Chapter 7
Summary

Summary of Impacts

Impacts associated with the Action Alternatives (Five Dam Removal, No Dam Removal, Six Dam Removal, and Three Dam Removal Alternatives) and the No Action Alternative are identified in Table 7-1. Most significant impacts would be considered less than significant after implementing the appropriate mitigation measures for the specific resource area identified in Table 7-1 and described in more detail in the appropriate resource section in Chapter 4 of this EIR/EIS. Some significant impacts are considered unavoidable (e.g., on aesthetics and visual resources) because the impact remains significant even after implementing mitigation measures incorporated into the project description or described in each resource section of this document. Other impacts are considered less than significant or beneficial to the resource area.

Comparison of Alternatives

A comparison between the Proposed Action and each of the Action Alternatives (including the No Action Alternative) is provided below to summarize the relative differences in chinook salmon and steelhead benefits and significant impacts that would be expected under each alternative.

Proposed Action (Five Dam Removal Alternative) and No Action Alternative

The No Action Alternative would avoid all the short-term construction impacts that would occur under the Proposed Action and would continue flow and fish-passage conditions that were established under the original FERC License Agreement. Beneficial effects for chinook salmon and steelhead associated with Proposed Action improvements to minimum creek flows, spawning and rearing habitat availability, water temperatures, and fish passage would not occur under the No Action Alternative. Because the Proposed Action would have substantial beneficial effects and would not result in a substantial number of significant and unavoidable impacts (impacts that could not be reduced to less-than-significant

levels with recommended mitigation measures), implementing the No Action Alternative does not offer substantial advantages related to avoidance of environmental impact.

The greatest benefit of the No Action Alternative would be avoidance of channel and streamside construction impacts on aquatic and terrestrial biological resources near Hydroelectric Project facilities (e.g. potential fish mortality, aquatic habitat disturbance, riparian forest disturbance, and short-term upland habitat impacts); however, avoidance of these impacts would come at the expense of longer-term fish and wildlife benefits on Battle Creek. Implementing the No Action Alternative would avoid significant impacts to historic properties, including Eagle Canyon, Wildcat, Inskip, and Coleman Diversion Dams and appurtenant facilities, and would avoid significant and unavoidable aesthetic impacts on the Oasis Springs Lodge related to improvements to South Powerhouse and Inskip Diversion Dam facilities. The No-Action Alternative would continue effects associated with continued use and upgrades of Hydroelectric Project diversion dams and canals.

Proposed Action (Five Dam Removal Alternative) and No Dam Removal Alternative

The No Dam Removal Alternative would provide new fish screens and fish ladders at North Battle Creek Feeder, Eagle Canyon, Wildcat, South, Inskip, and Coleman Diversion Dams. The dams, diversions, canals, and spring-water collection systems, however, would remain at the same locations as under the No Action Alternative. The more secure passage benefits and complete absence of diversion-related effects provided by removal of Wildcat, South, and Coleman Diversion Dams under the Proposed Action would not be realized under the No Dam Removal Alternative. The No Dam Removal Alternative also would not realize the potential benefits of minimized flow fluctuations during canal and powerhouse outages that would be provided by connectors at South and Inskip Powerhouses and in the stream channel below Wildcat, South, and Coleman Diversion Dams. The minimum flow requirements (i.e., AFRP minimum flow requirements) below the diversion dams would be higher than the instream flows for the No Action Alternative (i.e., FERC minimum flow requirements), but generally less than under the Proposed Action (i.e., MOU minimum flow requirements) (Section 4.3, "Hydrology"). Substantially greater production of chinook salmon and steelhead would be expected relative to the No Action Alternative. The No Dam Removal Alternative, however, would not incorporate the additional flexibility provided by the higher flow requirements for the Proposed Action relative to support for future adaptive management of flow targets for flow-habitat, fish passage, and water temperature considerations. The No Dam Removal Alternative would also maintain No Action conditions in Soap, Ripley, and Baldwin Creeks. The No Dam Removal Alternative would not provide the production from additional spawning and rearing habitat that would occur in Soap, Ripley, and Baldwin Creeks under the Five Dam Removal Alternative.

The No Dam Removal Alternative would generally result in less channel and stream construction impact and less upland construction effect on aquatic and terrestrial biological resources because Restoration Project improvements would involve mainly upgrading fish ladders and screens at existing dams and would not involve removal of dams and appurtenant facilities or construction of South and Inskip Powerhouse tailrace connectors. However, despite these relative differences, both the No Dam Removal Alternative and Five Dam Removal Alternative would result in the same significant construction impacts on aquatic and terrestrial biological resources because temporary loss of habitat and potential effects on fish and wildlife species would occur under both of these alternatives. Both the No Dam Alternative and Proposed Action would have short-term construction-related sedimentation and erosion impacts that would be mitigated to less-than-significant levels; the No Dam Removal Alternative would generally have slightly less relative impact because of relatively less construction activity under this alternative.

The No Dam Removal Alternative would have impacts similar to the Proposed Action on land use, aesthetics, transportation, noise, air quality, public health and safety, and recreation, although localized differences in impacts for these areas could occur on a temporary basis.

The No Dam Removal Alternative would have less impact on historic dams on Battle Creek than the Proposed Action because all historic properties (including Eagle Canyon, Wildcat, Inskip, and Coleman Diversion Dams) would remain in place under this alternative, although some fish ladder and screen modification would be made immediately adjacent to these structures.

Proposed Action (Five Dam Removal Alternative) and Six Dam Removal Alternative

The Six Dam Removal Alternative would generally result in chinook salmon and steelhead production and benefits that are similar to those of the Proposed Action. Eagle Canyon Dam would be removed under the Six Dam Removal Alternative, potentially providing more secure passage benefits and complete absence of diversion-related effects. However, the removal of Eagle Canyon Dam would remove the potential for future adaptive management of the water temperature benefits provided by the cold spring water below Eagle Canyon Dam. The Proposed Action would retain Eagle Canyon Dam and the potential to operate Eagle Canyon Dam and Diversion to maximize the benefits of cold water temperature provided by the springs.

The Six Dam Removal Alternative would generally result in slightly greater channel and stream construction impacts and similar upland construction effects on aquatic and terrestrial biological resources because Restoration Project improvements under this alternative would be the same as under the Five Dam Removal Alternative, except Eagle Canyon Diversion Dam and appurtenant facilities would also be removed. The Six Dam Removal Alternative would

result in the same significant construction impacts on aquatic and terrestrial biological resources, except additional effects would occur at the Eagle Canyon Diversion Dam construction site. Temporary loss of habitat and potential effects on fish and wildlife species would occur under both of these alternatives. Both the Six Dam Removal Alternative and Proposed Action would have short-term construction-related sedimentation and erosion impacts that would be mitigated to less-than-significant levels; the Six Dam Removal Alternative would generally have slightly greater relative impact because of slightly greater construction and dam removal activity under this alternative.

The Six Dam Removal Alternative would have impacts similar to the Proposed Action on land use, aesthetics, transportation, noise, air quality, public health and safety, and recreation, although localized differences in impacts for these resource areas could occur on a temporary basis, especially at the Eagle Canyon Diversion Dam site.

The Six Dam Removal Alternative would have slightly greater impacts on historic dams on Battle Creek than the Proposed Action because Eagle Canyon Diversion Dam would be removed in addition to removing Wildcat and Coleman Diversion Dams.

Proposed Action (Five Dam Removal Alternative) and Three Dam Removal Alternative

The Three Dam Removal Alternative would provide new fish screens and fish ladders at North Battle Creek Feeder, South, and Inskip Diversion Dams. The more secure passage benefits and complete absence of diversion-related effects provided by removal of South Diversion Dam under the Proposed Action would not be realized under the Three Dam Removal Alternative. Eagle Canyon Diversion Dam would be removed under the Three Dam Removal Alternative, potentially providing more secure passage benefits and complete absence of diversion-related effects. However, the removal of Eagle Canyon Diversion Dam would remove the potential for future adaptive management of the water temperature benefits provided by the cold spring water below Eagle Canyon Diversion Dam. The Proposed Action would retain Eagle Canyon Diversion Dam and the potential to operate Eagle Canyon Diversion Dam and Diversion to maximize the benefits of cold water temperature provided by the springs. The Three Dam Removal Alternative also would realize the potential benefits of minimized flow fluctuations during canal and powerhouse outages that would be provided by connectors at South and Inskip Powerhouses and in the stream channel below Wildcat, Eagle Canyon, and Coleman Diversion Dams. The absence of an absolute connector and bypass facility at Inskip Powerhouse, however, could result in benefits less than those realized by minimized flow and water temperature fluctuations under the Five Dam Removal Alternative. The minimum flow requirements (i.e., AFRP minimum flow requirements) below the diversion dams would be higher than the instream flows for the No Action Alternative (i.e., FERC minimum flow requirements), but generally less than

under the Proposed Action (i.e., MOU minimum flow requirements) (Section 4.3, "Hydrology"). Substantially greater production of chinook salmon and steelhead would be expected relative to the No Action Alternative. The Three Dam Removal Alternative, however, would not incorporate the additional flexibility provided by the higher flow requirements for the Proposed Action relative to support for future adaptive management of flow targets for flow-habitat, fish passage, and water temperature considerations. The Three Dam Removal Alternative would also maintain No Action conditions in Soap and Ripley Creeks. The Three Dam Removal Alternative would not provide the production from additional spawning and rearing habitat that would occur in Soap and Ripley Creeks under the Five Dam Removal Alternative.

The Three Dam Removal Alternative would generally result in less channel and stream construction impact and upland construction effect on aquatic and terrestrial biological resources compared to the Proposed Action because Restoration Project improvements under this alternative would not involve removing South, Soap Creek Feeder, or Lower Ripley Creek Feeder Diversion Dams and would not involve construction of the Inskip Powerhouse bypass facility. The Three Dam Removal Alternative would result in the same type of significant construction impacts on aquatic and terrestrial biological resources as the Proposed Action, but impacts would not occur at as many construction sites as identified for the Proposed Action. Temporary loss of habitat and potential effects on fish and wildlife species would occur under both of these alternatives. Both the Three Dam Removal Alternative and the Proposed Action would have short-term construction-related sedimentation and erosion impacts that would be mitigated to less-than-significant levels; the Three Dam Removal Alternative would generally have slightly less relative impact because of less construction and dam removal activity under this alternative.

The Three Dam Removal Alternative would have impacts similar to the Proposed Action on land use, aesthetics, transportation, noise, air quality, public health and safety, and recreation, although impacts would occur only at the facilities proposed to be improved under this alternative.

The Three Dam Removal Alternative would have slightly greater impacts on historic dams on Battle Creek than the Proposed Action because Eagle Canyon Diversion Dam would be removed in addition to removing Wildcat and Coleman Diversion Dams.

Environmentally Preferred Alternative

According to Reclamation's NEPA Handbook, the alternative, or alternatives, considered to be environmentally preferred should be specified in an EIS. The *environmentally preferred alternative* under NEPA is defined as "the alternative that will promote the national environmental policy as expressed in NEPA's Section 101." Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best

protects, preserves, and enhances historic, cultural, and natural resources. It is implicit in NEPA that the environmentally preferred alternative is a reasonable and feasible alternative. Reclamation is not obliged to select the environmentally preferred alternative but must identify it in the ROD and should, if possible, identify it in the final EIS.

