

RECLAMATION

Managing Water in the West

Environmental Assessment

2013 Lower Klamath River Late-Summer Flow Augmentation from Lewiston Dam

EA-13-07-NCAO



**U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region**

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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to 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.

Contents

	Page
Section 1 Introduction	1
Background	1
Need for the Proposal.....	1
Reclamation’s Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action.....	2
Scope.....	2
Resources Eliminated from Further Analysis	2
Cultural Resources	2
Indian Sacred Sites.....	3
Floodplains, Wetlands and Waterways.....	3
Land Use	3
Air Quality	4
Resources Requiring Further Analysis	4
Section 2 Alternatives Including the Proposed Action	4
No Action Alternative.....	5
Proposed Action.....	5
Alternatives Considered But Eliminated From Further Consideration.....	7
Section 3 Affected Environment and Environmental Consequences.....	8
Water Resources	8
Affected Environment.....	8
TRD.....	8
Coldwater Resources	9
Hydropower Generation.....	10
Trinity River and Lower Klamath River.....	10
Sacramento River Basin.....	11
Environmental Consequences.....	11
No Action.....	11
Proposed Action.....	11
Cumulative Impacts	13
Biological Resources	14
Affected Environment.....	14
Trinity River and Lower Klamath River.....	14
Coho Salmon.....	14
Green Sturgeon	15
Chinook Salmon.....	15
Other Wildlife	16
Central Valley	16
Environmental Consequences.....	17

No Action Alternative.....	17
Trinity River and Lower Klamath River.....	17
Sacramento River Basin.....	18
Proposed Action.....	18
Trinity River and Lower Klamath River.....	18
Sacramento River Basin.....	18
Cumulative Impacts	19
Global Climate	19
Environmental Consequences	20
No Action Alternative.....	20
Proposed Action.....	20
Indian Trust Assets	20
Affected Environment.....	21
Environmental Consequences.....	21
No Action.....	21
Proposed Action.....	21
Cumulative Impacts	21
Environmental Justice.....	21
Affected Environment.....	22
Environmental Consequences.....	22
No Action.....	22
Proposed Action.....	22
Cumulative Impacts	22
Socioeconomic Resources	22
Affected Environment.....	22
Environmental Consequences.....	23
No Action.....	23
Proposed Action.....	23
Cumulative Impacts	24
Section 4 Consultation and Coordination.....	24
Public Review Period.....	24
Endangered Species Act (16 U.S.C. § 1531 et seq.).....	24
Section 6 References	26
Section 7 List of Acronyms and Abbreviations.....	28
Appendix A – Response to Comments	29

Section 1 Introduction

Background

In August and September 2002, an estimated 170,000 fall-run Chinook salmon returned to the Klamath River, and a substantial number of adult Chinook salmon and other salmonids died prematurely in the lower Klamath River. This included an estimated 344 coho salmon listed as threatened under the Endangered Species Act (ESA). Federal, tribal, and state biologists studying the die-off concluded that: (1) pathogens *Ichthyophthirius multifiliis* (Ich) and *Flavobacterium columnare* (Columnaris) were the primary causes of death to fish; and (2) warm water temperatures, low water velocities and volumes, high fish density, and long fish residence times likely contributed to the disease outbreaks and subsequent mortalities (Guillen 2003; Belchik et al. 2004; Turek et al. 2004). Flows in the lower Klamath averaged about 2,000 cubic feet per second (cfs) during September 2002.

In 2003, 2004, and 2012, predictions of large runs of fall-run Chinook salmon to the Klamath River Basin and drier than normal hydrologic conditions prompted Reclamation to arrange for late-summer flow augmentation to increase water volumes and velocities in the lower Klamath River to reduce the probability of a disease outbreak in those years. Thirty-eight thousand acre-feet (TAF) of supplemental water was released from Trinity Reservoir in 2003, and 36 TAF in 2004, and 39 TAF in 2012. While documentation of the effectiveness of these events is limited, general observations were that implementation of the sustained higher releases from August to early September in each year coincided with no significant disease or adult mortalities.

The 2013 preharvest forecast for the ocean abundance of Klamath Basin fall-run Chinook salmon is 727,600 and the estimated escapement of fall-run to the Klamath Basin is approximately 272,000 (PFMC 2013). This forecast is 1.6 times larger than the estimated 2002 run. Fish biologists who work in the basin are again concerned that dry hydrologic conditions in the basin, and the above average expected run size, could be conducive to a disease problem similar to the one experienced in 2002.

Need for the Proposal

The need for the proposal is to reduce the likelihood, and potentially reduce the severity, of any Ich epizootic event that could lead to an associated fish die-off in 2013. Agency reports regarding the 2002 die-off identified crowded holding

conditions for pre-spawn adults, warm water temperatures, and presence of disease pathogens (i.e., Ich and Columnaris) as the likely major factors contributing to the adult mortalities.

The biological consequences of large-scale fish die-offs could substantially impact present efforts to restore the Klamath Basin anadromous fish communities and the many user groups that rely upon the fishery. Reductions in the Klamath and Trinity River fish populations would affect tribal fishery harvest opportunities, ocean harvest levels, recreational fishing, as well as public perception and recovery mandates. Loss of 3 year-old fish and a potential loss of 4 year-old fish from the a given brood year can affect the population structure and may impede recovery goals as identified in the Central Valley Project Improvement Act of 1992 (P.L. 102-575), for naturally produced fall-run Chinook salmon.

Reclamation’s Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action

The TRD Central Valley Project Act of 1955 (P.L.84-386) provides the principal authorization for implementing the Proposed Action. Specifically, Section 2 of the Act limits the integration of the Trinity River Division with the rest of the Central Valley Project and gives precedence to in-basin needs, including that “the Secretary is authorized and directed to adopt appropriate measures to insure preservation and propagation of fish and wildlife...”

Scope

Implementation of the Proposed Action would be limited to late summer 2013. The area of potential affect includes Trinity Reservoir and the Trinity River from Lewiston Dam to the confluence with the Klamath River and the Klamath to the Klamath River estuary near Klamath, California. Additionally, the affected environment includes the Sacramento River Basin as transbasin diversions from Trinity Reservoir via Lewiston Reservoir to the Sacramento River Basin occur routinely through the summer.

Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment of the Proposed Action and the No Action Alternative and has determined that there is no potential for direct, indirect, or cumulative effects to the following resources:

Cultural Resources

Reclamation uses the National Historic Preservation Act of 1966 (16 U.S.C. 470) Section 106 process to consider the effect to historic properties relating to a

Federal action or “undertaking” as outlined in the Section 106 implementing regulations at 36 CFR §800.

There would be no impacts to cultural resources under the No Action Alternative as conditions would remain the same as existing conditions. The Proposed Action involves the release of flows from Lewiston Dam on the Trinity River to augment flows in the lower Klamath River. This action would use existing infrastructure and no new construction or ground disturbance would occur as part of the Proposed Action. The release of flows from Lewiston Dam would be within the normal release flow range and water levels along the Trinity River and would not exceed the historic range of flows in the Trinity River. As a result, Reclamation has determined that the Proposed Action has no potential to cause effects to cultural resources eligible for inclusion in or listing on the National Register pursuant to 36 CFR §800.3(a)(1).

Indian Sacred Sites

Reclamation is required by Executive Order 13007, to the extent practicable permitted by law, and not clearly inconsistent with essential agency functions, to: (1) accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; and (2) avoid adversely affecting the physical integrity of such sacred sites. When appropriate, Reclamation shall, to the greatest extent possible, maintain the confidentiality of sacred sites.

There would be no impacts to Indian sacred sites under the No Action Alternative as conditions would remain the same as existing conditions. Similarly, the Proposed Action would not inhibit access to or ceremonial use of an Indian Sacred Site, nor would the Proposed Action adversely affect the physical integrity of such sacred sites.

Floodplains, Wetlands and Waterways

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands.

There would be no impacts to flood plains under the No Action Alternative as conditions would remain the same as existing conditions. The Proposed Action does not involve construction, dredging or other modification of regulated water features. No permits under the Clean Water Act (CWA; 33 U.S.C. 1251) would be needed. Further, the Proposed Action only includes providing controlled reservoir releases that are within the normal operational envelope.

Land Use

There would be no impacts to land use under the No Action Alternative as conditions would remain the same as existing conditions. Under the Proposed Action, there would be no changes in land use due to implementation of the Proposed Action. The proposed water releases from Lewiston Dam are within the historic range of flows addressed in the Trinity River Mainstem Fishery

Restoration Environmental Impact Statement/Environmental Impact Report (TRMFR EIS/EIR; U.S. Fish and Wildlife Service et al. 2000). In addition, the magnitude and timing of the target flows in the lower Klamath River are well within the range of historic flows resulting from rainstorms, etc. Therefore, no changes in land use near the rivers will be required as a consequence of the Proposed Action.

Air Quality

Section 176 (C) of the Clean Air Act (CAA; 42 U.S.C. 7506 [C]) requires any entity of the Federal Government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal CAA (42 U.S.C. 7401 [a]) before the action is otherwise approved.

There would be no impacts to air quality under the No Action Alternative as conditions would remain the same as existing conditions. Under the Proposed Action, no impacts to air quality would be expected. To the extent there may be such impacts, those would be speculative and need not be analyzed.

As there would be no impact to the resources listed above resulting from the Proposed Action or the No Action Alternative, they will not be considered further.

