Myers				5
Ellen Atkinson				5
Kathleen Doyle				5
Christi Dillon				5
Mary Seegott				5
Charles Langford				5
Laura B.				5

Name	Title	Organization Name	Letter Number	Form Number
Pat A.				5
Blain Martino				5
Doris Potter				5
Katherine Moseley				5
Rick Droman				5
Laura Clement				5
Joe C.				5
Lynelle Behler				5
Linda Foley				5
Michelle Morris				5
Carlene Moscatt				5
Eric Simpson				5
Marilyn Gearhart				5
Brenda Parra				5
Anne Young				5
Justin Hudson				5
James Roberts				5
winn wilson				5
Dr Kenneth R Pelletier				5
Craig Murray				5
Donna Thomas				5
Stacey Solum				5
RACHEL RAKACZKY				5
George Latta				5
Thomas Zachary				5
eric and kay nelson				5
Janis Swalwell				5
Jace Decory				5
Rachel Hess				5
Kathryn Young				5
Carrie West				5
Howard Higson				5
Stephan Armstrong				5
Paul Kalka				5
Carrie Thompson				5

Name	Title	Organization Name	Letter Number	Form Number
Jody Gibson				5
Erin McCune				5
Janelle Murphy				5
Linda Olson				5
Judy Pelton				5
Frank Wissler				5
Marie Mildner				5
Loretta Olsen				5
Mary Girard				5
judith tuck				5
linda fadem				5
Eileen Atkinson				5
Jim Voet				5
Richard Heermance				5
linda fadem				5
Taylor Herron				5
tina Littleman				5
Nancy Sidebotham				5
Elisa Rios				5
Patricia Foschi				5
Michael Stewart				5
Susan Gottfried				5
Sue Jama				5
Nancy Sidebotham				5
F. Carlene Reuscher				5
Michele LaPorte				5
Susan Wallace				5
Meghan Sirry				5
Sue Hall				5
Pamala Mckenna				5
Brandi McCauley				5
Jan Monical				5
Nancy Sosnove				5
Derek Lovitch				5
Shinichi Ikeda				5

Name	Title	Organization Name	Letter Number	Form Number
Sherry Lewis				5
Andrew Abate				5
Colin O'Neill				5
Bruce Hlodnicki				5
Rod Stokes				5
Shari OConnor				5
Mary Johannsen				5
Linda Chance				5
Nancy Pickering				5
Gracie Nghiem				5
Ellie Nghiem				5
Heidi Parvela				5
Luke Metzger				5
n w				5
Rita Butler				5
Tara Cornelisse				5
Mark Berman				5
Mitchell Broadbent				5
Evan McDermit				5
Jeff Kutach				5
Joanna Behrens				5
Janet Witzeman				5
Chris Dacus				5
Patricia Miller				5
John Stevens				5
Charlotte Sines				5
Jocelyn Riggins				5
Thomas Rewoldt				5
Martha Wales				5
Kathy Britt				5
Lin Cheong				5
Greg Stawinoga				5
Kimo Cochran				5
Sarah Doull				5
Dianne. Alpern.				5

Name	Title	Organization Name	Letter Number	Form Number
Michelle Krueger				5
Delia Taylor				5
Jeff LaFlamme				5
Mike Acosta				5
Debbie Schlinger				5
Allyson Frink				5
Derek Benedict				5
Dawn Gaitis				5
M. S. Worrell				5
Margo Wilson				5
Gary Hughes				5
Barbara Sopjes				5
Angelika Engels				5
John Geiger				5
Marsha Hicks				5
Leonor Molina				5
Debbie Thomas				5
Carol Ohlendorf				5
Sue Williams				5
Richard Ohlendorf				5
Parviz Khazaei				5
Debbie Carroll				5
Joanne Britton				5
caru epstien				5
Jason Wilson				5
Ann Pryich				5
Karen Freeman				5
Charlene Lauzon				5
Jeff Albrecht				5
Antonia Chianis				5
Valerie Sotere				5
Karen Lowery				5
Tony and Cindy Guarnieri				5
Helene Devin				5
Soheila Comninos				5

Name	Title	Organization Name	Letter Number	Form Number
Tonya Cockrell				5
Jen Danner				5
David Nowlis				5
Diane Vandiver				5
Bruce and Maureen DeNunzio				5
Slowomir and irene Przybysz				5
Dennis Adams				5
Carlin Black				5
Linda Greene				5
Diana Bain				5
Catherine Macan				5
Janice Tomlian				5
Lisa M. Mintz Kavas				5
Twila Roth				5
Susan Vogt				5
Evelyn Snedden				5
Carlos Townsend				5
Amy Lund				5
Margo Schueler				5
Ann Marie Connor				5
Andrew Luckhardt				5
Elizabeth Sullivan				5
Mark Johns				5
Curtis Barnett				5
Jenifer Johnson				5
chris ness				5
elizabeth major				5
Ellen McCann				5
Hilary McGregor				5
Claudia Stein				5
L Nelson				5
Spyros Braoudakis				5
Deborah Holcomb				5
Kathy Mason				5

Name	Title	Organization Name	Letter Number	Form Number
Steve Sample				5
Alain Guimond				5
Virginia Haver				5
Martha Calvinperez				5
Larry Mahlis				5
Kathleen McHendry				5
Nancy Schwall				5
Sheila Erlbaum				5
glenda mauk				5
Tanya Baccarat				5
Dan Esposito				5
Janet Robinson				5
Carol Curtis				5
Kathleen Kelley				5
Sandra Materi				5
Paula Hartgraves				5
Patricia Robinson				5
Priscilla Martinez				5
Marguerite Winkel				5
Dobi Dobroslawa				5
Janell Copello				5
Sharon Meyer				5
Kay Reinfried				5
J.M. Harris Jr				5
Ann Thryft				5
Zach Myones				5
Kathleen Turnbull				5
Linda Morgan				5
Jan Gustafson				5
Zoe Bennett-McNab				5
Lawrence Thompson				5
F Bean				5
Dee Austring				5
Barbara Barski				5
Michael and Jeanine Clarke				5

Name	Title	Organization Name	Letter Number	Form Number
Dr Terry Malone				5
Katrina Yurenka				5
Harry andPatricia C Schwarzlander				5
Gillian Taylor				5
Crystal Whitehead				5
Ruth Jackson				5
Neale Miglani				5
Marney Reed				5
Val Marshall				5
Aubrae Lamparella				5
Mark Grassman				5
Rick Edmondson				5
Kathy Oppenhuizen				5
Janette Lozada				5
William Roberson				5
Michael Renfrow				5
Cornelius Dykema				5
Jennifer Russell				5
Diane Wynne				5
Kristina Gravette				5
Sandra Papush				5
Matthew Anderson				5
Patty Duffy				5
Richard Mann				5
E Thunder				5
Lorraine Johnson				5
Robin Perry				5
Celine Grenier				5
Aimee Arnold				5
scott chapman				5
Sue Cossins				5
Michael McLaughlin				5
Laurel Ramsey				5
Valerie Pelletier				5
Sue Cossins				5

Name	Title	Organization Name	Letter Number	Form Number
David Dzikowski				5
Michelle Sewald				5
Judith Basye				5
Cody Dolnick				5
Michael Kenney				5
Doug Bender				5
Max Davila				5
Theresa Dover				5
Rosemary Busterna				5
Michael Kutilek				5
Madeline Lunzer				5
Sylvia Cardella				5
Ilse Spiegel				5
Matilde Damian				5
Alexana Carter				5
Laurel Tucker				5
Karen Procter				5
Jamie Lurtz				5
Kristine Winnicki				5
Tom Venus				5
Jamie Masterson				5
Harold Veeder				5
Amy Mower				5
Sam Simeone				5
Alexa Wall				5
Amy Rauhut				5
Eric Evinczik				5
David Bryan				5
William Grosh				5
Pam Walls				5
Donna Wagner				5
Dawn Foster				5
Charles Cohen				5
Karen Langelier				5
Andrea Lynch				5

Name	Title	Organization Name	Letter Number	Form Number
Liza Hamoy				5
Rebecca Bartlett				5
jasmine Congdon-Ng				5
Patricia Archuleta				5
Timmie Smith				5
Emma Bradshaw				5
Hana Correa				5
Jill Nicholas				5
Ronald Woolford				5
J.A. Clayman				5
Hilary Schuddekopf				5
Beatrice Simmonds				5
Linda Pflugrad				5
Leon Epperly				5
Joseph Boone				5
Lydia Tinder				5
Ryan Davis				5
Maryanne Jerome				5
Brenda Miller				5
Linda Pflugrad				5
Jane Young				5
Carol Hill				5
Nora Lewis Lewis				5
Steven Federman				5
Bruce Burns				5
Amy Gentes				5
Mercy Sidbury				5
Allen Yun				5
Helen Smart				5
Costa Saridakis				5
Angela Hoehne				5
Sylvia Boris				5
Patricia DuMont				5
Laurie Nye				5
JAY KAPLAN				5

Name	Title	Organization Name	Letter Number	Form Number
Sue Sefscik				5
John Tischhauser				5
Jennifer Nitz				5
Andra Heide				5
Rondi Saslow				5
Christine Byknish				5
sara sexton				5
Kat Juracka				5
Monica Geyer				5
Dagmar Anders				5
Nikayla Spain Escalera				5
Susan Nichols				5
Marguerite Foley				5
Lorraine Martinez				5
Jack Milton				5
Laura Gallagher				5
Carla Williams				5
Charlotte Grillot				5
Donna Lucier				5
Stephanie Trudeau				5
Gregory Duncan				5
Linda Johnson				5
Stevie Sugarman				5
Nancy Kolliner				5
Trudi Howell				5
Janet DeWoskin				5
Karma Samtenlhamo				5
Kristina Rohder				5
Erin Neubauer				5
Rena Lewis				5
Anne Blandin				5
Carolyn Ryan				5
Gwen Stone				5
Ellen Brouillet				5
Gene Trapp				5

Name	Title	Organization Name	Letter Number	Form Number
PA Reynolds				5
Kate Griffin				5
Linda Graae				5
Gayle Middleton				5
Nina French				5
Samuel Morningstar				5
Jim Malone				5
Amy Heneveld				5
Elisabeth Potts				5
Kirk Leonard				5
Steven Dallow				5
Karla Garcia				5
Alain Guimond				5
Lars Andersen				5
Susan Peters				5
Anna Wibalda				5
Leslie Gladstone				5
Karen Rubio				5
Julia Knaz				5
Nina Gallardo				5
Sara Kennedy				5
Rita F.				5
Mary Thiel				5
Don Meehan				5
Thomas McCabe				5
Mary Zamagni				5
Amanda Salvner				5
James McBride				5
Jen-Mai Wong				5
John Lampson				5
Rachel Gonzalez				5
J. Beverly				5
Wendy Kempsell				5
Jean Gilchrist				5
Keith Emery				5