Section 15126.6(e) of the state CEQA Guidelines also requires the state lead agency (SWRCB) to identify the environmentally superior alternative. If the No Action Alternative is also the environmentally superior alternative, the EIR will also identify an environmentally superior alternative from among the other alternatives. For the purposes of this EIS/EIR, the environmentally superior alternative will be referred to as the environmentally preferred alternative, as referred to under NEPA.

On the basis of the analyses of the potential environmental impacts, the Proposed Action, the Five Dam Removal Alternative, has been determined to be the environmentally preferred alternative. The Five Dam Removal Alternative would have more benefits to fish and power generation than the other alternatives. In addition, decommissioning the South Canal under the Five Dam Removal Alternative would provide potential habitat for special-status bat species.

Under the Five Dam Removal Alternative, new fish screens and fish ladders would be constructed at three diversion dams (North Battle Creek Feeder, Eagle Canyon, and Inskip Diversion Dams), and five diversion dams would be removed (Wildcat, South, Soap Creek Feeder, Lower Ripley Creek Feeder, and Coleman Diversion Dams). These modifications would substantially improve the reliability and effectiveness of upstream and downstream fish passage. In addition, powerhouse tailrace connectors are proposed that prevent the discharge of North Fork Battle Creek water to South Fork Battle Creek and the mixing of flow sources, which would prevent false attraction of anadromous fish to South Fork Battle Creek.

In relation to power generation, the annual power benefits associated with the Five Dam Removal Alternative would be greater than the increased annual total and going-forward cost of Hydroelectric Project power compared to the other alternatives (see Section 4.16, “Other NEPA Analysis”). The No Dam Removal, Six Dam Removal, and Three Dam Removal Alternatives would have greater replacement costs and fewer power generation benefits. Greater annual power benefits compared to anticipated replacement power costs under the Five Dam Removal Alternative demonstrates that the Hydroelectric Project would continue to be a low-cost source of electricity.

Table 7-1. Summary of Impacts, Levels of Significance, and Recommended Mitigation Measures for the No Action Alternative, Five Dam Removal Alternative (Proposed Action), No Dam Removal Alternative, Six Dam Removal Alternative, and Three Dam Removal Alternative

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
FISH			
No Action Alternative			
Hydroelectric Project facilities (including fish ladders) and operations would be maintained and operated in accordance with Federal Energy Regulatory Commission (FERC) regulations, and the existing minimum flows would continue to be provided; fish populations would continue to be maintained at levels lower than those targeted by restoration goals	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.1-1 Mortality and lowered growth rates and reproductive success of fish and other aquatic species in Battle Creek from an accidental spill of petroleum products and other construction-related materials	Significant	Construction contractor will implement toxic materials control and spill plans; Reclamation will implement a construction-area fish management program	Less than Significant
Impact 4.1-2 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species because of increased sedimentation to North Fork and South Fork Battle Creek as a result of construction activities	Significant	Construction contractors will develop and implement a vegetation protection plan and an erosion and sediment plan	Less than Significant
Impact 4.1-3 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species as a result of removing South, Coleman, and Eagle Canyon Diversion Dams, which would release currently stored fine sediment to the stream channel	Significant	Reclamation will remove diversion dams during low-flow season (July–October)	Less than Significant
Impact 4.1-4 Disturbed steelhead and chinook salmon habitat in the stream channel as a result of construction activities	Less than Significant	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-5 Disrupted movement and migration of fish species as a result of dewatering portions of the stream channel and temporarily removing fish ladders during construction	Less than Significant	None	Not applicable
Impact 4.1-6 Compromised feeding efficiency of sight-feeding fish from erosion and the input of fine sediment as a result of construction and demolition activities	Less than Significant	None	Not applicable
Impact 4.1-7 Vulnerability of all life stages of fish to injury or mortality from percussion-related energy shock waves, operation of equipment, and becoming trapped in isolated pockets of water during construction activities	Less than Significant	None	Not applicable
Impact 4.1-8 Reduced habitat and range of some resident warmwater species because of cooler water temperatures	Less than Significant	None	Not applicable
Impact 4.1-9 Decreased rainbow trout abundance in canals as a result of eliminating some diversions and constructing effective fish screens at three dams	Less than Significant	None	Not applicable
Impact 4.1-10 Increased exposure of rainbow trout to pathogens because of the increase of chinook salmon and steelhead in Battle Creek	Less than Significant	None	Not applicable
Impact 4.1-11 Substantially increased capacity indices for spawning and rearing of steelhead and chinook salmon resulting from increased minimum instream flows	Beneficial	None	Not applicable
Impact 4.1-12 Substantially increased production indices for fry and juvenile life stages for steelhead and chinook salmon as a result of cooler water temperatures	Beneficial	None	Not applicable
Impact 4.1-13 Increased survival of adults and increased spawning success because higher instream flows would improve conditions that facilitate passage of chinook salmon and steelhead over natural barriers	Beneficial	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-14 Increased survival of adults and increased spawning success because removal of five dams and the construction of more reliable effective fish ladders would facilitate passage of chinook salmon and steelhead	Beneficial	None	Not applicable
Impact 4.1-15 Potentially increased spawning success and fry production because eliminating the discharge of North Fork Battle Creek water to South Fork Battle Creek would facilitate the return of adult chinook salmon and steelhead to natal spawning habitat in South Fork and North Fork Battle Creek	Beneficial	None	Not applicable
Impact 4.1-16 Substantially increased survival of juvenile steelhead and chinook salmon during downstream movement and migration as a result of eliminating some diversions and constructing fish screens at the remaining diversions from North Fork and South Fork Battle Creek	Beneficial	None	Not applicable
Impact 4.1-17 Reduction of predation-related mortality as a result of removing dams and improving fish ladders	Beneficial	None	Not applicable
Impact 4.1-18 Substantially increased production of food for fish resulting from increased minimum instream flows	Beneficial	None	Not applicable
No Dam Removal Alternative			
Impact 4.1-19 Mortality and lowered growth rates and reproductive success of fish and other aquatic species in Battle Creek from an accidental spill of petroleum products and other construction-related materials (similar to Impact 4.1-1)	Significant	Construction contractor will implement toxic materials control and spill plans; Reclamation will implement a construction-area fish management program (same mitigation as that recommended for Proposed Action, Impact 4.1-1)	Less than Significant
Impact 4.1-20 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species because of increased sedimentation to North Fork and South Fork Battle Creek as a result of construction activities (similar to Impact 4.1-2)	Significant	Construction contractors will develop and implement a vegetation protection plan and an erosion and sediment plan (same mitigation as that recommended for Proposed Action, Impact 4.1-2)	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-21 Disturbed steelhead and chinook salmon habitat in the stream channel as a result of construction activities	Less than Significant	None	Not applicable
Impact 4.1-22 Disrupted movement and migration of fish species as a result of dewatering portions of the stream channel and temporarily removing fish ladders during construction (similar to Impact 4.1-5)	Less than Significant	None	Not applicable
Impact 4.1-23 Compromised feeding efficiency of sight-feeding fish from erosion and the input of fine sediment as a result of construction and demolition activities (similar to Impact 4.1-6)	Less than Significant	None	Not applicable
Impact 4.1-24 Vulnerability of all life stages of fish to injury or mortality from percussion-related energy shock waves, operation of equipment, and becoming trapped in isolated pockets of water during construction activities (similar to Impact 4.1-7)	Less than Significant	None	Not applicable
Impact 4.1-25 Reduced habitat and range of some resident warmwater species because of cooler water temperatures	Less than Significant	None	Not applicable
Impact 4.1-26 Decreased rainbow trout abundance in canals as a result of eliminating some diversions and constructing effective fish screens at three dams	Less than Significant	None	Not applicable
Impact 4.1-27 Increased exposure of rainbow trout to pathogens because of the increase of chinook salmon and steelhead in Battle Creek (similar to Impact 4.1-10)	Less than Significant	None	Not applicable
Impact 4.1-28 Substantially increased capacity indices for spawning and rearing of steelhead and chinook salmon resulting from increased minimum instream flows (similar to Impact 4.1-11)	Beneficial	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-29 Substantially increased production indices for fry and juvenile life stages for steelhead and chinook salmon as a result of cooler water temperatures (similar to Impact 4.1-12)	Beneficial	None	Not applicable
Impact 4.1-30 Increased survival of adults and increased spawning success because higher instream flows would improve conditions that facilitate passage of chinook salmon and steelhead over natural barriers (similar to Impact 4.1-13)	Beneficial	None	Not applicable
Impact 4.1-31 The construction of more effective fish ladders on North Battle Creek Feeder, Eagle Canyon, Wildcat, South, Inskip, and Coleman Diversion Dams would facilitate passage of chinook salmon and steelhead, which would increase survival of adults and increase spawning success	Beneficial	None	Not applicable
Impact 4.1-32 Constructing fish screens at the remaining diversions from North Fork and South Fork Battle Creek would substantially increase the survival of juvenile steelhead and chinook salmon during downstream movement and migration	Beneficial	None	Not applicable
Impact 4.1-33 Reduction of predation-related mortality as a result of improving fish ladders	Beneficial	None	Not applicable
Impact 4.1-34 Substantially increased production of food for fish resulting from increased minimum instream flows (similar to Impact 4.1-18)	Beneficial	None	Not applicable
Six Dam Removal Alternative			
Impact 4.1-35 Mortality and lowered growth rates and reproductive success of fish and other aquatic species in Battle Creek from an accidental spill of petroleum products and other construction-related materials (similar to Impact 4.1-1)	Significant	Construction contractor will implement toxic materials control and spill plans; Reclamation will implement a construction-area fish management program (same mitigation as that recommended for Proposed Action, Impact 4.1-1)	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-36 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species because of increased sedimentation to North Fork and South Fork Battle Creek as a result of construction activities (Similar to Impact 4.1-2)	Significant	Construction contractors will develop and implement a vegetation protection plan and an erosion and sediment plan (same mitigation as that recommended for Proposed Action, Impact 4.1-2)	Less than Significant
Impact 4.1-37 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species as a result of removing South, Coleman, and Eagle Canyon Diversion Dams, which would release currently stored fine sediment to the stream channel (similar to Impact 4.1-3)	Significant	Reclamation will remove diversion dams during low-flow season (July–October) (same mitigation as that recommended for Proposed Action, Impact 4.1-3)	Less than Significant
Impact 4.1-38 Disturbed steelhead and chinook salmon habitat in the stream channel as a result of construction activities (similar to 4.1-4)	Less than Significant	None	Not applicable
Impact 4.1-39 Disrupted movement and migration of fish species as a result of dewatering portions of the stream channel and temporarily removing fish ladders during construction (similar to Impact 4.1-5)	Less than Significant	None	Not applicable
Impact 4.1-40 Compromised feeding efficiency of sight-feeding fish from erosion and the input of fine sediment as a result of construction and demolition activities (similar to Impact 4.1-6)	Less than Significant	None	Not applicable
Impact 4.1-41 Vulnerability of all life stages of fish to injury or mortality from percussion-related energy shock waves, operation of equipment, and becoming trapped in isolated pockets of water during construction activities (similar to Impact 4.1-7)	Less than Significant	None	Not applicable
Impact 4.1-42 Reduced habitat and range of some resident warmwater species because of cooler water temperatures (similar to Impact 4.1-8)	Less than Significant	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-43 Decreased rainbow trout abundance in canals as a result of eliminating some diversions and constructing effective fish screens at three dams (similar to Impact 4.1-9)	Less than Significant	None	Not applicable
Impact 4.1-44 Increased exposure of rainbow trout to pathogens because of the increase of chinook salmon and steelhead in Battle Creek	Less than Significant	None	Not applicable
Impact 4.1-45 Substantially increased capacity indices for spawning and rearing habitat of steelhead and chinook salmon resulting from increased minimum instream flows (similar to Impact 4.1-11)	Beneficial	None	Not applicable
Impact 4.1-46 Substantially increased production indices for fry and juvenile life stages for steelhead and chinook salmon as a result of cooler water temperatures (similar to Impact 4.1-12)	Beneficial	None	Not applicable
Impact 4.1-47 Increased survival of adults and increased spawning success because higher instream flows would improve conditions that facilitate passage of chinook salmon and steelhead over natural barriers (similar to Impact 4.1-13)	Beneficial	None	Not applicable
Impact 4.1-48 Increased survival of adults and increased spawning success because removal of dams and the construction of more effective fish ladders would facilitate passage of chinook salmon and steelhead (similar to Impact 4.1-14)	Beneficial	None	Not applicable
Impact 4.1-49 Potentially increased spawning success and fry production because eliminating the discharge of North Fork Battle Creek water to South Fork Battle Creek would facilitate the return of adult chinook salmon and steelhead to natal spawning habitat in South Fork and North Fork Battle Creek (similar to Impact 4.1-15)	Beneficial	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-50 Substantially increased survival of juvenile steelhead and chinook salmon during downstream movement and migration as a result of ceasing diversions and constructing fish screens at the remaining diversions from North Fork and South Fork Battle Creek (similar to Impact 4.1-16)	Beneficial	None	Not applicable
Impact 4.1-51 Substantially increased production of food for fish resulting from increased minimum instream flows (similar to Impact 4.1-18)	Beneficial	None	Not applicable
Impact 4.1-52 Reduction of predation-related mortality as a result of removing dams and improving fish ladders (similar to Impact 4.1-17)	Beneficial	None	Not applicable
Three Dam Removal Alternative			
Impact 4.1-53 Mortality and lowered growth rates and reproductive success of fish and other aquatic species in Battle Creek from an accidental spill of petroleum products and other construction-related materials (similar to Impact 4.1-1)	Significant	Construction contractor will implement toxic materials control and spill plans; Reclamation will implement a construction-area fish management program (same mitigation as that recommended for Proposed Action, Impact 4.1-1)	Less than Significant
Impact 4.1-54 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species because of increased sedimentation to North Fork and South Fork Battle Creek as a result of construction activities (similar to Impact 4.1-2)	Significant	Construction contractors will develop and implement a vegetation protection plan and an erosion and sediment plan (same mitigation as that recommended for Proposed Action, Impact 4.1-2)	Less than Significant
Impact 4.1-55 Mortality of fish eggs and larvae and reduced reproductive success of fish and other aquatic species as a result of removing South, Coleman, and Eagle Canyon Diversion Dams, which would release currently stored fine sediment to the stream channel (similar to Impact 4.1-3)	Significant	Reclamation will remove diversion dams during low-flow season (July–October) (same mitigation as that recommended for Proposed Action, Impact 4.1-3)	Less than Significant
Impact 4.1-56 Disturbed steelhead and chinook salmon habitat in the stream channel as a result of construction activities (similar to Impact 4.1-4)	Less than Significant	None	Not applicable
Impact 4.1-57 Disrupted movement and migration of	Less than	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
fish species as a result of dewatering portions of the stream channel and temporarily removing fish ladders during construction (similar to Impact 4.1-5)	Significant		
Impact 4.1-58 Compromised feeding efficiency of sight-feeding fish from erosion and the input of fine sediment as a result of construction and demolition activities (similar to Impact 4.1-6)	Less than Significant	None	Not applicable
Impact 4.1-59 Vulnerability of all life stages of fish to injury or mortality from percussion-related energy shock waves, operation of equipment, and becoming trapped in isolated pockets of water during construction activities (similar to Impact 4.1-7)	Less than Significant	None	Not applicable
Impact 4.1-60 Reduced habitat and range of some resident warmwater species because of cooler water temperatures (similar to Impact 4.1-8)	Less than Significant	None	Not applicable
Impact 4.1-61 Decreased rainbow trout abundance in canals as a result of eliminating some diversions and constructing effective fish screens at three dams (similar to Impact 4.1-9)	Less than Significant	None	Not applicable
Impact 4.1-62 Increased exposure of rainbow trout to pathogens because of the increase of chinook salmon and steelhead in Battle Creek (similar to Impact 4.1-10)	Less than Significant	None	Not applicable
Impact 4.1-63 Substantially increased capacity indices for spawning and rearing of steelhead and chinook salmon resulting from increased minimum instream flows (similar to Impact 4.1-11)	Beneficial	None	Not applicable
Impact 4.1-64 Substantially increased production indices for fry and juvenile life stages for steelhead and chinook salmon as a result of cooler water temperatures (similar to Impact 4.1-12)	Beneficial	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.1-65 Increased survival of adults and increased spawning success because higher instream flows would improve conditions that facilitate passage of chinook salmon and steelhead over natural barriers (similar to Impact 4.1-13)	Beneficial	None	Not applicable
Impact 4.1-66 Increased survival of adults and increased spawning success because removal of dams and the construction of more effective fish ladders would facilitate passage of chinook salmon and steelhead (similar to Impact 4.1-14)	Beneficial	None	Not applicable
Impact 4.1-67 Potentially increased spawning success and fry production because eliminating the discharge of North Fork Battle Creek water to South Fork Battle Creek would facilitate the return of adult chinook salmon and steelhead to natal spawning habitat in South Fork and North Fork Battle Creek (similar to Impact 4.1-15)	Beneficial	None	Not applicable
Impact 4.1-68 Substantially increased survival of juvenile steelhead and chinook salmon during downstream movement and migration as a result of eliminating some diversions and constructing fish screens at the remaining diversions from North Fork and South Fork Battle Creek (similar to Impact 4.1-16)	Beneficial	None	Not applicable
Impact 4.1-69 Reduction of predation-related mortality as a result of removing dams and improving fish ladders (similar to Impact 4.1-17)	Beneficial	None	Not applicable
Impact 4.1-70 Substantially increased production of food for fish resulting from increased minimum instream flows (similar to Impact 4.1-18)	Beneficial	None	Not applicable
BOTANICAL, WETLAND, AND WILDLIFE RESOURCES			
No Action Alternative			
Botanical, wildlife, and wetland resources would not be affected under the No Action Alternative; the Hydroelectric	No Change	None	