Resources Requiring Further Analysis

This EA will analyze the affected environment of the Proposed Action and No Action Alternative in order to determine the potential direct, indirect, and cumulative effects to the following resources:

- Water Resources
- Biological Resources
- Indian Trusts Assets
- Environmental Justice
- Socioeconomic Resources

Section 2 Alternatives Including the Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

No Action Alternative

Under the No Action Alternative, late-summer releases from Lewiston Dam would remain at 450 cubic feet per second (cfs), as prescribed in the Record of Decision for the TRMFR EIS/EIR (U.S. Fish and Wildlife Service [Service] et al. 2000). Flow releases at Iron Gate Dam on the Klamath River would be consistent with the 2013 National Marine Fisheries Service (NMFS) and Service's biological opinion addressing operation of Reclamation's Klamath Project, about 900 cfs in August and about 1,000 cfs in September. In addition, Reclamation is expected to provide a short-term increase in Lewiston Dam releases to provide for the Hoopa Valley Tribe's Boat Dance Ceremony (Ceremony) as is customary in odd numbered years. In 2013, the Ceremony will occur on August 27th, necessitating the peak flow of 2,650 cfs from Lewiston to occur one day prior to the event to account for travel time from the dam to the ceremonial site. Flow adjustments (also called ramping rates) from the base flow of 450 cfs to the peak and down from the peak to 450 cfs will follow contemporary approved rates of change to minimize public and environmental concerns. In total, the implementation of the ceremonial flow, above the base flow of 450 cfs, will result in a 5-day span of increased flow accounting for approximately 11,000 AF.

Under the No Action Alternative the estimated flows in the lower Klamath River (U.S. Geological Survey Site #11530500; Klamath near Klamath gage [KNK]), and scheduled releases from Lewiston Dam are shown in Figure 1. Forecasted flows at the KNK gage would average about 2,060 cfs in the second half of August and about 2,080 cfs in September under the No Action Alternative (not including the Ceremony pulse flow from Lewiston Dam).

Diversion of water from the Trinity River Basin to the Sacramento River Basin would continue as scheduled; currently transferring 157 TAF in August 2013 is planned and 92 TAF in September.

Proposed Action

Reclamation would operate Trinity and Lewiston Reservoirs to target a minimum flow of 2,800 cfs in the lower Klamath River (USGS Station KNK) between August 15 and September 21, 2013, hereafter referred to as the Action Period. Flow augmentation would use up to 62,000 AF of water stored in Trinity Reservoir. However, augmentation of flow would be subject to the following environmental and biological conditions, which are to be informed by active monitoring programs that can alter the timing and duration of flow augmentation. Details of the conditions follow:

- 1) Flow augmentation to meet the 2,800 cfs target at KNK would commence August 15th but would not interfere with timing or magnitude of the

scheduled Hoopa Valley Tribe's Ceremony flows scheduled to occur in late August (See Figure 1).

- 2) Flow augmentation to meet the 2,800 cfs target at KNK would continue through September 21, and possibly through September 30 if average daily water temperatures are projected to be above 23 C at KNK, or the presence of observed fish behavior of concern (see Strange 2010). Daily evaluations would be made to determine whether augmentation flows would continue and for how long between September 21 and 30.
- 3) Monitoring would also be used to gain knowledge regarding the ecological consequences of the actions while also informing management whether additional actions may be required to thwart a fish die-off in 2013. For example, the Yurok Tribe will sample adult Chinook salmon and thoroughly examine them for signs of Ich infection. In the very unlikely and emergency situation that a threshold number of examined adults are infected with Ich, as confirmed by the Service's California-Nevada Fish Health Center, an immediate emergency flow release from Lewiston Reservoir would be initiated to further disrupt the life cycle of the pathogen in an attempt to prevent a catastrophic disease outbreak. Specifically, Lewiston Reservoir would be operated to double the current flow on the lower Klamath River at the KNK gage for a 7-day period (up to a maximum flow of 5,600 cfs). Up to approximately 39 TAF would be needed to implement the emergency response. This is designed to increase the water turnover rate in areas where adult fish are holding, more effectively flush the infectious life form of Ich downstream into the estuary where they cannot survive, and make it more difficult for additional fish to be infected.
- 4) Ramping rates from Lewiston Dam would follow contemporary approved rates of change to minimize public and other environmental concerns.

Given the current tributary accretion forecast, up to 62 TAF of supplemental water would be needed to implement the Proposed Action (not including the Ceremony pulse flow volume and assuming water temperatures remain below 23 C). The actual volume of water needed to implement the Proposed Action would depend on actual Klamath Basin accretions during that time period. The resulting hydrograph at the KNK gage is presented in Figure 1.

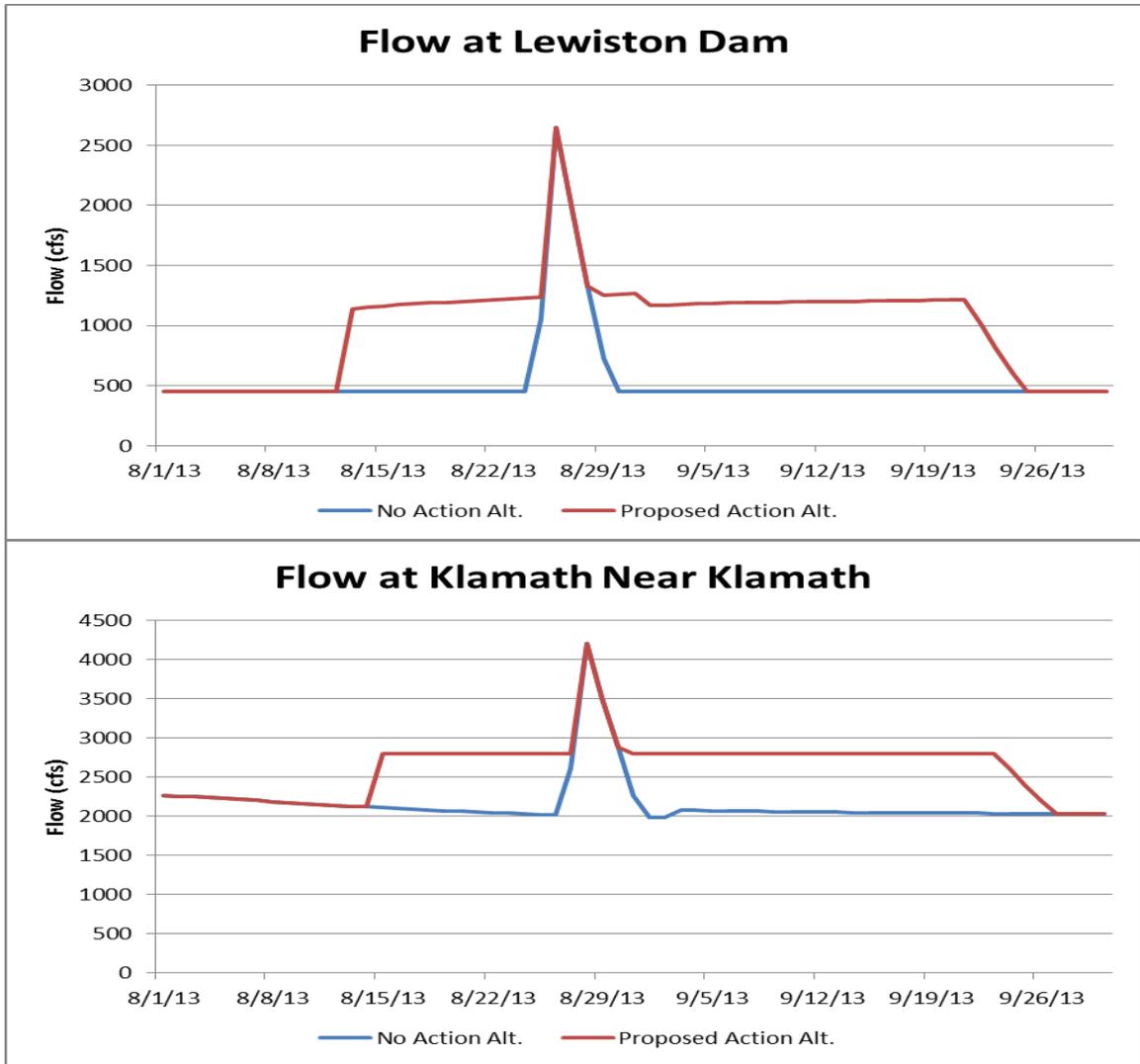


Figure 1. Approximate hydrograph for Lewiston Dam releases to result in the No Action Alternative and Proposed Action preventative flow targets in the lower Klamath River (U.S. Geological Survey Site #11530500: Klamath River near Klamath, California) during the 2013 fall-run Chinook salmon migration period.

Alternatives Considered But Eliminated From Further Consideration

The Trinity River Restoration Program (TRRP) Flow Work Group, Fall Flow Subgroup, detailed in their 2012 recommendations the primary reason that supplemental flows would decrease the likelihood of an epizootic event in the lower Klamath River during the late summer. In summary, the expectation is that increased water volumes and velocities in the lower river would dilute the infective stages of Ich and reduce the overall density of adult fall-run Chinook salmon. Accordingly, the Subgroup did not recommend a specific source for the

supplemental water (i.e., storage in the upper Klamath River Basin vs. the upper Trinity River). Reclamation considered the potential alternative sources of supplemental water for the lower Klamath River in the late summer.