Name	Title	Organization Name	Letter Number	Form Number
Letitia Dace				5
Leslie Ferriel				5
Marion Corbin				5
E. Neal				5
Lorrie Stillings				5
Marilyn Bove				5
Sharon LaLond				5
Merja Harju				5
Misha Skinner-Gehr				5
Ellen Morgan				5
Irene Dobrzanski				5
Tova Cohen				5
Nagisa VanVliet				5
Douglas Rivalsi				5
Lori Esposito				5
Kathy Piltz				5
Barbara Cain				5
Susan Porter				5
Diane Bloom				5
James Hartley				5
Pamela White				5
Lauren Tucker				5
Mary Eldredge				5
charles mcsweeney				5
Allison Everitt				5
Sarah Schaefer				5
Stephen Weissman				5
Karen Weigle				5
Paul Lifton				5
Patryce Stout				5
Susan Goran				5
Dawn Longo				5
Trent Orr				5
Forest Shomer				5
Janice Patrick				5

Name	Title	Organization Name	Letter Number	Form Number
Lauren Moss-Racusin				5
Jo Mawby-Baker				5
Laura Long				5
Natalie Hoag				5
P Perry				5
Julia Wade				5
Paul Eisenberg				5
A. Armstrong				5
Tia Ja				5
CT Rybka				5
Judith Abel				5
David Klass				5
Lenore Kester				5
Cheryl Rigby				5
Charlotte Eriksson				5
Doc Pierce				5
Laura Lane				5
Maria Gabrielle				5
Phebe Schwartz				5
Judy Wyeth				5
Cynthia Bentley				5
Clare McLellan				5
Sharon Mora				5
Steven McLellan				5
Margit Dahl				5
Kathy Spera				5
Chris Guillory				5
Rosemary Donaghue				5
Chad Fuqua				5
Nicole Knauber				5
Theresa Lange				5
Patti Johnson				5
Rosemary Donaghue				5
Thomas Smith				5
Liz Piercey				5

Name	Title	Organization Name	Letter Number	Form Number
Michelle Adcock				5
Grace Drummond				5
Antonio Scognamiglio				5
John and Michele Saridan				5
Charles W Baumann				5
Josette Le Beau				5
Lynn Ryan				5
David Osterhoudt				5
Julie Dallow				5
Rachael Riccobene				5
Kaci Caldwell				5
Julian Orr				5
Hugh Gurney				5
Teresa McCartney				5
Mo Arris				5
Tracey Peterson				5
uly silkey				5
Brandt Mannchan				5
Carol Edwards				5
Carol G				5
Kelly Eaves				5
Roberta Kessler				5
Jim Bearden				5
Lauri Taylor				5
James Kerr				5
Laurie Ellis				5
Tiffany Anderson				5
John Steponaitis				5
Marianne Edain				5
Deborah Blackman				5
Naomi Klass				5
Donna Ingenito				5
Karen Rivers				5
Robert Hughes				5
Harry Hinkle				5

Name	Title	Organization Name	Letter Number	Form Number
Caroline S?villa				5
Mary Devoy				5
Loretta Caruana				5
carolyn Walker				5
Brenda Haddock				5
Mark Williams				5
Sandra Holbrook				5
James Reeder				5
Charesa Harper				5
Judith Bachand				5
Michelle Hayward				5
JIM CORRIERE				5
Andrew Lenz				5
Robert Fried				5
Jonathan Tholl				5
Vikki Jones				5
Tom Cannon				5
David and Judith Berg				5
K Turrubiate				5
Jude Fletcher				5
Faye Rye				5
Nancy Drockelman				5
Jennifer Emerle-Sifuentes				5
Nikki Nafziger				5
Keely Gililland				5
Jillian Fiedor				5
Patricia Castine				5
Kenneth Ridley				5
Carina Chadwick				5
Cindy M. Dutka				5
Edward Bennett				5
Erik LaRue				5
anne ellis				5
Gerard Ridella				5
Elaine Willingham				5

Name	Title	Organization Name	Letter Number	Form Number
Louann Manning				5
Pat Robinson				5
libby Anderson				5
Gayle Kerr				5
Mykel Reese				5
PJ Anderson				5
Sincerely Enright				5
Pam Parks				5
Michele Barnes				5
Christopher Scheller				5
Theresa Andrews				5
Jared Goor				5
A J Hawkins				5
Angela Treat Lyon				5
Yvette Goot				5
Maggie Manchester				5
Kyle Gage				5
Joe Craig				5
Vera Loewer				5
frances MOSTOV				5
Andrew Hellinger				5
Alison Zyla				5
Annette Raatz				5
Stefan Taylor				5
Roxana Huggins				5
Tara Mudry				5
Penny Heintz				5
Lauren Linda				5
L Douglas				5
Elizabeth Mostov				5
Carole Ehrhardt				5
Lloyd Reynolds				5
James Scoville				5
Pamela Colony				5
John Sutherland				5

Name	Title	Organization Name	Letter Number	Form Number
Evan Frost				5
Alan Schwartz				5
Catherine Craig				5
A.L. Steiner				5
Lisa Goldman				5
Niki Learn				5
Paul Hunrichs				5
Ann Keenan				5
Andrea Chisari				5
Angie F.				5
Gail Dominick				5
Jamie Shields				5
pinkyjain pan				5
Tahera Mamdani				5
Norman Baker				5
sara stepnicka				5
Sarah Bracken				5
Deric McGee				5
Tracy Verardi				5
Glenn Smith				5
Randall Webb				5
Laurence Margolis				5
Roberto Oliveras				5
fay forman				5
donnal poppe				5
Susan Blake				5
Laura Peoples				5
Mara Mel?ndez				5
Jamie Hines				5
Lloyd Dent				5
Bethany Witthuhn				5
Stella Gibson				5
Roberta White				5
Thomas Weinschenk				5
Ann Stratten				5

Name	Title	Organization Name	Letter Number	Form Number
Jim Byrne				5
Brandon Burr				5
Raya Engler				5
Ralph Tuscher				5
Maryann Barulich				5
Jana Perinchief				5
Robert Swift				5
Bonnie Mandel				5
ROBBIN LAPORTA				5
Teresa Phillips				5
Lorraine Gray				5
Linda Klein				5
Mary Lee Johns				5
Kristin Conrad-Antovlle				5
Maureen Lynch				5
Sue Meyers				5
Patricia McClanahan				5
Margaret Adachi				5
Tina Wilson				5
Anna Sims				5
Karin Eckelmeyer				5
Margaret Guilfoy Tyler Ph.D.				5
Steven Keleti				5
Jan Randall				5
Kimberly Howard				5
Kathleen OConnell				5
Margaret Claypool				5
Veronique Sanson				5
Pat Lang				5
John Lizak				5
Paul Palla				5
K. Youmans				5
Kay Dyer				5
Vicki Fox				5
Ray Lorenson				5

Name	Title	Organization Name	Letter Number	Form Number
Allison Orvin				5
Jennifer Turco				5
Taryn Braband				5
Caye Drapcho				5
Michael Shapiro				5
Conrad Szablewski				5
Marilyn Shup				5
Margaret Goodale				5
Doris Applebaum				5
Klaudia Englund				5
Judi Stratton				5
Diane Smith				5
Phyllis Bottoms				5
Steve Brown				5
Johnny Hall				5
Lee Stark				5
steven carpenter				5
Maren MacGregor				5
Sara Roderer				5
Lyn Hart				5
Karen Berntsen				5
Penny and Bob Greenboam				5
Roger Kulp				5
Deb Dearing				5
NK A.				5
Mark Koritz				5
Sam McIntyre				5
Susan Gardner				5
Jamie Peltier				5
Debra Wright				5
Natalie Beebe				5
Amanda Senechal				5
Georgette Engard				5
Linda Fighera				5
Gail Flanders				5

Name	Title	Organization Name	Letter Number	Form Number
Janine Kondreck				5
Sally Tucker				5
Cindy Buschena				5
MELISSA schelich				5
John Lynch				5
Piet de Nennie				5
Ann MacLeod-Lambert				5
A. Pinheiro				5
Ken Zontek				5
Sherry Leinbach				5
Juliann Rule				5
Elizabeth Larson				5
Sharon Wushensky				5
Scott Murray				5
Sandra Goettling				5
Claudia Wornum				5
Christine P Stone				5
Babette Lewis				5
Betty King				5
flavia brizio				5
Patricia Ali				5
Robert Hammond				5
David Hatcher				5
Kristina Fukuda				5
Janet Neihart				5
Joe Brown				5
Katherine Robertson				5
Joyce L Britcher				5
Hilde Farthofer				5
JAN GOLICK				5
Kate Doyle				5
Katharine Sommerfield				5
Mary Johnson				5
cheryl watters				5
james thompson				5

Name	Title	Organization Name	Letter Number	Form Number
Colleen McMullen				5
nicola bassil				5
Betty Ford				5
Kenneth Bickel				5
Michael McGehee				5
Amanda Silver				5
AnaLisa Crandall				5
Fran Majestic				5
PAM BONAVENTURA				5
Denise Scotto				5
Shawn Jackson				5
Mark Olinger				5
John Scholten				5
Meredith Mohr				5
Adrian Smith				5
Jane Handel				5
Nick Hood				5
Sidney Herszenson				5
Betty Kegley				5
Barbara Darnell				5
Allen Ladage				5
Ryan Acebo				5
Sue Amell				5
andrew johns				5
Katharine Walker				5
Sherri Hodges				5
Brenda Michaels				5
Miriam Baum				5
Anonymous				5
Cara Nims				5
Michael Garitty				5
Chris Rogers				5
Alison Sanfilippo				5
Tine Hertmans				5
Melanie Fisher				5