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Project would continue to operate consistent with the current FERC license			
Five Dam Removal Alternative (Proposed Action)			
Impact 4.2-1 Potential disturbance or loss of 7.2 acres of woody riparian vegetation and associated wildlife habitat	Significant	Reclamation will minimize the removal and disturbance of riparian habitat, avoid long-term impacts on woody riparian vegetation and associated habitat, and compensate for the loss of any such habitat	Less than Significant
Impact 4.2-2 Potential introduction of noxious weeds or spread of existing noxious weeds	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.7-1, Reclamation will educate construction crews, use appropriate eradication techniques, wash all equipment after leaving noxious weed sites, use weed-free materials for revegetation, perform a post-construction weed inventory, and perform routine inspections at construction sites	Less than Significant
Impact 4.2-3 Potential loss or disturbance of 12.1 acres of waters of the United States (including wetlands)	Significant	In addition to mitigation recommended for the Proposed Action, Impacts 4.4-1 and 4.7-1, Reclamation will prohibit equipment access or staging in jurisdictional waters adjacent to the construction zone, stake and flag wetland areas for avoidance, routinely inspect protected areas, implement stream bank stabilization measures, and revegetate lost habitat	Less than Significant
Impact 4.2-4 Potential loss or disturbance of common upland woodland and forest communities and associated wildlife habitat	Significant	A qualified biologist will identify the species and number of native trees to be removed or affected to protect those not removed and develop a tree planting plan; in addition, a qualified biologist will monitor all newly planted trees for 5 years and inspect pruned sites prior to, immediately after, and 1 year after construction for regrowth	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.2-5 Potential disturbance to valley elderberry longhorn beetle habitat	Significant	A qualified biologist will identify and mark valley elderberry longhorn beetle habitat for avoidance during construction; Reclamation will minimize impacts during construction through protection measures and replace any lost habitat post construction	Less than Significant
Impact 4.2-6 Potential disturbance of foothill yellow-legged frog habitat	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for foothill yellow-legged frogs before construction begins; if frogs are found, a qualified biologist will construct barrier fencing to exclude frogs from the work area and relocate frogs to nearest suitable habitat until after construction	Less than Significant
Impact 4.2-7 Potential disturbance of northwestern pond turtle habitat	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for northwestern pond turtles before construction begins; if turtles are found, a qualified biologist will construct barrier fencing to exclude turtles from the work area and relocate frogs to nearest suitable habitat until after construction	Less than Significant
Impact 4.2-8 Potential disturbance of breeding habitat for yellow-breasted chat	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-1, a qualified biologist will survey for breeding yellow-breasted chats before construction begins; if breeding chats are found, the construction contractor will limit removal of riparian vegetation and establish a 500-ft. no disturbance buffer around all active sites until after construction	Less than Significant
Impact 4.2-9 Potential disturbance to nesting raptors	Significant	A qualified biologist will survey the project sites to locate active osprey and golden eagle nests before construction begins; if active nests are found, Reclamation will limit construction activities near the nest to the nonbreeding season	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		(mid-July to February), establish a 0.5-mile-radius direct line-of-sight buffer for active golden eagle nests and a 500-foot-radius direct line-of-sight buffer for active osprey nests, and maintain a 0.5-mile direct line-of-sight helicopter exclusion zone around any active nests	
Impact 4.2-10 Potential disturbance of bats in canal tunnels and on rocky cliffs and outcrops along canyon walls	Significant	A qualified biologist will survey construction sites, nearby tunnels, rocky cliffs and outcrops, and other potential bat habitats that could be adversely affected by construction to determine the presence or absence of bats; Reclamation will restrict construction activities to non-use periods or outside the breeding and hibernation periods if sites are found that support maternity colonies or large concentrations of roosting bats; if impacts are unavoidable during any season, Reclamation will implement selected minimizing actions to reduce disturbance of roosting bats; construction scheduling, buffer zones, and other mitigation measures will be developed in consultation with bat specialists, U.S. Fish and Wildlife Service, and the California Department of Fish and Game	Less than Significant
Impact 4.2-11 Possible loss of woody riparian vegetation along the South and Wildcat canals from cessation of flows	Less than Significant	None	Not applicable
Impact 4.2-12 Potential disturbance of foraging bald eagles along Battle Creek	Less than Significant	None	Not applicable
Impact 4.2-13 Reduction of artificial flow fluctuations and increased survival of amphibians	Beneficial	None	Not applicable
Impact 4.2-14 Increase in quantity of amphibian habitat resulting from increased minimum instream flows	Beneficial	None	Not applicable
Impact 4.2-15 Substantial increase in quantity of bat roosting habitat in the South Canal tunnels due to termination of water flow through the tunnels	Beneficial	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
No Dam Removal Alternative			
Impact 4.2-16 Potential disturbance or loss of 4.1 acres of woody riparian vegetation and associated wildlife habitat (similar to Impact 4.2-1)	Significant	Reclamation will minimize the removal and disturbance of riparian habitat, avoid long-term impacts on woody riparian vegetation and associated habitat, and compensate for the loss of any such habitat (same mitigation as recommended for the Proposed Action, Impact 4.2-1)	Less than Significant
Impact 4.2-17 Potential introduction of noxious weeds or spread of existing noxious weeds (similar to Impact 4.2-2)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.7-1, Reclamation will educate construction crews, use appropriate eradication techniques, wash all equipment after leaving noxious weed sites, use weed-free materials for revegetation, perform a post-construction weed inventory, and perform routine inspections at construction sites (same mitigation as recommended for the Proposed Action, Impact 4.2-2)	Less than Significant
Impact 4.2-18 Potential loss or disturbance of 11.6 acres of waters of the United States (including wetlands) (similar to Impact 4.2-3)	Significant	In addition to mitigation recommended for the Proposed Action, Impacts 4.4-1 and 4.7-1, Reclamation will prohibit equipment access or staging in jurisdictional waters adjacent to the construction zone, stake and flag wetland areas for avoidance, routinely inspect protected areas, implement stream bank stabilization measures, and revegetate lost habitat (same mitigation as recommended for the Proposed Action, Impact 4.2-3)	Less than Significant
Impact 4.2-19 Potential loss or disturbance of common upland woodland and forest communities and associated wildlife habitat (similar to Impact 4.2-4)	Significant	A qualified biologist will identify the species and number of native trees to be removed or affected to protect those not removed and develop a tree planting plan; in addition, a qualified biologist will monitor all newly planted trees for 5 years and	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		inspect pruned sites prior to, immediately after, and 1 year after construction for regrowth (same mitigation as recommended for the Proposed Action, Impact 4.2-4)	
Impact 4.2-20 Potential disturbance to valley elderberry longhorn beetle habitat (similar to Impact 4.2-5)	Significant	A qualified biologist will identify and mark valley elderberry longhorn beetle habitat for avoidance during construction; Reclamation will minimize impacts during construction through protection measures and replace any lost habitat post construction (same mitigation as recommended for the Proposed Action, Impact 4.2-5)	Less than Significant
Impact 4.2-21 Potential disturbance of foothill yellow-legged frog habitat (similar to Impact 4.2-6)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for foothill yellow-legged frogs before construction begins; if frogs are found, a qualified biologist will construct barrier fencing to exclude frogs from the work area and relocate frogs to nearest suitable habitat until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-6)	Less than Significant
Impact 4.2-22 Potential disturbance of northwestern pond turtle habitat (similar to Impact 4.2-7)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for northwestern pond turtles before construction begins; if turtles are found, a qualified biologist will construct barrier fencing to exclude turtles from the work area and relocate frogs to nearest suitable habitat until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-7)	Less than Significant
Impact 4.2-23 Potential disturbance of breeding habitat for yellow-breasted chat (similar to Impact 4.2-8)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-1, a qualified biologist will survey for breeding yellow-breasted chats before construction begins; if breeding chats are found, the construction contractor will limit removal of riparian vegetation and establish a 500-ft. no disturbance buffer around all active sites	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-8)	
Impact 4.2-24 Potential disturbance to nesting raptors (similar to Impact 4.2-9)	Significant	A qualified biologist will survey the project sites to locate active osprey and golden eagle nests before construction begins; if active nests are found, Reclamation will limit construction activities near the nest to the nonbreeding season (mid-July to February), establish a 0.5-mile-radius direct line-of-sight buffer for active golden eagle nests and a 500-foot-radius direct line-of-sight buffer for active osprey nests, and maintain a 0.5-mile direct line-of-sight helicopter exclusion zone around any active nests (same mitigation as recommended for the Proposed Action, Impact 4.2-9)	Less than Significant
Impact 4.2-25 Potential disturbance of bats in canal tunnels and on rocky cliffs and outcrops along canyon walls (similar to Impact 4.2-10)	Significant	A qualified biologist will survey construction sites, nearby tunnels, rocky cliffs and outcrops, and other potential bat habitats that could be adversely affected by construction to determine the presence or absence of bats; Reclamation will restrict construction activities to non-use periods or outside the breeding and hibernation periods if sites are found that support maternity colonies or large concentrations of roosting bats; if impacts are unavoidable during any season, Reclamation will implement selected minimizing actions to reduce disturbance of roosting bats; construction scheduling, buffer zones, and other mitigation measures will be developed in consultation with bat specialists, U.S. Fish and Wildlife Service, and the California Department of Fish and Game (same mitigation as recommended for the Proposed Action, Impact 4.2-10)	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.2-26 Potential disturbance of foraging bald eagles along Battle Creek (similar to Impact 4.2-12)	Less than Significant	None	Not applicable
Impact 4.2-27 Increase in quantity of amphibian habitat resulting from increased minimum instream flows (similar to Impact 4.2-14)	Beneficial	None	Not applicable
Six Dam Removal Alternative			
Impact 4.2-28 Potential disturbance or loss of 7.2 acres of woody riparian vegetation and associated wildlife habitat (similar to Impact 4.2-1)	Significant	Reclamation will minimize the removal and disturbance of riparian habitat, avoid long-term impacts on woody riparian vegetation and associated habitat, and compensate for the loss of any such habitat (same mitigation as recommended for the Proposed Action, Impact 4.2-1)	Less than Significant