The 2013 water supply conditions in the upper Klamath Basin and in the Trinity River Basin have deteriorated throughout the year. After planning for the Klamath River flows below Iron Gate Dam, and Upper Klamath Lake elevation management, consistent with the NMFS and Service's biological opinion addressing operation of Reclamation's Klamath Project, and providing for limited irrigation water delivery, Reclamation determined that in practical terms, supplemental water for late summer lower Klamath River flows is not available from the upper Klamath River.

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences associated with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

Water Resources

Reclamation stores water for several purposes in Trinity and Shasta Reservoirs. These facilities and other Central Valley Project (CVP) facilities are operated in a coordinated fashion to satisfy a number of geographically diverse flood control and environmental requirements, as well as provide water to satisfy water delivery and water rights responsibilities and to generate hydroelectric power.

Affected Environment

TRD

Trinity Reservoir is the primary water storage facility in the TRD of the CVP (Figure 2). At capacity, it stores 2.448 million acre-feet (MAF), and receives an average annual inflow volume of about 1.2 MAF. Water released from Trinity Reservoir flows to Lewiston Reservoir, a reregulating reservoir, formed by Lewiston Dam. From Lewiston Reservoir, water can be diverted for use in the Sacramento River Basin via the Clear Creek Tunnel, or pass through Lewiston Dam to flow 112 miles to the Klamath River, which then flows approximately 43 miles before entering the Pacific Ocean. The Trinity River Hatchery, located at the base of Lewiston Dam, also diverts a small quantity of water in support of fish hatchery operations.

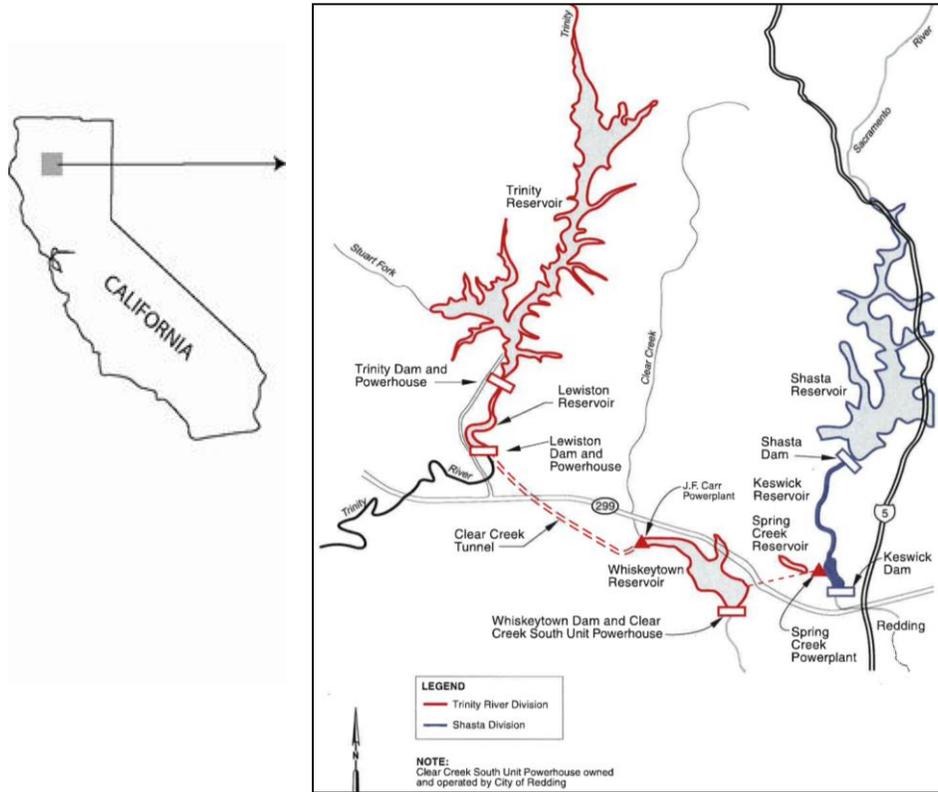


Figure 2. TRD of the Central Valley Project.

Water flowing through the 10.7-mile Clear Creek Tunnel enters the Judge Francis Carr Powerhouse and into Whiskeytown Reservoir, which also serves as a reregulating reservoir. Water stored in this reservoir is released through Whiskeytown Dam where it serves to meet environmental requirements in Clear Creek, to generate hydropower by Redding Electric Utility, and provide water for downstream irrigation, municipal and industrial (M&I) needs. Alternatively, water from Whiskeytown Reservoir can also be diverted through Spring Creek Tunnel to Spring Creek Powerplant to Spring Creek and then into Keswick Reservoir. In Keswick Reservoir, Trinity River water is combined with Shasta Reservoir water and discharged through the Keswick Powerplant to the Sacramento River (Figure 2).

Coldwater Resources

Trinity Reservoir storage is important for providing the cold water needs of the Trinity River, and Clear Creek and Sacramento River in the Sacramento River Basin. These needs include meeting certain temperature requirements in both systems, which rely to a certain degree on transbasin diversions to continually reduce the residence time for warming of both Lewiston and Whiskeytown Reservoirs to assure suitably cold water remain available for release to each of these waterways. The TRMFR EIS/EIR conducted assessments of the impact of projected temporal use of Trinity Reservoir storage by both basins with a condition of end of September carryover storage at 600 TAF. The study

concluded that water temperature objectives could be met a high percentage of the time, but only by withdrawing water from Trinity Reservoir through the auxiliary outlet (~100' lower than the Trinity Powerplant intake), which bypasses the powerplant.

The TRMFR EIS also reviewed historic accounts when the auxiliary outlet works was used to meet cold water resource needs (TRFMR EIS, Appendix A, page 427). In this review, the auxiliary outlet was used in 1991, 1992, and 1994 when storage was at 852 TAF, 1,008 TAF, and 1,200 TAF, respectively. In 2009, the need to use the auxiliary outlet occurred in the early fall. During this time, Trinity Reservoir storage was approximately 925 TAF.

In 2013, the September through November forecast storage volumes are 1,362, 1,243, and 1,221 TAF (Appendix A). Historically, temperatures concerns are ameliorated by November as ambient conditions typically result in mixing of the reservoir.

Hydropower Generation

The TRD has the capacity to generate substantial hydroelectric power per acre foot of water diverted because the water surface elevation difference between Trinity Reservoir and Keswick Reservoir is captured almost entirely as power head in closed conduits. In addition to generating power at Trinity and Lewiston Dams in the Trinity Basin, hydropower is also generated at Judge Francis Carr and Spring Creek Powerplants, then at Keswick Powerplant (part of the Sacramento River Division. In total, operations of the TRD alone can account for as much as 30 percent of the total power generation capability of the CVP (TRMFR EIS).

Power generation at Trinity Dam is dependent upon storage as well as downstream needs for cold water (see above section). When the storage gets low enough to entrain water of an unsuitable temperature into the powerplant, Reclamation must switch to use of the auxiliary outlet.

Trinity River and Lower Klamath River

In addition to generating hydropower at Trinity and Lewiston Reservoirs, Trinity Reservoir water is important for meeting a variety of other needs in the Trinity and Klamath Rivers. In the Trinity River, water is used year-round as prescribed by the TRMFR EIS/EIR Record of Decision, as part of the mandates of the TRRP. Releases from the deep portions of the reservoir assure release of suitably cold water throughout the year in support of TRRP goals. Other in-basin uses include supplementing Lewiston Dam releases in the late summer in odd years to support the ceremonial needs of the Hoopa Valley Tribe, which typically requires up to 11,000 AF to achieve the necessary flow levels in the lower Trinity River in support of the event. Another more contemporary in-basin need of this water includes occasionally augmenting flows in the lower Klamath River in certain years (i.e. 2003, 2004, and 2012) where risk of a potential die-off of adult salmon could occur during late summer. Supplemental flows used during these years

were proactive scheduled quantities that ranged up to 39,000 AF. The Trinity River Division is also operated to achieve the temperature objectives included in the North Coast Regional Water Quality Control Board, January 2007, Water Quality Control Plan for the North Coast Region.

Sacramento River Basin

In addition to generating hydropower at several powerplants, Trinity Reservoir water released from Keswick Dam is used to support environmental, irrigation, and M&I needs of the Sacramento River Valley, extending through the Sacramento – San Joaquin Delta. Relative to environmental conditions, the cold water that is diverted via the Clear Creek Tunnel is important for meeting the water temperature requirements in Clear Creek, assisting in meeting the water temperature requirements in the mainstem Sacramento River below Keswick Dam, and managing the cold water pool behind Shasta Dam. The period of greatest temperature reduction need in the Sacramento River Basin occurs during the warmer months when irrigation and M&I demands are highest and water temperature concerns of the mainstem Sacramento River exist for several fish species listed under the ESA.

In 2013, the Shasta Reservoir September through November forecast storage volumes are 1,718, 1,681, and 1,639 TAF. Historically, temperatures concerns are ameliorated by November as ambient conditions typically result in mixing of the reservoir.

Environmental Consequences

No Action

Under the No Action Alternative, the flow released from Lewiston Dam into the Trinity River in August and September 2013 would be maintained at 450 cfs, consistent with the flows described in the TRMFR EIS/EIR, in addition to a short term pulse flow (2,650 cfs) from Lewiston Dam to support a 1-day ceremonial need of the Hoopa Valley Tribe (see Figure 1). These flows are consistent with the existing condition; therefore, there would be no new effects to cold water resources, hydropower generation, or water resources for use in the Klamath River or Sacramento River Basins.