Name	Title	Organization Name	Letter Number	Form Number
Lindsay Newsome				5
Yvonne Albrecht				5
Rena Rouse				5
Madeleine Glick				5
Suzanne Shaffer				5
sherrri hodges				5
Andrew Alloy				5
Sandy Stuhaan				5
Anca Vlasopolos				5
Keiko Barrett				5
Victoria Anderson				5
Sheila Ryan				5
Terri Greene				5
Anne Haflich				5
Vicki Hambrick				5
Sonya Chan				5
Aileen McEvoy				5
Charles Happel				5
Elizabeth Rue				5
Daniel Giesy				5
Karhen Gutierrez				5
Felizitas Standeford				5
LINDA MCCAUGHEY				5
Robin Weirich				5
Mary Lynn Cris Webster				5
Lynda Copeland				5
Kerry Wininger				5
Sally Maish				5
Mark Takaro				5
carrie ferguson				5
S G				5
Jackie Bear				5
Anita McNamara				5
Tania Roa				5
Mary Ann Wheeler				5

Name	Title	Organization Name	Letter Number	Form Number
Gregory Rouse				5
Barb Robertson				5
Kristine Hutchin				5
Susan Snoles				5
Morgan MacConaugha-Snyder				5
Catherine Whiteside				5
Steven Nielsen				5
Amy Harlib				5
Nancy Petersen				5
Jaylen Schmitt				5
Tobey Thatcher				5
Lisbeth Alvarado				5
Denise Thomas				5
Debbie Wolf				5
Sue Petteway				5
Tanya Moller				5
Chris Rose				5
Ann Dow				5
Robin Bauer				5
Francelia Lieurance				5
Kate Hermann-Wu				5
Luke Pincince				5
KELLY BERRY				5
Susan Jordan				5
Mary Dederer				5
Arturo Franco				5
Jessica Merrill				5
Denise Violette				5
Kate Skolnick				5
Angela Pavlu				5
Lori Vaccaro				5
Ann Allen				5
Ailsa Hermann-Wu				5
Sylvia Schippers				5
Joan Knipe				5

Name	Title	Organization Name	Letter Number	Form Number
Gerri Reaves				5
Kian Daniel				5
Heidi Uppgaard				5
Delorse Lovelady				5
Jeffrey Barile				5
Karen Naiman				5
Jan Bergman				5
Kathleen Vaccaro Fegan				5
Choky Alvarez				5
Mihail Ungureanu				5
William Dustin				5
Noah Haydon				5
Marilyn Jasper				5
Susan Holt Stack				5
Dameon Hansen				5
Ines Beckhaus				5
John Schreiber				5
Patty Linder				5
Lisa Stone				5
Priscilla Mattison				5
Christian Heinold				5
Richard Bannister				5
Maureen Webb				5
Melissa Jurkowski				5
Elisa Plauche				5
Cindy Loomis				5
Terre Dunivant				5
Eilene Janke				5
Jim Yarbrough				5
jane Biggins				5
Janet Bindas				5
Greg Onsel				5
Kristeene Knopp				5
Frederick K Marchman				5
Chris Matera Matera				5

Name	Title	Organization Name	Letter Number	Form Number
Elizabeth Taylor				5
BEVERLY WRIGHT				5
T McVean				5
Marsha Vomastic				5
John Robey				5
Miki Laws				5
Melanie Braunbeck				5
Patsy Shuler				5
Shannon FitzMaurice				5
Kathleen Alexander				5
Joshua Paterno				5
Mary Jill Seibel				5
Conny Van Leeuwen				5
Uphoria Blackham				5
Ruby Mitchell				5
David Hardy				5
Kathy Clements				5
Lois Shadix				5
Nancy Niemeir				5
Christine Stever				5
Tina Pirazzi				5
Mary Mcauliffe				5
Edward Smith				5
Elsy Shallman				5
linda centorrino				5
David Nelson				5
Weslie Phillips				5
Pat Edgar				5
Lee Eames				5
Rhonda Marr				5
Patty Ridenour				5
Brian Hicks				5
Ronald Elmore				5
Kristine Leesekamp				5
Amanda Griffin				5

Name	Title	Organization Name	Letter Number	Form Number
Adrianne Martin				5
Kristen Bossert				5
Patricia LoBiondo				5
Deborah Wiggin				5
Julie Stein				5
Kriss McLaughlin				5
Andrew Wadsworth				5
Joni Dennison				5
Brit Rosso				5
Lisa Mazzola				5
Mary Puglia				5
Michael Harris				5
Lois Hanson				5
Whitney watters				5
Sharon Wolfe				5
T LaRue				5
Michele Brown				5
Janell Smith				5
Neil Freson				5
RJ J.				5
marjorie clisson				5
Robin Lorentzen				5
Thomas Struhsaker				5
Paul Schutt				5
Ann C McGill				5
Irene Martinez				5
Michelle McKenney				5
Lesley Jorgensen				5
Thomas Dorsey				5
Frederick Waage				5
Joy Dillon				5
Denny Blum				5
Osh Morethstorm				5
Sharlene Russell				5
Donna Brooks				5

Name	Title	Organization Name	Letter Number	Form Number
Sharon Sturges				5
Mike Lyman				5
Paula Thompson				5
Tanja Rieger				5
Sandra Cooper				5
Jessica Sikes				5
Kjersten Gmeiner MD				5
Stephen Powell				5
Lisa Caputo				5
Debra Berlan				5
Deborah Clanton				5
Susan Haebig				5
Meryle A. Korn				5
Lesley York				5
James Hollis				5
Lucie Laberge				5
Charlotte Harbeson				5
Lisa Fowlkes				5
Felicity Hohenshelt				5
Darren Strain				5
Jennifer Valentine				5
deborah amos				5
lil bobow				5
Kevin Vaught				5
Sue Dougherty				5
Norman Bishop				5
Sara Miller				5
Li Chin-Drachman				5
Hania Accary				5
John Rudolph				5
Constance Ruby				5
John Prybylski				5
Stacy Niemeyer				5
Debra Brinker				5
Emily Brownlee				5

Name	Title	Organization Name	Letter Number	Form Number
Hannah Miller				5
Bonnie Butts				5
Amanda Sue Rudisill				5
Lisa Barrett				5
Maureen Lynch				5
Stefanie Gross				5
Laura Caldwell				5
Bonnie Butts				5
Susan Harby				5
Kevin Slauson				5
Anne Stinson				5
jane Biggins				5
Julia Bottom				5
Clarice Bales				5
James Shelton				5
Barbara Gholz				5
Lauren Prust				5
M Woolley				5
Robin Pascal				5
Linda Schermer				5
Paul Halliday				5
Alan Papscun				5
Glen Venezio				5
Robbe Brunner				5
Susana Soares				5
Ivan Fuentes				5
Susan Homer				5
Thomas Keating				5
Susan Hawkins				5
Parviz Khazaei				5
Alicia Zack				5
Sherry Vatter				5
Leslie Fellows				5
Christie Childs				5
Sarah M				5

Name	Title	Organization Name	Letter Number	Form Number
Ewelina Klimek				5
Charlotte Jones				5
Vonnie Iams				5
Jesse Williams				5
Michael Guckian				5
Mina Sharp				5
James Keenan				5
Todd Clark				5
tami schreurs				5
Janet Woodall				5
April Woolley				5
Sarah Hafer				5
Elisabeth Shaver				5
Judy Brewer				5
Tom Schwegler				5
nico mcafee				5
Martha Gorak				5
naomi weisman				5
Lori Sinkovitz				5
Marshall Schwartz				5
Mary Orr				5
Riley Brannian				5
Lyndell Levitt				5
Theresa Kelly				5
Lawrence Uman				5
Diane Sullivan				5
Jill Grundfest				5
Karen Spring				5
Monique TONET				5
Sally Noack				5
Suellen Rowlison RN				5
nancy king				5
Caroline Jaffe				5
Jason LaBerge				5
Sheila Miller				5

Name	Title	Organization Name	Letter Number	Form Number
Laurence Das Neves				5
Tayira Mora Black				5
Michael Stevens				5
Mark Hallett				5
Betsy Ridge				5
Molly Molloy				5
Adarsh Ayyar				5
Harry Tiebout				5
Stephanie Clark				5
Walt Bellhaven				5
Gery Kouni				5
Christine Mitchell				5
Dale Barclay				5
R Green				5
Patti Schultze				5
Robert Jacobson				5
Diana Puente Penny				5
Mike Souza				5
Sonia Vitale				5
Monte Rogers				5
John Oda				5
Megan Eding				5
Eric Stordahl				5
Barb Silber				5
Sue Kacskos				5
Tamara Lesser				5
Jeff Miller				5
Tom Wendel				5
Mil Drysdale				5
Elizabeth Lamb				5
Elaine Cuttler				5
Sandra Farkas				5
Kathryn Vinson				5
Gary Allen				5
Yanisa Anaya				5

Name	Title	Organization Name	Letter Number	Form Number
Jenna Bell				5
Desiree Nagyfy				5
Gina Ness				5
Tamara Lesser				5
adam bradley				5
Armando A. Garcia				5
Sallie Delahoussaye				5
Pat Stinson				5
Sebastian Rerak				5
Charlotte K				5
Nancy Dollard				5
Donald Harland				5
John Goetz				5
lonna richmond				5
Mark Fraser				5
Andrea Sreiber				5
Layla Bouber				5
Yanisa Anaya				5
Drusilla Burrell				5
James Nasella				5
Steve Voliva				5
Matt Kroner				5
Abigail Correia				5
Colette Wilson				5
Michael and Karen Burmester				5
Sorinda Meza				5
Nancy Stewart				5
Mary Eastes				5
Michael Friedman				5
Christina DeRespiris				5
Sarah Conner				5
Margaret Clark				5
Tamara Lesser				5
Steve C. Dennis				5
Joshua Gonzales				5

Name	Title	Organization Name	Letter Number	Form Number
Missy Kendrick				5
Ellen Domke				5
John Thaw				5
Lisa Haage				5
John Dunn				5
Rob Puc				5
Priscilla Klemic				5
MICHAEL FOUNTAIN				5
Cindy Yates				5
Lynne St. John				5
candace porter				5
Robert Ross				5
Doug Charlesworth				5
Richard Hieber				5
Stephanie Barry				5
Jill Madsen				5
Devon Benton				5
Ann Sandritter				5
Jolie Jacobus				5
c keating				5
joan rubin				5
MICHAEL FOUNTAIN				5
Sharon Healey				5
Michael R. Watson				5
Janice Parke				5
Pamela Breitwater				5
Mary Kennedy Ice				5
Magdalena Craig				5
Ted Weber				5
D Clark				5
Jackie Scully-Clark				5
Darynne Jessler				5
Nancy Heck				5
Adi S				5
Kathi Ridgway				5