Impact 4.2-29 Potential introduction of noxious weeds or spread of existing noxious weeds (similar to Impact 4.2-2)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.7-1, Reclamation will educate construction crews, use appropriate eradication techniques, wash all equipment after leaving noxious weed sites, use weed-free materials for revegetation, perform a post-construction weed inventory, and perform routine inspections at construction sites (same mitigation as recommended for the Proposed Action, Impact 4.2-2)	Less than Significant
Impact 4.2-30 Potential loss or disturbance of 12.1 acres of waters of the United States (including wetlands) (similar to Impact 4.2-3)	Significant	In addition to mitigation recommended for the Proposed Action, Impacts 4.4-1 and 4.7-1, Reclamation will prohibit equipment access or staging in jurisdictional waters adjacent to the construction zone, stake and flag wetland areas for avoidance, routinely inspect protected areas, implement stream bank stabilization measures, and revegetate lost habitat (same mitigation as recommended for the Proposed Action, Impact	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		4.2-3)	
Impact 4.2-31 Potential loss or disturbance of common upland woodland and forest communities and associated wildlife habitat (similar to Impact 4.2-4)	Significant	A qualified biologist will identify the species and number of native trees to be removed or affected to protect those not removed and develop a tree planting plan; in addition, a qualified biologist will monitor all newly planted trees for 5 years and inspect pruned sites prior to, immediately after, and 1 year after construction for regrowth (same mitigation as recommended for the Proposed Action, Impact 4.2-4)	Less than Significant
Impact 4.2-32 Potential disturbance to valley elderberry longhorn beetle habitat (similar to Impact 4.2-5)	Significant	A qualified biologist will identify and mark valley elderberry longhorn beetle habitat for avoidance during construction; Reclamation will minimize impacts during construction through protection measures and replace any lost habitat post construction (same mitigation as recommended for the Proposed Action, Impact 4.2-5)	Less than Significant
Impact 4.2-33 Potential disturbance of foothill yellow-legged frog habitat (similar to Impact 4.2-6)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for foothill yellow-legged frogs before construction begins; if frogs are found, a qualified biologist will construct barrier fencing to exclude frogs from the work area and relocate frogs to nearest suitable habitat until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-6)	Less than Significant
Impact 4.2-34 Potential disturbance of northwestern pond turtle habitat (similar to Impact 4.2-7)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for northwestern pond turtles before construction begins; if turtles are found, a qualified biologist will construct barrier fencing to exclude turtles from the work area and relocate frogs to nearest suitable habitat until after construction (same mitigation as recommended	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		for the Proposed Action, Impact 4.2-7)	
Impact 4.2-35 Potential disturbance of breeding habitat for yellow-breasted chat (similar to Impact 4.2-8)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-1, a qualified biologist will survey for breeding yellow-breasted chats before construction begins; if breeding chats are found, the construction contractor will limit removal of riparian vegetation and establish a 500-ft. no disturbance buffer around all active sites until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-8)	Less than Significant
Impact 4.2-36 Potential disturbance to nesting raptors (similar to Impact 4.2-9)	Significant	A qualified biologist will survey the project sites to locate active osprey and golden eagle nests before construction begins; if active nests are found, Reclamation will limit construction activities near the nest to the nonbreeding season (mid-July to February), establish a 0.5-mile-radius direct line-of-sight buffer for active golden eagle nests and a 500-foot-radius direct line-of-sight buffer for active osprey nests, and maintain a 0.5-mile direct line-of-sight helicopter exclusion zone around any active nests (same mitigation as recommended for the Proposed Action, Impact 4.2-9)	Less than Significant
Impact 4.2-37 Potential disturbance of bats in canal tunnels and on rocky cliffs and outcrops along canyon walls (similar to Impact 4.2-10)	Significant	A qualified biologist will survey construction sites, nearby tunnels, rocky cliffs and outcrops, and other potential bat habitats that could be adversely affected by construction to determine the presence or absence of bats; Reclamation will restrict construction activities to non-use periods or outside the breeding and hibernation periods if sites are found that support maternity colonies or large concentrations of roosting bats; if impacts are unavoidable during any season, Reclamation will implement selected minimizing actions to reduce disturbance of roosting bats; construction	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		scheduling, buffer zones, and other mitigation measures will be developed in consultation with bat specialists, U.S. Fish and Wildlife Service, and the California Department of Fish and Game (same mitigation as recommended for the Proposed Action, Impact 4.2-10)	
Impact 4.2-38 Possible loss of woody riparian vegetation along the South and Wildcat Canals from cessation of flows (similar to Impact 4.2-11)	Less than Significant	None	Not applicable
Impact 4.2-39 Potential disturbance of foraging bald eagles along Battle Creek (similar to Impact 4.2-12)	Less than Significant	None	Not applicable
Impact 4.2-40 Reduction in artificial flow fluctuations and increased survival of amphibians (similar to Impact 4.2-13)	Beneficial	None	Not applicable
Impact 4.2-41 Increase in the quantity of amphibian habitat resulting from increased minimum instream flows (similar to Impact 4.2-14)	Beneficial	None	Not applicable
Impact 4.2-42 Substantial increase in the quantity of bat roosting habitat in the South Canal tunnels due to termination of water flow through the tunnels (similar to Impact 4.2-15)	Beneficial	None	Not applicable
Three Dam Removal Alternative			
Impact 4.2-43 Potential loss or disturbance of 6.0 acres of woody riparian vegetation and associated wildlife habitat (similar to Impact 4.2-1)	Significant	Reclamation will minimize the removal and disturbance of riparian habitat, avoid long-term impacts on woody riparian vegetation and associated habitat, and compensate for the loss of any such habitat (same mitigation as recommended for the Proposed Action, Impact 4.2-1)	Less than Significant
Impact 4.2-44 Potential introduction of noxious weeds or spread of existing noxious weeds (similar to Impact 4.2-2)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.7-1, Reclamation will educate construction crews, use appropriate eradication techniques, wash all equipment after	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		leaving noxious weed sites, use weed-free materials for revegetation, perform a post-construction weed inventory, and perform routine inspections at construction sites (same mitigation as recommended for the Proposed Action, Impact 4.2-2)	
Impact 4.2-45 Potential loss or disturbance of 11.6 acres of waters of the United States (including wetlands) (similar to Impact 4.2-3)	Significant	In addition to mitigation recommended for the Proposed Action, Impacts 4.4-1 and 4.7-1, Reclamation will prohibit equipment access or staging in jurisdictional waters adjacent to the construction zone, stake and flag wetland areas for avoidance, routinely inspect protected areas, implement stream bank stabilization measures, and revegetate lost habitat (same mitigation as recommended for the Proposed Action, Impact 4.2-3)	Less than Significant
Impact 4.2-46 Potential loss or disturbance of common upland woodland and forest communities and associated wildlife habitat (similar to Impact 4.2-4)	Significant	A qualified biologist will identify the species and number of native trees to be removed or affected to protect those not removed and develop a tree planting plan; in addition, a qualified biologist will monitor all newly planted trees for 5 years and inspect pruned sites prior to, immediately after, and 1 year after construction for regrowth (same mitigation as recommended for the Proposed Action, Impact 4.2-4)	Less than Significant
Impact 4.2-47 Potential disturbance to valley elderberry longhorn beetle habitat (similar to Impact 4.2-5)	Significant	A qualified biologist will identify and mark valley elderberry longhorn beetle habitat for avoidance during construction; Reclamation will minimize impacts during construction through protection measures and replace any lost habitat post construction (same mitigation as recommended for the Proposed Action, Impact 4.2-5)	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.2-48 Potential disturbance of foothill yellow-legged frog habitat (similar to Impact 4.2-6)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for foothill yellow-legged frogs before construction begins; if frogs are found, a qualified biologist will construct barrier fencing to exclude frogs from the work area and relocate frogs to nearest suitable habitat until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-6)	Less than Significant
Impact 4.2-49 Potential disturbance of northwestern pond turtle habitat (similar to Impact 4.2-7)	Significant	In addition to mitigation recommended for the Proposed Action, Impact 4.2-3, a qualified biologist will survey for northwestern pond turtles before construction begins; if turtles are found, a qualified biologist will construct barrier fencing to exclude turtles from the work area and relocate frogs to nearest suitable habitat until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-7)	Less than Significant
Impact 4.2-50 Potential disturbance of breeding habitat for yellow-breasted chat (similar to Impact 4.2-8)	Significant	A qualified biologist will survey for breeding yellow-breasted chats before construction begins; if breeding chats are found, the construction contractor will limit removal of riparian vegetation and establish a 500-ft. no disturbance buffer around all active sites until after construction (same mitigation as recommended for the Proposed Action, Impact 4.2-8)	Less than Significant
Impact 4.2-51 Potential disturbance to nesting raptors (similar to Impact 4.2-9)	Significant	A qualified biologist will survey the project sites to locate active osprey and golden eagle nests before construction begins; if active nests are found, Reclamation will limit construction activities near the nest to the nonbreeding season (mid-July to February), establish a 0.5-mile-radius direct line-of-sight buffer for active golden eagle nests and a 500-foot-radius direct line-of-sight buffer for active osprey nests, and maintain a 0.5-mile direct line-of-sight helicopter exclusion zone	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		around any active nests (same mitigation as recommended for the Proposed Action, Impact 4.2-9)	
Impact 4.2-52 Potential disturbance of bats in canal tunnels and on rocky cliffs and outcrops along canyon walls (similar to Impact 4.2-10)	Significant	A qualified biologist will survey construction sites, nearby tunnels, rocky cliffs and outcrops, and other potential bat habitats that could be adversely affected by construction to determine the presence or absence of bats; Reclamation will restrict construction activities to non-use periods or outside the breeding and hibernation periods if sites are found that support maternity colonies or large concentrations of roosting bats; if impacts are unavoidable during any season, Reclamation will implement selected minimizing actions to reduce disturbance of roosting bats; construction scheduling, buffer zones, and other mitigation measures will be developed in consultation with bat specialists, U.S. Fish and Wildlife Service, and the California Department of Fish and Game (same mitigation as recommended for the Proposed Action, Impact 4.2-10)	Less than Significant
Impact 4.2-53 Possible loss of woody riparian vegetation along the Wildcat Canal from cessation of flows (similar to Impact 4.2-11)	Less than Significant	None	Not applicable
Impact 4.2-54 Potential disturbance of foraging bald eagles along Battle Creek (similar to Impact 4.2-12)	Less than Significant	None	Not applicable
Impact 4.2-55 Reduction of artificial flow fluctuations and increased survival of amphibians (similar to Impact 4.2-13)	Beneficial	None	Not applicable
Impact 4.2-56 Substantial increase in the quantity of amphibian habitat resulting from increased minimum instream flows (similar to Impact 4.2-14)	Beneficial	None	Not applicable
HYDROLOGY			