Proposed Action

Using the June 28, 2013, tributary accretion forecast (90% exceedance), and assuming Iron Gate Dam releases of 900 cfs and 1,000 cfs in August and September, respectively, the forecasted KNK flows would be below 2,800 cfs before August 15 and supplemental releases would be needed from Lewiston Reservoir to achieve the target flow of 2,800 cfs at KNK as previously described.

Under the Proposed Action, the cold water of Trinity Reservoir would be reduced by up to 62 TAF in 2013, but would not result in significant affects to the cold

water resource needs for the immediate year. This is because the end of water year 2013 storage volume in Trinity Reservoir is projected to be 1.362 MAF, which is well above the storage threshold of approximately 1 MAF where the temperature of water released through the penstocks may be a concern for downstream use. A loss of about 62 TAF from the cold water pool could result in an increase in water temperatures at Lewiston Dam of a few tenths of a degree Fahrenheit when the flow augmentation releases are completed.

In 2014, the reduction in storage of up to 62 TAF due to implementation of augmentation flows may influence the cold water resource, but is dependent upon whether the reservoir would fill. In the event the reservoir spills, or substantial safety-of-dams releases occur, there could be no effect. Otherwise, there could be a relatively minor reduction in available cold water resources that may be accountable to this action.

Implementation of the Proposed Action will not adversely affect power generation in 2013, with the exception of a small loss of potential power generation at Trinity Dam due to reduced head. The expected schedule for water delivery to the Clear Creek Tunnel has already been developed, and the Proposed Action would not affect these exports.

If Trinity Reservoir does not fill in water year 2014, some portion of the water that is released through Lewiston Dam to implement the Proposed Action in 2013 may not be available for later release through the Clear Creek Tunnel, Carr Powerplant, the Spring Creek Tunnel and Powerplant and the powerplant at Keswick Dam in 2014. In turn, this may result in decreased power generation. However, this would be complex to determine and quantify, depending on the particular refill patterns at Trinity Reservoir, whether safety-of-dams releases occur at Trinity Dam in 2014, Shasta Reservoir operations, etc. In very general terms, if 62 TAF were released to the Trinity River to implement the preventative flows under the Proposed Action, future foregone generation could be a maximum of about 75,330 megawatt hours. However, power generation opportunities are subject to many restrictions and uncertainties unrelated to the Proposed Action.

In 2013, recreational activities in Trinity Reservoir are not likely to change to any great extent due to the Proposed Action. In the current year, boat ramp access to the lake is expected to remain the same as the No Action Alternative. In contrast, there is a small chance that some boat ramps might not be useable due to a reduced water elevation in the lake during the latter part of summer 2014. As previously mentioned, however, the complexities and uncertainties of accurately predicting water surface elevations that far in the future are tied to variable and unpredictable precipitation patterns and therefore preclude Reclamation from providing meaningful estimates.

The significant recreational activities in the Trinity River that may be influenced by the Proposed Action include pleasure rafting and fishing (boating), and

recreational fishing. Flows of about 1,200 cfs from Lewiston Dam needed to augment the lower Klamath River flow to 2,800 cfs would be expected to continue to provide bank and boat-based fishing as well as boating opportunities along the entire river. In addition, the greater quantity of water in the lower river would afford greater power boat access to a larger section of the Klamath River thereby expanding fishing opportunities for many.

Providing up to 62 TAF of supplemental water in the lower Klamath River as a preventative measure in the late summer in 2013 would not affect water supply allocations managed as part of the CVP in 2013, or water operations within the Central Valley. Water allocations for irrigation and M&I deliveries have already been determined for 2013, and the supplemental water would not affect the projected volume of water to be exported to the Sacramento River Basin in 2013. The extent that the release of up to 62 TAF affects the 2014 water supply and water allocations will depend on the water year 2014 hydrology and operational objectives. Water allocations are not likely to be affected by implementation of the proposed action.

Without implementation of the Proposed Action, Trinity Reservoir storage is forecasted to be approximately 1.362 MAF (90 percent exceedance value) at the beginning of water year 2014, which is lower than the historical average of about 1.66 MAF. Given the planned operation of Trinity Reservoir, Carr Powerplant, and Lewiston Reservoir, storage in Trinity Reservoir is forecasted to be 1.987 MAF at the end of April 2014 (50 percent exceedance). The approximately 62 TAF for preventative use in supplementing the lower Klamath River flows in late summer is about 4.5 percent of the forecasted volume present in Trinity Reservoir at the beginning of water year 2014 and about 3 percent of the 50 percent exceedance forecasted volume by the end of April 2014. Forecasting filling of Trinity Reservoir in April is complicated by the possibility of safety-of-dam releases that can occur from November through March as a result of above normal precipitation patterns that could occur. Safety-of-dam releases occurred in December 2012 and continued into early 2013.

If Trinity Reservoir fills during 2014, there would be no effects to water resources available for all potential purposes. In contrast, if Trinity Reservoir does not fill in 2014, some water volume, up to the amount released for supplemental Klamath River flows, may not be available for other potential purposes.

Cumulative Impacts

There are no anticipated substantial cumulative impacts on Trinity Basin water resources related to the Proposed Action. Although there are a number of relatively small scale water diversions downstream of Lewiston Dam, no additional impacts are expected to occur compared with recent past years.

The TRD of the CVP is operated in coordination with all the other CVP and State Water Project facilities. Due to varying future water supply conditions within this

large geographic area, it is not possible to meaningfully evaluate how a potential slightly lower Trinity Reservoir storage in 2014 may exacerbate system-wide supply conditions in the future.

Biological Resources

Affected Environment

Trinity River and Lower Klamath River

Several anadromous fish species use the lower Klamath River and the Trinity River to complete their lifecycles. The life stages of species of interest for this EA include both Federally-listed coho salmon (*Oncorhynchus kisutch*) as well as some non-listed fish, including the North American green sturgeon (*Acipenser medirostris*), spring- and fall-run Chinook salmon (*O. tshawytscha*), which have tribal, recreational and commercial value. One or more life stages of each of these species are present in the area of influence of the Proposed Action. The Pacific eulachon, while listed as threatened under the ESA, is not evaluated further because no life stages of this species would be present in freshwater during the period of effect from the Proposed Action. Greater detail on life history timing of considered species follows.

Coho Salmon

Coho salmon populations in the Klamath River Basin are severely reduced from historical levels and are listed as Federally threatened, part of the Southern Oregon/Northern California Coasts Evolutionarily Significant Unit. Life history timing for coho salmon in the Klamath River are provided in Table 1.

Table 1. Life-history timing of coho salmon in the Klamath River Basin downstream of Iron Gate Dam. Peak activity is indicated in black. (Table, and associated references, are from Stillwater Sciences, 2009)

Life stage (citations)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Incubation												
Emergence ^{1,2,3}												
Rearing ⁴												
Juvenile redistribution ⁵												
Juvenile outmigration ^{6,7,8,9,10}												
Adult migration ⁹												
Spawning ^{9,11}												

¹CDFG (2000, unpubl. data, as cited in NRC 2004); ²CDFG (2001, unpubl. data, as cited in NRC 2004); ³CDFG (2002, unpubl. data, as cited in NRC 2004); ⁴Sandercock (1991); ⁵T. Soto, Fisheries Biologist, Yurok Tribe, pers. comm., August 2008; ⁶Scheiff et al. (2001); ⁷Chesney and Yokel (2003); ⁸T. Shaw (USFWS, unpubl. data, 2002, as cited in NRC (2004)); ⁹NRC (2004); ¹⁰Wallace (2004); ¹¹Maurer (2002)

Green Sturgeon

Green sturgeon in the Klamath River Basin are included in the Pacific-Northern Distinct Population Segment (DPS), which also includes coastal spawning populations from the Eel River north to the Klamath and Rogue rivers. While not listed formally under the ESA as threatened or endangered, they are presently designated as a Species of Concern (NMFS 2006). Life-history timing for the various life stages in freshwater are provided in Table 2.

Table 2. Life-history timing of green sturgeon in the Klamath River Basin downstream of Iron Gate Dam. Peak activity is indicated in black (Table, and associated references, are from Stillwater Sciences, 2009)

Life stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Incubation/emergence ¹												
Rearing ^{1,2,3}												
Juvenile outmigration ^{4,5,6,7,8}												
Adult migration ^{1,2,9,10,11,12,13}												
Spawning ^{2,3,4,13}												
Post-spawning adult holding ¹³												

¹CALFED ERP (2007), ²NRC (2004), ³FERC (2006), ⁴Emmett et al. (1991, as cited in CALFED ERP 2007), ⁵CH2M Hill (1985), ⁶Hardy and Addley (2001), ⁷Scheiff et al. (2001), ⁸Belchik (2005, as cited in CALFED ERP 2007), ⁹KRBFTF (1991), ¹⁰Moyle (2002), ¹¹PacifiCorp (2004), ¹²Van Eenennaam et al. (2006), ¹³Benson et al. (2007)

Chinook Salmon

Chinook salmon of the Klamath River Basin are comprised of two runs or races, the spring-run that immigrates during the spring and early summer, and the fall-run that immigrates in the late summer and early fall. Adults of each race use similar habitat areas in the basin, largely separated by timing of use. Adult fall-run immigration into the Klamath River estuary and lower Klamath River can be subjected to environmental stressors that can result in premature mortality, as was documented in 2002. Greater details on life-history timing of the spring- and fall-run are provided in Tables 3 and 4.