Name	Title	Organization Name	Letter Number	Form Number
Annette Skelley				5
Diane Reaver				5
C. Kasey				5
Monica Myers				5
Jane Spini				5
Steve Overton				5
Bernadette Espinoza				5
Nancy Hayden				5
Peggy Hughes				5
Erna Robertson				5
Jared Cornelia				5
Bonnie Ricca				5
Marielle Marne				5
Maya Rainey				5
Marie D'Anna				5
Sammy Low				5
Karen Wilson				5
Janna Piper				5
Kathy Kosinski				5
Nancy Loftin				5
Julie Singh				5
Jim Panagos				5
Brian Dreckshage				5
Ann Babb				5
Michael Shell				5
Edwin Aiken				5
Liter Spence				5
John Mitchel				5
Elise L				5
Barbara Rubinstein				5
Nancy Schuhrke				5
Damon Brown				5
Patrick Gallagher				5
Mark Canright				5
Susan Traves				5

Name	Title	Organization Name	Letter Number	Form Number
Jerry Mawhorter				5
Laetitia Berrier-Saarbach				5
Lizzy Woods				5
Holly Crawford				5
Diane Martella				5
Lester Paul				5
James Wilcox				5
Vicki Gallegos				5
Nicholas Esser				5
Robert Ricewasser				5
J?rg Gaiser				5
Katherine Wright				5
Erin Millikin				5
Donald McGraw				5
Gary Warner				5
JJ L.				5
ROBERTA SEBASTIAN				5
joyce niksic				5
Chris Drumright				5
Carolyn Spencer				5
Timothy Schacht				5
ann Malyon				5
kara kemmler woodford				5
Diana Jones				5
Carol Lynne Eyster				5
Chris Lambrecht				5
Rama Bharadwaj				5
Richard Van Aken				5
Benton Elliott				5
Howard J Whitaker				5
John Jr Lucci				5
Barry Regan				5
Lynne Boehm				5
Faye Soares				5
Amy J Johannesen				5

Name	Title	Organization Name	Letter Number	Form Number
Jennifer Scott				5
Victoria Buchwald				5
Brian and Rita Cohen				5
Gilbert Latranche				5
Hashi Hanta				5
Ellen Canfil				5
Shatoiya De La Tour				5
Lynne C.				5
Mark Smith				5
Lawrence Holtzman				5
Rebecca Miller				5
Mark Karlsen				5
Laurel Starr				5
Sarah Livingston				5
Jean Marie VanWinkle				5
Andrew Philpot				5
Valerie Columbia				5
Michelle Van Asten				5
David Tvedt				5
Jillian Saxty				5
Karen Chinn				5
DANIEL D				5
Tracey Bonner				5
g clemson				5
Sherry Reisch				5
Terri Melville				5
Douglas Hammer				5
Julie Bohn				5
Tamara Wecker				5
Colleen Joe - Speier O'Meara				5
David Soares				5
Annika von Bartheld				5
Judy Pizarro				5
Lasha Wells				5
Jackie Lowell				5

Name	Title	Organization Name	Letter Number	Form Number
Hilary Persky				5
Colette A.				5
Edna Scheifele				5
Linda Whetstine				5
Nicole Mola				5
Penny Birch-Williams				5
Mike Camp				5
Diane Ryerson				5
Christy Barnes				5
Matthew Pintar				5
Thomas Hernandez				5
Dana Petre-Miller				5
Franco De Nicola				5
N D				5
Gudrun Dennis				5
Jahlina Carter				5
Dawn Dulac				5
Brad Yoho				5
Bailey Chui				5
Christina Laudeman				5
Brenda Smith				5
Meghan McCutcheon				5
Johanna Hantel				5
Wilma Hackman				5
Cindy Borske				5
Rita Mullis				5
Stephen Greenberg				5
Gabriela Elias				5
Lisa Pisano				5
Joe Glaston				5
James Mirro				5
John Sailer				5
Peggy Butler				5
Jeanine Mielke				5
Tahera Mamdani				5

Name	Title	Organization Name	Letter Number	Form Number
Amber Manske				5
Bill Capasso				5
Constance Spenger				5
Linda Maynard				5
Jeanine Mielke				5
Mary-Alyce Huenefeld				5
Pat Gilbert				5
Sheila Dixon				5
Edward And Gail Laurson				5
jonette bronson				5
Debasri Roy				5
Jane Schlegel				5
Paula Andersen				5
Michelle MacKenzie				5
Stephen Lipman				5
Sherry Macias				5
MaryEllen Meli				5
Lillianne Tiger				5
Ed Fiedler				5
LONDA Fowler				5
Earl Ratledge				5
Rebecca Rabinowitz				5
Brita Mj?s				5
James Majors				5
Tanja Lehmann				5
Iris L›pez				5
Lisa Summers				5
Sarah Stewart				5
Marcella Crane				5
Michelle Lind				5
Kevin PETTY				5
Linda Thompson				5
Kathleen Bentley				5
Kristin L.				5
Lou Paller				5

Name	Title	Organization Name	Letter Number	Form Number
John Franklin				5
Jen Frank				5
Jesse Gore				5
Mark Hurst				5
Melissa Bergemann				5
Claudia Fischer				5
Darlene Borcherding				5
Miranda O'Shields				5
Lorna Wood				5
Pam Rodrigues				5
Linda Melski				5
chris koury				5
Patricia Bocanegra				5
Sharon S. Bramblett				5
Leah Z				5
Kristin Rosenqvist				5
Lorri Gaffney				5
I. Engle				5
Cierra Buer				5
Buffalo Bruce				5
Laura Wilder				5
Elan Carlson				5
Anastasia Ioannou				5
mary lahovitch				5
KRISTINA SHULL				5
Diana Cobb				5
Kimberly Sickel				5
Tony Jones				5
Anthony Coleman				5
Caroline Kipling				5
Kathleen Doctor				5
Rochelle La Frinere				5
Sally Smith				5
Sam Garbi				5
E Clark				5

Name	Title	Organization Name	Letter Number	Form Number
Constance Kiesel				5
Elizabeth Eide				5
Wayne Langley				5
katherine johnson				5
John Peterson				5
Anne Pavlic				5
Marjory Keenan				5
marian Falla				5
Mynka Draper				5
Mike Jones				5
brian smale				5
Douglas Cooke				5
Riyaana Hartley				5
Kate Crowley				5
Kristin Green				5
Roz Hill				5
Marilyn Mooshie				5
Fr?d?ric Pulcini				5
Gloria Linda Maldonado				5
Jennifer Krinke				5
Ellen Henry				5
Ashley Martin				5
Rich Hughes				5
Erica Crytzer				5
Dat Tran				5
Delores Stachura				5
Julie Robertson				5
Eric Edwards				5
Mary Pearson				5
Diane Miller				5
Jeanne McGlen				5
Ally Jones				5
Lesley Glen				5
Pam Borso				5
Leah Fox				5

Name	Title	Organization Name	Letter Number	Form Number
Chris Poehlmann				5
Lisa Warden				5
Sandra Couch				5
Dat Tran				5
Madison Jackson				5
Diana Kunce				5
Janice Hoffman				5
Josephine Jones				5
Kathlyn Powell				5
Barbara Warren				5
Lynn Driessen				5
Mariam Shah-Rais				5
Gerritt And Elizabet Baker-Smith				5
Marcia Migdal				5
Joanne Barnes				5
William Olmsted				5
Susan Galante				5
Martha Aubin				5
Dawn Orahood				5
Jill Meier				5
Peggy Quentin				5
Betty Gunz				5
Catherine Williams				5
Robert Altom				5
kimble darlington				5
Leslie Smith				5
Brooke Prather				5
Cody Goin				5
Lisa Bey				5
Daniel Goldberg				5
Susan Detato				5
Kate Harder				5
Marco Pardi				5
Donna Ksczanowicz				5
Perri Kimono				5

Name	Title	Organization Name	Letter Number	Form Number
Jamie Green				5
Dorothy Hynous				5
Shelley Wehberg				5
Kathryn Kaffer				5
Stephanie Colshan				5
Mara Sabinson				5
Elaine Eudy				5
Steev Beeson				5
Rev. Elisabeth Zenker				5
Anna Bernath				5
Destiny Orantes				5
Carol Kemmerer				5
Stefano Lorenzini				5
Victoria Parrill				5
Keith Johnson				5
Loralee Clark				5
Maya Venkatraman				5
Georgia Mattingly				5
Aline Rosenzweig				5
Holly Burgin				5
GARY MADOLE				5
Bart Ryan				5
Raymond Arent				5
Tamara Rakow				5
Michael Fortie				5
Margaret Champion				5
Michael G Smith				5
Janelle Church				5
Carol Ames				5
Melinda Campos				5
Judy johnson				5
Dawn Kosec				5
Irwin Flashman				5
Alison Date				5
Kristin Niswonger				5

Name	Title	Organization Name	Letter Number	Form Number
Joanne Husar				5
Stephan Silen				5
Cindy Fine				5
Lauri desMarais				5
Lauren Rapp				5
Beatriz Cazeneuve				5
Dita ?kali?				5
Dana Sanchez				5
Andrew Lyall				5
Darrell Schmidt				5
sandra cruze				5
Erin Foley-Collins				5
Marita Hanse				5
Deb Christensen				5
Jeff Sterling				5
Suzanne Gaspar				5
Charlene Woodcock				5
Jeanine Weber				5
Todd Smarr				5
Alana Mawson				5
Derek Schmeh				5
Robert Herzog				5
Sandi Cornez				5
Jan McCreary				5
Barbara Arlen				5
M Timmins				5
Alex Green				5
Esther Weaver				5
Vicki Macina				5
Elaine Benjamin				5
John Rybicki				5
Ben Brooks				5
Linda Thompson				5
Amy Hile				5
Kate Neuschaefer				5

Name	Title	Organization Name	Letter Number	Form Number
Carley Phillips				5
Cindy Parrone				5
Susan Brandes				5
james hatchett				5
Art Shervs				5
Max Salt				5
Jeff Schwefel				5
Lulu Balbi				5
Jeanette Taylor				5
Cynthia Hicks				5
Alice Johnson				5
Douglas Rohn				5
Peter Ayres				5
Joanna Bose				5
Ordell Vee				5
Stella Gambardella				5
Julie Bernstein				5
Thomas Artle				5
Anna Drummond				5
Clifton Nunnally				5
Justin Schmidt				5
Salissa Chavez				5
Christine Ciepiela				5
Sarona Reitzik				5
Catherine Clevenger-Alvizo				5
Kat Ebin				5
Zuleikha Erbeldinger-Bjork				5
Denise Redden				5
Nancy Kilgore				5
James Beeler II				5
Sandy Rodgers				5
Merrie Thornburg				5
Denise Baker				5
audrey semel				5