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
No Action Alternative			
Current hydrology would not change; Hydroelectric Project facilities and operations would be maintained and operated in accordance with FERC regulations, and the existing minimum flows would continue to be provided	No Change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.3-1 In-water construction could result in short-term disruption of streambed and flows	Less than Significant	None	Not applicable
Impact 4.3-2 Coleman Diversion Dam removal could reduce the 10-, 25-, and 50-year floodwater surface profiles at Inskip Powerhouse	Beneficial	None	Not applicable
No Dam Removal Alternative			
Impact 4.3-3 In-water construction could result in short-term disruption of streambed and flows (similar to Impact 4.3-1)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.3-4 Removal of Eagle Canyon Diversion Dam could result in minor, slight increases to downstream bed elevations	Less than Significant	None	Not applicable
Impact 4.3-5 In-water construction could result in short-term disruption of streambed and flows (similar to Impact 4.3-1)	Less than Significant	None	Not applicable
Impact 4.3-6 Coleman Diversion Dam removal could reduce the 10-, 25-, and 50-year floodwater surface profiles at Inskip Powerhouse (similar to Impact 4.3-2)	Beneficial	None	Not applicable
Three Dam Removal Alternative			
Impact 4.3-7 In-water construction could result in short-term disruption of streambed and flows (similar to Impact 4.3-1)	Less than Significant	None	Not applicable
Impact 4.3-8 Coleman Diversion Dam removal could reduce the 10-, 25-, and 50-year floodwater surface profiles	Beneficial	None	Not Applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
at Inskip Powerhouse (similar to Impact 4.3-2)			
WATER QUALITY			
No Action Alternative			
The No Action Alternative would not affect water quality. Under the No Action Alternative, the Hydroelectric Project would continue to operate consistent with the current FERC license.	No change		
Five Dam Removal Alternative (Proposed Action)			
Impact 4.4-1 Increased erosion and subsequent discharge of settleable material into Battle Creek as a result of removing diversion dams and constructing fish screens and fish ladders	Significant	Reclamation will develop an erosion control plan in coordination with the Central Valley Regional Water Quality Control Board	Less than significant
Impact 4.4-2 Potential spills of hazardous materials could occur	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills	Less than significant
Impact 4.4-3 Removal of South and Coleman Diversion Dams could cause erosion of minor amounts of sediment from behind the dam	Less than Significant	None	Not applicable
Impact 4.4-4 Minor amounts of sediment released by the removal of Coleman Diversion Dam would be deposited at the County Road Bridge	Less than Significant	None	Not applicable
Impact 4.4-5 Short-term increased turbidity and settleable material load on the Coleman National Fish Hatchery water treatment plant as a result of removing Coleman Diversion Dam	Less than significant	None	Not Applicable
No Dam Removal Alternative			
Impact 4.4-6 Increased erosion and subsequent discharge of settleable material into Battle Creek as a result of constructing fish screens and fish ladders (similar to Impact 4.4-1)	Significant	Reclamation will develop an erosion control plan in coordination with the Central Valley Regional Water Quality Control Board (same mitigation as recommended for the Proposed Action, Impact 4.4-1)	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.4-7 Potential spills of hazardous materials could occur (similar to Impact 4.4-2)	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills (same mitigation as recommended for the Proposed Action, Impact 4.4-2)	Less than Significant
Six Dam Removal Alternative			
Impact 4.4-8 Increased erosion and subsequent discharge of settleable material into Battle Creek as a result of removing diversion dams and constructing fish screens and fish ladders (similar to Impact 4.4-1)	Significant	Reclamation will develop an erosion control plan in coordination with the Central Valley Regional Water Quality Control Board (same mitigation as recommended for the Proposed Action, Impact 4.4-1)	Less than Significant
Impact 4.4-9 Potential spills of hazardous materials could occur (similar to Impact 4.4-2)	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills (same mitigation as recommended for the Proposed Action, Impact 4.4-2)	Less than Significant
Impact 4.4-10 Removal of South and Coleman Diversion Dams could cause erosion of minor amounts of sediment from behind the dam (similar to Impact 4.4-3)	Less than Significant	None	Not applicable
Impact 4.4-11 Minor amounts of sediment released by the removal of Coleman Diversion Dam would be deposited at the County Road Bridge (similar to Impact 4.4-4)	Less than Significant	None	Not applicable
Impact 4.4-12 Short-term increased turbidity and settleable material load on the Coleman National Fish Hatchery water treatment plant as a result of removing Coleman Diversion Dam (similar to Impact 4.5-5)	Less than Significant	None	Not Applicable
Three Dam Removal Alternative			
Impact 4.4-13 Increased erosion and subsequent discharge of settleable material into Battle Creek as a result of removing diversion dams and constructing fish screens and fish ladders (similar to Impact 4.4-1)	Significant	Reclamation will develop an erosion control plan in coordination with the Central Valley Regional Water Quality Control Board (same mitigation as recommended for the Proposed Action, Impact 4.4-1)	Less than Significant
Impact 4.4-14 Potential spills of hazardous materials could occur (similar to Impact 4.4-2)	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills (same mitigation as recommended for the Proposed	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		Action, Impact 4.4-2)	
Impact 4.4-15 Removal of Coleman Diversion Dam could cause erosion of minor amounts of sediment from behind the dam (similar to Impact 4.4-3)	Less than Significant	None	Not applicable
Impact 4.4-16 Minor amounts of sediment released by the removal of Coleman Diversion Dam would be deposited at the County Road Bridge (similar to Impact 4.4-4)	Less than Significant	None	Not applicable
Impact 4.4-17 Short-term increased turbidity and settleable material load on the Coleman National Fish Hatchery water treatment plant as a result of removing Coleman Diversion Dam (similar to Impact 4.4-5)	Less than Significant	None	Not Applicable
GROUNDWATER			
No Action Alternative			
Groundwater would not change under the No Action Alternative	No Change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.5-1 Potential spills of hazardous materials could occur and contaminate the shallow groundwater system	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills	Less than significant
No Dam Removal Alternative			
Impact 4.5-2 Potential spills of hazardous materials could occur and contaminate the shallow groundwater system (similar to Impact 4.5-1)	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills (same mitigation as recommended for the Proposed Action, Impact 4.5-1)	Less than significant
Six Dam Removal Alternative			
Impact 4.5-3 Potential spills of hazardous materials could occur and contaminate the shallow groundwater system (similar to Impact 4.5-1)	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills (same mitigation as recommended for the Proposed Action, Impact 4.5-1)	Less than significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Three Dam Removal Alternative			
Impact 4.5-4 Potential spills of hazardous materials could occur and contaminate the shallow groundwater system (similar to Impact 4.5-1)	Significant	Reclamation will implement measures designed to avoid or minimize hazardous spills (same mitigation as recommended for the Proposed Action, Impact 4.5-1)	Less than significant
LAND USE			
No Action Alternative			
The No Action Alternative would not impact land use; the No Action Alternative is not expected to conflict with general plans and established land uses, alter existing land uses, displace a large number of people, or convert agricultural land to nonagricultural land	No Change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.6-1 Conversion of lands disturbed by construction activities from open space to Restoration Project support would substantially conflict with existing land uses	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.6-2 Conversion of lands disturbed by construction activities from open space to Restoration Project support would substantially conflict with existing land uses (similar to Impact 4.6-1)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.6-3 Conversion of lands disturbed by construction activities from open space to Restoration Project support would substantially conflict with existing land uses (similar to Impact 4.6-1)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.6-4 Conversion of lands disturbed by construction activities from open space to Restoration	Less than	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Project support would substantially conflict with existing land uses (similar to Impact 4.6-1)	Significant		
GEOLOGY AND SOILS			
No Action Alternative			
Geological and soil resources would not change	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.7-1 Potential accelerated water and wind erosion from construction activities	Significant	The construction contractor will implement an erosion and sediment control plan in addition to implementing best management practices at all construction sites	Less than Significant
Impact 4.7-2 Construction workers could be exposed to falling rocks	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.7-3 Potential accelerated water and wind erosion from construction activities (similar to Impact 4.7-1)	Significant	The construction contractor will implement an erosion and sediment control plan in addition to implementing best management practices at all construction sites (same mitigation as recommended for the Proposed Action, Impact 4.7-1)	Less than Significant
Impact 4.7-4 Construction workers could be exposed to falling rocks (similar to Impact 4.7-2)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.7-5 Potential accelerated water and wind erosion from construction activities (similar to Impact 4.7-1)	Significant	The construction contractor will implement an erosion and sediment control plan in addition to implementing best management practices at all construction sites (same mitigation as recommended for the Proposed Action, Impact 4.7-1)	Less than Significant
Impact 4.7-6 Construction workers could be exposed to falling rocks (similar to Impact 4.7-2)	Less than Significant	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Three Dam Removal Alternative			
Impact 4.7-7 Potential accelerated water and wind erosion from construction activities (similar to Impact 4.7-1)	Significant	The construction contractor will implement an erosion and sediment control plan in addition to implementing best management practices at all construction sites (same mitigation as recommended for the Proposed Action, Impact 4.7-1)	Less than Significant
Impact 4.7-8 Construction workers could be exposed to falling rocks (similar to Impact 4.7-2)	Less than Significant	None	Not applicable
AESTHETICS AND VISUAL RESOURCES			
No Action Alternative			
Aesthetics and visual resources would not change under the No Action Alternative; the No Action Alternative would not alter existing views of Hydroelectric Project facilities or affect any scenic vistas.	No Change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.8-1 Construction of tailrace connectors, new fish screens and fish ladders, and associated facilities would reduce scenic quality at the Oasis Springs Lodge	Significant and Unavoidable	Reclamation will implement a revegetation plan and Reclamation will apply an acid wash to the rock face along the proposed access road to break up the appearance of the cut in the hillside	Significant
Impact 4.8-2 Proposed construction of tailrace connector, bypass chute, and fish screen and fish ladders would alter views from adjacent area	Less than Significant	None	Not applicable
Impact 4.8-3 Removal of diversion dams and associated construction would not substantially reduce scenic quality from public viewing areas	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.8-4 Construction of fish screens and fish ladders and associated facilities would reduce scenic quality at the Oasis Springs Lodge (similar to Impact 4.8-1)	Significant and Unavoidable	Reclamation will implement a revegetation plan and Reclamation will apply an acid wash to the rock face along the proposed access road to break	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		up the appearance of the cut in the hillside (same mitigation as recommended for the Proposed Action, Impact 4.8-1)	