Table 3. Life-history timing of spring-run Chinook salmon in the Klamath River Basin downstream of Iron Gate Dam. Peak activity is indicated in black. (Table, and associated references, are from Stillwater Sciences, 2009)

Life stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Type I</i>												
Incubation ¹												
Emergence ^{1,2}												
Rearing												
Juvenile outmigration ¹												
Adult migration in mainstem ^{1,3,11}												
Adult entrance into tributaries ^{1,11}												
Spawning ^{7,8}												
<i>Type II</i>												
Rearing												
Juvenile outmigration ^{1,9,10,11}												
<i>Type III</i>												
Rearing												
Juvenile outmigration ^{1,10,11}												

¹ Olson (1996); ² West 1991; ³ Tuss et al. (1990, as cited in Olson 1996); ⁴ NAS (2004, as cited in FERC 2006); ⁵ Barnhart (1994); ⁶ NRC (2004); ⁷ Dean (1995a); ⁸ Sartori 2006a; ⁹ Sullivan (1989); ¹⁰ Dean (1994); ¹¹ Dean (1995)

Table 4. Life-history timing of fall-run Chinook salmon in the Klamath River Basin downstream of Iron Gate Dam. Peak activity is indicated in black. (Table, and associated references, are from Stillwater Sciences, 2009)

Life stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Type I</i>												
Incubation												
Emergence ¹												
Rearing												
Juvenile outmigration ^{2,3,4,5}												
Adult migration ^{6,7,8}												
Spawning ^{9,10,11,12}												
<i>Type II</i>												
Rearing												
Juvenile outmigration ^{2,13}												
<i>Type III</i>												
Rearing												
Juvenile outmigration ^{2,13}												

¹ USGS (1998, as cited in NRC 2004); ² Scheiff et al. (2001); ³ Chesney 2000; ⁴ Chesney and Yokel 2003; ⁵ Voight and Gale 1998; ⁶ NAS (2004, as cited in FERC 2006); ⁷ USGS (1998, as cited in NRC 2004); ⁸ Strange (2007); ⁹ Shaw et al. (1997); ¹⁰ Magnuson (2006); ¹¹ Lau (CDFG, pers. comm., 1996, as cited in Shaw et al. 1997); ¹² Hampton (2002); ¹³ Wallace 2004

Other Wildlife

Several species of amphibians, reptiles, and birds utilize the riparian corridor of the Trinity River as well as the lower Klamath River system.

Central Valley

Several anadromous fish species of special concern use the waterways in which Trinity River water is used in the Sacramento River Valley. Species of potential concern include the following Federally-listed species: Central Valley steelhead

(*O. mykiss*), spring- and winter-run Chinook salmon, and the Southern DPS population of North American green sturgeon (*Acipenser medirostris*).

Environmental Consequences

No Action Alternative

Trinity River and Lower Klamath River

Flows in the lower Klamath River during the late summer would be reflective of flows from Iron Gate Dam releases consistent with the 2013 NMFS and Service's biological opinion on operation of Reclamation's Klamath Project, releases from Lewiston Dam, and accretions of flow from tributaries between the dams to the lower Klamath River. Under the No Action Alternative, Lewiston Dam flows would remain the same as prescribed in the TRMFR EIS/EIR, in addition to a 1-day peak release of 2,650 cfs to accommodate the Hoopa Valley Tribe's Ceremony in late August (see Figure 1).

The TRMFR flow prescription of 450 cfs during August and September would result in no effect to the biota of the river system as it would be similar to the existing condition. In contrast, the Ceremonial flow, which Reclamation also considers an existing condition, would increase flow and reduce water temperatures of the lower Klamath River during a typical time of high abundance of holding fall-run salmon in the lower Klamath River. Resultant water temperatures of the lower Trinity River would be expected to be reduced by as much as 4 C, as what occurred during the Ceremony in late August 2009 (Scheiff and Zedonis 2009). Corresponding water temperature reductions of the Klamath River immediately below the confluence would likely be 2 C with a notable, but reduced influence, extending to the estuary (Scheiff and Zedonis 2009). Additionally, the associated ramping rates for flow changes in support of the Ceremonial flows at Lewiston Dam would remain consistent with historical patterns determined to be safe for the biota of the Trinity River or the lower Klamath River. Impacts to many of the species along the river would not be expected to be adversely affected by the Ceremony flow because most, if not all, of these species are likely advanced in development beyond the early life stages that could be more vulnerable to a change in flow/river stage during this time of the year. For example, there would no longer be yellow-legged frog egg masses on the river margins nor ground nesting birds. A potential beneficial influence of the Ceremony flow is that it may provide a stimulus for adult green sturgeon holding in the lower Trinity River and Klamath River below the confluence of the Trinity River to emigrate to the Pacific Ocean allowing improved survival.

Because the projected minimum flow of the lower Klamath River is substantially lower than what has been observed in the recent past, and the relatively large run-size projection for fall Chinook salmon, there is an increased risk for a fish die-off in the lower Klamath River in 2013, relative to the Proposed Action. While the temporary increase in flow attributable to the Ceremony flow could provide temporary relief for stressful environmental conditions in the lower Klamath

River, the duration of influence of the pulse would likely only last between 5 and 7 days, which would not be long enough to cover the entire time period of concern (or mid-August to mid-September). A fish die-off of the magnitude experienced in 2002 has obvious effects to the returning fish run, but also can affect the age class structure of salmon populations for a number of years. Also, the consequences of a fish die-off would include potentially preventing the TRRP from meeting natural fall-run Chinook salmon escapement goals.

Sacramento River Basin

The quantity and quality (i.e. water temperature) of flow would also remain suitable for transbasin diversions to Whiskeytown Reservoir, representing the source water for Clear Creek and Spring Creek diversions to Keswick Reservoir. As a consequence there would be no effect to the biota of the Sacramento River Basin. The water temperature compliance point in the mainstem Sacramento would be retained at the existing compliance point (currently Airport Road Bridge).

Proposed Action

Trinity River and Lower Klamath River

Under the Proposed Action, the susceptibility of returning adult fall Chinook salmon to diseases that led to the 2002 fish die-off would decrease in the lower Klamath River during the late summer in 2013. Modeling results suggest that during implementation of the proposed action, Lewiston Reservoir water temperatures would be about 0.5°F cooler than under a no action scenario. Additionally, it is well documented that the Trinity River and lower Klamath River would see a reduction in water temperatures. In turn, Chinook salmon may experience less physiological stress and vulnerability to disease. In 2003, 2004, and 2012, supplemental flows were implemented, and general observations were that the sustained higher releases from mid-August to mid-September in each year coincided with no significant disease or adult mortalities. However, given the inherent uncertainties regarding events of this nature, combined with the predicted large fish run size, it is not possible to predict with absolute certainty that the Proposed Action will preclude a fish die-off in 2013, nor is it possible to accurately quantify the reduced disease risk attributed to the increased flows. There may also be an increase in water temperatures in the Trinity River just subsequent to the Proposed Action. This could be as high as 0.5°F at Lewiston Dam. The timing of an increase in release temperature could coincide with a period when river temperatures are typically near the Basin Plan Objectives at Douglas City and the confluence of the North Fork Trinity River.

Sacramento River Basin

Implementation of the Proposed Action would not affect the quantity and quality (i.e. water temperature) of flow and would also remain suitable for transbasin diversions to Whiskeytown Reservoir in 2013. Modeling results suggest that during the augmentation releases at Lewiston Dam and into October, water

temperatures of releases from Whiskeytown Dam into Clear Creek would be reduced by about 0.4°F. Starting about mid-October, Whiskeytown Dam releases may potentially increase up to 0.25°F. A similar response is indicated for the Spring Creek Powerplant release. In turn, potential negative temperature impacts in the Sacramento River Basin are expected to occur after September, during the seasonal transition into expected cooler fall ambient conditions. The temperature impact in the Sacramento River at Airport Road is expected to be less than 0.1°F.

As a consequence, the influence of the Proposed Action would be similar to the No Action Alternative and there would be no substantial effects to the biota of the Sacramento River Basin in 2013.

Trinity and Shasta Reservoirs are operated in a coordinated fashion. Depending on the details of future operations and the fill pattern at both reservoirs, the Proposed Action may reduce the available cold water resources used to meet temperature objectives in the Sacramento River in 2014. Changes to the ability to achieve temperature objectives would be expected to be minor, as would the associated affects to ESA-listed salmon and steelhead.

Cumulative Impacts

No additional cumulative impacts to biological resources beyond those described in the TRMFR EIS/EIR are anticipated.

Global Climate

Climate change refers to significant change in measures of climate (e.g. temperature, precipitation, or wind) lasting for decades or longer and is considered a cumulative impact. Many environmental changes can contribute to climate change (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) (EPA 2010). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as CO₂, occur natural and are emitted to the atmosphere through natural processes and human activities. Between 1990 and 2009, CO₂ was the primary GHG (approximately 85 percent) produced in the U.S. due to the combustion of fossil fuels such as coal, natural gas, oil and gasoline to power cars, factories, utilities and appliances. The added gases, primarily CO₂ and CH₄, are enhancing the natural greenhouse effect and likely contributing to an increase in global average temperature and related climate change.