Name	Title	Organization Name	Letter Number	Form Number
Wm Scott				5
terry hawkins				5
Mary Wiener				5
Steve Wendt				5
Joan Kenny				5
Mindy Kay				5
Cristy Murray				5
Sonia ImMasche				5
Harold Adolph Meyer Jr				5
Heather Kester				5
David Crawford				5
Derek Gallion				5
Kristina Bedic				5
Lisa Neste				5
Aaron Turkewitz				5
Francois De La Giroday				5
Fred Granlund				5
Judy Shively				5
John Kozub				5
Mark Dolezal				5
Francis Schilling				5
Wendy Ruggeri				5
Choral Eddie				5
Elva Munro				5
Doreen Smithwick				5
Deborah Gandolfo				5
Dan Coburn				5
Joy Keithline				5
Tricia Lisa				5
Geoff Stradling				5
Maija Nevalainen				5
The Rev Charles H Hensel				5
Barbara Levedahl				5
Amy Priest				5
C Gamblin				5

Name	Title	Organization Name	Letter Number	Form Number
Lin Provost				5
Annette Jewell-Ceder				5
Susan Yarnell				5
Robin Swope				5
William Steele				5
Adil Mehta				5
Mary McMahon				5
Diane Battaglia				5
Renee Carl				5
Donald Perras				5
Benjamin Christy				5
Carla L				5
Eddie Deatropa-Gonzalez				5
Ann Hollyfield				5
Marcia Ouellette				5
Barbara Ballenger				5
Cora Luce				5
Ian Bentley				5
Matthew Carlstroem				5
Lindsey Densing				5
Devon Seltzer				5
Evelyn Malone				5
Caridad Romaine				5
RuthCecelia Tabor				5
Abra Rider				5
Jody Coakley				5
Eddie Deatropa-Gonzalez				5
Rosemary Agrista				5
Rebecca Augustin				5
sherrri hodges				5
Jessica Wardlaw				5
Brenda Denno				5
Joanne DeHart				5
Ginnie Preuss				5

Name	Title	Organization Name	Letter Number	Form Number
Jerry Siegel				5
Jamie Jang				5
Janel Fraser				5
Scott Ferguson				5
Zach Van Stanley				5
Arshia Abedini				5
Carol Thompson				5
Sandra Johnson				5
Camille Gilbert				5
Jessica Lombardi				5
David Rieckmann				5
Katherine Silvey				5
Michele Bowles				5
Mary Lyans				5
Joy Smiley				5
Lauren Bouyea				5
Anthony Albert				5
Laura Mingst				5
Marek Olszewski				5
Sharon McMenamin				5
Glen A Twombly				5
Patricia Schwab				5
Novella Adoue				5
Nina Davis				5
Janet Nongbri				5
Bettina Hempel				5
Jan Tullis				5
Bob Steininger				5
Sharon Fortunak				5
Hannah Osborne				5
Kathy Bradley				5
James Mandler				5
Dawn Myers				5
Lisa Hughes				5
Mary Thornton				5

Name	Title	Organization Name	Letter Number	Form Number
Catherine Saint-Clair				5
karen wood				5
Jennifer Taylor				5
Parviz Khazaei				5
Richard Zoah-Henderson				5
Nico Duon				5
Kenna Fowler				5
Crystal Carr				5
Joan Makurat				5
Dr.MaryAnn and Frank Graffagnino				5
Chad Evans				5
T Mullarkey				5
Jill Kellogg				5
Janis Hadley				5
Heather Isaac				5
Michael Denton				5
K Lyle				5
Becky Daiss				5
Mary Troland				5
J Dzija				5
RAY SPILSBURY				5
Dale Carpenter				5
Virginia Bell				5
Debbie Pinkham				5
Ellie McGuire				5
Mara Cid				5
Ilya Turov				5
ROSEMARY GRIFFITH				5
Holly Balogh				5
Tristin Pollet				5
S Norris				5
Pat Ross				5
Michael Cloud				5
robert cobb				5
Nicolas Duon				5

Name	Title	Organization Name	Letter Number	Form Number
Kelly Shuppe				5
Heather Walker				5
Mary Sue Baker				5
Sue Leskiw				5
Dan Sonny				5
Susan Kozinski				5
Katharine Kaulbach				5
Michael Lee				5
Ronald Howard				5
C S				5
Jon Hager				5
John Deddy				5
Roger Bau				5
Paula Holroyde				5
Virginia Bortoluzzo				5
Beverly Solomon				5
sandra garcia				5
Carolyn Marion				5
Richard Hubacek				5
DeeAnn Saber				5
Katarina Lang				5
Marck Oconnell				5
Gabrielle Swanberg				5
Jane Kelsberg				5
Vince Lindain				5
Elisabeth Bechmann				5
Deann Darling				5
Maria Jesus				5
Don Sparks				5
Heidi McCalla				5
Janet H.				5
Dave Ringle				5
Jody Caicco				5
Jackie Griffeth				5
Nicola Nicolai				5

Name	Title	Organization Name	Letter Number	Form Number
Sue Halligan				5
Nancy Jacobs				5
frank Koonce				5
J Lasahn				5
Leslie Mankes				5
Roger Hollander				5
Rus Postel				5
Susan Anderson				5
Michael Neininger				5
Joyce Doughty				5
Jennifer Thornton				5
Julie Ozias				5
Diane Soddy				5
Reed Williams				5
Geoff Clements				5
Lisa Daniels				5
Daniela Goncalves				5
James Sumler				5
Val Barri				5
Paula Loftis				5
T Hruska				5
Lloyd Townsend				5
Steve De Cock				5
David Beane				5
Virginia Bottorff				5
Miranda Everett				5
Jerry Clark				5
Mary Hood				5
Jeff Kiralis				5
Sharon Ponsford				5
Robin Kolwicz				5
Liz Keefe				5
Leona Klerer				5
Sally Mikel				5
Michael DeLoye				5

Name	Title	Organization Name	Letter Number	Form Number
JASON NAKAGAWA				5
Grady Warren				5
Brenda Mortensen				5
Christina Rincon				5
Paula Purvis				5
Dallas Malloy				5
Debra Nichols				5
Laura Rose-Fortmueller				5
Cindy Shoaf				5
Debi Combs				5
Sheila Sylvester				5
Nathan Pate				5
Shirley Sutter				5
Geraldine Brooks				5
Peace Baxter				5
April Fennell				5
Howard Mielke				5
Joel Drembus				5
Janet L Rhodes				5
Christena Redman				5
Roger Podewell				5
Reena Desai				5
Stanley sayer				5
Riley Canada II				5
Jeff Duncan				5
Carolynn Chapman				5
Marisa Gonzalez				5
Jessica Denis				5
Joel Leitner				5
Jaedra Luke				5
Ann Wiseman				5
Pat Petro				5
Valerie Matos				5
Dallas Malloy				5
Eric Brooker				5

Name	Title	Organization Name	Letter Number	Form Number
Bruce Gundersen				5
Barbara Mathes				5
Cathy Martin				5
Carolyn Thomas				5
Andrea Alexander				5
Julie Brickell				5
Margaret Tollner				5
Jessica Pate				5
Cheri Kunz				5
Helene Bank				5
Maureen Tunney				5
Diane Reeves				5
David Luboff				5
Shirley Swan				5
V.L. Brandt				5
Neus Tobella				5
Isabel Martins				5
allie palmer				5
Marce Walsh				5
Bruce Richman				5
Laura Goldberg				5
Laurie Forbes				5
Erik Evans				5
Kay Arthur				5
Karsten Mueller				5
LJ Lanfranchi				5
Sue Lundquist				5
Sharon Stern				5
Marinell Daniel				5
Christopher Koerner				5
Randy Marrs				5
Pamylle Greinke				5
L. Adams				5
Cindy Letchworth				5
Bonnie Helmer				5

Name	Title	Organization Name	Letter Number	Form Number
Kim Brower				5
Ann Friedman				5
Bobbi Lempert				5
Cynthia Coley				5
Valerie McKenzie				5
Rod Tharp				5
Laurie Axell				5
Tina Engel				5
Phoenix Oaks				5
Margarita Ayala				5
Marsha Smith				5
Sue McHenry				5
Sarah-Marie Belcastro				5
Shana Collett				5
CHRISTOPHER HARRIS				5
Rita McKissick				5
David Boyer				5
Colleen Cleary				5
Michelle Benes				5
Karen McGuinness				5
Wendy Bowman				5
Alexandria Luostari				5
V Kulikow				5
Susan Thiel				5
Linda Rudolph				5
Mark Wheeler				5
Peter Reingold				5
Krystal Krause				5
m. kincer				5
Mary Franz				5
Kelly Epstein				5
Eric Murrock				5
Terry Dailey				5
Stephanie Stout				5
John Stadelman				5

Name	Title	Organization Name	Letter Number	Form Number
Tom Tripp				5
Carol Wright				5
Joan Chryst				5
Liana Lang				5
Paul Russo				5
Jovy Jergens				5
Robert Wallace				5
David Stetler				5
Tina Trice				5
Rochelle Gravance				5
Jennifer Bambauer				5
Veronica Sousa				5
Kellen Dunn				5
David Mazariegos				5
Jean Schwinberg				5
Jutta Hartmann				5
Stuart Sandler				5
Pamela Waterworth				5
Jesse Kessler				5
Michael King				5
Dian Smith				5
James Connolly				5
Carina Zevely				5
Gordon Reilling				5
Sharon Paltin				5
Jeanette Shutay				5
Christiana Brinton				5
Toni Reading				5
Cornelia Herschel				5
Charles O'Clair				5
Margo Wyse				5
Michael Martin				5
Judy Irving				5
Todd Cisna				5
Laura Nowack				5

Name	Title	Organization Name	Letter Number	Form Number
John Kirk				5
Lynn C. Lang				5
Barbara McIntyre				5
DOLPH LOHWASSER				5
George Bourlotos				5
marilyn evenson				5
Danielle Schneider				5
Jackie Walby-Bocchino				5
Robin Nadel				5
Jamie Greer				5
Mona Shores				5
Patricia Risso				5
CASSIE MALONE				5
Cynthia Thompson				5
Pablo Bobe				5
Donna Snow				5
D Wyatt				5
Nancy Kassim Farran				5
Wendy James				5
Catherine McNamara				5
Diana Weatherby				5
JL Angell				5
Christina Burress				5
Jamie Johnson				5
Joy Turlo				5
April Atwood				5
Eric Ericson				5
Kris Lacy				5
Joan Agro				5
Suzanne de Berge				5
Donna Hriljac				5
G.Dale Mathey				5
Sincerely Bevilaqua				5
victor noerdlinger				5
David Hardee				5