Impact 4.8-5 Proposed construction of fish screen and fish ladders would alter views from adjacent area (similar to Impact 4.8-2)	Less than Significant	None	Not applicable
Impact 4.8-6 Construction of fish screens and fish ladders and associated project activities would substantially reduce scenic quality from public viewing areas (similar to Impact 4.8-3)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.8-7 Construction of tailrace connectors, new fish screen and fish ladder and associated facilities would reduce scenic quality at the Oasis Springs Lodge (similar to Impact 4.8-1)	Significant and Unavoidable	Reclamation will implement a revegetation plan and Reclamation will apply an acid wash to the rock face along the proposed access road to break up the appearance of the cut in the hillside (same mitigation as recommended for the Proposed Action, Impact 4.8-1)	Significant
Impact 4.8-8 Proposed construction of tailrace connector, bypass chute, and fish screen and fish ladders would alter views from adjacent area (similar to Impact 4.8-2)	Less than Significant	None	Not applicable
Impact 4.8-9 Removal of diversion dams and associated construction would substantially reduce scenic quality from public viewing areas (similar to Impact 4.8-3)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.8-10 Construction of new fish screen and fish ladder and associated facilities would reduce scenic quality at the Oasis Springs Lodge (similar to Impact 4.8-1)	Significant and Unavoidable	Reclamation will implement a revegetation plan and Reclamation will apply an acid wash to the rock face along the proposed access road to break up the appearance of the cut in the hillside (same mitigation as recommended for the Proposed Action, Impact 4.8-1)	Significant
Impact 4.8-11 Construction of the channel with armoring or revetment would alter views of the South Fork	Significant and Unavoidable	None	Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
creek bank			
Impact 4.8-12 Proposed construction of fish screens and fish ladders would alter views from adjacent area (similar to Impact 4.8-2)	Less than Significant	None	Not applicable
Impact 4.8-13 Removal of diversion dams and associated construction would substantially reduce scenic quality from public viewing areas (similar to Impact 4.8-3)	Less than Significant	None	Not applicable
TRANSPORTATION			
No Action Alternative			
The No Action Alternative would not result in the construction of new access roads or improvements to existing roads, other than those already planned as a part of the operation and maintenance plan for the Hydroelectric Project	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.9-1 Construction and removal activities at the Restoration Project sites would result in increased traffic volumes on state, county, and private roadways	Less than Significant	None	Not applicable
Impact 4.9-2 Construction traffic could damage county and private roadways	Less than Significant	None	Not applicable
Impact 4.9-3 Construction traffic or activities could delay emergency vehicle response times	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.9-4 Construction and removal activities at the Restoration Project sites would result in increased traffic volumes on state, county, and private roadways (similar to Impact 4.9-1)	Less than Significant	None	Not applicable
Impact 4.9-5 Construction traffic could damage county and private roadways (similar to Impact 4.9-2)	Less than Significant	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.9-6 Construction traffic or activities could delay emergency vehicle response times (similar to Impact 4.9-3)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.9-7 Construction and removal activities at the Restoration Project sites would result in increased traffic volumes on state, county, and private roadways (similar to Impact 4.9-1)	Less than Significant	None	Not applicable
Impact 4.9-8 Construction traffic could damage county and private roadways (similar to Impact 4.9-2)	Less than Significant	None	Not applicable
Impact 4.9-9 Construction traffic or activities could delay emergency vehicle response times (similar to Impact 4.9-3)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.9-10 Construction and removal activities at the Restoration Project sites would result in increased traffic volumes on state, county, and private roadways (similar to Impact 4.9-1)	Less than Significant	None	Not applicable
Impact 4.9-11 Construction traffic could damage county and private roadways (similar to Impact 4.9-2)	Less than Significant	None	Not applicable
Impact 4.9-12 Construction traffic or activities could delay emergency vehicle response times (similar to Impact 4.9-3)	Less than Significant	None	Not applicable
NOISE			
No Action Alternative			
The No Action Alternative would not increase noise levels above existing levels in the vicinity of the Restoration Project or at the locations of nearby sensitive receptors.	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.10-1 Exposure of noise-sensitive uses to noise and vibration from blasting	Significant	The construction contractor will implement noise and blast mitigation plan including but not limited to notification of blasting to nearby landowners, pre-blast alarms, continued noise monitoring, and best management practices	Less than Significant
Impact 4.10-2 Exposure of noise-sensitive land uses to noise from on-site construction activities	Significant	Reclamation will implement noise reducing construction practices	Less than Significant
Impact 4.10-3 Exposure of noise-sensitive land uses along site access roads to construction-related truck noise	Significant	Reclamation will construct an alternative haul route at least 750 feet from the nearest occupied residences and limit trucking operations to the hours of 7:00a.m. to 9:00p.m	Less than Significant
Impact 4.10-4 Exposure of noise-sensitive land use to noise from operation of the Restoration Project facilities	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.10-5 Exposure of noise-sensitive uses to noise and vibration from blasting (similar to Impact 4.10-1)	Significant	The construction contractor will implement noise and blast mitigation plan including but not limited to notification of blasting to nearby landowners, pre-blast alarms, continued noise monitoring, and best management practices (same mitigation as recommended for the Proposed Action, Impact 4.10-1)	Less than Significant
Impact 4.10-6 Exposure of noise-sensitive land uses to noise from on-site construction activities (similar to Impact 4.10-2)	Significant	Reclamation will implement noise reducing construction practices (same mitigation as recommended for the Proposed Action, Impact 4.10-2)	Less than Significant
Impact 4.10-7 Exposure of noise-sensitive land uses along site access roads to construction-related truck noise (similar to Impact 4.10-3)	Significant	Reclamation will construct an alternative haul route at least 750 feet from the nearest occupied residences and limit trucking operations to the hours of 7:00a.m. to 9:00p.m (same mitigation as recommended for the Proposed Action, Impact 4.10-3)	Less than Significant
Impact 4.10-8 Exposure of noise-sensitive land use to noise from operation of the Restoration Project facilities	Less than Significant	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
(similar to Impact 4.10-4)			
Six Dam Removal Alternative			
Impact 4.10-9 Exposure of noise-sensitive uses to noise and vibration from blasting (similar to Impact 4.10-1)	Significant	The construction contractor will implement noise and blast mitigation plan including but not limited to notification of blasting to nearby landowners, pre-blast alarms, continued noise monitoring, and best management practices (same mitigation as recommended for the Proposed Action, Impact 4.10-1)	Less than Significant
Impact 4.10-10 Exposure of noise-sensitive land uses to noise from on-site construction activities (similar to Impact 4.10-2)	Significant	Reclamation will implement noise reducing construction practices (same mitigation as recommended for the Proposed Action, Impact 4.10-2)	Less than Significant
Impact 4.10-11 Exposure of noise-sensitive land uses along site access roads to construction-related truck noise (similar to Impact 4.10-3)	Significant	Reclamation will construct an alternative haul route at least 750 feet from the nearest occupied residences and limit trucking operations to the hours of 7:00a.m. to 9:00p.m (same mitigation as recommended for the Proposed Action, Impact 4.10-3)	Less than Significant
Impact 4.10-12 Exposure of noise-sensitive land use to noise from operation of the Restoration Project facilities (similar to Impact 4.10-4)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.10-13 Exposure of noise-sensitive uses to noise and vibration from blasting (similar to Impact 4.10-1)	Significant	The construction contractor will implement noise and blast mitigation plan including but not limited to notification of blasting to nearby landowners, pre-blast alarms, continued noise monitoring, and best management practices (same mitigation as recommended for the Proposed Action, Impact 4.10-1)	Less than Significant
Impact 4.10-14 Exposure of noise-sensitive land uses to noise from on-site construction activities (similar to Impact 4.10-2)	Significant	Reclamation will implement noise reducing construction practices (same mitigation as recommended for the Proposed Action, Impact	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		4.10-2)	
Impact 4.10-15 Exposure of noise-sensitive land uses along site access roads to construction-related truck noise (similar to Impact 4.10-3)	Significant	Reclamation will construct an alternative haul route at least 750 feet from the nearest occupied residences and limit trucking operations to the hours of 7:00a.m. to 9:00p.m (same mitigation as recommended for the Proposed Action, Impact 4.10-3)	Less than Significant
Impact 4.10-16 Exposure of noise-sensitive land use to noise from operation of the Restoration Project facilities (similar to Impact 4.10-4)	Less than Significant	None	Not applicable
AIR QUALITY			
No Action Alternative			
Air quality would not change under the No Action Alternative	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.11-1 Construction-related emissions in excess of allowable thresholds	Significant	The construction contractor will comply with best management practices for emissions controls; Reclamation will obtain all applicable permits required by the Shasta County Air Quality Management District and the Tehama County Air Pollution Control District	Less than Significant
Impact 4.11-2 Increased emissions from operational and maintenance activities would contribute to violation of air quality standards	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.11-3 Construction-related emissions in excess of allowable thresholds (similar to Impact 4.11-1)	Significant	The construction contractor will comply with best management practices for emissions controls; Reclamation will obtain all applicable permits required by the Shasta County Air Quality Management District and the Tehama County Air Pollution Control District (same as mitigation	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		recommended for the Proposed Action, Impact 4.11-1)	
Impact 4.11-4 Increased emissions from operational and maintenance activities would contribute to violation of air quality standards (similar to Impact 4.11-2)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.11-5 Construction-related emissions in excess of allowable thresholds (similar to Impact 4.11-1)	Significant	The construction contractor will comply with best management practices for emissions controls; Reclamation will obtain all applicable permits required by the Shasta County Air Quality Management District and the Tehama County Air Pollution Control District (same as mitigation recommended for the Proposed Action, Impact 4.11-1)	Less than Significant
Impact 4.11-6 Increased emissions from operational and maintenance activities would contribute to violation of air quality standards (similar to Impact 4.3-2)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.11-7 Construction-related emissions in excess of allowable thresholds (similar to Impact 4.11-1)	Significant	The construction contractor will comply with best management practices for emissions controls; Reclamation will obtain all applicable permits required by the Shasta County Air Quality Management District and the Tehama County Air Pollution Control District (same as mitigation recommended for the Proposed Action, Impact 4.11-1)	Less than Significant
Impact 4.11-8 Increased emissions from operational and maintenance activities would contribute to violation of air quality standards (similar to Impact 4.11-2)	Less than Significant	None	Not applicable
PUBLIC HEALTH AND SAFETY			
No Action Alternative			