In 2006, the state of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill 32, which requires California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is further directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. In addition, the EPA has issued regulatory actions under the Federal Clean Air Act as well as other statutory authorities to address climate change issues.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, hydropower generation would occur as normal at the TRD. The amount and timing would vary according to available opportunities and other water release and delivery commitments. CVP power customers would not have to change their power purchase patterns and sources more so than the status quo conditions. Additional hydrocarbon-generated electricity would not have to be purchased in lieu of sustainable sourced power more so than the status quo conditions. Therefore, there would be no additional affects to GHG emissions.

Proposed Action

While no GHG emissions would be generated by as a direct result of implementation of the Proposed Action, there may be some broader scale or theoretical effects to GHG emission levels associated with the Proposed Action.

If 62 TAF of water is released from Trinity and Lewiston Reservoirs to augment flows in the lower Klamath River, some of that volume of water may have been exported from the Trinity River at some unknown time in the future, depending on fill patterns for Trinity Reservoir and other operational decisions. In that case, hydroelectric power would have been generated at the J.F. Carr Powerplant, the Spring Creek Powerplant, and likely the Keswick Powerplant. The power generated by this volume of water would have been available for purchase by the CVP “preference” power customers as available. CVP preference power customers share the CVP energy production that is in excess of Reclamation’s water pumping needs. At any given time, CVP power customers may have to purchase power when available CVP power is not sufficient for their demands. This non-CVP power may be hydrocarbon generated. Assuming 62 TAF of water is used for flow augmentation, a maximum of 75,330 megawatt hours of power generation may be foregone at some time in the future. Assuming that power customers would have to replace all of that power with hydrocarbon generated power, an estimated additional 53,149 metric tons of CO₂ equivalent would be emitted. The magnitude and timing of the potential additional CO₂ equivalent is unknown, as are the associated effects on Global Climate. For example, it is unlikely that more than 25,000 metric tons of CO₂ equivalent would be emitted on an annual basis so it is unlikely to have a significant effect on global climate.

Indian Trust Assets

Indian trust assets (ITA) are legal interests in assets that are held in trust by the United States Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. Trust assets may include lands,

minerals, and natural resources, as well as hunting, fishing, and water rights. In some cases, ITA may be located off trust land.

Affected Environment

Indian trust assets were described and considered in the TRMFR EIS/EIR and the associated Record of Decision. Specifically relevant to the No Action Alternative and the Proposed Action considered in this EA are the tribal trust fisheries in the Klamath and Trinity Rivers.

Environmental Consequences

No Action

Under the No Action Alternative, any affects to ITA have been previously described in the TRMFR EIS/EIR. As previously mentioned, the inherent uncertainties of events of this nature make it difficult to accurately quantify the risk of an epizootic outbreak to the large run of returning fall Chinook salmon associated with implementation of the No Action Alternative. However, if a large scale fish die-off similar to 2002 were to occur in late summer 2013, regardless of apparent causes, it would be devastating for the tribal trust fisheries in the Klamath and Trinity Rivers.

Proposed Action

Under the Proposed Action, it is expected that the risk of disease vulnerability to the large returning run of fall Chinook salmon to the lower Klamath River in the late summer would be decreased, relative to the No Action Alternative. In turn, the risk to the tribal trust fishery would be expected to decrease. In 2003, 2004 and 2012, supplemental flows were implemented, and general observations were that the sustained higher releases from mid-August to mid-September in each year coincided with no significant disease or adult mortalities. However, as previously mentioned, the expected decrease in risk associated with the Proposed Action cannot be accurately quantified.

Cumulative Impacts

Cumulative effects to ITA from future activities are somewhat speculative. Activities of Executive Branch federal agencies that may affect ITA are carefully scrutinized regarding their affects to these assets. State and local activities that are undertaken on non-Federal land are subject to associated limitations, and the resulting affects to ITA would be speculative.

Environmental Justice

Executive Order 12898 (February 11, 1994) mandates Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and lower-income populations.

Affected Environment

The Trinity and Klamath Rivers flow through rural areas, including Trinity County. In general, Trinity County is a lower-income population and recreational fishing is an important source of revenue. Additionally, these rivers both run through the Hoopa Valley Tribe and Yurok Tribe Reservations. Generally speaking, the Reservations' populations are lower-income and traditionally rely on salmon and steelhead as an important part of their subsistence.

Environmental Consequences

No Action

As previously mentioned, it is not currently possible to accurately quantify the risk of disease susceptibility to returning fall Chinook salmon in the lower Klamath River in the late summer under implementation of the No Action Alternative. However, if a large-scale fish die-off were to occur, as in 2002, it would be devastating to the Tribes and local communities.

Proposed Action

Under the Proposed Action, it is likely that the large run of fall Chinook salmon returning to the lower Klamath River in the late summer would be less susceptible to a disease outbreak similar to that which ultimately caused the 2002 fish die-off. In turn, the risk to the tribal, commercial and recreational fisheries, and the associated environmental justice would be reduced. However, as previously mentioned, this expected decrease in risk cannot be accurately quantified at this time.

Cumulative Impacts

Cumulative effects of future activities on minority and low income populations are speculative. Federal agency actions are subject to scrutiny regarding their affects to these populations. However, state and local activities on non-Federal lands are not necessarily subject to the same analyses. Therefore, it is speculative to determine the effects of future, non-Federal activities on minority and low income populations.

Socioeconomic Resources

Affected Environment

The most potentially affected socioeconomic resources that may be affected by the No Action or Proposed Action are the commercial, recreational, and tribal salmon and steelhead fisheries on Klamath Basin stocks and the associated economic activities. Also, water from Trinity Reservoir is exported to the Central Valley for consumptive use, and hydroelectric power is generated.

Environmental Consequences

No Action

Under the No Action Alternative, socioeconomic resources may be similar to those that were described in the TRMFR EIS/EIR. If a fish die-off does occur in the lower Klamath River in the late summer, tribal fisheries would likely be devastated and any fishery-related socioeconomic resources would be affected also. However, as previously mentioned, it is not possible to currently quantify the risk of fish disease susceptibility associated with the No Action Alternative.

Proposed Action

Under the Proposed Action, there would be a reduced risk of disease susceptibility to the large run of fall Chinook salmon returning to the Klamath River in the late summer. In turn, there may be less potential for adverse effects to fisheries-related socioeconomic resources. As previously mentioned, it is not currently possible to accurately quantify the expected decrease in disease susceptibility for fall Chinook salmon returning to the lower Klamath River in the late summer associated with the Proposed Action.

Depending in part on whether Trinity Reservoir completely fills in water year 2014 after the Proposed Action would be implemented; there is a possibility that some of the water volume from Trinity Reservoir used to implement the Proposed Action may not be available for other uses in the future. It would be speculative to estimate the amount of water that may be unavailable in the future. However, the amount of water needed for the preventative flows in the lower Klamath River is a small proportion of the total CVP water deliveries. Since the CVP facilities are operated in a coordinated fashion, and annual water allocations to contractors are determined by supply conditions throughout the system, it is unlikely that any allocations to individual contractors would be reduced in the future due to implementation of the Proposed Action.

Implementation of the Proposed Action will not adversely affect power generation in 2013, with the exception of a small loss of potential power generation at Trinity Dam. The expected schedule for water delivery to the Clear Creek Tunnel has already been developed, and the Proposed Action would not affect these exports.

If Trinity Reservoir does not fill in water year 2014, some portion of the water that is released through Lewiston Dam to implement the Proposed Action may not be available for later release through the Clear Creek Tunnel, Carr Powerplant, the Spring Creek Tunnel and Powerplant and the powerplant at Keswick Dam at some time in the future. In turn, this may result in decreased power generation. However, this would be complex to determine and quantify, depending on the particular refill patterns at Trinity Reservoir, whether safety-of-dams releases occur at Trinity Dam in 2014, Shasta Reservoir operations, etc. In very general terms, if 62 TAF were released to the Trinity River to implement the preventative flows under the Proposed Action, future foregone generation could be a maximum of about 75,330 megawatt hours. However, power generation opportunities are

subject to many restrictions and uncertainties unrelated to the Proposed Action. Also, power production patterns are generally driven by water operations decisions. Whether power in excess of Reclamation's water pumping needs is available at a given time, and whether power available for CVP power customers is sufficient for their demands is difficult to predict. In the unlikely event that water operations are changed due to implementation of the Proposed Action, CVP power customers may have to buy power from alternative sources when CVP power would have otherwise been generated using the water that was used to implement the Proposed Action.

Cumulative Impacts

Cumulative impacts of future activities on socioeconomic resources are speculative. Federal agency actions are subject to scrutiny regarding their affects to these resources. State and local activities on non-Federal lands are not necessarily subject to the same analyses. So it is not possible to meaningfully determine the effects of future, non-Federal activities on socioeconomic resources.

Section 4 Consultation and Coordination

Public Review Period

Reclamation previously provided several updates on the potential to release additional flows to augment flows in the lower Klamath River in late summer 2013 to the Trinity River Management Council (TMC), and the Trinity Adaptive Management Working Group (TAMWG; a Federal Advisory Committee Act-chartered committee). These groups were established by the TRMFR Record of Decision and provide a wide spectrum of local and regional representation with regard to fishery restoration topics.