Name	Title	Organization Name	Letter Number	Form Number
Robyn Brohard				5
Susan Wagner				5
Jace Mande				5
Rob Lozon				5
Bonnie MacRaith				5
Anita Watkins				5
Paul Fitzpatrick				5
Robert Ley				5
Richard Stern				5
gerald haram				5
Susan McRae				5
Christi DeMark				5
Chadd Charland				5
Angela Gantos				5
Roderick Gregory				5
Doug AllenIII				5
Susan White				5
Amy Schumacher				5
Sally Gilmore				5
Danielle Engle				5
Thomas Wilson				5
Andrea Graff And Allan Novak				5
Michael Nelson				5
Debra Gleason				5
Kirk Wells				5
Daniela Rossi				5
Nelson S.				5
Teri Davidson				5
Lynne Preston				5
Ron Hagg				5
Joanne Tenney				5
richard geiger				5
Ramona Draeger				5
Debra Ricci				5
Mary Shea				5

Name	Title	Organization Name	Letter Number	Form Number
Joanne Powell				5
Nelda McLaughlin				5
Judi Oswald				5
Wave Reaume				5
Hope Carr				5
Rachel Morr				5
David Griggs				5
Aubri Petree				5
Cornelia Herschel				5
Roslynn Witte				5
Victoria Koch				5
Graciela Rosato				5
R Clunan				5
William Wekselman				5
Rebecca Lexa				5
Loren Wieland				5
Lallon Pond				5
Adam D'Onofrio				5
Katherine Andersen				5
Jeffrey Hurwitz				5
Steviann Yanowitz				5
Brad Walker				5
Carmen Ramirez				5
Maria Soria				5
Michael Tucker				5
Ewa Piasecka				5
Lisa Musgrave				5
Pat Button				5
David Bellamy				5
David Worley				5
Todd Snyder				5
Brad J Abraham				5
Rita Lewis				5
Wesley Aten				5
Nile Arena				5

Name	Title	Organization Name	Letter Number	Form Number
Robert Espinoza				5
JULIANA SORELLI				5
Brad Nelson				5
Paul Emerson				5
Janice Cashell				5
Sherry Massaro				5
Vic Bostock				5
Patricia Shearin				5
Jordan Neiman				5
Chip Wyser				5
Pamela Brocious				5
Michele May				5
Jonathan Hancock				5
mitchell liswith				5
korinna Shan.				5
Gerald Thornton				5
Linda Bescript				5
Dorothea Stephan				5
Inge Knudson				5
a kasbarian				5
Alexandra Samaras				5
Lillian Hyland				5
Penny Sherrow				5
Hilary Jesmer				5
Mari Huff				5
Susan Head				5
Scott Perry				5
Kimberly Teraberry				5
Terry Bergeron				5
Fatima Afonso				5
Julie Acs-Ray				5
Christina Clement				5
Andrea Dransfield				5
Scott Wynn				5
Mary Lazas				5

Name	Title	Organization Name	Letter Number	Form Number
David Rogers				5
John Teevan				5
Laura Kuzma				5
Rich Lague				5
Sabine Anders				5
Joyce Olsen				5
Sophie Bonami				5
Nadine Duckworth				5
Paula Beall				5
Vic DeAngelo				5
Elizabeth Gilarowski				5
Marvin Blaustein				5
N Coyle				5
Panagiotis Rigopoulos				5
Stephanie Rogers				5
Nancy Havassy				5
Debbie Hatcher				5
Toshio Ozawa				5
Kevin Silvey				5
Harmon Huff				5
Emily Van Alyne				5
Coral Taylor				5
Sonja Malmuth				5
Barbara Bills				5
Jessica Rollins				5
Ralph Richardson				5
Barbara Carton-Riker				5
Samantha Rosa-Re				5
Sonya Curry				5
Kristin Crage				5
Cindy Page				5
Cheryl Gilchrist				5
Hristina Jankovic				5
Sarah Hanson				5
Leonid Volovnik				5

Name	Title	Organization Name	Letter Number	Form Number
Norm Wilmes				5
Amy Pitt				5
Kat Stephens				5
Victoria Obrien				5
Sharon Teagaraden				5
Rachel Lindsey				5
Susan lefler				5
Taffi Newhouser				5
Emily Lee				5
Allister Layne				5
Katheryne Mitchell				5
Lm Drucker				5
KERRY STILES SR				5
E.Muriel Gravina				5
Judith Cohen				5
Michaela Wehner				5
Maria Craigie				5
Amy Kiba				5
Herbert Lord				5
Becky McKee				5
Annette Dekanich				5
Coleen Ockletree				5
S. Robertson				5
Susan Siniard				5
Marjorie Browning				5
Steven Vogel				5
Kari Mueller				5
Sylvia Vairo				5
Gloria Shen				5
Mark M Giese				5
Amy Roberts				5
Carol Davis				5
Richard Cook				5
Rita O'Sullivan				5
Jane Drews				5

Name	Title	Organization Name	Letter Number	Form Number
C S				5
Howard Lazzarini				5
Sabine Anders				5
Cathy Thompson				5
Dawn Reed				5
Matthew Trbovich				5
susan peirce				5
Tod Barnett				5
Roberta Stern				5
Ellen Sansone				5
Cynthia Ferguson				5
Miranda Allison Young				5
Amy Freeman				5
Nathan Vogel				5
Roxann Carmean Floyd				5
Charlie Burns				5
Sarah Dean				5
Marcia Liotard				5
John Teevan				5
Joyce Schwartz				5
Lance Kammerud				5
Margaret Smith				5
Dorothea King				5
DORI BAILEY				5
Jimmy San Pedro				5
Tina Peak				5
Jeanne Held-Warmkessel				5
Amanda Olson				5
Joanna Ridgway				5
Linda Benda				5
Carol Collins				5
Nancy McRae				5
Christopher Bangs				5
S. Kay				5
Alma Marie Alcala				5

Name	Title	Organization Name	Letter Number	Form Number
Maryam Kamali				5
Christine Roane				5
Carl Howard				5
Tracy Turner				5
Paula Stevens				5
Maureen Schriber				5
Ann Bein				5
Bob Shippee				5
John Nickey				5
Matt Stedman				5
Teresa Lyman				5
MaryAnn Gordon				5
Bharat Adarkar				5
Charles Phillips				5
Jeane Harrison				5
Allen Myers				5
Cindy Sprecher				5
Charles McDonald				5
Ryan Baka				5
John Nickey				5
Nora Polk				5
Robert Keiser				5
Megan Baker				5
Mark Reback				5
Elaine GENASCI				5
K Krupinski				5
Jeanine Scott				5
Judi Poulson				5
Brian Gibbons				5
Kate Benton				5
Arlene Aughey				5
Anna Brewer				5
Donna Walters				5
Melissa Heithaus				5
Scott Gibson				5

Name	Title	Organization Name	Letter Number	Form Number
Gopal Shanker				5
Robin Hero				5
Michael Tomlinson				5
David Williams				5
Richard George				5
ReNae Nowicki				5
Erica Stanojevic				5
Ann Marie Lahaie				5
Perry Gx				5
Cassidy Haney				5
gina nova				5
Jim Haley				5
Janet Perlman				5
Sue Perry				5
Mikael Estarrona				5
Kermit Cuff				5
Marianella Torres				5
Brooks Obr				5
Devin Farrell				5
sara sexton				5
Jennifer Lee				5
Carolyn Borg				5
Luciano Graniello				5
Richard Spotts				5
Cybele Knowles				5
Rick Mick				5
Rick Mick				5
Sandra Dal Cais				5
Dan McCurdy				5
Dorothy Raizman				5
Dan Hill				5
Alice Abela				5
Kim Smith				5
Jill Janda				5
Frances Bell				5

Name	Title	Organization Name	Letter Number	Form Number
Sandra Forgues				5
Martin Zahn				5
Thomas Patterson				5
Kenneth Clark				5
Thomas Slaback				5
Michael Miller				5
Darlene Banks				5
BB Mielke				5
Carolyn Shama				5
Roger Anker				5
Kim Klein				5
Ann Wasgatt				5
James Bates				5
Elizabeth Neuvar				5
Kenneth Douglas				5
Frederique Coutel				5
Jeanette King				5
Jim Bush				5
Tracy Roth				5
Jennifer Powers				5
Elaine Becker				5
Joseph White				5
Stephen Donnelly				5
Nadine James				5
Sandra McLeod				5
Sharon Longyear				5
Eva Laasch				5
Betty Anderson				5
Phyllis Chavez				5
Cody Capella				5
SABINA PINTO				5
Karen Martellaro				5
Robert Strong				5
Stephen Babb				5
Ellen Halbert				5

Name	Title	Organization Name	Letter Number	Form Number
Dolores Fifer				5
Allison Shore				5
Blake Wu				5
Cynthia Loucks				5
Melissa Evask				5
Laura Overmann				5
Andrew Mullineaux				5
Martin Horwitz				5
Lisa Gray				5
Peter Effertz				5
Pamela Miller				5
janelle george				5
Jeffrey Bains				5
Orly Shaker				5
vicki hughes				5
Lea de Young				5
THOMAS CAMPANINI				5
Catherine Starkweather				5
John Warren				5
RICHARD CURRY				5
Mindy Meadows				5
James Mulcare				5
Melissa Haddad				5
Madeline Stetser				5
Joseph Stark				5
A.Diane Cathro				5
Robert Ferrara				5
Syd Beddingfield				5
Robert Van Wagoner				5
Pamela Finnegan				5
Nancy Rupp				5
keith kleber				5
Linda Linker				5
Lilia Beutel				5
Steve Braddom				5