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
The No Action Alternative is expected to have no impacts on public health and safety in addition to those already anticipated as part of the current operations at the existing facilities	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.12-1 Construction workers could be exposed to hazardous or toxic materials disturbed during construction, modification, or removal activities at the Restoration Project sites	Significant	Reclamation will develop and implement a spill prevention, containment, and countermeasure plan; reduce use of hazardous materials at project sites; and evaluate potential hazards at each project site and develop a plan to minimize risk to the public	Less than Significant
Impact 4.12-2 The public could be exposed to hazardous or toxic materials associated with or disturbed during construction, modification, or removal activities at the Restoration Project sites; public access to construction areas could also increase the potential for exposure to hazardous materials	Significant	Reclamation will clearly mark all construction sites as hazardous and off-limits to the public, backfill or cover excavation areas at each day end, lock access areas to prevent public entry, and notify nearby sensitive receptors and residents of activity schedule	Less than Significant
Impact 4.12-3 Increased vehicle traffic along private access roads during construction activities could endanger residents and domestic animals	Significant	Reclamation will limit construction vehicle speed to 5 mph on private roads, limit construction vehicle traffic on private roads to daylight hours only, and establish complaint line for residents to notify authorities of excessive vehicle speeds/safety issues	Less than Significant
Impact 4.12-4 Dewatering activities at the Restoration Project sites could provide breeding grounds for mosquitoes	Significant	Reclamation will maximize public protection with applicable mosquito abatement districts and control agencies, and inform workers to take appropriate precautions to protect health	Less than Significant
Impact 4.12-5 Helicopter operations at some of the Restoration Project sites could result in worker injury or fire	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.12-6 Construction workers could be exposed to hazardous or toxic materials disturbed during construction, modification, or removal activities at the Restoration	Significant	Reclamation will develop and implement a spill prevention, containment, and countermeasure plan; reduce use of hazardous materials at project sites;	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Project sites (similar to Impact 4.12-1)		and evaluate potential hazards at each project site and develop a plan to minimize risk to the public (same mitigation as recommended for the Proposed Action, Impact 4.11.12-1)	
Impact 4.12-7 The public could be exposed to hazardous or toxic materials associated with or disturbed during construction, modification, or removal activities at the Restoration Project sites; public access to construction areas could also increase the potential for exposure to hazardous materials (similar to Impact 4.12-2)	Significant	Reclamation will clearly mark all construction sites as hazardous and off-limits to the public, backfill or cover excavation areas at each day end, lock access areas to prevent public entry, and notify nearby sensitive receptors and residents of activity schedule (same mitigation as recommended for the Proposed Action, Impact 4.11.12-2)	Less than Significant
Impact 4.12-8 Increased vehicle traffic along private access roads during construction activities could endanger residents and domestic animals (similar to Impact 4.12-3)	Significant	Reclamation will limit construction vehicle speed to 5 mph on private roads, limit construction vehicle traffic on private roads to daylight hours only, and establish complaint line for residents to notify authorities of excessive vehicle speeds/safety issues (same mitigation as recommended for the Proposed Action, Impact 4.11.12-3)	Less than Significant
Impact 4.12-9 Dewatering activities at the Restoration Project sites could provide breeding grounds for mosquitoes (similar to Impact 4.12-4)	Significant	Reclamation will maximize public protection with applicable mosquito abatement districts and control agencies, and inform workers to take appropriate precautions to protect health (same mitigation as recommended for the Proposed Action, Impact 4.11.12-4)	Less than Significant
Impact 4.12-10 Helicopter operations at some of the Restoration Project sites could result in worker injury or fire (similar to Impact 4.12-5)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.12-11 Construction workers could be exposed to hazardous or toxic materials disturbed during construction, modification, or removal activities at the Restoration Project sites (similar to Impact 4.12-1)	Significant	Reclamation will develop and implement a spill prevention, containment, and countermeasure plan; reduce use of hazardous materials at project sites; and evaluate potential hazards at each project site	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		and develop a plan to minimize risk to the public (same mitigation as recommended for the Proposed Action, Impact 4.11.12-1)	
Impact 4.12-12 The public could be exposed to hazardous or toxic materials associated with or disturbed during construction, modification, or removal activities at the Restoration Project sites; public access to construction areas could also increase the potential for exposure to hazardous materials (similar to Impact 4.12-2)	Significant	Reclamation will clearly mark all construction sites as hazardous and off-limits to the public, backfill or cover excavation areas at each day end, lock access areas to prevent public entry, and notify nearby sensitive receptors and residents of activity schedule (same mitigation as recommended for the Proposed Action, Impact 4.11.12-2)	Less than Significant
Impact 4.12-13 Increased vehicle traffic along private access roads during construction activities could endanger residents and domestic animals (similar to Impact 4.12-3)	Significant	Reclamation will limit construction vehicle speed to 5 mph on private roads, limit construction vehicle traffic on private roads to daylight hours only, and establish complaint line for residents to notify authorities of excessive vehicle speeds/safety issues (same mitigation as recommended for the Proposed Action, Impact 4.11.12-3)	Less than Significant
Impact 4.12-14 Dewatering activities at the Restoration Project sites could provide breeding grounds for mosquitoes (similar to Impact 4.12-4)	Significant	Reclamation will maximize public protection with applicable mosquito abatement districts and control agencies, and inform workers to take appropriate precautions to protect health (same mitigation as recommended for the Proposed Action, Impact 4.11.12-4)	Less than Significant
Impact 4.12-15 Helicopter operations at some of the Restoration Project sites could result in worker injury or fire (similar to Impact 4.12-5)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.12-16 Construction workers could be exposed to hazardous or toxic materials disturbed during construction, modification, or removal activities at the Restoration Project sites (similar to Impact 4.12-1)	Significant	Reclamation will develop and implement a spill prevention, containment, and countermeasure plan; reduce use of hazardous materials at project sites; and evaluate potential hazards at each project site	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		and develop a plan to minimize risk to the public (same mitigation as recommended for the Proposed Action, Impact 4.11.12-1)	
Impact 4.12-17 The public could be exposed to hazardous or toxic materials associated with or disturbed during construction, modification, or removal activities at the Restoration Project sites; public access to construction areas could also increase the potential for exposure to hazardous materials (similar to Impact 4.12-2)	Significant	Reclamation will clearly mark all construction sites as hazardous and off-limits to the public, backfill or cover excavation areas at each day end, lock access areas to prevent public entry, and notify nearby sensitive receptors and residents of activity schedule (same mitigation as recommended for the Proposed Action, Impact 4.11.12-2)	Less than Significant
Impact 4.12-18 Increased vehicle traffic along private access roads during construction activities could endanger residents and domestic animals (similar to Impact 4.12-3)	Significant	Reclamation will limit construction vehicle speed to 5 mph on private roads, limit construction vehicle traffic on private roads to daylight hours only, and establish complaint line for residents to notify authorities of excessive vehicle speeds/safety issues (same mitigation as recommended for the Proposed Action, Impact 4.11.12-3)	Less than Significant
Impact 4.12-19 Dewatering activities at the Restoration Project sites could provide breeding grounds for mosquitoes (similar to Impact 4.12-4)	Significant	Reclamation will maximize public protection with applicable mosquito abatement districts and control agencies, and inform workers to take appropriate precautions to protect health (same mitigation as recommended for the Proposed Action, Impact 4.11.12-4)	Less than Significant
Impact 4.12-20 Helicopter operations at some of the Restoration Project sites could result in worker injury or fire (similar to Impact 4.12-5)	Less than Significant	None	Not applicable
PUBLIC SERVICES AND UTILITIES			
No Action Alternative			
The No Action Alternative would not affect public services and utilities and is not expected to contribute to the	No Change	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
increased usage of those public services and utilities described in the document			
Five Dam Removal Alternative (Proposed Action)			
Impact 4.13-1 Proposed activities at the Restoration Project sites may increase demands on fire, police, and emergency medical services	Significant	The construction contractors will implement practicable and conventional precautions to ensure the safety of workers and the general public, use physical barriers and sign postings consistent with standard construction safety management practices, provide notice to county law enforcement and fire protection agencies during proposed activities, and adhere to standard precautions and approaches required by the California Department of Forestry and Protection and Shasta and Tehama County Fire Departments	Less than significant
Impact 4.13-2 Proposed activities at the Restoration Project sites may increase demand on solid waste and hazardous waste disposal facilities	Less than Significant	None	Not applicable
Impact 4.13-3 Relocation or removal of electric transmission facilities could temporarily affect services provided by utilities	Less than Significant	None	Not applicable
No Dam Removal Alternative			
Impact 4.13-4 Proposed activities at the Restoration Project sites may increase demands on fire, police, and emergency medical services (similar to Impact 4.13-1)	Significant	The construction contractors will implement practicable and conventional precautions to ensure the safety of workers and the general public, use physical barriers and sign postings consistent with standard construction safety management practices, provide notice to county law enforcement and fire protection agencies during proposed activities, and adhere to standard precautions and approaches required by the California Department of Forestry and Protection and Shasta and Tehama County Fire Departments (same mitigation as recommended for the Proposed Action, Impact 4.13-1)	Less than significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.13-5 Proposed activities at the Restoration Project sites may increase demand on solid waste and hazardous waste disposal facilities (similar to Impact 4.13-2)	Less than Significant	None	Not applicable
Impact 4.13-6 Relocation or removal of electric transmission facilities could temporarily affect services provided by utilities (similar to Impact 4.13-3)	Less than Significant	None	Not applicable
Six Dam Removal Alternative			
Impact 4.13-7 Proposed activities at the Restoration Project sites may increase demands on fire, police, and emergency medical services (similar to Impact 4.13-1)	Significant	The construction contractors will implement practicable and conventional precautions to ensure the safety of workers and the general public, use physical barriers and sign postings consistent with standard construction safety management practices, provide notice to county law enforcement and fire protection agencies during proposed activities, and adhere to standard precautions and approaches required by the California Department of Forestry and Protection and Shasta and Tehama County Fire Departments (same mitigation as recommended for the Proposed Action, Impact 4.13-1)	Less than significant
Impact 4.13-8 Proposed activities at the Restoration Project sites may increase demand on solid waste and hazardous waste disposal facilities (similar to Impact 4.13-2)	Less than Significant	None	Not applicable
Impact 4.13-9 Relocation or removal of electric transmission facilities could temporarily affect services provided by utilities (similar to Impact 4.13-3)	Less than Significant	None	Not applicable
Three Dam Removal Alternative			
Impact 4.13-10 Significant Proposed activities at the Restoration Project sites may increase demands on fire, police, and emergency medical services (similar to Impact 4.13-1)	Significant	The construction contractors will implement practicable and conventional precautions to ensure the safety of workers and the general public, use physical barriers and sign postings consistent with standard construction safety management	Less than significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		practices, provide notice to county law enforcement and fire protection agencies during proposed activities, and adhere to standard precautions and approaches required by the California Department of Forestry and Protection and Shasta and Tehama County Fire Departments (same mitigation as recommended for the Proposed Action, Impact 4.13-1)	
Impact 4.13-11 Proposed activities at the Restoration Project sites may increase demand on solid waste and hazardous waste disposal facilities (similar to Impact 4.13-2)	Less than Significant	None	Not applicable
Impact 4.13-12 Relocation or removal of electric transmission facilities could temporarily affect services provided by utilities (similar to Impact 4.13-3)	Less than Significant	None	Not applicable
RECREATION			
No Action Alternative			
The No Action Alternative would not result in any changes to the existing recreational resources in and around the Restoration Project.	No change	None	Not applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.14-1 Construction activities at Inskip Diversion Dam could reduce recreational opportunities at the Oasis Springs Lodge	Significant and Unavoidable	Reclamation will notify Oasis Springs Lodge of construction activity schedule, provide monetary compensate for loss of recreation revenues (if necessary), and work with lodge operators to further reduce impacts on recreational opportunities	Significant
Impact 4.14-2 Construction activities could temporarily reduce recreational resources and activities	Significant	Reclamation will notify land and property owners of construction schedule and minimize construction during periods of high recreational activity	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Impact 4.14-3 Construction activities, including the use of equipment and storage areas, may temporarily impede public access to Battle Creek for kayaking and to private property where landowners may grant public access by selling hunting and fishing rights	Significant	Reclamation will notify nearby land and property owners of construction schedule, post signage notifying recreationalists of construction activity and schedule, store heavy equipment alongside access roads and roadways to allow passage of the public, and minimize construction during periods of high recreational activity	Less than Significant
Impact 4.14-4 Removing canals and installing fish screens to stop movement of fish into the remaining canals would virtually eliminate the resident trout populations and recreational trout fishing in the canals	Less than Significant	None	Not applicable
Impact 4.14-5 Increased flows in North Fork and South Fork Battle Creek could increase the opportunities for kayaking, rafting, and/or fishing activities	Beneficial	None	Not applicable
No Dam Removal Alternative			
Impact 4.14-6 Construction activities at Inskip Diversion Dam could reduce recreational opportunities at the Oasis Springs Lodge (similar to Impact 4.14-1)	Significant and Unavoidable	Reclamation will notify Oasis Springs Lodge of construction activity schedule, provide monetary compensate for loss of recreation revenues (if necessary), and work with lodge operators to further reduce impacts on recreational opportunities (same mitigation as recommended for the Proposed Action, Impact 4.14-1)	Significant
Impact 4.14-7 Construction activities could temporarily reduce recreational resources and activities (similar to Impact 4.14-2)	Significant	Reclamation will notify land and property owners of construction schedule and minimize construction during periods of high recreational activity (same mitigation as recommended for the Proposed Action, Impact 4.14-2)	Less than Significant
Impact 4.14-8 Construction activities, including the use of equipment and storage areas, may temporarily impede public access to Battle Creek for kayaking and to private property where landowners may grant public access by selling hunting and fishing rights (similar to Impact 4.14-3)	Significant	Reclamation will notify nearby land and property owners of construction schedule, post signage notifying recreationalists of construction activity and schedule, store heavy equipment alongside access roads and roadways to allow passage of the public, and minimize construction during periods of high recreational activity (same mitigation as	Less than Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		recommended for the Proposed Action, Impact 4.14-3)	
Impact 4.14-9 Installing fish screens to stop movement of fish into the canals would virtually eliminate the resident trout populations and recreational trout fishing in the canals (similar to Impact 4.14-4)	Less than Significant	None	Not applicable
Impact 4.14-10 Increased flows in North Fork and South Fork Battle Creek could increase the opportunities for kayaking, rafting, and/or fishing activities (similar to Impact 4.14-5)	Beneficial	None	Not applicable
Six Dam Removal Alternative			
Impact 4.14-11 Construction activities at Inskip Diversion Dam could reduce recreational opportunities at the Oasis Springs Lodge (similar to Impact 4.14-1)	Significant and Unavoidable	Reclamation will notify Oasis Springs Lodge of construction activity schedule, provide monetary compensate for loss of recreation revenues (if necessary), and work with lodge operators to further reduce impacts on recreational opportunities (same mitigation as recommended for the Proposed Action, Impact 4.14-1)	Significant
Impact 4.14-12 Construction activities at Inskip Diversion Dam could reduce recreational opportunities and revenues at the Oasis Springs Lodge (similar to Impact 4.14-2)	Significant	Reclamation will notify land and property owners of construction schedule and minimize construction during periods of high recreational activity (same mitigation as recommended for the Proposed Action, Impact 4.14-2)	Less than Significant
Impact 4.14-13 Construction activities, including the use of equipment and storage areas, may temporarily impede public access to Battle Creek for kayaking and to private property where landowners may grant public access by selling hunting and fishing rights (similar to Impact 4.14-3)	Significant	Reclamation will notify nearby land and property owners of construction schedule, post signage notifying recreationalists of construction activity and schedule, store heavy equipment alongside access roads and roadways to allow passage of the public, and minimize construction during periods of high recreational activity (same mitigation as recommended for the Proposed Action, Impact 4.14-3)	Less than Significant
Impact 4.14-14 Removing canals and installing fish screens to stop movement of fish into the remaining canals	Less than Significant	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
would virtually eliminate the resident trout populations and recreational trout fishing in the canals (similar to Impact 4.14-4)			
Impact 4.14-15 Increased flows in North Fork and South Fork Battle Creek could increase the opportunities for kayaking, rafting, and/or fishing activities (similar to Impact 4.14-5)	Beneficial	None	Not applicable
Three Dam Removal Alternative			
Impact 4.14-16 Construction activities at Inskip Diversion Dam could reduce recreational opportunities at the Oasis Springs Lodge (similar to Impact 4.14-1)	Significant and Unavoidable	Reclamation will notify Oasis Springs Lodge of construction activity schedule, provide monetary compensate for loss of recreation revenues (if necessary), and work with lodge operators to further reduce impacts on recreational opportunities (same mitigation as recommended for the Proposed Action, Impact 4.14-1)	Significant
Impact 4.14-17 Construction activities could temporarily reduce recreational resources and activities (similar to Impact 4.14-2)	Significant	Reclamation will notify land and property owners of construction schedule and minimize construction during periods of high recreational activity (same mitigation as recommended for the Proposed Action, Impact 4.14-2)	Less than Significant
Impact 4.14-18 Construction activities, including the use of equipment and storage areas, may temporarily impede public access to Battle Creek for kayaking and to private property where landowners may grant public access by selling hunting and fishing rights (similar to Impact 4.14-3)	Significant	Reclamation will notify nearby land and property owners of construction schedule, post signage notifying recreationalists of construction activity and schedule, store heavy equipment alongside access roads and roadways to allow passage of the public, and minimize construction during periods of high recreational activity (same mitigation as recommended for the Proposed Action, Impact 4.14-3)	Less than Significant
Impact 4.14-19 Installing fish screens to stop movement of fish into the canals would virtually eliminate the resident trout populations and recreational trout fishing in the canals (similar to Impact 4.14-4)	Less than Significant	None	Not applicable
Impact 4.14-20 Increased flows in North Fork and South	Beneficial	None	Not applicable