Reclamation provided the public an opportunity to comment on the Draft Finding of No Significant Impact and Draft EA from July 17, 2013, to the close of business on July 31, 2013. Details regarding comments received and responses to detailed comment themes are provided in Appendix A.

Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act (ESA) requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that

their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

The Proposed Action would not affect any federally listed threatened or endangered species under the jurisdiction of the Service. Therefore, there is no need to consult with the Service pursuant to the ESA.

NMFS representatives were involved in development of the recommendations that formed the basis of the Proposed Action. The group that developed the 2012 flow augmentation recommendations also considered any effects to threatened SONCC coho salmon associated with implementation, and concluded that there may be some minor benefits related to additional available rearing habitat during this time period.

Proposed operation of the TRD of the CVP was described in the 2008 Biological Assessment (BA) for the long-term operation of the CVP and State Water Project (SWP) submitted to NMFS. The NMFS issued a June 4, 2009, Biological Opinion (Opinion) addressing CVP/SWP operations as they affect listed fish and their designated critical habitats in the Central Valley. The Opinion concluded that the proposed operation of the CVP/SWP would jeopardize listed species and destroy or adversely modify designated critical habitat, and offered a Reasonable and Prudent Alternative (RPA) that, if implemented, would not jeopardize the species according to their analyses. Reclamation was also informed of NMFS's intent to issue a separate Opinion addressing SONCC coho salmon informed by the 2008 BA.

The 2009 CVP/SWP operations Opinion was subject to a number of legal challenges in the United States District Court for the Eastern District of California (Court), and Reclamation was challenged for their provisional acceptance and implementation of the RPA. On September 20, 2011, in the Consolidated Salmonid Cases, the Court remanded the Opinion to NMFS. Reclamation plans to submit a consultation package that includes a supplemental/updated BA describing proposed operation of the CVP/SWP to NMFS, to facilitate the remand of the Opinion, consistent with section 7(a)(2) of the ESA. The current schedule of the Court-ordered remand of the Opinion to NMFS calls for the new CVP/SWP operations Opinion to be issued to Reclamation by February 2017. Per the most recent court ruling, additional extensions are possible to 2018 and 2019.

The 2013 late-summer flow augmentation release will continue the status quo as to listed species in that Reclamation still retains discretion to provide flow and water temperature conditions that are consistent with currently anticipated conditions with respect to listed fish. Reclamation has determined that implementing the proposed flow augmentation action in 2013 prior to receiving the above mentioned new Opinion on CVP/SWP operations will not violate section 7(d) of the ESA, i.e., the action would not constitute an irreversible or

irretrievable commitment of resources which would have the effect of foreclosing the formulation or implementation of any RPA measures which would not violate section 7(a)(2) of the ESA.

The volume of Trinity Reservoir water used for augmentation and not available in the future for other purposes (e.g., river temperature control) will only be a “deficit” in Trinity or Shasta Reservoirs until these reservoirs fill, have significant safety-of-dam releases (at Trinity), or flood control (at Shasta). Based on historic hydrologic patterns in the Trinity and Sacramento Basins, it is likely that one or all of these things will happen before issuance of the new CVP/SWP Opinion. Therefore, the flow augmentation action in 2013 is not expected to preclude development of any RPA measures during the ongoing consultation.

Section 6 References

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Section 7 List of Acronyms and Abbreviations

cfs	cubic feet per second
CVP	Central Valley Project
DPS	distinct population segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
ESA	Endangered Species Act
ITA	Indian Trust Asset
KNK	Klamath Near Klamath
MAF	million acre-feet
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
PMFC	Pacific Fishery Management Council
Reclamation	Bureau of Reclamation
Service	U.S. Fish and Wildlife
TAF	thousand acre-feet
TAMWG	Trinity Adaptive Management Work Group
TMC	Trinity Management Council
TRD	Trinity River Division
TRMFR	Trinity River Mainstem Fishery Restoration
TRRP	Trinity River Restoration Program

Appendix A – Response to Comments

The draft EA and FONSI were made available for a 15-day public review on Reclamation’s Mid-Pacific Region web site following a July 17, 2013, press release. Comments received were considered in developing the final EA and FONSI.

Reclamation received:

- 2 emails opposing the Proposed Action
- 6 emails supporting the Proposed Action
- 1 email supporting the Proposed Action, and additional Iron Gate Dam releases
- 2 letters supporting the Proposed Action
- 94 post cards supporting the Proposed Action
- An online petition with 5,998 electronic signatures

Additionally, a summary of commenters who provided detailed comments are shown in Table 1. Responses to general categories of comments received are shown in Table 2.

Table 1. List of commenters who provided detailed comments on the 2013 Lower Klamath River Late Summer Flow Augmentation Proposal.

Commenter ID	Individual or Signatory	Agency/Affiliation
1	Kelli Gant	Trinity Lake Revitalization Alliance, Inc.
2	Jeff Sutton	Tehama-Colusa Canal Authority
3	Tom Stokely	California Water Impact Network
4	Glen Spain	Pacific Coast Federation of Fishermen’s Associations
5	Tim Hemstreet	PacifiCorp Energy
6	Thomas P. O’Rourke	Yurok Tribe
7	Gary Hughes	Environmental Protection Information Center
8	Barry Tippin	Redding Electric Utility
9	Danielle Vigil-Masten	Hoopa Valley Tribe
10	Daniel Nelson & Thomas Birmingham	San Luis & Delta-Mendota Water Authority & Westlands Water District

Table 2. Response to general categories of substantive comments received.

Commenter	Comment/Response
1	<p>Comment: The DEA’s stated Need for Proposal to “restore the native Klamath Basin anadromous fish communities and the many user groups that rely upon the fishery” is misleading and biased.</p> <p>Response: The final EA states that the need for the proposal is to reduce the likelihood, and potentially reduce the severity, of any Ich epizootic event that could lead to an associated fish die-off in 2013.</p>
1	<p>Comment: The proposed supplemental flows are in violation of the 2000 Trinity River Mainstem Fishery Restoration Record of Decision.</p> <p>Response: The Proposed Action is consistent with the TRD Central Valley Project Act of 1955 (P.L.84-386) which provides the principal authorization for implementing the flow augmentation action.</p>
1	<p>Comment: The DEA and FONSI do not reference any published, defensible scientific study or data showing that the preventative release of 62 TAF is needed. The need is speculative.</p> <p>Response: Reclamation is not aware of any specific studies addressing the efficacy of a preventative release of 62 TAF. The post-2002 analyses of the fish die-off that are referenced in the EA do provide relevant analyses and some general recommendations.</p>
1	<p>Comment: The DEA and FONSI are clearly biased to the Proposed Action by using selective analysis and disregarding any proactive planning for another dry hydrologic water year in 2014.</p> <p>Response: Reclamation does not agree that the any proactive planning for another dry hydrologic water year in 2014 is disregarded.</p>
1	<p>Comment: The DEA falsely states on page 18 that the Proposed Action would “be expected to decrease water temperature in the lower Klamath River during the period of flow augmentation.”</p> <p>Response: It is well documented in reports by the U.S. Fish and Wildlife Service that water temperatures of the Klamath River are influenced by releases from Lewiston Dam. Please see the following website: http://www.fws.gov/arcata/fisheries/activities/waterQuality/trinityWQ.html</p>
1	<p>Comment: The DEA completely omits the Trinity County population from the Affected Environment discussion within the Environmental Justice review.</p> <p>Response: Comment noted; please see the Environmental Justice section of this final EA.</p>
2, 10	<p>Comment: USBR does not have the legal authority to take the Proposed Action; if additional flows are necessary for fishery purposes, the flows</p>

Commenter	Comment/Response
	<p>should be provided by the Klamath Project.</p> <p>Response: The EA states the legal authority for the Proposed Action: the TRD Central Valley Project Act of 1955 (P.L.84-386). Water supply conditions in the upper Klamath Basin and environmental considerations resulted in little additional water being available from the upper Basin.</p>
1,2,7	<p>Comment: Lack of scientific support for the Proposed Action</p> <p>Response: Reclamation reviewed and considered the best available scientific information that was specifically relevant to the stated Need for Proposal while developing the Proposed Action.</p>
2	<p>Comment: USBR fails to analyze the potential impacts associated with the lost power generation and the associated environmental costs associated with replacing that lost power, alternatives that likely would have significant air quality impacts.</p> <p>Response: The EA states that, assuming 62 TAF of water is used for flow augmentation, a maximum of 75,330 megawatt hours of power generation may be foregone at some time in the future. Also, the EA states that under the Proposed Action, no impacts to air quality would be expected. To the extent there may be such impacts, those would be speculative and need not be analyzed.</p>
2	<p>Comment: USBR fails to analyze the impacts associated with the lost water associated with this action, resulting in less water for beneficial use for municipal, industrial, agricultural, and environmental needs within the CVP service area.</p> <p>Response: The EA states that implementation of the Proposed Action will not affect 2013 water allocations. The extent that the release of up to 62 TAF for flow augmentation has any effect on the 2014 water supply and water allocations will depend on the water year 2014 hydrology and operational objectives. It is unlikely that future allocations will be affected by implementation of the Proposed Action.</p>
2	<p>Comment: USBR failed to take timely action under NEPA and provided inadequate time to review and respond to the EA/Draft FONSI.</p> <p>Response: While Reclamation was aware of the forecasted large returning fall Chinook salmon run for several months, the deterioration of the accretion forecast, and the associated expected flows in the lower Klamath River in August and September, developed throughout the spring and summer. Based on the comments received, Reclamation believes the draft EA and FONSI review period was meaningful.</p>
2	<p>Comment: USBR failed to adequately identify measures to mitigate the impacts, including the cumulative impacts associated with the 2012 release.</p>