Name	Title	Organization Name	Letter Number	Form Number
Jenny And David Mapes				5
Candi Ausman				5
Henry Lyman				5
Kamal Prasad				5
Jami Gazerro				5
Cecilia Laspisa				5
Magdalena Jensen				5
Cynthia McNamara				5
Matthew Weaver				5
Claire Coenen				5
María Galarce				5
Roxanne Hartung				5
Leonard Meyer				5
Constance Waters				5
rosemarie shishkin				5
JOHANNA JARA				5
Kathryn Jacobs				5
Camilla Torsander				5
Peter Gradoni				5
Chris Pedone				5
Shanna Foley				5
Anna Narbutovskih				5
Jeanne Doherty				5
Lynn Pique				5
Paul Schmalzer				5
Jan Sockness				5
Jamila Viandier				5
Diane Coiner				5
Katie Hale				5
Ann Conney				5
Diane Pierce				5
Anita Montgomery				5
Karen Wolf				5
Arlene Steinberg				5
Delfina Etchart				5

Name	Title	Organization Name	Letter Number	Form Number
Jennifer Schusterman				5
Lisa Kanarish				5
Crystal Hart				5
Mary Ann Leitch				5
Nancy Archibald				5
Pat Mace				5
Suzy Sayle				5
Mike Cass				5
James Vallejos				5
Amanda MacKaye				5
Scott Flood				5
Leigh Begalske				5
Bo Bergstrom				5
Natalie Sanchez				5
Hannah MacLaren				5
freddie williams				5
James Loacker				5
Aaron Wade				5
Kaela MacLaughlin				5
Arline Fass				5
Carol A Newton				5
Mireille Urbain				5
Reid Johnson				5
Nancy Kmonk				5
Renee Rule				5
Veronica Z				5
Laurel Lamb				5
Rayline Dean				5
Alan Young				5
Ela Nolan				5
Robin Kacos				5
Tim Hammond				5
Judy Nelson				5
Maureen Schiener				5
Delores Johnson				5

Name	Title	Organization Name	Letter Number	Form Number
Michael Sarabia				5
Jackie Duffin				5
Susan Rohder				5
Kirsten Nielsen				5
Monica Watson				5
Timothy Raymond				5
Sherrill Faunce				5
Marla Green				5
G. S.				5
Geoffrey Richards				5
PJ McDaniel				5
Cynthia Simon				5
Wesley Banks				5
Sandra Gamble				5
Fran Lowe				5
Dianne Pingitore				5
Dee Gauss				5
Carole Thompson				5
Andrea Cimino				5
Gayle Spencer Spencer				5
John Reid				5
David Stewart				5
Christopher Gates				5
Brian Mitchell				5
Brenda Olivares				5
Lyda Stillwell				5
Ann T				5
John Burrows				5
Mary Shabbott				5
Barbara Geddes				5
gerrit woudstra				5
Kevin Wiker				5
C M				5
J.L. Evans				5
Brenda Gamache				5

Name	Title	Organization Name	Letter Number	Form Number
Rob Jursa				5
Kathleen Porter				5
Vickie Simpson				5
Diane Verna				5
Mark Glasser				5
C. J. Jackson				5
Tim Akehurst				5
Alan Schwartz				5
Manthri Wijemanne				5
Katerina Kachioutea				5
Bert Noel				5
Celeste Anacker				5
Sarah Roland				5
Richelle Bird				5
Paul Daly				5
J. Woodworth				5
Steven Hoffman				5
Brennan Nerhus				5
Michael Hinshaw				5
Susan Bradshaw				5
Betty Schiefer				5
Catalina Mazariegos				5
Kathryn Miller				5
Darlene Jakusz				5
Steve Sheehy				5
Lisha Doucet				5
Holly Dowling				5
Janice Brown				5
Jh V Dijk				5
Ronda Reynolds				5
Suzanne Dalton				5
Mariyana Dobreva				5
Christopher Tumolo				5
Lori West				5
ginette devaney				5

Name	Title	Organization Name	Letter Number	Form Number
Susan Schlessinger				5
Emily Sapp				5
Victoria Brandon				5
Lisa Isley				5
Maria Nasif				5
Carol Elkins				5
S. Repp				5
Elizabeth Lynch				5
Maria Asteinza				5
Lynne Campbell				5
Charles Smith				5
David M. Chervek				5
Alexis Sosa				5
Elizabeth Taylor				5
Mina Bornn				5
Evelyn Adams				5
Mike Rolbeck				5
Barbara Swyden				5
Mary Baysinger				5
Michael Bergman				5
Louise Reardon				5
John Barger				5
Alexis Mekalonis				5
Katie Zukoski				5
Victoria Linehan				5
m g				5
Candy Mancuso				5
Sue Touchette				5
Jon Piersol Piersol				5
Marina Ris				5
Michael Brandes				5
Linda Szurley				5
walter erhorn				5
Kate Holland				5
michael shawver				5

Name	Title	Organization Name	Letter Number	Form Number
Gregory Garnant				5
Ingrid Scott				5
Janae Dale				5
Nerissa Morgan				5
Diana Williams				5
Erin Barca				5
John Ruhl				5
Rose GonzalesNielsen				5
Kevin Kennedy				5
Michael Talbot				5
Ellen Murphy				5
betty harris				5
Eileen OBrien				5
Lynn Krikorian				5
Patricia Sloan				5
Patricia Rimestad				5
Edward Kuczynski				5
Emmet Ryan				5
David Edwards				5
Debra Atlas				5
Esther Conrriquez				5
Lisa Dolan				5
Sasha Kay				5
Ernie Walters				5
barbara Murray				5
Janet Benevento				5
Janet Burrows				5
Vonya Morris				5
Leire Herboso				5
Constance Knudsen				5
Brent Spencer				5
Ann Palmer				5
Mary Zack				5
Joanna Bressler				5
Carol Jurczewski				5

Name	Title	Organization Name	Letter Number	Form Number
Margaret Garr				5
Joe Macgregor				5
Rick Lambert				5
Deirdre Santaniello				5
Melodie Huffman				5
Kathleen Aggers				5
Bonnie Denhaan				5
Maureen Ouellette				5
Martina Car				5
Tammy Swoboda				5
Gary Wrasse				5
Sarah Johnson				5
Ian Dogole				5
Stacey Jones				5
Gloria Morrison				5
Daniel Dickey				5
Robert Badcock				5
Mark Weinberger				5
Maria Arteaga				5
Margaret White				5
Victoria Linehan				5
christina arasteh				5
Jeff Milliken				5
Luisa P				5
F Fitz				5
Terry Sessford				5
sandra hazzard				5
Anne Jameson				5
Thomas Ray				5
June Tullman				5
leslie spoon				5
Bonnie Hale				5
Ruth Darden				5
Jared Brenner				5
Taryn Dillon				5

Name	Title	Organization Name	Letter Number	Form Number
Sandra Hutchinson				5
Debra Herst				5
EUGENIA GUTERRES				5
Trina White				5
Caren Flashner				5
Karen Spradlin				5
Anne Greenberg				5
Charles Tazzia				5
Steve Griffin				5
Lydia Lafleur				5
Natalie Blasco				5
Alan Godley				5
Marie Bailey				5
Linda Helvie				5
Karen Harrington				5
Lorilie Morey				5
Nora Groeneweg				5
C Grimes				5
Nina Sikand				5
Fred Schloessinger				5
Ashley Carter				5
Katie Binhack				5
Lyndee cunningham				5
Edward Rutkowski				5
John Booth				5
Shirley Ritter				5
Jelica Roland				5
Tonya Eza				5
Luke Klein				5
Carl Cartwright				5
Lisa Boynton				5
Kathy Richards				5
Charlotte Lenox				5
Rebecca Picton				5
Darlyne Sahara				5

Name	Title	Organization Name	Letter Number	Form Number
Richard Kite				5
Jennifer Eckberg				5
Eric Crouch				5
P Nunez				5
Nancy Carl				5
Rocquelle Woods				5
stacey wiltrout				5
Sheila Tran				5
Darin Somma				5
Nancy Akerley				5
Wilma Büttner				5
Rose Marie Wilson				5
Edith Crowe				5
Les Roberts				5
Dalia Salgado				5
Marilyn Clark				5
Donna J McCarthy				5
Robert Cherwink				5
cinzia caporali				5
Tricia Toliver				5
Joan McGrath				5
Maria Fornataro				5
Jack Roberts				5
david j. lafond				5
Art Glick				5
Bob Roach				5
Ann Nowicki				5
Joyce Smith				5
Frances Palacio				5
Jana Pendragon				5
Karen Brant				5
Marilyn Logan				5
Karen Phillips				5
Nigel Paul Berridge Berridge				5
Taryn Dillon				5

Name	Title	Organization Name	Letter Number	Form Number
Heidi Behnke				5
Lesley Brill				5
Eleni Kotsis				5
Gay Goden				5
Kathy Hanson				5
Michelle Macy				5
Milana Keleman				5
Melinda Armistead				5
Melanie Lipton				5
Glenn Schlippert				5
Bob Neuzil				5
Kaitlin Purdy				5
Mary Cooke				5
Marianne Lazarus				5
Elizabeth Moore				5
Valerie Lloyd				5
Deborah Williams				5
Taylor Webber				5
Christine French				5
Diane Weinstein				5
Bronwen Evans				5
Martha Vest				5
Tom Miller				5
Heide-Marie Henniger				5
Barbara Addis				5
Jennifer Day				5
Debra Bruegge				5
Martha Price				5
Eva Thomas				5
Colin Kenny				5
Jack Dunham				5
Frauke Brandt				5
Holly MacAdam				5
Aaron Ucko				5
Tobey Thatcher				5

Name	Title	Organization Name	Letter Number	Form Number
Caryn Lerman				5
Larisa Long				5
Mark Rodgers Sr				5
Larry French				5
Richard Kornfeld				5
Joseph Gallo				5
Wendy Lukowitz				5
Jen Pagnini				5
Peter Weinberger				5
Julia OConnor				5
Beverly Bullock				5
Marie Claire Deluna				5
Jonna Johnson				5
Anju Hursh				5
mark Levin				5
Meredith Walters				5
Tim Schmitt				5
Cheryl Carney				5
vera Brandt				5
Sandra McLuckie				5
Julie Miyasaki				5
Bill Christie				5
Wilma Weddington				5
Claire Marsden				5
Robin Coleman				5
Linda Wuethrich				5
arline lohli				5
Denise Bounous				5
Amanda Real				5
Sue Bassett				5
Shannon Milhaupt				5
Nancy Blanchett				5
Carol Miller				5
MaryAnna Foskett				5
Aaeron Robb				5