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
Fork Battle Creek could increase the opportunities for kayaking, rafting, and/or fishing activities (similar to Impact 4.14-5)			
CULTURAL			
No Action Alternative			
No impacts would occur to cultural resources; the diversion dams and canals would continue to be affected by existing use and upgrades	No Change	None	Not Applicable
Five Dam Removal Alternative (Proposed Action)			
Impact 4.15-1 Removal of historic properties	Significant and Unavoidable	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other interested parties	Significant
Impact 4.15-2 Historic properties would be adversely affected	Significant	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other interested parties (same as mitigation recommended for the Proposed Action, Impact 4.15-1)	Less than significant
Impact 4.15-3 Potential damage to archaeological deposits as a result of vehicular traffic	Significant	Access roads will be flagged during construction, and traffic will be limited to these areas	Less than Significant
No Dam Removal Alternative			
Impact 4.15-4 Historic properties would be adversely affected (similar to Impact 4.15-2)	Significant	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other	Less than significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		interested parties (same as mitigation recommended for the Proposed Action, Impact 4.15-2)	
Impact 4.15-5 Potential damage to archaeological deposits as a result of vehicular traffic (similar to Impact 4.15-3)	Significant	Access roads will be flagged during construction, and traffic will be limited to these (same as mitigation recommended for the Proposed Action, Impact 4.15-3)	Less than significant
Six Dam Removal Alternative			
Impact 4.15-6 Removal of historical properties (similar to Impact 4.15-1)	Significant and Unavoidable	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other interested parties (same as mitigation recommended for the Proposed Action, Impact 4.15-1)	Significant
Impact 4.15-7 Historic properties would be adversely affected (similar to Impact 4.15-2)	Significant	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other interested parties (same as mitigation recommended for the Proposed Action, Impact 4.15-2)	Less than significant
Impact 4.15-8 Potential damage to archaeological deposits as a result of vehicular traffic (similar to Impact 4.15-3)	Significant	Access roads will be flagged during construction, and traffic will be limited to these areas (same as mitigation recommended for the Proposed Action, Impact 4.15-3)	Less than significant
Three Dam Removal Alternative			
Impact 4.15-9 Removal of historic properties (similar to Impact 4.15-1)	Significant and Unavoidable	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other	Significant

Impact	Level of Significance	Recommended Mitigation Measure(s)	Level of Significance after Mitigation
		interested parties (same as mitigation recommended for the Proposed Action, Impact 4.15-1)	
Impact 4.15-10 Eligible historic properties would be adversely affected (similar to Impact 4.15-2)	Significant	HAER documentation will be prepared for all eligible properties, and a CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study will be prepared and distributed to historical societies and other interested parties (same as mitigation recommended for the Proposed Action, Impact 4.15-2)	Less than significant
Impact 4.15-11 Potential damage to archaeological deposits as a result of vehicular traffic (similar to Impact 4.15-3)	Significant	Access roads will be flagged during construction, and traffic will be limited to these areas (same as mitigation recommended for the Proposed Action, Impact 4.15-3)	Less than significant