Commenter	Comment/Response
	<p>Response: Reclamation has not identified any specific impacts to water allocations or available power available for CVP power customers as a result of the flow augmentation action in 2012.</p>
2	<p>Comment: The continued unmitigated impacts to CVP stored water associated with the Proposed Action takes on heightened sense of urgency for the CVP water users due to the current state of the hydrologic conditions.</p> <p>Response: Comment noted.</p>
3, 7, 9	<p>Comment: The Bureau should recognize Humboldt County’s Right to 50,000 AF for use in the Klamath Basin.</p> <p>Response: The Commissioner of Reclamation and other Department of the Interior officials continue to evaluate this issue; additionally this is beyond the scope of this analysis.</p>
3	<p>Comment: Additional information on Safety-of-Dam releases from Trinity Reservoir in 2012 and 2013 should be included in the EA/FONSI.</p> <p>Response: Comment noted.</p>
3, 8	<p>Comment: The EA should incorporate power “gains” and “losses” as part of the Proposed Action, including the power generation at Trinity Power Plant that would result from the Proposed Action.</p> <p>Response: As stated in the EA, there would be no changes to planned 2013 CVP water operations as a result of implementation of the Proposed Action. As a result, there would be no changes to power production.</p>
5	<p>Comment: The EA should evaluate an alternative that would provide additional flow augmentation from Iron Gate Dam, in addition to releases from Trinity Dam, in response to in-river conditions that could cause disease outbreaks to occur above the confluence of the Trinity River.</p> <p>Response: Water supply conditions in the upper Klamath Basin and environmental considerations resulted in little additional water being available from the upper Basin. Further, Reclamation is not aware of any serious Ich occurrences in the Klamath River above the confluence of the Trinity River.</p>
6, 9	<p>Comment: Flow in the lower Klamath River should be 3,200 cfs instead of 2,800 cfs to assure protection of adult salmon.</p> <p>Response: Reclamation believes the 2,800 cfs target is adequate to ameliorate environmental conditions pursuant to Need for Proposal. In the event of an emergency situation of a disease epizootic event, flows in the lower Klamath River would be doubled for 7 days.</p>
4, 6	<p>Comment: Historical context and potential causative factors contributing</p>

Commenter	Comment/Response
	<p>to the 2002 lower Klamath fish kill should include a comparison of the projected 2013 run size to that of 2002, when the fish kill occurred; this year's projected run size is 1.7 times greater what returned during 2002.</p> <p>Response: The final EA incorporates language that acknowledges the forecasted 2013 run size relative to the estimated 2002 run when the catastrophic fish die-off occurred.</p>
6	<p>Comment: Need for the proposal should incorporate language reflecting that substantial mortality of ESA-listed SONCC coho salmon in 2002.</p> <p>Response: The final EA incorporates the estimated number of coho salmon listed under the ESA that died in 2002</p>
6	<p>Comments: We strongly believe that if the catch data or other indications show that fall-run Chinook salmon have entered the river earlier than August 15, the flow augmentation should begin earlier also. Furthermore, we believe that the augmentation should begin no later than August 15 regardless of whether the mainstem portion of the run has entered the river.</p> <p>Responses: Comment noted.</p>
6	<p>Comments: The environmental consequences section of the EA should include the potential consequences of a fish die-off and preventing the Trinity River Restoration Program from meeting natural fall-run escapement goals.</p> <p>Responses: The final EA incorporates this.</p>
7	<p>Comments: Consultation with U.S. Fish and Wildlife Service and the NMFS should occur in addition to the May 2013 Klamath Project Biological Opinion issued jointly by the Services.</p> <p>Responses: The Proposed Action would not affect any federally listed threatened or endangered species under the jurisdiction of the U.S. Fish and Wildlife Service. Therefore, there is no need to consult with the Service pursuant to the ESA. Regarding consultation with NMFS, please see the Consultation and Coordination section of the final EA.</p>
8	<p>Comment: Value of the hydroelectric energy generation due to flow augmentation should be fully accounted for, in particular for 2013.</p> <p>Responses: As stated in the EA, there would be no changes to planned 2013 CVP water operations as a result of implementation of the Proposed Action. As a result, Reclamation has not identified any expected changes to power production.</p>
8	<p>Comment: Reclamation has reached its own conclusions that the proposed project will not have significant impact on power sources in 2014 without adequate supporting documentation.</p>

Commenter	Comment/Response
	<p>Response: Reclamation has not identified any expected changes to water operations or power production due to implementation of the proposed action. To the extent there may be such impacts, they would be speculative and need not be analyzed.</p>
8, 10	<p>Comment: Reclamation has neglected to assess any impacts of the 39 TAF potentially needed for emergency flows.</p> <p>Responses: Reclamation believes the probability of an Ich epizootic event occurring in 2013 is very low, and this would be an unexpected event that would occur suddenly. If this was to occur it would be considered an emergency situation.</p>
9	<p>Comments: The federal government has a responsibility to protect tribal fishery resources.</p> <p>Responses: Comment noted, and Reclamation acknowledges this responsibility.</p>
9	<p>Comments: Reclamation must take timely and effective action to avoid a fish kill in 2013.</p> <p>Responses: Reclamation believes that the Proposed Action will effectively address the Need for Proposal.</p>
9	<p>Comments: The EA identifies neither how the temperature criterion was chosen, nor how this threshold is to be measured, calculated. Use of a peak value would be the most risk-adverse approach.</p> <p>Responses: Comment noted. See Strange 2010 referenced in the final EA.</p>
9	<p>Comments: A long-term plan for supplemental flows is needed</p> <p>Responses: Comment noted.</p>
9	<p>Comments: The Preferred Alternative should make it clear that releases of Trinity Division water for ceremonial use by the Hoopa Valley Tribe are independent of the flow releases identified in the Preferred Alternative for fish passage.</p> <p>Responses: The No Action Alternative includes the ceremonial flow; by definition it would not be part of the Proposed Action.</p>
10	<p>Comments: The purpose and need is inadequate.</p> <p>Responses: Comment noted. Please see the final EA Need for Proposal</p>
10	<p>Comments: Additional alternatives should have been reviewed</p> <p>Responses: Given the current state of relevant knowledge, Reclamation did not identify alternatives other than flow augmentation to achieve the Need for Proposal.</p>

Commenter	Comment/Response
10	<p>Comments: The draft EA’s discussion of alternatives considered but eliminated from further consideration is inadequate, including reference to explanation why the Klamath River water or other sources were not considered, including purchase or exchanges with CVP entities.</p> <p>Responses: Water supply conditions in the upper Klamath Basin and environmental considerations resulted in little additional water being available from the upper Basin. Reclamation was unable to identify any feasible opportunities for exchanges or willing-seller water purchase opportunities.</p>
10	<p>Comments: An EIS must be prepared to comply with NEPA.</p> <p>Responses: Reclamation believes the final EA properly analyzed the potential impacts due to implementation of the Proposed Action and determined, as stated in the FONSI, that there are no expected significant effects that would require an EIS.</p>
10	<p>Comments: The Proposed Action may have a significant effect on water and power resources.</p> <p>Responses: Reclamation has not identified any expected changes to water operations or power production due to implementation of the proposed action. To the extent there may be such impacts, they would be speculative and need not be analyzed.</p>
10	<p>Comments: The Proposed Action may have a significant effect on biological resources.</p> <p>Responses: Reclamation believes that implementation of the Proposed Action would not be expected to have a significant impact on biological resources.</p>
10	<p>Comments: Proposed Action may have a significant effect on the environment with respect to climate change (overall effect to climate change not included and why insignificant).</p> <p>Responses: The GHG emissions associated with any hydrocarbon-generated replacement power is not expected to have a significant impact on global climate, as stated in the final EA.</p>
10	<p>Comments: The Draft EA fails to adequately address Environmental Justice. (Failure to include sections of the Central Valley and west side of San Joaquin Valley.)</p> <p>Responses: Reclamation has not identified any expected changes to water operations or power production due to implementation of the proposed action. Accordingly, Reclamation did not identify any Environmental Justice issues related to the Central Valley.</p>
10	<p>Comments: The Proposed Action may have significant effects within the</p>

Commenter	Comment/Response
	<p>CVP Service Area south of the Delta (indirect groundwater-related effects associated with increased pumping and salinity, land fallowing decreased crop productivity from groundwater, and socioeconomic impacts: High prices for consumers).</p> <p>Responses: Reclamation has not identified any expected changes to water operations or power production due to implementation of the proposed action. To the extent there may be any such related impacts, they would be speculative and need not be analyzed.</p>
10	<p>Comment: Air quality and land use may be significantly affected by the proposed action and require further analysis (Increase in dust and groundwater pumping and therefore emissions and land fallowing).</p> <p>Responses: Reclamation has not identified any expected changes to water operations or power production due to implementation of the proposed action. The EA states that under the Proposed Action, no related impacts to air quality would be expected. To the extent there may be such impacts, those would be speculative and need not be analyzed.</p>
10	<p>Comment: ESA consultation is required for SONCC Coho salmon in the Klamath Basin and Central Valley listed species.</p> <p>Response: Please see the Consultation and Coordination section of the final EA.</p>