Name	Title	Organization Name	Letter Number	Form Number
Elizabeth Johnston				5
Laird Lorenz				5
Pat Berte				5
Dana Woods				5
Patricia Wilburn				5
Jack Polonka				5
James Frattarola				5
Anthony Baker				5
allison Alberts				5
Nancy Kennedy				5
Roisin Halfar				5
Nikolina Starcevic				5
Michele McFerran				5
Silvia Hal				5
Tom Key				5
Carlos Nunez				5
Crystal Anne Mourad				5
D.K. Hodges Hull				5
Sandra Costa				5
Jan Zollars				5
Michelle Thomas				5
Beth Darlington				5
Paul Brooks				5
Joyce Frye				5
Alana Willroth				5
Vickie McMurray				5
Brenda Harris				5
Kathleen Eaton				5
Robert Gore				5
Jaye Trottier				5
Kenneth Hittel				5
Diana Lubin				5
Sandra Costa				5
Sam Butler				5
Susan Holland				5

Name	Title	Organization Name	Letter Number	Form Number
Liz Field				5
Laura Guttridge				5
Joy Burk				5
Michele Roma				5
Kathryn Burns				5
George Neste				5
Marge W Barry				5
Cynthia Sherman-Jones				5
Mary Lyda				5
Shirley Klein				5
Gertrude Nuttman				5
George Munoz				5
Phillip Anderton				5
Terri Saurs				5
Crystal Elston				5
Linda Silversmith				5
Jean Boydston				5
Barbara B				5
Nicole Trotta				5
Mary Wellington				5
Robert Frank				5
Gary McCormick				5
J. David Scott				5
Greg Espe				5
Marilyn Lilly				5
Tonya Stiffler				5
Laura Ross				5
Carlo Bacci				5
Teresa Hammond				5
June Attarian				5
Lee Witkowski				5
Pamela Unger				5
Claire Perricelli				5
Gail Seghetti				5
Linda Livingston				5

Name	Title	Organization Name	Letter Number	Form Number
Ruth Felix				5
Joelle RICHE				5
Mark Bartleman				5
Scott Species				5
Julia Adkins				5
Lorraine Akiba				5
S Langguth				5
Edward Schneider				5
John Bryan				5
Shirlene Harris				5
Roberta Boyden				5
Jovita Fine				5
Kathy Ritchie				5
mark golembiewski				5
Heather Harl				5
Paula Vasconcelos				5
Jason Klinkel				5
Melba Dlugonski				5
Karen James				5
yvette obrien				5
Catherine Webster				5
William Lundeen				5
Nancy Keleher				5
DANIEL HENLING				5
Darren Frale				5
Mark Betti				5
George Bilyeu				5
Ingrid Rochester				5
Anne Robison				5
Gloria Fooks				5
A Wagner				5
biggi steurer				5
Jana Menard				5
Maryetta Brown				5
Sue Stack				5

Name	Title	Organization Name	Letter Number	Form Number
Patricia PERRON				5
Robert Furtek				5
Terri Gedo				5
John Lundquist				5
Heath Post				5
Robert Roberto				5
Victoria Cross				5
Jeannette Ralston				5
Ronald Warren				5
Aldana Santto				5
Mark Hayduke Grenard				5
Susan LeClair				5
Dara Gorelick				5
amanda rewinkel				5
Angela Daidone				5
Stephen and Robin Newberg				5
Raymond Valinoti				5
dc katten				5
Ilya Speranza				5
Debbie Morton				5
Monica Padilla				5
Ms. Lilith				5
Claudia Godinez				5
Linda Myers				5
Zachary Roberts Myones				5
BJ Trivedi				5
Katie Garton				5
T B				5
Roberta R Czarnecki				5
Erich Freimuth Jr				5
Claudia Stein				5
Nancy Weissman				5
Karen Sommer				5
Cathy Thomas				5
Nicole Everling				5

Name	Title	Organization Name	Letter Number	Form Number
Judy Scriptunas				5
Gisela zech				5
Annette LeVee				5
joel Lorimer				5
Greg Singleton				5
Doug Gledhill				5
Kathy Bayles				5
Andrew Stromfeld				5
Virginia Jastromb				5
Kimberly Grunden				5
Justina Gruling				5
DEVIN McCORMICK				5
Lila Henry				5
Carrie Johnson				5
John Lambert				5
eve Knoll				5
Candace Laporte				5
Julianne Yao				5
Pat Pesko				5
Jason Black				5
Donna Smith				5
Theresa Dee				5
Tami Lukachy				5
Catherine Carney-Feldman				5
Ann Bauer				5
Esme Prjanikov				5
Melissa Pearson				5
Regina B				5
Linda Rawlings				5
Susan McSwain				5
Jennifer Stahl				5
Cindy Rose				5
Marcus Straub				5
Lauren Amick				5
LORRAINE THOMPSON				5

Name	Title	Organization Name	Letter Number	Form Number
Randy Monroe				5
Jacqueline Brady				5
Veronika Coleman				5
Mary more				5
Susan King				5
Pat O'Halloran				5
Rudy Zeller				5
Robin Steudle				5
Colleen Wysser - Martin				5
Laurie Fraker				5
Kerri Renshaw				5
Lynette Rynders				5
elana Katz Rose				5
Ida Foo				5
Joan Sichterman				5
Michael Rynes				5
Nadav Shalev				5
Connie Allison				5
Tracey Katsouros				5
Steven Cook				5
Amanda Lawrence				5
Leah Creatura				5
Mary Romanek				5
Brigite Roy				5
Jane Galbraith				5
Leslie Edwards				5
Dee Buttimer				5
Rebecca Kindred				5
Greg Hampton				5
Heather Deane				5
Debra Dunson				5
James Turner				5
Matthew Priebe				5
Serah Jane				5
Nicole Bohlman				5

Name	Title	Organization Name	Letter Number	Form Number
Delphine Bez				5
Delphine Bez				5
Lisa Salazar				5
Emerson Jeremy				5
Jennifer Stedman				5
Ilene Goldstein				5
Dvora Robinson				5
Dwight Hughes				5
Tim Glover				5
Robert Miller				5
D Provance				5
Kitrina Lisiewski				5
Linda Owens				5
Justin LeGrow				5
chris clegg				5
Jan Koreneef				5
Catherine Alsafi				5
Sheri Sifleet				5
Mary Ann Viveros				5
Joyce Coogan				5
Shivangi Singh				5
James Lapp				5
Morgan Crawford				5
Kim Wick				5
Malcolm Rothera				5
Doreen Papajcik				5
John Essman				5
Tina Cari				5
Chris Pager				5
Joshua D Corris				5
Amitav Dash				5
Bonnie Miller				5
Carl B. and Pamela S Lechner				5
Lila-Dave Zastrow-Hendrickson				5

Name	Title	Organization Name	Letter Number	Form Number
Richard Solomon				5
Dr. Andrew Hansen				5
Christina Williams				5
Michelle Gobely				5
Cheryl Erb				5
C. Yee				5
Virginia Jaquez				6
Margaret K James				6
Sheridan Enomoto				6
Corrina Gould				6
Margaret L. Rockwood				6
Sarah Muskin				6
Raphael DiGenova				6
Ambrosia Krinsky				6
Tom Levy				6
Ina Adele Ray				6
Atava Garcia Swiecicki				6
Sam Keck Scott				6
Holly Irene Cardoza				6
Nichelle Garcia				6
Domingo Garcia				6
Solisa Garcia				6
Helene Sisk				6
David Martinez				6
Juni Verse				6
Rivkah Khanin				6
Tarak Kauff				6
Emmett Brennan				6
Rebekah Olstad				6
Kasmir T				6
Rena Oppenheimer				6
Jeanne France				6
Toby Stanley				6
Andrea Deezbaa O'Hare				6
Melodie Kauff				6

Name	Title	Organization Name	Letter Number	Form Number
JuLeah Willson				6
Alycia de Mesa				6
John Nameson				6
Doreen Bird				6
Debra Lopez				6
Jane P. Perry				6
Betsy Schulz				6
Alexandra Derby				6
Kelley Breen				6
Sabrina Krauss				6
Amy Eisenberg, Ph.D.				6
Carter Morgan				6
Lynne Nittler				6
Jim Yarbrough				6
Irene Dick-Endrizzi				6
Tracey Ash Japan				6
Demi Johnson				6
Kathleen Kimberling				6
Meredith Hackleman				6
Rachel Armstrong				6
Tony Marks-Block				6
Kate Gilbert				6
Illana Berger				6
Lisa Ferguson				6
Isaiah Wisdom				6
Diana Reidlinger				6
Jessica Webber				6
David Dodd				6
Lisa Nosal				6
Jeremy Ohmes				6
Evie Nich				6
Jahnavi Veronica				6
Ren Boxerman				6
Galen Hanly Hefferman				6
Nigel Webb				6

Name	Title	Organization Name	Letter Number	Form Number
Russell Smith				6
Joanne Fanucchi				6
Stephen Zettel				6
Matthew Humphrey				6
Thomas Johnston				6
Stacie Wolny				6
Grass O Dad				6
Brian Alan Reed				6
Monika Tippie				6
Deirdre Downey				6
Paul Moss				6
Robin M. Wright, Ph.D.				6
Peter Oppenheimer				6
Thomas Campanini				6
Luan Marks				6
Karen Bengard				6
Norm Groot				6
Nav Athwal				6
Lindsey Liebig				6
Brandon Fawaz				6
Greg Smith				6
Monty Hoggard				6
Laurie Dey				6
Blake Harlan				6
Pat Mecklenburg				6
Daniel Waterhouse				6
Teri Bontrager				6
Todd Barth				6
SHARON STOKES				6
Denelle Flake				6
Teri Bontrager				6
Russell G Gunlund				6
Andrew Genasci				6
Hilary Porter				6
Johnnie White				6

Name	Title	Organization Name	Letter Number	Form Number
Bradford Sublett				6
Chad Vander Feer				6
Jake Wenger				6
Donny Hopkins				6
Catalino Martinez				6
John Guthrie				6
Katerina Kronauge				6
Kyle Lerner				6
Joe Valente				6
Colleen Cecil				6
Bruce FRY				6
Paul Arnaudo				6
Gary Sack				6
Michael Doherty				6
Kevin Merrill				6
Gary Daniel				6
Colby Pereira				6
erin Gil				6
Joseph Hurlbut				6
Jenny Holtermann				6
Michael Vellutini				6
Chris Torres				6
Bert Owens, Denny				6
Robert Hoopes, DC				6
Jeff Carlton				6
Kenneth Doty				6
Amanda Leo				6
Emmett Linder				6
James Hay				6
Mr. & Mrs. Mark Alderson				6
Bruce Blodgett				6
Kevin Chiesa				6
Chris Torres				6
Mary Kay Benson				6